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

February 21, 2020

#5E27950-BG13

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

SUBJECT: Remediation Closure Report for the Raptor West 3 State #1 Release (1RP-3983), Lea County, New Mexico

To Whom it May Concern:

On behalf of Marathon Oil Permian, LLC (Marathon), Souder, Miller & Associates (SMA) has prepared this Remediation Closure Report that describes remediation activities for a release of liquids related to oil and gas production activities at the Raptor West 3 State #1 site. The site is in Unit J Section 3, Township 19S, Range 34E, Lea County, New Mexico, on state land. Figure 1 illustrates the vicinity and site location on an USGS 7.5 minute quadrangle map.

Table 1, summarizes information regarding the release.

Table 1: Release Information and Closure Criteria			
Name	Raptor West 3 State #1	Company	Marathon Oil Permian, LLC
API Number	30-025-36680	Location	32.6866246° -103.5449905°
Incident Number	1RP-3983		
Estimated Date of Release	Unknown	Date Reported to NMOCD	9/18/2015
Landowner	State	Reported To	NMOCD
Source of Release	Stuffing box		
Released Volume	Unknown	Released Material	Crude Oil
Recovered Volume	Unknown	Net Release	Unknown
NMOCD Closure Criteria	<50 feet to groundwater, due to unknown volume of release		
SMA Response Dates	November 1, 2019 and December 7, 2019		

1.0 Background

On September 18, 2015, a release of crude oil of unknown volume was observed during an onsite visit with NMOCD representatives. Initial response activities included equipment repair, excavation, and removal of contaminated soil around the wellhead to approximately three (3) feet deep. Impacted soil was then transported to R360 for disposal. Figure 1 illustrates the vicinity and site location, Figures 2 and 3 illustrate the release location.

In November 2015, NMOCD approved deferral of further remediation activities until the site was plugged and abandoned (P&A). The C-141 form is included in Appendix A.

2.0 Site Information and Closure Criteria

The Raptor West 3 State #1 is located approximately 20 miles southwest of Lovington, New Mexico on State land at an elevation of approximately 3,992 feet above mean sea level (amsl).

Based upon nearby water well data (Appendix B), depth to groundwater in the area is estimated to be 101 feet below grade surface (bgs). There are five (5) known water sources within ½-mile of the location, according to the New Mexico Office of the State Engineer (NMOSE) online water well database (https://gis.ose.state.nm.us/gisapps/ose_pod_locations/; accessed 10/14/2019). The nearest significant watercourse is playa, located approximately 794 feet to the north. 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 groundwater depth of greater than 100 feet bgs. However, due to the volume of the release being unknown, the site was assigned the applicable NMOCD Closure Criteria for depth to groundwater of less than 50 feet bgs.

3.0 Release Characterization Activities and Findings

At the request of Marathon, in order to complete P&A activities for the site, SMA conducted release characterization activities on November 1, 2019. SMA conducted field screening for chloride using an electrical conductivity (EC) meter and for hydrocarbon impacts using a calibrated MiniRAE 2000 photoionization detector (PID) throughout the area surrounding the wellhead and cellar. Field results indicated the presence of chlorides exceeding NMOCD Closure Criteria.

4.0 Soil Remediation Summary

On December 7, 2019 SMA returned to the site to guide the excavation of contaminated soil. After approval from area utilities via 811, SMA guided the excavation activities by collecting soil samples for field screening. Samples were screened for chloride using an electrical conductivity (EC) and for hydrocarbon impacts using a calibrated MiniRAE 2000 photoionization detector (PID). The walls and base were excavated until field screening results indicated that the NMOCD Closure Criteria would be met.

SMA collected confirmation samples from the base of the excavation, at a depth of approximately four (4) feet bgs (BH1, BH2), and from each of the excavation's sidewalls (SW1-SW4).

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

In addition to meeting the Closure Criteria, the top four (4) feet of impacted areas off of the well pad meet the Reclamation requirement of 19.15.29.13(D)(1). Contaminated soils were removed and replaced with clean backfill material to return the surface to previous contours. The contaminated soil was transported and disposed of at R360, an NMOCD permitted disposal facility.

SMA requests closure for the release 1RP-3983.

5.0 Scope and Limitations

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

If there are any questions regarding this report, please contact either Ashley Maxwell or Shawna Chubbuck at 505-325-7535.

Submitted by:
SOUDER, MILLER & ASSOCIATES

Ashley Maxwell
Project Scientist

Reviewed by:

Shawna Chubbuck
Senior Scientist

ATTACHMENTS:

Figures:

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

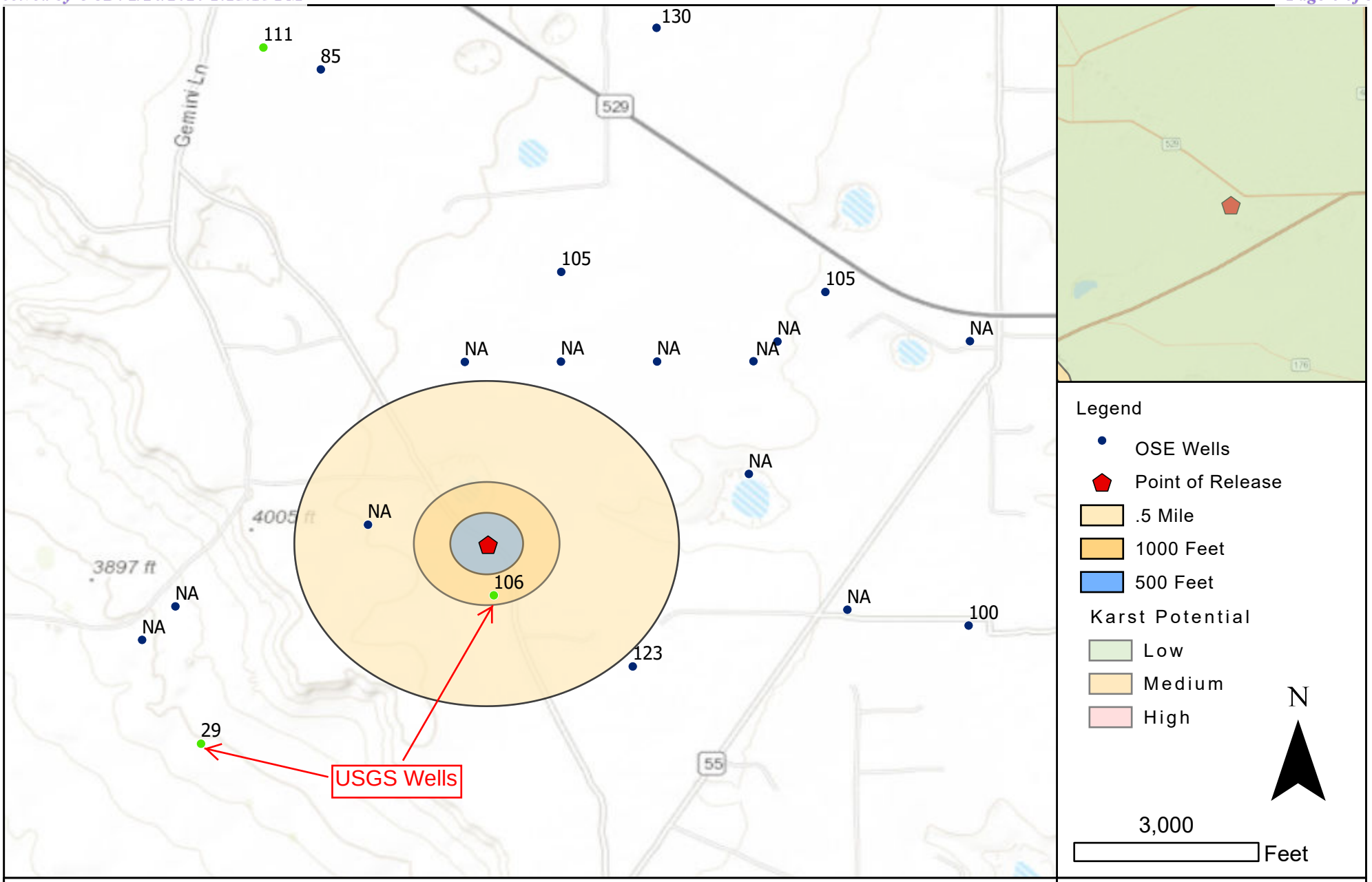
Tables:

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

Appendices:

Appendix A: Form C141
Appendix B: NMOSE Wells Report
Appendix C: Site Photography and Field Notes
Appendix D: Laboratory Analytical Reports

FIGURES



Regional Vicinity & Wellhead Protection Map
Raptor West 3 State #001 - Marathon Oil
UL: J S: 03 T: 19S R: 34E Lea County, New Mexico

Figure 1

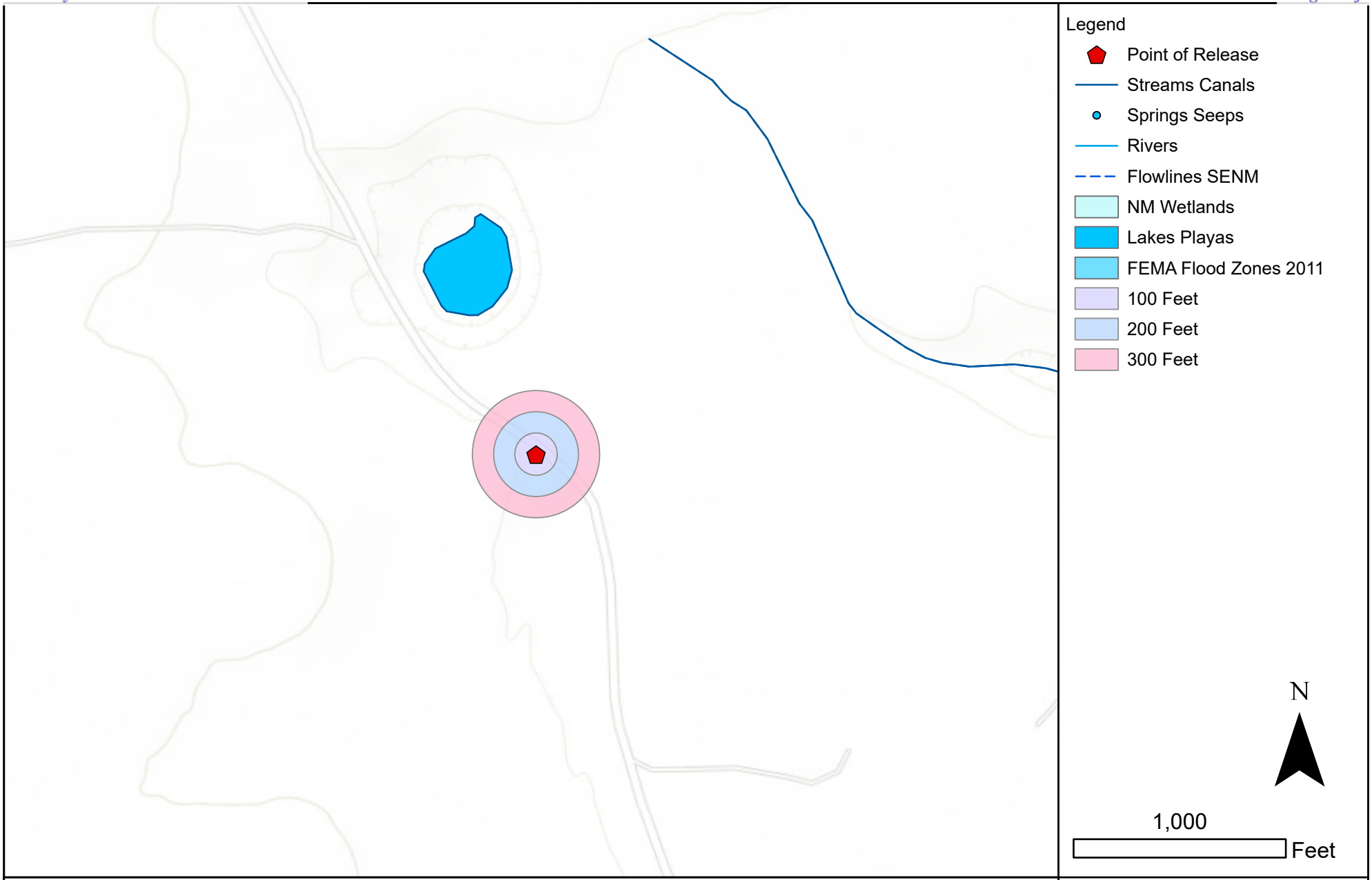
P:\5-Marathon 2019 MSA (5E27950)\GIS\ARC\GSMARATHON_MIT.aprx

Date Saved: 1/31/2020

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

Drawn Lynn A. Acosta
Date 1/31/2020
Checked
Approved

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



Surface Water Protection Map
Raptor West 3 State #001 - Marathon Oil
UL: J S: 03 T: 19S R: 34E Lea County, New Mexico

Figure 2

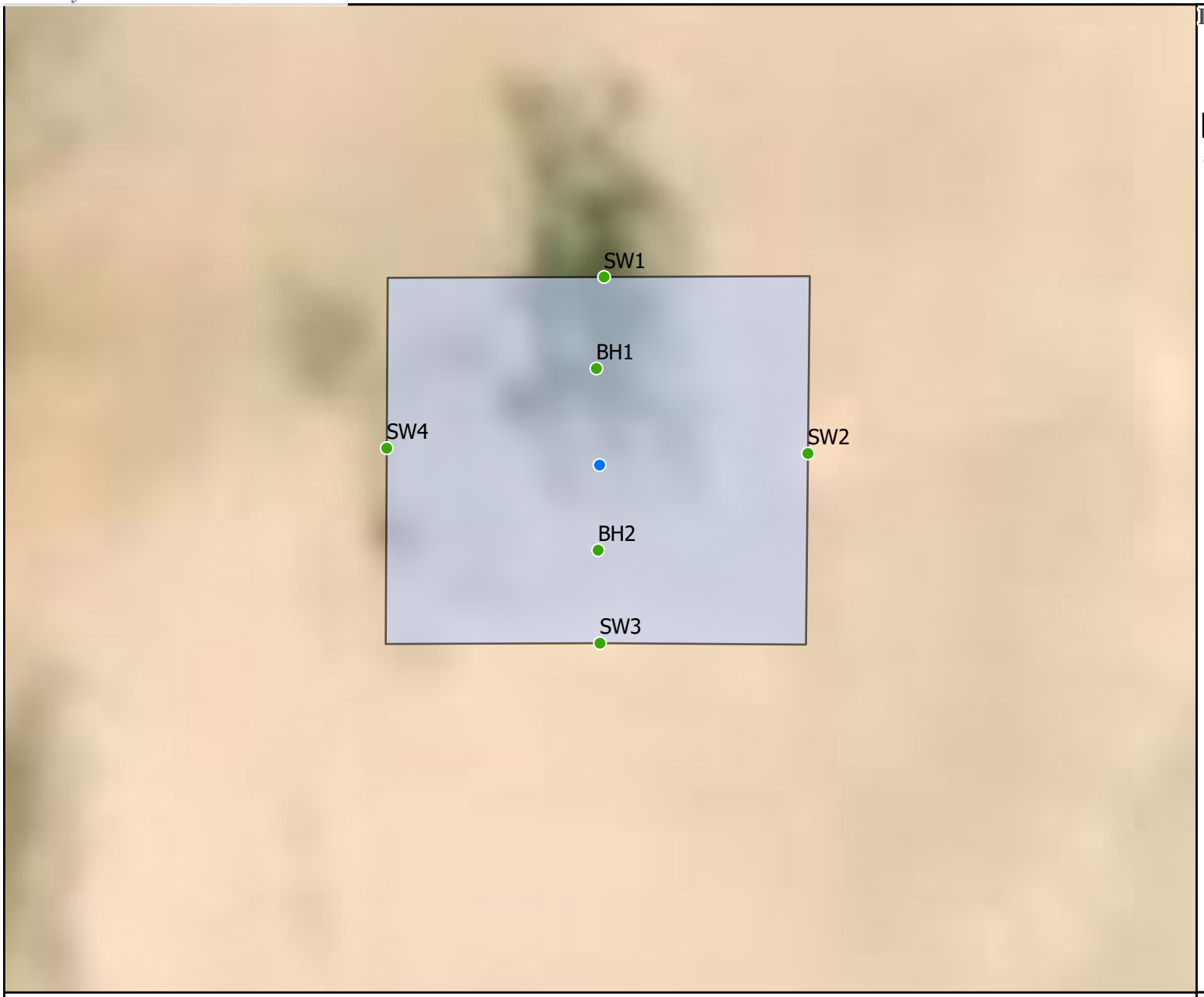
Revisions
By: Date: Descr:
By: Date: Descr:

Date Saved: 1/31/2020

Drawn Lynn A. Acosta
Date 1/31/2020
Checked
Approved

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

P:\5-Marathon 2019 MSA (5E27950)\GIS\ARC\GSMARATHON_MIT.aprx



Legend

- Point of Release
- Sample Locations
- 4' Excavation
- Pipelines

N

0 7 14 28

Feet

Site and Sample Location Map
Raptor West 3 state #001 - Marathon Oil
UL: J S: 03 T: 19S R: 34E Lea County, New Mexico

Figure 3

Revisions

By:_____ Date:_____ Descr:_____

By:_____ Date:_____ Descr:_____

Date Saved: 1/31/2020

Drawn Lynn A. Acosta
Date 2/1/2020
Checked
Approved

SMA

201 South Halagueno Street
Carlsbad, New Mexico 88220
(575) 689-7040
Serving the Southwest & Rocky Mountains

\\192.168.22.10\Projects\5-Marathon MSA 2019 (5E27950)\GIS\ARCGIS\MARATHON_MIT.aprx

TABLES

Table 2:
NMOCD Closure Criteria

Marathon Oil Permian, LLC
Raptor West 3 State #1 (1RP-3983)

Site Information (19.15.29.11.A(2, 3, and 4) NMAC)		Source/Notes
Depth to Groundwater (feet bgs)	101-108	NMOSE
Hortizontal Distance From All Water Sources Within 1/2 Mile (ft)	2,834	
Hortizontal Distance to Nearest Significant Watercourse (ft)	794	USGS 7.5 minute quadrangle 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	Unknown Release Volume	600	100		50	10
51' to 100'		10000	2500	1000	50	10
>100'		20000	2500	1000	50	10
Surface Water	**yes or no**	**if yes, then**				
<300' from continuously flowing watercourse or other significant watercourse?	No	600	100		50	10
<200' from lakebed, sinkhole or playa lake?	No					
Water Well or Water Source						
<500 feet from spring or a private, domestic fresh water well used by less than 5 households for domestic or stock watering purposes?	No					
<1000' from fresh water well or spring?	No					
Human and Other Areas						
<300' from an occupied permanent residence, school, hospital, institution or church?	No					
within incorporated municipal boundaries or within a defined municipal fresh water well field?	No					
<100' from wetland?	No					
within area overlying a subsurface mine	No					
within an unstable area?	No					
within a 100-year floodplain?	No					

Table 3:
Summary of Sample Results

Marathon Oil Permian, LLC
Raptor West 3 State #1 (1RP-3983)

Sample ID	Sample Date	Depth (feet bgs)	BTEX mg/Kg	Benzene mg/Kg	GRO mg/Kg	DRO mg/Kg	MRO mg/Kg	**Total TPH** mg/Kg	Cl- mg/Kg
NMOCD Closure Criteria			50	10				100	600
BH1	12/7/2019	4	<0.224	<0.025	<5.0	<9.6	<48	<62.6	170
BH2	12/7/2019	4	<0.217	<0.024	<4.8	<9.6	<48	<62.4	90
SW1	12/7/2019	0-4	<0.216	<0.024	<4.8	<8.9	<45	<58.7	380
SW2	12/7/2019	0-4	<0.219	<0.024	<4.9	<9.8	<49	<63.7	370
SW3	12/7/2019	0-4	<0.219	<0.024	<4.9	<9.5	<47	<61.4	270
SW4	12/7/2019	0-4	<0.225	<0.025	<5.0	<9.7	<48	<62.7	200

"--" = Not Analyzed

APPENDIX A
FORM C141

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

State of New Mexico
Energy Minerals and Natural Resources

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

Form C-141
Revised August 8, 2011

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: Nadel and Gussman Permian, LLC	Contact: Bill Dougherty	*Site will remain open until site is P&A'd.
Address: 601 N. Marienfeld, Suite 508, Midland, TX 79707	Telephone No.325-998-7107	
Facility Name: Raptor West 3 State #1	Facility Type: Oil Well	

Surface Owner State of NM	Mineral Owner	API No. 30-025-36680

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
J	3	19 S	34 E	1650	SOUTH	1650	EAST	LEA

Latitude_____ **Longitude**_____

NATURE OF RELEASE

Type of Release Oil	Volume of Release Unknown	Volume Recovered Unknown
Source of Release Stuffing Box at Wellhead	Date and Hour of Occurrence	Date and Hour of Discovery
Was Immediate Notice Given? ☐ Yes ☐ No ☒ Not Required	If YES, To Whom? Kellie Jones and Jamie Keyes with the OCD on Location	
By Whom? Cheryl Winkler	Date and Hour 9/18/2015	
Was a Watercourse Reached? ☐ Yes ☒ No	If YES, Volume Impacting the Watercourse.	

If a Watercourse was Impacted, Describe Fully.*

REVIEWED
By Kellie Jones at 2:16 pm, Nov 17, 2015

Describe Cause of Problem and Remedial Action Taken.*

The stuffing box's victaulic clamps had been inadequate to prevent an active discharge at the wellhead.

Describe Area Affected and Cleanup Action Taken.*

Victaulic clamps were replaced, stuffing box was repacked, wellhead steamed and painted. The footprint immediately around the wellhead associated with the stuffing box leak was excavated down to 2.5' to 3'. Shovels were used to excavate inside the cellar. The contaminated material was transferred to R360 along with the contaminated material from the site in general.

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: Bill Dougherty Printed Name: Bill Dougherty	OIL CONSERVATION DIVISION Approved by Environmental Specialist: Kelly	
Title: NM Field Superintendent	Approval Date: 11/17/2015	Expiration Date: Well is P&A
E-mail Address:spresley@naguss.com	Conditions of Approval: Site samples required. Delineate and remediate as per MNOCD guides. Geotag photographs of remediation required.	Attached ☐ 1RP-3983
Date: 10/29/2015 Phone: 432-682-4429		

* Attach Additional Sheets If Necessary

nKJ1532152826
pKJ1532152965

Form C-141
Page 3

State of New Mexico
Oil Conservation Division

Incident ID	
District RP	1RP-3983
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?	108 (ft bgs)
Did this release impact groundwater or surface water?	☐ Yes ☒ No
Are the lateral extents of the release within 300 feet of a continuously flowing watercourse or any other significant watercourse?	☐ Yes ☒ No
Are the lateral extents of the release within 200 feet of any lakebed, sinkhole, or playa lake (measured from the ordinary high-water mark)?	☐ Yes ☒ No
Are the lateral extents of the release within 300 feet of an occupied permanent residence, school, hospital, institution, or church?	☐ Yes ☒ No
Are the lateral extents of the release within 500 horizontal feet of a spring or a private domestic fresh water well used by less than five households for domestic or stock watering purposes?	☐ Yes ☒ No
Are the lateral extents of the release within 1000 feet of any other fresh water well or spring?	☐ Yes ☒ No
Are the lateral extents of the release within incorporated municipal boundaries or within a defined municipal fresh water well field?	☐ Yes ☒ No
Are the lateral extents of the release within 300 feet of a wetland?	☐ Yes ☒ No
Are the lateral extents of the release overlying a subsurface mine?	☐ Yes ☒ No
Are the lateral extents of the release overlying an unstable area such as karst geology?	☐ Yes ☒ No
Are the lateral extents of the release within a 100-year floodplain?	☐ Yes ☒ No
Did the release impact areas **not** on an exploration, development, production, or storage site?	☐ Yes ☒ No

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

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

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

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

Form C-141
Page 4

State of New Mexico
Oil Conservation Division

Incident ID	
District RP	1RP-3983
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: 2/17/2020

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

OCD Only

Received by: _____ Date: _____

Form C-141
Page 6

State of New Mexico
Oil Conservation Division

Incident ID	nKJ1532152826
District RP	1RP-3983
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 Title: Environmental Professional

Signature: Melodie Sanjari Date: 2/17/2020

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

OCD Only

Received by: _____ Date: _____

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

Closure Approved by: Bradford Billings Date: 08/06/2021

Printed Name: Bradford Billings Title: Envi.Spec.A

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	Twn	Rng	X	Y	Distance	Depth Well	Depth Water	Water Column
L 10347		L	LE		2	3	03	19S	34E	635909	3617566*	503	130		
L 04723		L	LE	1	1	1	11	19S	34E	637026	3616880*	864	145	123	22
CP 00806 POD1		CP	LE		4	4	04	19S	34E	635109	3617151*	1338	50		
L 04995		L	LE		4	4	34	18S	34E	636700	3618828*	1376	179	105	74
L 12103 POD1		L	LE	3	3	4	02	19S	34E	637920	3617173	1545	120		
L 11934 POD1		L	LE	3	3	4	35	18S	34E	637806	3618744*	1884	160	105	55
L 10380		L	LE	4	4	4	02	19S	34E	638428	3617102*	2057	153	100	53
CP 00811 POD1		CP	LE		4	4	09	19S	34E	635132	3615542*	2321	50		
L 05851		L	LE			1	34	18S	34E	635681	3619816*	2443	240	85	155
L 09576		L	LE		1	1	35	18S	34E	637082	3620041*	2645	180	130	50
L 12633 POD1		L	LE	2	2	2	34	18S	34E	636852	3620203	2757	180	117	63
L 04059		L	LE		4	1	12	19S	34E	639146	3616412*	2941	125	60	65

Average Depth to Water: **103 feet**
Minimum Depth: **60 feet**
Maximum Depth: **130 feet**

Record Count: 12

UTMNAD83 Radius Search (in meters):

Easting (X): 636406 **Northing (Y):** 3617483 **Radius:** 3000

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

APPENDIX C
SITE PHOTOGRAPHY
&
FIELD NOTES

Raptor West 3 State #1
Site Photography

Raptor West 3 State #1
Site Photography

Raptor West 3 State #1
Site Photography

SMA Field Screening

Location Name: Raptor West

Date: 12/7/19

Sample Name:	Soil Type:	Depth (BGS)	Collection Time:	EC (ppm)	Temp (°C)	PID Reading	PF
* BH1		4	1:45	0.24	28.6		
N-SW 1		0-4	1:15	0.92	36.5		
E-SW 2		0-4	1:25	0.73	22.0		
* S-SW 3		0-4	1:30	0.31	31.0		
* W-SW 4		0-4	1:10	0.28	27.2		
BH2		4	2:10	0.62	17.5		
NSW1.1		0-4	1:55	0.48	18.6		
ESW2.1		0-4	2:05	0.51	17.1		
NSW1.2			2:25	0.50	16.9		
* BH2.1			2:30	0.20	16.6		
* ESW2.2			2:35	0.31	16.3		
NSW1.3	>combined		2:50	0.44	16.5		
* NSW1.4			3:15	0.44	16.2		

APPENDIX D

LABORATORY ANALYTICAL REPORTS

HALL ENVIRONMENTAL ANALYSIS LABORATORY

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

December 12, 2019

Ashley Maxwell

Souder, Miller & Associates
201 S Halagueno
Carlsbad, NM 88221
TEL: (575) 689-8801
FAX

RE: Raptor West OrderNo.: 1912466

Dear Ashley Maxwell:

Hall Environmental Analysis Laboratory received 6 sample(s) on 12/10/2019 for the analyses presented in the following report.

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

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

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

Sincerely,

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order **1912466**
Date Reported: **12/12/2019**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Souder, Miller & Associates
Client Sample ID: BH1
Project: Raptor West
Collection Date: 12/7/2019
Lab ID: 1912466-001 **Matrix:** SOIL **Received Date:** 12/10/2019 10:55:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **CJS**	
Chloride	170	60		mg/Kg	20	12/11/2019 4:36:55 PM	49274
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**	
Diesel Range Organics (DRO)	ND	9.6		mg/Kg	1	12/11/2019 6:34:24 PM	49263
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	12/11/2019 6:34:24 PM	49263
Surr: DNOP	101	70-130		%Rec	1	12/11/2019 6:34:24 PM	49263
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	12/11/2019 2:39:56 PM	49258
Surr: BFB	79.4	66.6-105		%Rec	1	12/11/2019 2:39:56 PM	49258
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	ND	0.025		mg/Kg	1	12/11/2019 2:39:56 PM	49258
Toluene	ND	0.050		mg/Kg	1	12/11/2019 2:39:56 PM	49258
Ethylbenzene	ND	0.050		mg/Kg	1	12/11/2019 2:39:56 PM	49258
Xylenes, Total	ND	0.099		mg/Kg	1	12/11/2019 2:39:56 PM	49258
Surr: 4-Bromofluorobenzene	92.3	80-120		%Rec	1	12/11/2019 2:39:56 PM	49258

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

Qualifiers:

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

Analytical Report
Lab Order **1912466**
Date Reported: **12/12/2019**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Souder, Miller & Associates
Client Sample ID: BH2
Project: Raptor West
Collection Date: 12/7/2019
Lab ID: 1912466-002 **Matrix:** SOIL **Received Date:** 12/10/2019 10:55:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **CJS**	
Chloride	90	60		mg/Kg	20	12/11/2019 4:49:16 PM	49274
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**	
Diesel Range Organics (DRO)	ND	9.6		mg/Kg	1	12/11/2019 6:56:08 PM	49263
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	12/11/2019 6:56:08 PM	49263
Surr: DNOP	99.1	70-130		%Rec	1	12/11/2019 6:56:08 PM	49263
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	12/11/2019 11:54:42 AM	49258
Surr: BFB	83.2	66.6-105		%Rec	1	12/11/2019 11:54:42 AM	49258
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	ND	0.024		mg/Kg	1	12/11/2019 11:54:42 AM	49258
Toluene	ND	0.048		mg/Kg	1	12/11/2019 11:54:42 AM	49258
Ethylbenzene	ND	0.048		mg/Kg	1	12/11/2019 11:54:42 AM	49258
Xylenes, Total	ND	0.097		mg/Kg	1	12/11/2019 11:54:42 AM	49258
Surr: 4-Bromofluorobenzene	95.6	80-120		%Rec	1	12/11/2019 11:54:42 AM	49258

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

Qualifiers:

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

Analytical Report
Lab Order **1912466**
Date Reported: **12/12/2019**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Souder, Miller & Associates
Client Sample ID: SW1
Project: Raptor West
Collection Date: 12/7/2019
Lab ID: 1912466-003 **Matrix:** SOIL **Received Date:** 12/10/2019 10:55:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **CJS**	
Chloride	380	60		mg/Kg	20	12/11/2019 5:51:01 PM	49294
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**	
Diesel Range Organics (DRO)	ND	8.9		mg/Kg	1	12/11/2019 7:18:00 PM	49263
Motor Oil Range Organics (MRO)	ND	45		mg/Kg	1	12/11/2019 7:18:00 PM	49263
Surr: DNOP	113	70-130		%Rec	1	12/11/2019 7:18:00 PM	49263
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	12/11/2019 1:05:32 PM	49258
Surr: BFB	85.4	66.6-105		%Rec	1	12/11/2019 1:05:32 PM	49258
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	ND	0.024		mg/Kg	1	12/11/2019 1:05:32 PM	49258
Toluene	ND	0.048		mg/Kg	1	12/11/2019 1:05:32 PM	49258
Ethylbenzene	ND	0.048		mg/Kg	1	12/11/2019 1:05:32 PM	49258
Xylenes, Total	ND	0.096		mg/Kg	1	12/11/2019 1:05:32 PM	49258
Surr: 4-Bromofluorobenzene	99.8	80-120		%Rec	1	12/11/2019 1:05:32 PM	49258

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

Qualifiers:

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

Analytical Report
Lab Order **1912466**
Date Reported: **12/12/2019**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Souder, Miller & Associates
Client Sample ID: SW2
Project: Raptor West
Collection Date: 12/7/2019
Lab ID: 1912466-004 **Matrix:** SOIL **Received Date:** 12/10/2019 10:55:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **CJS**	
Chloride	370	60		mg/Kg	20	12/11/2019 6:28:03 PM	49294
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**	
Diesel Range Organics (DRO)	ND	9.8		mg/Kg	1	12/11/2019 8:01:33 PM	49263
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	12/11/2019 8:01:33 PM	49263
Surr: DNOP	115	70-130		%Rec	1	12/11/2019 8:01:33 PM	49263
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	12/11/2019 1:29:09 PM	49258
Surr: BFB	82.3	66.6-105		%Rec	1	12/11/2019 1:29:09 PM	49258
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	ND	0.024		mg/Kg	1	12/11/2019 1:29:09 PM	49258
Toluene	ND	0.049		mg/Kg	1	12/11/2019 1:29:09 PM	49258
Ethylbenzene	ND	0.049		mg/Kg	1	12/11/2019 1:29:09 PM	49258
Xylenes, Total	ND	0.097		mg/Kg	1	12/11/2019 1:29:09 PM	49258
Surr: 4-Bromofluorobenzene	95.0	80-120		%Rec	1	12/11/2019 1:29:09 PM	49258

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

Qualifiers:

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

Analytical Report
Lab Order **1912466**
Date Reported: **12/12/2019**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Souder, Miller & Associates
Client Sample ID: SW3
Project: Raptor West
Collection Date: 12/7/2019
Lab ID: 1912466-005 **Matrix:** SOIL **Received Date:** 12/10/2019 10:55:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **CJS**	
Chloride	270	60		mg/Kg	20	12/11/2019 6:40:24 PM	49294
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**	
Diesel Range Organics (DRO)	ND	9.5		mg/Kg	1	12/11/2019 8:23:22 PM	49263
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	12/11/2019 8:23:22 PM	49263
Surr: DNOP	101	70-130		%Rec	1	12/11/2019 8:23:22 PM	49263
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	12/11/2019 1:52:42 PM	49258
Surr: BFB	80.0	66.6-105		%Rec	1	12/11/2019 1:52:42 PM	49258
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	ND	0.024		mg/Kg	1	12/11/2019 1:52:42 PM	49258
Toluene	ND	0.049		mg/Kg	1	12/11/2019 1:52:42 PM	49258
Ethylbenzene	ND	0.049		mg/Kg	1	12/11/2019 1:52:42 PM	49258
Xylenes, Total	ND	0.097		mg/Kg	1	12/11/2019 1:52:42 PM	49258
Surr: 4-Bromofluorobenzene	92.8	80-120		%Rec	1	12/11/2019 1:52:42 PM	49258

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

Qualifiers:

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

Analytical Report
Lab Order **1912466**
Date Reported: **12/12/2019**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Souder, Miller & Associates
Client Sample ID: SW4
Project: Raptor West
Collection Date: 12/7/2019
Lab ID: 1912466-006 **Matrix:** SOIL **Received Date:** 12/10/2019 10:55:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **CJS**	
Chloride	200	60		mg/Kg	20	12/11/2019 6:52:45 PM	49294
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**	
Diesel Range Organics (DRO)	ND	9.7		mg/Kg	1	12/11/2019 8:45:14 PM	49263
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	12/11/2019 8:45:14 PM	49263
Surr: DNOP	93.5	70-130		%Rec	1	12/11/2019 8:45:14 PM	49263
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	12/11/2019 2:16:21 PM	49258
Surr: BFB	80.2	66.6-105		%Rec	1	12/11/2019 2:16:21 PM	49258
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	ND	0.025		mg/Kg	1	12/11/2019 2:16:21 PM	49258
Toluene	ND	0.050		mg/Kg	1	12/11/2019 2:16:21 PM	49258
Ethylbenzene	ND	0.050		mg/Kg	1	12/11/2019 2:16:21 PM	49258
Xylenes, Total	ND	0.10		mg/Kg	1	12/11/2019 2:16:21 PM	49258
Surr: 4-Bromofluorobenzene	92.0	80-120		%Rec	1	12/11/2019 2:16:21 PM	49258

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

Qualifiers:

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

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1912466**
12-Dec-19

Client: Souder, Miller & Associates
Project: Raptor West

Sample ID: **MB-49274**	SampType: **mblk**	TestCode: **EPA Method 300.0: Anions**							
Client ID: **PBS**	Batch ID: **49274**	RunNo: **65120**							
Prep Date: **12/11/2019**	Analysis Date: **12/11/2019**	SeqNo: **2234589**	Units: **mg/Kg**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	1.5								

Sample ID: **LCS-49274**	SampType: **lcs**	TestCode: **EPA Method 300.0: Anions**							
Client ID: **LCSS**	Batch ID: **49274**	RunNo: **65120**							
Prep Date: **12/11/2019**	Analysis Date: **12/11/2019**	SeqNo: **2234590**	Units: **mg/Kg**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	14	1.5	15.00	0	94.0	90	110			

Sample ID: **MB-49294**	SampType: **mblk**	TestCode: **EPA Method 300.0: Anions**							
Client ID: **PBS**	Batch ID: **49294**	RunNo: **65120**							
Prep Date: **12/11/2019**	Analysis Date: **12/11/2019**	SeqNo: **2234625**	Units: **mg/Kg**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	1.5								

Sample ID: **LCS-49294**	SampType: **lcs**	TestCode: **EPA Method 300.0: Anions**							
Client ID: **LCSS**	Batch ID: **49294**	RunNo: **65120**							
Prep Date: **12/11/2019**	Analysis Date: **12/11/2019**	SeqNo: **2234626**	Units: **mg/Kg**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	14	1.5	15.00	0	92.8	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 Limit
S	% Recovery outside of range due to dilution or matrix		

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1912466**
12-Dec-19

Client: Souder, Miller & Associates
Project: Raptor West

Sample ID: **LCS-49263** SampType: **LCS** TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **LCSS** Batch ID: **49263** RunNo: **65091**
Prep Date: **12/10/2019** Analysis Date: **12/11/2019** SeqNo: **2234585** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	63	10	50.00	0	126	63.9	124			S
Surr: DNOP	6.0		5.000		119	70	130			

Sample ID: **MB-49263** SampType: **MBLK** TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **PBS** Batch ID: **49263** RunNo: **65091**
Prep Date: **12/10/2019** Analysis Date: **12/11/2019** SeqNo: **2234586** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	10								
Motor Oil Range Organics (MRO)	ND	50								
Surr: DNOP	11		10.00		107	70	130			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1912466**

12-Dec-19

Client: Souder, Miller & Associates

Project: Raptor West

Sample ID: **mb-49258**	SampType: **MBLK**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **PBS**	Batch ID: **49258**	RunNo: **65101**
Prep Date: **12/10/2019**	Analysis Date: **12/11/2019**	SeqNo: **2234097** 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	880		1000		88.0	66.6	105			

Sample ID: **lcs-49258**	SampType: **LCS**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **LCSS**	Batch ID: **49258**	RunNo: **65101**
Prep Date: **12/10/2019**	Analysis Date: **12/11/2019**	SeqNo: **2234098** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	25	5.0	25.00	0	99.6	80	120			
Surr: BFB	990		1000		99.2	66.6	105			

Sample ID: **1912466-001ams**	SampType: **MS**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **BH1**	Batch ID: **49258**	RunNo: **65101**
Prep Date: **12/10/2019**	Analysis Date: **12/11/2019**	SeqNo: **2234101** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	27	4.6	23.13	0	115	69.1	142			
Surr: BFB	880		925.1		94.6	66.6	105			

Sample ID: **1912466-001amsd**	SampType: **MSD**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **BH1**	Batch ID: **49258**	RunNo: **65101**
Prep Date: **12/10/2019**	Analysis Date: **12/11/2019**	SeqNo: **2234102** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	26	4.6	23.23	0	112	69.1	142	1.82	20	
Surr: BFB	880		929.4		94.5	66.6	105	0	0	

Qualifiers:

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

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1912466**
12-Dec-19

Client: Souder, Miller & Associates
Project: Raptor West

Sample ID: **mb-49258**	SampType: **MBLK**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **PBS**	Batch ID: **49258**	RunNo: **65101**
Prep Date: **12/10/2019**	Analysis Date: **12/11/2019**	SeqNo: **2234140** Units: **mg/Kg**

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

Sample ID: **LCS-49258**	SampType: **LCS**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **LCSS**	Batch ID: **49258**	RunNo: **65101**
Prep Date: **12/10/2019**	Analysis Date: **12/11/2019**	SeqNo: **2234141** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.95	0.025	1.000	0	95.2	80	120			
Toluene	0.95	0.050	1.000	0	94.6	80	120			
Ethylbenzene	0.94	0.050	1.000	0	94.3	80	120			
Xylenes, Total	2.9	0.10	3.000	0	96.1	80	120			
Surr: 4-Bromofluorobenzene	1.0		1.000		104	80	120			

Sample ID: **1912466-002ams**	SampType: **MS**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **BH2**	Batch ID: **49258**	RunNo: **65101**
Prep Date: **12/10/2019**	Analysis Date: **12/11/2019**	SeqNo: **2234145** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.95	0.023	0.9217	0	103	76	123			
Toluene	0.95	0.046	0.9217	0.01034	102	80.3	127			
Ethylbenzene	0.97	0.046	0.9217	0.01169	104	80.2	131			
Xylenes, Total	2.9	0.092	2.765	0.01749	106	78	133			
Surr: 4-Bromofluorobenzene	0.89		0.9217		96.6	80	120			

Sample ID: **1912466-002amsd**	SampType: **MSD**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **BH2**	Batch ID: **49258**	RunNo: **65101**
Prep Date: **12/10/2019**	Analysis Date: **12/11/2019**	SeqNo: **2234146** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.95	0.023	0.9242	0	103	76	123	0.189	20	
Toluene	0.96	0.046	0.9242	0.01034	103	80.3	127	1.04	20	
Ethylbenzene	0.98	0.046	0.9242	0.01169	105	80.2	131	1.03	20	
Xylenes, Total	3.0	0.092	2.773	0.01749	107	78	133	1.31	20	
Surr: 4-Bromofluorobenzene	0.90		0.9242		96.9	80	120	0	0	

Qualifiers:

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

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: **1912466** RcptNo: **1**

Received By: **Yazmine Garduno** **12/10/2019 10:55:00 AM**

Completed By: **Yazmine Garduno** **12/10/2019 11:52:01 AM**

Reviewed By: ENM 12/10/19

Chain of Custody

1. Is Chain of Custody sufficiently 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. 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: _____ (<2 or >12 unless noted)
Adjusted? _____
Checked by: DAD 12/10/19

Special Handling (if applicable)

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

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

16. Additional remarks:

17. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	4.5	Good				
2	3.5	Good				

Chain-of-Custody Record

Client: SMA - Carlsbad

Mailing Address:

Phone #:

email or Fax#:

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

Accreditation: ☐ Az Compliance
☐ NELAC ☐ Other
☐ EDD (Type)

Turn-Around Time:
☐ Standard ☑ Rush 3 Day

Project Name: Raptor West

Project #:

Project Manager: Ashley Maxwell

Sampler: MJP

On Ice: X ☐ Yes ☐ No

# of Coolers: 2

Cooler Temp (including CF): 4.5 (0) = 4.5 / 3.5 (0) = 3.5 (°C)

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

Analysis Request

Date	Time	Matrix	Sample Name	Container Type and #	Preservative Type	HEAL No. 1912400	BTEX / MTBE / TMB's (8021)	TPH:8015D(GRO / DRO / MRO)	8081 Pesticides/8082 PCB's	EDB (Method 504.1)	PAHs by 8310 or 8270SIMS	RCRA 8 Metals	Cl, F, Br, NO_3, NO_2, PO_4, SO_4	8260 (VOA)	8270 (Semi-VOA)	Total Coliform (Present/Absent)
12/7		soil	BH1	4oz		-001	✓	✓					✓			
↓		↓	BH2	↓		-002	✓	✓					✓			
			SW1			-003	✓	✓					✓			
			SW2			-004	✓	✓					✓			
			SW3			-004	✓	✓					✓			
↓		↓	SW4	↓		-005	✓	✓					✓			

Date	Time	Relinquished by	Received by	Via	Date	Time
12/9	15:00				12/9/19	1500
12/9/19	1900			courier	12/10/19	1055

Remarks:
Direct Bill Marathon
CC Ashley Maxwell

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

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

Operator:	OGRID:
MARATHON OIL PERMIAN LLC 5555 San Felipe St. Houston, TX 77056	372098
	Action Number: 4063
	Action Type: [C-141] Release Corrective Action (C-141)

CONDITIONS

Created By	Condition	Condition Date
bbillings	None	8/6/2021