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	NRM2002458606
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 msanjari@marathonoil.com	Incident # *(assigned by OCD)*
Contact mailing address 4111 S. Tidwell Rd., Carlsbad, NM 8220	

Location of Release Source

Latitude 32.3182259 Longitude -104.0299149
(NAD 83 in decimal degrees to 5 decimal places)

Site Name H F 7 FEDERAL COM #001	Site Type Oil and gas drilling facility
Date Release Discovered 12/5/2019	API# *(if applicable)* 30-015-28509

Unit Letter	Section	Township	Range	County
L	07	23S	29E	Eddy

Surface Owner: ☐ State ☐ Federal ☐ Tribal ☒ Private (*Name:* *MOSAIC POTASH CARLSBAD INC*)

Nature and Volume of Release

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

☐ Crude Oil	Volume Released (bbls)	Volume Recovered (bbls)
☒ Produced Water	Volume Released (bbls) 41.67	Volume Recovered (bbls) 30 bbls
	Is the concentration of dissolved chloride in the produced water >10,000 mg/l?	☒ Yes ☐ No
☐ Condensate	Volume Released (bbls)	Volume Recovered (bbls)
☐ Natural Gas	Volume Released (Mcf)	Volume Recovered (Mcf)
☐ Other (describe)	Volume/Weight Released (provide units)	Volume/Weight Recovered (provide units)

Cause of Release

On December 5, 2019 around 3:15pm production reported a spill due to a produced water tank rupturing. 41.67 bbls of produced water were released onto the ground. Initial response shut in the well to stop the flow. A vacuum truck was immediately dispatched to recover fluids. The vac truck was able to recover 30 bbls. An emergency scrape was also ordered to prevent fluids from going off pad.

State of New Mexico
Oil Conservation Division

Incident ID	NRM2002458606
District RP	
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Was this a major release as defined by 19.15.29.7(A) NMAC? ☒ Yes ☐ No	If YES, for what reason(s) does the responsible party consider this a major release? This was a major release as defined by NMAC 19.15.29.7(A) based on volume of material released.

If YES, was immediate notice given to the OCD? By whom? To whom? When and by what means (phone, email, etc)?
Yes by Marathon to NMOCD District 2 and BLM on 12/6/2019 via email

Initial Response

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

☒ The source of the release has been stopped.
☒ The impacted area has been secured to protect human health and the environment.
☒ Released materials have been contained via the use of berms or dikes, absorbent pads, or other containment devices.
☒ All free liquids and recoverable materials have been removed and managed appropriately.

If all the actions described above have not been undertaken, explain why:

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

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

Printed Name: Melodie Sanjari Title: Environmental Professional

Signature: Melodie Sanjari Date: 12/11/2019

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

OCD Only

Received by: _____ Date: _____

State of New Mexico
Oil Conservation Division

Incident ID	NRM2002458606
District RP	
Facility ID	
Application ID	

Amended 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?	56-100 (ft bgs)
Did this release impact groundwater or surface water?	☐ Yes ☒ No
Are the lateral extents of the release within 300 feet of a continuously flowing watercourse or any other significant watercourse?	☐ Yes ☒ No
Are the lateral extents of the release within 200 feet of any lakebed, sinkhole, or playa lake (measured from the ordinary high-water mark)?	☐ Yes ☒ No
Are the lateral extents of the release within 300 feet of an occupied permanent residence, school, hospital, institution, or church?	☐ Yes ☒ No
Are the lateral extents of the release within 500 horizontal feet of a spring or a private domestic fresh water well used by less than five households for domestic or stock watering purposes?	☐ Yes ☒ No
Are the lateral extents of the release within 1000 feet of any other fresh water well or spring?	☐ Yes ☒ No
Are the lateral extents of the release within incorporated municipal boundaries or within a defined municipal fresh water well field?	☐ Yes ☒ No
Are the lateral extents of the release within 300 feet of a wetland?	☐ Yes ☒ No
Are the lateral extents of the release overlying a subsurface mine?	☐ Yes ☒ No
Are the lateral extents of the release overlying an unstable area such as karst geology?	☐ Yes ☒ No
Are the lateral extents of the release within a 100-year floodplain?	☐ Yes ☒ No
Did the release impact areas **not** on an exploration, development, production, or storage site?	☐ Yes ☒ No

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

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

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

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

State of New Mexico
Oil Conservation Division

Incident ID	NRM2002458606
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: 9/18/2020

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

OCD Only

Received by: _____ Date: _____

State of New Mexico
Oil Conservation Division

Incident ID	NRM2002458606
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 Title: Environmental Professional

Signature: Melodie Sanjari Date: 9/18/2020

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: _____ Date: _____

Printed Name: _____ Title: _____

Sanjari, Melodie (MRO)

From: Venegas, Victoria, EMNRD <Victoria.Venegas@state.nm.us>
Sent: Friday, September 18, 2020 1:45 PM
To: Sanjari, Melodie (MRO); Bratcher, Mike, EMNRD; Hamlet, Robert, EMNRD; Eads, Cristina, EMNRD
Cc: CFO_Spill, BLM_NM
Subject: [External] RE: NRM2002458606 H F 7 FEDERAL COM #001 @ 30-015-28509

Beware of links/attachments.

NRM2002458606 H F 7 FEDERAL COM #001 @ 30-015-28509

Ms. Sanjari,
Please submit the updated report via OCD's fee portal and let me know the PO#. Marathon's cooperation in this matter is greatly appreciated.
Thank you,

PLEASE REVIEW NEW GROUNDWATER DATA BELOW

Victoria Venegas
State of New Mexico
Energy, Minerals, and Natural Resources
Oil Conservation Division
811 S. First St., Artesia NM 88210
(575) 909-0269
Victoria.Venegas@state.nm.us

From: Sanjari, Melodie (MRO) <msanjari@marathonoil.com>
Sent: Friday, September 18, 2020 12:04 PM
To: Venegas, Victoria, EMNRD <Victoria.Venegas@state.nm.us>; Bratcher, Mike, EMNRD <mike.bratcher@state.nm.us>; Hamlet, Robert, EMNRD <Robert.Hamlet@state.nm.us>; Eads, Cristina, EMNRD <Cristina.Eads@state.nm.us>
Cc: CFO_Spill, BLM_NM <blm_nm_cfo_spill@blm.gov>
Subject: [EXT] RE: NRM2002458606 H F 7 FEDERAL COM #001 @ 30-015-28509

Ms. Venegas,

In order to provide more clarity on this incident and future projects in the area - Marathon Oil oversaw the drilling of a temporary monitoring well on the south-west corner of the HF Fed Com #1 location (C-4470 POD 1). Adkins Engineering executed the work and provided the drilling and plugging operations and OSE Permit in the form of a letter report (attached). As the report details, the well was left open to allow recharge and when probed, there was no groundwater detected at 55 feet bgs. When adjusting the remedial targets of the 51-100 feet bgs criteria to the confirmation and delineation samples that have been taken, this incident now meets closure criteria. Please let me know if you would like me to resubmit this new data with an amendment report and a signed final C141 or if you would like to review the report with this new data before resubmission.

Atkins ENGINEERING ASSOCIATES INC.
2904 W 2nd St.
Roswell, NM 88201
voice: 575.624.2420
fax: 575.624.2421
www.atkinseng.com

September 17, 2020

Melodie Sanjari
Marathon Oil
4111 S. Tidwell
Carlsbad, NM 88220

Re: Groundwater determination for HF7, Eddy County, New Mexico

Mrs. Sanjari:

Atkins Engineering Associates, Inc. (AEA) submits this report of a groundwater determination for the HF7 site located at approximately 32.317898° -104.030269° in the SW Lot 3 of Section 07, Township 23 South, Range 29 East, N.M.P.M. Eddy County, New Mexico.

Drilling Operations

On August 20, 2020, the New Mexico Office of the State Engineer (OSE) approved a *Permit to Drill a Well with No Water Right* under file C-4470 POD1 (attached).

On September 03, 2020, AEA advanced a boring using 4.25" hollow stem augers (HSA) to approximately 55 feet below ground surface (bgs). Temporary well materials consisting of 20 feet of 0.020" slotted 2" Sch 40 PVC screen were set at 35-55 feet bgs with riser to above ground surface. A water level probe was lowered within well to total depth and no groundwater was detected.

Plugging Operations

On September 8, 2020, AEA re-mobilized to site. A water level probe was lowered within well to total depth and no water was detected. The temporary well materials were removed from boring then backed filled with drill cutting from total depth to 10' bgs. A slurry of Portland Type I/II Neat cement mixed at 5.20 gallons per 94 lb. sack was landed from 10' bgs to surface. A total of two sacks were mixed and landed, checked for drops, and covered with native fill. AEA filed a well record of the plugged boring to the D2 OSE (attached).

Summary

No water was encountered to 55' below ground surface at Marathons HF7 location.

If you have any questions, please contact me at lucas@atkinseng.com or 575.499.9244.
Sincerely

Lucas Middleton- Staff Geoscientist

Atkins ENGINEERING ASSOCIATES INC.
2904 W 2nd St.
Roswell, NM 88201
voice: 575.624.2420
fax: 575.624.2421
www.atkinseng.com

09/14/2020

DII-NMOSE
1900 W 2nd Street
Roswell, NM 88201

Hand Delivered to the DII Office of the State Engineer

Re: Well Record C-4470 Pod1 and Plugging Record

To whom it may concern:

Attached please find a Well Record and Plugging Record, in duplicate, for C-4470 POD1, a boring that did not encountered water, was not converted permanently and plugged.

If you have any questions, please contact me at 575.499.9244 or lucas@atkinseng.com.

Sincerely,

Lucas Middleton

Enclosures: as noted above

APPLICANT COPY

RECEIVED SEP 14 2020

WELL RECORD & LOG

OFFICE OF THE STATE ENGINEER

www.ose.state.nm.us

RECEIVED SEP 14 2020 1:32

APPLICANT COPY

1. GENERAL AND WELL LOCATION

OSE POD NO. (WELL NO.)	WELL TAG ID NO.	OSE FILE NO(S).
POD1(SB-1)	n/a	C-4470

WELL OWNER NAME(S)	PHONE (OPTIONAL)
Marathon Oil	

WELL OWNER MAILING ADDRESS	CITY	STATE	ZIP
4111 S. Tidwell	Carlsbad	NM	88220

WELL LOCATION (FROM GPS)		DEGREES	MINUTES	SECONDS	
	LATITUDE	32°	19"	4.43'	N
	LONGITUDE	-104°	1"	48.97'	W

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

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

SW L3 Sec. 07 T23S R29E, NMPM

2. DRILLING & CASING INFORMATION

LICENSE NO.	NAME OF LICENSED DRILLER	NAME OF WELL DRILLING COMPANY
1249	Jackie D. Atkins	Atkins Engineering Associates, Inc.

DRILLING STARTED	DRILLING ENDED	DEPTH OF COMPLETED WELL (FT)	BORE HOLE DEPTH (FT)	DEPTH WATER FIRST ENCOUNTERED (FT)
09/03/2020	09/03/2020	Temporary-Removed	±55	none

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

STATIC WATER LEVEL IN COMPLETED WELL (FT): none

DRILLING FLUID: ☐ AIR ☐ MUD ADDITIVES – SPECIFY:

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

DEPTH (feet bgl) FROM	DEPTH (feet bgl) TO	BORE HOLE DIAM (inches)	CASING MATERIAL AND/OR GRADE (include each casing string, and note sections of screen)	CASING CONNECTION TYPE (add coupling diameter)	CASING INSIDE DIAM. (inches)	CASING WALL THICKNESS (inches)	SLOT SIZE (inches)
0	35	±8.5	2" Sch. 40 PVC Riser	Flush Thread 2 TPI	2.067	0.154	--
35	55	±8.5	2" Sch. 40 PVC Screen	Flush Thread 2 TPI	2.067	0.154	.020

3. ANNULAR MATERIAL

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

FOR OSE INTERNAL USE

WR-20 WELL RECORD & LOG (Version 06/30/17)

FILE NO.	POD NO.	TRN NO.	
LOCATION		WELL TAG ID NO.	PAGE 1 OF 2

4. HYDROGEOLOGIC LOG OF WELL

DEPTH (feet bgl) FROM	DEPTH (feet bgl) TO	THICKNESS (feet)	COLOR AND TYPE OF MATERIAL ENCOUNTERED - INCLUDE WATER-BEARING CAVITIES OR FRACTURE ZONES (attach supplemental sheets to fully describe all units)	WATER BEARING? (YES / NO)	ESTIMATED YIELD FOR WATER-BEARING ZONES (gpm)
0	4	4	Caliche with fine-grained sand, Pink (7.5 yr 7/5)	Y ✓ N	
4	14	10	Sand, fine-grained, poorly graded with caliche layers, Pink (7.5 yr 7/5)	Y ✓ N	
14	19	5	Sand, fine-grained, poorly graded with clay, Pink (7.5 yr 7/5)	Y ✓ N	
19	34	15	Sand, fine-grained, poorly graded with increasing clay, Brown (7.5 yr 5/8)	Y ✓ N	
34	49	15	Clay, Hard , Brown (5 yr 4/6)	Y ✓ N	
49	55	6	Sand, Fine grained, poorly graded, cemented , Brown (7.5 yr 5/6)	Y ✓ N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	

METHOD USED TO ESTIMATE YIELD OF WATER-BEARING STRATA:

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

TOTAL ESTIMATED WELL YIELD (gpm): 0.00

5. TEST; RIG SUPERVISION

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

MISCELLANEOUS INFORMATION: Removed well materials,abandoned boring by using drill cutting from total depth to 10' bgs then landed a slurry of Portland TYPE I/II Neat cement 5.2 gallons of water per 94 lb. sack from 10' bgs to land surface. No pump test.

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

Shane Eldridge

6. SIGNATURE

THE UNDERSIGNED HEREBY CERTIFIES THAT, TO THE BEST OF HIS OR HER KNOWLEDGE AND BELIEF, THE FOREGOING IS A TRUE AND CORRECT RECORD OF THE ABOVE DESCRIBED HOLE AND THAT HE OR SHE WILL FILE THIS WELL RECORD WITH THE STATE ENGINEER AND THE PERMIT HOLDER WITHIN 30 DAYS AFTER COMPLETION OF WELL DRILLING:

Jack Atkins — Jackie D. Atkins — 09/11/2020

SIGNATURE OF DRILLER / PRINT SIGNEE NAME — DATE

FOR OSE INTERNAL USE — WR-20 WELL RECORD & LOG (Version 06/30/2017)

FILE NO.	POD NO.	TRN NO.	
LOCATION		WELL TAG ID NO.	PAGE 2 OF 2

PLUGGING RECORD

NOTE: A Well Plugging Plan of Operations shall be approved by the State Engineer prior to plugging - 19.27.4 NMAC

I. GENERAL / WELL OWNERSHIP:

State Engineer Well Number: C-4470-POD1(SB-1)

Well owner: Marathon Oil Phone No.: 575-988-8753

Mailing address: 4111 S. Tidwell

City: Carlsbad State: NM Zip code: 88220

II. WELL PLUGGING INFORMATION:

1) Name of well drilling company that plugged well: Jackie D. Atkins (Atkins Engineering Associates, Inc.)

2) New Mexico Well Driller License No.: 1249 Expiration Date: 04/30/2021

3) Well plugging activities were supervised by the following well driller(s)/rig supervisor(s): Shane Eldridge

4) Date well plugging began: 09/08/2020 Date well plugging concluded: 09/08/2020

5) GPS Well Location: Latitude: 32 deg, 19 min, 4.43 sec
Longitude: 104 deg, 1 min, 48.97 sec, WGS 84

6) Depth of well confirmed at initiation of plugging as: 55 ft below ground level (bgl), by the following manner: weighted tape

7) Static water level measured at initiation of plugging: none ft bgl

8) Date well plugging plan of operations was approved by the State Engineer: 08/19/20

9) Were all plugging activities consistent with an approved plugging plan? No If not, please describe differences between the approved plugging plan and the well as it was plugged (attach additional pages as needed):

Used Portland TYPE I/II Neat cement (5.2 gallons of water per 94 lb. sack) in place of hydrated bentonite

10) Log of Plugging Activities - Label vertical scale with depths, and indicate separate plugging intervals with horizontal lines as necessary to illustrate material or methodology changes. Attach additional pages if necessary.

For each interval plugged, describe within the following columns:

Depth (ft bgl)	Plugging Material Used (include any additives used)	Volume of Material Placed (gallons)	Theoretical Volume of Borehole/ Casing (gallons)	Placement Method (tremie pipe, other)	Comments ("casing perforated first", "open annular space also plugged", etc.)
	0'-10' Portland TYPE I/II Neat cement (5.2 gallons of water per 94 lb. sack)	18 gallons	17 gallons	Auger as tremie	
	10'-55' Drill Cuttings	unknown	77 gallons	Boring	

MULTIPLY		BY		AND OBTAIN
cubic feet	x	7.4805	=	gallons
cubic yards	x	201.97	=	gallons

III. SIGNATURE:

I, Jackie D. Atkins , say that I am familiar with the rules of the Office of the State Engineer pertaining to the plugging of wells and that each and all of the statements in this Plugging Record and attachments are true to the best of my knowledge and belief.

Jack Atkins

Signature of Well Driller

09/11/2020

Date

PLEASE REVIEW NEW GROUNDWATER DATA ABOVE 9/18/2020

Weston Solutions, Inc.
2600 Dallas Parkway, Suite 280
Frisco, TX 75034

(469) 666-5500
WestonSolutions.com

4 June 2020

Victoria Venegas
State of New Mexico
Energy, Minerals, and Natural Resources
Oil Conservation Division
811 S. First St.
Artesia, New Mexico 88210

RE: Site Assessment and Closure Report
H F 7 Federal Com #001H
Marathon Oil EF, LLC
Incident ID. NRM2002458606

Dear Ms. Venegas:

On behalf of Marathon Oil Permian, LLC (Marathon), Weston Solutions, Inc. (WESTON®) respectfully submits this Site Assessment/Characterization Report and Closure Request for the release of production fluids at H F 7 Federal Com #001H (Site) pursuant to the State of New Mexico Energy, Minerals, and Natural Resources Oil Conservation Division's (NMOCD's) spill response rules. This report is intended to provide the NMOCD with a comprehensive account of delineation and remediation measures conducted at the Site to-date. A Site Location Map depicting the location of the project area is provided as **Figure 1**.

RELEASE INFORMATION

The release occurred on 5 December 2019 when a produced water tank ruptured at the H F 7 Federal Com #001 well site. **Figure 2** illustrates the impacted surface area and surface features of the site. The rupture resulted in the unintentional release of 41.67 barrels (bbls) of produced water onto the surrounding engineered pad. Due to the volume of produced water released being greater than 25 bbls, the release was considered a major release in accordance with New Mexico Administrative Code (NMAC) 19.15.29.7(A). The release was reported to the NMOCD District 2 office and the Bureau of Land Management (BLM) via email on 6 December 2019. The initial notification email and C-141 are included as **Attachment A** and **Attachment B** respectively.

INITIAL RESPONSE

Marathon's initial response to the release was to shut in the well to stop the flow of produced water to the ruptured tank. A vacuum truck was immediately mobilized to the site to recover the released fluids. The vacuum truck was able to recover 30 bbls (**Attachment C**) of the released fluids. In addition, to prevent the fluids from leaving the engineered pad, an emergency scrape was conducted pending over-excavation of impacted soils.

SITE ASSESSMENT/CHARACTERIZATION

The H F Federal Com #001 release was not observed to have impacted any surface water bodies and is not believed to have affected groundwater beneath the site. There is no readily available depth to groundwater information for the exact location of the site, but borings installed during WESTON investigation to approximately 21 feet below ground surface (ft bgs) did not encounter evidence of groundwater. A depth to water determination was prepared for the site by reviewing available information on nearby groundwater wells available through the New Mexico Office of the State Engineer records. The record search identified one well within 1 mile of the site as shown on **Figure 3**. The identified well is approximately 0.8 mile from the site and had a single reported depth to water measurement of 9.83 feet reported in 1950. The New Mexico Office of the State Engineer query indicated that, based upon available data for water levels within an approximately 1.5 mile radius, the depth to groundwater ranges from 10 to 200 ft bgs, with an average depth to groundwater of 53 ft bgs (**Attachment D**).

A survey of nearby surface water bodies and groundwater supply sources found the following:

- No continuously flowing watercourse or other significant watercourse within more than 300 feet (**Figure 4**).
- No lakebeds, sinkholes, or playa lakes were identified within in 200 feet of the lateral extent of the release (**Figure 4**).
- The lateral extent of the release does not come within 300 feet of an occupied permanent residence, school, hospital, institution, or church (**Figure 4**).
- There are no natural springs or private domestic water wells within 500 feet.
- No other fresh water wells or springs within 1,000 feet of the lateral extent of the release (**Figure 4**).
- There are no wetlands within 300 feet (**Figure 5**).
- The Site does not lie within a 100-year floodplain (**Figure 6**).

Furthermore, the following were not identified with the lateral extents of the site:

- An unstable area such as karst geology (**Figure 7**).
- A subsurface mine.

The release did not impact areas that are not on an exploration, development, production, or storage site.

REMEDIATION ACTIVITIES

TARGET REMEDIAL LEVELS

Target cleanup levels for the site were determined using the NMOCD Closure Criteria (19.15.29.12.B(4) and Table 1 NMAC) in combination with the Bureau of Land Management karst guidelines. **Table 1** summarizes the target cleanup levels, with the levels applicable to the site highlighted. The site Target Remedial Levels (RTLs) are based upon the fact that there is no groundwater data within ½ mile of the site. The following is a summary of the Target Remedial Levels utilized for remedial activities related to the release.

Contaminant of Concern	Closure Criteria (mg/kg)
Chlorides	600
TPH	100
GRO-DRO	-
BTEX	50
Benzene	10

REMEDIATION ACTIVITIES

Initial response activities were conducted by Marathon contractor Wescom, Inc. (Wescom) between 5 and 12 December 2019. During the time the well was shut in, recoverable free liquids were recovered with a vacuum truck, the release area had the surface scraped, and the ruptured tank and associated infrastructure were removed.

Soil remediation activities began on 13 January 2020 and were completed 20 January 2020. Marathon's contractor excavated four areas of the site: the South Tank (S-Tank), North Tank (N-Tank), East Tank (E-Tank), and West Tank (W-Tank) areas (see **Figure 8**). The S-Tank area was excavated to depths ranging from 6 to 12 feet. The N-Tank area was excavated primarily to 7 feet, with some portions excavated as deep as 17 feet. The E-Tank and W-Tank areas were excavated to 5 and 4 feet respectively.

The excavation activities removed approximately 2,900 cubic yards of impacted material. The excavated material was transported off-site between 17 and 20 January 2020 for disposal at New Mexico R360. The excavation was backfilled with imported clean caliche fill.

Photographs for the remediation activities are provided in **Attachment E**.

SOIL SAMPLING

Wescom collected confirmation samples between 16 and 19 January 2020 and submitted them to Hall Environmental Analysis Laboratory for analysis of total petroleum hydrocarbons (TPH) by

Method 8015M; benzene, toluene, ethylbenzene, and xylene (BTEX) by Method 8021B, and chlorides by Method 300.0. The soil samples were collected as composite samples based on approximately 200-square-foot areas of the side walls and bottom of the excavation. These samples were collected during the excavation activities, but the analytical data was not received until after the excavations had been backfilled, the containment reconstructed, and new equipment placed over large portions of the excavated areas. Marathon was not aware of the reported soil exceedances until after this had occurred. Marathon contacted the NMOCD and requested an extension to allow time to perform additional characterization and delineation activities to support the closure request for the site.

Since it was not possible to perform additional excavations without damaging the rebuilt containment and installed new equipment, Marathon contracted WESTON to collect additional samples to confirm that inaccessible impacted soils left in place beneath and adjacent to the remaining tanks, infrastructure, and nearby pipelines were sufficiently delineated. WESTON mobilized to the site on two occasions, between 14 and 15 April 2020, then again on 14 May 2020. During these two events, WESTON installed 21 soil borings.

The first event borings were located where safely accessible within 5 feet of the estimated location of the confirmation samples collected between 16 and 19 January 2020 that had reported concentrations exceeding one or more RTLs. These samples were all analyzed for chlorides and for TPH in a single sample (B-06 (3-4)). A single boring was also installed during this event to assess site-specific background chloride concentrations. Two composite background samples from the most relevant depth ranges based on the reported excavation depths, one from 5 – 7 feet bgs and one from 12 – 14 bgs. The following table indicates which soil borings were associated with which confirmation sampling location.

Confirmation Sample Location ID	Soil Boring Location ID
N-Tank NE-FS	B-01
N-Tank NW-FS	B-02
N-Tank-FS-Comp	B-03
E-Tank-S-WS-Comp	B-04
E-Tank-W-WS-Comp	B-05
W-Tank-E-WS-Comp	B-06
SP-21	B-07
SP-26	B-08
SP-27	B-09
SP-28	B-10
SP-29	B-11
SP-30	B-12
SP-31	B-13

The second event borings were installed to further qualify the findings of the first event. Four of these borings were installed within 5 feet of boring locations from the first event that had reported concentrations exceeding the RTL. Three of the remaining locations were selected to investigate the soils immediately adjacent to the pipeline corridor that runs along the southeast edge of the spill area. These borings were installed with a vacuum truck unit to clear the lines, and the samples were collected as a composite from the sidewall of the resulting boring. The final location was installed to confirm the extent of excavation in the northeast corner of the S-Tank excavation area as the boring installed during the first event appeared to have been installed in the clean caliche backfill material.

The sample locations are shown on **Figure 8** and soil boring logs are provided in **Attachment F**. All samples collected from the installed borings in two events were submitted to Xenco Laboratories in Carlsbad, New Mexico, for analysis of Chlorides by Method 300.0. A single sample (W-Tank-S-WS-Comp) was also analyzed for TPH by Method 8015M.

SOIL ANALYTICAL RESULTS

A summary of the analytical results is provided in **Table 2**, and the laboratory data packages are included in **Attachment G**. A total of sixty-one soil samples were collected at the site. Forty-six of the samples collected were composite samples collected for confirmation following completion of the excavation activities, and prior to the backfilling of the excavated areas. Twenty-five of the samples were collected from soil borings that were installed at the after backfilling had been completed as described above.

The initial thirteen soil boing locations were selected to confirm the extent of the thirteen confirmation samples that had reported chloride concentrations that exceeded the RTL. Of these initial soil boring samples, five had reported chloride concentrations that still exceeded the RTL. The second round of soil boring samples were collected to address the five locations that still exceeded the RTLs. The remaining 5 locations were sampled to delineate the impacted soil immediately adjacent to the pipeline. Of these 10 samples, only two had chloride report above the RTL, a sample collected at 21 feet in B-03-2 that have a reported concentration of 757 mg/kg of chlorides, and sample B-10-2 immediately adjacent to the pipeline with a reported concentration of 749 mg/kg of chlorides.

The background samples had a reported chloride concentration of 360 mg/kg for the interval of 5–7 ft bgs, and 445 mg/kg for the 12–14 ft bgs interval.

CLOSURE REQUEST

Based upon the confirmation sampling results and the subsequent soil boring sampling results, on behalf of Marathon Oil, WESTON requests that no further action be required at this time. The data indicate that only small volumes of impacted material remain in place, but access to these soils is restricted by the tank battery, infrastructure, and the adjacent

pipelines. All of these locations, including the pipeline right-of-ways are located in areas of the pad side that have been previously disturbed for and are currently utilized for oil and gas operations. The sample data also shows that the remaining soil has been characterized and delineated. The area that the access is restricted to has been vertically and horizontally delineated. There was no groundwater observed at the site to a depth of 21 ft bgs, and the bulk of the remaining soils occurs at depths between 2 and 6 feet. The impacted material identified in confirmation sample W-Tank-E-WS-Comp occurred at a depth of 17 feet, but was shown to be decreasing with depth in the sample collected from boring B-03-2 at a depth of 21 feet. Marathon believes that based upon the reported concentrations and limited volumes remaining, the material remaining in place poses no risk to human health or the environment. Marathon therefore requests that remediation of the remaining soils (as shown on **Figure 9**) be deferred until site abandonment.

CLOSING

Should you have any questions or require additional information, please contact Melodie Sanjari with Marathon by phone at (575) 988-8453 or email (msanjari@marathonoil.com) or myself at (469) 666-5526 or by email (robert.appelt@westonsolutions.com).

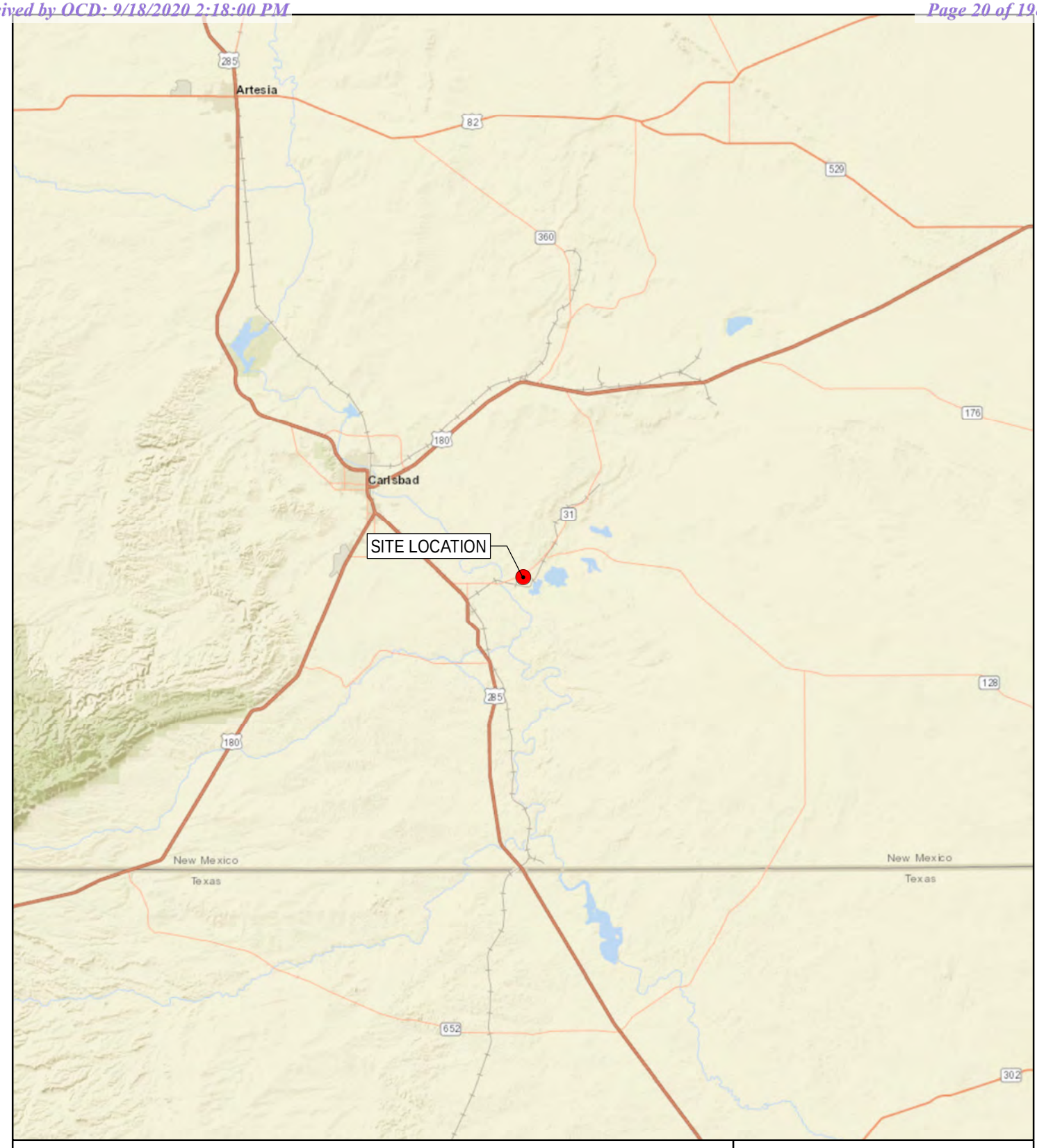
Sincerely,
WESTON SOLUTIONS, INC.

Robert M. Appelt
Project Manager

cc: Melodie Sanjari, Environmental Professional, Marathon Oil Company – Permian Asset

Attachments:
- Figures
- Tables
- Attachment A – Initial Release Notification Email
- Attachment B – Initial Form C-141
- Attachment C – Vacuum Truck Trip Ticket
- Attachment D – New Mexico Office of the State Engineer Water Level Query
- Attachment E – Photolog
- Attachment F – Soil Boring Logs
- Attachment G – Laboratory Analytical Reports

FIGURES

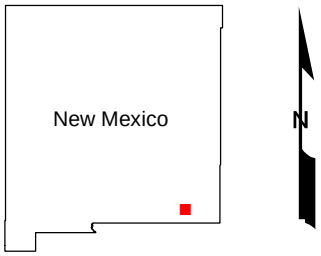


0 10 20

MILES

LEGEND

SITE LOCATION



SOURCE: © WORLD STREET MAPS; ESRI

FIGURE 1

SITE LOCATION MAP

HF 7 FEDERAL COM 001
LATITUDE 32.3182259° N
LONGITUDE 104.0299149° W
EDDY COUNTY, NEW MEXICO

DATE	PROJECT NO	SCALE
JUNE 2020	12553.023.001.0002	AS SHOWN

FILE: G:\Commercial\Marathon Oil Company\HF 7 Federal Com 001\mxd\Figure 1 - Site Location Map.mxd 10:55:26 AM 6/1/2020 deguentm

LEGEND

OIL SPILL BOUNDARY

N

0 50 100

FEET

SOURCE: © GOOGLE EARTH, 2020

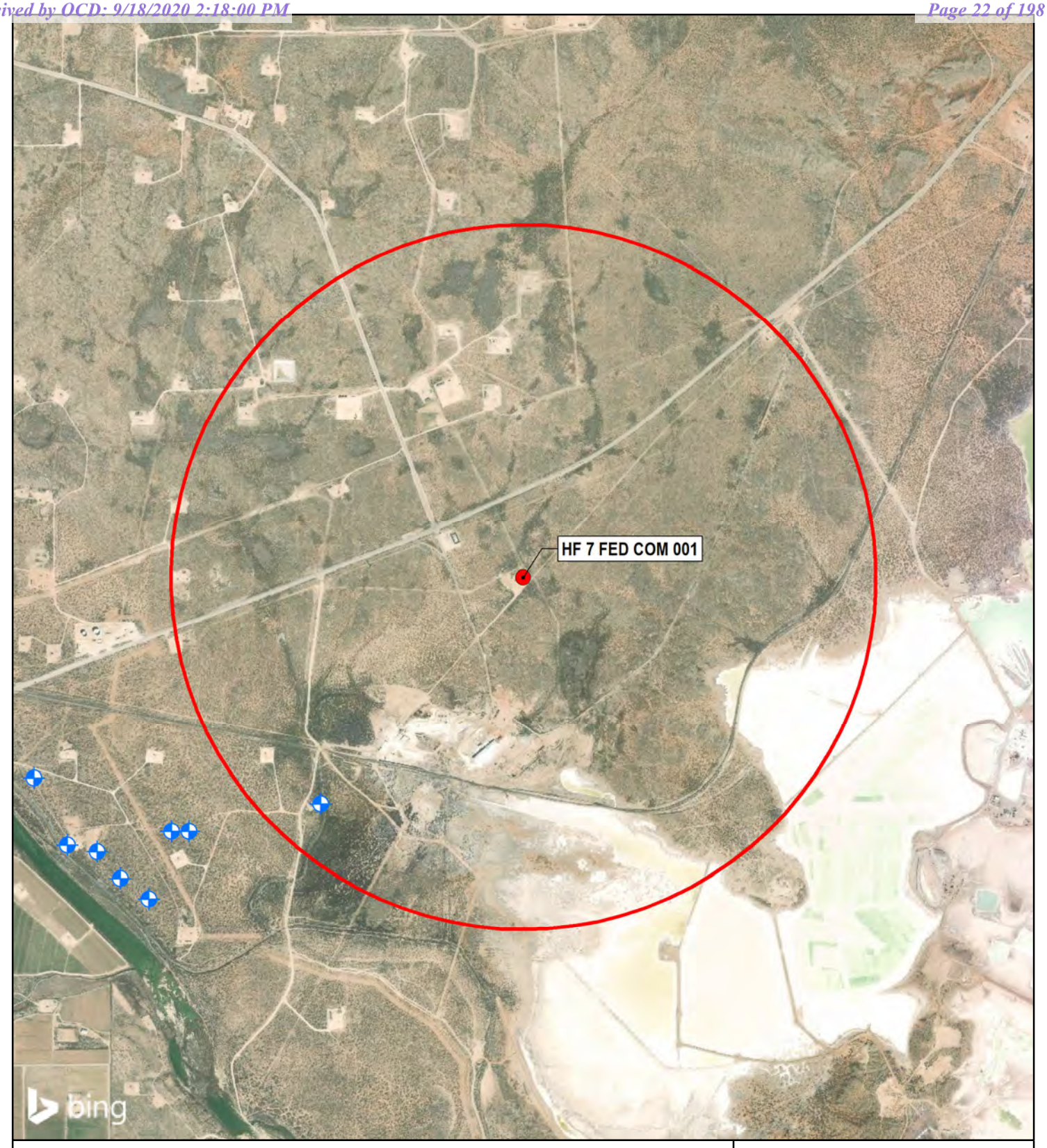
WESTON SOLUTIONS

FIGURE 2

SITE LAYOUT MAP
WITH IMPACTED AREA
HF 7 FEDERAL COM 001
LATITUDE 32.3182259° N
LONGITUDE 104.0299149° W
EDDY COUNTY, NEW MEXICO

DATE	PROJECT NO	SCALE
JUNE 2020	12553.023.001.0002	AS SHOWN

FILE: G:\Commercial\Marathon Oil Company\HF 7 Federal Com 001\mxd\Figure 2 - Site Layout Map with Impacted Area.mxd 1:02:20 PM 6/2/2020 deguentr

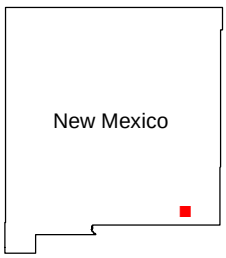


0 2,000 4,000

FEET

LEGEND

- SITE LOCATION
- MONITORING WELL
- 1-MILE BUFFER



N

SOURCE: © BING MAPS AERIAL; ESRI

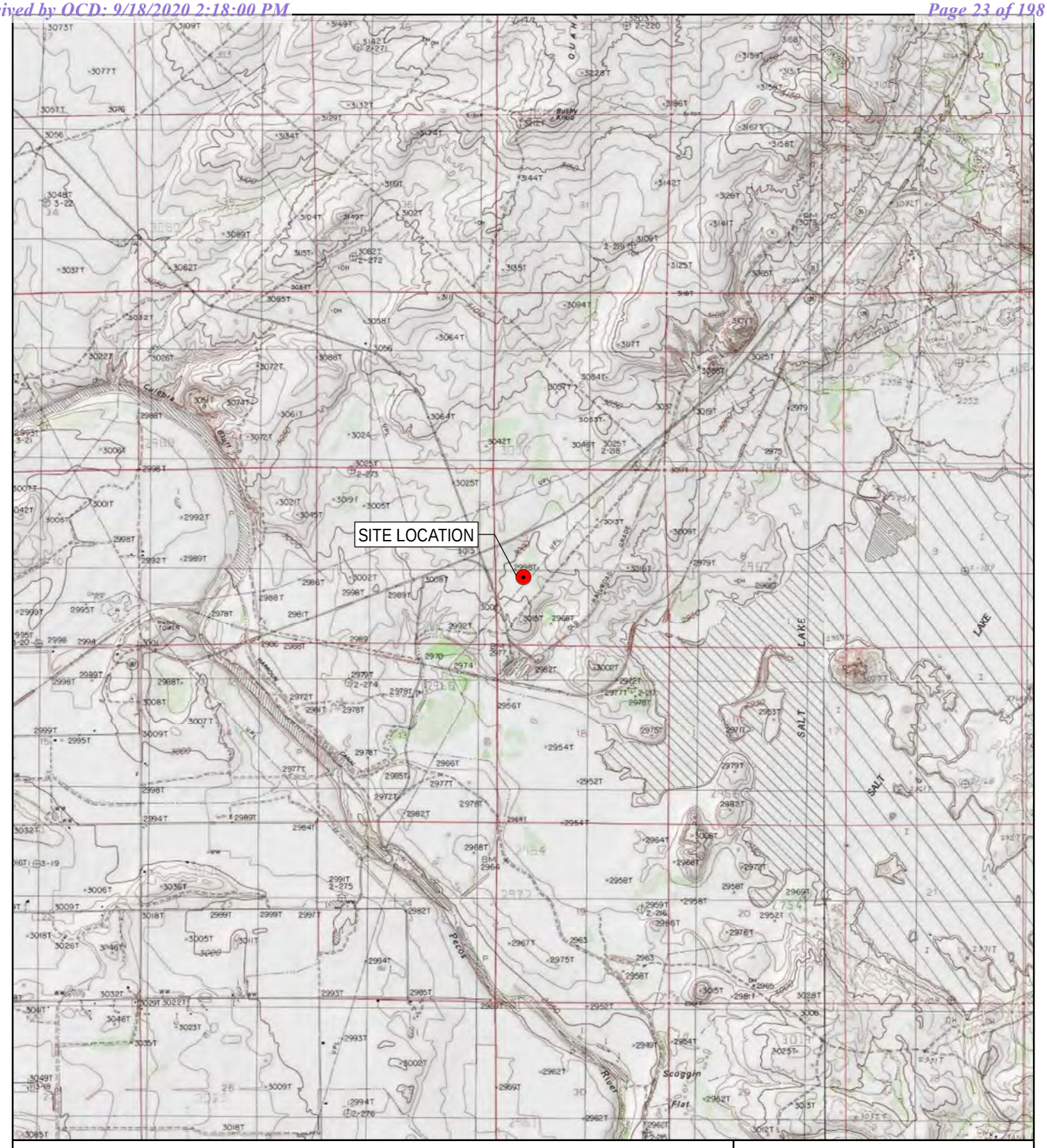
FIGURE 3

WATER WELL MAP

HF 7 FEDERAL COM 001
LATITUDE 32.3182259° N
LONGITUDE 104.0299149° W
EDDY COUNTY, NEW MEXICO

DATE	PROJECT NO	SCALE
JUNE 2020	12553.023.001.0002	AS SHOWN

FILE: G:\Commercial\Marathon Oil Company\HF 7 Federal Com 001\mxd\Figure 3 - Water Well Map.mxd 12:28:08 PM 6/2/2020 deguentm



0 4,000 8,000

FEET

LEGEND

SITE LOCATION

New Mexico

N

SOURCE: © NATIONAL GEOGRAPHIC TOPO; ESRI

WESTON SOLUTIONS

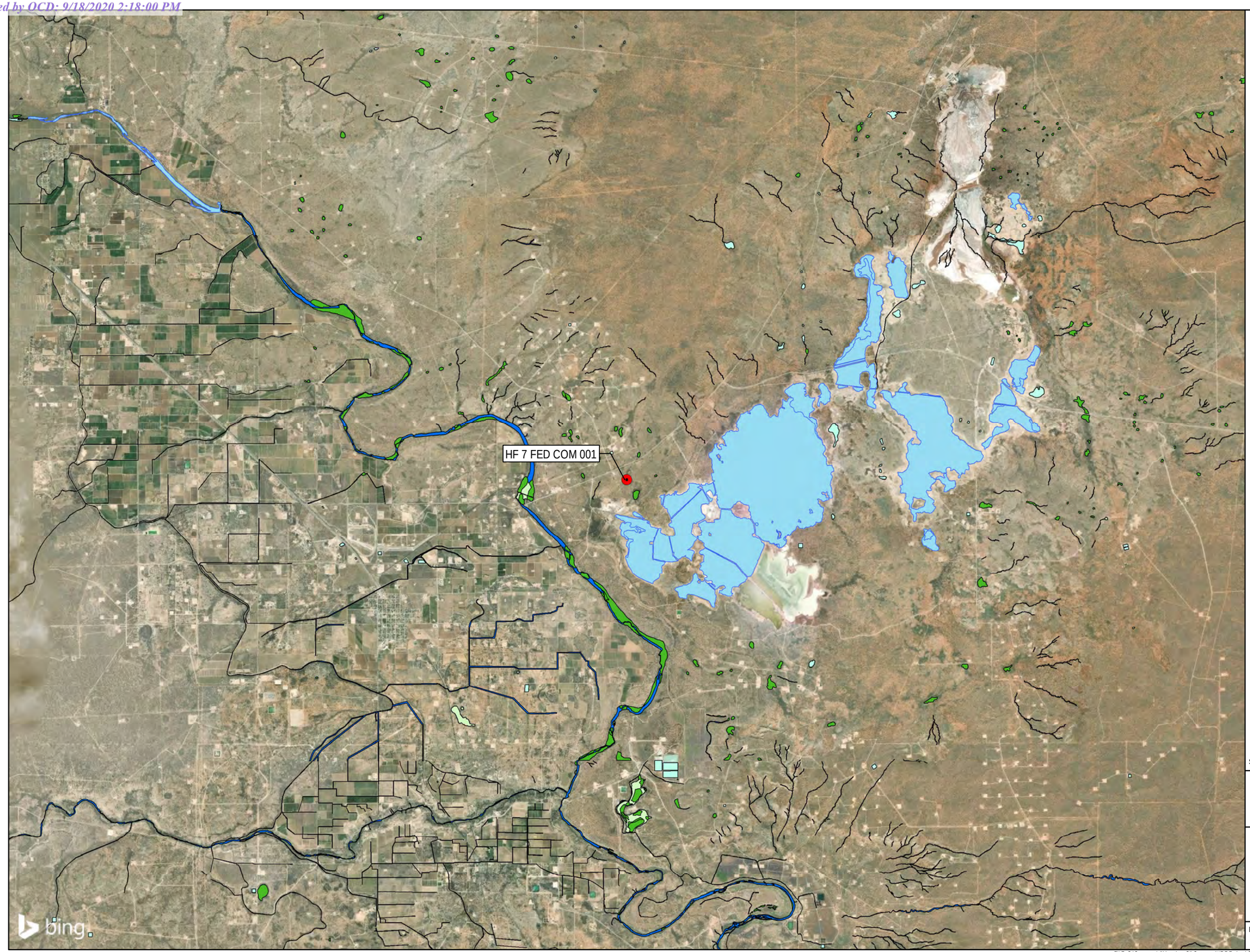
FIGURE 4

SITE AREA TOPOGRAPHIC MAP

HF 7 FEDERAL COM 001
LATITUDE 32.3182259° N
LONGITUDE 104.0299149° W
EDDY COUNTY, NEW MEXICO

DATE	PROJECT NO	SCALE
JUNE 2020	12553.023.001.0002	AS SHOWN

FILE: G:\Commercial\Marathon Oil Company\HF 7 Federal Com 001\mxd\Figure 4 - Site Area Topographic Map.mxd 7:28:26 PM 6/2/2020 deguentm



LEGEND

SITE LOCATION

WETLAND TYPE

FRESHWATER EMERGENT WETLAND

FRESHWATER FORESTED/SHRUB WETLAND

FRESHWATER POND

LAKE

RIVERINE

N

0 1.5 3

Miles

SOURCE: © BING MAPS AERIAL; ESRI

WESTON SOLUTIONS

FIGURE 5

WETLANDS INVENTORY MAP

HF 7 FEDERAL COM 001

LATITUDE 32.3182259° N

LONGITUDE 104.0299149° W

EDDY COUNTY, NEW MEXICO

DATE	PROJECT NO	SCALE
JUNE 2020	12553.023.001.0002	AS SHOWN

FILE: G:\Commercial\Marathon Oil Company\HF 7 Federal Com 001\mxd\Figure 5 - Wetlands Inventory Map.mxd 12:30:35 PM 6/2/2020 deguentru

LEGEND

SITE LOCATION

FLOOD ZONE

A

X

NOTE:
1. Zone A - Special Flood Hazard Area Without Base Flood Elevation (BFE).
2. Zone X - Area of Minimal Flood Hazard.

N

0 200 400

FEET

SOURCE: © GOOGLE EARTH, 2020

WESTON SOLUTIONS

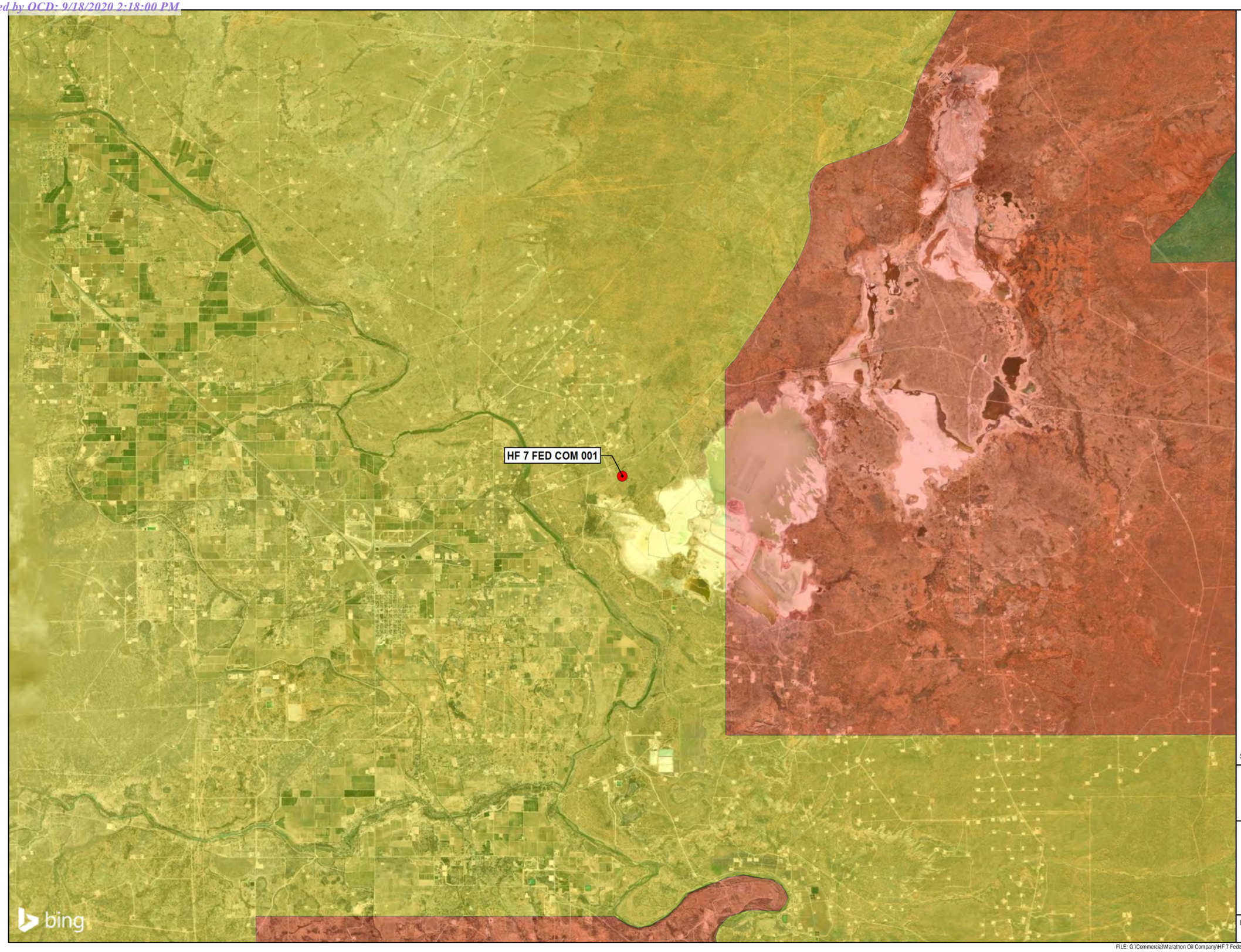
FIGURE 6

FEMA FLOOD HAZARD MAP

HF 7 FEDERAL COM 001
LATITUDE 32.3182259° N
LONGITUDE 104.0299149° W
EDDY COUNTY, NEW MEXICO

DATE	PROJECT NO	SCALE
JUNE 2020	12553.023.001.0002	AS SHOWN

FILE: G:\Commercial\Marathon Oil Company\HF 7 Federal Com 001\mxd\Figure 6 - FEMA Flood Hazard Map.mxd 12:24:55 PM 6/1/2020 deguentr



LEGEND

SITE LOCATION

KARST POTENTIAL

LOW

MEDIUM

HIGH

N

0 1.5 3

Miles

SOURCE: © BING MAPS AERIAL; ESRI

WESTON SOLUTIONS

FIGURE 7

KARST POTENTIAL MAP

HF 7 FEDERAL COM 001

LATITUDE 32.3182259° N

LONGITUDE 104.0299149° W

EDDY COUNTY, NEW MEXICO

DATE	PROJECT NO	SCALE
JUNE 2020	12553.023.001.0002	AS SHOWN

FILE: G:\Commercial\Marathon Oil Company\HF 7 Federal Com 001\mxd\Figure 7 - Karst Potential Map.mxd 12:16:18 PM 6/1/2020 deguentru

LEGEND

BORING LOCATION
CHLORIDE EXCEEDANCE

- BELOW CRITERIA
- ABOVE CRITERIA

SAMPLE LOCATION
CHLORIDE EXCEEDANCE

- BELOW CRITERIA
- ABOVE CRITERIA

EXCAVATIONS

- E-TANK EXCAVATION
- N-TANK EXCAVATION
- S-TANK EXCAVATION
- W-TANK EXCAVATION

NOTE:
1. Sample W-TANK-E-WS exceeded TPH and Chloride (mg/kg) closure criteria.

N

0 25 50

FEET

SOURCE: © GOOGLE EARTH, 2020

WESTON SOLUTIONS

FIGURE 8

EXCAVATION AREAS WITH SAMPLE AND EXCEEDANCE LOCATIONS

HF 7 FEDERAL COM 001
LATITUDE 32.3182259° N
LONGITUDE 104.0299149° W
EDDY COUNTY, NEW MEXICO

DATE	PROJECT NO	SCALE
JUNE 2020	12553.023.001.0002	AS SHOWN

FILE: G:\Commercial\Marathon Oil Company\HF 7 Federal Com 001\mxd\Figure 8 - Excavation Areas with Sample and Exceedance Locations.mxd 7:26:15 PM 6/2/2020 deguentri

LEGEND

DEFERRAL REQUEST AREAS

N

0 50 100

FEET

SOURCE: © GOOGLE EARTH, 2020

WESTON SOLUTIONS

FIGURE 9

SITE LAYOUT MAP WITH DEFERRAL REQUEST AREAS

HF 7 FEDERAL COM 001

LATITUDE 32.3182259° N

LONGITUDE 104.0299149° W

EDDY COUNTY, NEW MEXICO

DATE	PROJECT NO	SCALE
JUNE 2020	12553.023.001.0002	AS SHOWN

FILE: G:\Commercial\Marathon Oil Company\HF 7 Federal Com 001\mxd\Figure 9 - Site Layout Map with Deferral Request Areas.mxd 8:25:41 AM 6/4/2020 deguentin

TABLES

Table 1 - Remedial Target Levels

Closure Criteria (19.15.29.12.B(4) and Table 1 NMAC						
H F 7 Fed Com 001: 32.3182259, -104.0299149						
Depth to Groundwater Description		**Closure Criteria (units in mg/kg)**				
	Depth to Water (ft bgs)	**Chloride ***	**TPH**	**GRO+DRO**	**BTEX**	**Benzene**
Based on high karst potential	–	600	100	–	50	10
less than 50 ft bgs or no water data within 1/2 mile		600	**100**	–	**50**	**10**
51 ft to 100 ft	–	10000	2500	1000	50	10
greater than 100 ft	–	20000	2500	1000	50	10
Location Type						
Surface water	**Yes or No**	**If yes, then the Closure Criteria is…**				
< 300 feet from continuously flowing watercourse or other significant watercourse?	no	600	100	–	50	10
< 200 feet from lakebed, sinkhole or playa lake?	no	600	100	–	50	10
Water Well or Water Source	**Yes or No**	**If yes, then the Closure Criteria is…**				
< 500 feet from spring or a private, domestic fresh water well used by less than 5 households for domestic or stock watering purposes?	no	600	100	–	50	10
< 1000 feet from fresh water well or spring?	no	600	100	–	50	10
Human and Other Areas	**Yes or No**	**If yes, then the Closure Criteria is…**				
< 300 feet from an occupied permanent residence, school, hospital, institution or church?	no	600	100	–	50	10
within incorporated municipal boundaries or within a defined municipal fresh water well field?	no	600	100	–	50	10
< 100 feet from wetland?	no	600	100	–	50	10
within area overlying a subsurface mine?	no	600	100	–	50	10
within an unstable area?	no	600	100	–	50	10
within a 100-year floodplain?	no	600	100	–	50	10

*NOTE: Chloride is the numerical limit or background value, whichever is greater

Table 2. Laboratory Confirmation Analysis Results

Samples Analyzed at the Hall Environmental Analysis Laboratory

Sample Description					Field Screening		Petroleum Hydrocarbons			Inorganic	Lab Order #
							Volatile		Extractable		
Sample ID	Time	Depth (ft.)	Area	Date	Mohr Method ppm	Petroflag ppm	Benzene (mg/kg)	BTEX (total) (mg/kg)	TPH (mg/kg)	Chloride (mg/kg)	
South Tank Excavation - Closure Criteria							10	50	100	600	
SP-1	–	8	S-Tank	1/18/2020	NA	NA	ND	ND	ND	400	2002627
SP-2	–	8	S-Tank	1/18/2020	NA	NA	ND	ND	ND	530	2002627
SP-3	–	8	S-Tank	1/18/2020	NA	NA	ND	ND	ND	400	2002627
SP-4	–	12	S-Tank	1/18/2020	NA	NA	ND	ND	ND	420	2002627
SP-5	–	12	S-Tank	1/18/2020	NA	NA	ND	ND	ND	420	2002627
SP-6	–	12	S-Tank	1/18/2020	NA	NA	ND	ND	ND	430	2002627
SP-7	–	12	S-Tank	1/17/2020	NA	NA	ND	ND	ND	330	2002627
SP-8	–	12	S-Tank	1/17/2020	NA	NA	ND	ND	ND	440	2002627
SP-9	–	14	S-Tank	1/17/2020	NA	NA	ND	ND	ND	420	2002627
SP-10	–	12	S-Tank	1/17/2020	NA	NA	ND	ND	ND	400	2002627
SP-11	–	12	S-Tank	1/17/2020	NA	NA	ND	ND	ND	450	2002627
SP-12	–	12	S-Tank	1/16/2020	NA	NA	ND	ND	ND	460	2002627
SP-13	–	12	S-Tank	1/16/2020	NA	NA	ND	ND	ND	440	2002627
SP-14	–	12	S-Tank	1/16/2020	NA	NA	ND	ND	ND	430	2002627
SP-15	–	12	S-Tank	1/16/2020	NA	NA	ND	ND	ND	350	2002627
SP-16	–	12	S-Tank	1/16/2020	NA	NA	ND	ND	ND	430	2002627
SP-17	–	10	S-Tank	1/16/2020	NA	NA	ND	ND	ND	400	2002627
SP-18	–	10	S-Tank	1/16/2020	NA	NA	ND	ND	ND	450	2002627
SP-19	–	8	S-Tank	1/18/2020	NA	NA	ND	ND	ND	480	2002627
SP-20	–	6	S-Tank	1/18/2020	NA	NA	ND	ND	ND	510	2002627
SP-21	–	6	S-Tank	1/18/2020	NA	NA	ND	ND	ND	740	2002627
B-07	1120	5.5-6.5	Boring	4/16/2020	NA	NA	NA	NA	NA	386	658990
SP-22	–	Wall	S-Tank	1/18/2020	NA	NA	ND	ND	ND	270	2002627
SP-23	–	Wall	S-Tank	1/19/2020	NA	NA	ND	ND	ND	ND	2002627
SP-24	–	Wall	S-Tank	1/19/2020	NA	NA	ND	ND	ND	240	2002627
SP-25	–	Wall	S-Tank	1/19/2020	NA	NA	ND	ND	ND	ND	2002627
SP-26	–	Wall	S-Tank	1/19/2020	NA	NA	ND	ND	ND	720	2002627
B-08	1055	6-12	Boring	4/16/2020	NA	NA	NA	NA	NA	334	658990
SP-27	–	Wall	S-Tank	1/19/2020	NA	NA	ND	ND	ND	750	2002627
B-09	1200	6-12	Boring	4/16/2020	NA	NA	NA	NA	NA	355	658990
B-09-2-1	1220	1-5.5	Boring	5/14/2020	NA	NA	NA	NA	NA	222	661758
SP-28	–	Wall	S-Tank	1/19/2020	NA	NA	ND	ND	ND	730	2002627
B-10	1245	6-12	Boring	4/16/2020	NA	NA	NA	NA	NA	281	658990
B-10-2-1	1230	1-5.5	Boring	5/14/2020	NA	NA	NA	NA	NA	749	661758
SP-29	–	Wall	S-Tank	1/19/2020	NA	NA	ND	ND	ND	670	2002627
B-11	1330	6-12	Boring	4/16/2020	NA	NA	NA	NA	NA	905	658990
B-11-2-1	1130	1-5.5	Boring	5/14/2020	NA	NA	NA	NA	NA	205	661758
SP-30	–	Wall	S-Tank	1/19/2020	NA	NA	ND	ND	ND	830	2002627
B-12	1535	6-12	Boring	4/15/2020	NA	NA	NA	NA	NA	9.85	658990
B-12-2-1	1430	0-4	Boring	5/14/2020	NA	NA	NA	NA	NA	58	661758
SP-31	–	Wall	S-Tank	1/19/2020	NA	NA	ND	ND	ND	730	2002627
B-13	1430	6-12	Boring	4/15/2020	NA	NA	NA	NA	NA	646	658990
B-13-2-1	1355	2-6	Boring	5/14/2020	NA	NA	NA	NA	NA	244	661758

Table 2. Laboratory Confirmation Analysis Results

Samples Analyzed at the Hall Environmental Analysis Laboratory

Sample Description					Field Screening		Petroleum Hydrocarbons			Inorganic	Lab Order #
							Volatile		Extractable		
Sample ID	Time	Depth (ft.)	Area	Date	Mohr Method ppm	Petroflag ppm	Benzene (mg/kg)	BTEX (total) (mg/kg)	TPH (mg/kg)	Chloride (mg/kg)	
South Tank Excavation - Closure Criteria							10	50	100	600	
East Tank Excavation - Closure Criteria							10	50	100	600	
E-Tank-FS-Comp	1800	4	E-Tank	1/18/2020	170	ND	ND	ND	ND	**210**	2002628
E-Tank-NE-WS-Comp	1840	Wall	E-Tank	1/18/2020	420	ND	ND	ND	ND	**310**	2002628
E-Tank-S-WS-Comp	1830	Wall	E-Tank	1/18/2020	1000	–	ND	ND	ND	**2100**	2002628
B-04	1300	4-5	Boring	4/15/2020	NA	NA	NA	NA	NA	**134**	658990
E-Tank-W-WS-Comp	1630	Wall	E-Tank	1/18/2020	750	–	ND	ND	**39**	**1200**	2002628
B-05	1345	4-5	Boring	4/15/2020	NA	NA	NA	NA	NA	**985**	658990
B-05-2	1330	1-4	Boring	5/14/2020	NA	NA	NA	NA	NA	**119**	661758
North Tank Excavation - Closure Criteria							10	50	100	600	
N-Tank-FS-Comp	1800	17	N-Tank	1/18/2020	630	ND	ND	ND	ND	**830**	2002628
B-03	950	16.5-17.5	Boring	4/15/2020	NA	NA	NA	NA	NA	**1350**	658990
B-03-2-1	940	6.5-7.5	Boring	5/14/2020	NA	NA	NA	NA	NA	**492**	661758
B-03-2-2	1115	20-21	Boring	5/14/2020	NA	NA	NA	NA	NA	**757**	661758
N-Tank-NE-FS-Comp	1840	7	N-Tank	1/18/2020	520	ND	ND	ND	ND	**750**	2002628
B-01	1210	6.5-7.5	Boring	4/15/2020	NA	NA	NA	NA	NA	**489**	658990
N-Tank-NW-FS-Comp	1845	7	N-Tank	1/18/2020	480	ND	ND	ND	ND	**830**	2002628
B-02	1620	6.5-7.5	Boring	4/15/2020	NA	NA	NA	NA	NA	**75.5**	658990
N-Tank-E-WS-Comp	1835	Wall	N-Tank	1/18/2020	500	–	ND	ND	18	**540**	2002628
N-Tank-N-WS-Comp	1530	Wall	N-Tank	1/18/2020	550	ND	ND	ND	ND	**500**	2002628
N-Tank-W-WS-Comp	1830	Wall	N-Tank	1/18/2020	450	ND	ND	ND	ND	**400**	2002628
N-Tank-E-WS-Comp	1850	S-Wall	N-Tank	1/19/2020	–	–	ND	ND	ND	**110**	2002628
West Tank Excavation - Closure Criteria							10	50	100	600	
W-Tank-E-WS-Comp	1500	Wall	W-Tank	1/17/2020	1000	–	ND	ND	**4250**	**1200**	2002628
B-06	1650	3-4	Boring	4/15/2020	NA	NA	NA	NA	**<11.5**	**977**	658990
B-06-3	1200	1-5	Boring	5/14/2020	NA	NA	NA	NA	NA	**548**	661758
W-Tank-FS-Comp	1515	5	W-Tank	1/17/2020	330	–	ND	ND	ND	**460**	2002628
W-Tank-S-WS-Comp	1800	Wall	W-Tank	1/17/2020	400	ND	ND	ND	ND	**400**	2002628
W-Tank-W-WS-Comp	1600	Wall	W-Tank	1/18/2020	310	ND	ND	ND	ND	**270**	2002628
Background Samples											
BKGD	1025	5-7	Boring	4/15/2020	NA	NA	NA	NA	NA	**360**	658990
BKGD	1045	12-14	Boring	4/15/2020	NA	NA	NA	NA	NA	**445**	658990

830	Confirmation Sample Analytical Results exceed Remedial Target Level
1350	Soil Boring Sample Analytical Results exceed Remedial Target Level
ND	Analytical results for the sample were below the lab's detectable limits
NA	Sample was not alayzed for this analyte.

ATTACHMENT A

INITIAL RELEASE NOTIFICATION EMAIL

Appelt, Robert

From: Castro, Isaac (MRO) <icastro@marathonoil.com>
Sent: Friday, December 6, 2019 12:27 PM
To: blm_nm_cfo_spill@blm.gov; mike.bratcher@state.nm.us; robert.hamlet@state.nm.us; victoria.venegas@state.nm.us
Cc: Saa, Maria (MRO); Derry, Dwayne R. (MRO)
Subject: Marathon Oil Company - 24 hour notification - H F 7 FEDERAL COM #001

Good Morning,

On December 5, 2019 around 3:15pm production reported a spill due to a produced water tank rupturing. 41.67 bbls of produced water were released onto the ground. Initial response shut in the well to stop the flow. A vacuum truck was immediately dispatched to recover fluids. The vac truck was able to recover 30 bbls. An emergency scrape was also ordered to prevent fluids from going off pad. This was a **major** release as defined by NMAC 19.15.29.7(A) based on volume released. The Initial C-141 will be submitted into the NMOCD online system as required by SB 553.

Thank you,

Isaac Castro
Environmental Professional
Marathon Oil Company - Permian Asset
4111 S. Tidwell Road
Carlsbad, NM 88220
Cell: (575) 988-0561 **Email:** icastro@marathonoil.com

ATTACHMENT C

VACUUM TRUCK TRIP TICKET

AGAVE
Transportation Services, Inc.
accounting@agavetransportation.com
910-K E. Redd Rd. # 443 • El Paso, TX 79912

M10299

BILL TO

MARATHON OIL CO.

DISPOSAL NUMBER		DATE	12-5-19
COST CENTER		ORDERED BY	

DELIVERED FROM: HF7 Fed Com #1 — TO: Wash at

LOCATION LEASE: Eddy 30-015-28509

○ RIG ◉ BATTERY ○ COMPLETION ○ FLOW BACK

TRUCK OR UNIT NO.: 2522 — AMOUNT HAULED: ~~125~~ 30 — GAUGE: TOP: BOTTOM:

TIMES			DESCRIPTION	BILLING	RATE	AMOUNT
BATTERY	ARRIVE	3:20 ○ A.M. ◉ P.M.	Arrive at Location Tick up spill 30 bbls & pkw Wash out tank at 2360	Hrs.		
	DEPART	6:30 ○ A.M. ◉ P.M.		F/W		
				B/W		
DISPOSAL	ARRIVE	○ A.M. ○ P.M.		P/W		
	DEPART	○ A.M. ○ P.M.		CRI		

SUB TOTAL
TAX
TOTAL

Andres Cano — DRIVER PRINT NAME
DRIVER SIGNATURE

LRA Isaac Cardo — COMPANY MAN PRINT NAME
COMPANY MAN SIGNATURE

Thank You!

ATTACHMENT D

NEW MEXICO OFFICE OF THE STATE ENGINEER WATER LEVEL QUERY

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

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

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

(quarters are 1=NW 2=NE 3=SW 4=SE)
(quarters are smallest to largest) (NAD83 UTM in meters) (In feet)

POD Number	POD Sub-basin Code	County	Q 64	Q 16	Q 4	Sec	Tws	Rng	X	Y	Distance	Depth Well	Depth Water	Water Column
C 02702	C	ED			2	13	23S	28E	590715	3575108*	1178	38	20	18
C 01216	CUB	ED	4	1	1	13	23S	28E	589801	3575205*	1768	60	45	15
C 01214	CUB	ED	1	2	3	13	23S	28E	590010	3574597*	2006	70	20	50
C 01967	C	ED		2	3	13	23S	28E	590111	3574498*	2021	264	200	64
C 01215	CUB	ED	4	2	3	13	23S	28E	590210	3574397*	2048	104	15	89
C 02706	C	ED			4	18	23S	29E	592302	3574291*	2081	17	10	7
C 02804	CUB	ED		2	1	08	23S	29E	593262	3576905*	2099	100		
C 02805	CUB	ED		2	1	08	23S	29E	593262	3576905*	2099	100		
C 01217	CUB	ED	4	1	3	13	23S	28E	589789	3574371	2321	87	50	37
C 03059 EXPLORE	CUB	ED	4	1	3	17	23S	29E	592993	3574378*	2422		65	

Average Depth to Water: **53 feet**
Minimum Depth: **10 feet**
Maximum Depth: **200 feet**

Record Count: 10

Basin/County Search:

County: Eddy

UTMNAD83 Radius Search (in meters):

Easting (X): 591313.17 **Northing (Y):** 3576122.83 **Radius:** 2500

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

ATTACHMENT E

PHOTOLOG

PHOTOGRAPH NO. 1

Date: 1/15/2020
Direction: Northeast

Description:

Site Information Signage.

PHOTOGRAPH NO. 2

Date: 1/15/2020
Direction: West

Description:

Initial Site scrape; facing west.

PHOTOGRAPH NO. 3

Date: 1/15/2020
Direction: Northwest

Description:

Initial scrape; facing north.

PHOTOGRAPH NO. 4

Date: 1/15/2020
Direction: Northeast

Description:

Site signage.

PHOTOGRAPH NO. 5

Date: 1/19/2020
Direction: Northeast

Description:

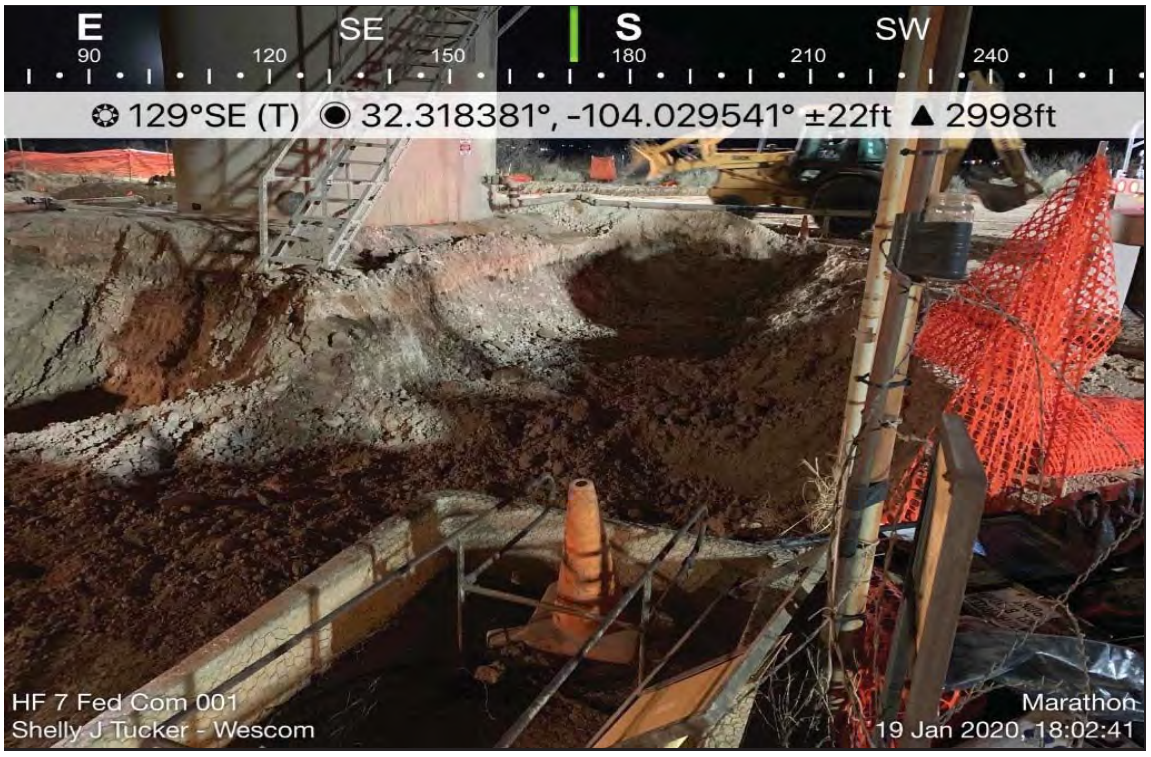
N-Tank Excavation 1/19/2020.

PHOTOGRAPH NO. 6

Date: 1/19/2020
Direction: Southeast

Description:

W-Tank Excavation on Right, N-Tank Excavation on left.



PHOTOGRAPH NO. 7

Date: 1/19/2020
Direction: Northwest

Description:

E-Tank Excavation.

PHOTOGRAPH NO. 8

Date: 1/17/2020
Direction: South

Description:

S-Tank Excavation extent; facing south.

PHOTOGRAPH NO. 9

Date: 1/17/2020
Direction: East

Description:

S-Tank excavation area – facing east.

PHOTOGRAPH NO. 10

Date: 1/17/2020
Direction: East

Description:

S-Tank excavation area compaction– facing east.

PHOTOGRAPH NO. 11

Date: 1/20/2020
Direction: West

Description:

Backfilled and compacted excavations; facing west.

PHOTOGRAPH NO. 12

Date: 1/20/2020
Direction: North

Description:

Backfilled and compacted S-Tank Excavation; facing north.

PHOTOGRAPH NO. 13

Date: 1/20/2020
Direction: South

Description:

Backfilled and Compacted N- and W-Tank Excavations; facing south.

PHOTOGRAPH NO. 14

Date: 1/20/2020
Direction: East

Description:

Backfilled and compacted S-Tank Excavation; facing east.

PHOTOGRAPH NO. 15

Date: 1/20/2020
Direction: East

Description:

Site excavation and backfill complete; facing east.

PHOTOGRAPH NO. 16

Date: 4/14/2020
Direction: Southeast

Description:

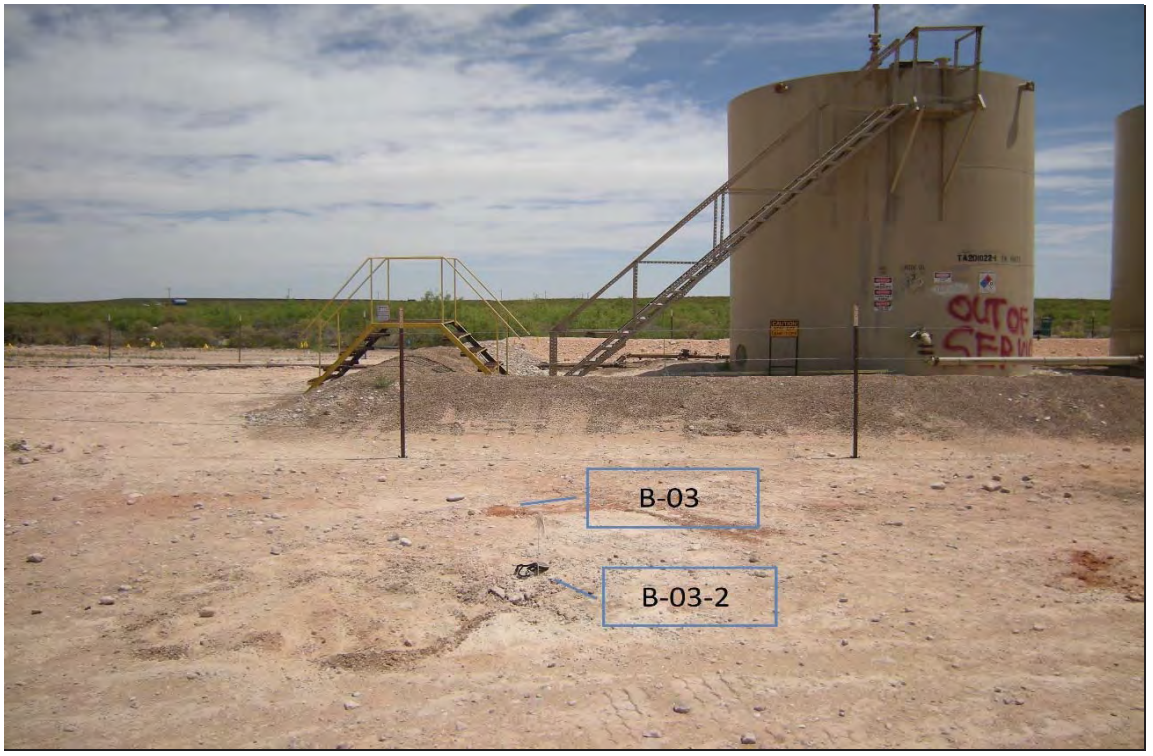
Respresentive view of the boring location drilled with a hollow stem auger. (Picture shown at location B-01)

PHOTOGRAPH NO. 17

Date: 5/14/2020
Direction: North

Description:

View of boring locations B-03 and B-03-2.

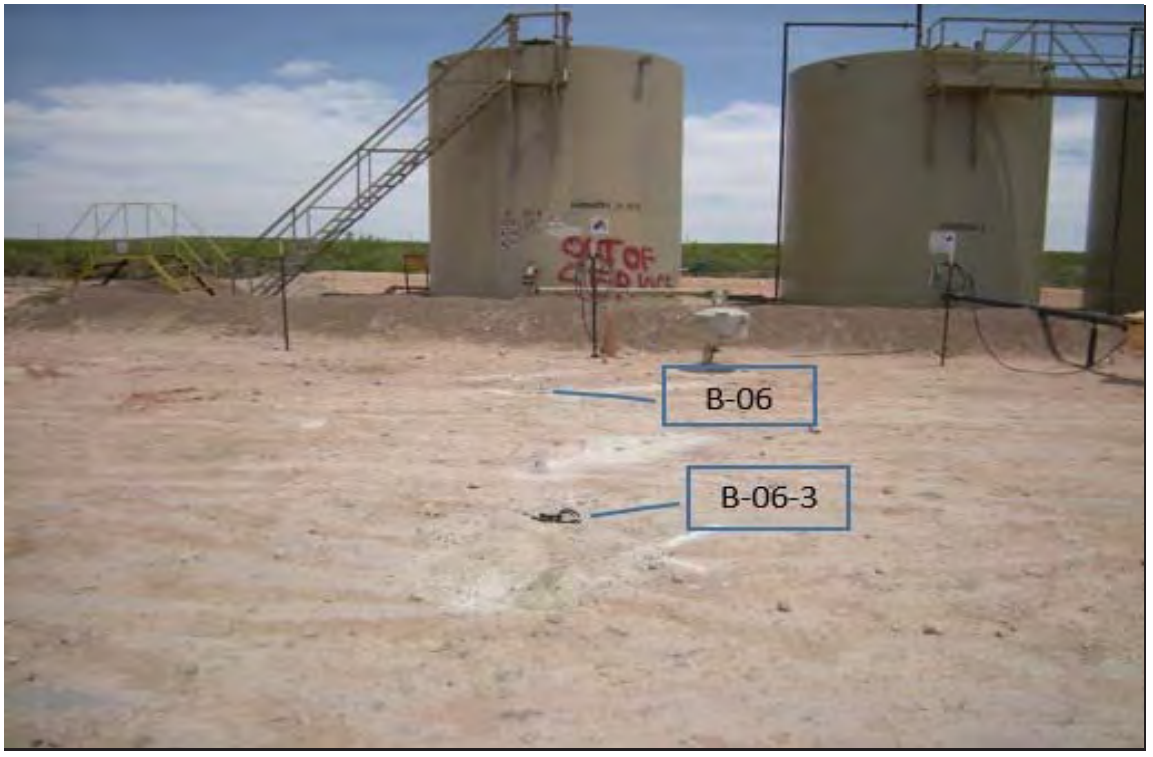


PHOTOGRAPH NO. 18

Date: 5/14/2020
Direction: Northeast

Description:

View of boring locations B-06-3 and B-06.



PHOTOGRAPH NO. 19

Date: 4/15/2020
Direction: Northeast

Description:

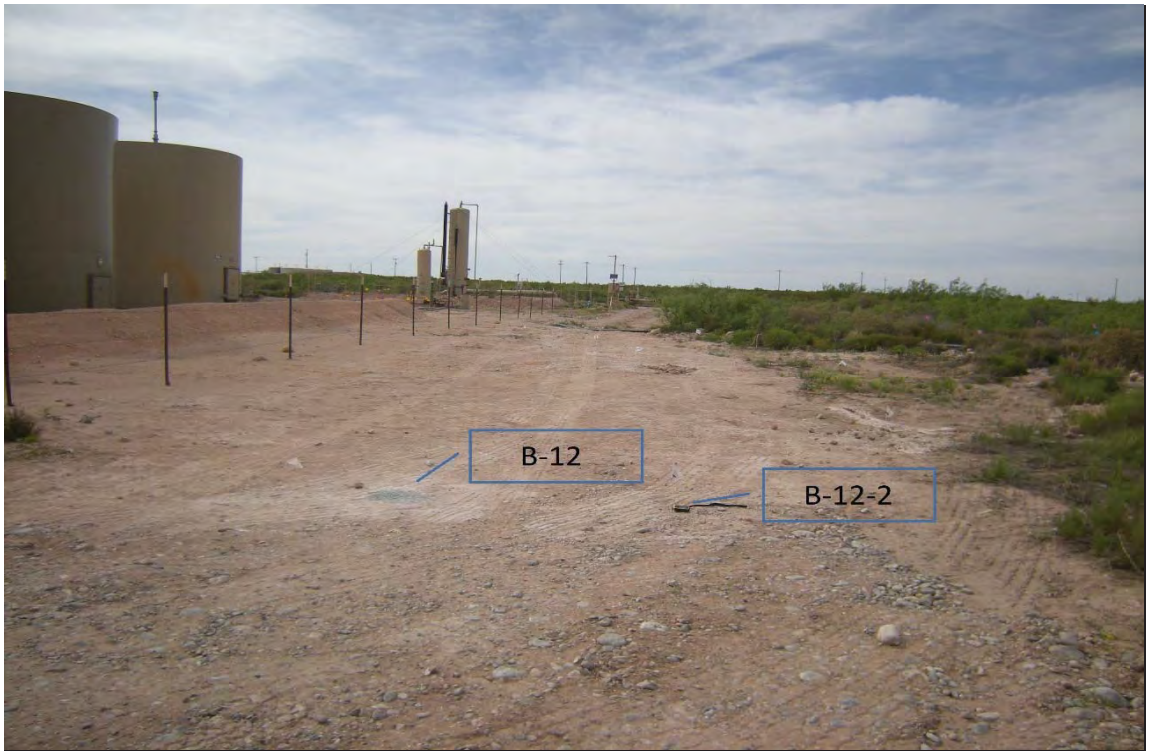
View of boring location B-08.

PHOTOGRAPH NO. 20

Date: 5/14/2020
Direction: Northwest

Description:

View of boring locations B-12-2 and B-12.



PHOTOGRAPH NO. 21

Date: 5/14/2020
Direction: Southwest

Description:

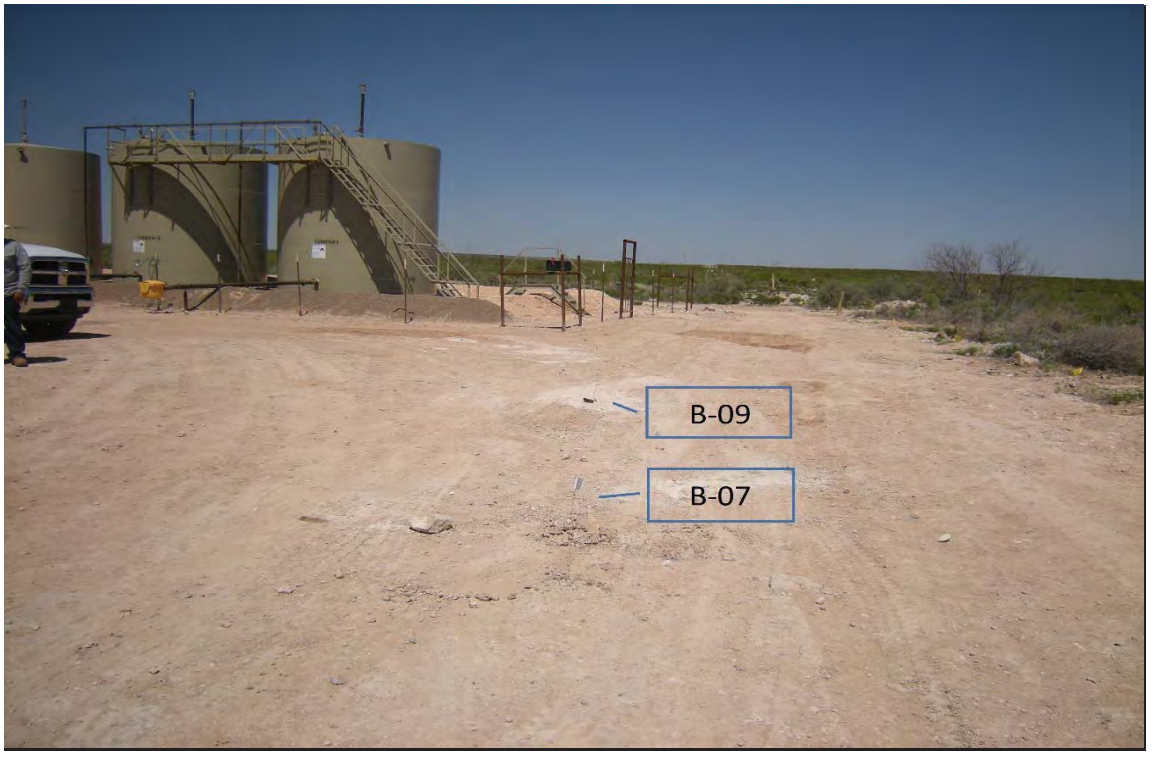
View of boring location B-11-2.

PHOTOGRAPH NO. 22

Date: 4/15/2020
Direction: Northeast

Description:

View of boring locations B-09 and B-10.



ATTACHMENT F

SOIL BORING LOGS

2600 Dallas Parkway
Suite 280
Frisco, Texas 75034
(469) 666-5500

Boring/Well Log

BORING ID: **B-01**
WELL ID: **NA**

PROJECT INFORMATION

PROJECT:	**MRO: HF7 Fed Com 001**
SITE LOCATION:	**Eddy Co., New Mexico**
JOB NUMBER:	**12553.023.001**
PROJECT MANAGER:	**Robert Appelt**
LOGGED BY:	**C. Spangler**
DATE(S) DRILLED:	**4/14/2020**

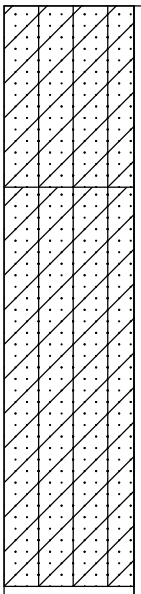
DRILLING INFORMATION

DRILLING COMPANY:	**Atkins Engineering Associates**		
DRILLING METHOD:	**Hollow Stem Auger with Split Spoon**		
BORING DEPTH:	**8 ft bgs**	WELL DEPTH:	**NA**
BORING DIAMETER:	**8.25-in**	WELL DIAMETER:	**NA**

TOP OF CASING ELEV: NA	N. LATITUDE	W. LONGITUDE
GROUND ELEVATION: 2996 ft MSL	32° 19.111'	-104° 01.765'

REMARKS: Refusal at 1.5 ft bgs, offset location ~3.0 ft.
Refusal at 0.5 ft bgs on cobbles. Proceeded with rig.

WATER LEVEL: **NA**
STATIC LEVEL: **NA**

DEPTH	LITHOLOGY	USCS	DESCRIPTION	SAMPLE ID	REC. %	OVM	WELL COMPLETION	INSTALLATION NOTES
0			SILTY CLAYEY LOAM, very fine grained sands, some to many cobbles and coarse (sandstone) gravel, trace roots, dry, dark brown to 0.5 ft bgs, grading to brown with depth.					
			SILTY CLAYEY LOAM (caliche), poorly cemented, breaks into blocky fragments, trace coarse concretions/precipitates, dry, light brown/ tan, grades to light pinkish brown with depth.					
5			At 5.0-6.0: dense.	B-01 (6.5-7.5)	100%			Borehole backfilled with hydrated bentonite chips.
			End of boring at 8.0 ft bgs.					
10								

bgs - below ground surface, MSL - Mean Sea Level, btoc - below top of casing, ND - Not Detected, NA - Not Applicable, NR - No Recovery

These logs should not be used separately from original report

2600 Dallas Parkway
Suite 280
Frisco, Texas 75034
(469) 666-5500

Boring/Well Log

BORING ID: **B-02**
WELL ID: **NA**

PROJECT INFORMATION

PROJECT:	**MRO: HF7 Fed Com 001**
SITE LOCATION:	**Eddy Co., New Mexico**
JOB NUMBER:	**12553.023.001**
PROJECT MANAGER:	**Robert Appelt**
LOGGED BY:	**C. Spangler**
DATE(S) DRILLED:	**4/14/2020**

DRILLING INFORMATION

DRILLING COMPANY:	**Atkins Engineering Associates**		
DRILLING METHOD:	**Hollow Stem Auger with Split Spoon**		
BORING DEPTH:	**8 ft bgs**	WELL DEPTH:	**NA**
BORING DIAMETER:	**8.25-in**	WELL DIAMETER:	**NA**

TOP OF CASING ELEV: NA	N. LATITUDE	W. LONGITUDE
GROUND ELEVATION: 2995 ft MSL	32° 19.102'	-104° 01.776

REMARKS:

WATER LEVEL: **NA**
STATIC LEVEL: **NA**

DEPTH	LITHOLOGY	USCS	DESCRIPTION	SAMPLE ID	REC. %	OVM	WELL COMPLETION	INSTALLATION NOTES
0			SILTY CLAYEY LOAM, very fine grained sands, some to many cobbles and coarse (sandstone) gravel, trace roots, dry, dark brown to 0.5 ft bgs, grading to brown with depth.					
			SILTY CLAYEY LOAM (caliche), poorly cemented, breaks into blocky fragments, trace coarse concretions/precipitates, dry, light brown/ tan, grades to light pinkish brown with depth.					
5			At 5.0-6.0: dense.	B-02 (6.5-7.5)	75%			
			End of boring at 8.0 ft bgs.					
10								Borehole backfilled with cuttings and hydrated bentonite chips.

bgs - below ground surface, MSL - Mean Sea Level, btoc - below top of casing, ND - Not Detected, NA - Not Applicable, NR - No Recovery

These logs should not be used separately from original report

2600 Dallas Parkway
Suite 280
Frisco, Texas 75034
(469) 666-5500

Boring/Well Log

BORING ID: **B-03**
WELL ID: **NA**

PROJECT INFORMATION

PROJECT:	**MRO: HF7 Fed Com 001**
SITE LOCATION:	**Eddy Co., New Mexico**
JOB NUMBER:	**12553.023.001**
PROJECT MANAGER:	**Robert Appelt**
LOGGED BY:	**C. Spangler**
DATE(S) DRILLED:	**4/15/2020**

DRILLING INFORMATION

DRILLING COMPANY:	**Atkins Engineering Associates**		
DRILLING METHOD:	**Hollow Stem Auger with Split Spoon**		
BORING DEPTH:	**18 ft bgs**	WELL DEPTH:	**NA**
BORING DIAMETER:	**8.25-in**	WELL DIAMETER:	**NA**

TOP OF CASING ELEV: NA
GROUND ELEVATION: 2995 ft MSL

N. LATITUDE	W. LONGITUDE
32° 19.100'	-104° 01.772'

REMARKS:

WATER LEVEL: **NA**
STATIC LEVEL: **NA**

DEPTH	LITHOLOGY	USCS	DESCRIPTION	SAMPLE ID	REC. %	OVM	WELL COMPLETION	INSTALLATION NOTES
0			SILTY CLAYEY LOAM, very fine grained sands, some to many cobbles and coarse (sandstone) gravel, trace roots, dry, dark brown to 0.5 ft bgs, grading to brown with depth.					Borehole backfilled with cuttings and hydrated bentonite chips.
5			SILTY CLAYEY LOAM (caliche), fine to very fine grained sands, poorly cemented, few to many coarse concretions/precipitates, dry, light brown/ tan, grades to light pinkish brown with depth. Sticky when wetted. At 5.0-6.0: dense.					
10			CLAYEY LOAM, poorly cemented, blocky, few nodules/concretions, dark reddish brown.	B-03 (16.5-17.5)	100%			
15								
20			End of boring at 18.0 ft bgs.					

bgs - below ground surface, MSL - Mean Sea Level, btoc - below top of casing, ND - Not Detected, NA - Not Applicable, NR - No Recovery

These logs should not be used separately from original report

WESTON SOLUTIONS
2600 Dallas Parkway
Suite 280
Frisco, Texas 75034
(469) 666-5500

Boring/Well Log

BORING ID: **B-03-2**
WELL ID: **NA**

PROJECT INFORMATION

PROJECT:	**MRO: HF7 Fed Com 001**
SITE LOCATION:	**Eddy Co., New Mexico**
JOB NUMBER:	**12553.023.001**
PROJECT MANAGER:	**Robert Appelt**
LOGGED BY:	**C. Spangler**
DATE(S) DRILLED:	**5/14/2020**

DRILLING INFORMATION

DRILLING COMPANY:	**Atkins Engineering Associates**		
DRILLING METHOD:	**Hollow Stem Auger with Split Spoon**		
BORING DEPTH:	**21 ft bgs**	WELL DEPTH:	**NA**
BORING DIAMETER:	**8.25-in**	WELL DIAMETER:	**NA**

TOP OF CASING ELEV: NA	N. LATITUDE	W. LONGITUDE
GROUND ELEVATION: 2995 ft MSL	32.31833°	-104.02955°

REMARKS:

WATER LEVEL: **NA**
STATIC LEVEL: **NA**

DEPTH	LITHOLOGY	USCS	DESCRIPTION	SAMPLE ID	REC. %	OVM	WELL COMPLETION	INSTALLATION NOTES
0			SILTY CLAYEY LOAM, very fine grained sands, some to many cobbles and coarse (sandstone) gravel, trace roots, dry, dark brown to 0.5 ft bgs, grading to brown with depth.					Borehole backfilled with cuttings and hydrated bentonite chips.
5			SILTY CLAYEY LOAM (caliche), fine to very fine grained sands, poorly cemented, few to many coarse concretions/precipitates, dry, light brown/ tan, grades to light pinkish brown with depth. Sticky when wetted. At 6.0-7.0: dense caliche (white).	B-03-2-1 (6.5-7.5)	50%			
10			CLAYEY LOAM, poorly cemented, blocky, few nodules/concretions, dry, dark reddish brown.					
15			At 16.5 ft bgs: slightly lighter (in color) with depth. At 17.0 ft bgs: black stringers. At 17.5 ft bgs: reddish brown mottled with gray.		75%			
20			End of boring at 21.0 ft bgs.	B-03-2-2 (20-21)	100%			

bgs - below ground surface, MSL - Mean Sea Level, btoc - below top of casing, ND - Not Detected, NA - Not Applicable, NR - No Recovery

These logs should not be used separately from original report

2600 Dallas Parkway
Suite 280
Frisco, Texas 75034
(469) 666-5500

Boring/Well Log

BORING ID: **B-04**
WELL ID: **NA**

PROJECT INFORMATION

PROJECT:	**MRO: HF7 Fed Com 001**
SITE LOCATION:	**Eddy Co., New Mexico**
JOB NUMBER:	**12553.023.001**
PROJECT MANAGER:	**Robert Appelt**
LOGGED BY:	**C. Spangler**
DATE(S) DRILLED:	**4/14/2020**

DRILLING INFORMATION

DRILLING COMPANY:	**Atkins Engineering Associates**		
DRILLING METHOD:	**Hollow Stem Auger with Split Spoon**		
BORING DEPTH:	**5 ft bgs**	WELL DEPTH:	**NA**
BORING DIAMETER:	**8.25-in**	WELL DIAMETER:	**NA**

TOP OF CASING ELEV: NA	N. LATITUDE	W. LONGITUDE
GROUND ELEVATION: 2996 ft MSL	32° 19.107'	-104° 01.761'

REMARKS: Hand Auger from 0-2 ft bgs. Refusal on cobbles.

WATER LEVEL: **NA**
STATIC LEVEL: **NA**

DEPTH	LITHOLOGY	USCS	DESCRIPTION	SAMPLE ID	REC. %	OVM	WELL COMPLETION	INSTALLATION NOTES
0			CLAYEY SAND LOAM, very fine grained sands, some to many cobbles and coarse (sandstone) gravel, trace roots, dry, dark brown to 0.5 ft bgs, grading to brown with depth.	B-04 (4-5)	100%			Borehole backfilled with hydrated bentonite chips.
			SILTY CLAYEY LOAM (caliche), very fine grained sands, poorly cemented, breaks into blocky fragments, trace coarse concretions/precipitates, dense, dry, light brown/ tan.		100%			
5			End of boring at 5.0 ft bgs.					
10								

bgs - below ground surface, MSL - Mean Sea Level, btoc - below top of casing, ND - Not Detected, NA - Not Applicable, NR - No Recovery

These logs should not be used separately from original report

2600 Dallas Parkway
Suite 280
Frisco, Texas 75034
(469) 666-5500

Boring/Well Log

BORING ID: **B-05**
WELL ID: **NA**

PROJECT INFORMATION

PROJECT:	**MRO: HF7 Fed Com 001**
SITE LOCATION:	**Eddy Co., New Mexico**
JOB NUMBER:	**12553.023.001**
PROJECT MANAGER:	**Robert Appelt**
LOGGED BY:	**C. Spangler**
DATE(S) DRILLED:	**4/14/2020**

DRILLING INFORMATION

DRILLING COMPANY:	**Atkins Engineering Associates**		
DRILLING METHOD:	**Hollow Stem Auger with Split Spoon**		
BORING DEPTH:	**5 ft bg**	WELL DEPTH:	**NA**
BORING DIAMETER:	**8.25-in**	WELL DIAMETER:	**NA**

TOP OF CASING ELEV: NA	N. LATITUDE	W. LONGITUDE
GROUND ELEVATION: 2996 ft MSL	32° 19.104'	-104° 01.759'

REMARKS: Refusal at ~1.0 ft bgs on cobbles. Proceed with rig.

WATER LEVEL: **NA**
STATIC LEVEL: **NA**

DEPTH	LITHOLOGY	USCS	DESCRIPTION	SAMPLE ID	REC. %	OVM	WELL COMPLETION	INSTALLATION NOTES
0			SILTY CLAYEY LOAM, very fine grained sands, some to many cobbles and coarse (sandstone) gravel, trace roots, dry, dark brown to 0.5 ft bgs, grading to brown with depth.	B-05 (4-5)	100%			Borehole backfilled with hydrated bentonite chips.
			SILTY CLAYEY LOAM (caliche), poorly cemented, breaks into blocky fragments, trace coarse concretions/precipitates, dry, light brown/ tan, grades lighter with depth.		50%			
5			End of boring at 5.0 ft bgs.					
10								

bgs - below ground surface, MSL - Mean Sea Level, btoc - below top of casing, ND - Not Detected, NA - Not Applicable, NR - No Recovery

These logs should not be used separately from original report

2600 Dallas Parkway
Suite 280
Frisco, Texas 75034
(469) 666-5500

Boring/Well Log

BORING ID: **B-05-2**
WELL ID: **NA**

PROJECT INFORMATION

PROJECT:	**MRO: HF7 Fed Com 001**
SITE LOCATION:	**Eddy Co., New Mexico**
JOB NUMBER:	**12553.023.001**
PROJECT MANAGER:	**Robert Appelt**
LOGGED BY:	**C. Spangler**
DATE(S) DRILLED:	**5/14/2020**

DRILLING INFORMATION

DRILLING COMPANY:	**Atkins Engineering Associates**		
DRILLING METHOD:	**Hollow Stem Auger with Split Spoon**		
BORING DEPTH:	**5 ft bgs**	WELL DEPTH:	**NA**
BORING DIAMETER:	**8.25-in**	WELL DIAMETER:	**NA**

TOP OF CASING ELEV: NA	N. LATITUDE	W. LONGITUDE
GROUND ELEVATION: 2995 ft MSL	32.31840°	-104.02931°

REMARKS: Refusal of split spoon tooling at 3.5 ft bgs.

WATER LEVEL: **NA**
STATIC LEVEL: **NA**

DEPTH	LITHOLOGY	USCS	DESCRIPTION	SAMPLE ID	REC. %	OVM	WELL COMPLETION	INSTALLATION NOTES
0			SILTY CLAYEY LOAM, very fine grained sands, some to many cobbles and coarse (sandstone) gravel, trace roots, dry, dark brown to 0.5 ft bgs, grading to brown with depth.	B-05-2 (1-4)	50%			Borehole backfilled with cuttings and hydrated bentonite chips.
			SILTY CLAYEY LOAM (caliche), few to many medium to coarse concretions, poorly cemented, blocky, dry, light brown, light pinkish brown with depth.		50%			
5			End of boring at 4 ft bgs.					
10								

bgs - below ground surface, MSL - Mean Sea Level, btoc - below top of casing, ND - Not Detected, NA - Not Applicable, NR - No Recovery

These logs should not be used separately from original report

2600 Dallas Parkway
Suite 280
Frisco, Texas 75034
(469) 666-5500

Boring/Well Log

BORING ID: **B-06**
WELL ID: **NA**

PROJECT INFORMATION

PROJECT:	**MRO: HF7 Fed Com 001**
SITE LOCATION:	**Eddy Co., New Mexico**
JOB NUMBER:	**12553.023.001**
PROJECT MANAGER:	**Robert Appelt**
LOGGED BY:	**C. Spangler**
DATE(S) DRILLED:	**4/14/2020**

DRILLING INFORMATION

DRILLING COMPANY:	**Atkins Engineering Associates**		
DRILLING METHOD:	**Hollow Stem Auger with Split Spoon**		
BORING DEPTH:	**4 ft bgs**	WELL DEPTH:	**NA**
BORING DIAMETER:	**8.25-in**	WELL DIAMETER:	**NA**

TOP OF CASING ELEV: NA	N. LATITUDE	W. LONGITUDE
GROUND ELEVATION: 2995 ft MSL	32° 19.097'	-104° 01.770'

REMARKS:

WATER LEVEL: **NA**
STATIC LEVEL: **NA**

DEPTH	LITHOLOGY	USCS	DESCRIPTION	SAMPLE ID	REC. %	OVM	WELL COMPLETION	INSTALLATION NOTES
0			SILTY CLAYEY LOAM, very fine grained sands, some to many cobbles and coarse (sandstone) gravel, trace roots, dry, dark brown to 0.5 ft bgs, grading to brown with depth.					
			SILTY CLAYEY LOAM (caliche), few to many medium to coarse concretions, poorly cemented, blocky, dry, light brown, light pinkish brown with depth	B-06 (3-4)	50%			
5			End of boring at 4 ft bgs.					Borehole backfilled with cuttings and hydrated bentonite chips.
10								

bgs - below ground surface, MSL - Mean Sea Level, btoc - below top of casing, ND - Not Detected, NA - Not Applicable, NR - No Recovery

These logs should not be used separately from original report

2600 Dallas Parkway
Suite 280
Frisco, Texas 75034
(469) 666-5500

Boring/Well Log

BORING ID: **B-06-3**
WELL ID: **NA**

PROJECT INFORMATION

PROJECT:	**MRO: HF7 Fed Com 001**
SITE LOCATION:	**Eddy Co., New Mexico**
JOB NUMBER:	**12553.023.001**
PROJECT MANAGER:	**Robert Appelt**
LOGGED BY:	**C. Spangler**
DATE(S) DRILLED:	**5/14/2020**

DRILLING INFORMATION

DRILLING COMPANY:	**Atkins Engineering Associates**		
DRILLING METHOD:	**Hollow Stem Auger with Split Spoon**		
BORING DEPTH:	**5 ft bgs**	WELL DEPTH:	**NA**
BORING DIAMETER:	**8.25-in**	WELL DIAMETER:	**NA**

TOP OF CASING ELEV: NA	N. LATITUDE	W. LONGITUDE
GROUND ELEVATION: 2995 ft MSL	32.31825°	-104.02953°

REMARKS:

WATER LEVEL: **NA**
STATIC LEVEL: **NA**

DEPTH	LITHOLOGY	USCS	DESCRIPTION	SAMPLE ID	REC. %	OVM	WELL COMPLETION	INSTALLATION NOTES
0			SILTY CLAYEY LOAM, very fine grained sands, some to many cobbles and coarse (sandstone) gravel, trace roots, dry, dark brown to 0.5 ft bgs, grading to brown with depth.	B-06-3 (1-5)	50%			Borehole backfilled with cuttings and hydrated bentonite chips.
			SILTY CLAYEY LOAM (caliche), few to many medium to coarse concretions, poorly cemented, blocky, dry, light brown, light pinkish brown with depth		70%			
5			End of boring at 5 ft bgs.		75%			
10								

bgs - below ground surface, MSL - Mean Sea Level, btoc - below top of casing, ND - Not Detected, NA - Not Applicable, NR - No Recovery

These logs should not be used separately from original report

2600 Dallas Parkway
Suite 280
Frisco, Texas 75034
(469) 666-5500

Boring/Well Log

BORING ID: **B-07**
WELL ID: **NA**

PROJECT INFORMATION

PROJECT:	**MRO: HF7 Fed Com 001**
SITE LOCATION:	**Eddy Co., New Mexico**
JOB NUMBER:	**12553.023.001**
PROJECT MANAGER:	**Robert Appelt**
LOGGED BY:	**C. Spangler**
DATE(S) DRILLED:	**4/15/2020**

DRILLING INFORMATION

DRILLING COMPANY:	**Atkins Engineering Associates**		
DRILLING METHOD:	**Hollow Stem Auger with Split Spoon**		
BORING DEPTH:	**7 ft bgs**	WELL DEPTH:	**NA**
BORING DIAMETER:	**8.25-in**	WELL DIAMETER:	**NA**

TOP OF CASING ELEV: NA	N. LATITUDE	W. LONGITUDE
GROUND ELEVATION: 2995 ft MSL	32° 19.083'	-104° 01.765'

REMARKS: Dense blow counts.
Location moved ~2 ft northeast out of NM gas pipeline easement.

WATER LEVEL: **NA**
STATIC LEVEL: **NA**

DEPTH	LITHOLOGY	USCS	DESCRIPTION	SAMPLE ID	REC. %	OVM	WELL COMPLETION	INSTALLATION NOTES
0			SILTY CLAYEY LOAM, very fine grained sands, some to many cobbles and coarse (sandstone) gravel, trace roots, dry, dark brown to 0.5 ft bgs, grading to brown with depth.					
			SILTY CLAYEY LOAM (caliche), poorly cemented, breaks into blocky fragments, trace coarse concretions/precipitates, dry, light brown/ tan, grades to light pinkish brown with depth.					
5			At 5.0-6.0: dense.	B-07 (5.5-6.5)	100%			
			End of boring at 7.0 ft bgs.					Borehole backfilled with cuttings and hydrated bentonite chips.
10								

bgs - below ground surface, MSL - Mean Sea Level, btoc - below top of casing, ND - Not Detected, NA - Not Applicable, NR - No Recovery

These logs should not be used separately from original report

2600 Dallas Parkway
Suite 280
Frisco, Texas 75034
(469) 666-5500

Boring/Well Log

BORING ID: **B-08**
WELL ID:

PROJECT INFORMATION

PROJECT:	**MRO: HF7 Fed Com 001**
SITE LOCATION:	**Eddy Co., New Mexico**
JOB NUMBER:	**12553.023.001**
PROJECT MANAGER:	**Robert Appelt**
LOGGED BY:	**C. Spangler**
DATE(S) DRILLED:	**4/15/2020**

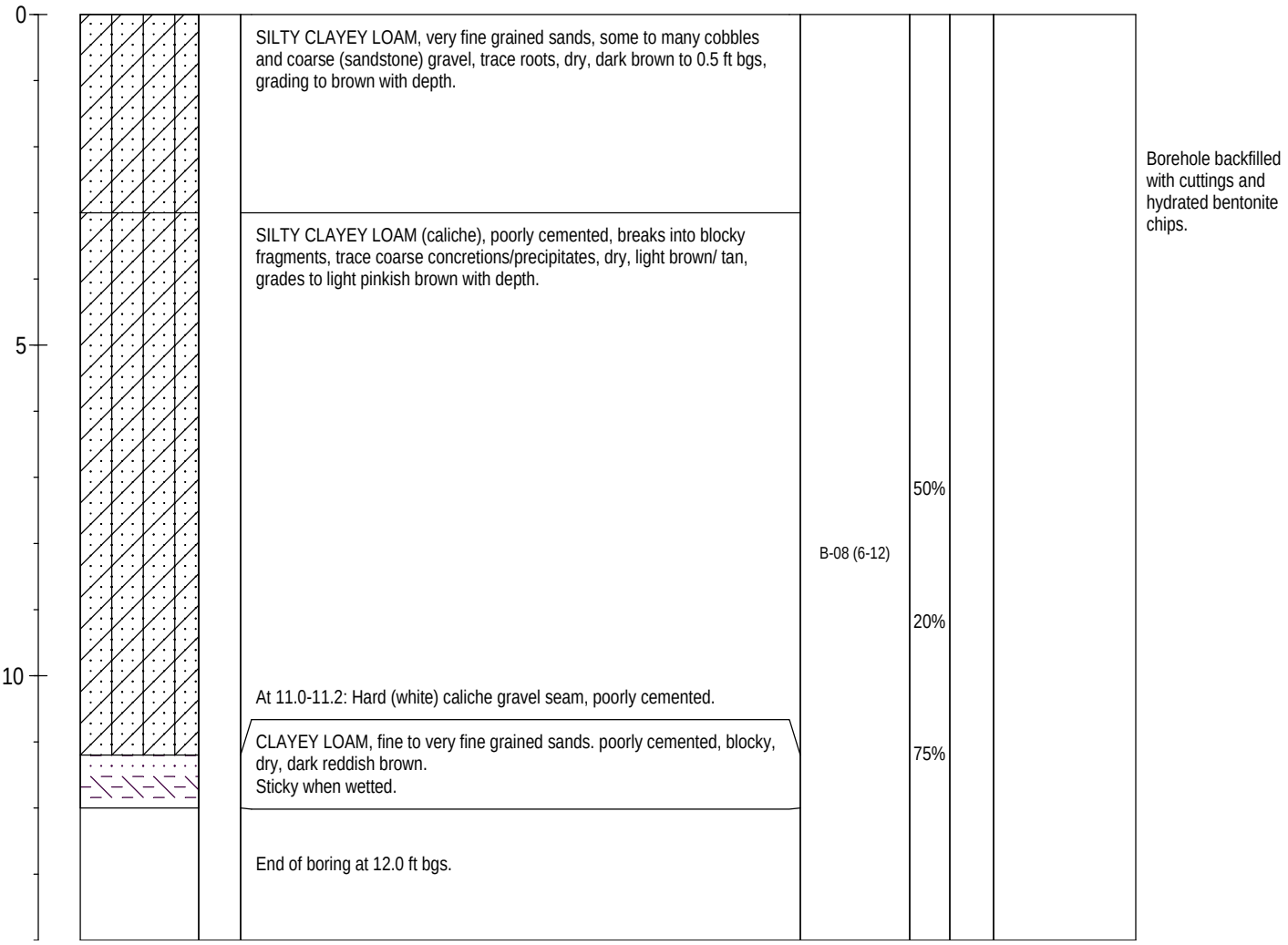
DRILLING INFORMATION

DRILLING COMPANY:	**Atkins Engineering Associates**		
DRILLING METHOD:	**Hollow Stem Auger with Split Spoon**		
BORING DEPTH:	**12 ft bgs**	WELL DEPTH:	**NA**
BORING DIAMETER:	**8.25-in**	WELL DIAMETER:	**NA**

TOP OF CASING ELEV: NA	N. LATITUDE	W. LONGITUDE
GROUND ELEVATION: 2994 ft MSL	32° 19.081'	-104° 01.768'

REMARKS: Refusal of split spoon tooling at 7 ft bgs.

WATER LEVEL: **NA**
STATIC LEVEL: **NA**



bgs - below ground surface, MSL - Mean Sea Level, btoc - below top of casing, ND - Not Detected, NA - Not Applicable, NR - No Recovery

These logs should not be used separately from original report

2600 Dallas Parkway
Suite 280
Frisco, Texas 75034
(469) 666-5500

Boring/Well Log

BORING ID: **B-09**
WELL ID: **NA**

PROJECT INFORMATION

PROJECT:	**MRO: HF7 Fed Com 001**
SITE LOCATION:	**Eddy Co., New Mexico**
JOB NUMBER:	**12553.023.001**
PROJECT MANAGER:	**Robert Appelt**
LOGGED BY:	**C. Spangler**
DATE(S) DRILLED:	**4/15/2020**

DRILLING INFORMATION

DRILLING COMPANY:	**Atkins Engineering Associates**		
DRILLING METHOD:	**Hollow Stem Auger with Split Spoon**		
BORING DEPTH:	**12 ft bgs**	WELL DEPTH:	**NA**
BORING DIAMETER:	**8.25-in**	WELL DIAMETER:	**NA**

TOP OF CASING ELEV: NA
GROUND ELEVATION: 2995 ft MSL

N. LATITUDE	W. LONGITUDE
32° 19.086'	-104° 01.763'

REMARKS: Refusal of tooling at 6.5 ft bgs (hard/dense).
Location moved ~5 ft northwest out of NM gas pipeline easement.

WATER LEVEL: **NA**
STATIC LEVEL: **NA**

DEPTH	LITHOLOGY	USCS	DESCRIPTION	SAMPLE ID	REC. %	OVM	WELL COMPLETION	INSTALLATION NOTES
0			SILTY CLAYEY LOAM, very fine grained sands, some to many cobbles and coarse (sandstone) gravel, trace roots, dry, dark brown to 0.5 ft bgs, grading to brown with depth.					
			SILTY CLAYEY LOAM (caliche), poorly cemented, breaks into blocky fragments, few to little coarse concretions/precipitates, dry, light brown/ tan, grades to light pinkish brown with depth.					
5			At 6.5: dense (white) caliche seam.	B-09 (6-12)	100%			Borehole backfilled with cuttings and hydrated bentonite chips.
			CLAYEY LOAM, fine to very fine grained sands, poorly cemented, blocky, dense, few to little nodules/concretions, dark reddish brown.		70%			
10					75%			
			End of boring at 12.0 ft bgs.					

bgs - below ground surface, MSL - Mean Sea Level, btoc - below top of casing, ND - Not Detected, NA - Not Applicable, NR - No Recovery

These logs should not be used separately from original report

2600 Dallas Parkway
Suite 280
Frisco, Texas 75034
(469) 666-5500

Boring/Well Log

BORING ID: **B-09-2**
WELL ID: **NA**

PROJECT INFORMATION

PROJECT:	**MRO: HF7 Fed Com 001**
SITE LOCATION:	**Eddy Co., New Mexico**
JOB NUMBER:	**12553.023.001**
PROJECT MANAGER:	**Robert Appelt**
LOGGED BY:	**C. Spangler**
DATE(S) DRILLED:	**5/14/2020**

DRILLING INFORMATION

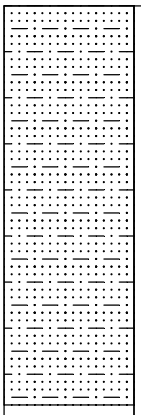
DRILLING COMPANY:	**Atkins Engineering Associates**		
DRILLING METHOD:	**Hollow Stem Auger with Split Spoon**		
BORING DEPTH:	**5.5 ft bgs**	WELL DEPTH:	**NA**
BORING DIAMETER:	**~ 2 ft**	WELL DIAMETER:	**NA**

TOP OF CASING ELEV: NA
GROUND ELEVATION: 2995 ft MSL

N. LATITUDE	W. LONGITUDE
32.31804°	-104.02937°

REMARKS: Location is hydrovac hole along pipeline.
Sample composite collected from sidewall.

WATER LEVEL: **NA**
STATIC LEVEL: **NA**

DEPTH	LITHOLOGY	USCS	DESCRIPTION	SAMPLE ID	REC. %	OVM	WELL COMPLETION	INSTALLATION NOTES
0			SILTY SAND, trace to few clay, fine grained sands, few gravel (near surface), roots, dry, dark brown.	B-09-2-1 (1-5.5)	100%			
5			End of boring at 5.5 ft bgs.					
10								

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These logs should not be used separately from original report

2600 Dallas Parkway
Suite 280
Frisco, Texas 75034
(469) 666-5500

Boring/Well Log

BORING ID: **B-10**
WELL ID:

PROJECT INFORMATION

PROJECT:	**MRO: HF7 Fed Com 001**
SITE LOCATION:	**Eddy Co., New Mexico**
JOB NUMBER:	**12553.023.001**
PROJECT MANAGER:	**Robert Appelt**
LOGGED BY:	**C. Spangler**
DATE(S) DRILLED:	**4/15/2020**

DRILLING INFORMATION

DRILLING COMPANY:	**Atkins Engineering Associates**		
DRILLING METHOD:	**Hollow Stem Auger with Split Spoon**		
BORING DEPTH:	**12 ft bgs**	WELL DEPTH:	**NA**
BORING DIAMETER:	**8.25-in**	WELL DIAMETER:	**NA**

TOP OF CASING ELEV: NA	N. LATITUDE	W. LONGITUDE
GROUND ELEVATION: 2995 ft MSL	32° 19.088'	-104° 01.762'

REMARKS: Refusal of tooling at 7 ft bgs (hard/dense).
Location moved ~8-10 ft northwest out of NM gas pipeline easement.

WATER LEVEL: **NA**
STATIC LEVEL: **NA**

DEPTH	LITHOLOGY	USCS	DESCRIPTION	SAMPLE ID	REC. %	OVM	WELL COMPLETION	INSTALLATION NOTES
0			SILTY CLAYEY LOAM, very fine grained sands, some to many cobbles and coarse (sandstone) gravel, trace roots, dry, dark brown to 0.5 ft bgs, grading to brown with depth.					Borehole backfilled with cuttings and hydrated bentonite chips.
5			SILTY CLAYEY LOAM (caliche), poorly cemented, breaks into blocky fragments, few to little coarse concretions/precipitates, dry, light brown/ tan, grades to light pinkish brown with depth. At 7.0-7.2 ft bgs: caliche seam. At 7.2 ft bgs: (white) caliche mottled with dark reddish brown.	B-10 (6-12)	10% 40%			
10			CLAYEY LOAM, fine to very fine grained sands, poorly cemented, few nodules/concretions, dark reddish brown. Sticky when wetted.		80%			
			End of boring at 12.0 ft bgs.					

bgs - below ground surface, MSL - Mean Sea Level, btoc - below top of casing, ND - Not Detected, NA - Not Applicable, NR - No Recovery

These logs should not be used separately from original report

2600 Dallas Parkway
Suite 280
Frisco, Texas 75034
(469) 666-5500

Boring/Well Log

BORING ID: **B-10-2**
WELL ID: **NA**

PROJECT INFORMATION

PROJECT:	**MRO: HF7 Fed Com 001**
SITE LOCATION:	**Eddy Co., New Mexico**
JOB NUMBER:	**12553.023.001**
PROJECT MANAGER:	**Robert Appelt**
LOGGED BY:	**C. Spangler**
DATE(S) DRILLED:	**5/14/2020**

DRILLING INFORMATION

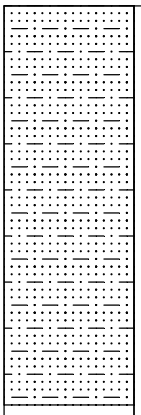
DRILLING COMPANY:	**Atkins Engineering Associates**		
DRILLING METHOD:	**Hollow Stem Auger with Split Spoon**		
BORING DEPTH:	**5.5 ft bgs**	WELL DEPTH:	**NA**
BORING DIAMETER:	**~ 2 ft**	WELL DIAMETER:	**NA**

TOP OF CASING ELEV: NA
GROUND ELEVATION: 2995 ft MSL

N. LATITUDE	W. LONGITUDE
32.31811°	-104.02930°

REMARKS: Location is hydrovac hole along pipeline.
Sample composite collected from sidewall.

WATER LEVEL: **NA**
STATIC LEVEL: **NA**

DEPTH	LITHOLOGY	USCS	DESCRIPTION	SAMPLE ID	REC. %	OVM	WELL COMPLETION	INSTALLATION NOTES
0			SILTY SAND, trace to few clay, fine grained sands, few gravel (near surface), roots, dry, dark brown.	B-10-2-1 (1-5.5)	100%			
5			End of boring at 5.5 ft bgs.					
10								

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These logs should not be used separately from original report

2600 Dallas Parkway
Suite 280
Frisco, Texas 75034
(469) 666-5500

Boring/Well Log

BORING ID: **B-11**
WELL ID:

PROJECT INFORMATION

PROJECT:	**MRO: HF7 Fed Com 001**
SITE LOCATION:	**Eddy Co., New Mexico**
JOB NUMBER:	**12553.023.001**
PROJECT MANAGER:	**Robert Appelt**
LOGGED BY:	**C. Spangler**
DATE(S) DRILLED:	**4/15/2020**

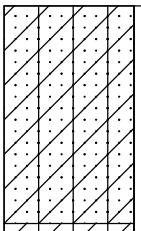
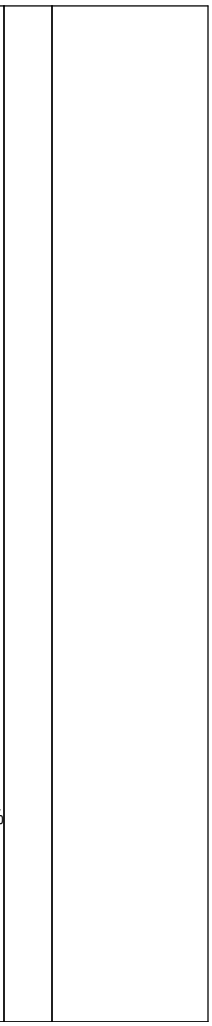
DRILLING INFORMATION

DRILLING COMPANY:	**Atkins Engineering Associates**		
DRILLING METHOD:	**Hollow Stem Auger with Split Spoon**		
BORING DEPTH:	**12 ft bgs**	WELL DEPTH:	**NA**
BORING DIAMETER:	**8.25-in**	WELL DIAMETER:	**NA**

TOP OF CASING ELEV: NA	N. LATITUDE	W. LONGITUDE
GROUND ELEVATION: 2995 ft MSL	32° 19.093'	-104° 01.756

REMARKS: Location moved ~15 ft northwest out of NM gas pipeline easement.
Location moved to foot of berm, fence temporarily downed for access.

WATER LEVEL: **NA**
STATIC LEVEL: **NA**

DEPTH	LITHOLOGY	USCS	DESCRIPTION	SAMPLE ID	REC. %	OVM	WELL COMPLETION	INSTALLATION NOTES
0			SILTY CLAYEY LOAM, very fine grained sands, some to many cobbles and coarse (sandstone) gravel, trace roots, dry, dark brown to 0.5 ft bgs, grading to brown with depth.	B-11 (6-12)	30%			Borehole backfilled with cuttings and hydrated bentonite chips.
			SILTY CLAYEY LOAM (caliche), poorly cemented, breaks into blocky fragments, few to little coarse concretions/precipitates, dry, light brown/ tan, grades to light pinkish brown with depth.					
5			At 6.5-7.0 ft bgs: caliche seam. At 7.0 ft bgs: (white) caliche mottled with dark reddish brown.		50%			
10			CLAYEY LOAM, fine to very fine grained sands, poorly cemented, few nodules/concretions, dark reddish brown. Sticky when wetted.		100%			
			End of boring at 12.0 ft bgs.					

bgs - below ground surface, MSL - Mean Sea Level, btoc - below top of casing, ND - Not Detected, NA - Not Applicable, NR - No Recovery

These logs should not be used separately from original report

2600 Dallas Parkway
Suite 280
Frisco, Texas 75034
(469) 666-5500

Boring/Well Log

BORING ID: **B-11-2**
WELL ID: **NA**

PROJECT INFORMATION

PROJECT: **MRO: HF7 Fed Com 001**
SITE LOCATION: **Eddy Co., New Mexico**
JOB NUMBER: **12553.023.001**
PROJECT MANAGER: **Robert Appelt**
LOGGED BY: **C. Spangler**
DATE(S) DRILLED: **5/14/2020**

DRILLING INFORMATION

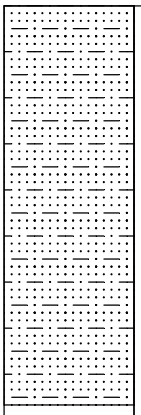
DRILLING COMPANY: **Atkins Engineering Associates**
DRILLING METHOD: **Hollow Stem Auger with Split Spoon**
BORING DEPTH: **5.5 ft bgs** WELL DEPTH: **NA**
BORING DIAMETER: **~ 2 ft** WELL DIAMETER: **NA**

TOP OF CASING ELEV: NA
GROUND ELEVATION: 2995 ft MSL

N. LATITUDE	W. LONGITUDE
32.31817°	-104.02923°

REMARKS: Location is hydrovac hole along pipeline.
Sample composite collected from sidewall.

WATER LEVEL: **NA**
STATIC LEVEL: **NA**

DEPTH	LITHOLOGY	USCS	DESCRIPTION	SAMPLE ID	REC. %	OVM	WELL COMPLETION	INSTALLATION NOTES
0			SILTY SAND, trace to few clay, fine grained sands, few gravel (near surface), roots, dry, dark brown.	B-11-2-1 (1-5.5)	100%			
5			End of boring at 5.5 ft bgs.					
10								

bgs - below ground surface, MSL - Mean Sea Level, btoc - below top of casing, ND - Not Detected, NA - Not Applicable, NR - No Recovery

These logs should not be used separately from original report

2600 Dallas Parkway
Suite 280
Frisco, Texas 75034
(469) 666-5500

Boring/Well Log

BORING ID: **B-12**
WELL ID: **NA**

PROJECT INFORMATION

PROJECT:	**MRO: HF7 Fed Com 001**
SITE LOCATION:	**Eddy Co., New Mexico**
JOB NUMBER:	**12553.023.001**
PROJECT MANAGER:	**Robert Appelt**
LOGGED BY:	**C. Spangler**
DATE(S) DRILLED:	**4/14/2020**

DRILLING INFORMATION

DRILLING COMPANY:	**Atkins Engineering Associates**		
DRILLING METHOD:	**Hollow Stem Auger with Split Spoon**		
BORING DEPTH:	**12 ft bgs**	WELL DEPTH:	**NA**
BORING DIAMETER:	**8.25-in**	WELL DIAMETER:	**NA**

TOP OF CASING ELEV: NA	N. LATITUDE	W. LONGITUDE
GROUND ELEVATION: 2995 ft MSL	32° 19.098'	-104° 01.752'

REMARKS:

WATER LEVEL: **NA**
STATIC LEVEL: **NA**

DEPTH	LITHOLOGY	USCS	DESCRIPTION	SAMPLE ID	REC. %	OVM	WELL COMPLETION	INSTALLATION NOTES
0			SILTY CLAYEY LOAM, very fine grained sands, some to many cobbles and coarse (sandstone) gravel, trace roots, dry, dark brown to 0.5 ft bgs, grading to brown with depth.					Borehole backfilled with hydrated bentonite chips.
			SILTY CLAYEY LOAM (caliche), poorly cemented, breaks into blocky fragments, trace coarse concretions/precipitates, dry, light brown/ tan, grades to light pinkish brown with depth.					
5			At 5.0-6.0: dense.	B-12 (6-12)	50%			
					50%			
10			At 11.0-11.2: Hard (white) caliche seam.					
			CLAYEY LOAM, fine to very fine grained sands. poorly cemented, dry, dark reddish brown. Sticky when wetted.		50%			
			End of boring at 12.0 ft bgs.					

bgs - below ground surface, MSL - Mean Sea Level, btoc - below top of casing, ND - Not Detected, NA - Not Applicable, NR - No Recovery

These logs should not be used separately from original report

2600 Dallas Parkway
Suite 280
Frisco, Texas 75034
(469) 666-5500

Boring/Well Log

BORING ID: **B-12-2**
WELL ID: **NA**

PROJECT INFORMATION

PROJECT:	**MRO: HF7 Fed Com 001**
SITE LOCATION:	**Eddy Co., New Mexico**
JOB NUMBER:	**12553.023.001**
PROJECT MANAGER:	**Robert Appelt**
LOGGED BY:	**C. Spangler**
DATE(S) DRILLED:	**5/14/2020**

DRILLING INFORMATION

DRILLING COMPANY:	**Atkins Engineering Associates**		
DRILLING METHOD:	**Hollow Stem Auger with Split Spoon**		
BORING DEPTH:	**8 ft bgs**	WELL DEPTH:	**NA**
BORING DIAMETER:	**8.25-in**	WELL DIAMETER:	**NA**

TOP OF CASING ELEV: NA	N. LATITUDE	W. LONGITUDE
GROUND ELEVATION: 2996 ft	32.31830°	-104.02918°

REMARKS: Refusal of split spoon tooling at 3.0 ft bgs.

WATER LEVEL: **NA**
STATIC LEVEL: **NA**

DEPTH	LITHOLOGY	USCS	DESCRIPTION	SAMPLE ID	REC. %	OVM	WELL COMPLETION	INSTALLATION NOTES
0			SILTY CLAYEY LOAM, very fine grained sands, some to many cobbles and coarse (sandstone) gravel, trace roots, dry, dark brown to 0.5 ft bgs, grading lighter to brown with depth.	B-12-2 (0-4)	100%			Borehole backfilled with hydrated bentonite chips.
			SILTY CLAYEY LOAM (caliche), poorly cemented, blocky, trace coarse concretions/precipitates, dry, light brown/ tan, grades to light pinkish brown with depth.		50%			
5			At 6.0: dense/hard (white) caliche lense.		75%			
			CLAYEY LOAM, fine to very fine grained sands, trace rounded concretions, trace (white) caliche striations, fine to very fine grained sands, blocky, poorly cemented, dry, dark reddish brown.		100%			
			End of boring at 8.0 ft bgs.					
10								

bgs - below ground surface, MSL - Mean Sea Level, btoc - below top of casing, ND - Not Detected, NA - Not Applicable, NR - No Recovery

These logs should not be used separately from original report

2600 Dallas Parkway
Suite 280
Frisco, Texas 75034
(469) 666-5500

Boring/Well Log

BORING ID: **B-13**
WELL ID: **NA**

PROJECT INFORMATION

PROJECT:	**MRO: HF7 Fed Com 001**
SITE LOCATION:	**Eddy Co., New Mexico**
JOB NUMBER:	**12553.023.001**
PROJECT MANAGER:	**Robert Appelt**
LOGGED BY:	**C. Spangler**
DATE(S) DRILLED:	**4/14/2020**

DRILLING INFORMATION

DRILLING COMPANY:	**Atkins Engineering Associates**		
DRILLING METHOD:	**Hollow Stem Auger with Split Spoon**		
BORING DEPTH:	**12 ft bgs**	WELL DEPTH:	**NA**
BORING DIAMETER:	**8.25-in**	WELL DIAMETER:	**NA**

TOP OF CASING ELEV: NA	N. LATITUDE	W. LONGITUDE
GROUND ELEVATION: 2996 ft	32° 19.101'	-104° 01.756'

REMARKS: Hand auger to ~1.0 ft bgs (refusal on cobbles).
Refusal of sampler tool at 11.5 ft bgs.

WATER LEVEL: **NA**
STATIC LEVEL: **NA**

DEPTH	LITHOLOGY	USCS	DESCRIPTION	SAMPLE ID	REC. %	OVM	WELL COMPLETION	INSTALLATION NOTES
0			SILTY CLAYEY LOAM, very fine grained sands, some to many cobbles and coarse (sandstone) gravel, trace roots, dry, dark brown to 0.5 ft bgs, grading to brown with depth.	B-13 (6-12)	100%			Borehole backfilled with hydrated bentonite chips.
5			SILTY CLAYEY LOAM (caliche), poorly cemented, blocky, trace coarse concretions/precipitates, dry, light brown/ tan, grades to light pinkish brown with depth.		100%			
10			CLAYEY LOAM, fine to very fine grained sands, trace rounded concretions, trace (white) caliche striations, fine to very fine grained sands, blocky, poorly cemented, dry, dark reddish brown.		75%			
			End of boring at 12 ft bgs.					

bgs - below ground surface, MSL - Mean Sea Level, btoc - below top of casing, ND - Not Detected, NA - Not Applicable, NR - No Recovery

These logs should not be used separately from original report

2600 Dallas Parkway
Suite 280
Frisco, Texas 75034
(469) 666-5500

Boring/Well Log

BORING ID: **B-13-2**
WELL ID: **NA**

PROJECT INFORMATION

PROJECT:	**MRO: HF7 Fed Com 001**
SITE LOCATION:	**Eddy Co., New Mexico**
JOB NUMBER:	**12553.023.001**
PROJECT MANAGER:	**Robert Appelt**
LOGGED BY:	**C. Spangler**
DATE(S) DRILLED:	**5/14/2020**

DRILLING INFORMATION

DRILLING COMPANY:	**Atkins Engineering Associates**		
DRILLING METHOD:	**Hollow Stem Auger with Split Spoon**		
BORING DEPTH:	**12 ft bgs**	WELL DEPTH:	**NA**
BORING DIAMETER:	**8.25-in**	WELL DIAMETER:	**NA**

TOP OF CASING ELEV: NA	N. LATITUDE	W. LONGITUDE
GROUND ELEVATION: 2996 ft	32.31836°	-104.02926°

REMARKS: Refusal of split spoon tooling at 2.5 ft bgs.
Refusal of split spoon tooling at 5.5 & 9.5 ft bgs.

WATER LEVEL: **NA**
STATIC LEVEL: **NA**

DEPTH	LITHOLOGY	USCS	DESCRIPTION	SAMPLE ID	REC. %	OVM	WELL COMPLETION	INSTALLATION NOTES
0			SILTY CLAYEY LOAM, very fine grained sands, some to many cobbles and coarse (sandstone) gravel, trace roots, dry, dark brown to 0.5 ft bgs, grading lighter to brown with depth.					
			SILTY CLAYEY LOAM (caliche), poorly cemented, blocky, trace coarse concretions/precipitates, dry, light brown/ tan, grades to light pinkish brown with depth.		25%			
5			At 5.5-6.0: dense/hard (white) caliche lense.		75%			
			CLAYEY LOAM, fine to very fine grained sands, trace rounded concretions, trace (white) caliche striations, fine to very fine grained sands, blocky, poorly cemented, dry, dark reddish brown.	B-13-2 (2-6)	75%			
10					100%			
			End of boring at 12 ft bgs.					

Borehole backfilled with hydrated bentonite chips.

bgs - below ground surface, MSL - Mean Sea Level, btoc - below top of casing, ND - Not Detected, NA - Not Applicable, NR - No Recovery

These logs should not be used separately from original report

ATTACHMENT G

LABORATORY REPORTS OF ANALYSIS AND CHAIN OF CUSTODY DOCUMENTATION

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

February 05, 2020

Shar Harvester
Wescom Inc
1907 San Jose Blvd
Carlsbad, NM 88220
TEL: (575) 499-6831
FAX

RE: HF 7 FED COM 001 OrderNo.: 2001B64

Dear Shar Harvester:

Hall Environmental Analysis Laboratory received 1 sample(s) on 1/29/2020 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 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 **2001B64**
Date Reported: **2/5/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Wescom Inc
Project: HF 7 FED COM 001
Lab ID: 2001B64-001 **Matrix:** SOIL

Client Sample ID: N-Tank-E-WS-COMP
Collection Date: 1/19/2020 6:50:00 PM
Received Date: 1/29/2020 2:00:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **CLP**
Diesel Range Organics (DRO)	ND	9.9		mg/Kg	1	2/3/2020 9:14:43 AM
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	2/3/2020 9:14:43 AM
Surr: DNOP	93.8	55.1-146		%Rec	1	2/3/2020 9:14:43 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **RAA**
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	1/31/2020 2:34:45 PM
Surr: BFB	82.5	66.6-105		%Rec	1	1/31/2020 2:34:45 PM
EPA METHOD 8021B: VOLATILES						Analyst: **RAA**
Benzene	ND	0.024		mg/Kg	1	1/31/2020 2:34:45 PM
Toluene	ND	0.049		mg/Kg	1	1/31/2020 2:34:45 PM
Ethylbenzene	ND	0.049		mg/Kg	1	1/31/2020 2:34:45 PM
Xylenes, Total	ND	0.097		mg/Kg	1	1/31/2020 2:34:45 PM
Surr: 4-Bromofluorobenzene	95.0	80-120		%Rec	1	1/31/2020 2:34:45 PM
EPA METHOD 300.0: ANIONS						Analyst: **CAS**
Chloride	110	60		mg/Kg	20	2/4/2020 1:30:41 PM

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2001B64**

05-Feb-20

Client: Wescom Inc

Project: HF 7 FED COM 001

Sample ID: **MB-50242**	SampType: **mblk**	TestCode: **EPA Method 300.0: Anions**
Client ID: **PBS**	Batch ID: **50242**	RunNo: **66289**
Prep Date: **2/4/2020**	Analysis Date: **2/4/2020**	SeqNo: **2277916** Units: **mg/Kg**

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

Sample ID: **LCS-50242**	SampType: **lcs**	TestCode: **EPA Method 300.0: Anions**
Client ID: **LCSS**	Batch ID: **50242**	RunNo: **66289**
Prep Date: **2/4/2020**	Analysis Date: **2/4/2020**	SeqNo: **2277917** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	14	1.5	15.00	0	92.9	90	110			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2001B64**

05-Feb-20

Client: Wescom Inc

Project: HF 7 FED COM 001

Sample ID: **MB-50189**	SampType: **MBLK**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **PBS**	Batch ID: **50189**	RunNo: **66246**
Prep Date: **1/31/2020**	Analysis Date: **2/3/2020**	SeqNo: **2275621** 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	9.4		10.00		93.6	55.1	146			

Sample ID: **LCS-50189**	SampType: **LCS**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **LCSS**	Batch ID: **50189**	RunNo: **66246**
Prep Date: **1/31/2020**	Analysis Date: **2/3/2020**	SeqNo: **2275622** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	52	10	50.00	0	104	63.9	124			
Surr: DNOP	4.5		5.000		89.9	55.1	146			

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#: **2001B64**

05-Feb-20

Client: Wescom Inc

Project: HF 7 FED COM 001

Sample ID: **lcs-50164**	SampType: **LCS**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **LCSS**	Batch ID: **50164**	RunNo: **66228**
Prep Date: **1/30/2020**	Analysis Date: **1/31/2020**	SeqNo: **2275525** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	21	5.0	25.00	0	84.7	80	120			
Surr: BFB	900		1000		89.5	66.6	105			

Sample ID: **mb-50164**	SampType: **MBLK**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **PBS**	Batch ID: **50164**	RunNo: **66228**
Prep Date: **1/30/2020**	Analysis Date: **1/31/2020**	SeqNo: **2275526** 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	770		1000		77.4	66.6	105			

Sample ID: **mb-50219**	SampType: **MBLK**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **PBS**	Batch ID: **50219**	RunNo: **66278**
Prep Date: **2/3/2020**	Analysis Date: **2/5/2020**	SeqNo: **2277403** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: BFB	750		1000		75.4	66.6	105			

Sample ID: **lcs-50219**	SampType: **LCS**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **LCSS**	Batch ID: **50219**	RunNo: **66278**
Prep Date: **2/3/2020**	Analysis Date: **2/4/2020**	SeqNo: **2277404** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: BFB	850		1000		85.5	66.6	105			

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#: **2001B64**

05-Feb-20

Client: Wescom Inc

Project: HF 7 FED COM 001

Sample ID: **LCS-50164**	SampType: **LCS**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **LCSS**	Batch ID: **50164**	RunNo: **66228**
Prep Date: **1/30/2020**	Analysis Date: **1/31/2020**	SeqNo: **2275580** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.89	0.025	1.000	0	88.6	80	120			
Toluene	0.91	0.050	1.000	0	90.6	80	120			
Ethylbenzene	0.91	0.050	1.000	0	91.0	80	120			
Xylenes, Total	2.8	0.10	3.000	0	91.9	80	120			
Surr: 4-Bromofluorobenzene	0.91		1.000		91.4	80	120			

Sample ID: **mb-50164**	SampType: **MBLK**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **PBS**	Batch ID: **50164**	RunNo: **66228**
Prep Date: **1/30/2020**	Analysis Date: **1/31/2020**	SeqNo: **2275581** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.025								
Toluene	ND	0.050								
Ethylbenzene	ND	0.050								
Xylenes, Total	ND	0.10								
Surr: 4-Bromofluorobenzene	0.89		1.000		89.5	80	120			

Sample ID: **mb-50219**	SampType: **MBLK**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **PBS**	Batch ID: **50219**	RunNo: **66278**
Prep Date: **2/3/2020**	Analysis Date: **2/5/2020**	SeqNo: **2277435** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 4-Bromofluorobenzene	0.85		1.000		85.3	80	120			

Sample ID: **lcs-50219**	SampType: **LCS**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **LCSS**	Batch ID: **50219**	RunNo: **66278**
Prep Date: **2/3/2020**	Analysis Date: **2/4/2020**	SeqNo: **2277436** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 4-Bromofluorobenzene	0.92		1.000		91.9	80	120			

Qualifiers:

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

HALL ENVIRONMENTAL ANALYSIS LABORATORY

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

Sample Log-In Check List

Client Name: **WESCOM INC** Work Order Number: **2001B64** RcptNo: **1**

Received By: **Desiree Dominguez** **1/29/2020 2:00:00 PM**

Completed By: **Yazmine Garduno** **1/30/2020 10:36:38 AM**

Reviewed By: JR 1/30/20

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: Y61/30/20

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 °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	4.4	Good				

Chain-of-Custody Record

Client: Weslom, INC.

Mailing Address: 1907 San Jose BLVD
APT 425, CARLSBAD, NM 88220

Phone #: 575 840 3940

email or Fax#:

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

Accreditation: ☐ Az Compliance
☐ NELAC ☐ Other

☐ EDD (Type)

Turn-Around Time:
☑ Standard ☐ Rush

Project Name: HF 7 FED Com 001

Project #:

Project Manager: SHAR HARVESTER

Sampler: SHAR HARVESTER

On Ice: ☑ Yes ☐ No

# of Coolers: 1

Cooler Temp(including CF): 4.5 - 0.1 = 4.4 (°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. 2001814	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)
1/29	18:50	S	N-TANK-E-WS-COMP	JAR	ICE	-001	X	X					X			

Remarks:

Date:	Time:	Relinquished by:	Received by:	Via:	Date	Time
1/29	14.00				1/29/20	1400
1/29/19	1900		FDX Courier		1/30/20	9:10

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

HALL ENVIRONMENTAL ANALYSIS LABORATORY

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

February 21, 2020

Shar Harvester
Marathon Oil Company
4111 Tidwell Road
Carlsbad, NM 88220
TEL: (575) 297-0956
FAX

RE: HF 7 Fed Com 1 OrderNo.: 2002627

Dear Shar Harvester:

Hall Environmental Analysis Laboratory received 31 sample(s) on 2/15/2020 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 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 **2002627**
Date Reported: **2/21/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon Oil Company
Project: HF 7 Fed Com 1
Lab ID: 2002627-001 **Matrix:** SOIL

Client Sample ID: HF 7-1 SP1-8'
Collection Date: 1/18/2020
Received Date: 2/15/2020 12:35:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **CLP**
Diesel Range Organics (DRO)	ND	9.4	H	mg/Kg	1	2/19/2020 2:11:04 PM
Motor Oil Range Organics (MRO)	ND	47	H	mg/Kg	1	2/19/2020 2:11:04 PM
Surr: DNOP	94.6	55.1-146	H	%Rec	1	2/19/2020 2:11:04 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	ND	4.6	H	mg/Kg	1	2/19/2020 3:35:44 PM
Surr: BFB	86.1	66.6-105	H	%Rec	1	2/19/2020 3:35:44 PM
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Benzene	ND	0.023	H	mg/Kg	1	2/19/2020 3:35:44 PM
Toluene	ND	0.046	H	mg/Kg	1	2/19/2020 3:35:44 PM
Ethylbenzene	ND	0.046	H	mg/Kg	1	2/19/2020 3:35:44 PM
Xylenes, Total	ND	0.092	H	mg/Kg	1	2/19/2020 3:35:44 PM
Surr: 4-Bromofluorobenzene	95.5	80-120	H	%Rec	1	2/19/2020 3:35:44 PM
EPA METHOD 300.0: ANIONS						Analyst: **CAS**
Chloride	400	60	H	mg/Kg	20	2/18/2020 6:39:14 PM

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 **2002627**
Date Reported: **2/21/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon Oil Company
Project: HF 7 Fed Com 1
Lab ID: 2002627-002 **Matrix:** SOIL

Client Sample ID: HF7-1 SP2-8'
Collection Date: 1/18/2020
Received Date: 2/15/2020 12:35:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **CLP**
Diesel Range Organics (DRO)	ND	8.9	H	mg/Kg	1	2/19/2020 2:38:38 PM
Motor Oil Range Organics (MRO)	ND	45	H	mg/Kg	1	2/19/2020 2:38:38 PM
Surr: DNOP	94.2	55.1-146	H	%Rec	1	2/19/2020 2:38:38 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	ND	4.6	H	mg/Kg	1	2/19/2020 3:59:24 PM
Surr: BFB	81.7	66.6-105	H	%Rec	1	2/19/2020 3:59:24 PM
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Benzene	ND	0.023	H	mg/Kg	1	2/19/2020 3:59:24 PM
Toluene	ND	0.046	H	mg/Kg	1	2/19/2020 3:59:24 PM
Ethylbenzene	ND	0.046	H	mg/Kg	1	2/19/2020 3:59:24 PM
Xylenes, Total	ND	0.093	H	mg/Kg	1	2/19/2020 3:59:24 PM
Surr: 4-Bromofluorobenzene	90.4	80-120	H	%Rec	1	2/19/2020 3:59:24 PM
EPA METHOD 300.0: ANIONS						Analyst: **CAS**
Chloride	530	60	H	mg/Kg	20	2/18/2020 7:16:14 PM

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 **2002627**
Date Reported: **2/21/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon Oil Company
Project: HF 7 Fed Com 1
Lab ID: 2002627-003 **Matrix:** SOIL

Client Sample ID: HF7-1 SP3-8'
Collection Date: 1/18/2020
Received Date: 2/15/2020 12:35:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **CLP**
Diesel Range Organics (DRO)	ND	9.6	H	mg/Kg	1	2/19/2020 2:47:48 PM
Motor Oil Range Organics (MRO)	ND	48	H	mg/Kg	1	2/19/2020 2:47:48 PM
Surr: DNOP	95.7	55.1-146	H	%Rec	1	2/19/2020 2:47:48 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	ND	4.6	H	mg/Kg	1	2/19/2020 4:23:05 PM
Surr: BFB	84.2	66.6-105	H	%Rec	1	2/19/2020 4:23:05 PM
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Benzene	ND	0.023	H	mg/Kg	1	2/19/2020 4:23:05 PM
Toluene	ND	0.046	H	mg/Kg	1	2/19/2020 4:23:05 PM
Ethylbenzene	ND	0.046	H	mg/Kg	1	2/19/2020 4:23:05 PM
Xylenes, Total	ND	0.092	H	mg/Kg	1	2/19/2020 4:23:05 PM
Surr: 4-Bromofluorobenzene	92.4	80-120	H	%Rec	1	2/19/2020 4:23:05 PM
EPA METHOD 300.0: ANIONS						Analyst: **CAS**
Chloride	400	60	H	mg/Kg	20	2/18/2020 7:28:35 PM

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 **2002627**
Date Reported: **2/21/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon Oil Company
Project: HF 7 Fed Com 1
Lab ID: 2002627-004 **Matrix:** SOIL

Client Sample ID: HF7-1 SP4-12'
Collection Date: 1/18/2020
Received Date: 2/15/2020 12:35:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **CLP**
Diesel Range Organics (DRO)	ND	9.1	H	mg/Kg	1	2/19/2020 2:57:00 PM
Motor Oil Range Organics (MRO)	ND	46	H	mg/Kg	1	2/19/2020 2:57:00 PM
Surr: DNOP	95.7	55.1-146	H	%Rec	1	2/19/2020 2:57:00 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	ND	4.9	H	mg/Kg	1	2/19/2020 4:46:41 PM
Surr: BFB	82.9	66.6-105	H	%Rec	1	2/19/2020 4:46:41 PM
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Benzene	ND	0.024	H	mg/Kg	1	2/19/2020 4:46:41 PM
Toluene	ND	0.049	H	mg/Kg	1	2/19/2020 4:46:41 PM
Ethylbenzene	ND	0.049	H	mg/Kg	1	2/19/2020 4:46:41 PM
Xylenes, Total	ND	0.098	H	mg/Kg	1	2/19/2020 4:46:41 PM
Surr: 4-Bromofluorobenzene	91.1	80-120	H	%Rec	1	2/19/2020 4:46:41 PM
EPA METHOD 300.0: ANIONS						Analyst: **CAS**
Chloride	420	60	H	mg/Kg	20	2/18/2020 7:40:56 PM

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 **2002627**
Date Reported: **2/21/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon Oil Company
Project: HF 7 Fed Com 1
Lab ID: 2002627-005 **Matrix:** SOIL

Client Sample ID: HF7-1 SP5-12'
Collection Date: 1/18/2020
Received Date: 2/15/2020 12:35:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **CLP**
Diesel Range Organics (DRO)	ND	9.1	H	mg/Kg	1	2/19/2020 3:06:11 PM
Motor Oil Range Organics (MRO)	ND	45	H	mg/Kg	1	2/19/2020 3:06:11 PM
Surr: DNOP	125	55.1-146	H	%Rec	1	2/19/2020 3:06:11 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	ND	4.9	H	mg/Kg	1	2/19/2020 5:10:03 PM
Surr: BFB	83.3	66.6-105	H	%Rec	1	2/19/2020 5:10:03 PM
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Benzene	ND	0.024	H	mg/Kg	1	2/19/2020 5:10:03 PM
Toluene	ND	0.049	H	mg/Kg	1	2/19/2020 5:10:03 PM
Ethylbenzene	ND	0.049	H	mg/Kg	1	2/19/2020 5:10:03 PM
Xylenes, Total	ND	0.098	H	mg/Kg	1	2/19/2020 5:10:03 PM
Surr: 4-Bromofluorobenzene	92.0	80-120	H	%Rec	1	2/19/2020 5:10:03 PM
EPA METHOD 300.0: ANIONS						Analyst: **CAS**
Chloride	420	60	H	mg/Kg	20	2/18/2020 7:53:17 PM

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 **2002627**
Date Reported: **2/21/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon Oil Company
Project: HF 7 Fed Com 1
Lab ID: 2002627-006 **Matrix:** SOIL

Client Sample ID: HF7-1 SP6-12'
Collection Date: 1/18/2020
Received Date: 2/15/2020 12:35:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **CLP**
Diesel Range Organics (DRO)	ND	9.3	H	mg/Kg	1	2/19/2020 3:15:24 PM
Motor Oil Range Organics (MRO)	ND	46	H	mg/Kg	1	2/19/2020 3:15:24 PM
Surr: DNOP	96.1	55.1-146	H	%Rec	1	2/19/2020 3:15:24 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	ND	4.8	H	mg/Kg	1	2/19/2020 7:31:17 PM
Surr: BFB	84.2	66.6-105	H	%Rec	1	2/19/2020 7:31:17 PM
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Benzene	ND	0.024	H	mg/Kg	1	2/19/2020 7:31:17 PM
Toluene	ND	0.048	H	mg/Kg	1	2/19/2020 7:31:17 PM
Ethylbenzene	ND	0.048	H	mg/Kg	1	2/19/2020 7:31:17 PM
Xylenes, Total	ND	0.095	H	mg/Kg	1	2/19/2020 7:31:17 PM
Surr: 4-Bromofluorobenzene	92.4	80-120	H	%Rec	1	2/19/2020 7:31:17 PM
EPA METHOD 300.0: ANIONS						Analyst: **CAS**
Chloride	430	60	H	mg/Kg	20	2/18/2020 8:05:38 PM

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 **2002627**
Date Reported: **2/21/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon Oil Company
Project: HF 7 Fed Com 1
Lab ID: 2002627-007 **Matrix:** SOIL

Client Sample ID: HF7-1 SP7-12'
Collection Date: 1/17/2020
Received Date: 2/15/2020 12:35:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **CLP**
Diesel Range Organics (DRO)	ND	8.6	H	mg/Kg	1	2/19/2020 3:24:37 PM
Motor Oil Range Organics (MRO)	ND	43	H	mg/Kg	1	2/19/2020 3:24:37 PM
Surr: DNOP	96.4	55.1-146	H	%Rec	1	2/19/2020 3:24:37 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	ND	4.6	H	mg/Kg	1	2/19/2020 7:54:51 PM
Surr: BFB	81.6	66.6-105	H	%Rec	1	2/19/2020 7:54:51 PM
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Benzene	ND	0.023	H	mg/Kg	1	2/19/2020 7:54:51 PM
Toluene	ND	0.046	H	mg/Kg	1	2/19/2020 7:54:51 PM
Ethylbenzene	ND	0.046	H	mg/Kg	1	2/19/2020 7:54:51 PM
Xylenes, Total	ND	0.092	H	mg/Kg	1	2/19/2020 7:54:51 PM
Surr: 4-Bromofluorobenzene	90.4	80-120	H	%Rec	1	2/19/2020 7:54:51 PM
EPA METHOD 300.0: ANIONS						Analyst: **CAS**
Chloride	330	60	H	mg/Kg	20	2/18/2020 8:17:58 PM

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 **2002627**
Date Reported: **2/21/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon Oil Company
Project: HF 7 Fed Com 1
Lab ID: 2002627-008 **Matrix:** SOIL

Client Sample ID: HF7-1 SP8-12'
Collection Date: 1/17/2020
Received Date: 2/15/2020 12:35:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **CLP**
Diesel Range Organics (DRO)	ND	8.5	H	mg/Kg	1	2/19/2020 3:33:51 PM
Motor Oil Range Organics (MRO)	ND	43	H	mg/Kg	1	2/19/2020 3:33:51 PM
Surr: DNOP	105	55.1-146	H	%Rec	1	2/19/2020 3:33:51 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	ND	4.8	H	mg/Kg	1	2/19/2020 8:18:23 PM
Surr: BFB	81.5	66.6-105	H	%Rec	1	2/19/2020 8:18:23 PM
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Benzene	ND	0.024	H	mg/Kg	1	2/19/2020 8:18:23 PM
Toluene	ND	0.048	H	mg/Kg	1	2/19/2020 8:18:23 PM
Ethylbenzene	ND	0.048	H	mg/Kg	1	2/19/2020 8:18:23 PM
Xylenes, Total	ND	0.096	H	mg/Kg	1	2/19/2020 8:18:23 PM
Surr: 4-Bromofluorobenzene	89.7	80-120	H	%Rec	1	2/19/2020 8:18:23 PM
EPA METHOD 300.0: ANIONS						Analyst: **CAS**
Chloride	440	61	H	mg/Kg	20	2/18/2020 8:30:19 PM

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 **2002627**
Date Reported: **2/21/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon Oil Company
Project: HF 7 Fed Com 1
Lab ID: 2002627-009 **Matrix:** SOIL

Client Sample ID: HF7-1 SP9-14'
Collection Date: 1/17/2020
Received Date: 2/15/2020 12:35:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **CLP**
Diesel Range Organics (DRO)	ND	9.1	H	mg/Kg	1	2/19/2020 3:43:07 PM
Motor Oil Range Organics (MRO)	ND	45	H	mg/Kg	1	2/19/2020 3:43:07 PM
Surr: DNOP	93.9	55.1-146	H	%Rec	1	2/19/2020 3:43:07 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	ND	4.8	H	mg/Kg	1	2/19/2020 8:41:47 PM
Surr: BFB	85.0	66.6-105	H	%Rec	1	2/19/2020 8:41:47 PM
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Benzene	ND	0.024	H	mg/Kg	1	2/19/2020 8:41:47 PM
Toluene	ND	0.048	H	mg/Kg	1	2/19/2020 8:41:47 PM
Ethylbenzene	ND	0.048	H	mg/Kg	1	2/19/2020 8:41:47 PM
Xylenes, Total	ND	0.095	H	mg/Kg	1	2/19/2020 8:41:47 PM
Surr: 4-Bromofluorobenzene	93.7	80-120	H	%Rec	1	2/19/2020 8:41:47 PM
EPA METHOD 300.0: ANIONS						Analyst: **CAS**
Chloride	420	60	H	mg/Kg	20	2/18/2020 9:07:23 PM

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 **2002627**
Date Reported: **2/21/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon Oil Company
Project: HF 7 Fed Com 1
Lab ID: 2002627-010 **Matrix:** SOIL

Client Sample ID: HF7-1 SP10-12'
Collection Date: 1/17/2020
Received Date: 2/15/2020 12:35:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **CLP**
Diesel Range Organics (DRO)	ND	9.0	H	mg/Kg	1	2/19/2020 3:52:22 PM
Motor Oil Range Organics (MRO)	ND	45	H	mg/Kg	1	2/19/2020 3:52:22 PM
Surr: DNOP	77.0	55.1-146	H	%Rec	1	2/19/2020 3:52:22 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	ND	4.7	H	mg/Kg	1	2/19/2020 9:05:01 PM
Surr: BFB	83.6	66.6-105	H	%Rec	1	2/19/2020 9:05:01 PM
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Benzene	ND	0.024	H	mg/Kg	1	2/19/2020 9:05:01 PM
Toluene	ND	0.047	H	mg/Kg	1	2/19/2020 9:05:01 PM
Ethylbenzene	ND	0.047	H	mg/Kg	1	2/19/2020 9:05:01 PM
Xylenes, Total	ND	0.094	H	mg/Kg	1	2/19/2020 9:05:01 PM
Surr: 4-Bromofluorobenzene	92.7	80-120	H	%Rec	1	2/19/2020 9:05:01 PM
EPA METHOD 300.0: ANIONS						Analyst: **CAS**
Chloride	400	60	H	mg/Kg	20	2/18/2020 9:19:43 PM

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 **2002627**
Date Reported: **2/21/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon Oil Company
Project: HF 7 Fed Com 1
Lab ID: 2002627-011 **Matrix:** SOIL

Client Sample ID: HF7-1 SP11-12'
Collection Date: 1/17/2020
Received Date: 2/15/2020 12:35:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **CLP**
Diesel Range Organics (DRO)	ND	8.8	H	mg/Kg	1	2/19/2020 4:01:38 PM
Motor Oil Range Organics (MRO)	ND	44	H	mg/Kg	1	2/19/2020 4:01:38 PM
Surr: DNOP	77.6	55.1-146	H	%Rec	1	2/19/2020 4:01:38 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	ND	4.9	H	mg/Kg	1	2/19/2020 9:28:33 PM
Surr: BFB	82.8	66.6-105	H	%Rec	1	2/19/2020 9:28:33 PM
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Benzene	ND	0.024	H	mg/Kg	1	2/19/2020 9:28:33 PM
Toluene	ND	0.049	H	mg/Kg	1	2/19/2020 9:28:33 PM
Ethylbenzene	ND	0.049	H	mg/Kg	1	2/19/2020 9:28:33 PM
Xylenes, Total	ND	0.098	H	mg/Kg	1	2/19/2020 9:28:33 PM
Surr: 4-Bromofluorobenzene	91.0	80-120	H	%Rec	1	2/19/2020 9:28:33 PM
EPA METHOD 300.0: ANIONS						Analyst: **CAS**
Chloride	450	59	H	mg/Kg	20	2/18/2020 9:32:04 PM

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 **2002627**
Date Reported: **2/21/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon Oil Company
Project: HF 7 Fed Com 1
Lab ID: 2002627-012 **Matrix:** SOIL

Client Sample ID: HF7-1 SP12-12'
Collection Date: 1/16/2020
Received Date: 2/15/2020 12:35:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **CLP**
Diesel Range Organics (DRO)	ND	8.9	H	mg/Kg	1	2/19/2020 4:10:54 PM
Motor Oil Range Organics (MRO)	ND	44	H	mg/Kg	1	2/19/2020 4:10:54 PM
Surr: DNOP	89.1	55.1-146	H	%Rec	1	2/19/2020 4:10:54 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	ND	4.9	H	mg/Kg	1	2/19/2020 9:51:58 PM
Surr: BFB	81.9	66.6-105	H	%Rec	1	2/19/2020 9:51:58 PM
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Benzene	ND	0.025	H	mg/Kg	1	2/19/2020 9:51:58 PM
Toluene	ND	0.049	H	mg/Kg	1	2/19/2020 9:51:58 PM
Ethylbenzene	ND	0.049	H	mg/Kg	1	2/19/2020 9:51:58 PM
Xylenes, Total	ND	0.098	H	mg/Kg	1	2/19/2020 9:51:58 PM
Surr: 4-Bromofluorobenzene	90.7	80-120	H	%Rec	1	2/19/2020 9:51:58 PM
EPA METHOD 300.0: ANIONS						Analyst: **CAS**
Chloride	460	60	H	mg/Kg	20	2/18/2020 9:44:24 PM

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 **2002627**
Date Reported: **2/21/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon Oil Company
Project: HF 7 Fed Com 1
Lab ID: 2002627-013 **Matrix:** SOIL

Client Sample ID: HF7-1 SP13-12'
Collection Date: 1/16/2020
Received Date: 2/15/2020 12:35:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **CLP**
Diesel Range Organics (DRO)	ND	10	H	mg/Kg	1	2/19/2020 4:20:12 PM
Motor Oil Range Organics (MRO)	ND	50	H	mg/Kg	1	2/19/2020 4:20:12 PM
Surr: DNOP	108	55.1-146	H	%Rec	1	2/19/2020 4:20:12 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	ND	4.7	H	mg/Kg	1	2/19/2020 10:15:32 PM
Surr: BFB	82.5	66.6-105	H	%Rec	1	2/19/2020 10:15:32 PM
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Benzene	ND	0.024	H	mg/Kg	1	2/19/2020 10:15:32 PM
Toluene	ND	0.047	H	mg/Kg	1	2/19/2020 10:15:32 PM
Ethylbenzene	ND	0.047	H	mg/Kg	1	2/19/2020 10:15:32 PM
Xylenes, Total	ND	0.094	H	mg/Kg	1	2/19/2020 10:15:32 PM
Surr: 4-Bromofluorobenzene	91.4	80-120	H	%Rec	1	2/19/2020 10:15:32 PM
EPA METHOD 300.0: ANIONS						Analyst: **CAS**
Chloride	440	60	H	mg/Kg	20	2/18/2020 9:56:45 PM

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 **2002627**
Date Reported: **2/21/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon Oil Company
Project: HF 7 Fed Com 1
Lab ID: 2002627-014 **Matrix:** SOIL

Client Sample ID: HF7-1 SP14-12'
Collection Date: 1/16/2020
Received Date: 2/15/2020 12:35:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **CLP**
Diesel Range Organics (DRO)	ND	9.7	H	mg/Kg	1	2/19/2020 4:29:30 PM
Motor Oil Range Organics (MRO)	ND	49	H	mg/Kg	1	2/19/2020 4:29:30 PM
Surr: DNOP	91.3	55.1-146	H	%Rec	1	2/19/2020 4:29:30 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	ND	4.8	H	mg/Kg	1	2/19/2020 10:39:10 PM
Surr: BFB	82.5	66.6-105	H	%Rec	1	2/19/2020 10:39:10 PM
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Benzene	ND	0.024	H	mg/Kg	1	2/19/2020 10:39:10 PM
Toluene	ND	0.048	H	mg/Kg	1	2/19/2020 10:39:10 PM
Ethylbenzene	ND	0.048	H	mg/Kg	1	2/19/2020 10:39:10 PM
Xylenes, Total	ND	0.095	H	mg/Kg	1	2/19/2020 10:39:10 PM
Surr: 4-Bromofluorobenzene	90.1	80-120	H	%Rec	1	2/19/2020 10:39:10 PM
EPA METHOD 300.0: ANIONS						Analyst: **MRA**
Chloride	430	60	H	mg/Kg	20	2/20/2020 10:20:57 AM

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 **2002627**
Date Reported: **2/21/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon Oil Company
Project: HF 7 Fed Com 1
Lab ID: 2002627-015 **Matrix:** SOIL

Client Sample ID: HF7-1 SP15-12'
Collection Date: 1/16/2020
Received Date: 2/15/2020 12:35:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **CLP**
Diesel Range Organics (DRO)	ND	9.6	H	mg/Kg	1	2/19/2020 6:20:10 PM
Motor Oil Range Organics (MRO)	ND	48	H	mg/Kg	1	2/19/2020 6:20:10 PM
Surr: DNOP	97.6	55.1-146	H	%Rec	1	2/19/2020 6:20:10 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	ND	4.7	H	mg/Kg	1	2/19/2020 11:02:42 PM
Surr: BFB	84.9	66.6-105	H	%Rec	1	2/19/2020 11:02:42 PM
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Benzene	ND	0.023	H	mg/Kg	1	2/19/2020 11:02:42 PM
Toluene	ND	0.047	H	mg/Kg	1	2/19/2020 11:02:42 PM
Ethylbenzene	ND	0.047	H	mg/Kg	1	2/19/2020 11:02:42 PM
Xylenes, Total	ND	0.093	H	mg/Kg	1	2/19/2020 11:02:42 PM
Surr: 4-Bromofluorobenzene	93.1	80-120	H	%Rec	1	2/19/2020 11:02:42 PM
EPA METHOD 300.0: ANIONS						Analyst: **MRA**
Chloride	350	60	H	mg/Kg	20	2/20/2020 10:58:11 AM

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 **2002627**
Date Reported: **2/21/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon Oil Company
Project: HF 7 Fed Com 1
Lab ID: 2002627-016 **Matrix:** SOIL

Client Sample ID: HF7-1 SP16-12'
Collection Date: 1/16/2020
Received Date: 2/15/2020 12:35:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **CLP**
Diesel Range Organics (DRO)	ND	9.6	H	mg/Kg	1	2/19/2020 6:47:37 PM
Motor Oil Range Organics (MRO)	ND	48	H	mg/Kg	1	2/19/2020 6:47:37 PM
Surr: DNOP	97.8	55.1-146	H	%Rec	1	2/19/2020 6:47:37 PM
EPA METHOD 300.0: ANIONS						Analyst: **MRA**
Chloride	430	60	H	mg/Kg	20	2/20/2020 11:35:25 AM
EPA METHOD 8260B: VOLATILES SHORT LIST						Analyst: **JMR**
Benzene	ND	0.024	H	mg/Kg	1	2/19/2020 4:02:46 PM
Toluene	ND	0.048	H	mg/Kg	1	2/19/2020 4:02:46 PM
Ethylbenzene	ND	0.048	H	mg/Kg	1	2/19/2020 4:02:46 PM
Xylenes, Total	ND	0.096	H	mg/Kg	1	2/19/2020 4:02:46 PM
Surr: 1,2-Dichloroethane-d4	93.1	70-130	H	%Rec	1	2/19/2020 4:02:46 PM
Surr: 4-Bromofluorobenzene	95.1	70-130	H	%Rec	1	2/19/2020 4:02:46 PM
Surr: Dibromofluoromethane	93.4	70-130	H	%Rec	1	2/19/2020 4:02:46 PM
Surr: Toluene-d8	100	70-130	H	%Rec	1	2/19/2020 4:02:46 PM
EPA METHOD 8015D MOD: GASOLINE RANGE						Analyst: **JMR**
Gasoline Range Organics (GRO)	ND	4.8	H	mg/Kg	1	2/19/2020 4:02:46 PM
Surr: BFB	92.1	70-130	H	%Rec	1	2/19/2020 4:02:46 PM

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 **2002627**
Date Reported: **2/21/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon Oil Company
Project: HF 7 Fed Com 1
Lab ID: 2002627-017 **Matrix:** SOIL

Client Sample ID: HF7-1 SP17-10'
Collection Date: 1/16/2020
Received Date: 2/15/2020 12:35:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **CLP**
Diesel Range Organics (DRO)	ND	9.4	H	mg/Kg	1	2/19/2020 6:56:46 PM
Motor Oil Range Organics (MRO)	ND	47	H	mg/Kg	1	2/19/2020 6:56:46 PM
Surr: DNOP	99.9	55.1-146	H	%Rec	1	2/19/2020 6:56:46 PM
EPA METHOD 300.0: ANIONS						Analyst: **MRA**
Chloride	400	60	H	mg/Kg	20	2/20/2020 11:47:49 AM
EPA METHOD 8260B: VOLATILES SHORT LIST						Analyst: **JMR**
Benzene	ND	0.024	H	mg/Kg	1	2/19/2020 5:28:24 PM
Toluene	ND	0.049	H	mg/Kg	1	2/19/2020 5:28:24 PM
Ethylbenzene	ND	0.049	H	mg/Kg	1	2/19/2020 5:28:24 PM
Xylenes, Total	ND	0.098	H	mg/Kg	1	2/19/2020 5:28:24 PM
Surr: 1,2-Dichloroethane-d4	98.7	70-130	H	%Rec	1	2/19/2020 5:28:24 PM
Surr: 4-Bromofluorobenzene	93.3	70-130	H	%Rec	1	2/19/2020 5:28:24 PM
Surr: Dibromofluoromethane	96.6	70-130	H	%Rec	1	2/19/2020 5:28:24 PM
Surr: Toluene-d8	98.1	70-130	H	%Rec	1	2/19/2020 5:28:24 PM
EPA METHOD 8015D MOD: GASOLINE RANGE						Analyst: **JMR**
Gasoline Range Organics (GRO)	ND	4.9	H	mg/Kg	1	2/19/2020 5:28:24 PM
Surr: BFB	91.8	70-130	H	%Rec	1	2/19/2020 5:28:24 PM

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 **2002627**
Date Reported: **2/21/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon Oil Company
Project: HF 7 Fed Com 1
Lab ID: 2002627-018 **Matrix:** SOIL

Client Sample ID: HF7-1 SP18-10'
Collection Date: 1/16/2020
Received Date: 2/15/2020 12:35:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **CLP**
Diesel Range Organics (DRO)	ND	9.7	H	mg/Kg	1	2/19/2020 7:05:53 PM
Motor Oil Range Organics (MRO)	ND	49	H	mg/Kg	1	2/19/2020 7:05:53 PM
Surr: DNOP	89.3	55.1-146	H	%Rec	1	2/19/2020 7:05:53 PM
EPA METHOD 300.0: ANIONS						Analyst: **MRA**
Chloride	450	60	H	mg/Kg	20	2/20/2020 12:25:04 PM
EPA METHOD 8260B: VOLATILES SHORT LIST						Analyst: **JMR**
Benzene	ND	0.025	H	mg/Kg	1	2/19/2020 6:54:01 PM
Toluene	ND	0.049	H	mg/Kg	1	2/19/2020 6:54:01 PM
Ethylbenzene	ND	0.049	H	mg/Kg	1	2/19/2020 6:54:01 PM
Xylenes, Total	ND	0.098	H	mg/Kg	1	2/19/2020 6:54:01 PM
Surr: 1,2-Dichloroethane-d4	89.8	70-130	H	%Rec	1	2/19/2020 6:54:01 PM
Surr: 4-Bromofluorobenzene	96.3	70-130	H	%Rec	1	2/19/2020 6:54:01 PM
Surr: Dibromofluoromethane	91.6	70-130	H	%Rec	1	2/19/2020 6:54:01 PM
Surr: Toluene-d8	99.3	70-130	H	%Rec	1	2/19/2020 6:54:01 PM
EPA METHOD 8015D MOD: GASOLINE RANGE						Analyst: **JMR**
Gasoline Range Organics (GRO)	ND	4.9	H	mg/Kg	1	2/19/2020 6:54:01 PM
Surr: BFB	93.2	70-130	H	%Rec	1	2/19/2020 6:54:01 PM

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 **2002627**
Date Reported: **2/21/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon Oil Company
Project: HF 7 Fed Com 1
Lab ID: 2002627-019 **Matrix:** SOIL

Client Sample ID: HF7-1 SP19-8'
Collection Date: 1/18/2020
Received Date: 2/15/2020 12:35:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **CLP**
Diesel Range Organics (DRO)	ND	9.8	H	mg/Kg	1	2/19/2020 7:14:59 PM
Motor Oil Range Organics (MRO)	ND	49	H	mg/Kg	1	2/19/2020 7:14:59 PM
Surr: DNOP	90.7	55.1-146	H	%Rec	1	2/19/2020 7:14:59 PM
EPA METHOD 300.0: ANIONS						Analyst: **MRA**
Chloride	480	60	H	mg/Kg	20	2/20/2020 12:37:29 PM
EPA METHOD 8260B: VOLATILES SHORT LIST						Analyst: **JMR**
Benzene	ND	0.025	H	mg/Kg	1	2/19/2020 7:22:28 PM
Toluene	ND	0.049	H	mg/Kg	1	2/19/2020 7:22:28 PM
Ethylbenzene	ND	0.049	H	mg/Kg	1	2/19/2020 7:22:28 PM
Xylenes, Total	ND	0.098	H	mg/Kg	1	2/19/2020 7:22:28 PM
Surr: 1,2-Dichloroethane-d4	93.2	70-130	H	%Rec	1	2/19/2020 7:22:28 PM
Surr: 4-Bromofluorobenzene	97.7	70-130	H	%Rec	1	2/19/2020 7:22:28 PM
Surr: Dibromofluoromethane	96.3	70-130	H	%Rec	1	2/19/2020 7:22:28 PM
Surr: Toluene-d8	101	70-130	H	%Rec	1	2/19/2020 7:22:28 PM
EPA METHOD 8015D MOD: GASOLINE RANGE						Analyst: **JMR**
Gasoline Range Organics (GRO)	ND	4.9	H	mg/Kg	1	2/19/2020 7:22:28 PM
Surr: BFB	95.0	70-130	H	%Rec	1	2/19/2020 7:22:28 PM

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 **2002627**
Date Reported: **2/21/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon Oil Company
Project: HF 7 Fed Com 1
Lab ID: 2002627-020 **Matrix:** SOIL

Client Sample ID: HF7-1 SP20-6'
Collection Date: 1/18/2020
Received Date: 2/15/2020 12:35:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **CLP**
Diesel Range Organics (DRO)	ND	9.6	H	mg/Kg	1	2/19/2020 7:24:06 PM
Motor Oil Range Organics (MRO)	ND	48	H	mg/Kg	1	2/19/2020 7:24:06 PM
Surr: DNOP	91.1	55.1-146	H	%Rec	1	2/19/2020 7:24:06 PM
EPA METHOD 300.0: ANIONS						Analyst: **MRA**
Chloride	510	60	H	mg/Kg	20	2/20/2020 12:49:54 PM
EPA METHOD 8260B: VOLATILES SHORT LIST						Analyst: **JMR**
Benzene	ND	0.025	H	mg/Kg	1	2/19/2020 7:50:58 PM
Toluene	ND	0.050	H	mg/Kg	1	2/19/2020 7:50:58 PM
Ethylbenzene	ND	0.050	H	mg/Kg	1	2/19/2020 7:50:58 PM
Xylenes, Total	ND	0.099	H	mg/Kg	1	2/19/2020 7:50:58 PM
Surr: 1,2-Dichloroethane-d4	91.9	70-130	H	%Rec	1	2/19/2020 7:50:58 PM
Surr: 4-Bromofluorobenzene	97.8	70-130	H	%Rec	1	2/19/2020 7:50:58 PM
Surr: Dibromofluoromethane	94.8	70-130	H	%Rec	1	2/19/2020 7:50:58 PM
Surr: Toluene-d8	98.0	70-130	H	%Rec	1	2/19/2020 7:50:58 PM
EPA METHOD 8015D MOD: GASOLINE RANGE						Analyst: **JMR**
Gasoline Range Organics (GRO)	ND	5.0	H	mg/Kg	1	2/19/2020 7:50:58 PM
Surr: BFB	93.7	70-130	H	%Rec	1	2/19/2020 7:50:58 PM

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 **2002627**
Date Reported: **2/21/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon Oil Company
Project: HF 7 Fed Com 1
Lab ID: 2002627-021 **Matrix:** SOIL

Client Sample ID: HF7-1 SP21-6'
Collection Date: 1/18/2020
Received Date: 2/15/2020 12:35:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**
Diesel Range Organics (DRO)	ND	9.6	H	mg/Kg	1	2/20/2020 10:34:10 AM
Motor Oil Range Organics (MRO)	ND	48	H	mg/Kg	1	2/20/2020 10:34:10 AM
Surr: DNOP	59.3	55.1-146	H	%Rec	1	2/20/2020 10:34:10 AM
EPA METHOD 300.0: ANIONS						Analyst: **MRA**
Chloride	740	60	H	mg/Kg	20	2/20/2020 1:02:19 PM
EPA METHOD 8260B: VOLATILES SHORT LIST						Analyst: **JMR**
Benzene	ND	0.024	H	mg/Kg	1	2/19/2020 8:19:34 PM
Toluene	ND	0.048	H	mg/Kg	1	2/19/2020 8:19:34 PM
Ethylbenzene	ND	0.048	H	mg/Kg	1	2/19/2020 8:19:34 PM
Xylenes, Total	ND	0.096	H	mg/Kg	1	2/19/2020 8:19:34 PM
Surr: 1,2-Dichloroethane-d4	92.6	70-130	H	%Rec	1	2/19/2020 8:19:34 PM
Surr: 4-Bromofluorobenzene	94.1	70-130	H	%Rec	1	2/19/2020 8:19:34 PM
Surr: Dibromofluoromethane	93.2	70-130	H	%Rec	1	2/19/2020 8:19:34 PM
Surr: Toluene-d8	97.4	70-130	H	%Rec	1	2/19/2020 8:19:34 PM
EPA METHOD 8015D MOD: GASOLINE RANGE						Analyst: **JMR**
Gasoline Range Organics (GRO)	ND	4.8	H	mg/Kg	1	2/19/2020 8:19:34 PM
Surr: BFB	92.9	70-130	H	%Rec	1	2/19/2020 8:19:34 PM

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 **2002627**
Date Reported: **2/21/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon Oil Company
Client Sample ID: HF7-1 SP22 Wall
Project: HF 7 Fed Com 1
Collection Date: 1/18/2020
Lab ID: 2002627-022 **Matrix:** SOIL **Received Date:** 2/15/2020 12:35:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **CLP**
Diesel Range Organics (DRO)	ND	9.7	H	mg/Kg	1	2/19/2020 7:42:18 PM
Motor Oil Range Organics (MRO)	ND	49	H	mg/Kg	1	2/19/2020 7:42:18 PM
Surr: DNOP	68.2	55.1-146	H	%Rec	1	2/19/2020 7:42:18 PM
EPA METHOD 300.0: ANIONS						Analyst: **MRA**
Chloride	270	60	H	mg/Kg	20	2/20/2020 1:14:43 PM
EPA METHOD 8260B: VOLATILES SHORT LIST						Analyst: **JMR**
Benzene	ND	0.025	H	mg/Kg	1	2/19/2020 8:48:07 PM
Toluene	ND	0.050	H	mg/Kg	1	2/19/2020 8:48:07 PM
Ethylbenzene	ND	0.050	H	mg/Kg	1	2/19/2020 8:48:07 PM
Xylenes, Total	ND	0.10	H	mg/Kg	1	2/19/2020 8:48:07 PM
Surr: 1,2-Dichloroethane-d4	88.8	70-130	H	%Rec	1	2/19/2020 8:48:07 PM
Surr: 4-Bromofluorobenzene	95.8	70-130	H	%Rec	1	2/19/2020 8:48:07 PM
Surr: Dibromofluoromethane	93.7	70-130	H	%Rec	1	2/19/2020 8:48:07 PM
Surr: Toluene-d8	99.3	70-130	H	%Rec	1	2/19/2020 8:48:07 PM
EPA METHOD 8015D MOD: GASOLINE RANGE						Analyst: **JMR**
Gasoline Range Organics (GRO)	ND	5.0	H	mg/Kg	1	2/19/2020 8:48:07 PM
Surr: BFB	94.0	70-130	H	%Rec	1	2/19/2020 8:48:07 PM

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 **2002627**
Date Reported: **2/21/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon Oil Company
Client Sample ID: HF7-1 SP23 Wall
Project: HF 7 Fed Com 1
Collection Date: 1/19/2020
Lab ID: 2002627-023 **Matrix:** SOIL **Received Date:** 2/15/2020 12:35:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **CLP**
Diesel Range Organics (DRO)	ND	9.5	H	mg/Kg	1	2/19/2020 7:51:24 PM
Motor Oil Range Organics (MRO)	ND	48	H	mg/Kg	1	2/19/2020 7:51:24 PM
Surr: DNOP	117	55.1-146	H	%Rec	1	2/19/2020 7:51:24 PM
EPA METHOD 300.0: ANIONS						Analyst: **MRA**
Chloride	ND	60	H	mg/Kg	20	2/20/2020 1:27:07 PM
EPA METHOD 8260B: VOLATILES SHORT LIST						Analyst: **JMR**
Benzene	ND	0.024	H	mg/Kg	1	2/19/2020 9:16:37 PM
Toluene	ND	0.048	H	mg/Kg	1	2/19/2020 9:16:37 PM
Ethylbenzene	ND	0.048	H	mg/Kg	1	2/19/2020 9:16:37 PM
Xylenes, Total	ND	0.095	H	mg/Kg	1	2/19/2020 9:16:37 PM
Surr: 1,2-Dichloroethane-d4	89.7	70-130	H	%Rec	1	2/19/2020 9:16:37 PM
Surr: 4-Bromofluorobenzene	94.7	70-130	H	%Rec	1	2/19/2020 9:16:37 PM
Surr: Dibromofluoromethane	95.2	70-130	H	%Rec	1	2/19/2020 9:16:37 PM
Surr: Toluene-d8	99.5	70-130	H	%Rec	1	2/19/2020 9:16:37 PM
EPA METHOD 8015D MOD: GASOLINE RANGE						Analyst: **JMR**
Gasoline Range Organics (GRO)	ND	4.8	H	mg/Kg	1	2/19/2020 9:16:37 PM
Surr: BFB	91.5	70-130	H	%Rec	1	2/19/2020 9:16:37 PM

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 **2002627**
Date Reported: **2/21/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon Oil Company
Project: HF 7 Fed Com 1
Lab ID: 2002627-024 **Matrix:** SOIL

Client Sample ID: HF7-1 SP24 Wall
Collection Date: 1/19/2020
Received Date: 2/15/2020 12:35:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **CLP**
Diesel Range Organics (DRO)	ND	9.7	H	mg/Kg	1	2/19/2020 8:00:28 PM
Motor Oil Range Organics (MRO)	ND	49	H	mg/Kg	1	2/19/2020 8:00:28 PM
Surr: DNOP	86.5	55.1-146	H	%Rec	1	2/19/2020 8:00:28 PM
EPA METHOD 300.0: ANIONS						Analyst: **MRA**
Chloride	240	60	H	mg/Kg	20	2/20/2020 1:39:32 PM
EPA METHOD 8260B: VOLATILES SHORT LIST						Analyst: **JMR**
Benzene	ND	0.024	H	mg/Kg	1	2/19/2020 9:45:00 PM
Toluene	ND	0.048	H	mg/Kg	1	2/19/2020 9:45:00 PM
Ethylbenzene	ND	0.048	H	mg/Kg	1	2/19/2020 9:45:00 PM
Xylenes, Total	ND	0.096	H	mg/Kg	1	2/19/2020 9:45:00 PM
Surr: 1,2-Dichloroethane-d4	90.4	70-130	H	%Rec	1	2/19/2020 9:45:00 PM
Surr: 4-Bromofluorobenzene	94.5	70-130	H	%Rec	1	2/19/2020 9:45:00 PM
Surr: Dibromofluoromethane	93.2	70-130	H	%Rec	1	2/19/2020 9:45:00 PM
Surr: Toluene-d8	100	70-130	H	%Rec	1	2/19/2020 9:45:00 PM
EPA METHOD 8015D MOD: GASOLINE RANGE						Analyst: **JMR**
Gasoline Range Organics (GRO)	ND	4.8	H	mg/Kg	1	2/19/2020 9:45:00 PM
Surr: BFB	92.0	70-130	H	%Rec	1	2/19/2020 9:45:00 PM

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 **2002627**
Date Reported: **2/21/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon Oil Company
Project: HF 7 Fed Com 1
Lab ID: 2002627-025 **Matrix:** SOIL

Client Sample ID: HF7-1 SP25 Wall
Collection Date: 1/19/2020
Received Date: 2/15/2020 12:35:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **CLP**
Diesel Range Organics (DRO)	ND	9.9	H	mg/Kg	1	2/19/2020 8:09:33 PM
Motor Oil Range Organics (MRO)	ND	49	H	mg/Kg	1	2/19/2020 8:09:33 PM
Surr: DNOP	82.3	55.1-146	H	%Rec	1	2/19/2020 8:09:33 PM
EPA METHOD 300.0: ANIONS						Analyst: **MRA**
Chloride	ND	60	H	mg/Kg	20	2/20/2020 1:51:56 PM
EPA METHOD 8260B: VOLATILES SHORT LIST						Analyst: **JMR**
Benzene	ND	0.024	H	mg/Kg	1	2/19/2020 10:13:35 PM
Toluene	ND	0.048	H	mg/Kg	1	2/19/2020 10:13:35 PM
Ethylbenzene	ND	0.048	H	mg/Kg	1	2/19/2020 10:13:35 PM
Xylenes, Total	ND	0.097	H	mg/Kg	1	2/19/2020 10:13:35 PM
Surr: 1,2-Dichloroethane-d4	90.3	70-130	H	%Rec	1	2/19/2020 10:13:35 PM
Surr: 4-Bromofluorobenzene	96.8	70-130	H	%Rec	1	2/19/2020 10:13:35 PM
Surr: Dibromofluoromethane	92.2	70-130	H	%Rec	1	2/19/2020 10:13:35 PM
Surr: Toluene-d8	103	70-130	H	%Rec	1	2/19/2020 10:13:35 PM
EPA METHOD 8015D MOD: GASOLINE RANGE						Analyst: **JMR**
Gasoline Range Organics (GRO)	ND	4.8	H	mg/Kg	1	2/19/2020 10:13:35 PM
Surr: BFB	94.8	70-130	H	%Rec	1	2/19/2020 10:13:35 PM

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 **2002627**
Date Reported: **2/21/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon Oil Company
Client Sample ID: HF7-1 SP26 Wall
Project: HF 7 Fed Com 1
Collection Date: 1/19/2020
Lab ID: 2002627-026 **Matrix:** SOIL **Received Date:** 2/15/2020 12:35:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**
Diesel Range Organics (DRO)	ND	8.8	H	mg/Kg	1	2/20/2020 10:57:42 AM
Motor Oil Range Organics (MRO)	ND	44	H	mg/Kg	1	2/20/2020 10:57:42 AM
Surr: DNOP	69.2	55.1-146	H	%Rec	1	2/20/2020 10:57:42 AM
EPA METHOD 300.0: ANIONS						Analyst: **MRA**
Chloride	720	60	H	mg/Kg	20	2/20/2020 2:04:21 PM
EPA METHOD 8260B: VOLATILES SHORT LIST						Analyst: **JMR**
Benzene	ND	0.023	H	mg/Kg	1	2/19/2020 10:42:10 PM
Toluene	ND	0.046	H	mg/Kg	1	2/19/2020 10:42:10 PM
Ethylbenzene	ND	0.046	H	mg/Kg	1	2/19/2020 10:42:10 PM
Xylenes, Total	ND	0.092	H	mg/Kg	1	2/19/2020 10:42:10 PM
Surr: 1,2-Dichloroethane-d4	86.1	70-130	H	%Rec	1	2/19/2020 10:42:10 PM
Surr: 4-Bromofluorobenzene	94.6	70-130	H	%Rec	1	2/19/2020 10:42:10 PM
Surr: Dibromofluoromethane	94.7	70-130	H	%Rec	1	2/19/2020 10:42:10 PM
Surr: Toluene-d8	100	70-130	H	%Rec	1	2/19/2020 10:42:10 PM
EPA METHOD 8015D MOD: GASOLINE RANGE						Analyst: **JMR**
Gasoline Range Organics (GRO)	ND	4.6	H	mg/Kg	1	2/19/2020 10:42:10 PM
Surr: BFB	92.0	70-130	H	%Rec	1	2/19/2020 10:42:10 PM

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 **2002627**
Date Reported: **2/21/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon Oil Company
Client Sample ID: HF7-1 SP27 Wall
Project: HF 7 Fed Com 1
Collection Date: 1/19/2020
Lab ID: 2002627-027 **Matrix:** SOIL **Received Date:** 2/15/2020 12:35:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**
Diesel Range Organics (DRO)	ND	9.3	H	mg/Kg	1	2/20/2020 11:21:23 AM
Motor Oil Range Organics (MRO)	ND	46	H	mg/Kg	1	2/20/2020 11:21:23 AM
Surr: DNOP	69.3	55.1-146	H	%Rec	1	2/20/2020 11:21:23 AM
EPA METHOD 300.0: ANIONS						Analyst: **MRA**
Chloride	750	60	H	mg/Kg	20	2/20/2020 2:16:45 PM
EPA METHOD 8260B: VOLATILES SHORT LIST						Analyst: **JMR**
Benzene	ND	0.024	H	mg/Kg	1	2/19/2020 11:10:45 PM
Toluene	ND	0.047	H	mg/Kg	1	2/19/2020 11:10:45 PM
Ethylbenzene	ND	0.047	H	mg/Kg	1	2/19/2020 11:10:45 PM
Xylenes, Total	ND	0.094	H	mg/Kg	1	2/19/2020 11:10:45 PM
Surr: 1,2-Dichloroethane-d4	89.9	70-130	H	%Rec	1	2/19/2020 11:10:45 PM
Surr: 4-Bromofluorobenzene	92.9	70-130	H	%Rec	1	2/19/2020 11:10:45 PM
Surr: Dibromofluoromethane	95.0	70-130	H	%Rec	1	2/19/2020 11:10:45 PM
Surr: Toluene-d8	98.5	70-130	H	%Rec	1	2/19/2020 11:10:45 PM
EPA METHOD 8015D MOD: GASOLINE RANGE						Analyst: **JMR**
Gasoline Range Organics (GRO)	ND	4.7	H	mg/Kg	1	2/19/2020 11:10:45 PM
Surr: BFB	92.2	70-130	H	%Rec	1	2/19/2020 11:10:45 PM

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 **2002627**
Date Reported: **2/21/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon Oil Company
Client Sample ID: HF7-1 SP28 Wall
Project: HF 7 Fed Com 1
Collection Date: 1/19/2020
Lab ID: 2002627-028 **Matrix:** SOIL **Received Date:** 2/15/2020 12:35:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**
Diesel Range Organics (DRO)	ND	9.6	H	mg/Kg	1	2/20/2020 11:44:55 AM
Motor Oil Range Organics (MRO)	ND	48	H	mg/Kg	1	2/20/2020 11:44:55 AM
Surr: DNOP	81.7	55.1-146	H	%Rec	1	2/20/2020 11:44:55 AM
EPA METHOD 300.0: ANIONS						Analyst: **MRA**
Chloride	730	60	H	mg/Kg	20	2/20/2020 2:53:58 PM
EPA METHOD 8260B: VOLATILES SHORT LIST						Analyst: **JMR**
Benzene	ND	0.023	H	mg/Kg	1	2/20/2020 2:52:10 PM
Toluene	ND	0.047	H	mg/Kg	1	2/20/2020 2:52:10 PM
Ethylbenzene	ND	0.047	H	mg/Kg	1	2/20/2020 2:52:10 PM
Xylenes, Total	ND	0.093	H	mg/Kg	1	2/20/2020 2:52:10 PM
Surr: 1,2-Dichloroethane-d4	88.8	70-130	H	%Rec	1	2/20/2020 2:52:10 PM
Surr: 4-Bromofluorobenzene	94.3	70-130	H	%Rec	1	2/20/2020 2:52:10 PM
Surr: Dibromofluoromethane	91.9	70-130	H	%Rec	1	2/20/2020 2:52:10 PM
Surr: Toluene-d8	99.3	70-130	H	%Rec	1	2/20/2020 2:52:10 PM
EPA METHOD 8015D MOD: GASOLINE RANGE						Analyst: **JMR**
Gasoline Range Organics (GRO)	ND	4.7	H	mg/Kg	1	2/20/2020 2:01:54 AM
Surr: BFB	93.5	70-130	H	%Rec	1	2/20/2020 2:01:54 AM

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 **2002627**
Date Reported: **2/21/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon Oil Company
Client Sample ID: HF7-1 SP29 Wall
Project: HF 7 Fed Com 1
Collection Date: 1/19/2020
Lab ID: 2002627-029 **Matrix:** SOIL **Received Date:** 2/15/2020 12:35:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**
Diesel Range Organics (DRO)	ND	9.7	H	mg/Kg	1	2/20/2020 12:08:27 PM
Motor Oil Range Organics (MRO)	ND	49	H	mg/Kg	1	2/20/2020 12:08:27 PM
Surr: DNOP	74.1	55.1-146	H	%Rec	1	2/20/2020 12:08:27 PM
EPA METHOD 300.0: ANIONS						Analyst: **MRA**
Chloride	670	60	H	mg/Kg	20	2/20/2020 3:06:23 PM
EPA METHOD 8260B: VOLATILES SHORT LIST						Analyst: **JMR**
Benzene	ND	0.024	H	mg/Kg	1	2/20/2020 3:20:41 PM
Toluene	ND	0.049	H	mg/Kg	1	2/20/2020 3:20:41 PM
Ethylbenzene	ND	0.049	H	mg/Kg	1	2/20/2020 3:20:41 PM
Xylenes, Total	ND	0.097	H	mg/Kg	1	2/20/2020 3:20:41 PM
Surr: 1,2-Dichloroethane-d4	91.8	70-130	H	%Rec	1	2/20/2020 3:20:41 PM
Surr: 4-Bromofluorobenzene	96.1	70-130	H	%Rec	1	2/20/2020 3:20:41 PM
Surr: Dibromofluoromethane	96.1	70-130	H	%Rec	1	2/20/2020 3:20:41 PM
Surr: Toluene-d8	98.7	70-130	H	%Rec	1	2/20/2020 3:20:41 PM
EPA METHOD 8015D MOD: GASOLINE RANGE						Analyst: **JMR**
Gasoline Range Organics (GRO)	ND	4.9	H	mg/Kg	1	2/20/2020 2:30:20 AM
Surr: BFB	96.8	70-130	H	%Rec	1	2/20/2020 2:30:20 AM

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 **2002627**
Date Reported: **2/21/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon Oil Company
Client Sample ID: HF7-1 SP30 Wall
Project: HF 7 Fed Com 1
Collection Date: 1/19/2020
Lab ID: 2002627-030 **Matrix:** SOIL
Received Date: 2/15/2020 12:35:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**
Diesel Range Organics (DRO)	ND	10	H	mg/Kg	1	2/20/2020 12:32:04 PM
Motor Oil Range Organics (MRO)	ND	50	H	mg/Kg	1	2/20/2020 12:32:04 PM
Surr: DNOP	83.6	55.1-146	H	%Rec	1	2/20/2020 12:32:04 PM
EPA METHOD 300.0: ANIONS						Analyst: **MRA**
Chloride	830	60	H	mg/Kg	20	2/20/2020 3:18:47 PM
EPA METHOD 8260B: VOLATILES SHORT LIST						Analyst: **JMR**
Benzene	ND	0.023	H	mg/Kg	1	2/20/2020 3:49:19 PM
Toluene	ND	0.047	H	mg/Kg	1	2/20/2020 3:49:19 PM
Ethylbenzene	ND	0.047	H	mg/Kg	1	2/20/2020 3:49:19 PM
Xylenes, Total	ND	0.094	H	mg/Kg	1	2/20/2020 3:49:19 PM
Surr: 1,2-Dichloroethane-d4	87.4	70-130	H	%Rec	1	2/20/2020 3:49:19 PM
Surr: 4-Bromofluorobenzene	91.9	70-130	H	%Rec	1	2/20/2020 3:49:19 PM
Surr: Dibromofluoromethane	95.4	70-130	H	%Rec	1	2/20/2020 3:49:19 PM
Surr: Toluene-d8	100	70-130	H	%Rec	1	2/20/2020 3:49:19 PM
EPA METHOD 8015D MOD: GASOLINE RANGE						Analyst: **JMR**
Gasoline Range Organics (GRO)	ND	4.7	H	mg/Kg	1	2/20/2020 2:58:49 AM
Surr: BFB	93.2	70-130	H	%Rec	1	2/20/2020 2:58:49 AM

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 **2002627**
Date Reported: **2/21/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon Oil Company
Client Sample ID: HF7-1 SP31 Wall
Project: HF 7 Fed Com 1
Collection Date: 1/19/2020
Lab ID: 2002627-031 **Matrix:** SOIL
Received Date: 2/15/2020 12:35:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**
Diesel Range Organics (DRO)	ND	9.8	H	mg/Kg	1	2/20/2020 12:55:37 PM
Motor Oil Range Organics (MRO)	ND	49	H	mg/Kg	1	2/20/2020 12:55:37 PM
Surr: DNOP	68.7	55.1-146	H	%Rec	1	2/20/2020 12:55:37 PM
EPA METHOD 300.0: ANIONS						Analyst: **MRA**
Chloride	730	60	H	mg/Kg	20	2/20/2020 3:31:12 PM
EPA METHOD 8260B: VOLATILES SHORT LIST						Analyst: **JMR**
Benzene	ND	0.025	H	mg/Kg	1	2/20/2020 4:17:41 PM
Toluene	ND	0.049	H	mg/Kg	1	2/20/2020 4:17:41 PM
Ethylbenzene	ND	0.049	H	mg/Kg	1	2/20/2020 4:17:41 PM
Xylenes, Total	ND	0.098	H	mg/Kg	1	2/20/2020 4:17:41 PM
Surr: 1,2-Dichloroethane-d4	93.5	70-130	H	%Rec	1	2/20/2020 4:17:41 PM
Surr: 4-Bromofluorobenzene	96.2	70-130	H	%Rec	1	2/20/2020 4:17:41 PM
Surr: Dibromofluoromethane	94.1	70-130	H	%Rec	1	2/20/2020 4:17:41 PM
Surr: Toluene-d8	101	70-130	H	%Rec	1	2/20/2020 4:17:41 PM
EPA METHOD 8015D MOD: GASOLINE RANGE						Analyst: **JMR**
Gasoline Range Organics (GRO)	ND	4.9	H	mg/Kg	1	2/20/2020 3:27:14 AM
Surr: BFB	91.9	70-130	H	%Rec	1	2/20/2020 3:27:14 AM

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2002627**

21-Feb-20

Client: Marathon Oil Company
Project: HF 7 Fed Com 1

Sample ID: **MB-50516**	SampType: **mblk**	TestCode: **EPA Method 300.0: Anions**							
Client ID: **PBS**	Batch ID: **50516**	RunNo: **66623**							
Prep Date: **2/18/2020**	Analysis Date: **2/18/2020**	SeqNo: **2289871**	Units: **mg/Kg**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	1.5								

Sample ID: **LCS-50516**	SampType: **lcs**	TestCode: **EPA Method 300.0: Anions**							
Client ID: **LCSS**	Batch ID: **50516**	RunNo: **66623**							
Prep Date: **2/18/2020**	Analysis Date: **2/18/2020**	SeqNo: **2289872**	Units: **mg/Kg**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	14	1.5	15.00	0	92.5	90	110			

Sample ID: **LCS-50552**	SampType: **lcs**	TestCode: **EPA Method 300.0: Anions**							
Client ID: **LCSS**	Batch ID: **50552**	RunNo: **66700**							
Prep Date: **2/20/2020**	Analysis Date: **2/20/2020**	SeqNo: **2292980**	Units: **mg/Kg**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	14	1.5	15.00	0	92.7	90	110			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2002627**

21-Feb-20

Client: Marathon Oil Company
Project: HF 7 Fed Com 1

Sample ID: **MB-50531**	SampType: **MBLK**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**							
Client ID: **PBS**	Batch ID: **50531**	RunNo: **66632**							
Prep Date: **2/19/2020**	Analysis Date: **2/19/2020**	SeqNo: **2289788**	Units: **%Rec**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP	8.8		10.00		88.0	55.1	146			

Sample ID: **LCS-50531**	SampType: **LCS**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**							
Client ID: **LCSS**	Batch ID: **50531**	RunNo: **66632**							
Prep Date: **2/19/2020**	Analysis Date: **2/19/2020**	SeqNo: **2289789**	Units: **%Rec**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP	4.4		5.000		88.9	55.1	146			

Sample ID: **MB-50497**	SampType: **MBLK**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**							
Client ID: **PBS**	Batch ID: **50497**	RunNo: **66632**							
Prep Date: **2/18/2020**	Analysis Date: **2/19/2020**	SeqNo: **2290342**	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	12		10.00		116	55.1	146			

Sample ID: **LCS-50497**	SampType: **LCS**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**							
Client ID: **LCSS**	Batch ID: **50497**	RunNo: **66632**							
Prep Date: **2/18/2020**	Analysis Date: **2/19/2020**	SeqNo: **2290343**	Units: **mg/Kg**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	54	10	50.00	0	109	70	130			
Surr: DNOP	5.0		5.000		99.6	55.1	146			

Sample ID: **2002627-001AMS**	SampType: **MS**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**							
Client ID: **HF 7-1 SP1-8'**	Batch ID: **50497**	RunNo: **66632**							
Prep Date: **2/18/2020**	Analysis Date: **2/19/2020**	SeqNo: **2290402**	Units: **mg/Kg**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	54	9.8	49.16	0	109	47.4	136			H
Surr: DNOP	4.8		4.916		97.5	55.1	146			H

Sample ID: **2002627-001AMSD**	SampType: **MSD**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**							
Client ID: **HF 7-1 SP1-8'**	Batch ID: **50497**	RunNo: **66632**							
Prep Date: **2/18/2020**	Analysis Date: **2/19/2020**	SeqNo: **2290403**	Units: **mg/Kg**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	52	9.2	46.00	0	113	47.4	136	3.87	43.4	H

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#: **2002627**

21-Feb-20

Client: Marathon Oil Company
Project: HF 7 Fed Com 1

Sample ID: **2002627-001AMSD** SampType: **MSD** TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **HF 7-1 SP1-8'** Batch ID: **50497** RunNo: **66632**
Prep Date: **2/18/2020** Analysis Date: **2/19/2020** SeqNo: **2290403** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP	4.6		4.600		99.0	55.1	146	0	0	H

Sample ID: **2002627-015AMS** SampType: **MS** TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **HF7-1 SP15-12'** Batch ID: **50509** RunNo: **66632**
Prep Date: **2/18/2020** Analysis Date: **2/19/2020** SeqNo: **2290852** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	50	9.6	47.94	0	105	47.4	136			H
Surr: DNOP	4.4		4.794		92.4	55.1	146			H

Sample ID: **2002627-015AMSD** SampType: **MSD** TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **HF7-1 SP15-12'** Batch ID: **50509** RunNo: **66632**
Prep Date: **2/18/2020** Analysis Date: **2/19/2020** SeqNo: **2290853** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	52	9.9	49.26	0	105	47.4	136	3.11	43.4	H
Surr: DNOP	4.5		4.926		90.7	55.1	146	0	0	H

Sample ID: **MB-50509** SampType: **MBLK** TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **PBS** Batch ID: **50509** RunNo: **66632**
Prep Date: **2/18/2020** Analysis Date: **2/19/2020** SeqNo: **2290854** 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	12		10.00		120	55.1	146			

Sample ID: **LCS-50509** SampType: **LCS** TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **LCSS** Batch ID: **50509** RunNo: **66632**
Prep Date: **2/18/2020** Analysis Date: **2/19/2020** SeqNo: **2290855** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	57	10	50.00	0	113	70	130			
Surr: DNOP	5.0		5.000		99.8	55.1	146			

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#: **2002627**

21-Feb-20

Client: Marathon Oil Company
Project: HF 7 Fed Com 1

Sample ID: **mb1**	SampType: **MBLK**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **PBS**	Batch ID: **G66649**	RunNo: **66649**
Prep Date:	Analysis Date: **2/19/2020**	SeqNo: **2290656** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: BFB	780		1000		77.9	66.6	105			

Sample ID: **2.5ug gro lcs**	SampType: **LCS**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **LCSS**	Batch ID: **G66649**	RunNo: **66649**
Prep Date:	Analysis Date: **2/19/2020**	SeqNo: **2290657** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: BFB	930		1000		93.3	66.6	105			

Sample ID: **mb-50488**	SampType: **MBLK**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **PBS**	Batch ID: **50488**	RunNo: **66649**
Prep Date: **2/17/2020**	Analysis Date: **2/19/2020**	SeqNo: **2290660** 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	810		1000		81.4	66.6	105			

Sample ID: **lcs-50488**	SampType: **LCS**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **LCSS**	Batch ID: **50488**	RunNo: **66649**
Prep Date: **2/17/2020**	Analysis Date: **2/19/2020**	SeqNo: **2290661** 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	99.1	80	120			
Surr: BFB	930		1000		93.1	66.6	105			

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#: **2002627**

21-Feb-20

Client: Marathon Oil Company
Project: HF 7 Fed Com 1

Sample ID: **mb1**	SampType: **MBLK**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **PBS**	Batch ID: **B66649**	RunNo: **66649**
Prep Date:	Analysis Date: **2/19/2020**	SeqNo: **2290689** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 4-Bromofluorobenzene	0.86		1.000		85.6	80	120			

Sample ID: **100ng btex lcs**	SampType: **LCS**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **LCSS**	Batch ID: **B66649**	RunNo: **66649**
Prep Date:	Analysis Date: **2/19/2020**	SeqNo: **2290690** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 4-Bromofluorobenzene	0.92		1.000		92.4	80	120			

Sample ID: **mb-50488**	SampType: **MBLK**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **PBS**	Batch ID: **50488**	RunNo: **66649**
Prep Date: **2/17/2020**	Analysis Date: **2/19/2020**	SeqNo: **2290693** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.025								
Toluene	ND	0.050								
Ethylbenzene	ND	0.050								
Xylenes, Total	ND	0.10								
Surr: 4-Bromofluorobenzene	0.90		1.000		89.9	80	120			

Sample ID: **LCS-50488**	SampType: **LCS**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **LCSS**	Batch ID: **50488**	RunNo: **66649**
Prep Date: **2/17/2020**	Analysis Date: **2/19/2020**	SeqNo: **2290694** 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	95.1	80	120			
Toluene	0.99	0.050	1.000	0	98.7	80	120			
Ethylbenzene	1.0	0.050	1.000	0	99.8	80	120			
Xylenes, Total	3.0	0.10	3.000	0	101	80	120			
Surr: 4-Bromofluorobenzene	0.97		1.000		96.7	80	120			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2002627**

21-Feb-20

Client: Marathon Oil Company
Project: HF 7 Fed Com 1

Sample ID: **2002627-017ams** SampType: **MS** TestCode: **EPA Method 8260B: Volatiles Short List**
Client ID: **HF7-1 SP17-10'** Batch ID: **50494** RunNo: **66663**
Prep Date: **2/17/2020** Analysis Date: **2/19/2020** SeqNo: **2290897** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.99	0.025	0.9823	0	101	70	130			H
Toluene	0.96	0.049	0.9823	0	98.0	70	130			H
Ethylbenzene	0.98	0.049	0.9823	0	99.9	70	130			H
Xylenes, Total	2.9	0.098	2.947	0	99.7	70	130			H
Surr: 1,2-Dichloroethane-d4	0.48		0.4912		97.4	70	130			H
Surr: 4-Bromofluorobenzene	0.47		0.4912		95.7	70	130			H
Surr: Dibromofluoromethane	0.46		0.4912		93.1	70	130			H
Surr: Toluene-d8	0.48		0.4912		98.2	70	130			H

Sample ID: **2002627-017amsd** SampType: **MSD** TestCode: **EPA Method 8260B: Volatiles Short List**
Client ID: **HF7-1 SP17-10'** Batch ID: **50494** RunNo: **66663**
Prep Date: **2/17/2020** Analysis Date: **2/19/2020** SeqNo: **2290898** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.94	0.023	0.9381	0	99.7	70	130	5.63	20	H
Toluene	0.93	0.047	0.9381	0	98.9	70	130	3.74	20	H
Ethylbenzene	0.94	0.047	0.9381	0	100	70	130	4.19	0	H
Xylenes, Total	2.8	0.094	2.814	0	100	70	130	4.12	0	H
Surr: 1,2-Dichloroethane-d4	0.45		0.4690		95.9	70	130	0	0	H
Surr: 4-Bromofluorobenzene	0.45		0.4690		96.7	70	130	0	0	H
Surr: Dibromofluoromethane	0.44		0.4690		94.2	70	130	0	0	H
Surr: Toluene-d8	0.46		0.4690		99.1	70	130	0	0	H

Sample ID: **lcs-50494** SampType: **LCS** TestCode: **EPA Method 8260B: Volatiles Short List**
Client ID: **LCSS** Batch ID: **50494** RunNo: **66663**
Prep Date: **2/17/2020** Analysis Date: **2/19/2020** SeqNo: **2290917** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	1.0	0.025	1.000	0	100	70	130			
Toluene	0.98	0.050	1.000	0	98.5	70	130			
Ethylbenzene	0.99	0.050	1.000	0	98.7	70	130			
Xylenes, Total	2.9	0.10	3.000	0	97.2	70	130			
Surr: 1,2-Dichloroethane-d4	0.46		0.5000		92.8	70	130			
Surr: 4-Bromofluorobenzene	0.48		0.5000		96.4	70	130			
Surr: Dibromofluoromethane	0.46		0.5000		92.2	70	130			
Surr: Toluene-d8	0.50		0.5000		99.9	70	130			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2002627**

21-Feb-20

Client: Marathon Oil Company
Project: HF 7 Fed Com 1

Sample ID: **mb-50494** SampType: **MBLK** TestCode: **EPA Method 8260B: Volatiles Short List**
Client ID: **PBS** Batch ID: **50494** RunNo: **66663**
Prep Date: **2/17/2020** Analysis Date: **2/19/2020** SeqNo: **2290918** 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: 1,2-Dichloroethane-d4	0.47		0.5000		94.9	70	130			
Surr: 4-Bromofluorobenzene	0.50		0.5000		99.2	70	130			
Surr: Dibromofluoromethane	0.48		0.5000		96.2	70	130			
Surr: Toluene-d8	0.50		0.5000		101	70	130			

Sample ID: **lcs-50546** SampType: **LCS** TestCode: **EPA Method 8260B: Volatiles Short List**
Client ID: **LCSS** Batch ID: **50546** RunNo: **66683**
Prep Date: **2/19/2020** Analysis Date: **2/20/2020** SeqNo: **2292072** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 1,2-Dichloroethane-d4	0.46		0.5000		92.0	70	130			
Surr: 4-Bromofluorobenzene	0.46		0.5000		92.7	70	130			
Surr: Dibromofluoromethane	0.47		0.5000		94.7	70	130			
Surr: Toluene-d8	0.50		0.5000		99.6	70	130			

Sample ID: **mb-50546** SampType: **MBLK** TestCode: **EPA Method 8260B: Volatiles Short List**
Client ID: **PBS** Batch ID: **50546** RunNo: **66683**
Prep Date: **2/19/2020** Analysis Date: **2/20/2020** SeqNo: **2292073** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 1,2-Dichloroethane-d4	0.48		0.5000		95.4	70	130			
Surr: 4-Bromofluorobenzene	0.47		0.5000		94.5	70	130			
Surr: Dibromofluoromethane	0.47		0.5000		94.2	70	130			
Surr: Toluene-d8	0.50		0.5000		99.9	70	130			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2002627**

21-Feb-20

Client: Marathon Oil Company
Project: HF 7 Fed Com 1

Sample ID: **2002627-016ams** SampType: **MS** TestCode: **EPA Method 8015D Mod: Gasoline Range**
Client ID: **HF7-1 SP16-12'** Batch ID: **50494** RunNo: **66663**
Prep Date: **2/17/2020** Analysis Date: **2/19/2020** SeqNo: **2290925** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	22	4.9	24.68	0	90.3	70	130			H
Surr: BFB	450		493.6		90.7	70	130			H

Sample ID: **2002627-016amsd** SampType: **MSD** TestCode: **EPA Method 8015D Mod: Gasoline Range**
Client ID: **HF7-1 SP16-12'** Batch ID: **50494** RunNo: **66663**
Prep Date: **2/17/2020** Analysis Date: **2/19/2020** SeqNo: **2290926** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	22	4.9	24.73	0	88.6	70	130	1.68	20	H
Surr: BFB	470		494.6		94.3	70	130	0	0	H

Sample ID: **lcs-50494** SampType: **LCS** TestCode: **EPA Method 8015D Mod: Gasoline Range**
Client ID: **LCSS** Batch ID: **50494** RunNo: **66663**
Prep Date: **2/17/2020** Analysis Date: **2/19/2020** SeqNo: **2290946** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	23	5.0	25.00	0	90.2	70	130			
Surr: BFB	460		500.0		91.3	70	130			

Sample ID: **mb-50494** SampType: **MBLK** TestCode: **EPA Method 8015D Mod: Gasoline Range**
Client ID: **PBS** Batch ID: **50494** RunNo: **66663**
Prep Date: **2/17/2020** Analysis Date: **2/19/2020** SeqNo: **2290947** 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	480		500.0		95.5	70	130			

Sample ID: **lcs-50546** SampType: **LCS** TestCode: **EPA Method 8015D Mod: Gasoline Range**
Client ID: **LCSS** Batch ID: **50546** RunNo: **66683**
Prep Date: **2/19/2020** Analysis Date: **2/20/2020** SeqNo: **2292078** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: BFB	470		500.0		94.4	70	130			

Sample ID: **mb-50546** SampType: **MBLK** TestCode: **EPA Method 8015D Mod: Gasoline Range**
Client ID: **PBS** Batch ID: **50546** RunNo: **66683**
Prep Date: **2/19/2020** Analysis Date: **2/20/2020** SeqNo: **2292079** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: BFB	460		500.0		92.5	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

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: **MARATHON OIL COMPA** Work Order Number: **2002627** RcptNo: **1**

Received By: **Erin Melendrez** **2/15/2020 12:35:00 PM**

Completed By: **Erin Melendrez** **2/15/2020 2:56:45 PM**

Reviewed By: ENM 2/17/20

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: JR 2/17/20

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

Chain-of-Custody Record

Client: Marathon (Wescom)

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

Project Name: HF 7 Fed Com 1

Project #:

Project Manager: Shar Harveston

Sampler:

On Ice: ☑ Yes ☐ No

# of Coolers: 1

Cooler Temp(including CF): 4.9 +0.2(CF) = 5.1 (°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. 2002627	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	(C) F, Br, NO_3, NO_2, PO_4, SO_4	8260 (VOA)	8270 (Semi-VOA)	Total Coliform (Present/Absent)
1/18/20		soil	HF7-1 SP-1 8'			-001	X	X					X			
			SP-2 8'			-002										
			SP-3 8'			-003										
			SP4-12'			-004										
			SP5-12'			-005										
↓			SP6-12'			-006										
1/17/20			SP7-12'			-007										
			SP8-12'			-008										
			SP9-14'			-009										
			SP10-12'			-010										
ENM 2/7/20			SP11-12'			-011										
~~1/16/20~~		↓ 1/16/20	SP12-12'			-012							↓			

Date:	Time:	Relinquished by:	Received by:	Via:	Date	Time
2/14/20	1630	Shelly Tucker			2/14/20	1630
2/14/20	1900			Courier	2/15/20	1235

Remarks:
Run out of hold samples
Per Shelly Tucker

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.

Chain-of-Custody Record

Client: Marathon (Wescom)

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

Project Name: HF7 Fed Com 1

Project #:

Project Manager: Shai Harvester

Sampler:

On Ice: ☒ Yes ☐ No

# of Coolers: 1

Cooler Temp(including CF): 4.9+0.2(CF)=5.1(°C)

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

Analysis Request

Date	Time	Matrix	Sample Name	Container Type and #	Preservative Type	HEAL No. 2007627	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)
1/16/20		soil	HF7-1 SP13-12'	4oz 1	ice	-013	X	X								
			SP14-12'			-014										
			SP15-12'			-015										
			SP16-12'			-016										
			SP17-10'			-017										
			SP18-10'			-018										
1/18/20			SP19-8'			-019										
			SP20-6'			-020										
			SP21-6'			-021										
			SP22 wall			-022										
1/19/20			SP23 wall			-023										
			SP24 wall			-024										

Date	Time	Relinquished by	Received by	Via	Date	Time
2/14/20	1630	Shelly Tucker			2/14/20	1630
2/14/20	1900			Courier	2/15/20	1235

Remarks:
run out of hold samples
Per Shelly Tucker

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.

Chain-of-Custody Record

Client: Marathon (Wescom)

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

Project Name: HF7-Fed 1

Project #:

Project Manager: Shar Harvester

Sampler:

On Ice: ☒ Yes ☐ No

# of Coolers: 1

Cooler Temp(including CF): 4.9+0.2(CF)=5.1(°C)

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

Analysis Request

Date	Time	Matrix	Sample Name	Container Type and #	Preservative Type	HEAL No. 2002627	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)
1/9/20		soil	HF7-1 SP25 wall	4oz gl	ice	-025	X	X					X			
			SP26 wall			-026										
			SP27 wall			-027										
			SP28 wall			-028										
			SP29 wall			-029										
			SP30 wall			-030										
			SP31 wall			-031										

Date:	Time:	Relinquished by:	Received by:	Via:	Date	Time
		Shelly Tucker				
Date:	Time:	Relinquished by:	Received by:	Via: Courier	Date 2/15/20	Time 1235

Remarks: run out of hold samples per Shelly Tucker

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

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
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Website: www.hallenvironmental.com

February 21, 2020

Shar Harvester
Marathon Oil Company
4111 Tidwell Road
Carlsbad, NM 88220
TEL: (575) 297-0956
FAX

RE: HF7 Fed Com 1 OrderNo.: 2002628

Dear Shar Harvester:

Hall Environmental Analysis Laboratory received 14 sample(s) on 2/15/2020 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 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 **2002628**
Date Reported: **2/21/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon Oil Company
Project: HF7 Fed Com 1
Lab ID: 2002628-001 **Matrix:** SOIL

Client Sample ID: E-WS-Comp
Collection Date: 1/17/2020 3:00:00 PM
Received Date: 2/15/2020 12:35:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **CLP**
Diesel Range Organics (DRO)	2900	100	H	mg/Kg-dr	10	2/20/2020 10:20:30 AM
Motor Oil Range Organics (MRO)	1200	520	H	mg/Kg-dr	10	2/20/2020 10:20:30 AM
Surr: DNOP	0	55.1-146	SH	%Rec	10	2/20/2020 10:20:30 AM
EPA METHOD 300.0: ANIONS						Analyst: **CAS**
Chloride	1200	67	H	mg/Kg-dr	20	2/19/2020 3:07:05 PM
EPA METHOD 8260B: VOLATILES SHORT LIST						Analyst: **JMR**
Benzene	ND	0.13	HD	mg/Kg-dr	5	2/20/2020 1:55:16 PM
Toluene	ND	0.26	HD	mg/Kg-dr	5	2/20/2020 1:55:16 PM
Ethylbenzene	ND	0.26	HD	mg/Kg-dr	5	2/20/2020 1:55:16 PM
Xylenes, Total	ND	0.53	HD	mg/Kg-dr	5	2/20/2020 1:55:16 PM
Surr: 1,2-Dichloroethane-d4	97.0	70-130	HD	%Rec	5	2/20/2020 1:55:16 PM
Surr: 4-Bromofluorobenzene	54.7	70-130	SHD	%Rec	5	2/20/2020 1:55:16 PM
Surr: Dibromofluoromethane	95.5	70-130	HD	%Rec	5	2/20/2020 1:55:16 PM
Surr: Toluene-d8	100	70-130	HD	%Rec	5	2/20/2020 1:55:16 PM
EPA METHOD 8015D MOD: GASOLINE RANGE						Analyst: **JMR**
Gasoline Range Organics (GRO)	150	5.3	H	mg/Kg-dr	1	2/20/2020 3:55:37 AM
Surr: BFB	99.0	70-130	H	%Rec	1	2/20/2020 3:55:37 AM
PERCENT MOISTURE						Analyst: **JMR**
Percent Moisture	11	1.0	H	wt%	1	2/19/2020

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 **2002628**
Date Reported: **2/21/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon Oil Company
Client Sample ID: FS-Comp-4/5'
Project: HF7 Fed Com 1
Collection Date: 1/18/2020 3:15:00 PM
Lab ID: 2002628-002 **Matrix:** SOIL **Received Date:** 2/15/2020 12:35:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **CLP**
Diesel Range Organics (DRO)	ND	10	H	mg/Kg-dr	1	2/20/2020 10:29:35 AM
Motor Oil Range Organics (MRO)	ND	51	H	mg/Kg-dr	1	2/20/2020 10:29:35 AM
Surr: DNOP	85.2	55.1-146	H	%Rec	1	2/20/2020 10:29:35 AM
EPA METHOD 300.0: ANIONS						Analyst: **CAS**
Chloride	460	69	H	mg/Kg-dr	20	2/19/2020 3:44:08 PM
EPA METHOD 8260B: VOLATILES SHORT LIST						Analyst: **JMR**
Benzene	ND	0.027	H	mg/Kg-dr	1	2/20/2020 4:46:12 PM
Toluene	ND	0.054	H	mg/Kg-dr	1	2/20/2020 4:46:12 PM
Ethylbenzene	ND	0.054	H	mg/Kg-dr	1	2/20/2020 4:46:12 PM
Xylenes, Total	ND	0.11	H	mg/Kg-dr	1	2/20/2020 4:46:12 PM
Surr: 1,2-Dichloroethane-d4	96.3	70-130	H	%Rec	1	2/20/2020 4:46:12 PM
Surr: 4-Bromofluorobenzene	96.7	70-130	H	%Rec	1	2/20/2020 4:46:12 PM
Surr: Dibromofluoromethane	96.3	70-130	H	%Rec	1	2/20/2020 4:46:12 PM
Surr: Toluene-d8	97.7	70-130	H	%Rec	1	2/20/2020 4:46:12 PM
EPA METHOD 8015D MOD: GASOLINE RANGE						Analyst: **JMR**
Gasoline Range Organics (GRO)	ND	5.4	H	mg/Kg-dr	1	2/20/2020 4:23:59 AM
Surr: BFB	93.5	70-130	H	%Rec	1	2/20/2020 4:23:59 AM
PERCENT MOISTURE						Analyst: **JMR**
Percent Moisture	13	1.0	H	wt%	1	2/19/2020

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 **2002628**
Date Reported: **2/21/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon Oil Company
Client Sample ID: S-WS-Comp
Project: HF7 Fed Com 1
Collection Date: 1/17/2020 6:00:00 PM
Lab ID: 2002628-003 **Matrix:** SOIL **Received Date:** 2/15/2020 12:35:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **CLP**
Diesel Range Organics (DRO)	ND	11	H	mg/Kg-dr	1	2/20/2020 10:38:39 AM
Motor Oil Range Organics (MRO)	ND	55	H	mg/Kg-dr	1	2/20/2020 10:38:39 AM
Surr: DNOP	85.8	55.1-146	H	%Rec	1	2/20/2020 10:38:39 AM
EPA METHOD 300.0: ANIONS						Analyst: **CAS**
Chloride	400	73	H	mg/Kg-dr	20	2/19/2020 4:21:11 PM
EPA METHOD 8260B: VOLATILES SHORT LIST						Analyst: **JMR**
Benzene	ND	0.030	H	mg/Kg-dr	1	2/20/2020 5:14:43 PM
Toluene	ND	0.060	H	mg/Kg-dr	1	2/20/2020 5:14:43 PM
Ethylbenzene	ND	0.060	H	mg/Kg-dr	1	2/20/2020 5:14:43 PM
Xylenes, Total	ND	0.12	H	mg/Kg-dr	1	2/20/2020 5:14:43 PM
Surr: 1,2-Dichloroethane-d4	86.8	70-130	H	%Rec	1	2/20/2020 5:14:43 PM
Surr: 4-Bromofluorobenzene	95.6	70-130	H	%Rec	1	2/20/2020 5:14:43 PM
Surr: Dibromofluoromethane	92.6	70-130	H	%Rec	1	2/20/2020 5:14:43 PM
Surr: Toluene-d8	100	70-130	H	%Rec	1	2/20/2020 5:14:43 PM
EPA METHOD 8015D MOD: GASOLINE RANGE						Analyst: **JMR**
Gasoline Range Organics (GRO)	ND	6.0	H	mg/Kg-dr	1	2/20/2020 4:52:25 AM
Surr: BFB	91.9	70-130	H	%Rec	1	2/20/2020 4:52:25 AM
PERCENT MOISTURE						Analyst: **JMR**
Percent Moisture	17	1.0	H	wt%	1	2/19/2020

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 **2002628**
Date Reported: **2/21/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon Oil Company
Client Sample ID: FS-Comp-4'
Project: HF7 Fed Com 1
Collection Date: 1/18/2020 6:00:00 PM
Lab ID: 2002628-004 **Matrix:** SOIL **Received Date:** 2/15/2020 12:35:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **CLP**
Diesel Range Organics (DRO)	ND	9.9	H	mg/Kg-dr	1	2/20/2020 10:47:47 AM
Motor Oil Range Organics (MRO)	ND	50	H	mg/Kg-dr	1	2/20/2020 10:47:47 AM
Surr: DNOP	91.2	55.1-146	H	%Rec	1	2/20/2020 10:47:47 AM
EPA METHOD 300.0: ANIONS						Analyst: **CAS**
Chloride	210	79	H	mg/Kg-dr	20	2/19/2020 4:33:31 PM
EPA METHOD 8260B: VOLATILES SHORT LIST						Analyst: **JMR**
Benzene	ND	0.031	H	mg/Kg-dr	1	2/20/2020 5:43:20 PM
Toluene	ND	0.061	H	mg/Kg-dr	1	2/20/2020 5:43:20 PM
Ethylbenzene	ND	0.061	H	mg/Kg-dr	1	2/20/2020 5:43:20 PM
Xylenes, Total	ND	0.12	H	mg/Kg-dr	1	2/20/2020 5:43:20 PM
Surr: 1,2-Dichloroethane-d4	90.2	70-130	H	%Rec	1	2/20/2020 5:43:20 PM
Surr: 4-Bromofluorobenzene	93.7	70-130	H	%Rec	1	2/20/2020 5:43:20 PM
Surr: Dibromofluoromethane	95.6	70-130	H	%Rec	1	2/20/2020 5:43:20 PM
Surr: Toluene-d8	100	70-130	H	%Rec	1	2/20/2020 5:43:20 PM
EPA METHOD 8015D MOD: GASOLINE RANGE						Analyst: **JMR**
Gasoline Range Organics (GRO)	ND	6.1	H	mg/Kg-dr	1	2/20/2020 5:20:48 AM
Surr: BFB	91.4	70-130	H	%Rec	1	2/20/2020 5:20:48 AM
PERCENT MOISTURE						Analyst: **JMR**
Percent Moisture	24	1.0	H	wt%	1	2/19/2020

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 **2002628**
Date Reported: **2/21/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon Oil Company
Client Sample ID: W-WS-Comp
Project: HF7 Fed Com 1
Collection Date: 1/18/2020 4:30:00 PM
Lab ID: 2002628-005 **Matrix:** SOIL
Received Date: 2/15/2020 12:35:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **CLP**
Diesel Range Organics (DRO)	39	10	H	mg/Kg-dr	1	2/20/2020 10:56:53 AM
Motor Oil Range Organics (MRO)	ND	50	H	mg/Kg-dr	1	2/20/2020 10:56:53 AM
Surr: DNOP	107	55.1-146	H	%Rec	1	2/20/2020 10:56:53 AM
EPA METHOD 300.0: ANIONS						Analyst: **CAS**
Chloride	1200	67	H	mg/Kg-dr	20	2/19/2020 4:45:52 PM
EPA METHOD 8260B: VOLATILES SHORT LIST						Analyst: **JMR**
Benzene	ND	0.026	H	mg/Kg-dr	1	2/20/2020 7:36:55 PM
Toluene	ND	0.052	H	mg/Kg-dr	1	2/20/2020 7:36:55 PM
Ethylbenzene	ND	0.052	H	mg/Kg-dr	1	2/20/2020 7:36:55 PM
Xylenes, Total	ND	0.10	H	mg/Kg-dr	1	2/20/2020 7:36:55 PM
Surr: 1,2-Dichloroethane-d4	89.2	70-130	H	%Rec	1	2/20/2020 7:36:55 PM
Surr: 4-Bromofluorobenzene	93.0	70-130	H	%Rec	1	2/20/2020 7:36:55 PM
Surr: Dibromofluoromethane	96.8	70-130	H	%Rec	1	2/20/2020 7:36:55 PM
Surr: Toluene-d8	99.7	70-130	H	%Rec	1	2/20/2020 7:36:55 PM
EPA METHOD 8015D MOD: GASOLINE RANGE						Analyst: **JMR**
Gasoline Range Organics (GRO)	ND	5.2	H	mg/Kg-dr	1	2/20/2020 7:36:55 PM
Surr: BFB	93.5	70-130	H	%Rec	1	2/20/2020 7:36:55 PM
PERCENT MOISTURE						Analyst: **JMR**
Percent Moisture	10	1.0	H	wt%	1	2/19/2020

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 **2002628**
Date Reported: **2/21/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon Oil Company
Client Sample ID: W-WS-Comp
Project: HF7 Fed Com 1
Collection Date: 1/18/2020 4:00:00 PM
Lab ID: 2002628-006 **Matrix:** SOIL
Received Date: 2/15/2020 12:35:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **CLP**
Diesel Range Organics (DRO)	ND	11	H	mg/Kg-dr	1	2/20/2020 11:05:58 AM
Motor Oil Range Organics (MRO)	ND	53	H	mg/Kg-dr	1	2/20/2020 11:05:58 AM
Surr: DNOP	87.7	55.1-146	H	%Rec	1	2/20/2020 11:05:58 AM
EPA METHOD 300.0: ANIONS						Analyst: **CAS**
Chloride	270	76	H	mg/Kg-dr	20	2/19/2020 4:58:12 PM
EPA METHOD 8260B: VOLATILES SHORT LIST						Analyst: **JMR**
Benzene	ND	0.032	H	mg/Kg-dr	1	2/20/2020 9:02:19 PM
Toluene	ND	0.063	H	mg/Kg-dr	1	2/20/2020 9:02:19 PM
Ethylbenzene	ND	0.063	H	mg/Kg-dr	1	2/20/2020 9:02:19 PM
Xylenes, Total	ND	0.13	H	mg/Kg-dr	1	2/20/2020 9:02:19 PM
Surr: 1,2-Dichloroethane-d4	90.3	70-130	H	%Rec	1	2/20/2020 9:02:19 PM
Surr: 4-Bromofluorobenzene	94.6	70-130	H	%Rec	1	2/20/2020 9:02:19 PM
Surr: Dibromofluoromethane	96.4	70-130	H	%Rec	1	2/20/2020 9:02:19 PM
Surr: Toluene-d8	101	70-130	H	%Rec	1	2/20/2020 9:02:19 PM
EPA METHOD 8015D MOD: GASOLINE RANGE						Analyst: **JMR**
Gasoline Range Organics (GRO)	ND	6.3	H	mg/Kg-dr	1	2/20/2020 9:02:19 PM
Surr: BFB	93.6	70-130	H	%Rec	1	2/20/2020 9:02:19 PM
PERCENT MOISTURE						Analyst: **JMR**
Percent Moisture	21	1.0	H	wt%	1	2/19/2020

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 **2002628**
Date Reported: **2/21/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon Oil Company
Client Sample ID: S-WS-Comp
Project: HF7 Fed Com 1
Collection Date: 1/18/2020 6:30:00 PM
Lab ID: 2002628-007 **Matrix:** SOIL **Received Date:** 2/15/2020 12:35:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **CLP**
Diesel Range Organics (DRO)	ND	12	H	mg/Kg-dr	1	2/20/2020 12:06:49 PM
Motor Oil Range Organics (MRO)	ND	60	H	mg/Kg-dr	1	2/20/2020 12:06:49 PM
Surr: DNOP	89.9	55.1-146	H	%Rec	1	2/20/2020 12:06:49 PM
EPA METHOD 300.0: ANIONS						Analyst: **CAS**
Chloride	2100	77	H	mg/Kg-dr	20	2/19/2020 5:10:33 PM
EPA METHOD 8260B: VOLATILES SHORT LIST						Analyst: **JMR**
Benzene	ND	0.030	H	mg/Kg-dr	1	2/20/2020 9:30:43 PM
Toluene	ND	0.060	H	mg/Kg-dr	1	2/20/2020 9:30:43 PM
Ethylbenzene	ND	0.060	H	mg/Kg-dr	1	2/20/2020 9:30:43 PM
Xylenes, Total	ND	0.12	H	mg/Kg-dr	1	2/20/2020 9:30:43 PM
Surr: 1,2-Dichloroethane-d4	90.6	70-130	H	%Rec	1	2/20/2020 9:30:43 PM
Surr: 4-Bromofluorobenzene	97.6	70-130	H	%Rec	1	2/20/2020 9:30:43 PM
Surr: Dibromofluoromethane	94.0	70-130	H	%Rec	1	2/20/2020 9:30:43 PM
Surr: Toluene-d8	101	70-130	H	%Rec	1	2/20/2020 9:30:43 PM
EPA METHOD 8015D MOD: GASOLINE RANGE						Analyst: **JMR**
Gasoline Range Organics (GRO)	ND	6.0	H	mg/Kg-dr	1	2/20/2020 9:30:43 PM
Surr: BFB	93.9	70-130	H	%Rec	1	2/20/2020 9:30:43 PM
PERCENT MOISTURE						Analyst: **JMR**
Percent Moisture	22	1.0	H	wt%	1	2/19/2020

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 **2002628**
Date Reported: **2/21/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon Oil Company
Client Sample ID: N-WS-Comp
Project: HF7 Fed Com 1
Collection Date: 1/19/2020 3:30:00 PM
Lab ID: 2002628-008 **Matrix:** SOIL
Received Date: 2/15/2020 12:35:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **CLP**
Diesel Range Organics (DRO)	ND	10	H	mg/Kg-dr	1	2/20/2020 12:15:48 PM
Motor Oil Range Organics (MRO)	ND	50	H	mg/Kg-dr	1	2/20/2020 12:15:48 PM
Surr: DNOP	73.3	55.1-146	H	%Rec	1	2/20/2020 12:15:48 PM
EPA METHOD 300.0: ANIONS						Analyst: **CAS**
Chloride	500	76	H	mg/Kg-dr	20	2/19/2020 5:22:54 PM
EPA METHOD 8260B: VOLATILES SHORT LIST						Analyst: **JMR**
Benzene	ND	0.031	H	mg/Kg-dr	1	2/21/2020 12:20:46 AM
Toluene	ND	0.062	H	mg/Kg-dr	1	2/21/2020 12:20:46 AM
Ethylbenzene	ND	0.062	H	mg/Kg-dr	1	2/21/2020 12:20:46 AM
Xylenes, Total	ND	0.12	H	mg/Kg-dr	1	2/21/2020 12:20:46 AM
Surr: 1,2-Dichloroethane-d4	88.8	70-130	H	%Rec	1	2/21/2020 12:20:46 AM
Surr: 4-Bromofluorobenzene	94.9	70-130	H	%Rec	1	2/21/2020 12:20:46 AM
Surr: Dibromofluoromethane	95.0	70-130	H	%Rec	1	2/21/2020 12:20:46 AM
Surr: Toluene-d8	101	70-130	H	%Rec	1	2/21/2020 12:20:46 AM
EPA METHOD 8015D MOD: GASOLINE RANGE						Analyst: **JMR**
Gasoline Range Organics (GRO)	ND	6.2	H	mg/Kg-dr	1	2/21/2020 12:20:46 AM
Surr: BFB	92.8	70-130	H	%Rec	1	2/21/2020 12:20:46 AM
PERCENT MOISTURE						Analyst: **JMR**
Percent Moisture	21	1.0	H	wt%	1	2/19/2020

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 **2002628**
Date Reported: **2/21/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon Oil Company
Client Sample ID: FS-Comp-17'
Project: HF7 Fed Com 1
Collection Date: 1/19/2020 6:00:00 PM
Lab ID: 2002628-009 **Matrix:** SOIL **Received Date:** 2/15/2020 12:35:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **CLP**
Diesel Range Organics (DRO)	ND	11	H	mg/Kg-dr	1	2/20/2020 12:24:50 PM
Motor Oil Range Organics (MRO)	ND	54	H	mg/Kg-dr	1	2/20/2020 12:24:50 PM
Surr: DNOP	90.1	55.1-146	H	%Rec	1	2/20/2020 12:24:50 PM
EPA METHOD 300.0: ANIONS						Analyst: **CAS**
Chloride	830	67	H	mg/Kg-dr	20	2/19/2020 5:35:14 PM
EPA METHOD 8260B: VOLATILES SHORT LIST						Analyst: **JMR**
Benzene	ND	0.028	H	mg/Kg-dr	1	2/21/2020 12:49:02 AM
Toluene	ND	0.056	H	mg/Kg-dr	1	2/21/2020 12:49:02 AM
Ethylbenzene	ND	0.056	H	mg/Kg-dr	1	2/21/2020 12:49:02 AM
Xylenes, Total	ND	0.11	H	mg/Kg-dr	1	2/21/2020 12:49:02 AM
Surr: 1,2-Dichloroethane-d4	91.4	70-130	H	%Rec	1	2/21/2020 12:49:02 AM
Surr: 4-Bromofluorobenzene	96.9	70-130	H	%Rec	1	2/21/2020 12:49:02 AM
Surr: Dibromofluoromethane	92.7	70-130	H	%Rec	1	2/21/2020 12:49:02 AM
Surr: Toluene-d8	100	70-130	H	%Rec	1	2/21/2020 12:49:02 AM
EPA METHOD 8015D MOD: GASOLINE RANGE						Analyst: **JMR**
Gasoline Range Organics (GRO)	ND	5.6	H	mg/Kg-dr	1	2/21/2020 12:49:02 AM
Surr: BFB	93.5	70-130	H	%Rec	1	2/21/2020 12:49:02 AM
PERCENT MOISTURE						Analyst: **JMR**
Percent Moisture	11	1.0	H	wt%	1	2/19/2020

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 **2002628**
Date Reported: **2/21/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon Oil Company
Client Sample ID: W-WS-Comp
Project: HF7 Fed Com 1
Collection Date: 1/19/2020 6:30:00 PM
Lab ID: 2002628-010 **Matrix:** SOIL
Received Date: 2/15/2020 12:35:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **CLP**
Diesel Range Organics (DRO)	ND	9.4	H	mg/Kg-dr	1	2/20/2020 12:33:53 PM
Motor Oil Range Organics (MRO)	ND	47	H	mg/Kg-dr	1	2/20/2020 12:33:53 PM
Surr: DNOP	114	55.1-146	H	%Rec	1	2/20/2020 12:33:53 PM
EPA METHOD 300.0: ANIONS						Analyst: **CAS**
Chloride	400	65	H	mg/Kg-dr	20	2/19/2020 5:47:35 PM
EPA METHOD 8260B: VOLATILES SHORT LIST						Analyst: **JMR**
Benzene	ND	0.027	H	mg/Kg-dr	1	2/21/2020 1:17:18 AM
Toluene	ND	0.054	H	mg/Kg-dr	1	2/21/2020 1:17:18 AM
Ethylbenzene	ND	0.054	H	mg/Kg-dr	1	2/21/2020 1:17:18 AM
Xylenes, Total	ND	0.11	H	mg/Kg-dr	1	2/21/2020 1:17:18 AM
Surr: 1,2-Dichloroethane-d4	91.2	70-130	H	%Rec	1	2/21/2020 1:17:18 AM
Surr: 4-Bromofluorobenzene	95.2	70-130	H	%Rec	1	2/21/2020 1:17:18 AM
Surr: Dibromofluoromethane	93.7	70-130	H	%Rec	1	2/21/2020 1:17:18 AM
Surr: Toluene-d8	99.7	70-130	H	%Rec	1	2/21/2020 1:17:18 AM
EPA METHOD 8015D MOD: GASOLINE RANGE						Analyst: **JMR**
Gasoline Range Organics (GRO)	ND	5.4	H	mg/Kg-dr	1	2/21/2020 1:17:18 AM
Surr: BFB	90.0	70-130	H	%Rec	1	2/21/2020 1:17:18 AM
PERCENT MOISTURE						Analyst: **JMR**
Percent Moisture	7.6	1.0	H	wt%	1	2/19/2020

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 **2002628**
Date Reported: **2/21/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon Oil Company
Client Sample ID: E-WS-Comp
Project: HF7 Fed Com 1
Collection Date: 1/19/2020 6:35:00 PM
Lab ID: 2002628-011 **Matrix:** SOIL
Received Date: 2/15/2020 12:35:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **CLP**
Diesel Range Organics (DRO)	18	13	H	mg/Kg-dr	1	2/20/2020 12:42:58 PM
Motor Oil Range Organics (MRO)	ND	63	H	mg/Kg-dr	1	2/20/2020 12:42:58 PM
Surr: DNOP	80.8	55.1-146	H	%Rec	1	2/20/2020 12:42:58 PM
EPA METHOD 300.0: ANIONS						Analyst: **CAS**
Chloride	540	80	H	mg/Kg-dr	20	2/19/2020 5:59:55 PM
EPA METHOD 8260B: VOLATILES SHORT LIST						Analyst: **JMR**
Benzene	ND	0.032	H	mg/Kg-dr	1	2/21/2020 1:45:33 AM
Toluene	ND	0.065	H	mg/Kg-dr	1	2/21/2020 1:45:33 AM
Ethylbenzene	ND	0.065	H	mg/Kg-dr	1	2/21/2020 1:45:33 AM
Xylenes, Total	ND	0.13	H	mg/Kg-dr	1	2/21/2020 1:45:33 AM
Surr: 1,2-Dichloroethane-d4	92.5	70-130	H	%Rec	1	2/21/2020 1:45:33 AM
Surr: 4-Bromofluorobenzene	92.8	70-130	H	%Rec	1	2/21/2020 1:45:33 AM
Surr: Dibromofluoromethane	93.8	70-130	H	%Rec	1	2/21/2020 1:45:33 AM
Surr: Toluene-d8	97.7	70-130	H	%Rec	1	2/21/2020 1:45:33 AM
EPA METHOD 8015D MOD: GASOLINE RANGE						Analyst: **JMR**
Gasoline Range Organics (GRO)	ND	6.5	H	mg/Kg-dr	1	2/21/2020 1:45:33 AM
Surr: BFB	88.4	70-130	H	%Rec	1	2/21/2020 1:45:33 AM
PERCENT MOISTURE						Analyst: **JMR**
Percent Moisture	24	1.0	H	wt%	1	2/19/2020

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 **2002628**
Date Reported: **2/21/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon Oil Company
Project: HF7 Fed Com 1
Lab ID: 2002628-012 **Matrix:** SOIL

Client Sample ID: NE-WS-Comp
Collection Date: 1/19/2020 6:40:00 PM
Received Date: 2/15/2020 12:35:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **CLP**
Diesel Range Organics (DRO)	ND	9.2	H	mg/Kg-dr	1	2/20/2020 12:52:04 PM
Motor Oil Range Organics (MRO)	ND	46	H	mg/Kg-dr	1	2/20/2020 12:52:04 PM
Surr: DNOP	86.0	55.1-146	H	%Rec	1	2/20/2020 12:52:04 PM
EPA METHOD 300.0: ANIONS						Analyst: **CAS**
Chloride	310	74	H	mg/Kg-dr	20	2/19/2020 6:12:16 PM
EPA METHOD 8260B: VOLATILES SHORT LIST						Analyst: **JMR**
Benzene	ND	0.029	H	mg/Kg-dr	1	2/21/2020 2:13:48 AM
Toluene	ND	0.057	H	mg/Kg-dr	1	2/21/2020 2:13:48 AM
Ethylbenzene	ND	0.057	H	mg/Kg-dr	1	2/21/2020 2:13:48 AM
Xylenes, Total	ND	0.11	H	mg/Kg-dr	1	2/21/2020 2:13:48 AM
Surr: 1,2-Dichloroethane-d4	90.0	70-130	H	%Rec	1	2/21/2020 2:13:48 AM
Surr: 4-Bromofluorobenzene	96.2	70-130	H	%Rec	1	2/21/2020 2:13:48 AM
Surr: Dibromofluoromethane	92.5	70-130	H	%Rec	1	2/21/2020 2:13:48 AM
Surr: Toluene-d8	99.4	70-130	H	%Rec	1	2/21/2020 2:13:48 AM
EPA METHOD 8015D MOD: GASOLINE RANGE						Analyst: **JMR**
Gasoline Range Organics (GRO)	ND	5.7	H	mg/Kg-dr	1	2/21/2020 2:13:48 AM
Surr: BFB	91.2	70-130	H	%Rec	1	2/21/2020 2:13:48 AM
PERCENT MOISTURE						Analyst: **JMR**
Percent Moisture	19	1.0	H	wt%	1	2/19/2020

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 **2002628**
Date Reported: **2/21/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon Oil Company
Project: HF7 Fed Com 1
Lab ID: 2002628-013 **Matrix:** SOIL

Client Sample ID: NE-FS-Comp-7'
Collection Date: 1/19/2020 6:40:00 PM
Received Date: 2/15/2020 12:35:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **CLP**
Diesel Range Organics (DRO)	ND	11	H	mg/Kg-dr	1	2/20/2020 1:01:10 PM
Motor Oil Range Organics (MRO)	ND	53	H	mg/Kg-dr	1	2/20/2020 1:01:10 PM
Surr: DNOP	85.9	55.1-146	H	%Rec	1	2/20/2020 1:01:10 PM
EPA METHOD 300.0: ANIONS						Analyst: **CAS**
Chloride	750	66	H	mg/Kg-dr	20	2/19/2020 6:49:20 PM
EPA METHOD 8260B: VOLATILES SHORT LIST						Analyst: **JMR**
Benzene	ND	0.027	H	mg/Kg-dr	1	2/21/2020 2:42:05 AM
Toluene	ND	0.054	H	mg/Kg-dr	1	2/21/2020 2:42:05 AM
Ethylbenzene	ND	0.054	H	mg/Kg-dr	1	2/21/2020 2:42:05 AM
Xylenes, Total	ND	0.11	H	mg/Kg-dr	1	2/21/2020 2:42:05 AM
Surr: 1,2-Dichloroethane-d4	89.7	70-130	H	%Rec	1	2/21/2020 2:42:05 AM
Surr: 4-Bromofluorobenzene	95.0	70-130	H	%Rec	1	2/21/2020 2:42:05 AM
Surr: Dibromofluoromethane	92.4	70-130	H	%Rec	1	2/21/2020 2:42:05 AM
Surr: Toluene-d8	98.5	70-130	H	%Rec	1	2/21/2020 2:42:05 AM
EPA METHOD 8015D MOD: GASOLINE RANGE						Analyst: **JMR**
Gasoline Range Organics (GRO)	ND	5.4	H	mg/Kg-dr	1	2/21/2020 2:42:05 AM
Surr: BFB	90.7	70-130	H	%Rec	1	2/21/2020 2:42:05 AM
PERCENT MOISTURE						Analyst: **JMR**
Percent Moisture	8.4	1.0	H	wt%	1	2/19/2020

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 **2002628**
Date Reported: **2/21/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon Oil Company
Project: HF7 Fed Com 1
Lab ID: 2002628-014 **Matrix:** SOIL

Client Sample ID: NW-FS-Comp-7'
Collection Date: 1/19/2020 6:45:00 PM
Received Date: 2/15/2020 12:35:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **CLP**
Diesel Range Organics (DRO)	ND	10	H	mg/Kg-dr	1	2/20/2020 1:10:18 PM
Motor Oil Range Organics (MRO)	ND	52	H	mg/Kg-dr	1	2/20/2020 1:10:18 PM
Surr: DNOP	70.3	55.1-146	H	%Rec	1	2/20/2020 1:10:18 PM
EPA METHOD 300.0: ANIONS						Analyst: **CAS**
Chloride	830	67	H	mg/Kg-dr	20	2/19/2020 7:01:42 PM
EPA METHOD 8260B: VOLATILES SHORT LIST						Analyst: **JMR**
Benzene	ND	0.027	H	mg/Kg-dr	1	2/21/2020 3:10:17 AM
Toluene	ND	0.054	H	mg/Kg-dr	1	2/21/2020 3:10:17 AM
Ethylbenzene	ND	0.054	H	mg/Kg-dr	1	2/21/2020 3:10:17 AM
Xylenes, Total	ND	0.11	H	mg/Kg-dr	1	2/21/2020 3:10:17 AM
Surr: 1,2-Dichloroethane-d4	86.6	70-130	H	%Rec	1	2/21/2020 3:10:17 AM
Surr: 4-Bromofluorobenzene	94.3	70-130	H	%Rec	1	2/21/2020 3:10:17 AM
Surr: Dibromofluoromethane	93.0	70-130	H	%Rec	1	2/21/2020 3:10:17 AM
Surr: Toluene-d8	98.1	70-130	H	%Rec	1	2/21/2020 3:10:17 AM
EPA METHOD 8015D MOD: GASOLINE RANGE						Analyst: **JMR**
Gasoline Range Organics (GRO)	ND	5.4	H	mg/Kg-dr	1	2/21/2020 3:10:17 AM
Surr: BFB	88.4	70-130	H	%Rec	1	2/21/2020 3:10:17 AM
PERCENT MOISTURE						Analyst: **JMR**
Percent Moisture	9.9	1.0	H	wt%	1	2/19/2020

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2002628**

21-Feb-20

Client: Marathon Oil Company

Project: HF7 Fed Com 1

Sample ID: **MB-50543**	SampType: **mblk**	TestCode: **EPA Method 300.0: Anions**							
Client ID: **PBS**	Batch ID: **50543**	RunNo: **66643**							
Prep Date: **2/19/2020**	Analysis Date: **2/19/2020**	SeqNo: **2291802**	Units: **mg/Kg**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	1.5								

Sample ID: **LCS-50543**	SampType: **lcs**	TestCode: **EPA Method 300.0: Anions**							
Client ID: **LCSS**	Batch ID: **50543**	RunNo: **66643**							
Prep Date: **2/19/2020**	Analysis Date: **2/19/2020**	SeqNo: **2291803**	Units: **mg/Kg**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	14	1.5	15.00	0	92.6	90	110			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2002628**

21-Feb-20

Client: Marathon Oil Company

Project: HF7 Fed Com 1

Sample ID: **MB-50539**	SampType: **MBLK**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **PBS**	Batch ID: **50539**	RunNo: **66668**
Prep Date: **2/19/2020**	Analysis Date: **2/20/2020**	SeqNo: **2291592** 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	14		10.00		139	55.1	146			

Sample ID: **LCS-50539**	SampType: **LCS**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **LCSS**	Batch ID: **50539**	RunNo: **66668**
Prep Date: **2/19/2020**	Analysis Date: **2/20/2020**	SeqNo: **2291593** 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	125	70	130			
Surr: DNOP	5.8		5.000		115	55.1	146			

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#: **2002628**

21-Feb-20

Client: Marathon Oil Company
Project: HF7 Fed Com 1

Sample ID: **lcs-50494**	SampType: **LCS**	TestCode: **EPA Method 8260B: Volatiles Short List**
Client ID: **LCSS**	Batch ID: **50494**	RunNo: **66663**
Prep Date: **2/17/2020**	Analysis Date: **2/19/2020**	SeqNo: **2290917** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	1.0	0.025	1.000	0	100	70	130			
Toluene	0.98	0.050	1.000	0	98.5	70	130			
Ethylbenzene	0.99	0.050	1.000	0	98.7	70	130			
Xylenes, Total	2.9	0.10	3.000	0	97.2	70	130			
Surr: 1,2-Dichloroethane-d4	0.46		0.5000		92.8	70	130			
Surr: 4-Bromofluorobenzene	0.48		0.5000		96.4	70	130			
Surr: Dibromofluoromethane	0.46		0.5000		92.2	70	130			
Surr: Toluene-d8	0.50		0.5000		99.9	70	130			

Sample ID: **mb-50494**	SampType: **MBLK**	TestCode: **EPA Method 8260B: Volatiles Short List**
Client ID: **PBS**	Batch ID: **50494**	RunNo: **66663**
Prep Date: **2/17/2020**	Analysis Date: **2/19/2020**	SeqNo: **2290918** 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: 1,2-Dichloroethane-d4	0.47		0.5000		94.9	70	130			
Surr: 4-Bromofluorobenzene	0.50		0.5000		99.2	70	130			
Surr: Dibromofluoromethane	0.48		0.5000		96.2	70	130			
Surr: Toluene-d8	0.50		0.5000		101	70	130			

Sample ID: **lcs-50546**	SampType: **LCS**	TestCode: **EPA Method 8260B: Volatiles Short List**
Client ID: **LCSS**	Batch ID: **50546**	RunNo: **66683**
Prep Date: **2/19/2020**	Analysis Date: **2/20/2020**	SeqNo: **2292072** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 1,2-Dichloroethane-d4	0.46		0.5000		92.0	70	130			
Surr: 4-Bromofluorobenzene	0.46		0.5000		92.7	70	130			
Surr: Dibromofluoromethane	0.47		0.5000		94.7	70	130			
Surr: Toluene-d8	0.50		0.5000		99.6	70	130			

Sample ID: **mb-50546**	SampType: **MBLK**	TestCode: **EPA Method 8260B: Volatiles Short List**
Client ID: **PBS**	Batch ID: **50546**	RunNo: **66683**
Prep Date: **2/19/2020**	Analysis Date: **2/20/2020**	SeqNo: **2292073** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 1,2-Dichloroethane-d4	0.48		0.5000		95.4	70	130			
Surr: 4-Bromofluorobenzene	0.47		0.5000		94.5	70	130			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2002628**

21-Feb-20

Client: Marathon Oil Company
Project: HF7 Fed Com 1

Sample ID: **mb-50546**	SampType: **MBLK**	TestCode: **EPA Method 8260B: Volatiles Short List**
Client ID: **PBS**	Batch ID: **50546**	RunNo: **66683**
Prep Date: **2/19/2020**	Analysis Date: **2/20/2020**	SeqNo: **2292073** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: Dibromofluoromethane	0.47		0.5000		94.2	70	130			
Surr: Toluene-d8	0.50		0.5000		99.9	70	130			

Sample ID: **lcs-50537**	SampType: **LCS**	TestCode: **EPA Method 8260B: Volatiles Short List**
Client ID: **LCSS**	Batch ID: **50537**	RunNo: **66683**
Prep Date: **2/19/2020**	Analysis Date: **2/20/2020**	SeqNo: **2292744** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	1.1	0.025	1.000	0	109	70	130			
Toluene	1.0	0.050	1.000	0	103	70	130			
Surr: 1,2-Dichloroethane-d4	0.45		0.5000		90.4	70	130			
Surr: 4-Bromofluorobenzene	0.45		0.5000		90.2	70	130			
Surr: Dibromofluoromethane	0.48		0.5000		96.9	70	130			
Surr: Toluene-d8	0.50		0.5000		101	70	130			

Sample ID: **mb-50537**	SampType: **MBLK**	TestCode: **EPA Method 8260B: Volatiles Short List**
Client ID: **PBS**	Batch ID: **50537**	RunNo: **66683**
Prep Date: **2/19/2020**	Analysis Date: **2/20/2020**	SeqNo: **2292745** 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: 1,2-Dichloroethane-d4	0.46		0.5000		91.1	70	130			
Surr: 4-Bromofluorobenzene	0.47		0.5000		94.2	70	130			
Surr: Dibromofluoromethane	0.47		0.5000		94.5	70	130			
Surr: Toluene-d8	0.49		0.5000		98.9	70	130			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2002628**

21-Feb-20

Client: Marathon Oil Company
Project: HF7 Fed Com 1

Sample ID: **lcs-50494**	SampType: **LCS**	TestCode: **EPA Method 8015D Mod: Gasoline Range**
Client ID: **LCSS**	Batch ID: **50494**	RunNo: **66663**
Prep Date: **2/17/2020**	Analysis Date: **2/19/2020**	SeqNo: **2290946** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	23	5.0	25.00	0	90.2	70	130			
Surr: BFB	460		500.0		91.3	70	130			

Sample ID: **mb-50494**	SampType: **MBLK**	TestCode: **EPA Method 8015D Mod: Gasoline Range**
Client ID: **PBS**	Batch ID: **50494**	RunNo: **66663**
Prep Date: **2/17/2020**	Analysis Date: **2/19/2020**	SeqNo: **2290947** 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	480		500.0		95.5	70	130			

Sample ID: **lcs-50546**	SampType: **LCS**	TestCode: **EPA Method 8015D Mod: Gasoline Range**
Client ID: **LCSS**	Batch ID: **50546**	RunNo: **66683**
Prep Date: **2/19/2020**	Analysis Date: **2/20/2020**	SeqNo: **2292078** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: BFB	470		500.0		94.4	70	130			

Sample ID: **mb-50546**	SampType: **MBLK**	TestCode: **EPA Method 8015D Mod: Gasoline Range**
Client ID: **PBS**	Batch ID: **50546**	RunNo: **66683**
Prep Date: **2/19/2020**	Analysis Date: **2/20/2020**	SeqNo: **2292079** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: BFB	460		500.0		92.5	70	130			

Sample ID: **2002628-005ams**	SampType: **MS**	TestCode: **EPA Method 8015D Mod: Gasoline Range**
Client ID: **W-WS-Comp**	Batch ID: **50537**	RunNo: **66683**
Prep Date: **2/19/2020**	Analysis Date: **2/20/2020**	SeqNo: **2292833** Units: **mg/Kg-dry**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	25	5.4	26.97	0	92.6	70	130			H
Surr: BFB	500		539.4		93.0	70	130			H

Sample ID: **2002628-005amsd**	SampType: **MSD**	TestCode: **EPA Method 8015D Mod: Gasoline Range**
Client ID: **W-WS-Comp**	Batch ID: **50537**	RunNo: **66683**
Prep Date: **2/19/2020**	Analysis Date: **2/20/2020**	SeqNo: **2292834** Units: **mg/Kg-dry**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	25	5.1	25.53	0	96.0	70	130	1.83	20	H
Surr: BFB	460		510.7		89.8	70	130	0	0	H

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#: **2002628**

21-Feb-20

Client: Marathon Oil Company

Project: HF7 Fed Com 1

Sample ID: **lcs-50537**	SampType: **LCS**	TestCode: **EPA Method 8015D Mod: Gasoline Range**
Client ID: **LCSS**	Batch ID: **50537**	RunNo: **66683**
Prep Date: **2/19/2020**	Analysis Date: **2/20/2020**	SeqNo: **2292850** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	23	5.0	25.00	0	91.2	70	130			
Surr: BFB	470		500.0		93.3	70	130			

Sample ID: **mb-50537**	SampType: **MBLK**	TestCode: **EPA Method 8015D Mod: Gasoline Range**
Client ID: **PBS**	Batch ID: **50537**	RunNo: **66683**
Prep Date: **2/19/2020**	Analysis Date: **2/20/2020**	SeqNo: **2292851** 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	450		500.0		89.8	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

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: **MARATHON OIL COMPA** Work Order Number: **2002628** RcptNo: **1**

Received By: **Erin Melendrez** **2/15/2020 12:35:00 PM**

Completed By: **Erin Melendrez** **2/15/2020 3:28:51 PM**

Reviewed By: ENM 2/17/20

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: SR 2/17/20

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

Chain-of-Custody Record

Client: Marathon (Wescom)

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

Project Name: AF7 Fed Com 1

Project #:

Project Manager: Shar Harvester

Sampler:

On Ice: ☒ Yes ☐ No

# of Coolers:

Cooler Temp(including CF): 4.3+0.2(CF)=4.5(°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. 2002628	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)
1/17/20	1500	soil	E-WS-Comp	4oz g	ice	-001	X	X					X			
1/18/20	1515		FS-comp-4/5'			-002										
1/17/20	1800		S-WS-comp			-003										
1/18/20	1800		FS-COMP-4'			-004										
"	1630		W-WS-Comp			-005										
"	1600		W-WS-comp			-006										
"	1830		S-WS-comp			-007										
1/19/20	1530		N-WS-comp			-008										
	1800		FS-Comp-17'			-009										
	1830		W-WS-comp			-010										
	1835		E-WS-comp			-011										
↓	1840	↓	NE-WS-comp	↓	↓	-012	↓	↓					↓			

Date:	Time:	Relinquished by:	Received by:	Via:	Date	Time
2/14/20	1630				2/14/20	1630
2/14/20	1900			Courier	2/15/20	1235

Remarks:
Run out of hold samples
For TPH, BTEX, Chloride
Per Shelly Tucker 2/14/20 @ 1613

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.

Chain-of-Custody Record

Client: Marathon (Wescom)

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

Project Name: HF 7 Fed Com 1

Project #:

Project Manager: Shai Hamester

Sampler:

On Ice: ☒ Yes ☐ No

# of Coolers: 1

Cooler Temp(including CF): 4.3+0.2(CF)=4.5 (°C)

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

Date	Time	Matrix	Sample Name	Container Type and #	Preservative Type	HEAL No. 2002628	Analysis Request: BTEX / MTBE / TMB's (8021)	TPH:8015D(GRO / DRO / MRO)	8081 Pesticides/8082 PCB's	EDB (Method 504.1)	PAHs by 8310 or 8270SIMS	RCRA 8 Metals	Cl, F, Br, NO_3, NO_2, PO_4, SO_4	8260 (VOA)	8270 (Semi-VOA)	Total Coliform (Present/Absent)
1/19/20	1840	soil	NE-FS-comp-7'	4oz g	ice	-013	X	X					X			
1/19/20	1845	"	NW-FS-comp-7'	"	"	-014	X	X					X			

Date: 2/14/20 Time: 1630 Relinquished by: Shelly Tucker
Received by: Via: Date Time 2/14/20 1630

Date: 2/14/20 Time: 1900 Relinquished by:
Received by: Via: Courier Date Time 1235 2/15/20

Remarks: Run out of hold samples per Shelly Tucker

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.

Certificate of Analysis Summary 658990

Weston Solutions, Frisco, TX

Project Name: NF 7 #001

Project Id:
Contact: Robert Appelt
Project Location: Carlsbad, NM

Date Received in Lab: Wed 04.15.2020 16:35
Report Date: 04.20.2020 12:55
Project Manager: Jessica Kramer

Analysis Requested													
	Lab Id:	658990-001		658990-002		658990-003		658990-004		658990-005		658990-006	
	Field Id:	BKGD (5-7)		BKGD (12-14)		B-D1 (6.5-7.5)		B-04 (4-5)		B-05 (4-5)		B-13 (6-12)	
	Depth:	5-7 ft		12-14 ft		6.5-7.5 ft		4-5 ft		4-5 ft		6-12 ft	
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	Sampled:	04.14.2020 10:25		04.14.2020 10:45		04.14.2020 12:10		04.14.2020 13:00		04.14.2020 13:45		04.14.2020 14:30	
Chloride by EPA 300	***Extracted:***	04.16.2020 12:36		04.16.2020 12:36		04.16.2020 12:36		04.16.2020 12:36		04.16.2020 12:36		04.16.2020 12:36	
	Analyzed:	** ** ** **		04.16.2020 12:45		04.16.2020 12:50		04.16.2020 12:55		04.16.2020 13:01		04.16.2020 13:17	
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Chloride		360	9.96	445	10.1	489	9.98	134	9.94	985	10.0	646	9.92

Houston - Dallas - Midland - Tampa - Phoenix - Lubbock - San Antonio - El Paso - Atlanta - New Mexico

Jessica Kramer
Project Manager

Certificate of Analysis Summary 658990

Weston Solutions, Frisco, TX

Project Name: NF 7 #001

Project Id:
Contact: Robert Appelt
Project Location: Carlsbad, NM

Date Received in Lab: Wed 04.15.2020 16:35
Report Date: 04.20.2020 12:55
Project Manager: Jessica Kramer

Analysis Requested													
	Lab Id:	658990-007		658990-008		658990-009		658990-010		658990-011		658990-012	
	Field Id:	B-02 (6.5-7.5)		B-06 (3-4)		B-12 (6-12)		B-03 (16.5-17.5)		B-08 (6-12)		B-07 (5.5-6.5)	
	Depth:	6.5-7.5 ft		3-4 ft		6-12 ft		16.5-17.5 ft		6-12 ft		5.5-6.5 ft	
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	Sampled:	04.14.2020 16:20		04.14.2020 16:50		04.14.2020 15:35		04.14.2020 09:50		04.15.2020 10:55		04.15.2020 11:20	
Chloride by EPA 300	***Extracted:***	04.16.2020 12:36		04.16.2020 12:36		04.16.2020 12:36		04.16.2020 12:36		04.16.2020 12:36		04.16.2020 12:36	
	Analyzed:	04.16.2020 13:23		04.16.2020 13:28		04.16.2020 13:34		04.16.2020 13:39		04.16.2020 13:45		04.16.2020 14:02	
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Chloride		75.5	10.0	977	9.90	9.85 J	9.90	1350	100	334	9.98	386	10.1
TPH By SW8015 Mod	***Extracted:***			04.16.2020 12:00									
	Analyzed:			04.16.2020 13:07									
	Units/RL:			mg/kg	RL								
Gasoline Range Hydrocarbons (GRO)				<14.0	50.3								
Diesel Range Organics (DRO)				<11.5	50.3								
Motor Oil Range Hydrocarbons (MRO)				<11.5	50.3								
Total TPH				<11.5	50.3								

Jessica Kramer
Project Manager

Certificate of Analysis Summary 658990

Weston Solutions, Frisco, TX

Project Name: NF 7 #001

Project Id:
Contact: Robert Appelt
Project Location: Carlsbad, NM

Date Received in Lab: Wed 04.15.2020 16:35
Report Date: 04.20.2020 12:55
Project Manager: Jessica Kramer

Analysis Requested											
	Lab Id:	658990-013		658990-014		658990-015					
	Field Id:	B-09 (6-12)		B-10 (6-12)		B-11 (6-12)					
	Depth:	6-12 ft		6-12 ft		6-12 ft					
	Matrix:	SOIL		SOIL		SOIL					
	Sampled:	04.15.2020 12:00		04.15.2020 12:45		04.15.2020 13:30					
Chloride by EPA 300	***Extracted:***	04.16.2020 12:36		04.16.2020 12:36		04.16.2020 12:36					
	Analyzed:	04.16.2020 14:08		04.16.2020 14:26		04.16.2020 14:32					
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL				
Chloride		355	10.0	281	10.1	905	9.92				

Houston - Dallas - Midland - Tampa - Phoenix - Lubbock - San Antonio - El Paso - Atlanta - New Mexico

Jessica Kramer
Project Manager

Analytical Report 658990

for

Weston Solutions

Project Manager: Robert Appelt

NF 7 #001

04.20.2020

Collected By: Crystal Spangler

1089 N Canal Street
Carlsbad, NM 88220

Xenco-Houston (EPA Lab Code: TX00122):
Texas (T104704215-19-30), Arizona (AZ0765), Florida (E871002-24), Louisiana (03054)
Oklahoma (2019-058), North Carolina (681), Arkansas (19-037-0)

Xenco-Dallas (EPA Lab Code: TX01468):
Texas (TX104704295-19-22), Arizona (AZ0809), Arkansas (17-063-0)

Xenco-El Paso (EPA Lab Code: TX00127): Texas (T104704221-19-16)
Xenco-Lubbock (EPA Lab Code: TX00139): Texas (T104704219-19-21)
Xenco-Midland (EPA Lab Code: TX00158): Texas (T104704400-19-19)
Xenco-Carlsbad (LELAP): Louisiana (05092)
Xenco-San Antonio (EPA Lab Code: TNI02385): Texas (T104704534-19-5)
Xenco Phoenix (EPA Lab Code: AZ00901): Arizona (AZ0757)
Xenco-Tampa: Florida (E87429), North Carolina (483)

04.20.2020

Project Manager: **Robert Appelt**
Weston Solutions
2600 Dallas Parkway, Suite 280
Frisco, TX 75034

Reference: XENCO Report No(s): **658990**
NF 7 #001
Project Address: Carlsbad, NM

Robert Appelt:

We are reporting to you the results of the analyses performed on the samples received under the project name referenced above and identified with the XENCO Report Number(s) 658990. All results being reported under this Report Number apply to the samples analyzed and properly identified with a Laboratory ID number. Subcontracted analyses are identified in this report with either the NELAC certification number of the subcontract lab in the analyst ID field, or the complete subcontracted report attached to this report.

Unless otherwise noted in a Case Narrative, all data reported in this Analytical Report are in compliance with NELAC standards. The uncertainty of measurement associated with the results of analysis reported is available upon request. Should insufficient sample be provided to the laboratory to meet the method and NELAC Matrix Duplicate and Matrix Spike requirements, then the data will be analyzed, evaluated and reported using all other available quality control measures.

The validity and integrity of this report will remain intact as long as it is accompanied by this letter and reproduced in full, unless written approval is granted by XENCO Laboratories. This report will be filed for at least 5 years in our archives after which time it will be destroyed without further notice, unless otherwise arranged with you. The samples received, and described as recorded in Report No. 658990 will be filed for 45 days, and after that time they will be properly disposed without further notice, unless otherwise arranged with you. We reserve the right to return to you any unused samples, extracts or solutions related to them if we consider so necessary (e.g., samples identified as hazardous waste, sample sizes exceeding analytical standard practices, controlled substances under regulated protocols, etc).

We thank you for selecting XENCO Laboratories to serve your analytical needs. If you have any questions concerning this report, please feel free to contact us at any time.

Respectfully,

Jessica Kramer

Jessica Kramer
Project Manager

A Small Business and Minority Company

Houston - Dallas - Midland - Tampa - Phoenix - Lubbock - San Antonio - El Paso - Atlanta - New Mexico

Sample Cross Reference 658990

Weston Solutions, Frisco, TX

NF 7 #001

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
BKGD (5-7)	S	04.14.2020 10:25	5 - 7 ft	658990-001
BKGD (12-14)	S	04.14.2020 10:45	12 - 14 ft	658990-002
B-D1 (6.5-7.5)	S	04.14.2020 12:10	6.5 - 7.5 ft	658990-003
B-04 (4-5)	S	04.14.2020 13:00	4 - 5 ft	658990-004
B-05 (4-5)	S	04.14.2020 13:45	4 - 5 ft	658990-005
B-13 (6-12)	S	04.14.2020 14:30	6 - 12 ft	658990-006
B-02 (6.5-7.5)	S	04.14.2020 16:20	6.5 - 7.5 ft	658990-007
B-06 (3-4)	S	04.14.2020 16:50	3 - 4 ft	658990-008
B-12 (6-12)	S	04.14.2020 15:35	6 - 12 ft	658990-009
B-03 (16.5-17.5)	S	04.14.2020 09:50	16.5 - 17.5 ft	658990-010
B-08 (6-12)	S	04.15.2020 10:55	6 - 12 ft	658990-011
B-07 (5.5-6.5)	S	04.15.2020 11:20	5.5 - 6.5 ft	658990-012
B-09 (6-12)	S	04.15.2020 12:00	6 - 12 ft	658990-013
B-10 (6-12)	S	04.15.2020 12:45	6 - 12 ft	658990-014
B-11 (6-12)	S	04.15.2020 13:30	6 - 12 ft	658990-015

CASE NARRATIVE

Client Name: Weston Solutions

Project Name: NF 7 #001

Project ID:
Work Order Number(s): *658990*

Report Date: *04.20.2020*
Date Received: *04.15.2020*

This laboratory is NELAC accredited under the Texas Laboratory Accreditation Program for all the methods, analytes, and matrices reported in this data package except as noted. The data have been reviewed and are technically compliant with the requirements of the methods used, except where noted by the laboratory.

Sample receipt non conformances and comments:

Sample receipt non conformances and comments per sample:

None

Certificate of Analytical Results 658990

Weston Solutions, Frisco, TX

NF 7 #001

Sample Id:	**BKGD (5-7)**	Matrix:	Soil	Date Received:	04.15.2020 16:35
Lab Sample Id:	658990-001	Date Collected:	04.14.2020 10:25	Sample Depth:	5 - 7 ft
Analytical Method:	Chloride by EPA 300			Prep Method:	E300P
Tech:	MAB			% Moisture:	
Analyst:	MAB	Date Prep:	04.16.2020 12:36	Basis:	Wet Weight
Seq Number:	3123310				

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**360**	9.96	0.353	mg/kg	04.16.2020 12:28		1

Certificate of Analytical Results 658990

Weston Solutions, Frisco, TX

NF 7 #001

Sample Id:	**BKGD (12-14)**	Matrix:	Soil	Date Received:	04.15.2020 16:35
Lab Sample Id:	658990-002	Date Collected:	04.14.2020 10:45	Sample Depth:	12 - 14 ft
Analytical Method:	Chloride by EPA 300			Prep Method:	E300P
Tech:	MAB			% Moisture:	
Analyst:	MAB	Date Prep:	04.16.2020 12:36	Basis:	Wet Weight
Seq Number:	3123310				

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**445**	10.1	0.357	mg/kg	04.16.2020 12:45		1

Certificate of Analytical Results 658990

Weston Solutions, Frisco, TX

NF 7 #001

Sample Id:	**B-D1 (6.5-7.5)**	Matrix:	Soil	Date Received:	04.15.2020 16:35
Lab Sample Id:	658990-003	Date Collected:	04.14.2020 12:10	Sample Depth:	6.5 - 7.5 ft
Analytical Method:	Chloride by EPA 300			Prep Method:	E300P
Tech:	MAB			% Moisture:	
Analyst:	MAB	Date Prep:	04.16.2020 12:36	Basis:	Wet Weight
Seq Number:	3123310				

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**489**	9.98	0.353	mg/kg	04.16.2020 12:50		1

Certificate of Analytical Results 658990

Weston Solutions, Frisco, TX

NF 7 #001

Sample Id:	**B-04 (4-5)**	Matrix:	Soil	Date Received:	04.15.2020 16:35
Lab Sample Id:	658990-004	Date Collected:	04.14.2020 13:00	Sample Depth:	4 - 5 ft
Analytical Method:	Chloride by EPA 300			Prep Method:	E300P
Tech:	MAB			% Moisture:	
Analyst:	MAB	Date Prep:	04.16.2020 12:36	Basis:	Wet Weight
Seq Number:	3123310				

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**134**	9.94	0.352	mg/kg	04.16.2020 12:55		1

Certificate of Analytical Results 658990

Weston Solutions, Frisco, TX

NF 7 #001

Sample Id:	**B-05 (4-5)**	Matrix:	Soil	Date Received:	04.15.2020 16:35
Lab Sample Id:	658990-005	Date Collected:	04.14.2020 13:45	Sample Depth:	4 - 5 ft
Analytical Method:	Chloride by EPA 300			Prep Method:	E300P
Tech:	MAB			% Moisture:	
Analyst:	MAB	Date Prep:	04.16.2020 12:36	Basis:	Wet Weight
Seq Number:	3123310				

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**985**	10.0	0.355	mg/kg	04.16.2020 13:01		1

Certificate of Analytical Results 658990

Weston Solutions, Frisco, TX

NF 7 #001

Sample Id:	**B-13 (6-12)**	Matrix:	Soil	Date Received:	04.15.2020 16:35
Lab Sample Id:	658990-006	Date Collected:	04.14.2020 14:30	Sample Depth:	6 - 12 ft
Analytical Method:	Chloride by EPA 300			Prep Method:	E300P
Tech:	MAB			% Moisture:	
Analyst:	MAB	Date Prep:	04.16.2020 12:36	Basis:	Wet Weight
Seq Number:	3123310				

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**646**	9.92	0.351	mg/kg	04.16.2020 13:17		1

Certificate of Analytical Results 658990

Weston Solutions, Frisco, TX

NF 7 #001

Sample Id:	**B-02 (6.5-7.5)**	Matrix:	Soil	Date Received:	04.15.2020 16:35
Lab Sample Id:	658990-007	Date Collected:	04.14.2020 16:20	Sample Depth:	6.5 - 7.5 ft
Analytical Method:	Chloride by EPA 300			Prep Method:	E300P
Tech:	MAB			% Moisture:	
Analyst:	MAB	Date Prep:	04.16.2020 12:36	Basis:	Wet Weight
Seq Number:	3123310				

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**75.5**	10.0	0.354	mg/kg	04.16.2020 13:23		1

Certificate of Analytical Results 658990

Weston Solutions, Frisco, TX

NF 7 #001

Sample Id:	**B-06 (3-4)**	Matrix:	Soil	Date Received:	04.15.2020 16:35
Lab Sample Id:	658990-008	Date Collected:	04.14.2020 16:50	Sample Depth:	3 - 4 ft

Analytical Method:	Chloride by EPA 300			Prep Method:	E300P
Tech:	MAB			% Moisture:	
Analyst:	MAB	Date Prep:	04.16.2020 12:36	Basis:	Wet Weight
Seq Number:	3123310				

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**977**	9.90	0.350	mg/kg	04.16.2020 13:28		1

Analytical Method:	TPH By SW8015 Mod			Prep Method:	SW8015P
Tech:	DTH			% Moisture:	
Analyst:	DTH	Date Prep:	04.16.2020 12:00	Basis:	Wet Weight
Seq Number:	3123293				

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<14.0	50.3	14.0	mg/kg	04.16.2020 13:07	U	1
Diesel Range Organics (DRO)	C10C28DRO	<11.5	50.3	11.5	mg/kg	04.16.2020 13:07	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<11.5	50.3	11.5	mg/kg	04.16.2020 13:07	U	1
Total TPH	PHC635	<11.5	50.3	11.5	mg/kg	04.16.2020 13:07	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	99	%	70-135	04.16.2020 13:07	
o-Terphenyl	84-15-1	105	%	70-135	04.16.2020 13:07	

Certificate of Analytical Results 658990

Weston Solutions, Frisco, TX

NF 7 #001

Sample Id:	**B-12 (6-12)**	Matrix:	Soil	Date Received:	04.15.2020 16:35
Lab Sample Id:	658990-009	Date Collected:	04.14.2020 15:35	Sample Depth:	6 - 12 ft
Analytical Method:	Chloride by EPA 300			Prep Method:	E300P
Tech:	MAB			% Moisture:	
Analyst:	MAB	Date Prep:	04.16.2020 12:36	Basis:	Wet Weight
Seq Number:	3123310				

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**9.85**	9.90	0.350	mg/kg	04.16.2020 13:34	J	1

Certificate of Analytical Results 658990

Weston Solutions, Frisco, TX

NF 7 #001

Sample Id:	**B-03 (16.5-17.5)**	Matrix:	Soil	Date Received:	04.15.2020 16:35
Lab Sample Id:	658990-010	Date Collected:	04.14.2020 09:50	Sample Depth:	16.5 - 17.5 ft
Analytical Method:	Chloride by EPA 300			Prep Method:	E300P
Tech:	MAB			% Moisture:	
Analyst:	MAB	Date Prep:	04.16.2020 12:36	Basis:	Wet Weight
Seq Number:	3123310				

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**1350**	100	3.55	mg/kg	04.16.2020 13:39		10

Certificate of Analytical Results 658990

Weston Solutions, Frisco, TX

NF 7 #001

Sample Id:	**B-08 (6-12)**	Matrix:	Soil	Date Received:	04.15.2020 16:35
Lab Sample Id:	658990-011	Date Collected:	04.15.2020 10:55	Sample Depth:	6 - 12 ft
Analytical Method:	Chloride by EPA 300			Prep Method:	E300P
Tech:	MAB			% Moisture:	
Analyst:	MAB	Date Prep:	04.16.2020 12:36	Basis:	Wet Weight
Seq Number:	3123310				

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**334**	9.98	0.353	mg/kg	04.16.2020 13:45		1

Certificate of Analytical Results 658990

Weston Solutions, Frisco, TX

NF 7 #001

Sample Id:	**B-07 (5.5-6.5)**	Matrix:	Soil	Date Received:	04.15.2020 16:35
Lab Sample Id:	658990-012	Date Collected:	04.15.2020 11:20	Sample Depth:	5.5 - 6.5 ft
Analytical Method:	Chloride by EPA 300			Prep Method:	E300P
Tech:	MAB			% Moisture:	
Analyst:	MAB	Date Prep:	04.16.2020 12:36	Basis:	Wet Weight
Seq Number:	3123310				

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**386**	10.1	0.358	mg/kg	04.16.2020 14:02		1

Certificate of Analytical Results 658990

Weston Solutions, Frisco, TX

NF 7 #001

Sample Id:	**B-09 (6-12)**	Matrix:	Soil	Date Received:	04.15.2020 16:35
Lab Sample Id:	658990-013	Date Collected:	04.15.2020 12:00	Sample Depth:	6 - 12 ft
Analytical Method:	Chloride by EPA 300			Prep Method:	E300P
Tech:	MAB			% Moisture:	
Analyst:	MAB	Date Prep:	04.16.2020 12:36	Basis:	Wet Weight
Seq Number:	3123310				

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**355**	10.0	0.355	mg/kg	04.16.2020 14:08		1

Certificate of Analytical Results 658990

Weston Solutions, Frisco, TX

NF 7 #001

Sample Id:	**B-10 (6-12)**	Matrix:	Soil	Date Received:	04.15.2020 16:35
Lab Sample Id:	658990-014	Date Collected:	04.15.2020 12:45	Sample Depth:	6 - 12 ft
Analytical Method:	Chloride by EPA 300			Prep Method:	E300P
Tech:	MAB			% Moisture:	
Analyst:	MAB	Date Prep:	04.16.2020 12:36	Basis:	Wet Weight
Seq Number:	3123310				

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**281**	10.1	0.357	mg/kg	04.16.2020 14:26		1

Certificate of Analytical Results 658990

Weston Solutions, Frisco, TX

NF 7 #001

Sample Id:	**B-11 (6-12)**	Matrix:	Soil	Date Received:	04.15.2020 16:35
Lab Sample Id:	658990-015	Date Collected:	04.15.2020 13:30	Sample Depth:	6 - 12 ft
Analytical Method:	Chloride by EPA 300			Prep Method:	E300P
Tech:	MAB			% Moisture:	
Analyst:	MAB	Date Prep:	04.16.2020 12:36	Basis:	Wet Weight
Seq Number:	3123310				

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**905**	9.92	0.351	mg/kg	04.16.2020 14:32		1

Flagging Criteria

X In our quality control review of the data a QC deficiency was observed and flagged as noted. MS/MSD recoveries were found to be outside of the laboratory control limits due to possible matrix /chemical interference, or a concentration of target analyte high enough to affect the recovery of the spike concentration. This condition could also affect the relative percent difference in the MS/MSD.

B A target analyte or common laboratory contaminant was identified in the method blank. Its presence indicates possible field or laboratory contamination.

D The sample(s) were diluted due to targets detected over the highest point of the calibration curve, or due to matrix interference. Dilution factors are included in the final results. The result is from a diluted sample.

E The data exceeds the upper calibration limit; therefore, the concentration is reported as estimated.

F RPD exceeded lab control limits.

J The target analyte was positively identified below the quantitation limit and above the detection limit.

U Analyte was not detected.

L The LCS data for this analytical batch was reported below the laboratory control limits for this analyte. The department supervisor and QA Director reviewed data. The samples were either reanalyzed or flagged as estimated concentrations.

H The LCS data for this analytical batch was reported above the laboratory control limits. Supporting QC Data were reviewed by the Department Supervisor and QA Director. Data were determined to be valid for reporting.

K Sample analyzed outside of recommended hold time.

JN A combination of the "N" and the "J" qualifier. The analysis indicates that the analyte is "tentatively identified" and the associated numerical value may not be consistent with the amount actually present in the environmental sample.

** Surrogate recovered outside laboratory control limit.

BRL Below Reporting Limit. **ND** Not Detected.

RL Reporting Limit

MDL Method Detection Limit **SDL** Sample Detection Limit **LOD** Limit of Detection

PQL Practical Quantitation Limit **MQL** Method Quantitation Limit **LOQ** Limit of Quantitation

DL Method Detection Limit

NC Non-Calculable

SMP Client Sample **BLK** Method Blank

BKS/LCS Blank Spike/Laboratory Control Sample **BKSD/LCSD** Blank Spike Duplicate/Laboratory Control Sample Duplicate

MD/SD Method Duplicate/Sample Duplicate **MS** Matrix Spike **MSD:** Matrix Spike Duplicate

+ NELAC certification not offered for this compound.

* (Next to analyte name or method description) = Outside XENCO's scope of NELAC accreditation

QC Summary 658990

Weston Solutions

NF 7 #001

Analytical Method: Chloride by EPA 300 — Prep Method: E300P
Seq Number: 3123310 — Matrix: Solid — Date Prep: 04.16.2020
MB Sample Id: 7701398-1-BLK — LCS Sample Id: 7701398-1-BKS — LCSD Sample Id: 7701398-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	<0.354	250	259	104	261	104	90-110	1	20	mg/kg	04.16.2020 12:17	

Analytical Method: Chloride by EPA 300 — Prep Method: E300P
Seq Number: 3123310 — Matrix: Soil — Date Prep: 04.16.2020
Parent Sample Id: 658990-001 — MS Sample Id: 658990-001 S — MSD Sample Id: 658990-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	360	200	562	101	569	105	90-110	1	20	mg/kg	04.16.2020 12:34	

Analytical Method: Chloride by EPA 300 — Prep Method: E300P
Seq Number: 3123310 — Matrix: Soil — Date Prep: 04.16.2020
Parent Sample Id: 658990-011 — MS Sample Id: 658990-011 S — MSD Sample Id: 658990-011 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	334	200	552	109	548	107	90-110	1	20	mg/kg	04.16.2020 13:51	

Analytical Method: TPH By SW8015 Mod — Prep Method: SW8015P
Seq Number: 3123293 — Matrix: Solid — Date Prep: 04.16.2020
MB Sample Id: 7701402-1-BLK — LCS Sample Id: 7701402-1-BKS — LCSD Sample Id: 7701402-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Gasoline Range Hydrocarbons (GRO)	<13.9	1000	974	97	940	94	70-135	4	35	mg/kg	04.16.2020 12:05	
Diesel Range Organics (DRO)	<11.5	1000	1110	111	1060	106	70-135	5	35	mg/kg	04.16.2020 12:05	

Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
1-Chlorooctane	91		108		107		70-135	%	04.16.2020 12:05
o-Terphenyl	96		108		120		70-135	%	04.16.2020 12:05

Analytical Method: TPH By SW8015 Mod — Prep Method: SW8015P
Seq Number: 3123293 — Matrix: Solid — Date Prep: 04.16.2020
MB Sample Id: 7701402-1-BLK

Parameter	MB Result	Units	Analysis Date	Flag
Motor Oil Range Hydrocarbons (MRO)	<11.5	mg/kg	04.16.2020 11:45	

MS/MSD Percent Recovery [D] = 100*(C-A) / B — LCS = Laboratory Control Sample — MS = Matrix Spike
Relative Percent Difference RPD = 200* | (C-E) / (C+E) | — A = Parent Result — B = Spike Added
LCS/LCSD Recovery [D] = 100 * (C) / [B] — C = MS/LCS Result — D = MSD/LCSD % Rec
Log Difference Log Diff. = Log(Sample Duplicate) - Log(Original Sample) — E = MSD/LCSD Result

QC Summary 658990

Weston Solutions

NF 7 #001

Analytical Method: **TPH By SW8015 Mod** Prep Method: SW8015P

Seq Number: 3123293 Matrix: Soil Date Prep: 04.16.2020

Parent Sample Id: 658990-008 MS Sample Id: 658990-008 S MSD Sample Id: 658990-008 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Gasoline Range Hydrocarbons (GRO)	<13.9	1000	973	97	1040	104	70-135	7	35	mg/kg	04.16.2020 13:28	
Diesel Range Organics (DRO)	<11.5	1000	1130	113	1130	113	70-135	0	35	mg/kg	04.16.2020 13:28	

Surrogate	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1-Chlorooctane	115		119		70-135	%	04.16.2020 13:28
o-Terphenyl	112		118		70-135	%	04.16.2020 13:28

MS/MSD Percent Recovery [D] = 100*(C-A) / B
Relative Percent Difference RPD = 200* | (C-E) / (C+E) |
LCS/LCSD Recovery [D] = 100 * (C) / [B]
Log Difference Log Diff. = Log(Sample Duplicate) - Log(Original Sample)

LCS = Laboratory Control Sample
A = Parent Result
C = MS/LCS Result
E = MSD/LCSD Result

MS = Matrix Spike
B = Spike Added
D = MSD/LCSD % Rec

Chain of Custody

XENCO LABORATORIES
Houston,TX (281) 240-4200 Dallas,TX (214) 902-0300 San Antonio,TX (210) 509-3334
Midland,TX (432) 704-5440 EL Paso,TX (915) 585-3443 Lubbock,TX (806) 794-1296 Crasibad, NM (432) 704-5440
Phoenix,AZ (480) 355-0900 Atlanta,GA (770) 449-8800 Tampa,FL (813) 620-2000 West Palm Beach, FL (561) 689-6701 www.xenco.com

Work Order No: 658990

Project Manager:	Robert Appelt	Bill to: (if different)	MRO – Melodie Sanjari
Company Name:	Weston Solutions	Company Name:	Marathon Oil
Address:	2600 Dallas Prkwy ste 380	Address:	
City, State ZIP:	Frisco, TX 75034	City, State ZIP:	Carlsbad, NM
Phone:	214.205.4145	Email:	

Work Order Comments

Program: UST/PST ☐ PRP ☐ Brownfields ☐ RRC ☐ Superfund ☐
State of Project:
Reporting:Level II ☐ Level III ☐ PST/UST ☐ TRRP ☐ Level IV ☐
Deliverables: EDD ☐ ADaPT ☐ Other:

Project Name:	HF 7 Fed Com #001	Turn Around	
Project Number:		Routine ☐	
Project Location	Carlsbad, NM	Rush: 7DAY	
Sampler's Name:	Crystal Spangler	Due Date:	
PO #:		Quote #:	

SAMPLE RECEIPT			
Temp Blank:	(Yes) No	Wet Ice:	(Yes) No
Temperature (°C):	1.4	Thermometer ID	THM007
Received Intact:	(Yes) No		
Cooler Custody Seals:	Yes (No) N/A	Correction Factor:	-0.2
Sample Custody Seals:	Yes (No) N/A	Total Containers:	15

Lab ID	Sample Identification	Matrix	Date Sampled	Time Sampled	Depth	Number of Containers	Pres. Code	NA	NA												
								Chlorides 300.0	TPH 8015M												
1	BKGD (5-7)	S	4/14/2020	1025	5-7'	1		X													
2	BKGD (12-14)			1045	12-14'			X													
3	B-01 (6.5-7.5)			1210	6.5-7.5'			X													
4	B-04 (4-5)			1300	4-5'			X													
5	B-05 (4-5)			1335	4-5'			X													
6	B-13 (6-12)			1430	6-12'			X													
7	B-02 (6.5-7.5)			1620	6.5-7.5'			X													
8	B-06 (3-4)			1650	3-4'			X	X												
9	B-12 (6-12)		"	1535	6-12'			X													
10	B-03 (16.5-17.5)	↓	4/15/2020	0950	16.5-17.5	↓		X													

Preservative Codes

MeOH: Me
None: NO
HNO3: HN
H2S04: H2
HCL: HL
NaOH: Na
Zn Acetate+ NaOH: Zn

TAT starts the day recevied by the lab, if received by 4:00pm

Sample Comments

Total 200.7 / 6010 200.8 / 6020: 8RCRA 13PPM Texas 11 Al Sb As Ba Be B Cd Ca Cr Co Cu Fe Pb Mg Mn Mo Ni K Se Ag SiO2 Na Sr Tl Sn U V Zn

Circle Method(s) and Metal(s) to be analyzed TCLP / SPLP 6010: 8RCRA Sb As Ba Be Cd Cr Co Cu Pb Mn Mo Ni Se Ag Tl U 1631 / 245.1 / 7470 / 7471 : Hg

Relinquished by: (Signature)	Received by: (Signature)	Date/Time	Relinquished by: (Signature)	Received by: (Signature)	Date/Time
1		4/15/2020 1035	2		
3			4		
5			6		

Revised Date 022619 Rev. 2019.1

Chain of Custody

XENCO LABORATORIES

Houston,TX (281) 240-4200 Dallas,TX (214) 902-0300 San Antonio,TX (210) 509-3334
Midland,TX (432) 704-5440 EL Paso,TX (915) 585-3443 Lubbock,TX (806) 794-1296 Crasibad, NM (432) 704-5440
Phoenix,AZ (480) 355-0900 Atlanta,GA (770) 449-8800 Tampa,FL (813) 620-2000 West Palm Beach, FL (561) 689-6701

Work Order No: 458990

www.xenco.com Page 2 of 2

Project Manager:	Robert Appelt	Bill to: (if different)	Melodie Sanjari
Company Name:	Weston Solutions	Company Name:	Marathon Oil
Address:	2600 Dallas Parkway, Ste 280	Address:	
City, State ZIP:	Frisco, TX 75034	City, State ZIP:	Carlsbad, NM
Phone:	214.205.4145	Email:	

Work Order Comments

Program: UST/PST ☐ PRP ☐ Brownfields ☐ RRC ☐ Superfund ☐
State of Project:
Reporting: Level II ☐ Level III ☐ PST/UST ☐ TRRP ☐ Level IV ☐
Deliverables: EDD ☐ ADaPT ☐ Other:

Project Name:	HF 7 Fed Com #001	Turn Around	
Project Number:		Routine ☐	
Project Location	Carlsbad NM	Rush: 7 DAY	
Sampler's Name:	Crystal Spangler	Due Date:	
PO #:		Quote #:	

SAMPLE RECEIPT				
Temp Blank:	Yes No	Wet Ice:	Yes ~~No~~	
Temperature (°C):		Thermometer ID		
Received Intact:	Yes No			
Cooler Custody Seals:	Yes No N/A	Correction Factor:		
Sample Custody Seals:	Yes No N/A	Total Containers:		

Lab ID	Sample Identification	Matrix	Date Sampled	Time Sampled	Depth	Number of Containers	Pres. Code	ANALYSIS REQUEST: Chlorides 300.0	ANALYSIS REQUEST: TPH 8015M	Sample Comments
11	B-08 (6-12)	S	4/15/2020	1055	6-12'	1		X		
12	B-07 (5.5-6.5)			1120	5.5-6.5'			X		
13	B-09 (6-12)			1200	6-12'			X		
14	B-10 (6-12)			1245	6-12'			X		
15	B-11 (6-12)			1330	6-12'	1		X		

Preservative Codes

MeOH: Me
None: NO
HNO3: HN
H2S04: H2
HCL: HL
NaOH: Na
Zn Acetate+ NaOH: Zn

TAT starts the day recevied by the lab, if received by 4:00pm

Total 200.7 / 6010 200.8 / 6020: 8RCRA 13PPM Texas 11 Al Sb As Ba Be B Cd Ca Cr Co Cu Fe Pb Mg Mn Mo Ni K Se Ag SiO2 Na Sr Tl Sn U V Zn

Circle Method(s) and Metal(s) to be analyzed

TCLP / SPLP 6010: 8RCRA Sb As Ba Be Cd Cr Co Cu Pb Mn Mo Ni Se Ag Tl U

1631 / 245.1 / 7470 / 7471 : Hg

Notice: Signature of this document and relinquishment of samples constitutes a valid purchase order from client company to Xenco, its affiliates and subcontractors. It assigns standard terms and conditions of service. Xenco will be liable only for the cost of samples and shall not assume any responsibility for any losses or expenses incurred by the client if such losses are due to circumstances beyond the control of Xenco. A minimum charge of $75.00 will be applied to each project and a charge of $5 for each sample submitted to Xenco, but not analyzed. These terms will be enforced unless previously negotiated.

Relinquished by: (Signature)	Received by: (Signature)	Date/Time	Relinquished by: (Signature)	Received by: (Signature)	Date/Time
		4/15/2020 1035	2		
			4		
			6		

Revised Date 022619 Rev. 2019.1

XENCO Laboratories

Prelogin/Nonconformance Report- Sample Log-In

Client: Weston Solutions

Date/ Time Received: 04.15.2020 04.35.00 PM

Work Order #: 658990

Acceptable Temperature Range: 0 - 6 degC
Air and Metal samples Acceptable Range: Ambient

Temperature Measuring device used : T-NM-007

Sample Receipt Checklist	Comments
#1 *Temperature of cooler(s)?	1.4
#2 *Shipping container in good condition?	**Yes**
#3 *Samples received on ice?	**Yes**
#4 *Custody Seals intact on shipping container/ cooler?	**Yes**
#5 Custody Seals intact on sample bottles?	**Yes**
#6*Custody Seals Signed and dated?	**Yes**
#7 *Chain of Custody present?	**Yes**
#8 Any missing/extra samples?	**No**
#9 Chain of Custody signed when relinquished/ received?	**Yes**
#10 Chain of Custody agrees with sample labels/matrix?	**Yes**
#11 Container label(s) legible and intact?	**Yes**
#12 Samples in proper container/ bottle?	**Yes**
#13 Samples properly preserved?	**Yes**
#14 Sample container(s) intact?	**Yes**
#15 Sufficient sample amount for indicated test(s)?	**Yes**
#16 All samples received within hold time?	**Yes**
#17 Subcontract of sample(s)?	**No**
#18 Water VOC samples have zero headspace?	**N/A**

*** Must be completed for after-hours delivery of samples prior to placing in the refrigerator**

Analyst: PH Device/Lot#:

Checklist completed by: Elizabeth McClellan Date: 04.16.2020

Checklist reviewed by: Jessica Kramer Date: 04.16.2020

Jessica Kramer

Certificate of Analysis Summary 661758

Weston Solutions, Frisco, TX

Project Name: HF7 Fed Com#001

Project Id:
Contact: Robert Appelt
Project Location: Carlsbad NM

Date Received in Lab: Fri 05.15.2020 11:07
Report Date: 05.19.2020 09:40
Project Manager: Jessica Kramer

Analysis Requested													
	Lab Id:	661758-001		661758-002		661758-003		661758-004		661758-005		661758-006	
	Field Id:	B-03-2-1 (6.5-7.5)		B-03-2-2 (20-21)		B-11-2-1 (1-5.5		B-06-3 (1-5)		B-09-2-1 (1-5.5)		B-10-2-1 (1-5.5)	
	Depth:	6.5-7.5 ft		20-21 ft		1-5.5 ft		1-5 ft		1-5.5 ft		1-5.5 ft	
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	Sampled:	05.14.2020 09:40		05.14.2020 11:15		05.14.2020 11:30		05.14.2020 12:00		05.14.2020 12:20		05.14.2020 12:30	
Chloride by EPA 300	***Extracted:***	05.15.2020 17:15		05.15.2020 17:15		05.15.2020 17:15		05.15.2020 17:15		05.15.2020 17:15		05.15.2020 17:17	
	Analyzed:	05.15.2020 21:37		05.15.2020 21:43		05.15.2020 21:48		05.15.2020 21:54		05.15.2020 22:00		05.15.2020 22:35	
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Chloride		492	9.98	757	9.98	205	9.94	548	9.98	222	10.1	749	9.90

Houston - Dallas - Midland - Tampa - Phoenix - Lubbock - San Antonio - El Paso - Atlanta - New Mexico

Jessica Kramer
Project Manager

Certificate of Analysis Summary 661758

Weston Solutions, Frisco, TX

Project Name: HF7 Fed Com#001

Project Id:
Contact: Robert Appelt
Project Location: Carlsbad NM

Date Received in Lab: Fri 05.15.2020 11:07
Report Date: 05.19.2020 09:40
Project Manager: Jessica Kramer

Analysis Requested													
	Lab Id:	661758-007		661758-008		661758-009		661758-010					
	Field Id:	B-05-2 (1-4)		B-13-2-1 (2-6)		B-12-2-1 (0-4)		Dup -01					
	Depth:	1-4 ft		2-6 ft		0-4 ft							
	Matrix:	SOIL		SOIL		SOIL		SOIL					
	Sampled:	05.14.2020 13:30		05.14.2020 13:55		05.14.2020 14:30		05.14.2020 00:00					
Chloride by EPA 300	***Extracted:***	05.15.2020 17:17		05.15.2020 17:17		05.15.2020 17:17		05.18.2020 12:00					
	Analyzed:	05.15.2020 22:53		05.15.2020 22:59		05.15.2020 23:05		05.18.2020 15:40					
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL				
Chloride		119	9.92	244	9.92	58.0	9.96	216	10.0				

Jessica Kramer
Project Manager

Analytical Report 661758

for

Weston Solutions

Project Manager: Robert Appelt

HF7 Fed Com#001

05.19.2020

Collected By: Client

1089 N Canal Street
Carlsbad, NM 88220

Xenco-Houston (EPA Lab Code: TX00122):
Texas (T104704215-20-32), Arizona (AZ0765), Florida (E871002-33), Louisiana (03054)
Oklahoma (2019-058), North Carolina (681), Arkansas (20-035-0)

Xenco-Dallas (EPA Lab Code: TX01468):
Texas (TX104704295-19-23), Arizona (AZ0809)

Xenco-El Paso (EPA Lab Code: TX00127): Texas (T104704221-19-16)
Xenco-Lubbock (EPA Lab Code: TX00139): Texas (T104704219-20-22)
Xenco-Midland (EPA Lab Code: TX00158): Texas (T104704400-19-19)
Xenco-Carlsbad (LELAP): Louisiana (05092)
Xenco-San Antonio (EPA Lab Code: TNI02385): Texas (T104704534-19-5)
Xenco Phoenix (EPA Lab Code: AZ00901): Arizona (AZ0757)
Xenco-Tampa: Florida (E87429), North Carolina (483)

05.19.2020

Project Manager: **Robert Appelt**
Weston Solutions
2600 Dallas Parkway, Suite 280
Frisco, TX 75034

Reference: XENCO Report No(s): **661758**
HF7 Fed Com#001
Project Address: Carlsbad NM

Robert Appelt:

We are reporting to you the results of the analyses performed on the samples received under the project name referenced above and identified with the XENCO Report Number(s) 661758. All results being reported under this Report Number apply to the samples analyzed and properly identified with a Laboratory ID number. Subcontracted analyses are identified in this report with either the NELAC certification number of the subcontract lab in the analyst ID field, or the complete subcontracted report attached to this report.

Unless otherwise noted in a Case Narrative, all data reported in this Analytical Report are in compliance with NELAC standards. The uncertainty of measurement associated with the results of analysis reported is available upon request. Should insufficient sample be provided to the laboratory to meet the method and NELAC Matrix Duplicate and Matrix Spike requirements, then the data will be analyzed, evaluated and reported using all other available quality control measures.

The validity and integrity of this report will remain intact as long as it is accompanied by this letter and reproduced in full, unless written approval is granted by XENCO Laboratories. This report will be filed for at least 5 years in our archives after which time it will be destroyed without further notice, unless otherwise arranged with you. The samples received, and described as recorded in Report No. 661758 will be filed for 45 days, and after that time they will be properly disposed without further notice, unless otherwise arranged with you. We reserve the right to return to you any unused samples, extracts or solutions related to them if we consider so necessary (e.g., samples identified as hazardous waste, sample sizes exceeding analytical standard practices, controlled substances under regulated protocols, etc).

We thank you for selecting XENCO Laboratories to serve your analytical needs. If you have any questions concerning this report, please feel free to contact us at any time.

Respectfully,

Jessica Kramer

Jessica Kramer
Project Manager

A Small Business and Minority Company

Houston - Dallas - Midland - Tampa - Phoenix - Lubbock - San Antonio - El Paso - Atlanta - New Mexico

Sample Cross Reference 661758

Weston Solutions, Frisco, TX

HF7 Fed Com#001

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
B-03-2-1 (6.5-7.5)	S	05.14.2020 09:40	6.5 - 7.5 ft	661758-001
B-03-2-2 (20-21)	S	05.14.2020 11:15	20 - 21 ft	661758-002
B-11-2-1 (1-5.5	S	05.14.2020 11:30	1 - 5.5 ft	661758-003
B-06-3 (1-5)	S	05.14.2020 12:00	1 - 5 ft	661758-004
B-09-2-1 (1-5.5)	S	05.14.2020 12:20	1 - 5.5 ft	661758-005
B-10-2-1 (1-5.5)	S	05.14.2020 12:30	1 - 5.5 ft	661758-006
B-05-2 (1-4)	S	05.14.2020 13:30	1 - 4 ft	661758-007
B-13-2-1 (2-6)	S	05.14.2020 13:55	2 - 6 ft	661758-008
B-12-2-1 (0-4)	S	05.14.2020 14:30	0 - 4 ft	661758-009
Dup -01	S	05.14.2020 00:00	ft	661758-010

CASE NARRATIVE

Client Name: Weston Solutions

Project Name: HF7 Fed Com#001

Project ID:
Work Order Number(s): *661758*

Report Date: *05.19.2020*
Date Received: *05.15.2020*

Sample receipt non conformances and comments:

Sample receipt non conformances and comments per sample:

None

Certificate of Analytical Results 661758

Weston Solutions, Frisco, TX

HF7 Fed Com#001

Sample Id:	**B-03-2-1 (6.5-7.5)**	Matrix:	Soil	Date Received:	05.15.2020 11:07
Lab Sample Id:	661758-001	Date Collected:	05.14.2020 09:40	Sample Depth:	6.5 - 7.5 ft
Analytical Method:	Chloride by EPA 300			Prep Method:	E300P
Tech:	MAB			% Moisture:	
Analyst:	MAB	Date Prep:	05.15.2020 17:15	Basis:	Wet Weight
Seq Number:	3126178				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**492**	9.98	mg/kg	05.15.2020 21:37		1

Certificate of Analytical Results 661758

Weston Solutions, Frisco, TX

HF7 Fed Com#001

Sample Id:	**B-03-2-2 (20-21)**	Matrix:	Soil	Date Received:	05.15.2020 11:07
Lab Sample Id:	661758-002	Date Collected:	05.14.2020 11:15	Sample Depth:	20 - 21 ft
Analytical Method:	Chloride by EPA 300			Prep Method:	E300P
Tech:	MAB			% Moisture:	
Analyst:	MAB	Date Prep:	05.15.2020 17:15	Basis:	Wet Weight
Seq Number:	3126178				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**757**	9.98	mg/kg	05.15.2020 21:43		1

Certificate of Analytical Results 661758

Weston Solutions, Frisco, TX

HF7 Fed Com#001

Sample Id:	**B-11-2-1 (1-5.5**	Matrix:	Soil	Date Received:	05.15.2020 11:07
Lab Sample Id:	661758-003	Date Collected:	05.14.2020 11:30	Sample Depth:	1 - 5.5 ft
Analytical Method:	Chloride by EPA 300			Prep Method:	E300P
Tech:	MAB			% Moisture:	
Analyst:	MAB	Date Prep:	05.15.2020 17:15	Basis:	Wet Weight
Seq Number:	3126178				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**205**	9.94	mg/kg	05.15.2020 21:48		1

Certificate of Analytical Results 661758

Weston Solutions, Frisco, TX

HF7 Fed Com#001

Sample Id:	**B-06-3 (1-5)**	Matrix:	Soil	Date Received:	05.15.2020 11:07
Lab Sample Id:	661758-004	Date Collected:	05.14.2020 12:00	Sample Depth:	1 - 5 ft
Analytical Method:	Chloride by EPA 300			Prep Method:	E300P
Tech:	MAB			% Moisture:	
Analyst:	MAB	Date Prep:	05.15.2020 17:15	Basis:	Wet Weight
Seq Number:	3126178				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**548**	9.98	mg/kg	05.15.2020 21:54		1

Certificate of Analytical Results 661758

Weston Solutions, Frisco, TX

HF7 Fed Com#001

Sample Id:	**B-09-2-1 (1-5.5)**	Matrix:	Soil	Date Received:	05.15.2020 11:07
Lab Sample Id:	661758-005	Date Collected:	05.14.2020 12:20	Sample Depth:	1 - 5.5 ft
Analytical Method:	Chloride by EPA 300			Prep Method:	E300P
Tech:	MAB			% Moisture:	
Analyst:	MAB	Date Prep:	05.15.2020 17:15	Basis:	Wet Weight
Seq Number:	3126178				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**222**	10.1	mg/kg	05.15.2020 22:00		1

Certificate of Analytical Results 661758

Weston Solutions, Frisco, TX

HF7 Fed Com#001

Sample Id:	**B-10-2-1 (1-5.5)**	Matrix:	Soil	Date Received:	05.15.2020 11:07
Lab Sample Id:	661758-006	Date Collected:	05.14.2020 12:30	Sample Depth:	1 - 5.5 ft
Analytical Method:	Chloride by EPA 300			Prep Method:	E300P
Tech:	MAB			% Moisture:	
Analyst:	MAB	Date Prep:	05.15.2020 17:17	Basis:	Wet Weight
Seq Number:	3126180				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**749**	9.90	mg/kg	05.15.2020 22:35		1

Certificate of Analytical Results 661758

Weston Solutions, Frisco, TX

HF7 Fed Com#001

Sample Id:	**B-05-2 (1-4)**	Matrix:	Soil	Date Received:	05.15.2020 11:07
Lab Sample Id:	661758-007	Date Collected:	05.14.2020 13:30	Sample Depth:	1 - 4 ft
Analytical Method:	Chloride by EPA 300			Prep Method:	E300P
Tech:	MAB			% Moisture:	
Analyst:	MAB	Date Prep:	05.15.2020 17:17	Basis:	Wet Weight
Seq Number:	3126180				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**119**	9.92	mg/kg	05.15.2020 22:53		1

Certificate of Analytical Results 661758

Weston Solutions, Frisco, TX

HF7 Fed Com#001

Sample Id:	**B-13-2-1 (2-6)**	Matrix:	Soil	Date Received:	05.15.2020 11:07
Lab Sample Id:	661758-008	Date Collected:	05.14.2020 13:55	Sample Depth:	2 - 6 ft
Analytical Method:	Chloride by EPA 300			Prep Method:	E300P
Tech:	MAB			% Moisture:	
Analyst:	MAB	Date Prep:	05.15.2020 17:17	Basis:	Wet Weight
Seq Number:	3126180				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**244**	9.92	mg/kg	05.15.2020 22:59		1

Certificate of Analytical Results 661758

Weston Solutions, Frisco, TX

HF7 Fed Com#001

Sample Id:	**B-12-2-1 (0-4)**	Matrix:	Soil	Date Received:	05.15.2020 11:07
Lab Sample Id:	661758-009	Date Collected:	05.14.2020 14:30	Sample Depth:	0 - 4 ft
Analytical Method:	Chloride by EPA 300			Prep Method:	E300P
Tech:	MAB			% Moisture:	
Analyst:	MAB	Date Prep:	05.15.2020 17:17	Basis:	Wet Weight
Seq Number:	3126180				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**58.0**	9.96	mg/kg	05.15.2020 23:05		1

Certificate of Analytical Results 661758

Weston Solutions, Frisco, TX

HF7 Fed Com#001

Sample Id:	**Dup -01**	Matrix:	Soil	Date Received:	05.15.2020 11:07
Lab Sample Id:	661758-010	Date Collected:	05.14.2020 00:00		
Analytical Method:	Chloride by EPA 300			Prep Method:	E300P
Tech:	MAB			% Moisture:	
Analyst:	MAB	Date Prep:	05.18.2020 12:00	Basis:	Wet Weight
Seq Number:	3126302				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**216**	10.0	mg/kg	05.18.2020 15:40		1

Flagging Criteria

X In our quality control review of the data a QC deficiency was observed and flagged as noted. MS/MSD recoveries were found to be outside of the laboratory control limits due to possible matrix /chemical interference, or a concentration of target analyte high enough to affect the recovery of the spike concentration. This condition could also affect the relative percent difference in the MS/MSD.

B A target analyte or common laboratory contaminant was identified in the method blank. Its presence indicates possible field or laboratory contamination.

D The sample(s) were diluted due to targets detected over the highest point of the calibration curve, or due to matrix interference. Dilution factors are included in the final results. The result is from a diluted sample.

E The data exceeds the upper calibration limit; therefore, the concentration is reported as estimated.

F RPD exceeded lab control limits.

J The target analyte was positively identified below the quantitation limit and above the detection limit.

U Analyte was not detected.

L The LCS data for this analytical batch was reported below the laboratory control limits for this analyte. The department supervisor and QA Director reviewed data. The samples were either reanalyzed or flagged as estimated concentrations.

H The LCS data for this analytical batch was reported above the laboratory control limits. Supporting QC Data were reviewed by the Department Supervisor and QA Director. Data were determined to be valid for reporting.

K Sample analyzed outside of recommended hold time.

JN A combination of the "N" and the "J" qualifier. The analysis indicates that the analyte is "tentatively identified" and the associated numerical value may not be consistent with the amount actually present in the environmental sample.

** Surrogate recovered outside laboratory control limit.

BRL Below Reporting Limit. **ND** Not Detected.

RL Reporting Limit

MDL Method Detection Limit **SDL** Sample Detection Limit **LOD** Limit of Detection

PQL Practical Quantitation Limit **MQL** Method Quantitation Limit **LOQ** Limit of Quantitation

DL Method Detection Limit

NC Non-Calculable

SMP Client Sample **BLK** Method Blank

BKS/LCS Blank Spike/Laboratory Control Sample **BKSD/LCSD** Blank Spike Duplicate/Laboratory Control Sample Duplicate

MD/SD Method Duplicate/Sample Duplicate **MS** Matrix Spike **MSD:** Matrix Spike Duplicate

+ NELAC certification not offered for this compound.

* (Next to analyte name or method description) = Outside XENCO's scope of NELAC accreditation

QC Summary 661758

Weston Solutions

HF7 Fed Com#001

Analytical Method: Chloride by EPA 300 — Prep Method: E300P
Seq Number: 3126178 — Matrix: Solid — Date Prep: 05.15.2020
MB Sample Id: 7703456-1-BLK — LCS Sample Id: 7703456-1-BKS — LCSD Sample Id: 7703456-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	<10.0	250	248	99	247	99	90-110	0	20	mg/kg	05.15.2020 19:16	

Analytical Method: Chloride by EPA 300 — Prep Method: E300P
Seq Number: 3126180 — Matrix: Solid — Date Prep: 05.15.2020
MB Sample Id: 7703457-1-BLK — LCS Sample Id: 7703457-1-BKS — LCSD Sample Id: 7703457-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	<10.0	250	249	100	247	99	90-110	1	20	mg/kg	05.15.2020 22:24	

Analytical Method: Chloride by EPA 300 — Prep Method: E300P
Seq Number: 3126302 — Matrix: Solid — Date Prep: 05.18.2020
MB Sample Id: 7703548-1-BLK — LCS Sample Id: 7703548-1-BKS — LCSD Sample Id: 7703548-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	<10.0	250	250	100	248	99	90-110	1	20	mg/kg	05.18.2020 12:55	

Analytical Method: Chloride by EPA 300 — Prep Method: E300P
Seq Number: 3126178 — Matrix: Soil — Date Prep: 05.15.2020
Parent Sample Id: 661755-004 — MS Sample Id: 661755-004 S — MSD Sample Id: 661755-004 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	72.7	200	261	94	262	95	90-110	0	20	mg/kg	05.15.2020 19:33	

Analytical Method: Chloride by EPA 300 — Prep Method: E300P
Seq Number: 3126178 — Matrix: Soil — Date Prep: 05.15.2020
Parent Sample Id: 661755-014 — MS Sample Id: 661755-014 S — MSD Sample Id: 661755-014 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	87.3	202	294	102	289	101	90-110	2	20	mg/kg	05.15.2020 20:56	

Analytical Method: Chloride by EPA 300 — Prep Method: E300P
Seq Number: 3126180 — Matrix: Soil — Date Prep: 05.15.2020
Parent Sample Id: 661758-006 — MS Sample Id: 661758-006 S — MSD Sample Id: 661758-006 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	749	198	945	99	947	99	90-110	0	20	mg/kg	05.15.2020 22:41	

MS/MSD Percent Recovery [D] = 100*(C-A) / B — LCS = Laboratory Control Sample — MS = Matrix Spike
Relative Percent Difference RPD = 200* | (C-E) / (C+E) | — A = Parent Result — B = Spike Added
LCS/LCSD Recovery [D] = 100 * (C) / [B] — C = MS/LCS Result — D = MSD/LCSD % Rec
Log Difference Log Diff. = Log(Sample Duplicate) - Log(Original Sample) — E = MSD/LCSD Result

QC Summary 661758

Weston Solutions

HF7 Fed Com#001

Analytical Method: **Chloride by EPA 300** Prep Method: E300P

Seq Number: 3126302 Matrix: Soil Date Prep: 05.18.2020

Parent Sample Id: 661821-001 MS Sample Id: 661821-001 S MSD Sample Id: 661821-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	4380	198	4570	96	4570	96	90-110	0	20	mg/kg	05.18.2020 18:34	

Analytical Method: **Chloride by EPA 300** Prep Method: E300P

Seq Number: 3126302 Matrix: Soil Date Prep: 05.18.2020

Parent Sample Id: 661821-011 MS Sample Id: 661821-011 S MSD Sample Id: 661821-011 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	12000	200	12200	100	12200	99	90-110	0	20	mg/kg	05.18.2020 18:51	

MS/MSD Percent Recovery [D] = 100*(C-A) / B

Relative Percent Difference RPD = 200* | (C-E) / (C+E) |

LCS/LCSD Recovery [D] = 100 * (C) / [B]

Log Difference Log Diff. = Log(Sample Duplicate) - Log(Original Sample)

LCS = Laboratory Control Sample

A = Parent Result

C = MS/LCS Result

E = MSD/LCSD Result

MS = Matrix Spike

B = Spike Added

D = MSD/LCSD % Rec

Chain of Custody

Work Order No: 441758

Houston,TX (281) 240-4200 Dallas,TX (214) 902-0300 San Antonio,TX (210) 509-3334
Midland,TX (432) 704-5440 EL Paso,TX (915) 585-3443 Lubbock,TX (806) 794-1296 Crasbad, NM (432) 704-5440
Phoenix,AZ (480) 355-0900 Atlanta,GA (770) 449-8800 Tampa,FL (813) 620-2000 West Palm Beach, FL (561) 689-6701 www.xenco.com

Project Manager:	Robert Appelt	Bill to: (if different)	MRO - Melodie Sanjari
Company Name:	Weston Solutions	Company Name:	Marathon Oil
Address:	2600 Dallas Prkwy Ste 280	Address:	
City, State ZIP:	Frisco, Tx 75034	City, State ZIP:	Carlsbad, NM
Phone:	214.205.4145	Email:	

Work Order Comments

Program: UST/PST ☐ PRP ☐ Brownfields ☐ RRC ☐ Superfund ☐
State of Project:
Reporting:Level II ☐ Level III ☐ PST/UST ☐ TRRP ☐ Level IV ☐
Deliverables: EDD ☐ ADaPT ☐ Other:

Project Name:	HF 7 Fed Com #001	Turn Around	
Project Number:		Routine ☐	
Project Location	Carlsbad, NM	Rush: 7 DAY	
Sampler's Name:	Crystal Spangler	Due Date:	
PO #:		Quote #:	

SAMPLE RECEIPT			
Temperature (°C):	1.4	Temp Blank:	(Yes) No
Received Intact:	(Yes) No	Wet Ice:	~~Yes~~ No
Cooler Custody Seals:	Yes (No) N/A	Thermometer ID	T-NM-007
Sample Custody Seals:	Yes (No) N/A	Correction Factor:	-0.2
		Total Containers:	12

Lab ID	Sample Identification	Matrix	Date Sampled	Time Sampled	Depth	Number of Containers	Pres. Code	ANALYSIS REQUEST: No chlorides (300.0)	Sample Comments
1	B-03-2-1 (6.5-7.5)	S	5/14/2020	0940	6.5-7.5	1		X	
2	B-03-2-2 (20-21)			1115	20-21				
3	B-11-2-1 (1-5.5)			1130	1-5.5				
4	B-06-3 (1-5)			1200	1-5				
5	B-09-2-1 (1-5.5)			1220	1-5.5				
6	B-10-2-1 (1-5.5)			1230	1-5.5	3			MS/MSD
7	B-05-2 (1-4)			1330	1-4	1			
8	B-13-2-1 (2-6)			1355	2-6				
9	B-12-2-1 (0-4)			1430	0-4				
10	Dup-01			0000				X	

Preservative Codes: MeOH: Me; None: NO; HNO3: HN; H2S04: H2; HCL: HL; NaOH: Na; Zn Acetate+ NaOH: Zn

TAT starts the day recevied by the lab, if received by 4:00pm

Total 200.7 / 6010 200.8 / 6020: 8RCRA 13PPM Texas 11 Al Sb As Ba Be B Cd Ca Cr Co Cu Fe Pb Mg Mn Mo Ni K Se Ag SiO2 Na Sr Tl Sn U V Zn

Circle Method(s) and Metal(s) to be analyzed

TCLP / SPLP 6010: 8RCRA Sb As Ba Be Cd Cr Co Cu Pb Mn Mo Ni Se Ag Tl U

1631 / 245.1 / 7470 / 7471 : Hg

Notice: Signature of this document and relinquishment of samples constitutes a valid purchase order from client company to Xenco, its affiliates and subcontractors. It assigns standard terms and conditions of service. Xenco will be liable only for the cost of samples and shall not assume any responsibility for any losses or expenses incurred by the client if such losses are due to circumstances beyond the control of Xenco. A minimum charge of $75.00 will be applied to each project and a charge of $5 for each sample submitted to Xenco, but not analyzed. These terms will be enforced unless previously negotiated.

Relinquished by: (Signature)	Received by: (Signature)	Date/Time	Relinquished by: (Signature)	Received by: (Signature)	Date/Time
		5/15/20 11:07	2		
3			4		
5			6		

Revised Date 022619 Rev: 2019.1

XENCO Laboratories

Prelogin/Nonconformance Report- Sample Log-In

Client: Weston Solutions

Date/ Time Received: 05.15.2020 11.07.00 AM

Work Order #: 661758

Acceptable Temperature Range: 0 - 6 degC
Air and Metal samples Acceptable Range: Ambient

Temperature Measuring device used : T-NM-007

Sample Receipt Checklist		Comments
#1 *Temperature of cooler(s)?	1.4	
#2 *Shipping container in good condition?	**Yes**	
#3 *Samples received on ice?	**Yes**	
#4 *Custody Seals intact on shipping container/ cooler?	**Yes**	
#5 Custody Seals intact on sample bottles?	**Yes**	
#6*Custody Seals Signed and dated?	**Yes**	
#7 *Chain of Custody present?	**Yes**	
#8 Any missing/extra samples?	**No**	
#9 Chain of Custody signed when relinquished/ received?	**Yes**	
#10 Chain of Custody agrees with sample labels/matrix?	**Yes**	
#11 Container label(s) legible and intact?	**Yes**	
#12 Samples in proper container/ bottle?	**Yes**	Samples recieved in bulk containers
#13 Samples properly preserved?	**Yes**	
#14 Sample container(s) intact?	**Yes**	
#15 Sufficient sample amount for indicated test(s)?	**Yes**	
#16 All samples received within hold time?	**Yes**	
#17 Subcontract of sample(s)?	**No**	
#18 Water VOC samples have zero headspace?	**N/A**	

*** Must be completed for after-hours delivery of samples prior to placing in the refrigerator**

Analyst: PH Device/Lot#:

Checklist completed by: Elizabeth McClellan Date: 05.15.2020

Checklist reviewed by: Jessica Kramer Date: 05.18.2020

Jessica Kramer