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 <u>32.3182259</u>

(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	238	29E	Eddy

Surface Owner: State Federal Tribal Private (Name: <u>MOSAIC POTASH CARLSBAD INC</u>)

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) <u>41.67</u>	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.

rm C-141	State of New Mexico	Incident ID	NRM2002458606
e 2	Oil Conservation Division	District RP	1111112002450000
		Facility ID	
		Application ID	
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 par This was a major release as defined by NMAC 19.1	ty consider this a major release's	? material released.
If YES, was immediate n Yes by Marathon to NMC	otice given to the OCD? By whom? To whom? Wh DCD District 2 and BLM on 12/6/2019 via email	en and by what means (phone, o	email, etc)?

Initial Response

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

 \square 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: <u>Environmental Professional</u>
Signature: <u>Melodíe Sanjaví</u>	Date:12/11/2019
email: <u>msanjari@marathonoil.com</u>	Telephone: <u>575-988-8753</u>
OCD Only	
Received by:	Date:

Oil Conservation Division

	1 uge 5 0j 1.
Incident ID	NRM2002458606
District RP	
Facility ID	
Application ID	

Page 2 of 198

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?	<u>56-100</u> (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
- \boxtimes 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.

orm C-141 State of N	Jew Mexico		Page 4 of
age 4 Oil Conserv	vation Division	Incident ID District RP	NRM2002458606
		Facility ID	
		Application ID	
regulations all operators are required to report and/or fil public health or the environment. The acceptance of a C failed to adequately investigate and remediate contamin addition, OCD acceptance of a C-141 report does not re and/or regulations.	le certain release notifications and per C-141 report by the OCD does not rel lation that pose a threat to groundwate lieve the operator of responsibility fo	form corrective actions for rele ieve the operator of liability sh er, surface water, human health r compliance with any other fe	eases which may endanger nould their operations have a or the environment. In orderal, state, or local laws
Printed Name: <u>Melodie Sanjari</u>	Title:	Environmental Profession	onal
Signature: <u>Melodíe Savjarí</u> I	Date: 9/18/2020		
email: <u>msanjari@marathonoil.com</u>	Telephone	: <u>575-988-8753</u>	
OCD Only			

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 item	s must be included in the closure report.
A scaled site and sampling diagram as described in 19.15.29.11 N	MAC
Photographs of the remediated site prior to backfill or photos of t must be notified 2 days prior to liner inspection)	he liner integrity if applicable (Note: appropriate OCD District office
Laboratory analyses of final sampling (Note: appropriate ODC Di	strict 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 and regulations all operators are required to report and/or file certain re may endanger public health or the environment. The acceptance of a C should their operations have failed to adequately investigate and remed human health or the environment. In addition, OCD acceptance of a C compliance with any other federal, state, or local laws and/or regulation restore, reclaim, and re-vegetate the impacted surface area to the condit accordance with 19.15.29.13 NMAC including notification to the OCD	to the best of my knowledge and understand that pursuant to OCD rules lease notifications and perform corrective actions for releases which -141 report by the OCD does not relieve the operator of liability iate contamination that pose a threat to groundwater, surface water, -141 report does not relieve the operator of responsibility for as. The responsible party acknowledges they must substantially ions that existed prior to the release or their final land use in when reclamation and re-vegetation are complete.
Printed Name: <u>Melodie Sanjari</u>	Title: <u>Environmental Professional</u>
Signature: <u>Melodie Sanjari</u> Date: 9/18/2020	
email: <u>msanjari@marathonoil.com</u>	Telephone: <u>575-988-8753</u>
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></victoria.venegas@state.nm.us>
Sent:	Friday, September 18, 2020 1:45 PM
То:	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,

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

PLEASE REVIEW NEW GROUNDWATER DATA BELOW

OCD approval does not relieve the operator of liability should their operations fail to adequately investigate and remediate contamination that may pose a threat to groundwater, surface water, human health or the environment. In addition, OCD approval does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations.

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.

2904 W 2nd St. Roswell, NM 88201 voice: 575.624.2420 fax: 575.624.2421 www.atkinsena.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 <u>lucas@atkinseng.com</u> or 575.499.9244. Sincerely

Snues Michelde

Lucas Middleton- Staff Geoscientist



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,

Groon Middle

Lucas Middleton

Enclosures: as noted above



CST 07. SEP 14 2026 #132

USE DT REP 14 2020 PM1

de la

PAGE 1 OF 2

WELL TAG ID NO.



LOCATION

WELL RECORD & LOG

OFFICE OF THE STATE ENGINEER

www.ose.state.nm.us

-	OSE POD NO. (WELL NO	.)		WELL TAG ID NO		-	OSE FILE N	10(S).	2N	42		
NO	PODI(SB-1)			n/a			C-4470					
OCATI	WELL OWNER Marathon Oi	name(s) 1						PHONE (OI	PTIONAL)				
WELL L	WELL OWNER 4111 S. Tidw	MAILING vell	ADDRESS					CITY Carlsbad	state ZIP bad NM 88220				
CNERAL AND V	WELL LOCATION (FROM GPS) DEGREES LATITUDE MINUTES 32° SECONDS 19" LATITUDE 32° 19" 4.43' N LONGITUDE -104° 1" 48.97' W DESCRIPTION RELATING WELL LOCATION TO STREET ADDRESS AND COMMON LANDMARKS – PLS PLS PLS PLS							* ACCURA * DATUM I	* ACCURACY REQUIRED: ONE TENTH OF A SECOND * DATUM REQUIRED: WGS 84				
1. GF	DESCRIPTION SW L3 Sec.	RELATIN	IG WELL LOCATION TO R29E, NMPM) STREET ADDR	ESS AND COMMON	N LANDMAI	KS – PLS	S (SECTION,	TOWNSHJIP, RANGE) WI	HERE AVAILABLE			
	LICENSE NO. 1249		NAME OF LICENSED	DRILLER	ackie D. Atkins	6			NAME OF WELL DI Atkins En	RILLING COMPANY gineering Associates, 1	inc.		
	DRILLING STA 09/03/20	rted 120	DRILLING ENDED 09/03/2020	DEPTH OF CO Temp	MPLETED WELL (F orary-Removed	17)	BORE HO	le depth (f. ±55	T) DEPTH WATER FI	RST ENCOUNTERED (FT) none			
Z	COMPLETED WELL IS: ARTESIAN TO DRY HOLE SHALLO						FINED)		STATIC WATER LE	STATIC WATER LEVEL IN COMPLETED WELL (FT) none			
VIIO	DRILLING FLUID: AIR I MUD ADDITIVES - SPECIFY:												
RM	DRILLING MET	HOD:	ROTARY	HAMMER	CABLE T	TOOL	✓ OTHE	R – SPECIFY:	Holl	ow Stem Auger			
SING INFOR	DEPTH (feet bgl) BORE HOLE FROM TO DIAM (inches)		CASING	MATERIAL ANI GRADE each casing string,	D/OR , and	C/ CONI 1	ASING NECTION TYPE	CASING INSIDE DIAM. (inches)	CASING CASING WALL INSIDE DIAM. THICKNESS (inches) (inches)				
¢ CA	0	35	±8.5	2" Se	ch. 40 PVC Riser	, 	flush T	hread 2 TPI	2.067	0.154			
2. DRILLING	35	55	±8.5	2" Sc	h. 40 PVC Screen		Flush T	hread 2 TPI	2.067	0.154	.020		
	DEPTH (fe	et bgl)	BORE HOLE		ST ANNULAR SI	EAL MAT	ERIAL A	ND	AMOUNT	METHO	D OF		
TERIAL	FROM	то	DIAM. (inches)	GRA	VEL PACK SIZE	-RANGE I	BY INTE	RVAL	(cubic feet)	PLACEN	MENT		
NULAR MAT													
3. AN													
FOR	OSE INTERNA	AL USE			DOD MO	\		WR	-20 WELL RECORD	& LOG (Version 06/3	0/17)		

	DEPTH (fe	et bgl)		COLOR AN			TEPED			2	ESTIMATED
	FROM	то	THICKNESS (feet)	INCLUDE WAT	ER-BEARING CAVITIES (pplemental sheets to fully d	OR FRAG	TERED - CTURE ZONI all units)	3S	WAT BEAR (YES /	ER ING? 'NO)	WATER- BEARING ZONES (gpm)
	0	4	4	Calich	e with fine-grained sand, Pin	ık (7.5 yı	7/5)		Y	√N	
	4	14	10	Sand, fine-grained	d, poorly graded with caliche	e layers, l	Pink (7.5 yr 7/	5)	Y	√N	
	14	19	5	Sand, fine-gr	rained, poorly graded with cl	ay, Pink	(7.5 yr 7/5)		Y	√ N	
	19	34	15	Sand, fine-grained,	poorly graded with increasing	ng clay, H	Brown (7.5 yr :	5/8)	Y	√ N	
	34	49	15		Clay, Hard , Brown (5 yr	4/6)			Y	√ N	
Ţ	49	55	6	Sand, Fine grai	ined, poorly graded, cemente	d , Brow	n (7.5 yr 5/6)		Y	√ N	L
WEI									Y	N	
OF									Y	N	
06	1								Y	N	
ICI									Y	N	
DOJ									Y	N	
EO						_			Y	N	
ROC			1	1		_			Y	N	
EX.									Y	N	
4.]									Y	N	
	C		1.0						Y	N	
			1						Y	N	
		1							Y	N	
									Y	N	
				1					Y	N	
		-							Y	N	
	METHOD US	ED TO ES	STIMATE YIELD	OF WATER-BEARIN	G STRATA:			TOTA	L ESTIM	ATED	
_	PUMP		IR LIFT	BAILER O	THER - SPECIFY:			WEL	l yield	(gpm):	0.00
NO	WELL TEST	TEST STAR	RESULTS - ATT. T TIME, END TI	ACH A COPY OF DAT ME, AND A TABLE SI	TA COLLECTED DURING HOWING DISCHARGE AN	WELL 1 ID DRA	TESTING, IN WDOWN OV	CLUDIN ER THI	NĜ DIŜCH E TESTIN	LARGE N G PERIO	IETHOD, D.
5. TEST; RIG SUPERVISI	MISCELLAN PRINT NAMP Shane Eldridg	EOUS INI E(S) OF D	FORMATION: Restu Sh No RILL RIG SUPER	emoved well material arry of Portland TYP b pump test. VISOR(S) THAT PRO	s,abandoned boring by us E I/II Neat cement 5.2 gal VIDED ONSITE SUPERVI	sing dril llons of SION O	l cutting fror water per 94 F WELL CON	n total (lb. sac	depth to 1 k from 10 TTION OT	0' bgs ti 0' bgs to HER TH	en landed a land surface. AN LICENSEE:
6. SIGNATURE	THE UNDERS CORRECT RI AND THE PE	SIGNED F SCORD O RMIT HO Atteins	HEREBY CERTIF F THE ABOVE D LDER WITHIN 3	IES THAT, TO THE E ESCRIBED HOLE AN 0 DAYS AFTER COM Ja R / PRINT SIGNEE	BEST OF HIS OR HER KNO ID THAT HE OR SHE WIL PLETION OF WELL DRIL ckie D. Atkins NAME	OWLED L FILE ' LING:	GE AND BEL THIS WELL I	JEF, TH	IE FOREC D WITH 7 09/11/	GOING IS THE STA (2020 DATE	A TRUE AND TE ENGINEER
_						_					
FO	R OSE INTERN	AL USE					WR-20 WE	LL REC	CORD & L	.OG(Ver	sion 06/30/2017)
FIL	E NO.	_			POD NO.		TRN NO.			_	
LO	CATION					WELL	TAG ID NO.				PAGE 2 OF 2



PLUGGING RECORDS



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:

Well owner: Marathon Oil				Phone No.	. 575-988-87	'53	
failing address: 4111 S. Tidwel	I						
Sity: Carlsbad		State:			NM	Zip o	code:88220
I. WELL PLUGGING INFO	RMATION:						
) Name of well drilling co	ompany that plug	ged well:	Jackie D. A	Atkins (/	Atkins Engine	ering Associa	tes, Inc.)
) New Mexico Well Drille	er License No.:	1249				Expiration Da	ite: 04/30/20
) Well plugging activities Shane Eldridge	were supervised	by the follo	owing wel	driller	(s)/rig superv	visor(s):	_
	00/00/2020	•			loging concl	udad: 09/08/	2020
4) Date well plugging bega	n: 09/06/2020	,	_ Date	wen ph	ugging conci	uucu.	
 Date well plugging bega GPS Well Location: 	n:	32	Date deg,	19	min,	4.43 sec	

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

7) Static water level measured at initiation of plugging: ______ 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? <u>No</u> 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

1.100

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

Depth (ft bgl)	Plugging <u>Material Used</u> (include any additives used)	Volume of <u>Material Placed</u> (gallons)	Theoretical Volume of Borehole/ Casing (gallons)	Placement <u>Method</u> (tremie pipe, other)	<u>Comments</u> ("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 E cubic feet x 7.4	3Y AND OBTAIN 1805 = gallons		
		cubic yards x 201.9	97 = gallons		

For each interval plugged, describe within the following columns:

III. SIGNATURE:

I, <u>Jackie D. Atkins</u>, 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

09/11/2020

Signature of Well Driller

Date

Version: September 8, 2009 Page 2 of 2



Weston Solutions, Inc. 2600 Dallas Parkway, Suite 280 Frisco, TX 75034 (469) 666-5500 WestonSolutions.com

PLEASE REVIEW NEW GROUNDWATER DATA ABOVE 9/18/2020

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.



Closure Report H F 7 Federal Com #001H Marathon Oil EF, LLC Incident ID. NRM2002458606 4 June 2020 Page 2 of 6

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.



Closure Report H F 7 Federal Com #001H Marathon Oil EF, LLC Incident ID. NRM2002458606 4 June 2020 Page 3 of 6

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 $\frac{1}{2}$ 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
ТРН	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



Closure Report H F 7 Federal Com #001H Marathon Oil EF, LLC Incident ID. NRM2002458606 4 June 2020 Page 4 of 6

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				



Closure Report H F 7 Federal Com #001H Marathon Oil EF, LLC Incident ID. NRM2002458606 4 June 2020 Page 5 of 6

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



Closure Report H F 7 Federal Com #001H Marathon Oil EF, LLC Incident ID. NRM2002458606 4 June 2020 Page 6 of 6

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.**

to be the approx

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



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





ederal Com 001\mxd\Figure 2 - Site Layout Map with Impacted Area.mxd 1:02:20 PM 6/2/2020 deguentm



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

Received by OCD: 9/18/2020 2:18:00 PM

Page 23 of 198



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



<u>Page 24 of 198</u>



Page 25 of 198



<u>Page 26 of 198</u>



Page 27 of 198

FILE: G:ICommercial/Marathon Oil CompanyIHF 7 Federal Com 001/mxd/Figure 8 - Excavation Areas with Sample and Exceedance Locations.mxd 7:26:15 PM 6/2/2020 deguentre





Figure 9 - Site Layout Map with Deferral Request Areas.mxd 8:25:41 AM 6/4/2020 deguentri-

-

•

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 Cr	iteria (units	s in mg/kg)					
	Depth to Water (ft bgs)	Chloride *	ТРН	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, ther	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, ther	n 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												
		Sam	ples Anal	yzed at the ⊦	all Enviro	onmenta	l Analysis	Laborator	у				
S	Sample D	escription	- 	-	Field Sc	reening	Petrol	eum Hydı	ocarbons	Inorganic	Lab Order #		
							Volatile Extractable						
					σ								
					ho			Ē					
					/let	ge	ð	ota		a			
		ft.)			r D	ofl	zen	K (t		rid			
		th (Joh	etr	en	ETE)	Hd.	hla			
Comula ID	Time	ept	A ****	Data	2 nnm	 	 (ma/ka)	ma (ka)	⊢ (ma/ka)	(ma/ka)			
Sample ID	Time		Area	Date	ρριιι	ppin	(IIIg/ Kg)		(118/ Kg)				
	n - Closu	v Criteria	S-Tank	1/18/2020	ΝΔ	ΝΔ		50		600 400	2002627		
SP-1		8	S-Tank	1/18/2020	NΑ				ND	530	2002027		
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	440	2002627		
SP-14 SD_15		12	S-Tank	1/16/2020					ND	450 250	2002627		
SP-16	_	12	S-Tank	1/16/2020	NA	NA	ND	ND	ND	430	2002027		
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-U8	1055	0-12 Wall	S Tank	4/16/2020						334 750	058990		
B-09	1200	6-12	Boring	1/19/2020	NA	NA NA	NA	ND	NA	355	658990		
B-09 B-09-2-1	1200	1-5.5	Boring	5/14/2020	NΑ		NA	NΑ		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		
5P-31	-	Wall	S-Tank	1/19/2020	NA	NA	ND	ND	ND	730	2002627		
B-13 B-13-2-1	1255	0-12 2.6	Boring	4/15/2020	NA NA	NA	NA NA		NA NA	646 244	658990 661750		
D-TJ-C-T	1272	2-0	BOLING	5/ 14/ 2020	NA	NA	INA	NA	NA NA	244	001/30		

	Table 2. Laboratory Confirmation Analysis Results											
		Sam	ples Anal	yzed at the H	lall Enviro	onmenta	l Analysis	Laborator	У			
S	Sample D	escription			Field Sc	reening	Petrol	eum Hydr	ocarbons	Inorganic	Lab Order #	
							Vola	atile	Extractable			
Sample ID	Time	Depth (ft.)	Area	Date	면 정 Mohr Method	면 표 Betroflag	auazuag Benzen (mg/kg)	(gd/gg) (gg/gg)	HdL (mg/kg)	(gay/gu) (gay/ga)		
South Tank Excavation	n - Closu	re Criteria					10	50	100	600		
East Tank Excavation	- Closure	e 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	ı - Closur	e 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	
			3									

830
1350
ND

Confirmation Sample Analytical Results exceed Remedial Target Level

Soil Boring Sample Analytical Results exceed Remedial Target Level

Sample was not alayzed for this analyte.

Analytical results for the sample were below the lab's detectable limits

NA

.

ATTACHMENT A

INITIAL RELEASE NOTIFICATION EMAIL

Appelt, Robert

From:	Castro, Isaac (MRO) <icastro@marathonoil.com> Friday, December 6, 2019 12:27 PM</icastro@marathonoil.com>
To:	blm_nm_cfo_spill@blm.gov; mike.bratcher@state.nm.us; robert.hamlet@state.nm.us;
Cc:	victoria.venegas@state.nm.us 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

B 910-F	AG Tran recounting@agr & E. Redd Rd.	sportation Services, Inc. avetransportation.com # 443 • El Paso, TX 799	12				M	10299
2				- DISPO	SAL		DATE 12	-5-19
T MARA	ATHON C	DIL CO.		COS CENT	TER	1. 1. 1. 1.	ORDERED B	Y
DELIVERED FROM:	[7	fed Con	#1	TO: L	0	BATTERY O	COMPLETION	O FLOW BACK
TRUCK OR UNIT NO.:	322	AMOUNT HAULED:	GAUGE: TOP): :		вотт	OM:	17 (2) 2) (2) (3)
	TIME	S	DESCRIP	PTION		BILLING	RATE	AMOUNT
	ARRIVE	3.20 O A.M.	Arria at 1	action		Hrs.		
BATTERY	DEPART	6 30 O A.M. O P.M.	d she was	236 00	44.	F/W		
	ARRIVE	O A.M. O P.M.	tonk at	12360		P/W		
DISPOSAL	DEPART	O A.M. O P.M.	10			CRI		
Andre		NAME	COMPANY MAN PRIM	NT NAME	AC	Thank Yo	SUB TOTAL TAX	
DRI	VER SIGNAT	URE	COMPANY MAN SIGN	NATURE	-		IVIAL	

Page 36 of 198
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

(R=POD has (A CLW##### in the POD suffix indicates the been replaced, POD has been replaced O=orphaned. (quarters are 1=NW 2=NE 3=SW 4=SE) & no longer serves a C=the file is water right file.) closed) (quarters are smallest to largest) (NAD83 UTM in meters) (In feet) POD Sub-QQQ **Depth Depth Water** Well Water Column POD Number Code basin County 64 16 4 Sec Tws Rng Х Distance Y C 02702 С 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 CUB 70 C 01214 ED 1 2 3 13 23S 28E 590010 3574597* 2006 20 50 C 01967 С ED 2 3 13 23S 28E 590111 3574498* 2021 264 200 64 CUB 4 2 3 13 23S 28E C 01215 ED 590210 3574397* 2048 104 15 89 С ED 18 23S 29E 592302 3574291* 2081 17 10 7 C 02706 4 C 02804 CUB ED 2 1 08 23S 29E 593262 3576905* 2099 100 2 1 08 23S 29E 593262 C 02805 CUB ED 3576905* 2099 100 C 01217 CUB ED 1 3 13 23S 28E 589789 3574371 2321 87 50 37 4 C 03059 EXPLORE CUB ED 1 3 17 23S 29E 592993 3574378* 2422 65 Δ 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

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

.

.

ATTACHMENT E

PHOTOLOG

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.



Date: 1/15/2020 Direction: Northwest

Description:

Initial scrape; facing north.



Date: 1/15/2020 Direction: Northeast

Description:

Site signage.





Date: 1/19/2020 Direction: Northeast

Description:

N-Tank Excavation 1/19/2020.



Date: 1/19/2020 Direction: Southeast

Description:

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



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.



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.



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.

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.





Date: 1/20/2020 Direction: East

Description:

Site excavation and backfill complete; facing east.



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)



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.



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.



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

TV			2600 Dallas Parkway	Borin	g/V	Vel	l Log	Page 1 of 1
V	↓'/ ♪		Suite 280 Frisco, Texas, 75034	BORING	ID:	B-	01	
Ĭ		SOLUTIONS	(469) 666-5500	WELL ID	:	NA	N	
	PROJ	ECT INFORMATION		DRILLIN	G IN	FO	RMATION	
PROJ SITE I JOB N PROJ	ECT: LOCATION: IUMBER: ECT MANAG	MRO: HF7 Fed Com Eddy Co., New Mexi 12553.023.001 ER: Robert Appelt	001 DRILLING CO CO DRILLING M BORING DEI BORING DIA	OMPANY: Atl Ethod: Ho Pth: 8 ft Meter: 8.2	kins llow t bgs 5-in	Eng Ste	ineering As m Auger wi WELL DEPTH WELL DIAME	sociates th Split Spoon l: NA TER: NA
LOGG DATE	GED BY: (S) DRILLED	C. Spangler 2 4/14/2020	TOP OF CASI GROUND FLE	NG ELEV: NA Evation: 2996 f i	t MSI		N. LATITUDE 32° 19.111'	W. LONGITUDE -104° 01.765'
REMA	RKS: Refusi Refusi	al at 1.5 ft bgs, offset location ~3.0 ft. al at 0.5 ft bgs on cobbles. Proceeded	with rig.	\	ATER	LEVE	EL: NA EL: NA	
DEPTH	LITHOLOGY	S DESC	RIPTION	SAMPLEID	REC. %	MVO	WELL COMPLETION	INSTALLATION NOTES
5		SILTY CLAYEY LOAM, very lift (and coarse (sandstone) gravel, tra grading to brown with depth. SILTY CLAYEY LOAM (caliche), p fragments, trace coarse concretio grades to light pinkish brown with At 5.0-6.0: dense.	poorly cemented, breaks into blocky poorly cemented, breaks into blocky ns/precipitates, dry, light brown/ tan, depth.	B-01 (6.5-7.5)	100%			Borehole backfilled with hydrated bentonite chips.

				Dallas Parkway		Boring	<u>y/V</u>	Ve	l Log	Page 1 of 1
V	小子	λ	Su Su Frisco	ite 280 Texas 75034		BORING	ID:	B-	02	
			OLUTIONS (469)) 666-5500		WELL ID:		NA	4	
	PROJ	ECI	INFORMATION		D	RILLING	J IN	IFO	RMATION	N
PROJI SITE L JOB N PROJI LOGG	ECT: LOCATION: IUMBER: ECT MANAG IED BY:	ER:	MRO: HF7 Fed Com 001 Eddy Co., New Mexico 12553.023.001 Robert Appelt C. Spangler	DRILLING CO DRILLING ME BORING DEF BORING DIA	omp etho pth: met	ANY: Atk DD: Hol 8 ft ER: 8.25	tins llow bgs 5-in	Eng Ste	gineering A m Auger w WELL DEPT WELL DIAM	ssociates ith Split Spoon 'H: NA ETER: NA
DATE	(S) DRILLED	:	4/14/2020	GROUND ELE	NG EI VATI	LEV: NA ON: 2995 ft	MSL	_	N. LATITUD 32° 19.102'	-104° 01.776
REMA	RKS:					v WA	ATER	LEV	el: NA	
						🗶 ST	ATIC	LEVI	EL: NA	
DEPTH	LITHOLOGY	USCS	DESCRIPTION			SAMPLEID	REC. %	MVO	WELL COMPLETIO	N NOTES
5			SILTY CLAYEY LOAM, very fine grained sand: and coarse (sandstone) gravel, trace roots, dry grading to brown with depth. SILTY CLAYEY LOAM (caliche), poorly cemen fragments, trace coarse concretions/precipitate grades to light pinkish brown with depth. At 5.0-6.0: dense. End of boring at 8.0 ft bgs.	s, some to many cobble , dark brown to 0.5 ft bg	s (s,	B-02 (6.5-7.5)	75%			Borehole backfilled with cuttings and hydrated bentonite chips.

Page 54 of 198 Received by OCD: 9/18/2020 2:18:00 PM **Boring/Well Log** Page 1 of 1 2600 Dallas Parkway Suite 280 BORING ID: B-03 Frisco, Texas 75034 NA WELL ID: (469) 666-5500 DRILLING INFORMATION **PROJECT INFORMATION PROJECT:** MRO: HF7 Fed Com 001 DRILLING COMPANY: Atkins Engineering Associates SITE LOCATION: **Eddy Co., New Mexico DRILLING METHOD:** Hollow Stem Auger with Split Spoon JOB NUMBER: 12553.023.001 **BORING DEPTH:** 18 ft bgs WELL DEPTH: NA PROJECT MANAGER: WELL DIAMETER: NA 8.25-in **Robert Appelt BORING DIAMETER:** LOGGED BY: C. Spangler N. LATITUDE W. LONGITUDE TOP OF CASING ELEV: NA DATE(S) DRILLED: 4/15/2020 -104° 01.772' GROUND ELEVATION: 2995 ft MSL 32° 19.100' REMARKS: WATER LEVEL: NA \bigtriangledown w STATIC LEVEL: NA SAMPLEID LITHOLOGY % USCS DEPTH WELL INSTALLATION MVO REC. DESCRIPTION COMPLETION 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 SILTY CLAYEY LOAM (caliche), fine to very fine grained sands, poorly chips. cemented, few to many coarse concretions/precipitates, dry, light brown/ tan, grades to light pinkish brown with depth. Sticky when wetted. 5 At 5.0-6.0: dense. CLAYEY LOAM, poorly cemented, blocky, few nodules/concretions, dark reddish brown. 10 15 B-03 (16.5-100% 17.5) End of boring at 18.0 ft bgs. 20

Page 55 of 198 Received by OCD: 9/18/2020 2:18:00 PM **Boring/Well Log** Page 1 of 1 2600 Dallas Parkway Suite 280 BORING ID: **B-03-2** Frisco, Texas 75034 NA WELL ID: (469) 666-5500 DRILLING INFORMATION **PROJECT INFORMATION PROJECT:** MRO: HF7 Fed Com 001 DRILLING COMPANY: Atkins Engineering Associates SITE LOCATION: **Eddy Co., New Mexico DRILLING METHOD:** Hollow Stem Auger with Split Spoon JOB NUMBER: 12553.023.001 **BORING DEPTH:** 21 ft bgs WELL DEPTH: NA WELL DIAMETER: NA PROJECT MANAGER: 8.25-in **Robert Appelt BORING DIAMETER:** LOGGED BY: C. Spangler N. LATITUDE W. LONGITUDE TOP OF CASING ELEV: NA DATE(S) DRILLED: 5/14/2020 -104.02955° GROUND ELEVATION: 2995 ft MSL 32.31833° REMARKS: WATER LEVEL: NA \bigtriangledown w STATIC LEVEL: NA SAMPLEID LITHOLOGY % USCS DEPTH WELL INSTALLATION MVO REC. DESCRIPTION COMPLETION NOTES 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 SILTY CLAYEY LOAM (caliche), fine to very fine grained sands, poorly chips. cemented, few to many coarse concretions/precipitates, dry, light brown/ tan, grades to light pinkish brown with depth. 5 Sticky when wetted. At 6.0-7.0: dense caliche (white). B-03-2-1 (6.5-50% 7.5) CLAYEY LOAM, poorly cemented, blocky, few nodules/concretions, dry, dark reddish brown. 10 15 At 16.5 ft bgs: slightly lighter (in color) with depth. 75% At 17.0 ft bgs: black stringers. At 17.5 ft bgs: reddish brown mottled with gray. 20 B-03-2-2 (20-100% 21) End of boring at 21.0 ft bgs.

Page 56 of 198 Received by OCD: 9/18/2020 2:18:00 PM **Boring/Well Log** Page 1 of 1 2600 Dallas Parkway Suite 280 BORING ID: B-04 Frisco, Texas 75034 NA WELL ID: (469) 666-5500 DRILLING INFORMATION **PROJECT INFORMATION PROJECT:** MRO: HF7 Fed Com 001 DRILLING COMPANY: Atkins Engineering Associates SITE LOCATION: **Eddy Co., New Mexico DRILLING METHOD:** Hollow Stem Auger with Split Spoon JOB NUMBER: 12553.023.001 **BORING DEPTH:** 5 ft bgs WELL DEPTH: NA PROJECT MANAGER: Robert Appelt 8.25-in WELL DIAMETER: NA **BORING DIAMETER:** LOGGED BY: C. Spangler N. LATITUDE W. LONGITUDE TOP OF CASING ELEV: NA DATE(S) DRILLED: 4/14/2020 32° 19.107' -104° 01.761' GROUND ELEVATION: 2996 ft MSL REMARKS: Hand Auger from 0-2 ft bgs. Refusal on cobbles. WATER LEVEL: NA \bigtriangledown STATIC LEVEL: NA w SAMPLEID LITHOLOGY % DEPTH USCS WELL INSTALLATION MVO REC. DESCRIPTION COMPLETION 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. 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% B-04 (4-5) 5 End of boring at 5.0 ft bgs. 10 -

ived by	OCD: 9/18/	/2020	0 2:18:00 PM			1	Dovina	т/V	Val		Page 57
V	N/ E	4		600 Dalla Suite	as Parkway 280	ן י		5/ V			Faye I UI I
$\underline{\nabla}$		<u>)</u> ((risco, Te	exas 75034	t v	SURING	ID:	B-	05	
			SOLUTIONS _®	(469) 66	66-5500	1	WELL ID:		INA		
	PROJ	IEC.	Γ INFORMATION			DF	RILLING	3 IN	FO	RMATION	I
PROJI SITE L JOB N PROJI LOGG	ECT: LOCATION: IUMBER: ECT MANAG ED BY:	SER:	MRO: HF7 Fed Com 001 Eddy Co., New Mexico 12553.023.001 Robert Appelt C. Spangler	l	DRILLING CON DRILLING ME ⁻ BORING DEPT BORING DIAM	MPA ΓΗΟΙ ΓΗ: ΕΤΕ	NY: Atk D: Hol 5 ft R: 8.2	kins llow bg 5-in	Eng Ste	ineering As m Auger wi WELL DEPT WELL DIAMI	ssociates ith Split Spoon H: NA ETER: NA
DATE((S) DRILLED	:	4/14/2020		TOP OF CASING	G ELI	EV: NA	MO		N. LATITUDE	E W. LONGITUDE
	DKC. Dofus	al at .	1 Aft has an cabblas. Procoad with rid		GROUND ELEV		IN: 2996 ft	MSL	-	32° 19.104	-104 01.759
KEIVIA	IKKO: IVelus	ai at ~		y.			∞ wa	ATER	LEVE	il: NA il: NA	
DEPTH	LITHOLOGY	USCS	DESCRIPT	ION		c	AMPLEID	REC. %	MVO	WELL COMPLETION	INSTALLATION N NOTES
5			SILTY CLAYEY LOAW, Very tine grained and coarse (sandstone) gravel, trace roo grading to brown with depth. SILTY CLAYEY LOAM (caliche), poorly of fragments, trace coarse concretions/prec grades lighter with depth. End of boring at 5.0 ft bgs.	cemented	breaks into blocky hrk brown to 0.5 ft bgs, breaks into blocky hry, light brown/ tan,		B-05 (4-5)	100%			Borehole backfilled with hydrated bentonite chips.

ived by	OCD: 9/18/	2020	2:18:00 PM							Page 58
V	\sqrt{r}	Х	2600	Dallas Parkway		Boring	g/V	Vel	l Log	Page 1 of 1
Ú	\sqrt{L}	\mathcal{N}	Frisco	ouile 280 o, Texas 75034		BORING	ID:	B-	05-2	
			SOLUTIONS (46	9) 666-5500		WELL ID:		NA	4	
	PROJ	ECT	Γ INFORMATION		D	RILLINC	G IN	IFO	RMATION	
PROJ	FCT:		MRO: HF7 Fed Com 001	DRILLING CC)MP/	ANY: Atk	ins	Eng	ineering Ass	sociates
SITE L	_OCATION:		Eddy Co., New Mexico	DRILLING ME	ETHC	D: Hol	llow	Ste	m Auger wit	h Split Spoon
JOB N	IUMBER:		12553.023.001	BORING DEP	TH:	5 ft	bgs	5	WELL DEPTH	l: NA
PROJ	ECT MANAG	ER:	Robert Appelt	BORING DIAM	METI	ER: 8.2 5	5-in		WELL DIAME	TER: NA
	ED BY: (s) ndil i en		C. Spangler	TOP OF CASIN	IG EI	_EV: NA			N. LATITUDE	W. LONGITUDE
DATE	(3) DRILLED	•	3/14/2020	GROUND ELEV	VATI	ON: 2995 ft	MSI	_	32.31840°	-104.02931°
REMA	RKS: Refus	al of s	plit spoon tooling at 3.5 ft bgs.			SZ WA	ATER	LEVI	EL: NA	
						🗶 ST	ATIC	LEVE	EL: NA	
EPTH	-UOLOGY	CS	DESCRIPTION	N		NPLEID	С. %	ź	WELL	INSTALLATION
),,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	LINO	n		•		SAIVI	RE(6	COMPLETION	NOTES
5			and coarse (sandstone) gravel, trace roots, d grading to brown with depth. SILTY CLAYEY LOAM (caliche), few to many concretions, poorly cemented, blocky, dry, lig with depth. End of boring at 4 ft bgs.	ry, dark brown to 0.5 ft bgs / medium to coarse ht brown, light pinkish brow	wn	B-05-2 (1-4)	50%			Borehole backfilled with cuttings and hydrated bentonite chips.

ived by	0CD: 9/18/	2020 -	0 2:18:00 PM							Page 59
V	$\nabla \mathcal{A}$	Ж		Dallas Parkway		Boring	g/V	Vel	l Log	Page 1 of 1
Ù	\sqrt{L}	\mathcal{N}	Frisco	uite 280 o, Texas 75034		BORING	ID:	B-	06	
			SOLUTIONS (469	9) 666-5500		WELL ID:		NA	4	
	PROJ	ECT	Γ INFORMATION		D	RILLING	Ъ IN	FO	RMATION	
PROJ SITE I JOB N PROJ	ECT: LOCATION: IUMBER: ECT MANAG	ER:	MRO: HF7 Fed Com 001 Eddy Co., New Mexico 12553.023.001 Robert Appelt	DRILLING CO DRILLING ME BORING DEF BORING DIA	OMPA ETHC PTH: METI	ANY: Atk DD: Hol 4 ft ER: 8.25	ins low bgs 5-in	Eng Ste	jineering As m Auger wi WELL DEPTI WELL DIAME	sociates th Split Spoon H: NA ETER: NA
DATE	IED BY: (S) DRILLED	:	C. Spangler 4/14/2020	TOP OF CASIN GROUND ELE	NG EI VATI(_EV: NA DN: 2995 ft	MSL	_	N. LATITUDE 32° 19.097'	W. LONGITUDE
REMA	ARKS:					∽ WA	TER	LEV	EL: NA	
						🗶 ST.	ATIC	LEVI	EL: NA	
JEPTH	LITHOLOGY	USCS	DESCRIPTION	J		SAMPLEID	REC. %	MVO	WELL COMPLETION	INSTALLATION NOTES
5			SILTY CLAYEY LOAM (caliche), few to many concretions, poorly cemented, blocky, dry, ligt with depth End of boring at 4 ft bgs.	medium to coarse ht brown, light pinkish bro	is,	B-06 (3-4)	50%			Borehole backfilled with cuttings and hydrated bentonite chips.

ived by	OCD: 9/18	/2020	0 2:18:00 PM							Page 60
V7	VTT	Έ	2600 Da	allas Parkway	B	Boring	g/V	Vel	l Log	Page 1 of 1
Ú		\mathbf{N}	Sui Frisco.	ite 280 Texas 75034	В	ORING	ID:	B-	06-3	
		ノ	SOLUTIONS (469)	666-5500	W	/ELL ID:		NA	A	
	PRO.	JEC	Γ INFORMATION		DR	ILLING	3 IN	FO	RMATION	
PROJ SITE L JOB N PROJ	ECT: LOCATION: IUMBER: ECT MANAC	SER:	MRO: HF7 Fed Com 001 Eddy Co., New Mexico 12553.023.001 Robert Appelt	DRILLING CON DRILLING MET BORING DEPT BORING DIAM	/IPAN THOD TH: ETER	Y: Atk : Hol 5 ft R: 8.25	ins low bgs 5-in	Eng Ste	gineering Ass m Auger wit WELL DEPTH WELL DIAME	sociates :h Split Spoon I: NA TER: NA
LOGG DATE	ED BY: (S) DRILLED):	C. Spangler 5/14/2020	TOP OF CASING	G ELE' ATION	V: NA J: 2995 ft	MSL	_	N. LATITUDE 32.31825°	W. LONGITUDE -104.02953°
REMA	RKS:					∠ WA	ATER	LEV	EL: NA	
						🗶 ST.	ATIC	LEVI	EL: NA	
DEPTH	LITHOLOGY	USCS	DESCRIPTION		SA	MPLEID	REC. %	MVO	WELL COMPLETION	INSTALLATION NOTES
5			and coarse (sandstone) gravel, trace roots, dry, grading to brown with depth. SILTY CLAYEY LOAM (caliche), few to many m concretions, poorly cemented, blocky, dry, light with depth End of boring at 5 ft bgs.	dark brown to 0.5 ft bgs, ledium to coarse brown, light pinkish brow	E	3-06-3 (1-5)	50%			Borehole backfilled with cuttings and hydrated bentonite chips.

ived by	[,] OCD: 9/18/	/2020	0 2:18:00 PM			D •	(1)			Page 61
V7	$\nabla \mathbf{r}$	К		0 Dallas Parkway Suito 200		Boring	g/V	vel	I Log	Page 1 of 1
Ù	$\sqrt{L^{+}}$	$\boldsymbol{\gamma}$	Fris	Sulle 280 co, Texas 75034		BORING	ID:	B-	07	
		ノ	SOLUTIONS (4	69) 666-5500		WELL ID:		NA	A	
	PROJ	EC	Γ INFORMATION		D	RILLING	G IN	IFO	RMATION	
PROJ Site I Job N	ECT: LOCATION: IUMBER:		MRO: HF7 Fed Com 001 Eddy Co., New Mexico 12553.023.001	DRILLING C DRILLING M BORING DE	omp Ieth(Pth:	ANY: Atk DD: Hol 7 ft	kins llow bgs	Eng Ste	gineering Ass m Auger wit WELL DEPTH	sociates h Split Spoon : NA
PROJ		ER:	Robert Appelt	BORING DIA	AIVIE I	ER: 8.2 :	5-in			IER: NA
DATE	(S) DRILLED	:	4/15/2020	TOP OF CAS GROUND EL	ING E EVATI	LEV: NA ON: 2995 ft	MSI	_	N. LATITUDE 32° 19.083'	W. LONGITUDE -104° 01.765'
REMA	ARKS: Dense	e blow	counts.				ATER	LEV	EL: NA	
	Locati	on mo	ved ~2 ft northeast out of NM gas pipelir	ne easement.		🗶 ST	ATIC	LEV	EL: NA	
DEPTH	LITHOLOGY	USCS	DESCRIPTIC	N		SAMPLEID	REC. %	MVO	WELL COMPLETION	INSTALLATION NOTES
5			SILTY CLAYEY LOAM (caliche), poorly cen fragments, trace coarse concretions/precipil grades to light pinkish brown with depth. At 5.0-6.0: dense.	nented, breaks into blocky ates, dry, light brown/ tan	, ,	B-07 (5.5-6.5)	100%			Borehole backfilled with cuttings and hydrated bentonite chips.

				2600 Dal	llas Parkway	B	oring	g/V	Vel	l Log	Page 1 of 1
V	41	SIN		Suite Frisco, Te	e 280 exas 75034	BC	ORING I	 D:	B-	08	
		SOL	UTIONS	(469) 6	66-5500	W	ELL ID:				
	PROJ	ECT INF	FORMATION		_	DRI	LLING	i IN	FO	RMATION	1
PROJE SITE L JOB N PROJE LOGG	ECT: .OCATION: UMBER: ECT MANAG ED BY:	MR Edd 1255 ER: Rob C. S	O: HF7 Fed Con ly Co., New Mex 53.023.001 pert Appelt Spangler	n 001 ico	DRILLING CC DRILLING ME BORING DEP BORING DIAN	ompan' Thod: Th: Meter	Y: Atk Holl 12 f : 8.25	ins low t bg -in	Eng Ste s	ineering As m Auger w WELL DEPT WELL DIAM	ssociates ith Split Spoon H: NA ETER: NA
DATE((S) DRILLED	: 4/15	5/2020			IG ELEV	/:NA	MCI		N. LATITUD	E W. LONGITUDE
RFMA	RKS: Refusa	al of split spoo	on tooling at 7 ft bgs.		GROUNDELE		. 2994 IL		- F\/F	J2 17.001	-104 01.700
			0 0					ATIC	LEVE	EL: NA	
DEPTH	LITHOLOGY	USCS	DESC	CRIPTION		SA	MPLEID	REC. %	MVO	WELL COMPLETIO	INSTALLATION N NOTES
5		At 11.0 CLAYE dry, da Sticky	D-11.2: Hard (white) caliche ark reddish brown. when wetted.	poorly cemented ons/precipitates, n depth. e gravel seam, p grained sands. p	d, breaks into blocky dry, light brown/ tan, oorly cemented.	s, B	-08 (6-12)	50% 20% 75%			Borehole backfilled with cuttings and hydrated bentonite chips.

TV	VTT	Y		2600 Dal	las Parkway]	Boring	g/V	Vel	l Log	Page 1 of 1
V	ፈገታ	\mathcal{N}	N K	Suite Frisco, Te	e 280 exas 750.34	E	BORING	ID:	B-	09	
		Js	OLUTIONS	(469) 6	66-5500	۱	NELL ID:		NA	4	
	PROJ	ECT	INFORMATION			DF	RILLING	G IN	IFO	RMATION	
PROJI SITE L	ECT: LOCATION:		MRO: HF7 Fed Com Eddy Co., New Mexic	001 co	DRILLING CO DRILLING ME	MPA THO	NY: Atk D: Hol	kins llow	Eng Ste	gineering As m Auger wi	sociates th Split Spoon
JOR N	ΙUMBER: Εστ Μάνιας	FD.	12553.023.001 Robert Appelt			IH: NETE	12 1 D· 8 24	it bg 5 in	gs	WELL DEPTH	I: NA
LOGG	ED BY:		C. Spangler				IX. 0.2.	5-m			
DATE((S) DRILLED	:	4/15/2020		TOP OF CASIN	G ELI	EV: NA			N. LATITUDE	W. LONGITUDE
		al of to	aling at (E ft bas (bard/dansa)		GROUND ELEV		N: 2995 ft	MSI	-	32° 19.086	-104° 01.763°
KEMA	KKS: Reius: Locati	ai UI (0) on mo\	very at 0.5 it bys (nard/dense). /ed ~5 ft northwest out of NM da	as pipeline ea	sement.		∽ WA	ATER	LEVI	EL: NA	
							🗶 ST	ATIC	LEVI	EL: NA	
DEPTH	LITHOLOGY	uscs	DESCI	RIPTION		c	AMPLEID	REC. %	MVO	WELL COMPLETION	INSTALLATION NOTES
5			SILTY CLAYEY LOAM, very fine g and coarse (sandstone) gravel, tra grading to brown with depth. SILTY CLAYEY LOAM (caliche), p fragments, few to little coarse cond tan, grades to light pinkish brown v At 6.5: dense (white) caliche seam CLAYEY LOAM, fine to very fine g dense, few to little nodules/concret	prained sands, s poorly cemented cretions/precipit with depth. n.	some to many cobbles ark brown to 0.5 ft bgs d, breaks into blocky ates, dry, light brown/ ates, dry, light brown/ boorly cemented, block ish brown.	з, «У,	В-09 (6-12)	100% 70% 75%			Borehole backfilled with cuttings and hydrated bentonite chips.
-			5								

Page 64 of 198 Received by OCD: 9/18/2020 2:18:00 PM **Boring/Well Log** Page 1 of 1 2600 Dallas Parkway Suite 280 BORING ID: **B-09-2** Frisco, Texas 75034 WELL ID: NA (469) 666-5500 DRILLING INFORMATION **PROJECT INFORMATION PROJECT:** MRO: HF7 Fed Com 001 DRILLING COMPANY: Atkins Engineering Associates Hollow Stem Auger with Split Spoon SITE LOCATION: Eddy Co., New Mexico **DRILLING METHOD:** JOB NUMBER: 12553.023.001 **BORING DEPTH:** 5.5 ft bgs WELL DEPTH: NA PROJECT MANAGER: Robert Appelt ~2 ft **BORING DIAMETER:** WELL DIAMETER: NA LOGGED BY: C. Spangler N. LATITUDE W. LONGITUDE TOP OF CASING ELEV: NA DATE(S) DRILLED: 5/14/2020 32.31804° -104.02937° GROUND ELEVATION: 2995 ft MSL Location is hydrovac hole along pipeline. REMARKS: WATER LEVEL: NA \bigtriangledown Sample composite collected from sidewall. STATIC LEVEL: NA W SAMPLEID LITHOLOGY % DEPTH USCS OVM WELL INSTALLATION REC. DESCRIPTION COMPLETION NOTES 0. SILTY SAND, trace to few clay, fine grained sands, few gravel (near surface), roots, dry, dark brown. 100% B-09-2-1 (1-5.5) 5 End of boring at 5.5 ft bgs. 10 -

TV	$\mathbf{v}_{\mathbf{r}}$	<u> </u>		2600 Dal	las Parkway		Boring	g/V	Vel	l Log	Page 1 of 1
Ľ	小	ŊЦ		Suite Frisco, Te	e 280 exas 75034	E	BORING	ID:	B-	10	
		/so		(469) 6	66-5500	V	NELL ID:				
	PROJ	IECT I	NFORMATION			DR	RILLING	G IN	FO	RMATION	
PROJI SITE L JOB N PROJI	ECT: LOCATION: IUMBER: ECT MANAG	M E 12 GER: R	IRO: HF7 Fed Con ddy Co., New Mexi 2553.023.001 cobert Appelt	1 001 co	DRILLING CO DRILLING ME BORING DEP BORING DIAN	ompai Thoi Th: //ete	NY: Atk D: Hol 12 f R: 8.2	tins llow ft bg 5-in	Eng Ste 35	ineering As m Auger wi WELL DEPTI WELL DIAME	sociates th Split Spoon H: NA TER: NA
DATE((S) DRILLED): 4 /	/15/2020		TOP OF CASIN	IG ELE	EV: NA			N. LATITUDE	W. LONGITUDE
		ol of toolin	an at 7 ft has (hard/danas)		GROUND ELEV	/ATIO	N: 2995 ft	MSL	-	32° 19.088'	-104° 01.762'
REMA	RKS: Reius Locati	ion moved	a 7 if bys (nard/dense). ~8-10 ft northwest out of N	M gas pipeline	e easement.		∞ W/ ▼ ST	ATER ATIC	LEVI	el: na El: na	
DEPTH	LITHOLOGY	USCS	DESC	RIPTION		ç	AMPLEID	REC. %	MVO	WELL COMPLETION	INSTALLATION NOTES
5		SIL anı gra SIL fra tar	LTY CLAYEY LOAM, very fine of coarse (sandstone) gravel, tra ading to brown with depth.	grained sands, s ace roots, dry, d poorly cemented cretions/precipit with depth. ed with dark red	some to many cobbles ark brown to 0.5 ft bgs d, breaks into blocky ates, dry, light brown/ dish brown.	5,	B-10 (6-12)	10%			Borehole backfilled with cuttings and hydrated bentonite chips.
10+	-\-\-\-\-	CL no Sti	AYEY LOAM, fine to very fine dules/concretions, dark reddish cky when wetted.	grained sands, p 1 brown.	poorly cemented, few			80%			

<u>Page 66 of</u> 198 Received by OCD: 9/18/2020 2:18:00 PM **Boring/Well Log** Page 1 of 1 2600 Dallas Parkway Suite 280 BORING ID: **B-10-2** Frisco, Texas 75034 WELL ID: NA (469) 666-5500 DRILLING INFORMATION **PROJECT INFORMATION PROJECT:** MRO: HF7 Fed Com 001 DRILLING COMPANY: Atkins Engineering Associates Hollow Stem Auger with Split Spoon SITE LOCATION: Eddy Co., New Mexico **DRILLING METHOD:** JOB NUMBER: 12553.023.001 **BORING DEPTH:** 5.5 ft bgs WELL DEPTH: NA PROJECT MANAGER: Robert Appelt ~2 ft **BORING DIAMETER:** WELL DIAMETER: NA LOGGED BY: C. Spangler N. LATITUDE W. LONGITUDE TOP OF CASING ELEV: NA DATE(S) DRILLED: 5/14/2020 -104.02930° GROUND ELEVATION: 2995 ft MSL 32.31811° Location is hydrovac hole along pipeline. REMARKS: WATER LEVEL: NA \bigtriangledown Sample composite collected from sidewall. STATIC LEVEL: NA W SAMPLEID LITHOLOGY % DEPTH USCS OVM WELL INSTALLATION REC. DESCRIPTION COMPLETION NOTES 0. SILTY SAND, trace to few clay, fine grained sands, few gravel (near surface), roots, dry, dark brown. 100% B-10-2-1 (1-5.5) 5 End of boring at 5.5 ft bgs. 10 -

ΓV	VTT	ľ		2600 Dal	las Parkway		Boring	g/V	Vel	l Log	Page 1 of 1
Ľ	心子	\mathcal{N}		Suite Frisco, Te	e 280 exas 75034		BORING	ID:	B-	11	
			OLUTIONS	(469) 6	66-5500		WELL ID:				
	PROJ	ЕСТ	INFORMATION			D	RILLING	G IN	FO	RMATION	
PROJE SITE L JOB N	ECT: _OCATION: IUMBER:		MRO: HF7 Fed Com Eddy Co., New Mexi 12553.023.001	1 001 co	DRILLING CO DRILLING ME BORING DEP	ompa Tho Th:	NY: Atl D: Ho 12 1	cins llow ft bg	Eng Ste s	gineering As m Auger wi WELL DEPTH	sociates th Split Spoon l: NA
PROJ	ECT MANAG	ER:	Robert Appelt		BORING DIAN	ЛЕТЕ	ER: 8.2 :	5-in		WELL DIAME	TER: NA
LOGG DATE(ED BY: (S) DRILLED	:	C. Spangler 4/15/2020		TOP OF CASIN	IG EL	EV: NA	MSI		N. LATITUDE	W. LONGITUDE
RFMA	RKS Locatio	on mov	ved ~15 ft northwest out of NM	gas pipeline e	asement.				- F.V.		-104 01.750
	Locatio	on mov	ved to foot of berm, fence temp	orarily downed	d for access.		⊥ w	ATIC	LEVI	EL: NA	
DEPTH	LITHOLOGY	USCS	DESC	RIPTION			SAMPLEID	REC. %	MVO	WELL COMPLETION	INSTALLATION NOTES
0			SILTY CLAYEY LOAM, very fine (and coarse (sandstone) gravel, tra grading to brown with depth. SILTY CLAYEY LOAM (caliche), p fragments, few to little coarse con tan, grades to light pinkish brown At 6.5-7.0 ft bgs: caliche seam. At 7.0 ft bgs: (white) caliche mottle	grained sands, s ace roots, dry, d poorly cemented cretions/precipit with depth.	some to many cobbles ark brown to 0.5 ft bgs d, breaks into blocky ates, dry, light brown/	5	B-11 (6-12)	30%			Borehole backfilled with cuttings and hydrated bentonite chips.
10 -	-\\\\		CLAYEY LOAM, fine to very fine on nodules/concretions, dark reddish Sticky when wetted.	grained sands, p brown.	poorly cemented, few			100%			
-	_`_`_`										

<u>Page 68 of</u> 198 Received by OCD: 9/18/2020 2:18:00 PM **Boring/Well Log** Page 1 of 1 2600 Dallas Parkway Suite 280 BORING ID: **B-11-2** Frisco, Texas 75034 WELL ID: NA (469) 666-5500 DRILLING INFORMATION **PROJECT INFORMATION PROJECT:** MRO: HF7 Fed Com 001 DRILLING COMPANY: Atkins Engineering Associates Hollow Stem Auger with Split Spoon SITE LOCATION: Eddy Co., New Mexico **DRILLING METHOD:** JOB NUMBER: 12553.023.001 **BORING DEPTH:** 5.5 ft bgs WELL DEPTH: NA PROJECT MANAGER: Robert Appelt ~2 ft **BORING DIAMETER:** WELL DIAMETER: NA LOGGED BY: C. Spangler N. LATITUDE W. LONGITUDE TOP OF CASING ELEV: NA DATE(S) DRILLED: 5/14/2020 -104.02923° GROUND ELEVATION: 2995 ft MSL 32.31817° Location is hydrovac hole along pipeline. REMARKS: WATER LEVEL: NA \bigtriangledown Sample composite collected from sidewall. STATIC LEVEL: NA W SAMPLEID LITHOLOGY % DEPTH USCS OVM WELL INSTALLATION REC. DESCRIPTION COMPLETION NOTES 0. SILTY SAND, trace to few clay, fine grained sands, few gravel (near surface), roots, dry, dark brown. 100% B-11-2-1 (1-5.5) 5 End of boring at 5.5 ft bgs. 10 -

Page 69 of 198 Received by OCD: 9/18/2020 2:18:00 PM **Boring/Well Log** Page 1 of 1 2600 Dallas Parkway Suite 280 BORING ID: B-12 Frisco, Texas 75034 NA WELL ID: (469) 666-5500 DRILLING INFORMATION **PROJECT INFORMATION PROJECT:** MRO: HF7 Fed Com 001 DRILLING COMPANY: Atkins Engineering Associates SITE LOCATION: **Eddy Co., New Mexico DRILLING METHOD:** Hollow Stem Auger with Split Spoon JOB NUMBER: 12553.023.001 **BORING DEPTH:** 12 ft bgs WELL DEPTH: NA WELL DIAMETER: NA PROJECT MANAGER: Robert Appelt 8.25-in **BORING DIAMETER:** LOGGED BY: C. Spangler N. LATITUDE W. LONGITUDE TOP OF CASING ELEV: NA DATE(S) DRILLED: 4/14/2020 32° 19.098' -104° 01.752' GROUND ELEVATION: 2995 ft MSL REMARKS: WATER LEVEL: NA \bigtriangledown w STATIC LEVEL: NA SAMPLEID LITHOLOGY % DEPTH USCS WELL INSTALLATION MVO REC. DESCRIPTION COMPLETION 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. 50% B-12 (6-12) 50% 10 At 11.0-11.2: Hard (white) caliche seam. CLAYEY LOAM, fine to very fine grained sands. poorly cemented, dry, 50% dark reddish brown. Sticky when wetted. End of boring at 12.0 ft bgs.

Page 70 of 198 Received by OCD: 9/18/2020 2:18:00 PM **Boring/Well Log** Page 1 of 1 2600 Dallas Parkway Suite 280 BORING ID: B-12-2 Frisco, Texas 75034 NA WELL ID: (469) 666-5500 DRILLING INFORMATION **PROJECT INFORMATION PROJECT:** MRO: HF7 Fed Com 001 DRILLING COMPANY: Atkins Engineering Associates SITE LOCATION: **Eddy Co., New Mexico DRILLING METHOD:** Hollow Stem Auger with Split Spoon JOB NUMBER: 12553.023.001 **BORING DEPTH:** 8 ft bgs WELL DEPTH: NA WELL DIAMETER: NA PROJECT MANAGER: 8.25-in **Robert Appelt BORING DIAMETER:** LOGGED BY: C. Spangler N. LATITUDE W. LONGITUDE TOP OF CASING ELEV: NA DATE(S) DRILLED: 5/14/2020 -104.02918° GROUND ELEVATION: 2996 ft 32.31830° REMARKS: Refusal of split spoon tooling at 3.0 ft bgs. WATER LEVEL: NA \bigtriangledown STATIC LEVEL: NA w SAMPLEID LITHOLOGY % USCS DEPTH WELL INSTALLATION MVO REC. DESCRIPTION COMPLETION 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. 100% B-12-2 (0-4) Borehole backfilled with hydrated bentonite chips. 50% SILTY CLAYEY LOAM (caliche), poorly cemented, blocky, trace coarse concretions/precipitates, dry, light brown/ tan, grades to light pinkish brown with depth. 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

TV	VII	Ì		2600 Dal	las Parkway		Boring	g/V	Vel	l Log	Page 1 of 1
V	ע <i>י</i> ו ₽	\mathcal{N}		Suite Frisco Ti	e 280 exas 75034		BORING	ID:	B-	13	
		ノs	OLUTIONS	(469) 6	66-5500	, I	WELL ID:		NA	A	
	PROJ	ECT	INFORMATION			DF	RILLING	G IN	IFO	RMATION	
PROJI SITE I			MRO: HF7 Fed Com	001	DRILLING CO	MPA	NY: Atl	kins	Eng	ineering As	sociates th Split Spoon
JOB N	IUMBER:		12553.023.001	.0	BORING DEP	TH:	12 110	ft be	su s	WFII DEPTH	: NA
PROJI	ECT MANAG	GER:	Robert Appelt		BORING DIAN	ЛЕТЕ	R: 8.2	5-in		WELL DIAME	TER: NA
LOGG DATE(ED BY: (S) DRILLED):	C. Spangler 4/14/2020		TOP OF CASIN	IG EL	EV: NA	•		N. LATITUDE 32° 19.101'	W. LONGITUDE -104° 01.756'
RFMA	RKS: Hand	auger t	o ~1.0 ft bgs (refusal on cobble	s).				ATER	I F VI		
	Refus	al of sa	mpler tool at 11.5 ft bgs.				± m	ATIC	LEVI	EL: NA	
DEPTH	LITHOLOGY	USCS	DESCI	RIPTION		c.	SAMPLEID	REC. %	MVO	WELL COMPLETION	INSTALLATION NOTES
5			and coarse (sandstone) gravel, tra- grading to brown with depth. SILTY CLAYEY LOAM (caliche), p concretions/precipitates, dry, light h with depth. CLAYEY LOAM, fine to very fine g concretions, trace (white) caliche s blocky, poorly cemented, dry, dark	ce roots, dry, d	ark brown to 0.5 ft bgs d, blocky, trace coarse des to light pinkish bro race rounded o very fine grained san	s, swn	B-13 (6-12)	100%			Borehole backfilled with hydrated bentonite chips.
1											

	2600 Da	llas Parkway	Borin	g/V	Vel	l Log	Page 1 of 1	
\'\'\ <i>\</i> \	Suite 280		BORING ID: B-13-2					
	SOLUTIONS (469) C	666-5500	WELL ID	:	NA	A		
PROIEC	T INFORMATION		DRILLIN	<u>G IN</u>	FO	RMATION		
					_			
PRUJECT: MRO: HF7 Fed Com 001		DRILLING COMPANY: Atkins Engineering Associates						
JOB NUMBER:	12553.023.001	BORING DEPT	нор. н а Н: 12	12 ft bos WFLL DEPTH: NA				
PROJECT MANAGER:	Robert Appelt	BORING DIAM	ETER: 8.2	5-in	,5	WELL DIAME	TER: NA	
LOGGED BY:	C. Spangler						WIONGITUDE	
DATE(S) DRILLED:	5/14/2020	GROUND ELEV	3 ELEV. INA Ation: 2996 f	→ V MA ON: 2996 ft			-104.02926°	
REMARKS: Refusal of	split spoon tooling at 2.5 ft bgs.			ATFR	IFV			
Refusal of	split spoon tooling at 5.5 & 9.5 ft bgs.			ΓΔΤΙΟ				
						,		
DEPTH ITHOLOGY S	DESCRIPTION		CAMPLEID	EC. %	N	WELL	INSTALLATION NOTES	
					0			
5	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. At 5.5-6.0: dense/hard (white) caliche lense. 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.		vn IS, B-13-2 (2-6)	25% 75% 75%			Borehole backfilled with hydrated bentonite chips.	
ATTACHMENT G

LABORATORY REPORTS OF ANALYSIS AND CHAIN OF CUSTODY DOCUMENTATION



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

Hall Environmental Analysis Laboratory

TEL: 505-345-3975 FAX: 505-345-4107

Website: www.hallenvironmental.com

4901 Hawkins NE

Albuquerque, NM 87109

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

Andy Freeman Laboratory Manager 4901 Hawkins NE Albuquerque, NM 87109

CLIENT: Wescom Inc

Project:

Lab ID:

HF 7 FED COM 001

2001B64-001

Analytical Report Lab Order 2001B64

Date Reported: 2/5/2020

Hall Environmental Analysis Laboratory, Inc.

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

Analyses	Result	RL Qu	al Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORG	BANICS				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. Sample Diluted Due to Matrix

D Н Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

PQL Practical Quanitative Limit

% Recovery outside of range due to dilution or matrix S

В Analyte detected in the associated Method Blank

E Value above quantitation range

J Analyte detected below quantitation limits

Р Sample pH Not In Range

RL Reporting Limit Page 1 of 5

Client: Project:	Wes HF (com Inc 7 FED COM 00	1								
Sample ID:	MB-50242	SampT	ype: m t	olk	Tes	tCode: EF	PA Method	300.0: Anion	s		
Client ID:	PBS	Batch	ו ID: 50	242	F	RunNo: 66	6289				
Prep Date:	2/4/2020	Analysis D	ate: 2 /	4/2020	S	SeqNo: 22	277916	Units: mg/K	g		
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride		ND	1.5								
Sample ID:	LCS-50242	SampT	ype: Ics	;	Tes	tCode: EF	PA Method	300.0: Anion	s		
Client ID:	LCSS	Batch	ו ID: 50	242	F	RunNo: 66	6289				
Prep Date:	2/4/2020	Analysis D	ate: 2/	4/2020	S	SeqNo: 22	277917	Units: mg/K	g		
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

WO#: 2001B64 05-Feb-20

Client: Wescon Project: HF 7 FE	n Inc ED COM 00	1									
Sample ID: MB-50189	SampT	ype: ME	BLK	Tes	tCode: EF	PA Method	8015M/D: Di	esel Range	e Organics		٦
Client ID: PBS	Batch	n ID: 50	189	RunNo: 66246							
Prep Date: 1/31/2020	Analysis D)ate: 2 /	3/2020	S	SeqNo: 22	275621	Units: mg/k	٢g			
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	SampT	ype: LC	S	Tes	tCode: EF	PA Method	8015M/D: Di	esel Range	e Organics		٦
Client ID: LCSS	Batch	n ID: 50	189	F	RunNo: 60	6246					
Prep Date: 1/31/2020	Analysis D)ate: 2 /	3/2020	5	SeqNo: 22	275622	Units: mg/k	٢g			
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

Page 3 of 5

WO#: 2001B64 05-Feb-20

QC SUMMARY REPORT Hall Environmental Analysis Laboratory, Inc.

WO#:	2001B64
	05 Eab 20

05-Feb-20

Client: Project:	Wesco HF 7 F	m Inc ED COM 001								
Sample ID:	: Ics-50164	SampType	E LCS	Tes	tCode: EPA	A Method	8015D: Gaso	line Rang	e	
Client ID:	LCSS	Batch ID	50164	F	RunNo: 662	228				
Prep Date:	1/30/2020	Analysis Date	1/31/2020	S	SeqNo: 227	5525	Units: mg/K	g		
Analyte		Result P	QL SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Rang	ge 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	F	RunNo: 662	228				
Prep Date:	1/30/2020	Analysis Date	1/31/2020	5	SeqNo: 227	5526	Units: mg/K	g		
Analyte		Result P	QL SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Rang	ge Organics (GRO)	ND	5.0							
Surr: BFB		770	1000		77.4	66.6	105			
Sample ID:	mb-50219	SampType	BLK	Tes	tCode: EPA	A Method	8015D: Gaso	line Rang	е	
Client ID:	PBS	Batch ID	50219	F	RunNo: 662	278				
Prep Date:	2/3/2020	Analysis Date	2/5/2020	S	SeqNo: 227	7403	Units: %Rec	:		
Analyte		Result P	QL 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	Tes	tCode: EPA	A Method	8015D: Gaso	line Rang	e	
Client ID:	LCSS	Batch ID	50219	F	RunNo: 662	278				
Prep Date:	2/3/2020	Analysis Date	2/4/2020	S	SeqNo: 227	7404	Units: %Rec	;		
Analyte		Result P	QL 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: Project:	Wes HF	com Inc 7 FED COM 00)1								
Sample ID:	LCS-50164	Samp	Гуре: LC	S	Tes	tCode: EF	PA Method	8021B: Volati	les		
Client ID:	LCSS	Batc	h ID: 50	164	F	RunNo: 66	6228				
Prep Date:	1/30/2020	Analysis [Date: 1 /	31/2020	S	SeqNo: 22	275580	Units: mg/K	9		
Analvte		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-Brom	ofluorobenzene	0.91		1.000		91.4	80	120			
Sample ID:	mb-50164	Samp	Гуре: МЕ	BLK	Tes	tCode: EF	PA Method	8021B: Volati	les		
Client ID:	PBS	Batc	h ID: 50	164	F	RunNo: 66	6228				
Prep Date:	1/30/2020	Analysis [Date: 1 /	31/2020	S	SeqNo: 22	275581	Units: mg/K	9		
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-Brom	ofluorobenzene	0.89		1.000		89.5	80	120			
Sample ID:	mb-50219	Samp	Гуре: МЕ	BLK	Tes	tCode: EF	PA Method	8021B: Volati	les		
Client ID:	PBS	Batc	h ID: 50	219	F	RunNo: 66	6278				
Prep Date:	2/3/2020	Analysis [Date: 2 /	5/2020	5	SeqNo: 22	277435	Units: %Rec			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 4-Brom	ofluorobenzene	0.85		1.000		85.3	80	120			
Sample ID:	lcs-50219	Samp	Гуре: LC	S	Tes	tCode: EF	PA Method	8021B: Volati	les		
Client ID:	LCSS	Batc	h ID: 50	219	F	RunNo: 66	6278				
Prep Date:	2/3/2020	Analysis [Date: 2 /	4/2020	S	SeqNo: 22	277436	Units: %Rec			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 4-Brom	ofluorobenzene	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

ENVIRONMENTAL ANALYSIS LABORATORY	TEL: 505-345-, Website: ww	4901 Haw Albuquerque, NI 3975 FAX: 505-3 w.hallenvironmer	vkins NE M 87109 45-4107 ntal.com	Sample Log-In Check Li				
Client Name: WESCOM INC	Work Order Num	nber: 2001B64			RcptNo:	t		
Received By: Desiree Dominguez	1/29/2020 2:00:00	РМ	E	2				
Completed By: Yazmine Garduno	1/30/2020 10:36:3	8 AM	njon	nin léfarients				
Reviewed By: JR 1/30/20			y -	1				
Chain of Custody								
1. Is Chain of Custody sufficiently complete?		Yes 🗹	N	•	Not Present			
2. How was the sample delivered?		Courier						
Log In								
3. Was an attempt made to cool the samples?		Yes 🗹	N	•	NA 🗌			
4. Were all samples received at a temperature of	>0° C to 6.0°C	Yes 🗹	N	•				
5. Sample(s) in proper container(s)?		Yes 🗹	N	•				
6. Sufficient sample volume for indicated test(s)?		Yes 🗹	N					
7. Are samples (except VOA and ONG) properly	preserved?	Yes 🗹	N					
8, Was preservative added to bottles?		Yes 🗌	N					
9. Received at least 1 vial with headspace <1/4" f	or AQ VOA?	Yes	N		NA 🗹	/		
10. Were any sample containers received broken?		Yes	N	0	# of processed	-1		
11. Does paperwork match bottle labels? (Note discrepancies on chain of custody)		Yes 🗹	N	• □	bottles checked for pH:	212 unless noted)		
2. Are matrices correctly identified on Chain of Cu	istody?	Yes 🖌	N		Adjusted?			
3. Is it clear what analyses were requested?		Yes 🗹	N		1	VI. Nen12		
14. Were all holding times able to be met? (If no, notify customer for authorization.)		Yes 🗹	N	• 🗆 [Checked by:	10110014		
Special Handling (if applicable)					1			
15. Was client notified of all discrepancies with thi	s order?	Yes 🗌	N	• 🗆				
Person Notified:	Date	•				h		
By Whom:	Via:	eMail] Phone [Fax	In Person			
Regarding:				*****				
Client Instructions:	 (1) ≤ (1) < (1)		ana an					
16. Additional remarks:								
17. Cooler Information								
Cooler No Temp C Condition Sea	Intact Seal No	Seal Date	Signe	d By				

																				Rece
C	hain-	of-Cu	stody Record	Turn-Around	Time:					H/	LL	E٢	٧V	IR		NM	IEľ	NT/	AL	ived
Client:	Jescom	. 1NC.		5-Standard	🗆 Rush				~	AN	IAL	YS	SIS	L	AB	SOI	RA	то	R	by O
				Project Name	e:				1	w	/w.ha	ilenvi	ironn	nent	al.co	m				CD:
Mailing /	Address:	1907	7 SAN, OSE, BLVD		+ FED C	om 001		490	1 Ha	wkins	NE -	Alb	uque	erque	e, NN	N 87'	109			81/6
ADTA	125	CARLS	BAD NIN 88220	Project #:				Te	. <mark>50</mark> 5	5-345-	3975	F	ax	505-	345-	4107		_	_	
Phone #	: 670	5 84	10 3940								م 	nalý	rsis	Req	uest					
email or	Fax#:			Project Mana	ager:	0	31)	б Ю	s	0		SO			sent					18:0
QA/QC F	Package:			SHAR	HAIZVERTE	10	8)	N N	Ш С	CIN4		04,			tí Ab					0 PM
□ Stan	dard		Level 4 (Full Validation)	Complete Cite > HATING ATT D			ΥB's	R	82 F	()		02, 1			sen		2			
Accredit	tation:		mpliance	Sampler: Sa	On Ice: BY Yes INO) Q	s/80	504.	5 0	3. N		(YC	(Pre		×		1	
	(Type)			# of Coolers			TBE	۱ ق ا	icide	pou	Aetal	2	(A	ni-V(Lorm					
				Cooler Tem	O(including CF): U	5 - 0.1 = 4.4 (°C)	N	0151	Pest	Metl	2 2	Ъ	N S	(Ser	Coli					
				Container	Preservative	HEAL NO.	ĮΨ,	Ч:8: Н:8	181			L.	260	270	otal					
Date	Time	Matrix	Sample Name	Type and #	Туре	LUUIBLA		F	<u>∞</u>			\bigotimes	00	<u> 60</u>		┝─┤	 -		+	
1 19	18:50	5	N-TANK-E-WS-COM	JAR	100		\vdash	M			_	\vdash				$\left - \right $	\rightarrow	-+	-+-	╶┼╌┦
									-+			<u> </u>		─-	-	-		-+	-+-	╶╁─┦
																-	┝──┤	-+	-+-	
															<u> </u>		┝─┤	-+	-+-	+
									-							-		-+	_+	
							-					┼╌	+				┝─┥	<u> </u>		+-
																	$\left - \right $	-+	-+-	+
																┼──	$\left - \right $	-+	-+	
												+-	+	+			┟╾─┦	┝╼╋	-+	_ _
						·	-					+		+	┦──	┼──	┟──┦	\vdash	-+	
							+				_ -	+		┼──	+	┼─	┼─┤	\vdash	+	
				- Bassing Hur	/ia:	Date Time	Re	 mark	 :s:			<u> </u>		<u> </u>			<u> </u>	LL		
Date:	Time:	Rélinquis	hed by:	Received by	Via.	1/29/20 140	2	man												Pa
	14.00 Time:	Retinatis	hed by:	Received by:	∕ Via:	Date Time	-													ge 8
1 (76)			K1	HOR	Couter	1/20/70 9:10														1 05
	<u>// /7 代</u>	rv. samples si	omitted to Hall Environmental may be	subcontracted to othe	er accredited laborate	ories. This serves as notice of t	his pos	sibility.	Any s	ub-cont	acted da	ata will	be cle	arly no	otated o	on the :	analytic	cal repo	irt.	198

•



February 21, 2020

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

OrderNo.: 2002627

Hall Environmental Analysis Laboratory

TEL: 505-345-3975 FAX: 505-345-4107

Website: www.hallenvironmental.com

4901 Hawkins NE

Albuquerque, NM 87109

RE: HF 7 Fed Com 1

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

Andy Freeman Laboratory Manager 4901 Hawkins NE Albuquerque, NM 87109

Hall Environmental Analysis Laboratory, Inc.

Lab Order 2002627 Date Reported: 2/21/2020

CLIENT:	Marathon Oil Company		Client Sample ID: HF 7-1 SP1-8'								
Project:	HF 7 Fed Com 1		Co	llectio	on Date:	1/18/2	020				
Lab ID:	2002627-001	Matrix: SOIL	R	Received Date: 2/15/2020 12:35:00 PM							
Analyses		Result	RL (Qual	Units	DF	Date Analyzed				
EPA MET	HOD 8015M/D: DIESEL RAN	GE ORGANICS					Analyst: CLP				
Diesel R	ange Organics (DRO)	ND	9.4	Н	mg/Kg	1	2/19/2020 2:11:04 PM				
Motor Oi	I Range Organics (MRO)	ND	47	Н	mg/Kg	1	2/19/2020 2:11:04 PM				
Surr: [ONOP	94.6	55.1-146	Н	%Rec	1	2/19/2020 2:11:04 PM				
EPA MET	HOD 8015D: GASOLINE RAI	NGE					Analyst: NSB				
Gasoline	Range Organics (GRO)	ND	4.6	н	mg/Kg	1	2/19/2020 3:35:44 PM				
Surr: E	BFB	86.1	66.6-105	Н	%Rec	1	2/19/2020 3:35:44 PM				
EPA MET	HOD 8021B: VOLATILES						Analyst: NSB				
Benzene		ND	0.023	Н	mg/Kg	1	2/19/2020 3:35:44 PM				
Toluene		ND	0.046	Н	mg/Kg	1	2/19/2020 3:35:44 PM				
Ethylben	zene	ND	0.046	Н	mg/Kg	1	2/19/2020 3:35:44 PM				
Xylenes,	Total	ND	0.092	Н	mg/Kg	1	2/19/2020 3:35:44 PM				
Surr: 4	4-Bromofluorobenzene	95.5	80-120	Н	%Rec	1	2/19/2020 3:35:44 PM				
EPA MET	HOD 300.0: ANIONS						Analyst: CAS				
Chloride		400	60	Н	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. Sample Diluted Due to Matrix

D Holding times for preparation or analysis exceeded Η

ND Not Detected at the Reporting Limit

PQL Practical Quanitative Limit

S % Recovery outside of range due to dilution or matrix

Analyte detected in the associated Method Blank В

- Е Value above quantitation range
- J Analyte detected below quantitation limits

Р Sample pH Not In Range

RL Reporting Limit Page 1 of 39

Hall Environmental Analysis Laboratory, Inc.

Lab Order 2002627

Date Reported: 2/21/2020

CLIENT: Marathon Oil Company Client Sample ID: HF7-1 SP2-8'									
Project: HF 7 Fed Com 1		Co	ollectio	on Date:	1/18/2	020			
Lab ID: 2002627-002	Matrix: SOIL	F	Receiv	ed Date:	2/15/2	020 12:35:00 PM			
Analyses	Result	RL	Qual	Units	DF	Date Analyzed			
EPA METHOD 8015M/D: DIESEL RANG	E ORGANICS					Analyst: CLP			
Diesel Range Organics (DRO)	ND	8.9	Н	mg/Kg	1	2/19/2020 2:38:38 PM			
Motor Oil Range Organics (MRO)	ND	45	Н	mg/Kg	1	2/19/2020 2:38:38 PM			
Surr: DNOP	94.2	55.1-146	Н	%Rec	1	2/19/2020 2:38:38 PM			
EPA METHOD 8015D: GASOLINE RAN	GE					Analyst: NSB			
Gasoline Range Organics (GRO)	ND	4.6	Н	mg/Kg	1	2/19/2020 3:59:24 PM			
Surr: BFB	81.7	66.6-105	Н	%Rec	1	2/19/2020 3:59:24 PM			
EPA METHOD 8021B: VOLATILES						Analyst: NSB			
Benzene	ND	0.023	Н	mg/Kg	1	2/19/2020 3:59:24 PM			
Toluene	ND	0.046	Н	mg/Kg	1	2/19/2020 3:59:24 PM			
Ethylbenzene	ND	0.046	Н	mg/Kg	1	2/19/2020 3:59:24 PM			
Xylenes, Total	ND	0.093	Н	mg/Kg	1	2/19/2020 3:59:24 PM			
Surr: 4-Bromofluorobenzene	90.4	80-120	Н	%Rec	1	2/19/2020 3:59:24 PM			
EPA METHOD 300.0: ANIONS						Analyst: CAS			
Chloride	530	60	Н	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. Sample Diluted Due to Matrix

D Holding times for preparation or analysis exceeded Η

ND Not Detected at the Reporting Limit

PQL Practical Quanitative Limit

S % Recovery outside of range due to dilution or matrix

- Analyte detected in the associated Method Blank В
- Е Value above quantitation range
- J Analyte detected below quantitation limits
- Р Sample pH Not In Range

RL Reporting Limit Page 2 of 39

Hall Environmental Analysis Laboratory, Inc.

Lab Order 2002627

Date Reported: 2/21/2020

CLIENT: Marathon Oil Company Client Sample ID: HF7-1 SP3-8'											
Project: HF 7 Fed Com 1		Co	ollectio	on Date:	1/18/2	020					
Lab ID: 2002627-003	Matrix: SOIL Received Date: 2/15/2020 12:35:00 PM										
Analyses	Result	RL	Qual	Units	DF	Date Analyzed					
EPA METHOD 8015M/D: DIESEL RANG	E ORGANICS					Analyst: CLP					
Diesel Range Organics (DRO)	ND	9.6	Н	mg/Kg	1	2/19/2020 2:47:48 PM					
Motor Oil Range Organics (MRO)	ND	48	Н	mg/Kg	1	2/19/2020 2:47:48 PM					
Surr: DNOP	95.7	55.1-146	Н	%Rec	1	2/19/2020 2:47:48 PM					
EPA METHOD 8015D: GASOLINE RANG	E					Analyst: NSB					
Gasoline Range Organics (GRO)	ND	4.6	Н	mg/Kg	1	2/19/2020 4:23:05 PM					
Surr: BFB	84.2	66.6-105	Н	%Rec	1	2/19/2020 4:23:05 PM					
EPA METHOD 8021B: VOLATILES						Analyst: NSB					
Benzene	ND	0.023	Н	mg/Kg	1	2/19/2020 4:23:05 PM					
Toluene	ND	0.046	Н	mg/Kg	1	2/19/2020 4:23:05 PM					
Ethylbenzene	ND	0.046	Н	mg/Kg	1	2/19/2020 4:23:05 PM					
Xylenes, Total	ND	0.092	Н	mg/Kg	1	2/19/2020 4:23:05 PM					
Surr: 4-Bromofluorobenzene	92.4	80-120	Н	%Rec	1	2/19/2020 4:23:05 PM					
EPA METHOD 300.0: ANIONS						Analyst: CAS					
Chloride	400	60	Н	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. Sample Diluted Due to Matrix

D Holding times for preparation or analysis exceeded Η

ND Not Detected at the Reporting Limit

PQL Practical Quanitative Limit

S % Recovery outside of range due to dilution or matrix

Analyte detected in the associated Method Blank В

Е Value above quantitation range

J Analyte detected below quantitation limits

Р Sample pH Not In Range

RL Reporting Limit Page 3 of 39

Hall Environmental Analysis Laboratory, Inc.

Lab Order 2002627

Date Reported: 2/21/2020

CLIENT: Marathon Oil Company	Client Sample ID: HF7-1 SP4-12' Collection Date: 1/18/2020					
Project: HF 7 Fed Com 1						
Lab ID: 2002627-004	Matrix: SOIL	R	leceiv	ed Date:	2/15/2	020 12:35:00 PM
Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANG	GE ORGANICS					Analyst: CLP
Diesel Range Organics (DRO)	ND	9.1	н	mg/Kg	1	2/19/2020 2:57:00 PM
Motor Oil Range Organics (MRO)	ND	46	Н	mg/Kg	1	2/19/2020 2:57:00 PM
Surr: DNOP	95.7	55.1-146	Н	%Rec	1	2/19/2020 2:57:00 PM
EPA METHOD 8015D: GASOLINE RAN	GE					Analyst: NSB
Gasoline Range Organics (GRO)	ND	4.9	н	mg/Kg	1	2/19/2020 4:46:41 PM
Surr: BFB	82.9	66.6-105	Н	%Rec	1	2/19/2020 4:46:41 PM
EPA METHOD 8021B: VOLATILES						Analyst: NSB
Benzene	ND	0.024	н	mg/Kg	1	2/19/2020 4:46:41 PM
Toluene	ND	0.049	Н	mg/Kg	1	2/19/2020 4:46:41 PM
Ethylbenzene	ND	0.049	Н	mg/Kg	1	2/19/2020 4:46:41 PM
Xylenes, Total	ND	0.098	Н	mg/Kg	1	2/19/2020 4:46:41 PM
Surr: 4-Bromofluorobenzene	91.1	80-120	Н	%Rec	1	2/19/2020 4:46:41 PM
EPA METHOD 300.0: ANIONS						Analyst: CAS
Chloride	420	60	Н	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. Sample Diluted Due to Matrix

D Holding times for preparation or analysis exceeded Η

ND Not Detected at the Reporting Limit

PQL Practical Quanitative Limit

S % Recovery outside of range due to dilution or matrix

- Analyte detected in the associated Method Blank В
- Е Value above quantitation range
- J Analyte detected below quantitation limits
- Р Sample pH Not In Range
- RL Reporting Limit

Page 4 of 39

Analytical Report

Hall Environmental Analysis Laboratory, Inc.

Lab Order 2002627

Hall Ei	Hall Environmental Analysis Laboratory, Inc.			Date Reported: 2/21/20					
CLIENT:	Marathon Oil Company		Client Sample ID	:HF7-1	SP5-12'				
Project:	HF 7 Fed Com 1		Collection Date	: 1/18/2	020				
Lab ID:	2002627-005	Matrix: SOIL	Received Date	: 2/15/2	020 12:35:00 PM				
Analyses		Result	RL Qual Units	DF	Date Analyzed				

EPA METHOD 8015M/D: DIESEL RANGE ORG	ANICS					Analyst: CLP
Diesel Range Organics (DRO)	ND	9.1	Н	mg/Kg	1	2/19/2020 3:06:11 PM
Motor Oil Range Organics (MRO)	ND	45	Н	mg/Kg	1	2/19/2020 3:06:11 PM
Surr: DNOP	125	55.1-146	Н	%Rec	1	2/19/2020 3:06:11 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: NSB
Gasoline Range Organics (GRO)	ND	4.9	Н	mg/Kg	1	2/19/2020 5:10:03 PM
Surr: BFB	83.3	66.6-105	Н	%Rec	1	2/19/2020 5:10:03 PM
EPA METHOD 8021B: VOLATILES						Analyst: NSB
Benzene	ND	0.024	Н	mg/Kg	1	2/19/2020 5:10:03 PM
Toluene	ND	0.049	Н	mg/Kg	1	2/19/2020 5:10:03 PM
Ethylbenzene	ND	0.049	Н	mg/Kg	1	2/19/2020 5:10:03 PM
Xylenes, Total	ND	0.098	Н	mg/Kg	1	2/19/2020 5:10:03 PM
Surr: 4-Bromofluorobenzene	92.0	80-120	Н	%Rec	1	2/19/2020 5:10:03 PM
EPA METHOD 300.0: ANIONS						Analyst: CAS
Chloride	420	60	Н	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. Sample Diluted Due to Matrix

D Н Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

PQL Practical Quanitative Limit

% Recovery outside of range due to dilution or matrix S

Analyte detected in the associated Method Blank В

Е Value above quantitation range

J Analyte detected below quantitation limits

Р Sample pH Not In Range

RL Reporting Limit Page 5 of 39

Hall Environmental Analysis Laboratory, Inc.

Lab Order 2002627 Date Reported: 2/21/2020

CLIENT: Marathon Oil Company	Client Sample ID: HF7-1 SP6-12'					
Project: HF 7 Fed Com 1	Collection Date: 1/18/2020 Matrix: SOIL Received Date: 2/15/2020 12:35:00 PM					
Lab ID: 2002627-006						
Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE	ORGANICS					Analyst: CLP
Diesel Range Organics (DRO)	ND	9.3	Н	mg/Kg	1	2/19/2020 3:15:24 PM
Motor Oil Range Organics (MRO)	ND	46	Н	mg/Kg	1	2/19/2020 3:15:24 PM
Surr: DNOP	96.1	55.1-146	Н	%Rec	1	2/19/2020 3:15:24 PM
EPA METHOD 8015D: GASOLINE RANG	E					Analyst: NSB
Gasoline Range Organics (GRO)	ND	4.8	Н	mg/Kg	1	2/19/2020 7:31:17 PM
Surr: BFB	84.2	66.6-105	Н	%Rec	1	2/19/2020 7:31:17 PM
EPA METHOD 8021B: VOLATILES						Analyst: NSB
Benzene	ND	0.024	Н	mg/Kg	1	2/19/2020 7:31:17 PM
Toluene	ND	0.048	Н	mg/Kg	1	2/19/2020 7:31:17 PM
Ethylbenzene	ND	0.048	Н	mg/Kg	1	2/19/2020 7:31:17 PM
Xylenes, Total	ND	0.095	Н	mg/Kg	1	2/19/2020 7:31:17 PM
Surr: 4-Bromofluorobenzene	92.4	80-120	Н	%Rec	1	2/19/2020 7:31:17 PM
EPA METHOD 300.0: ANIONS						Analyst: CAS
Chloride	430	60	Н	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. Sample Diluted Due to Matrix

D Holding times for preparation or analysis exceeded Η

ND Not Detected at the Reporting Limit

PQL Practical Quanitative Limit

S % Recovery outside of range due to dilution or matrix

Analyte detected in the associated Method Blank В

Е Value above quantitation range

J Analyte detected below quantitation limits

Р Sample pH Not In Range

RL Reporting Limit Page 6 of 39

Hall Environmental Analysis Laboratory, Inc.

Lab Order 2002627

Date Reported:	2/21/2020
----------------	-----------

CLIENT: Marathon Oil Company	Client Sample ID: HF7-1 SP7-12'					
Project: HF 7 Fed Com 1		Col	llectio	on Date:	1/17/2	020
Lab ID: 2002627-007	Matrix: SOIL	Re	eceiv	ed Date:	2/15/2	020 12:35:00 PM
Analyses	Result	RL (Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL R	ANGE ORGANICS					Analyst: CLP
Diesel Range Organics (DRO)	ND	8.6	Н	mg/Kg	1	2/19/2020 3:24:37 PM
Motor Oil Range Organics (MRO)	ND	43	Н	mg/Kg	1	2/19/2020 3:24:37 PM
Surr: DNOP	96.4	55.1-146	Н	%Rec	1	2/19/2020 3:24:37 PM
EPA METHOD 8015D: GASOLINE F	RANGE					Analyst: NSB
Gasoline Range Organics (GRO)	ND	4.6	Н	mg/Kg	1	2/19/2020 7:54:51 PM
Surr: BFB	81.6	66.6-105	Н	%Rec	1	2/19/2020 7:54:51 PM
EPA METHOD 8021B: VOLATILES						Analyst: NSB
Benzene	ND	0.023	н	mg/Kg	1	2/19/2020 7:54:51 PM
Toluene	ND	0.046	Н	mg/Kg	1	2/19/2020 7:54:51 PM
Ethylbenzene	ND	0.046	Н	mg/Kg	1	2/19/2020 7:54:51 PM
Xylenes, Total	ND	0.092	Н	mg/Kg	1	2/19/2020 7:54:51 PM
Surr: 4-Bromofluorobenzene	90.4	80-120	Н	%Rec	1	2/19/2020 7:54:51 PM
EPA METHOD 300.0: ANIONS						Analyst: CAS
Chloride	330	60	Н	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. Sample Diluted Due to Matrix

D Holding times for preparation or analysis exceeded Η

ND Not Detected at the Reporting Limit

PQL Practical Quanitative Limit

S % Recovery outside of range due to dilution or matrix

Analyte detected in the associated Method Blank В

Е Value above quantitation range

J Analyte detected below quantitation limits

Р Sample pH Not In Range

RL Reporting Limit Page 7 of 39

Hall Environmental Analysis Laboratory, Inc.

Lab Order 2002627

Date Reported: 2/21/2020

CLIENT: Marathon Oil Company	Client Sample ID: HF7-1 SP8-12'					
Project: HF 7 Fed Com 1		Co	llectio	on Date:	1/17/2	020
Lab ID: 2002627-008	Matrix: SOIL	R	eceiv	ed Date:	2/15/2	020 12:35:00 PM
Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANG	E ORGANICS					Analyst: CLP
Diesel Range Organics (DRO)	ND	8.5	н	mg/Kg	1	2/19/2020 3:33:51 PM
Motor Oil Range Organics (MRO)	ND	43	Н	mg/Kg	1	2/19/2020 3:33:51 PM
Surr: DNOP	105	55.1-146	Н	%Rec	1	2/19/2020 3:33:51 PM
EPA METHOD 8015D: GASOLINE RAN	GE					Analyst: NSB
Gasoline Range Organics (GRO)	ND	4.8	Н	mg/Kg	1	2/19/2020 8:18:23 PM
Surr: BFB	81.5	66.6-105	Н	%Rec	1	2/19/2020 8:18:23 PM
EPA METHOD 8021B: VOLATILES						Analyst: NSB
Benzene	ND	0.024	н	mg/Kg	1	2/19/2020 8:18:23 PM
Toluene	ND	0.048	Н	mg/Kg	1	2/19/2020 8:18:23 PM
Ethylbenzene	ND	0.048	Н	mg/Kg	1	2/19/2020 8:18:23 PM
Xylenes, Total	ND	0.096	Н	mg/Kg	1	2/19/2020 8:18:23 PM
Surr: 4-Bromofluorobenzene	89.7	80-120	Н	%Rec	1	2/19/2020 8:18:23 PM
EPA METHOD 300.0: ANIONS						Analyst: CAS
Chloride	440	61	Н	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. Sample Diluted Due to Matrix

D Holding times for preparation or analysis exceeded Η

ND Not Detected at the Reporting Limit

PQL Practical Quanitative Limit

S % Recovery outside of range due to dilution or matrix

Analyte detected in the associated Method Blank В

Е Value above quantitation range

J Analyte detected below quantitation limits

Р Sample pH Not In Range

RL Reporting Limit Page 8 of 39

Hall Environmental Analysis Laboratory, Inc.

Lab Order 2002627

Date Reported: 2/21/2020

CLIENT: Marathon Oil Company	Client Sample ID: HF7-1 SP9-14'						
Project: HF 7 Fed Com 1	Collection Date: 1/17/2020 Matrix: SOIL Received Date: 2/15/2020 12:35:00 PM						
Lab ID: 2002627-009							
Analyses	Result	RL	Qual	Units	DF	Date Analyzed	
EPA METHOD 8015M/D: DIESEL RANG	E ORGANICS					Analyst: CLP	
Diesel Range Organics (DRO)	ND	9.1	н	mg/Kg	1	2/19/2020 3:43:07 PM	
Motor Oil Range Organics (MRO)	ND	45	Н	mg/Kg	1	2/19/2020 3:43:07 PM	
Surr: DNOP	93.9	55.1-146	Н	%Rec	1	2/19/2020 3:43:07 PM	
EPA METHOD 8015D: GASOLINE RANG	GE					Analyst: NSB	
Gasoline Range Organics (GRO)	ND	4.8	н	mg/Kg	1	2/19/2020 8:41:47 PM	
Surr: BFB	85.0	66.6-105	Н	%Rec	1	2/19/2020 8:41:47 PM	
EPA METHOD 8021B: VOLATILES						Analyst: NSB	
Benzene	ND	0.024	Н	mg/Kg	1	2/19/2020 8:41:47 PM	
Toluene	ND	0.048	Н	mg/Kg	1	2/19/2020 8:41:47 PM	
Ethylbenzene	ND	0.048	Н	mg/Kg	1	2/19/2020 8:41:47 PM	
Xylenes, Total	ND	0.095	Н	mg/Kg	1	2/19/2020 8:41:47 PM	
Surr: 4-Bromofluorobenzene	93.7	80-120	Н	%Rec	1	2/19/2020 8:41:47 PM	
EPA METHOD 300.0: ANIONS						Analyst: CAS	
Chloride	420	60	Н	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. Sample Diluted Due to Matrix

D Holding times for preparation or analysis exceeded Η

ND Not Detected at the Reporting Limit

PQL Practical Quanitative Limit

S % Recovery outside of range due to dilution or matrix

Analyte detected in the associated Method Blank В

Е Value above quantitation range

J Analyte detected below quantitation limits

Р Sample pH Not In Range

RL Reporting Limit Page 9 of 39

Hall Environmental Analysis Laboratory, Inc.

Lab Order 2002627

Date Reported: 2/21/2020

CLIENT: Marathon Oil Company	Client Sample ID: HF7-1 SP10-12' Collection Date: 1/17/2020 Matrix: SOIL Received Date: 2/15/2020 12:35:00 PM					
Project: HF 7 Fed Com 1						
Lab ID: 2002627-010						
Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANG	E ORGANICS					Analyst: CLP
Diesel Range Organics (DRO)	ND	9.0	Н	mg/Kg	1	2/19/2020 3:52:22 PM
Motor Oil Range Organics (MRO)	ND	45	Н	mg/Kg	1	2/19/2020 3:52:22 PM
Surr: DNOP	77.0	55.1-146	Н	%Rec	1	2/19/2020 3:52:22 PM
EPA METHOD 8015D: GASOLINE RAN	GE					Analyst: NSB
Gasoline Range Organics (GRO)	ND	4.7	Н	mg/Kg	1	2/19/2020 9:05:01 PM
Surr: BFB	83.6	66.6-105	Н	%Rec	1	2/19/2020 9:05:01 PM
EPA METHOD 8021B: VOLATILES						Analyst: NSB
Benzene	ND	0.024	Н	mg/Kg	1	2/19/2020 9:05:01 PM
Toluene	ND	0.047	Н	mg/Kg	1	2/19/2020 9:05:01 PM
Ethylbenzene	ND	0.047	Н	mg/Kg	1	2/19/2020 9:05:01 PM
Xylenes, Total	ND	0.094	Н	mg/Kg	1	2/19/2020 9:05:01 PM
Surr: 4-Bromofluorobenzene	92.7	80-120	Н	%Rec	1	2/19/2020 9:05:01 PM
EPA METHOD 300.0: ANIONS						Analyst: CAS
Chloride	400	60	Н	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. Sample Diluted Due to Matrix

D Holding times for preparation or analysis exceeded Η

ND Not Detected at the Reporting Limit

PQL Practical Quanitative Limit

S % Recovery outside of range due to dilution or matrix

Analyte detected in the associated Method Blank В

Е Value above quantitation range

J Analyte detected below quantitation limits

Р Sample pH Not In Range

RL Reporting Limit Page 10 of 39

Hall Environmental Analysis Laboratory, Inc.

Lab Order 2002627

Date Reported: 2/21/2020

CLIENT: Marathon Oil Company	Client Sample ID: HF7-1 SP11-12'Collection Date: 1/17/2020Matrix: SOILReceived Date: 2/15/2020 12:35:00 PM					
Project: HF 7 Fed Com 1						
Lab ID: 2002627-011						
Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANG	E ORGANICS					Analyst: CLP
Diesel Range Organics (DRO)	ND	8.8	Н	mg/Kg	1	2/19/2020 4:01:38 PM
Motor Oil Range Organics (MRO)	ND	44	Н	mg/Kg	1	2/19/2020 4:01:38 PM
Surr: DNOP	77.6	55.1-146	Н	%Rec	1	2/19/2020 4:01:38 PM
EPA METHOD 8015D: GASOLINE RAN	GE					Analyst: NSB
Gasoline Range Organics (GRO)	ND	4.9	Н	mg/Kg	1	2/19/2020 9:28:33 PM
Surr: BFB	82.8	66.6-105	Н	%Rec	1	2/19/2020 9:28:33 PM
EPA METHOD 8021B: VOLATILES						Analyst: NSB
Benzene	ND	0.024	Н	mg/Kg	1	2/19/2020 9:28:33 PM
Toluene	ND	0.049	Н	mg/Kg	1	2/19/2020 9:28:33 PM
Ethylbenzene	ND	0.049	Н	mg/Kg	1	2/19/2020 9:28:33 PM
Xylenes, Total	ND	0.098	Н	mg/Kg	1	2/19/2020 9:28:33 PM
Surr: 4-Bromofluorobenzene	91.0	80-120	Н	%Rec	1	2/19/2020 9:28:33 PM
EPA METHOD 300.0: ANIONS						Analyst: CAS
Chloride	450	59	Н	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. Sample Diluted Due to Matrix

D Holding times for preparation or analysis exceeded Η

ND Not Detected at the Reporting Limit

PQL Practical Quanitative Limit

S % Recovery outside of range due to dilution or matrix

Analyte detected in the associated Method Blank В

Е Value above quantitation range

J Analyte detected below quantitation limits

Р Sample pH Not In Range

RL Reporting Limit Page 11 of 39

Hall Environmental Analysis Laboratory, Inc.

Date Reported: 2/21/2020

CLIENT: Marathon Oil Company	Client Sample ID: HF7-1 SP12-12'							
Project: HF 7 Fed Com 1		Collection Date: 1/16/2020						
Lab ID: 2002627-012	Matrix: SOIL	R	Received Date: 2/15/2020 12:35:00 PM					
Analyses	Result	RL	Qual	Units	DF	Date Analyzed		
EPA METHOD 8015M/D: DIESEL RANG	E ORGANICS					Analyst: CLP		
Diesel Range Organics (DRO)	ND	8.9	Н	mg/Kg	1	2/19/2020 4:10:54 PM		
Motor Oil Range Organics (MRO)	ND	44	Н	mg/Kg	1	2/19/2020 4:10:54 PM		
Surr: DNOP	89.1	55.1-146	Н	%Rec	1	2/19/2020 4:10:54 PM		
EPA METHOD 8015D: GASOLINE RANG	GE					Analyst: NSB		
Gasoline Range Organics (GRO)	ND	4.9	н	mg/Kg	1	2/19/2020 9:51:58 PM		
Surr: BFB	81.9	66.6-105	Н	%Rec	1	2/19/2020 9:51:58 PM		
EPA METHOD 8021B: VOLATILES						Analyst: NSB		
Benzene	ND	0.025	Н	mg/Kg	1	2/19/2020 9:51:58 PM		
Toluene	ND	0.049	Н	mg/Kg	1	2/19/2020 9:51:58 PM		
Ethylbenzene	ND	0.049	Н	mg/Kg	1	2/19/2020 9:51:58 PM		
Xylenes, Total	ND	0.098	Н	mg/Kg	1	2/19/2020 9:51:58 PM		
Surr: 4-Bromofluorobenzene	90.7	80-120	Н	%Rec	1	2/19/2020 9:51:58 PM		
EPA METHOD 300.0: ANIONS						Analyst: CAS		
Chloride	460	60	Н	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. Sample Diluted Due to Matrix

D Holding times for preparation or analysis exceeded Η

ND Not Detected at the Reporting Limit

PQL Practical Quanitative Limit

S % Recovery outside of range due to dilution or matrix

Analyte detected in the associated Method Blank В

Е Value above quantitation range

J Analyte detected below quantitation limits

Р Sample pH Not In Range

RL Reporting Limit Page 12 of 39

Hall Environmental Analysis Laboratory, Inc.

Date Reported: 2/21/2020

CLIENT: Marathon Oil	Company	Client Sample ID: HF7-1 SP13-12'					
Project: HF 7 Fed Com	1	Collection Date: 1/16/2020 Matrix: SOIL Received Date: 2/15/2020 12:35:00 PM					
Lab ID: 2002627-013	Matrix: SOIL						
Analyses	Result	RL	Qual	Units	DF	Date Analyzed	
EPA METHOD 8015M/D	DIESEL RANGE ORGANICS					Analyst: CLP	
Diesel Range Organics (D	RO) ND	10	Н	mg/Kg	1	2/19/2020 4:20:12 PM	
Motor Oil Range Organics	(MRO) ND	50	Н	mg/Kg	1	2/19/2020 4:20:12 PM	
Surr: DNOP	108	55.1-146	Н	%Rec	1	2/19/2020 4:20:12 PM	
EPA METHOD 8015D: G	ASOLINE RANGE					Analyst: NSB	
Gasoline Range Organics	(GRO) ND	4.7	Н	mg/Kg	1	2/19/2020 10:15:32 PM	
Surr: BFB	82.5	66.6-105	Н	%Rec	1	2/19/2020 10:15:32 PM	
EPA METHOD 8021B: V	OLATILES					Analyst: NSB	
Benzene	ND	0.024	Н	mg/Kg	1	2/19/2020 10:15:32 PM	
Toluene	ND	0.047	Н	mg/Kg	1	2/19/2020 10:15:32 PM	
Ethylbenzene	ND	0.047	Н	mg/Kg	1	2/19/2020 10:15:32 PM	
Xylenes, Total	ND	0.094	Н	mg/Kg	1	2/19/2020 10:15:32 PM	
Surr: 4-Bromofluoroben	zene 91.4	80-120	Н	%Rec	1	2/19/2020 10:15:32 PM	
EPA METHOD 300.0: AN	lions					Analyst: CAS	
Chloride	440	60	Н	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. Sample Diluted Due to Matrix

D Holding times for preparation or analysis exceeded Η

ND Not Detected at the Reporting Limit

PQL Practical Quanitative Limit

S % Recovery outside of range due to dilution or matrix

Analyte detected in the associated Method Blank В

Е Value above quantitation range

J Analyte detected below quantitation limits

Р Sample pH Not In Range

RL Reporting Limit Page 13 of 39

Surr: 4-Bromofluorobenzene

EPA METHOD 300.0: ANIONS

Chloride

Analytical Report

Hall Environmental Analysis Laboratory, Inc.

Lab Order 2002627 Date Reported: 2/21/2020

2/19/2020 10:39:10 PM

v	• •								
CLIENT: Marathon Oil Company	Client Sample ID: HF7-1 SP14-12'								
Project: HF 7 Fed Com 1	Collection Date: 1/16/2020								
Lab ID: 2002627-014	Matrix: SOIL Received Date: 2/15/2020 12:35:00 PM								
Analyses	Result	RL	Qual	Units	DF	Date Analyzed			
EPA METHOD 8015M/D: DIESEL RANG	GE ORGANICS					Analyst: CLP			
Diesel Range Organics (DRO)	ND	9.7	Н	mg/Kg	1	2/19/2020 4:29:30 PM			
Motor Oil Range Organics (MRO)	ND	49	Н	mg/Kg	1	2/19/2020 4:29:30 PM			
Surr: DNOP	91.3	55.1-146	Н	%Rec	1	2/19/2020 4:29:30 PM			
EPA METHOD 8015D: GASOLINE RAN	IGE					Analyst: NSB			
Gasoline Range Organics (GRO)	ND	4.8	Н	mg/Kg	1	2/19/2020 10:39:10 PM			
Surr: BFB	82.5	66.6-105	Н	%Rec	1	2/19/2020 10:39:10 PM			
EPA METHOD 8021B: VOLATILES						Analyst: NSB			
Benzene	ND	0.024	Н	mg/Kg	1	2/19/2020 10:39:10 PM			
Toluene	ND	0.048	Н	mg/Kg	1	2/19/2020 10:39:10 PM			
Ethylbenzene	ND	0.048	Н	mg/Kg	1	2/19/2020 10:39:10 PM			
Xylenes, Total	ND	0.095	н	mg/Kg	1	2/19/2020 10:39:10 PM			

90.1

430

80-120

Analyst: MRA 60 Н mg/Kg 20 2/20/2020 10:20:57 AM

1

%Rec

Н

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

Qualifiers:

*

Value exceeds Maximum Contaminant Level. Sample Diluted Due to Matrix

D Н Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

PQL Practical Quanitative Limit

% Recovery outside of range due to dilution or matrix S

- В Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- Р Sample pH Not In Range
- RL Reporting Limit

Page 14 of 39

Hall Environmental Analysis Laboratory, Inc.

Lab Order 2002627 Date Reported: 2/21/2020

CLIENT: Marathon Oil Company	Client Sample ID: HF7-1 SP15-12'							
Project: HF 7 Fed Com 1	Collection Date: 1/16/2020							
Lab ID: 2002627-015	Matrix: SOIL	Matrix: SOIL Received Date: 2/15/2020 12:35:00 PM						
Analyses	Result	RL	Qual	Units	DF	Date Analyzed		
EPA METHOD 8015M/D: DIESEL RAN	IGE ORGANICS					Analyst: CLP		
Diesel Range Organics (DRO)	ND	9.6	Н	mg/Kg	1	2/19/2020 6:20:10 PM		
Motor Oil Range Organics (MRO)	ND	48	Н	mg/Kg	1	2/19/2020 6:20:10 PM		
Surr: DNOP	97.6	55.1-146	Н	%Rec	1	2/19/2020 6:20:10 PM		
EPA METHOD 8015D: GASOLINE RA	NGE					Analyst: NSB		
Gasoline Range Organics (GRO)	ND	4.7	н	mg/Kg	1	2/19/2020 11:02:42 PM		
Surr: BFB	84.9	66.6-105	Н	%Rec	1	2/19/2020 11:02:42 PM		
EPA METHOD 8021B: VOLATILES						Analyst: NSB		
Benzene	ND	0.023	Н	mg/Kg	1	2/19/2020 11:02:42 PM		
Toluene	ND	0.047	Н	mg/Kg	1	2/19/2020 11:02:42 PM		
Ethylbenzene	ND	0.047	Н	mg/Kg	1	2/19/2020 11:02:42 PM		
Xylenes, Total	ND	0.093	Н	mg/Kg	1	2/19/2020 11:02:42 PM		
Surr: 4-Bromofluorobenzene	93.1	80-120	Н	%Rec	1	2/19/2020 11:02:42 PM		
EPA METHOD 300.0: ANIONS						Analyst: MRA		
Chloride	350	60	Н	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. Sample Diluted Due to Matrix

D Holding times for preparation or analysis exceeded Η

ND Not Detected at the Reporting Limit PQL

Practical Quanitative Limit

S % Recovery outside of range due to dilution or matrix

Analyte detected in the associated Method Blank В

Е Value above quantitation range

J Analyte detected below quantitation limits

Р Sample pH Not In Range

RL Reporting Limit Page 15 of 39

CLIENT: Marathon Oil Company

Analytical Report Lab Order 2002627

Hall Environmental Analysis Laboratory, Inc.

Date Reported: 2/21/2020 Client Sample ID: HF7-1 SP16-12'

Project: HF 7 Fed Com 1	Collection Date: 1/16/2020							
Lab ID: 2002627-016	Matrix: SOIL	ŀ	Received Date: 2/15/2020 12:35:00 PM					
Analyses	Result	RL	Qual	Units	DF	Date Analyzed		
EPA METHOD 8015M/D: DIESEL RAI	NGE ORGANICS					Analyst: CLP		
Diesel Range Organics (DRO)	ND	9.6	Н	mg/Kg	1	2/19/2020 6:47:37 PM		
Motor Oil Range Organics (MRO)	ND	48	Н	mg/Kg	1	2/19/2020 6:47:37 PM		
Surr: DNOP	97.8	55.1-146	Н	%Rec	1	2/19/2020 6:47:37 PM		
EPA METHOD 300.0: ANIONS						Analyst: MRA		
Chloride	430	60	Н	mg/Kg	20	2/20/2020 11:35:25 AM		
EPA METHOD 8260B: VOLATILES S	HORT LIST					Analyst: JMR		
Benzene	ND	0.024	Н	mg/Kg	1	2/19/2020 4:02:46 PM		
Toluene	ND	0.048	Н	mg/Kg	1	2/19/2020 4:02:46 PM		
Ethylbenzene	ND	0.048	Н	mg/Kg	1	2/19/2020 4:02:46 PM		
Xylenes, Total	ND	0.096	Н	mg/Kg	1	2/19/2020 4:02:46 PM		
Surr: 1,2-Dichloroethane-d4	93.1	70-130	Н	%Rec	1	2/19/2020 4:02:46 PM		
Surr: 4-Bromofluorobenzene	95.1	70-130	Н	%Rec	1	2/19/2020 4:02:46 PM		
Surr: Dibromofluoromethane	93.4	70-130	Н	%Rec	1	2/19/2020 4:02:46 PM		
Surr: Toluene-d8	100	70-130	Н	%Rec	1	2/19/2020 4:02:46 PM		
EPA METHOD 8015D MOD: GASOLII	NE RANGE					Analyst: JMR		
Gasoline Range Organics (GRO)	ND	4.8	Н	mg/Kg	1	2/19/2020 4:02:46 PM		
Surr: BFB	92.1	70-130	Н	%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. Sample Diluted Due to Matrix

D Holding times for preparation or analysis exceeded Н

ND Not Detected at the Reporting Limit

PQL Practical Quanitative Limit

% Recovery outside of range due to dilution or matrix S

Analyte detected in the associated Method Blank В

Е Value above quantitation range

J Analyte detected below quantitation limits

Р Sample pH Not In Range

RL Reporting Limit Page 16 of 39

CLIENT: Marathon Oil Company

Analytical Report Lab Order 2002627

Hall Environmental Analysis Laboratory, Inc.

Date Reported: 2/21/2020 Client Sample ID: HF7-1 SP17-10'

Project: HF 7 Fed Com 1	Collection Date: 1/16/2020							
Lab ID: 2002627-017	Matrix: SOIL	F	Received Date: 2/15/2020 12:35:00 PM					
Analyses	Result	RL	Qual	Units	DF	Date Analyzed		
EPA METHOD 8015M/D: DIESEL RAN	GE ORGANICS					Analyst: CLP		
Diesel Range Organics (DRO)	ND	9.4	Н	mg/Kg	1	2/19/2020 6:56:46 PM		
Motor Oil Range Organics (MRO)	ND	47	Н	mg/Kg	1	2/19/2020 6:56:46 PM		
Surr: DNOP	99.9	55.1-146	Н	%Rec	1	2/19/2020 6:56:46 PM		
EPA METHOD 300.0: ANIONS						Analyst: MRA		
Chloride	400	60	Н	mg/Kg	20	2/20/2020 11:47:49 AM		
EPA METHOD 8260B: VOLATILES SH	ORT LIST					Analyst: JMR		
Benzene	ND	0.024	Н	mg/Kg	1	2/19/2020 5:28:24 PM		
Toluene	ND	0.049	Н	mg/Kg	1	2/19/2020 5:28:24 PM		
Ethylbenzene	ND	0.049	Н	mg/Kg	1	2/19/2020 5:28:24 PM		
Xylenes, Total	ND	0.098	Н	mg/Kg	1	2/19/2020 5:28:24 PM		
Surr: 1,2-Dichloroethane-d4	98.7	70-130	Н	%Rec	1	2/19/2020 5:28:24 PM		
Surr: 4-Bromofluorobenzene	93.3	70-130	Н	%Rec	1	2/19/2020 5:28:24 PM		
Surr: Dibromofluoromethane	96.6	70-130	Н	%Rec	1	2/19/2020 5:28:24 PM		
Surr: Toluene-d8	98.1	70-130	Н	%Rec	1	2/19/2020 5:28:24 PM		
EPA METHOD 8015D MOD: GASOLIN	E RANGE					Analyst: JMR		
Gasoline Range Organics (GRO)	ND	4.9	Н	mg/Kg	1	2/19/2020 5:28:24 PM		
Surr: BFB	91.8	70-130	н	%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. Sample Diluted Due to Matrix

D Н Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

PQL Practical Quanitative Limit

% Recovery outside of range due to dilution or matrix S

В Analyte detected in the associated Method Blank

E Value above quantitation range

J Analyte detected below quantitation limits

Р Sample pH Not In Range

RL Reporting Limit Page 17 of 39

Hall Environmental Analysis Laboratory, Inc.

Date Reported: 2/21/2020

CLIENT: Marathon Oil Company		Clie	nt Sar	nple ID:	HF7-1	SP18-10'		
Project: HF 7 Fed Com 1		Collection Date: 1/16/2020						
Lab ID: 2002627-018	Matrix: SOIL Received Date: 2/15/2020 12:35:00 PM							
Analyses	Result	RL	Qual	Units	DF	Date Analyzed		
EPA METHOD 8015M/D: DIESEL RAN	GE ORGANICS					Analyst: CLP		
Diesel Range Organics (DRO)	ND	9.7	Н	mg/Kg	1	2/19/2020 7:05:53 PM		
Motor Oil Range Organics (MRO)	ND	49	Н	mg/Kg	1	2/19/2020 7:05:53 PM		
Surr: DNOP	89.3	55.1-146	Н	%Rec	1	2/19/2020 7:05:53 PM		
EPA METHOD 300.0: ANIONS						Analyst: MRA		
Chloride	450	60	Н	mg/Kg	20	2/20/2020 12:25:04 PM		
EPA METHOD 8260B: VOLATILES SH	ORT LIST					Analyst: JMR		
Benzene	ND	0.025	Н	mg/Kg	1	2/19/2020 6:54:01 PM		
Toluene	ND	0.049	Н	mg/Kg	1	2/19/2020 6:54:01 PM		
Ethylbenzene	ND	0.049	Н	mg/Kg	1	2/19/2020 6:54:01 PM		
Xylenes, Total	ND	0.098	Н	mg/Kg	1	2/19/2020 6:54:01 PM		
Surr: 1,2-Dichloroethane-d4	89.8	70-130	Н	%Rec	1	2/19/2020 6:54:01 PM		
Surr: 4-Bromofluorobenzene	96.3	70-130	Н	%Rec	1	2/19/2020 6:54:01 PM		
Surr: Dibromofluoromethane	91.6	70-130	Н	%Rec	1	2/19/2020 6:54:01 PM		
Surr: Toluene-d8	99.3	70-130	Н	%Rec	1	2/19/2020 6:54:01 PM		
EPA METHOD 8015D MOD: GASOLIN	E RANGE					Analyst: JMR		
Gasoline Range Organics (GRO)	ND	4.9	Н	mg/Kg	1	2/19/2020 6:54:01 PM		
Surr: BFB	93.2	70-130	Н	%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. Sample Diluted Due to Matrix

D Holding times for preparation or analysis exceeded Η

ND Not Detected at the Reporting Limit

PQL Practical Quanitative Limit

% Recovery outside of range due to dilution or matrix S

Analyte detected in the associated Method Blank В

Е Value above quantitation range

J Analyte detected below quantitation limits

Р Sample pH Not In Range

RL Reporting Limit Page 18 of 39

Hall Environmental Analysis Laboratory, Inc.

Date Reported: 2/21/2020

CLIENT: Marathon Oil Company	Client Sample ID: HF7-1 SP19-8' Collection Date: 1/18/2020						
Project: HF 7 Fed Com 1							
Lab ID: 2002627-019	Matrix: SOIL	R	eceiv	ed Date:	2/15/2	020 12:35:00 PM	
Analyses	Result	RL Qual U		Units	DF	Date Analyzed	
EPA METHOD 8015M/D: DIESEL RAN	GE ORGANICS					Analyst: CLP	
Diesel Range Organics (DRO)	ND	9.8	н	mg/Kg	1	2/19/2020 7:14:59 PM	
Motor Oil Range Organics (MRO)	ND	49	н	mg/Kg	1	2/19/2020 7:14:59 PM	
Surr: DNOP	90.7	55.1-146	Н	%Rec	1	2/19/2020 7:14:59 PM	
EPA METHOD 300.0: ANIONS						Analyst: MRA	
Chloride	480	60	Н	mg/Kg	20	2/20/2020 12:37:29 PM	
EPA METHOD 8260B: VOLATILES SH	ORT LIST					Analyst: JMR	
Benzene	ND	0.025	Н	mg/Kg	1	2/19/2020 7:22:28 PM	
Toluene	ND	0.049	Н	mg/Kg	1	2/19/2020 7:22:28 PM	
Ethylbenzene	ND	0.049	Н	mg/Kg	1	2/19/2020 7:22:28 PM	
Xylenes, Total	ND	0.098	Н	mg/Kg	1	2/19/2020 7:22:28 PM	
Surr: 1,2-Dichloroethane-d4	93.2	70-130	Н	%Rec	1	2/19/2020 7:22:28 PM	
Surr: 4-Bromofluorobenzene	97.7	70-130	Н	%Rec	1	2/19/2020 7:22:28 PM	
Surr: Dibromofluoromethane	96.3	70-130	Н	%Rec	1	2/19/2020 7:22:28 PM	
Surr: Toluene-d8	101	70-130	Н	%Rec	1	2/19/2020 7:22:28 PM	
EPA METHOD 8015D MOD: GASOLIN	E RANGE					Analyst: JMR	
Gasoline Range Organics (GRO)	ND	4.9	Н	mg/Kg	1	2/19/2020 7:22:28 PM	
Surr: BFB	95.0	70-130	Н	%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. Sample Diluted Due to Matrix

D Holding times for preparation or analysis exceeded Η

- ND Not Detected at the Reporting Limit
- PQL Practical Quanitative Limit
- S % Recovery outside of range due to dilution or matrix

- Analyte detected in the associated Method Blank В
- Е Value above quantitation range
- J Analyte detected below quantitation limits
- Р Sample pH Not In Range
- RL Reporting Limit

Page 19 of 39

CLIENT: Marathon Oil Company

2002627-020

Project: HF 7 Fed Com 1

Lab ID:

Analytical Report Lab Order 2002627

Hall Environmental Analysis Laboratory, Inc.

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

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

*

D

Value exceeds Maximum Contaminant Level. 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

Page 20 of 39

Hall Environmental Analysis Laboratory, Inc.

Lab Order 2002627 Date Reported: 2/21/2020

CLIENT:	Marathon Oil Company	Client Sample ID: HF7-1 SP21-6'						
Project:	HF 7 Fed Com 1		Co	ollectio	on Date:	1/18/2	020	
Lab ID:	2002627-021	Matrix: SOIL Received Date: 2/15/2020 12:35:00 PM						
Analyses		Result	RL	Qual	Units	DF	Date Analyzed	
EPA MET	HOD 8015M/D: DIESEL RAN	GE ORGANICS					Analyst: BRM	
Diesel R	ange Organics (DRO)	ND	9.6	Н	mg/Kg	1	2/20/2020 10:34:10 AM	
Motor Oi	I Range Organics (MRO)	ND	48	Н	mg/Kg	1	2/20/2020 10:34:10 AM	
Surr: I	ONOP	59.3	55.1-146	Н	%Rec	1	2/20/2020 10:34:10 AM	
EPA MET	HOD 300.0: ANIONS						Analyst: MRA	
Chloride		740	60	Н	mg/Kg	20	2/20/2020 1:02:19 PM	
EPA MET	HOD 8260B: VOLATILES SH	ORT LIST					Analyst: JMR	
Benzene		ND	0.024	н	mg/Kg	1	2/19/2020 8:19:34 PM	
Toluene		ND	0.048	Н	mg/Kg	1	2/19/2020 8:19:34 PM	
Ethylben	zene	ND	0.048	Н	mg/Kg	1	2/19/2020 8:19:34 PM	
Xylenes,	Total	ND	0.096	Н	mg/Kg	1	2/19/2020 8:19:34 PM	
Surr: 7	1,2-Dichloroethane-d4	92.6	70-130	Н	%Rec	1	2/19/2020 8:19:34 PM	
Surr: 4	1-Bromofluorobenzene	94.1	70-130	Н	%Rec	1	2/19/2020 8:19:34 PM	
Surr: I	Dibromofluoromethane	93.2	70-130	Н	%Rec	1	2/19/2020 8:19:34 PM	
Surr:	Toluene-d8	97.4	70-130	Н	%Rec	1	2/19/2020 8:19:34 PM	
EPA MET	HOD 8015D MOD: GASOLIN	E RANGE					Analyst: JMR	
Gasoline	Range Organics (GRO)	ND	4.8	Н	mg/Kg	1	2/19/2020 8:19:34 PM	
Surr: I	3FB	92.9	70-130	Н	%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. Sample Diluted Due to Matrix

D Holding times for preparation or analysis exceeded Η

ND Not Detected at the Reporting Limit

PQL Practical Quanitative Limit

S % Recovery outside of range due to dilution or matrix

Analyte detected in the associated Method Blank В

Е Value above quantitation range

J Analyte detected below quantitation limits

Р Sample pH Not In Range

RL Reporting Limit Page 21 of 39

Hall Environmental Analysis Laboratory, Inc.

Date Reported: 2/21/2020

CLIENT: Marathon Oil Company	Client Sample ID: HF7-1 SP22 Wall							
Project: HF 7 Fed Com 1		Co	llectio	on Date:	1/18/2	020		
Lab ID: 2002627-022	Matrix: SOIL	R	Received Date: 2/15/2020 12:35:00 PM					
Analyses	Result	RL	Qual	Units	DF	Date Analyzed		
EPA METHOD 8015M/D: DIESEL RAN	GE ORGANICS					Analyst: CLP		
Diesel Range Organics (DRO)	ND	9.7	Н	mg/Kg	1	2/19/2020 7:42:18 PM		
Motor Oil Range Organics (MRO)	ND	49	Н	mg/Kg	1	2/19/2020 7:42:18 PM		
Surr: DNOP	68.2	55.1-146	Н	%Rec	1	2/19/2020 7:42:18 PM		
EPA METHOD 300.0: ANIONS						Analyst: MRA		
Chloride	270	60	Н	mg/Kg	20	2/20/2020 1:14:43 PM		
EPA METHOD 8260B: VOLATILES SH	ORT LIST					Analyst: JMR		
Benzene	ND	0.025	Н	mg/Kg	1	2/19/2020 8:48:07 PM		
Toluene	ND	0.050	Н	mg/Kg	1	2/19/2020 8:48:07 PM		
Ethylbenzene	ND	0.050	Н	mg/Kg	1	2/19/2020 8:48:07 PM		
Xylenes, Total	ND	0.10	Н	mg/Kg	1	2/19/2020 8:48:07 PM		
Surr: 1,2-Dichloroethane-d4	88.8	70-130	Н	%Rec	1	2/19/2020 8:48:07 PM		
Surr: 4-Bromofluorobenzene	95.8	70-130	Н	%Rec	1	2/19/2020 8:48:07 PM		
Surr: Dibromofluoromethane	93.7	70-130	Н	%Rec	1	2/19/2020 8:48:07 PM		
Surr: Toluene-d8	99.3	70-130	Н	%Rec	1	2/19/2020 8:48:07 PM		
EPA METHOD 8015D MOD: GASOLIN	E RANGE					Analyst: JMR		
Gasoline Range Organics (GRO)	ND	5.0	н	mg/Kg	1	2/19/2020 8:48:07 PM		
Surr: BFB	94.0	70-130	Н	%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. Sample Diluted Due to Matrix

D Holding times for preparation or analysis exceeded Η

ND Not Detected at the Reporting Limit

PQL Practical Quanitative Limit

% Recovery outside of range due to dilution or matrix S

Analyte detected in the associated Method Blank В

Е Value above quantitation range

J Analyte detected below quantitation limits

Р Sample pH Not In Range

RL Reporting Limit Page 22 of 39

Hall Environmental Analysis Laboratory, Inc.

Lab Order 2002627 Date Reported: 2/21/2020

CLIENT: Marathon Oil Company	Client Sample ID: HF7-1 SP23 WallCollection Date: 1/19/2020Matrix: SOILReceived Date: 2/15/2020 12:35:00 PM					
Project: HF 7 Fed Com 1						
Lab ID: 2002627-023						
Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANG	GE ORGANICS					Analyst: CLP
Diesel Range Organics (DRO)	ND	9.5	Н	mg/Kg	1	2/19/2020 7:51:24 PM
Motor Oil Range Organics (MRO)	ND	48	Н	mg/Kg	1	2/19/2020 7:51:24 PM
Surr: DNOP	117	55.1-146	Н	%Rec	1	2/19/2020 7:51:24 PM
EPA METHOD 300.0: ANIONS						Analyst: MRA
Chloride	ND	60	Н	mg/Kg	20	2/20/2020 1:27:07 PM
EPA METHOD 8260B: VOLATILES SH	ORT LIST					Analyst: JMR
Benzene	ND	0.024	Н	mg/Kg	1	2/19/2020 9:16:37 PM
Toluene	ND	0.048	Н	mg/Kg	1	2/19/2020 9:16:37 PM
Ethylbenzene	ND	0.048	Н	mg/Kg	1	2/19/2020 9:16:37 PM
Xylenes, Total	ND	0.095	Н	mg/Kg	1	2/19/2020 9:16:37 PM
Surr: 1,2-Dichloroethane-d4	89.7	70-130	Н	%Rec	1	2/19/2020 9:16:37 PM
Surr: 4-Bromofluorobenzene	94.7	70-130	Н	%Rec	1	2/19/2020 9:16:37 PM
Surr: Dibromofluoromethane	95.2	70-130	Н	%Rec	1	2/19/2020 9:16:37 PM
Surr: Toluene-d8	99.5	70-130	Н	%Rec	1	2/19/2020 9:16:37 PM
EPA METHOD 8015D MOD: GASOLINE	ERANGE					Analyst: JMR
Gasoline Range Organics (GRO)	ND	4.8	Н	mg/Kg	1	2/19/2020 9:16:37 PM
Surr: BFB	91.5	70-130	Н	%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. Sample Diluted Due to Matrix

D Holding times for preparation or analysis exceeded Η

ND Not Detected at the Reporting Limit

PQL Practical Quanitative Limit

% Recovery outside of range due to dilution or matrix S

Analyte detected in the associated Method Blank В

Е Value above quantitation range

J Analyte detected below quantitation limits

Р Sample pH Not In Range

RL Reporting Limit Page 23 of 39

Hall Environmental Analysis Laboratory, Inc.

Date Reported: 2/21/2020

CLIENT: Marathon Oil Company	Client Sample ID: HF7-1 SP24 Wall Collection Date: 1/19/2020						
Project: HF 7 Fed Com 1							
Lab ID: 2002627-024	Matrix: SOIL	020 12:35:00 PM					
Analyses	Result	RL	Qual	Units	DF	Date Analyzed	
EPA METHOD 8015M/D: DIESEL RAN	GE ORGANICS					Analyst: CLP	
Diesel Range Organics (DRO)	ND	9.7	н	mg/Kg	1	2/19/2020 8:00:28 PM	
Motor Oil Range Organics (MRO)	ND	49	Н	mg/Kg	1	2/19/2020 8:00:28 PM	
Surr: DNOP	86.5	55.1-146	Н	%Rec	1	2/19/2020 8:00:28 PM	
EPA METHOD 300.0: ANIONS						Analyst: MRA	
Chloride	240	60	Н	mg/Kg	20	2/20/2020 1:39:32 PM	
EPA METHOD 8260B: VOLATILES SH	IORT LIST					Analyst: JMR	
Benzene	ND	0.024	н	mg/Kg	1	2/19/2020 9:45:00 PM	
Toluene	ND	0.048	Н	mg/Kg	1	2/19/2020 9:45:00 PM	
Ethylbenzene	ND	0.048	Н	mg/Kg	1	2/19/2020 9:45:00 PM	
Xylenes, Total	ND	0.096	Н	mg/Kg	1	2/19/2020 9:45:00 PM	
Surr: 1,2-Dichloroethane-d4	90.4	70-130	Н	%Rec	1	2/19/2020 9:45:00 PM	
Surr: 4-Bromofluorobenzene	94.5	70-130	Н	%Rec	1	2/19/2020 9:45:00 PM	
Surr: Dibromofluoromethane	93.2	70-130	Н	%Rec	1	2/19/2020 9:45:00 PM	
Surr: Toluene-d8	100	70-130	Н	%Rec	1	2/19/2020 9:45:00 PM	
EPA METHOD 8015D MOD: GASOLIN	E RANGE					Analyst: JMR	
Gasoline Range Organics (GRO)	ND	4.8	н	mg/Kg	1	2/19/2020 9:45:00 PM	
Surr: BFB	92.0	70-130	н	%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. Sample Diluted Due to Matrix

D Holding times for preparation or analysis exceeded Н

ND Not Detected at the Reporting Limit

PQL Practical Quanitative Limit

S % Recovery outside of range due to dilution or matrix В Analyte detected in the associated Method Blank

Е Value above quantitation range

J Analyte detected below quantitation limits

Р Sample pH Not In Range

RL Reporting Limit Page 24 of 39

CLIENT: Marathon Oil Company

Analytical Report Lab Order 2002627

Hall Environmental Analysis Laboratory, Inc.

Date Reported: 2/21/2020 Client Sample ID: HF7-1 SP25 Wall

Project: HF 7 Fed Com 1	Collection Date: 1/19/2020							
Lab ID: 2002627-025 Analyses	Matrix: SOIL	Received Date: 2/15/2020 12:35:00 PM						
	Result	RL	Qual	Units	DF	Date Analyzed		
EPA METHOD 8015M/D: DIESEL RAN	GE ORGANICS					Analyst: CLP		
Diesel Range Organics (DRO)	ND	9.9	н	mg/Kg	1	2/19/2020 8:09:33 PM		
Motor Oil Range Organics (MRO)	ND	49	Н	mg/Kg	1	2/19/2020 8:09:33 PM		
Surr: DNOP	82.3	55.1-146	Н	%Rec	1	2/19/2020 8:09:33 PM		
EPA METHOD 300.0: ANIONS						Analyst: MRA		
Chloride	ND	60	Н	mg/Kg	20	2/20/2020 1:51:56 PM		
EPA METHOD 8260B: VOLATILES SH	ORT LIST					Analyst: JMR		
Benzene	ND	0.024	Н	mg/Kg	1	2/19/2020 10:13:35 PM		
Toluene	ND	0.048	Н	mg/Kg	1	2/19/2020 10:13:35 PM		
Ethylbenzene	ND	0.048	Н	mg/Kg	1	2/19/2020 10:13:35 PM		
Xylenes, Total	ND	0.097	Н	mg/Kg	1	2/19/2020 10:13:35 PM		
Surr: 1,2-Dichloroethane-d4	90.3	70-130	Н	%Rec	1	2/19/2020 10:13:35 PM		
Surr: 4-Bromofluorobenzene	96.8	70-130	Н	%Rec	1	2/19/2020 10:13:35 PM		
Surr: Dibromofluoromethane	92.2	70-130	Н	%Rec	1	2/19/2020 10:13:35 PM		
Surr: Toluene-d8	103	70-130	Н	%Rec	1	2/19/2020 10:13:35 PM		
EPA METHOD 8015D MOD: GASOLIN	E RANGE					Analyst: JMR		
Gasoline Range Organics (GRO)	ND	4.8	Н	mg/Kg	1	2/19/2020 10:13:35 PM		
Surr: BFB	94.8	70-130	н	%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

Н Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

PQL Practical Quanitative Limit

% Recovery outside of range due to dilution or matrix S

В Analyte detected in the associated Method Blank

- Е Value above quantitation range
- J Analyte detected below quantitation limits

Р Sample pH Not In Range

RL Reporting Limit Page 25 of 39

Hall Environmental Analysis Laboratory, Inc.

Date Reported: 2/21/2020

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 Result	Received Date: 2/15/2020 12:35:00 PM							
Analyses		RL	Qual	Units	DF	Date Analyzed			
EPA METHOD 8015M/D: DIESEL RAN	GE ORGANICS					Analyst: BRM			
Diesel Range Organics (DRO)	ND	8.8	Н	mg/Kg	1	2/20/2020 10:57:42 AM			
Motor Oil Range Organics (MRO)	ND	44	Н	mg/Kg	1	2/20/2020 10:57:42 AM			
Surr: DNOP	69.2	55.1-146	Н	%Rec	1	2/20/2020 10:57:42 AM			
EPA METHOD 300.0: ANIONS						Analyst: MRA			
Chloride	720	60	Н	mg/Kg	20	2/20/2020 2:04:21 PM			
EPA METHOD 8260B: VOLATILES SH	ORT LIST					Analyst: JMR			
Benzene	ND	0.023	Н	mg/Kg	1	2/19/2020 10:42:10 PM			
Toluene	ND	0.046	Н	mg/Kg	1	2/19/2020 10:42:10 PM			
Ethylbenzene	ND	0.046	Н	mg/Kg	1	2/19/2020 10:42:10 PM			
Xylenes, Total	ND	0.092	Н	mg/Kg	1	2/19/2020 10:42:10 PM			
Surr: 1,2-Dichloroethane-d4	86.1	70-130	Н	%Rec	1	2/19/2020 10:42:10 PM			
Surr: 4-Bromofluorobenzene	94.6	70-130	Н	%Rec	1	2/19/2020 10:42:10 PM			
Surr: Dibromofluoromethane	94.7	70-130	Н	%Rec	1	2/19/2020 10:42:10 PM			
Surr: Toluene-d8	100	70-130	Н	%Rec	1	2/19/2020 10:42:10 PM			
EPA METHOD 8015D MOD: GASOLIN	E RANGE					Analyst: JMR			
Gasoline Range Organics (GRO)	ND	4.6	Н	mg/Kg	1	2/19/2020 10:42:10 PM			
Surr: BFB	92.0	70-130	н	%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. Sample Diluted Due to Matrix

D Holding times for preparation or analysis exceeded Η

ND Not Detected at the Reporting Limit

PQL Practical Quanitative Limit

S % Recovery outside of range due to dilution or matrix

Analyte detected in the associated Method Blank В

Е Value above quantitation range

J Analyte detected below quantitation limits

Р Sample pH Not In Range

RL Reporting Limit Page 26 of 39
Analytical Report

Hall Environmental Analysis Laboratory, Inc.

Lab Order 2002627 Date Reported: 2/21/2020

CLIENT: Marathon Oil Company Project: HF 7 Fed Com 1		Client Sample ID: HF7-1 SP27 Wall Collection Date: 1/19/2020									
Lab ID: 2002627-027	Matrix: SOIL	F	Receive	ed Date:	2/15/2	020 12:35:00 PM					
Analyses	Result	RL	Qual	Units	DF	Date Analyzed					
EPA METHOD 8015M/D: DIESEL RAN	GE ORGANICS					Analyst: BRM					
Diesel Range Organics (DRO)	ND	9.3	Н	mg/Kg	1	2/20/2020 11:21:23 AM					
Motor Oil Range Organics (MRO)	ND	46	Н	mg/Kg	1	2/20/2020 11:21:23 AM					
Surr: DNOP	69.3	55.1-146	н	%Rec	1	2/20/2020 11:21:23 AM					
EPA METHOD 300.0: ANIONS						Analyst: MRA					
Chloride	750	60	Н	mg/Kg	20	2/20/2020 2:16:45 PM					
EPA METHOD 8260B: VOLATILES SH	ORT LIST					Analyst: JMR					
Benzene	ND	0.024	н	mg/Kg	1	2/19/2020 11:10:45 PM					
Toluene	ND	0.047	Н	mg/Kg	1	2/19/2020 11:10:45 PM					
Ethylbenzene	ND	0.047	Н	mg/Kg	1	2/19/2020 11:10:45 PM					
Xylenes, Total	ND	0.094	Н	mg/Kg	1	2/19/2020 11:10:45 PM					
Surr: 1,2-Dichloroethane-d4	89.9	70-130	Н	%Rec	1	2/19/2020 11:10:45 PM					
Surr: 4-Bromofluorobenzene	92.9	70-130	Н	%Rec	1	2/19/2020 11:10:45 PM					
Surr: Dibromofluoromethane	95.0	70-130	Н	%Rec	1	2/19/2020 11:10:45 PM					
Surr: Toluene-d8	98.5	70-130	Н	%Rec	1	2/19/2020 11:10:45 PM					
EPA METHOD 8015D MOD: GASOLINI	E RANGE					Analyst: JMR					
Gasoline Range Organics (GRO)	ND	4.7	Н	mg/Kg	1	2/19/2020 11:10:45 PM					
Surr: BFB	92.2	70-130	Н	%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. Sample Diluted Due to Matrix

D Holding times for preparation or analysis exceeded Η

ND Not Detected at the Reporting Limit

PQL Practical Quanitative Limit

% Recovery outside of range due to dilution or matrix S

В Analyte detected in the associated Method Blank

Е Value above quantitation range

J Analyte detected below quantitation limits

Р Sample pH Not In Range

RL Reporting Limit Page 27 of 39

Toluene

Ethylbenzene

Xylenes, Total

Surr: BFB

Surr: 1,2-Dichloroethane-d4

Surr: 4-Bromofluorobenzene

Surr: Dibromofluoromethane

Gasoline Range Organics (GRO)

EPA METHOD 8015D MOD: GASOLINE RANGE

Surr: Toluene-d8

Analytical Report

2/20/2020 2:52:10 PM

2/20/2020 2:01:54 AM

2/20/2020 2:01:54 AM

Analyst: JMR

Hall Environmental Analysis Laboratory, Inc.

Lab Order 2002627 Date Reported: 2/21/2020

CLIENT: Marathon Oil Company		Client Sample ID: HF7-1 SP28 Wall										
Project: HF 7 Fed Com 1		Co	ollecti	on Date:	1/19/2	.020						
Lab ID: 2002627-028	Matrix: SOIL	P	Receiv	ed Date:	2/15/2	.020 12:35:00 PM						
Analyses	Result	RL	Qual	Units	DF	Date Analyzed						
EPA METHOD 8015M/D: DIESEL RA	NGE ORGANICS					Analyst: BRM						
Diesel Range Organics (DRO)	ND	9.6	Н	mg/Kg	1	2/20/2020 11:44:55 AM						
Motor Oil Range Organics (MRO)	ND	48	Н	mg/Kg	1	2/20/2020 11:44:55 AM						
Surr: DNOP	81.7	55.1-146	Н	%Rec	1	2/20/2020 11:44:55 AM						
EPA METHOD 300.0: ANIONS						Analyst: MRA						
Chloride	730	60	Н	mg/Kg	20	2/20/2020 2:53:58 PM						
EPA METHOD 8260B: VOLATILES	SHORT LIST					Analyst: JMR						
Benzene	ND	0.023	Н	mg/Kg	1	2/20/2020 2:52:10 PM						

0.047

0.047

0.093

70-130

70-130

70-130

70-130

70-130

4.7

Н

Н

Н

Н

Н

н

Н

Н

Н

mg/Kg

mg/Kg

mg/Kg

%Rec

%Rec

%Rec

%Rec

mg/Kg

%Rec

1

1

1

1

1

1

1

1

1

ND

ND

ND

88.8

94.3

91.9

99.3

ND

93.5

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

Η Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

PQL Practical Quanitative Limit

% Recovery outside of range due to dilution or matrix S

В Analyte detected in the associated Method Blank

Е Value above quantitation range

J Analyte detected below quantitation limits

Р Sample pH Not In Range

RL Reporting Limit Page 28 of 39

Analytical Report

Hall Environmental Analysis Laboratory, Inc.

Lab Order 2002627

Date Reported: 2/21/2020

CLIENT: Marathon Oil Company		Clie	nt Sai	nple ID:	HF7-1	SP29 Wall			
Project: HF 7 Fed Com 1		Co	ollecti	on Date:	1/19/2	020			
Lab ID: 2002627-029	Matrix: SOIL	F	Received Date: 2/15/2020 12:35:00 PM						
Analyses	Result	RL	Qual	Units	DF	Date Analyzed			
EPA METHOD 8015M/D: DIESEL RAN	IGE ORGANICS					Analyst: BRM			
Diesel Range Organics (DRO)	ND	9.7	Н	mg/Kg	1	2/20/2020 12:08:27 PM			
Motor Oil Range Organics (MRO)	ND	49	Н	mg/Kg	1	2/20/2020 12:08:27 PM			
Surr: DNOP	74.1	55.1-146	Н	%Rec	1	2/20/2020 12:08:27 PM			
EPA METHOD 300.0: ANIONS						Analyst: MRA			
Chloride	670	60	Н	mg/Kg	20	2/20/2020 3:06:23 PM			
EPA METHOD 8260B: VOLATILES SH	IORT LIST					Analyst: JMR			
Benzene	ND	0.024	Н	mg/Kg	1	2/20/2020 3:20:41 PM			
Toluene	ND	0.049	Н	mg/Kg	1	2/20/2020 3:20:41 PM			
Ethylbenzene	ND	0.049	Н	mg/Kg	1	2/20/2020 3:20:41 PM			
Xylenes, Total	ND	0.097	Н	mg/Kg	1	2/20/2020 3:20:41 PM			
Surr: 1,2-Dichloroethane-d4	91.8	70-130	Н	%Rec	1	2/20/2020 3:20:41 PM			
Surr: 4-Bromofluorobenzene	96.1	70-130	Н	%Rec	1	2/20/2020 3:20:41 PM			
Surr: Dibromofluoromethane	96.1	70-130	Н	%Rec	1	2/20/2020 3:20:41 PM			
Surr: Toluene-d8	98.7	70-130	Н	%Rec	1	2/20/2020 3:20:41 PM			
EPA METHOD 8015D MOD: GASOLIN	E RANGE					Analyst: JMR			
Gasoline Range Organics (GRO)	ND	4.9	Н	mg/Kg	1	2/20/2020 2:30:20 AM			
Surr: BFB	96.8	70-130	Н	%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

Holding times for preparation or analysis exceeded Η

ND Not Detected at the Reporting Limit

PQL Practical Quanitative Limit

% Recovery outside of range due to dilution or matrix S

В Analyte detected in the associated Method Blank

Е Value above quantitation range

J Analyte detected below quantitation limits

Р Sample pH Not In Range

RL Reporting Limit Page 29 of 39

Project:

Lab ID:

CLIENT: Marathon Oil Company HF 7 Fed Com 1

2002627-030

Analytical Report

Hall Environmental Analysis Laboratory, Inc.

Lab Order 2002627 Date Reported: 2/21/2020

	Client Sample ID: HF7-1 SP30 Wall
	Collection Date: 1/19/2020
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 ORGA	NICS					Analyst: BRM
Diesel Range Organics (DRO)	ND	10	Н	mg/Kg	1	2/20/2020 12:32:04 PM
Motor Oil Range Organics (MRO)	ND	50	Н	mg/Kg	1	2/20/2020 12:32:04 PM
Surr: DNOP	83.6	55.1-146	Н	%Rec	1	2/20/2020 12:32:04 PM
EPA METHOD 300.0: ANIONS						Analyst: MRA
Chloride	830	60	Н	mg/Kg	20	2/20/2020 3:18:47 PM
EPA METHOD 8260B: VOLATILES SHORT LIST						Analyst: JMR
Benzene	ND	0.023	Н	mg/Kg	1	2/20/2020 3:49:19 PM
Toluene	ND	0.047	Н	mg/Kg	1	2/20/2020 3:49:19 PM
Ethylbenzene	ND	0.047	Н	mg/Kg	1	2/20/2020 3:49:19 PM
Xylenes, Total	ND	0.094	Н	mg/Kg	1	2/20/2020 3:49:19 PM
Surr: 1,2-Dichloroethane-d4	87.4	70-130	Н	%Rec	1	2/20/2020 3:49:19 PM
Surr: 4-Bromofluorobenzene	91.9	70-130	Н	%Rec	1	2/20/2020 3:49:19 PM
Surr: Dibromofluoromethane	95.4	70-130	Н	%Rec	1	2/20/2020 3:49:19 PM
Surr: Toluene-d8	100	70-130	Н	%Rec	1	2/20/2020 3:49:19 PM
EPA METHOD 8015D MOD: GASOLINE RANGE						Analyst: JMR
Gasoline Range Organics (GRO)	ND	4.7	Н	mg/Kg	1	2/20/2020 2:58:49 AM
Surr: BFB	93.2	70-130	н	%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. Sample Diluted Due to Matrix

D Η Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

PQL Practical Quanitative Limit

% Recovery outside of range due to dilution or matrix S

Analyte detected in the associated Method Blank В

Е Value above quantitation range

J Analyte detected below quantitation limits

Р Sample pH Not In Range

RL Reporting Limit Page 30 of 39

.

Analytical Report

Hall Environmental Analysis Laboratory, Inc.

Lab Order 2002627

Date Reported: 2/21/2020

CLIENT:	Marathon Oil Company		Clie	ent Sai	nple ID:	HF7-1	SP31 Wall			
Project:	HF 7 Fed Com 1		C	ollecti	on Date:	1/19/2	020			
Lab ID:	2002627-031	Matrix: SOIL	F	Received Date: 2/15/2020 12:35:00 PM						
Analyses		Result	RL	Qual	Units	DF	Date Analyzed			
EPA ME	THOD 8015M/D: DIESEL RAN	GE ORGANICS					Analyst: BRM			
Diesel R	ange Organics (DRO)	ND	9.8	Н	mg/Kg	1	2/20/2020 12:55:37 PM			
Motor O	il Range Organics (MRO)	ND	49	Н	mg/Kg	1	2/20/2020 12:55:37 PM			
Surr:	DNOP	68.7	55.1-146	Н	%Rec	1	2/20/2020 12:55:37 PM			
EPA ME	THOD 300.0: ANIONS						Analyst: MRA			
Chloride		730	60	Н	mg/Kg	20	2/20/2020 3:31:12 PM			
EPA ME	THOD 8260B: VOLATILES SH	ORT LIST					Analyst: JMR			
Benzene	9	ND	0.025	Н	mg/Kg	1	2/20/2020 4:17:41 PM			
Toluene		ND	0.049	Н	mg/Kg	1	2/20/2020 4:17:41 PM			
Ethylber	zene	ND	0.049	Н	mg/Kg	1	2/20/2020 4:17:41 PM			
Xylenes,	, Total	ND	0.098	Н	mg/Kg	1	2/20/2020 4:17:41 PM			
Surr:	1,2-Dichloroethane-d4	93.5	70-130	Н	%Rec	1	2/20/2020 4:17:41 PM			
Surr: 4	4-Bromofluorobenzene	96.2	70-130	Н	%Rec	1	2/20/2020 4:17:41 PM			
Surr:	Dibromofluoromethane	94.1	70-130	Н	%Rec	1	2/20/2020 4:17:41 PM			
Surr:	Toluene-d8	101	70-130	Н	%Rec	1	2/20/2020 4:17:41 PM			
EPA ME	THOD 8015D MOD: GASOLINI	ERANGE					Analyst: JMR			
Gasoline	e Range Organics (GRO)	ND	4.9	Н	mg/Kg	1	2/20/2020 3:27:14 AM			
Surr:	BFB	91.9	70-130	н	%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. Sample Diluted Due to Matrix

D Holding times for preparation or analysis exceeded Η

ND Not Detected at the Reporting Limit

PQL Practical Quanitative Limit

% Recovery outside of range due to dilution or matrix S

Analyte detected in the associated Method Blank В

Е Value above quantitation range

J Analyte detected below quantitation limits

Р Sample pH Not In Range

RL Reporting Limit Page 31 of 39

Client:	Marath	on Oil Company									
Project:	HF 7 F	ed Com 1									
Sample ID:	MB-50516	SampType:	mblk	TestCode: EPA Method 300.0: Anions							
Client ID:	PBS	Batch ID:	50516	F	RunNo: 66623						
Prep Date:	2/18/2020	Analysis Date:	2/18/2020	S	GeqNo: 2289871	Units: mg/Kg					
Analyte		Result PC	L SPK value	SPK Ref Val	%REC LowLim	it HighLimit %F	RPD RPDLimit	Qual			
Chloride		ND	1.5								
Sample ID: I	LCS-50516 SampType: Ics TestCode: EPA Method 300.0: Anions										
Client ID:	CSS	Batch ID:	50516	F	RunNo: 66623						
Prep Date:	2/18/2020	Analysis Date:	2/18/2020	S	GeqNo: 2289872	Units: mg/Kg					
Analyte		Result PC	L SPK value	SPK Ref Val	%REC LowLim	it HighLimit %F	RPD RPDLimit	Qual			
Chloride		14	1.5 15.00	0	92.5 9	0 110					
Sample ID: I	_CS-50552	SampType:	lcs	Tes	tCode: EPA Metho	d 300.0: Anions					
Client ID:	_CSS	Batch ID:	50552	F	RunNo: 66700						
Prep Date:	2/20/2020	Analysis Date:	2/20/2020	2/20/2020 SeqNo: 2292980 Units: mg/Kg							
Analyte		Result PC	L SPK value	SPK Ref Val	%REC LowLim	it HighLimit %F	RPD RPDLimit	Qual			
Chloride		14	1.5 15.00	0	92.7 9	0 110					

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

Page 32 of 39

.

WO#: 2002627 21-Feb-20

QC SUMMARY REPORT Hall Environmental Analysis Laboratory, Inc.

Client:	Marathon	Oil Com	pany								
Project:	HF / Fed	Com I									
Sample ID:	MB-50531	Samp	Гуре:	MBLK	Tes	tCode: E	PA Method	8015M/D: Die	esel Range	e Organics	
Client ID:	PBS	Batc	h ID:	50531	F	RunNo: 6	6632				
Prep Date:	2/19/2020	Analysis [Date:	2/19/2020	5	SeqNo: 2	2289788	Units: %Red	;		
Analyte		Result	PQ	L 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	Samp	Гуре:	LCS	Tes	tCode: E	PA Method	8015M/D: Die	sel Range	e Organics	
Client ID:	LCSS	Batc	h ID:	50531	F	RunNo: 6	6632				
Prep Date:	2/19/2020	Analysis [Date:	2/19/2020	5	SeqNo: 2	2289789	Units: %Red	;		
Analyte		Result	PQ	L 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	Samp	Туре:	MBLK	Tes	tCode: E	PA Method	8015M/D: Die	esel Range	e Organics	
Client ID:	PBS	Bato	h ID:	50497	F	RunNo: 6	6632				
Prep Date:	2/18/2020	Analysis [Date:	2/19/2020	S	SeqNo: 2	2290342	Units: mg/K	g		
Analyte		Result	PQ	L SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range	Organics (DRO)	ND	1	10							
Surr: DNOP	je organics (MRO)	ND 12	5	10.00		116	55.1	146			
Commission	1 00 50/07	Comm	T. market		Taa			004 FM/D . D.		0	
Client ID:	LCS-50497	Samp	гуре: ы ID:	LUS 50407	res		PA Method	8015M/D: DIE	esel Range	e Organics	
Pren Date:	2/18/2020	Analysis [Date:	2/19/2020	ı ç	SeaNo: 2	290343	Units: ma/K	a		
Analyta	2,10,2020	Deput					Loud imit	Llight imit	9 0/ DOD		Qual
Diesel Range	Organics (DRO)	Result 54	PQ	L SPK value	O SPK Ker Val	%REC 109	LOWLIMIT 70	HighLimit 130	%RPD	RPDLIMI	Qual
Surr: DNOP		5.0		5.000		99.6	55.1	146			
Sample ID:	2002627-001AMS	Samp	Type:	MS	Tes	tCode: E	PA Method	8015M/D: Die	esel Rango	e Organics	
Client ID:	HF 7-1 SP1-8'	Batc	h ID:	50497	F	RunNo: 6	6632			C C	
Prep Date:	2/18/2020	Analysis [Date:	2/19/2020	S	SeqNo: 2	2290402	Units: mg/K	g		
Analyte		Result	PQ	L 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			Н
Surr: DNOP		4.8		4.916		97.5	55.1	146			Η
Sample ID:	2002627-001AMS	Samp ⁻	Гуре:	MSD	Tes	tCode: E	PA Method	8015M/D: Die	esel Range	e Organics	
Client ID:	HF 7-1 SP1-8'	Bato	h ID:	50497	F	RunNo: 6	6632				
Prep Date:	2/18/2020	Analysis [Date:	2/19/2020	S	SeqNo: 2	2290403	Units: mg/K	g		
Analyte		Result	PQ	L 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	Н

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

.

2002627

21-Feb-20

WO#:

orting Limit

Client: Project:	Marathon HF 7 Fed	Oil Comp Com 1	bany									
Sample ID:	2002627-001AMSD	SampT	ype: MS	SD	Tes	tCode: E	PA Method	8015M/D: Di	esel Rang	e Organics		
Client ID:	HF 7-1 SP1-8'	Batch	n ID: 504	497	F	RunNo: 6	6632					
Prep Date:	2/18/2020	Analysis D	ate: 2 /	19/2020	S	SeqNo: 2	290403	Units: mg/k	٢g			
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	Н	
Sample ID:	2002627-015AMS	SampT	ype: MS	6	Tes	stCode: EPA Method 8015M/D: Diesel Range Organics						
Client ID:	HF7-1 SP15-12'	Batch	n ID: 50	509	RunNo: 66632							
Prep Date:	2/18/2020	Analysis D	ate: 2 /	19/2020	S	SeqNo: 2	290852	Units: mg/k	٢g			
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			Н	
Surr: DNOP		4.4		4.794		92.4	55.1	146			Н	
Sample ID: 2002627-015AMSD SampType: MSD TestCode: EPA Method 8015M/D: Diesel Range Organics												
Client ID:	HF7-1 SP15-12'	Batch	n ID: 50	509	F	RunNo: 6	6632					
Prep Date:	2/18/2020	Analysis D	ate: 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	Н	
Surr: DNOP		4.5		4.926		90.7	55.1	146	0	0	H	
Sample ID:	MB-50509	SampT	ype: ME	BLK	Tes	tCode: E	PA Method	8015M/D: Di	esel Rang	e Organics		
Client ID:	PBS	Batch	n ID: 50	509	F	RunNo: 6	6632					
Prep Date:	2/18/2020	Analysis D	ate: 2 /	19/2020	S	SeqNo: 2	290854	Units: mg/h	٢g			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Diesel Range	Organics (DRO)	ND	10									
Motor Oil Rang	ge Organics (MRO)	ND	50	40.00		100	FF 4	110				
SUFF: DINOP		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	n ID: 50	509	F	RunNo: 6	6632					
Prep Date:	2/18/2020	Analysis D	ate: 2 /	19/2020	S	SeqNo: 2	290855	Units: mg/k	٢g			
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

.

WO#: 2002627 21-Feb-20

QC SUMMARY REPORT Hall Environmental Analysis Laboratory, Inc.

Client: Project:	Marath HF 7 F	non Oil Comp Fed Com 1	any								
Sample ID:	mb1	SampT	ype: ME	ЗLK	Tes	tCode: E	PA Method	8015D: Gaso	line Rang	e	
Client ID:	PBS	Batch	ID: G 6	6649	F	unNo: 6	6649				
Prep Date:		Analysis D	ate: 2 /	19/2020	S	eqNo: 2	290656	Units: %Red	;		
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	SampT	ype: LC	s	Tes	tCode: E	PA Method	8015D: Gaso	line Rang	e	
Client ID:	LCSS	Batch	ID: G 6	6649	F	unNo: 6	6649				
Prep Date:		Analysis D	ate: 2 /	19/2020	S	eqNo: 2	290657	Units: %Red	;		
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	SampT	ype: ME	BLK	Tes	tCode: E	PA Method	8015D: Gaso	line Rang	e	
Client ID:	PBS	Batch	ID: 50	488	F	unNo: 6	6649				
Prep Date:	2/17/2020	Analysis D	ate: 2 /	19/2020	S	eqNo: 2	290660	Units: mg/K	g		
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Rang	e Organics (GRO)	ND	5.0								-
Surr: BFB		810		1000		81.4	66.6	105			
Sample ID:	lcs-50488	SampT	ype: LC	S	Tes	tCode: E	PA Method	8015D: Gaso	line Rang	e	
Client ID:	LCSS	Batch	ID: 50	488	F	unNo: 6	6649				
Prep Date:	2/17/2020	Analysis D	ate: 2 /	19/2020	S	eqNo: 2	290661	Units: mg/K	g		
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Rang	e 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
- Н Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit

PQL Practical Quanitative Limit

% Recovery outside of range due to dilution or matrix S

- в Analyte detected in the associated Method Blank
- Е
- J
- Р Sample pH Not In Range

Page 35 of 39

.

2002627

21-Feb-20

WO#:

Value above quantitation range

- Analyte detected below quantitation limits
- RL Reporting Limit

QC SUMMARY REPORT Hall Environmental Analysis Laboratory, Inc.

Client:	Marathor	n Oil Comp	any								
Project:	HF 7 Fed	l Com 1									
Sample ID:	mb1	SampT	vpe: ME	BLK	Test	tCode: EF	PA Method	8021B: Volat	iles		
Client ID:	PBS	Batch		6649	R	unNo: 66	649				
Bron Data:	1 20		ato: 2/	10/2020	c		200680	Linite: % Poo			
T Tep Date.		Analysis D		13/2020			230003	01113. /01100	,		
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 4-Brom	nofluorobenzene	0.86		1.000		85.6	80	120			
Sample ID:	100ng btex lcs	SampT	ype: LC	s	Test	tCode: EF	PA Method	8021B: Volat	iles		
Client ID:	LCSS	Batch	ID: B6	6649	R	unNo: 66	6649				
Prep Date:		Analysis D	ate: 2 /	19/2020	S	eqNo: 22	290690	Units: %Rec	:		
Analvte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HiahLimit	%RPD	RPDLimit	Qual
Surr: 4-Brom	nofluorobenzene	0.92		1.000		92.4	80	120			
Comple ID:		CompT			Teel				lee		
Sample ID.	MD-50488	Sampi	ype. NIE	SLK.	Tes		A Method	8021B: Volat	lies		
Client ID:	PBS	Batch	ID: 504	488	R	lunNo: 66	6649				
Prep Date:	2/17/2020	Analysis D	ate: 2/	19/2020	S	eqNo: 22	290693	Units: mg/K	g		
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-Brom	nofluorobenzene	0.90		1.000		89.9	80	120			
Sample ID:	LCS-50488	SampT	ype: LC	S	Test	tCode: EF	PA Method	8021B: Volat	iles		
Client ID:	LCSS	Batch	ID: 504	488	R	unNo: 66	6649				
Prep Date:	2/17/2020	Analysis D	ate: 2 /	19/2020	S	eqNo: 22	290694	Units: mg/K	g		
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-Brom	nofluorobenzene	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

.

WO#: 2002627 21-Feb-20 **Client:**

QC SUMMARY REPORT Hall Environmental Analysis Laboratory, Inc.

Marathon Oil Company

Project:	HF 7 Fed	Com 1									
Sample ID: 2	002627-017ams	SampTy	/pe: MS	6	Tes	stCode: EPA Method 8260B: Volatiles Short List					
Client ID: H	F7-1 SP17-10'	Batch	ID: 504	494	F	RunNo: 66663					
Prep Date:	2/17/2020	Analysis Da	ate: 2 /	19/2020	S	SeqNo: 2	290897	Units: mg/K	(g		
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			Н
Toluene		0.96	0.049	0.9823	0	98.0	70	130			Н
Ethylbenzene		0.98	0.049	0.9823	0	99.9	70	130			Н
Xylenes, Total		2.9	0.098	2.947	0	99.7	70	130			Н
Surr: 1,2-Dichlo	proethane-d4	0.48		0.4912		97.4	70	130			Н
Surr: 4-Bromofl	luorobenzene	0.47		0.4912		95.7	70	130			Н
Surr: Dibromofl	uoromethane	0.46		0.4912		93.1	70	130			Н
Surr: Toluene-c	81	0.48		0.4912		98.2	70	130			Н
Sample ID: 2	002627-017amsd	SampTy	/pe: MS	D	Tes	tCode: E	PA Method	8260B: Volat	tiles Short	List	
Client ID: H	F7-1 SP17-10'	Batch	ID: 504	494	RunNo: 66663						
Prep Date:	2/17/2020	Analysis Da	ate: 2 /	19/2020	S	SeqNo: 2	290898	Units: mg/K	(g		
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	Н
Toluene		0.93	0.047	0.9381	0	98.9	70	130	3.74	20	Н
Ethylbenzene		0.94	0.047	0.9381	0	100	70	130	4.19	0	Н
Xylenes, Total		2.8	0.094	2.814	0	100	70	130	4.12	0	Н
Surr: 1,2-Dichlo	proethane-d4	0.45		0.4690		95.9	70	130	0	0	Н
Surr: 4-Bromofl	luorobenzene	0.45		0.4690		96.7	70	130	0	0	Н
Surr: Dibromofl	uoromethane	0.44		0.4690		94.2	70	130	0	0	Н
Surr: Toluene-c	18	0.46		0.4690		99.1	70	130	0	0	Н
Sample ID: Ic	s-50494	SampTy	/pe: LC	S	Tes	tCode: E	PA Method	8260B: Vola	tiles Short	List	
Client ID: L	CSS	Batch	ID: 504	494	F	RunNo: 6	6663				
Prep Date:	2/17/2020	Analysis Da	ate: 2 /	19/2020	S	SeqNo: 2	290917	Units: mg/K	(g		
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-Dichlo	proethane-d4	0.46		0.5000		92.8	70	130			
Surr: 4-Bromofl	luorobenzene	0.48		0.5000		96.4	70	130			
Surr: Dibromofl	uoromethane	0.46		0.5000		92.2	70	130			
Surr: Toluene-c	81	0.50		0.5000		99.9	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

WO#: 2002627 21-Feb-20

Client:MarathProject:HF 7 F	on Oil Comp ed Com 1	oany								
Sample ID: mb-50494	SampT	ype: MI	BLK	Tes	tCode: El	PA Method	8260B: Volat	iles Short	List	
Client ID: PBS	Batch	n ID: 50	494	F	RunNo: 6	6663				
Prep Date: 2/17/2020	Analysis D)ate: 2	19/2020	5	SeqNo: 22	290918	Units: mg/K	g		
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: Ics-50546	SampT	ype: LC	s	Tes	tCode: El	PA Method	8260B: Volat	iles Short	List	
Client ID: LCSS	Batch	n ID: 50	546	F	RunNo: 6	6683				
Prep Date: 2/19/2020	Analysis D)ate: 2	/20/2020	S	SeqNo: 22	292072	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	SampT	ype: MI	BLK	Tes	tCode: El	PA Method	8260B: Volat	iles Short	List	
Client ID: PBS	Batch	n ID: 50	546	F	RunNo: 6	6683				
Prep Date: 2/19/2020	Analysis D)ate: 2	/20/2020	S	SeqNo: 2	292073	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.
- D Sample Diluted Due to Matrix
- Η Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quanitative Limit
- % Recovery outside of range due to dilution or matrix S

- в Analyte detected in the associated Method Blank
- Е Value above quantitation range
- J Analyte detected below quantitation limits
- Р Sample pH Not In Range
- RL Reporting Limit

.

2002627

21-Feb-20

WO#:

QC SUMMARY REPORT Hall Environmental Analysis Laboratory, Inc.

Client:	Marathon	Oil Comp	any								
Project:	HF 7 Fed	Com 1									
Sample ID:	2002627-016ams	SampT	ype: M	S	Tes	tCode: E	PA Method	8015D Mod:	Gasoline	Range	
Client ID:	HF7-1 SP16-12'	Batch	ID: 50	494	F	RunNo: (66663				
Prep Date:	2/17/2020	Analysis D	ate: 2	/19/2020	5	SeqNo: 2	2290925	Units: mg/k	٢g		
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Rang Surr: BFB	ge Organics (GRO)	22 450	4.9	24.68 493.6	0	90.3 90.7	70 70	130 130			H H
Sample ID:	2002627-016amsd	SampT	ype: M	SD	Tes	tCode: E	PA Method	8015D Mod:	Gasoline	Range	
Client ID:	HF7-1 SP16-12'	Batch	ID: 50	494	F	RunNo: (66663				
Prep Date:	2/17/2020	Analysis D	ate: 2	/19/2020	5	SeqNo: 2	2290926	Units: mg/k	٢g		
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Rang	ge Organics (GRO)	22	4.9	24.73	0	88.6	70	130	1.68	20	Н
Surr: BFB		470		494.6		94.3	70	130	0	0	Н
Sample ID:	lcs-50494	SampT	ype: LC	s	Tes	tCode: E	EPA Method	8015D Mod:	Gasoline	Range	
Client ID:	LCSS	Batch	ID: 50	494	F	RunNo: (66663				
Prep Date:	2/17/2020	Analysis D	ate: 2	/19/2020	S	SeqNo: 2	2290946	Units: mg/h	٢g		
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Rang	ge 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	SampT	ype: MI	BLK	Tes	tCode: E	PA Method	8015D Mod:	Gasoline	Range	
Client ID:	PBS	Batch	ID: 50	494	F	RunNo: (66663				
Prep Date:	2/17/2020	Analysis D	ate: 2	/19/2020	5	SeqNo:	2290947	Units: mg/k	٤g		
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Rang	ge Organics (GRO)	ND	5.0					100			
Surr: BFB		480		500.0		95.5	70	130			
Sample ID:	lcs-50546	SampT	ype: LC	s	Tes	tCode: E	PA Method	8015D Mod:	Gasoline	Range	
Client ID:	LCSS	Batch	ID: 50	546	F	RunNo: (66683				
Prep Date:	2/19/2020	Analysis D	ate: 2	/20/2020	5	SeqNo: 2	2292078	Units: %Re	с		
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	SampT	ype: MI	BLK	Tes	tCode: E	PA Method	8015D Mod:	Gasoline	Range	
Client ID:	PBS	Batch	ID: 50	546	F	RunNo: (66683			-	
Prep Date:	2/19/2020	Analysis D	ate: 2	/20/2020	5	SeqNo: 2	2292079	Units: %Re	С		
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

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

.

WO#: 2002627 21-Feb-20

ANALYSIS LABORATORY	TEL: 505-345- Website: ww	ental Analysis 4901 F Albuquerque, 3975 FAX: 50. w.hallenviron	Laboratory Jawkins NE NM 87109 5-345-4107 nental.com	Sar	nple Log-In Che	ck List
Client Name: MARATHON OIL COM	PA Work Order Nun	nber: 200262	7		RcptNo: 1	
Received By: Erin Melendrez Completed By: Erin Melendrez Reviewed By: ENM	2/15/2020 12:35:0 2/15/2020 2:56:45 2/17/71	0 PM PM	U U	ing		
Chain of Custodu						
1 Is Chain of Custody sufficiently comple	102	Vec I	a.			
2 How was the sample delivered?		Courier	1			
		Courier				
Log In 3. Was an attempt mode to see 1 th						
5. Was an attempt made to cool the samp	oles?	Yes 🗹		No 🗀		
4. Were all samples received at a temperative	ature of >0° C to 6.0°C	Yes 🗹	n 3	No 🗌		
5. Sample(s) in proper container(s)?		Yes 🔽		No 🗌		
6. Sufficient sample volume for indicated t	est(s)?	Yes V		No 🗌		
7. Are samples (except VOA and ONG) pr	operly preserved?	Yes 🗸		No 🗆		
8. Was preservative added to bottles?		Yes	1	No 🔽	NA 🗌	
9. Received at least 1 vial with headspace	<1/4" for AQ VOA?	Yes		No 🗌		
10. Were any sample containers received I	proken?	Yes		No 🔽		/
					# of preserved bottles checked	
11. Does paperwork match bottle labels?	⁰	Yes 🗸	1	No 🗌	for pH:	
12 Are matrices correctly identified on Cha	/) in of Custody?	Vec V			Adjusted?	uniess noted)
13. Is it clear what analyses were requested	1?	Yes V			/	
14. Were all holding times able to be met?		Yes 🗸	1	No 🗌	Checked by: 12	2/17/20
(If no, notify customer for authorization.)				/	11/100
Special Handling (if applicable)						
15. Was client notified of all discrepancies	with this order?	Yes	ĥ li	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	Sign	ed By	T	

Client:	hain	-of-Cu ara- (.v	Jescon)	Turn-Around	Time: $d \square Rust$ e: $f \square f d$	(p) (HALL ENVIRONMENTA ANALYSIS LABORATOR www.hallenvironmental.com					CAL OR'	eived by OCD:							
walling	Address	3:		Project #:	Tea	LONI		49	01 H	awk	ins N	VE -	Alt	ouqu	erqu	ie, NN	1 8710	9		9/18
							-	T€	el. 50)5-34	45-39	975	F	ax	505	-345-4	1107	-		2020
omail	H.			Draiget Man				0				F	4	515	Req	uest		-		2:1
QA/QC	Package: dard		□ Level 4 (Full Validation)	Sha	v Han	water	s (8021)	O / MRO	PCB's		SIMS		PO4, SO			t/Absent	K			8:00 PM
Accredi	itation:	□ Az Co	ompliance	Sampler:	i territe		[MB	/ DR	082	÷.	8270		10 ₂ ,			esen				
	AC (Type)	□ Othe	r	On Ice: # of Coolers:	X Yes	□ No	BE / 1	GRO	des/8	d 504	10 or	tals	10 ₃ , N		(AOV	m (Pre				
				Cooler Temp	(including CF): UC	+0.7(cA=5.1 (°C)	MTR	15D(estici	letho	y 83	8 Me	Br, N	(AO)	Semi-	olifor				
Date	Time	Matrix	Sample Name	Container Type and #	Preservative Type	HEAL NO. 2002627	фтеу/	TPH:80	8081 P	EDB (N	PAHs b	RCRA	CF, E	8260 (\	8270 (S	Total C				
1/18/20	1	soil	HE7- SP.1 8'	1.		-001	x	x					X							
			5P-281			-007		1												
			SP-3 81			-003														
			SP4-12'			-004														
			SP5-12		1	-005														
4			SP6-12			-000														
(17)20			SP7-12			-007														
	(518-12			-008	1				1.67									
	1120		589-14			-079														
12	7.	I	SP10-12'			-010														
EFEN	Man	Tared	SP11-12'			-011					- 1									
XXA	0510	11/16	120 SP 12-12			-012		1					V							
Date: 2 2/14/20	Time: [630	Relinquish	elly Tuch	Received by:	Via:	Date Time 2/14/20 1630	Rem	narks	s: Ru	NC	suit	-sf	ho	IL	san	ng le	25			Page
Date:	11me: 1900	Relinquish	hed by:	Received by:	via:COUri	Cr Date Time 1235 2/15/20			Per	- 2	she	-lly		uc	Ke	C.				123 of 1

Client: Mailing	Address	-of-Ci Aarc (Weg	ustody Record whon won)	Froject Nam	e: Fed (Com 1	HALL ENVIRONMENTA ANALYSIS LABORATON www.hallenvironmental.com 4901 Hawkins NE - Albuquerque, NM 87109					OR	ived by OCD: 9/18.							
Dhana	<i>µ</i> .			Project #.				Te	1. 50	5-34	5-39	975 A	F	ax	505- Reg	-345-4	4107			/2020
email o	r Fax#			Project Man	ader:/	1		()					04		log	Ŧ		1		2:1
QA/QC I	Package: Idard		□ Level 4 (Full Validation)	Shar	Hande	stan	's (8021	O / MRC	PCB's		SMISO		PO4, SC			nt/Absen				8:00 PM
	tation: AC	□ Az Co □ Othe	ompliance r	Sampler: On Ice: # of Coolers:	Øk Yes	🗆 No	BE / TMB	GRO / DR	des/8082	d 504.1)	10 or 827	als	O ₃ , NO ₂ ,		VOA)	m (Presei				
Date	Time	Matrix	Sample Name	Cooler Temp Container Type and #	Preservative Type	9+0,2(CF)=5.1(°C) HEAL NO. 2N7627	BIEN MTE	TPH:8015D(8081 Pestici	EDB (Metho	PAHs by 83	RCRA 8 Met	CJF, Br, N	8260 (VOA)	8270 (Semi-	Total Colifor				
11/16/20		soil	HE7-1 SP13-12'	40201	ice	-113	X	X					Ĭ					17		
	1		SP14-12'	P		-014		1					1							1
	I.		SP15-12			-015														
			SD11-12			-0110														
			5P17-10			-017											-			
			SP 18-10'			-018						1								
11-118 20			SP 19 - 8'			-019					1						1			
			sp 20 -6			-070		1	1											
			SP21-6'			-021			1								- 6			
			JPZZ wall			-072														
1/9/20			SP23 wall			-023														T.
1		1	↓ SP24 wall	\downarrow	V	-024	V	6					1					1		
Date: 2/14/20 Date:	Time:	Relinquist	elyTuch	Received by: Received by:	Via: Via: COUr	Date Time 2 14 20 630 IOP Date Time	Rem	narks run Per	ה ה - S	int the l	of 14	ho Ti	ld re l	sa re	mp	les				Page 124
211.	1900	Ø.	17	LiA	5	2/15/20 1235								2.5.12	_				1.5.1	of 1

Client: Mailing Phone	Chain Ma Addres #:	s:	ustody Recon X7 (Wescom)	rd Turn-Arou Standa Project Na HF Project #:	nd Time: ard I Rus me: 7-Fed 1	sh	HALL ENVIRONMEN ANALYSIS LABORAT www.hallenvironmental.com 4901 Hawkins NE - Albuquerque, NM 87109 Tel. 505-345-3975 Fax 505-345-4107 Analysis Request					ENT ATC	Received by OCD: 9/18/2020						
email o QA/QC Star Accred NEL EDE	r Fax#: Package ndard litation: _AC D (Type)	: Az Co Othe	□ Level 4 (Full Valic ompliance r	Project Ma Shut Sampler: On Ice: # of Coole	nager: Lr Han1 ▼Yes	No No	3E / TMB's (8021)	GRO / DRO / MRO)	des/8082 PCB's	d 504.1)	0 or 8270SIMS	als	O ₃ , NO ₂ , PO ₄ , SO ₄		/OA)	n (Present/Absent)			18:00 PM
Date	Time	Matrix	Sample Name	Cooler Ter Container Type and #	Preservative	9+0.2(CP-5.(°C) e HEAL NO. 2002(027	BTEXIMTE	TPH:8015D(0	8081 Pesticio	EDB (Methoo	PAHs by 831	RCRA 8 Met	CI, F, Br, N	8260 (VOA)	8270 (Semi-V	Total Coliforr			
Date:	Time:	Relinquish	$\frac{ F -F- \leq P2S}{SP2}$ $\frac{SP2}{SP2}$ $\frac{SP2}{SP29}$ $\frac{SP29}{SP29}$ $\frac{SP30}{SP30}$ $\frac{SP30}{SP31}$ $\frac{SP31}{SP31}$	Wall Jorg I Wall Wall Wall Wall Wall Wall Wall Wall	Via:	-025 -026 -027 -028 -029 -030 -031 -031 Date Time	×	×		(
Date:	Time:	Relinquish	ed by:	Received by:	Via:COUri	Tor Date Time 1235		ru SV	.N a	sut ly	A	hol ck	d s	iam	p le	23	per		Page 125 of



February 21, 2020

Shar Harvester Marathon Oil Company 4111 Tidwell Road Carlsbad, NM 88220 TEL: (575) 297-0956 FAX Hall Environmental Analysis Laboratory 4901 Hawkins NE Albuquerque, NM 87109 TEL: 505-345-3975 FAX: 505-345-4107 Website: www.hallenvironmental.com

OrderNo.: 2002628

Dear Shar Harvester:

RE: HF7 Fed Com 1

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

Andy Freeman Laboratory Manager 4901 Hawkins NE Albuquerque, NM 87109

2002628-001

Project: HF7 Fed Com 1

Lab ID:

Analytical Report Lab Order 2002628

Date Reported: 2/21/2020

Hall Environmental Analysis Laboratory, Inc.

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 ORGA	NICS					Analyst: CLP
Diesel Range Organics (DRO)	2900	100	Н	mg/Kg-dr	10	2/20/2020 10:20:30 AM
Motor Oil Range Organics (MRO)	1200	520	Н	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	Н	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	Н	mg/Kg-dr	1	2/20/2020 3:55:37 AM
Surr: BFB	99.0	70-130	Н	%Rec	1	2/20/2020 3:55:37 AM
PERCENT MOISTURE						Analyst: JMR
Percent Moisture	11	1.0	Н	wt%	1	2/19/2020

Matrix: SOIL

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

Qualifiers:

*

Value exceeds Maximum Contaminant Level. Sample Diluted Due to Matrix

D Η Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit PQL Practical Quanitative Limit

% Recovery outside of range due to dilution or matrix S

В Analyte detected in the associated Method Blank

E Value above quantitation range

J Analyte detected below quantitation limits

Р Sample pH Not In Range

RL Reporting Limit Page 1 of 20

2002628-002

Project: HF7 Fed Com 1

Lab ID:

Analytical Report
Lab Order 2002628

Date Reported: 2/21/2020

Hall Environmental Analysis Laboratory, Inc.

Client Sample ID: FS-Comp-4/5' Collection Date: 1/18/2020 3:15:00 PM Received Date: 2/15/2020 12:35:00 PM

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

Matrix: SOIL

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

Qualifiers:

*

Value exceeds Maximum Contaminant Level. Sample Diluted Due to Matrix

D Sample Diluted Due to MatrixH 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

Page 2 of 20

Project: HF7 Fed Com 1

Analytical Report Lab Order 2002628

Date Reported: 2/21/2020

Hall Environmental Analysis Laboratory, Inc.

Client Sample ID: S-WS-Comp Collection Date: 1/17/2020 6:00:00 PM Received Date: 2/15/2020 12:35:00 PM

Lab ID: 2002628-003	Matrix: SOIL Received Date: 2/15/2020 12:35:00 PM						
Analyses	Result	RL Q	ual	Units DF	Date Analyzed		
EPA METHOD 8015M/D: DIESEL RANGE	ORGANICS				Analyst: CLP		
Diesel Range Organics (DRO)	ND	11	Н	mg/Kg-dr 1	2/20/2020 10:38:39 AM		
Motor Oil Range Organics (MRO)	ND	55	Н	mg/Kg-dr 1	2/20/2020 10:38:39 AM		
Surr: DNOP	85.8	55.1-146	Н	%Rec 1	2/20/2020 10:38:39 AM		
EPA METHOD 300.0: ANIONS					Analyst: CAS		
Chloride	400	73	Н	mg/Kg-dr 20	2/19/2020 4:21:11 PM		
EPA METHOD 8260B: VOLATILES SHOP	RT LIST				Analyst: JMR		
Benzene	ND	0.030	Н	mg/Kg-dr 1	2/20/2020 5:14:43 PM		
Toluene	ND	0.060	Н	mg/Kg-dr 1	2/20/2020 5:14:43 PM		
Ethylbenzene	ND	0.060	Н	mg/Kg-dr 1	2/20/2020 5:14:43 PM		
Xylenes, Total	ND	0.12	Н	mg/Kg-dr 1	2/20/2020 5:14:43 PM		
Surr: 1,2-Dichloroethane-d4	86.8	70-130	Н	%Rec 1	2/20/2020 5:14:43 PM		
Surr: 4-Bromofluorobenzene	95.6	70-130	Н	%Rec 1	2/20/2020 5:14:43 PM		
Surr: Dibromofluoromethane	92.6	70-130	Н	%Rec 1	2/20/2020 5:14:43 PM		
Surr: Toluene-d8	100	70-130	Н	%Rec 1	2/20/2020 5:14:43 PM		
EPA METHOD 8015D MOD: GASOLINE F	RANGE				Analyst: JMR		
Gasoline Range Organics (GRO)	ND	6.0	Н	mg/Kg-dr 1	2/20/2020 4:52:25 AM		
Surr: BFB	91.9	70-130	Н	%Rec 1	2/20/2020 4:52:25 AM		
PERCENT MOISTURE					Analyst: JMR		
Percent Moisture	17	1.0	Н	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. Sample Diluted Due to Matrix

D Sample Diluted Due to MatrixH 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

Page 3 of 20

2002628-004

Project: HF7 Fed Com 1

Lab ID:

Analytical Report
Lab Order 2002628

Date Reported: 2/21/2020

Hall Environmental Analysis Laboratory, Inc.

Client Sample ID: FS-Comp-4' Collection Date: 1/18/2020 6:00:00 PM Received Date: 2/15/2020 12:35:00 PM

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

Matrix: SOIL

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

Qualifiers:

*

Value exceeds Maximum Contaminant Level. Sample Diluted Due to Matrix

D Sample Diluted Due to MatrixH 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

Page 4 of 20

2002628-005

Project: HF7 Fed Com 1

Lab ID:

Analytical Report Lab Order 2002628

Date Reported: 2/21/2020

Hall Environmental Analysis Laboratory, Inc.

Client Sample ID: W-WS-Comp Collection Date: 1/18/2020 4:30:00 PM Received Date: 2/15/2020 12:35:00 PM

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

Matrix: SOIL

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

Qualifiers:

*

Value exceeds Maximum Contaminant Level. Sample Diluted Due to Matrix

D Sample Diluted Due to MatrixH 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

Page 5 of 20

Project: HF7 Fed Com 1

Analytical Report Lab Order 2002628

Date Reported: 2/21/2020

Hall Environmental Analysis Laboratory, Inc.

Client Sample ID: W-WS-Comp Collection Date: 1/18/2020 4:00:00 PM Received Date: 2/15/2020 12:35:00 PM

Lab ID: 2002628-006	Matrix: SOIL Received Date: 2/15/2020 12:35:00 PM						
Analyses	Result	RL Q	ual	Units DF	Date Analyzed		
EPA METHOD 8015M/D: DIESEL RAN	GE ORGANICS				Analyst: CLP		
Diesel Range Organics (DRO)	ND	11	Н	mg/Kg-dr 1	2/20/2020 11:05:58 AM		
Motor Oil Range Organics (MRO)	ND	53	Н	mg/Kg-dr 1	2/20/2020 11:05:58 AM		
Surr: DNOP	87.7	55.1-146	Н	%Rec 1	2/20/2020 11:05:58 AM		
EPA METHOD 300.0: ANIONS					Analyst: CAS		
Chloride	270	76	н	mg/Kg-dr 20	2/19/2020 4:58:12 PM		
EPA METHOD 8260B: VOLATILES SH	ORT LIST				Analyst: JMR		
Benzene	ND	0.032	Н	mg/Kg-dr 1	2/20/2020 9:02:19 PM		
Toluene	ND	0.063	Н	mg/Kg-dr 1	2/20/2020 9:02:19 PM		
Ethylbenzene	ND	0.063	Н	mg/Kg-dr 1	2/20/2020 9:02:19 PM		
Xylenes, Total	ND	0.13	Н	mg/Kg-dr 1	2/20/2020 9:02:19 PM		
Surr: 1,2-Dichloroethane-d4	90.3	70-130	Н	%Rec 1	2/20/2020 9:02:19 PM		
Surr: 4-Bromofluorobenzene	94.6	70-130	Н	%Rec 1	2/20/2020 9:02:19 PM		
Surr: Dibromofluoromethane	96.4	70-130	Н	%Rec 1	2/20/2020 9:02:19 PM		
Surr: Toluene-d8	101	70-130	Н	%Rec 1	2/20/2020 9:02:19 PM		
EPA METHOD 8015D MOD: GASOLIN	E RANGE				Analyst: JMR		
Gasoline Range Organics (GRO)	ND	6.3	Н	mg/Kg-dr 1	2/20/2020 9:02:19 PM		
Surr: BFB	93.6	70-130	Н	%Rec 1	2/20/2020 9:02:19 PM		
PERCENT MOISTURE					Analyst: JMR		
Percent Moisture	21	1.0	Н	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. Sample Diluted Due to Matrix

D Н Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

PQL Practical Quanitative Limit

% Recovery outside of range due to dilution or matrix S

В Analyte detected in the associated Method Blank

E Value above quantitation range

J Analyte detected below quantitation limits

Р Sample pH Not In Range

RL Reporting Limit Page 6 of 20

2002628-007

Project: HF7 Fed Com 1

Lab ID:

Analytical Report Lab Order 2002628

Date Reported: 2/21/2020

Hall Environmental Analysis Laboratory, Inc.

Client Sample ID: S-WS-Comp Collection Date: 1/18/2020 6:30:00 PM Received Date: 2/15/2020 12:35:00 PM

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

Matrix: SOIL

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

Qualifiers:

*

Value exceeds Maximum Contaminant Level. Sample Diluted Due to Matrix

D Sample Diluted Due to MatrixH 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

Page 7 of 20

Analytical Report Lab Order 2002628

Date Reported: 2/21/2020

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon Oil Company		Clier	nt Sai	mple ID: N-WS	-Comp
Project: HF7 Fed Com 1		Co	llecti	on Date: 1/19/2	020 3:30:00 PM
Lab ID: 2002628-008	Matrix: SOIL	R	020 12:35:00 PM		
Analyses	Result	Result RL Qual		Units DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RAN	GE ORGANICS				Analyst: CLP
Diesel Range Organics (DRO)	ND	10	н	mg/Kg-dr 1	2/20/2020 12:15:48 PM
Motor Oil Range Organics (MRO)	ND	50	Н	mg/Kg-dr 1	2/20/2020 12:15:48 PM
Surr: DNOP	73.3	55.1-146	Н	%Rec 1	2/20/2020 12:15:48 PM
EPA METHOD 300.0: ANIONS					Analyst: CAS
Chloride	500	76	Н	mg/Kg-dr 20	2/19/2020 5:22:54 PM
EPA METHOD 8260B: VOLATILES SH	IORT LIST				Analyst: JMR
Benzene	ND	0.031	Н	mg/Kg-dr 1	2/21/2020 12:20:46 AM
Toluene	ND	0.062	Н	mg/Kg-dr 1	2/21/2020 12:20:46 AM
Ethylbenzene	ND	0.062	Н	mg/Kg-dr 1	2/21/2020 12:20:46 AM
Xylenes, Total	ND	0.12	Н	mg/Kg-dr 1	2/21/2020 12:20:46 AM
Surr: 1,2-Dichloroethane-d4	88.8	70-130	Н	%Rec 1	2/21/2020 12:20:46 AM
Surr: 4-Bromofluorobenzene	94.9	70-130	Н	%Rec 1	2/21/2020 12:20:46 AM
Surr: Dibromofluoromethane	95.0	70-130	Н	%Rec 1	2/21/2020 12:20:46 AM
Surr: Toluene-d8	101	70-130	Н	%Rec 1	2/21/2020 12:20:46 AM
EPA METHOD 8015D MOD: GASOLIN	E RANGE				Analyst: JMR
Gasoline Range Organics (GRO)	ND	6.2	н	mg/Kg-dr 1	2/21/2020 12:20:46 AM
Surr: BFB	92.8	70-130	н	%Rec 1	2/21/2020 12:20:46 AM
PERCENT MOISTURE					Analyst: JMR
Percent Moisture	21	1.0	н	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. Sample Diluted Due to Matrix

D Holding times for preparation or analysis exceeded Н

ND Not Detected at the Reporting Limit

PQL Practical Quanitative Limit

S % Recovery outside of range due to dilution or matrix

Analyte detected in the associated Method Blank В

Е Value above quantitation range

J Analyte detected below quantitation limits

Р Sample pH Not In Range

RL Reporting Limit Page 8 of 20

.

2002628-009

Project: HF7 Fed Com 1

Lab ID:

Analytical Report
Lab Order 2002628

Date Reported: 2/21/2020

Hall Environmental Analysis Laboratory, Inc.

Client Sample ID: FS-Comp-17' Collection Date: 1/19/2020 6:00:00 PM Received Date: 2/15/2020 12:35:00 PM

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

Matrix: SOIL

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

Qualifiers:

*

Value exceeds Maximum Contaminant Level. Sample Diluted Due to Matrix

D Sample Diluted Due to MatrixH 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

Page 9 of 20

Project: HF7 Fed Com 1

Analytical Report Lab Order 2002628

Date Reported: 2/21/2020

Hall Environmental Analysis Laboratory, Inc.

Client Sample ID: W-WS-Comp Collection Date: 1/19/2020 6:30:00 PM Received Date: 2/15/2020 12:35:00 PM

Lab ID: 2002628-010	Matrix: SOIL	Re	ceive	020 12:35:00 PM	
Analyses	Result	RL Q)ual	Units DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANG	E ORGANICS				Analyst: CLP
Diesel Range Organics (DRO)	ND	9.4	Н	mg/Kg-dr 1	2/20/2020 12:33:53 PM
Motor Oil Range Organics (MRO)	ND	47	Н	mg/Kg-dr 1	2/20/2020 12:33:53 PM
Surr: DNOP	114	55.1-146	Н	%Rec 1	2/20/2020 12:33:53 PM
EPA METHOD 300.0: ANIONS					Analyst: CAS
Chloride	400	65	Н	mg/Kg-dr 20	2/19/2020 5:47:35 PM
EPA METHOD 8260B: VOLATILES SHO	RT LIST				Analyst: JMR
Benzene	ND	0.027	Н	mg/Kg-dr 1	2/21/2020 1:17:18 AM
Toluene	ND	0.054	Н	mg/Kg-dr 1	2/21/2020 1:17:18 AM
Ethylbenzene	ND	0.054	Н	mg/Kg-dr 1	2/21/2020 1:17:18 AM
Xylenes, Total	ND	0.11	Н	mg/Kg-dr 1	2/21/2020 1:17:18 AM
Surr: 1,2-Dichloroethane-d4	91.2	70-130	Н	%Rec 1	2/21/2020 1:17:18 AM
Surr: 4-Bromofluorobenzene	95.2	70-130	Н	%Rec 1	2/21/2020 1:17:18 AM
Surr: Dibromofluoromethane	93.7	70-130	Н	%Rec 1	2/21/2020 1:17:18 AM
Surr: Toluene-d8	99.7	70-130	Н	%Rec 1	2/21/2020 1:17:18 AM
EPA METHOD 8015D MOD: GASOLINE	RANGE				Analyst: JMR
Gasoline Range Organics (GRO)	ND	5.4	Н	mg/Kg-dr 1	2/21/2020 1:17:18 AM
Surr: BFB	90.0	70-130	Н	%Rec 1	2/21/2020 1:17:18 AM
PERCENT MOISTURE					Analyst: JMR
Percent Moisture	7.6	1.0	Н	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. Sample Diluted Due to Matrix

D Sample Diluted Due to MatrixH 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

Page 10 of 20

2002628-011

Project: HF7 Fed Com 1

Lab ID:

Analytical Report
Lab Order 2002628

Date Reported: 2/21/2020

Hall Environmental Analysis Laboratory, Inc.

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

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

Matrix: SOIL

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

Qualifiers:

*

Value exceeds Maximum Contaminant Level. Sample Diluted Due to Matrix

D Sample Diluted Due to MatrixH 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

Page 11 of 20

Project: HF7 Fed Com 1

Analytical Report
Lab Order 2002628

Date Reported: 2/21/2020

Hall Environmental Analysis Laboratory, Inc.

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

Lab ID: 2002628-012	Matrix: SOIL	Rec	ceive	ed Date: 2/15/20	020 12:35:00 PM
Analyses	Result	RL Q	ual	Units DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANG	E ORGANICS				Analyst: CLP
Diesel Range Organics (DRO)	ND	9.2	Н	mg/Kg-dr 1	2/20/2020 12:52:04 PM
Motor Oil Range Organics (MRO)	ND	46	Н	mg/Kg-dr 1	2/20/2020 12:52:04 PM
Surr: DNOP	86.0	55.1-146	Н	%Rec 1	2/20/2020 12:52:04 PM
EPA METHOD 300.0: ANIONS					Analyst: CAS
Chloride	310	74	Н	mg/Kg-dr 20	2/19/2020 6:12:16 PM
EPA METHOD 8260B: VOLATILES SHO	RT LIST				Analyst: JMR
Benzene	ND	0.029	Н	mg/Kg-dr 1	2/21/2020 2:13:48 AM
Toluene	ND	0.057	Н	mg/Kg-dr 1	2/21/2020 2:13:48 AM
Ethylbenzene	ND	0.057	Н	mg/Kg-dr 1	2/21/2020 2:13:48 AM
Xylenes, Total	ND	0.11	Н	mg/Kg-dr 1	2/21/2020 2:13:48 AM
Surr: 1,2-Dichloroethane-d4	90.0	70-130	Н	%Rec 1	2/21/2020 2:13:48 AM
Surr: 4-Bromofluorobenzene	96.2	70-130	Н	%Rec 1	2/21/2020 2:13:48 AM
Surr: Dibromofluoromethane	92.5	70-130	Н	%Rec 1	2/21/2020 2:13:48 AM
Surr: Toluene-d8	99.4	70-130	Н	%Rec 1	2/21/2020 2:13:48 AM
EPA METHOD 8015D MOD: GASOLINE	RANGE				Analyst: JMR
Gasoline Range Organics (GRO)	ND	5.7	Н	mg/Kg-dr 1	2/21/2020 2:13:48 AM
Surr: BFB	91.2	70-130	Н	%Rec 1	2/21/2020 2:13:48 AM
PERCENT MOISTURE					Analyst: JMR
Percent Moisture	19	1.0	Н	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. Sample Diluted Due to Matrix

D Sample Diluted Due to MatrixH 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

Page 12 of 20

2002628-013

Project: HF7 Fed Com 1

Lab ID:

Analytical Report
Lab Order 2002628

Date Reported: 2/21/2020

Hall Environmental Analysis Laboratory, Inc.

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	Н	mg/Kg-dr	· 1	2/20/2020 1:01:10 PM
Motor Oil Range Organics (MRO)	ND	53	Н	mg/Kg-dr	· 1	2/20/2020 1:01:10 PM
Surr: DNOP	85.9	55.1-146	Н	%Rec	1	2/20/2020 1:01:10 PM
EPA METHOD 300.0: ANIONS						Analyst: CAS
Chloride	750	66	Н	mg/Kg-dr	20	2/19/2020 6:49:20 PM
EPA METHOD 8260B: VOLATILES SHOR	T LIST					Analyst: JMR
Benzene	ND	0.027	Н	mg/Kg-dr	· 1	2/21/2020 2:42:05 AM
Toluene	ND	0.054	Н	mg/Kg-dr	· 1	2/21/2020 2:42:05 AM
Ethylbenzene	ND	0.054	Н	mg/Kg-dr	· 1	2/21/2020 2:42:05 AM
Xylenes, Total	ND	0.11	Н	mg/Kg-dr	· 1	2/21/2020 2:42:05 AM
Surr: 1,2-Dichloroethane-d4	89.7	70-130	Н	%Rec	1	2/21/2020 2:42:05 AM
Surr: 4-Bromofluorobenzene	95.0	70-130	Н	%Rec	1	2/21/2020 2:42:05 AM
Surr: Dibromofluoromethane	92.4	70-130	Н	%Rec	1	2/21/2020 2:42:05 AM
Surr: Toluene-d8	98.5	70-130	Н	%Rec	1	2/21/2020 2:42:05 AM
EPA METHOD 8015D MOD: GASOLINE RA	ANGE					Analyst: JMR
Gasoline Range Organics (GRO)	ND	5.4	Н	mg/Kg-dr	· 1	2/21/2020 2:42:05 AM
Surr: BFB	90.7	70-130	Н	%Rec	1	2/21/2020 2:42:05 AM
PERCENT MOISTURE						Analyst: JMR
Percent Moisture	8.4	1.0	Н	wt%	1	2/19/2020

Matrix: SOIL

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

Qualifiers:

*

Value exceeds Maximum Contaminant Level. Sample Diluted Due to Matrix

D Sample Diluted Due to MatrixH 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

Page 13 of 20

Analytical Report Lab Order 2002628

Date Reported: 2/21/2020

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon Oil Company Client Sample ID: NW-FS-Comp-7' **Project:** HF7 Fed Com 1 Collection Date: 1/19/2020 6:45:00 PM Lab ID: 2002628-014 Matrix: SOIL Received Date: 2/15/2020 12:35:00 PM Result **RL** Qual Units DF **Date Analyzed** Analyses EPA METHOD 8015M/D: DIESEL RANGE ORGANICS Analyst: CLP Diesel Range Organics (DRO) ND 10 Н mg/Kg-dr 1 2/20/2020 1:10:18 PM Motor Oil Range Organics (MRO) ND 52 Н mg/Kg-dr 1 2/20/2020 1:10:18 PM Surr: DNOP 70.3 55.1-146 н %Rec 2/20/2020 1:10:18 PM 1 **EPA METHOD 300.0: ANIONS** Analyst: CAS Chloride 830 2/19/2020 7:01:42 PM 67 Н mg/Kg-dr 20 **EPA METHOD 8260B: VOLATILES SHORT LIST** Analyst: JMR Benzene ND 0.027 mg/Kg-dr 1 2/21/2020 3:10:17 AM Н Toluene ND 0.054 mg/Kg-dr 1 2/21/2020 3:10:17 AM Н Ethylbenzene ND 0.054 Н mg/Kg-dr 1 2/21/2020 3:10:17 AM Xylenes, Total ND 0.11 Н mg/Kg-dr 1 2/21/2020 3:10:17 AM Surr: 1,2-Dichloroethane-d4 86.6 70-130 Н %Rec 1 2/21/2020 3:10:17 AM Surr: 4-Bromofluorobenzene 94.3 70-130 Н %Rec 1 2/21/2020 3:10:17 AM Surr: Dibromofluoromethane 70-130 н %Rec 2/21/2020 3:10:17 AM 93.0 1 Surr: Toluene-d8 98.1 70-130 Н %Rec 1 2/21/2020 3:10:17 AM **EPA METHOD 8015D MOD: GASOLINE RANGE** Analyst: JMR Gasoline Range Organics (GRO) ND 5.4 Н mg/Kg-dr 1 2/21/2020 3:10:17 AM Surr: BFB 88.4 70-130 Н %Rec 1 2/21/2020 3:10:17 AM PERCENT MOISTURE Analyst: JMR Percent Moisture 2/19/2020 9.9 1.0 Н wt% 1

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

Qualifiers:

Value exceeds Maximum Contaminant Level. Sample Diluted Due to Matrix

D Н Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

Practical Quanitative Limit PQL

S % Recovery outside of range due to dilution or matrix

Analyte detected in the associated Method Blank В

Е Value above quantitation range

J Analyte detected below quantitation limits

Р Sample pH Not In Range

RL Reporting Limit Page 14 of 20

Client: Project:	Mara HF7	thon Oil Company Fed Com 1	7						
Sample ID:	MB-50543	SampType:	mblk	Tes	tCode: EPA Method	300.0: Anions			
Client ID:	PBS	Batch ID:	50543	F	RunNo: 66643				
Prep Date:	2/19/2020	Analysis Date:	2/19/2020	0 SeqNo: 2291802 Units: mg/Kg					
Analyte		Result PC	QL SPK value	SPK Ref Val	%REC LowLimit	HighLimit %RP	D RPDLimit	Qual	
Chloride		ND	1.5						
Sample ID:	LCS-50543	SampType:	lcs	Tes	tCode: EPA Method	300.0: Anions			
Client ID:	LCSS	Batch ID:	50543	F	RunNo: 66643				
Prep Date:	2/19/2020	Analysis Date:	2/19/2020	S	GeqNo: 2291803	Units: mg/Kg			
Analyte		Result PC	QL SPK value	SPK Ref Val	%REC LowLimit	HighLimit %RP	D 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

Page 15 of 20

.

WO#: 2002628 21-Feb-20

Client: Mar Project: HF7	athon Oil Com ' Fed Com 1	pany								
Sample ID: MB-50539	Samp	Type: ME	BLK	Tes	tCode: E	PA Method	8015M/D: Di	esel Rang	e Organics	
Client ID: PBS	Batc	h ID: 50	539	F	6668					
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 (MRC	D) ND	50								
Surr: DNOP	14		10.00		139	55.1	146			
Sample ID: LCS-50539	Samp	Type: LC	S	Tes	tCode: El	PA Method	8015M/D: Di	esel Rang	e Organics	
Client ID: LCSS	Batc	h ID: 50	539	F	RunNo: 6	6668				
Prep Date: 2/19/2020	Analysis [Date: 2 /	20/2020	S	SeqNo: 22	291593	Units: mg/k	٢g		
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

Page 16 of 20

.

WO#: 2002628 21-Feb-20 **Client:**

QC SUMMARY REPORT Hall Environmental Analysis Laboratory, Inc.

Marathon Oil Company

Project: HF7 Fe	d Com 1	-								
Sample ID: Ics-50494	SampTy	ype: LC	S	Tes	tCode: El	PA Method	8260B: Volat	iles Short	List	
Client ID: LCSS	Batch	ID: 504	494	F	RunNo: 6	6663				
Prep Date: 2/17/2020	Analysis Da	ate: 2 /	19/2020	S	SeqNo: 2	290917	Units: mg/K	g		
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	SampTy	ype: ME	BLK	Tes	tCode: El	PA Method	8260B: Volat	iles Short	List	
Client ID: PBS	Batch	ID: 504	494	F	RunNo: 6	6663				
Prep Date: 2/17/2020	Analysis Da	ate: 2 /	19/2020	S	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: Ics-50546	SampTy	ype: LC	S	Tes	tCode: El	PA Method	8260B: Volat	iles Short	List	
Client ID: LCSS	Batch	ID: 50	546	F	RunNo: 6	6683				
Prep Date: 2/19/2020	Analysis Da	ate: 2 /	20/2020	S	SeqNo: 2	292072	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	SampTy	ype: ME	BLK	Tes	tCode: El	PA Method	8260B: Volat	iles Short	List	
Client ID: PBS	Batch	ID: 50	546	F	RunNo: 6	6683				
Prep Date: 2/19/2020	Analysis Da	ate: 2/	20/2020	S	SeqNo: 2	292073	Units: %Red	;		
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.

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

WO#:	2002628
	21-Feb-20

QC SUMMARY REPORT Hall Environmental Analysis Laboratory, Inc.

Client: Maratho	on Oil Com	pany								
Project: HF7 Fee	d Com 1									
Sample ID: mb-50546	Sampl	Type MF	RI K	Tes	tCode: F	PA Method	8260B: Vola	tiles Short	List	
	Potol					6602	02000. 0010		LIST	
Client ID. PD3	Datc	11D. 30 :	540	Г						
Prep Date: 2/19/2020	Analysis E	Date: 2/	20/2020	S	SeqNo: 22	292073	Units: %Re	С		
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: Ics-50537	SampT	Type: LC	S	Tes	tCode: EF	PA Method	8260B: Vola	tiles Short	List	
Client ID: LCSS	Batcl	h ID: 50	537	F	RunNo: 6	6683				
Prep Date: 2/19/2020	Analysis E	Date: 2 /	20/2020	5	SeqNo: 22	292744	Units: mg/k	٢g		
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	SampT	Гуре: МЕ	BLK	Tes	tCode: EF	PA Method	8260B: Vola	tiles Short	List	
Client ID: PBS	Batcl	h ID: 50	537	F	RunNo: 60	6683				
Prep Date: 2/19/2020	Analysis E	Date: 2 /	20/2020	S	SeqNo: 22	292745	Units: mg/k	٢g		
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.
- 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

Page 18 of 20

.

2002628

21-Feb-20

WO#:
QC SUMMARY REPORT Hall Environmental Analysis Laboratory, Inc.

Client: Project:	Marathon HF7 Fed	Oil Comp Com 1	any								
Sample ID:	Ics-50494	SampT	ype: L(cs	Tes	tCode: El	PA Method	8015D Mod:	Gasoline	Range	
Client ID:	LCSS	Batch	1D: 50)494	F	RunNo: 6	6663				
Prep Date:	2/17/2020	Analysis D	ate: 2	/19/2020	S	SeqNo: 2	290946	Units: mg/k	٢g		
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Rang Surr: BFB	ge Organics (GRO)	23 460	5.0	25.00 500.0	0	90.2 91.3	70 70	130 130			
Sample ID:	mb-50494	SampT	уре: М	BLK	Tes	tCode: El	PA Method	8015D Mod:	Gasoline	Range	
Client ID:	PBS	Batch	ID: 50)494	F	RunNo: 6	6663				
Prep Date:	2/17/2020	Analysis D	ate: 2	/19/2020	5	SeqNo: 2	290947	Units: mg/k	٢g		
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Rang Surr: BFB	ge Organics (GRO)	ND 480	5.0	500.0		95.5	70	130			
Sample ID:	Ics-50546	SampT	ype: LC	cs	Tes	tCode: El	PA Method	8015D Mod:	Gasoline	Range	
Client ID:	LCSS	Batch	ID: 50)546	F	RunNo: 6	6683				
Prep Date:	2/19/2020	Analysis D	ate: 2	/20/2020	5	SeqNo: 2	292078	Units: %Re	с		
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	SampT	ype: M	BLK	Tes	tCode: El	PA Method	8015D Mod:	Gasoline	Range	
Client ID:	PBS	Batch	ID: 50)546	F	RunNo: 6	6683				
Prep Date:	2/19/2020	Analysis D	ate: 2	/20/2020	S	SeqNo: 2	292079	Units: %Re	с		
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	SampT	ype: M	s	Tes	tCode: El	PA Method	8015D Mod:	Gasoline	Range	
Client ID:	W-WS-Comp	Batch	ID: 50	537	F	RunNo: 6	6683				
Prep Date:	2/19/2020	Analysis D	ate: 2	/20/2020	S	SeqNo: 2	292833	Units: mg/k	(g-dry		
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Rang	ge Organics (GRO)	25	5.4	26.97	0	92.6	70	130			н
Surr: BFB		500		539.4		93.0	70	130			н
Sample ID:	2002628-005amsd	I SampT	ype: M	SD	Tes	tCode: El	PA Method	8015D Mod:	Gasoline	Range	
Client ID:	W-WS-Comp	Batch	ID: 50)537	F	RunNo: 6	6683				
Prep Date:	2/19/2020	Analysis D	ate: 2	/20/2020	5	SeqNo: 2	292834	Units: mg/k	(g-dry		
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Rang	ge Organics (GRO)	25	5.1	25.53	0	96.0	70	130	1.83	20	н
SULL: RER		460		510.7		89.8	70	130	0	0	н

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

.

2002628

21-Feb-20

WO#:

Client: Project:	Marathon Oil (HF7 Fed Com	Company 1	y											
Sample ID: Ics-50	S	TestCode: EPA Method 8015D Mod: Gasoline Range												
Client ID: LCSS		Batch ID	50	537	RunNo: 66683									
Prep Date: 2/19/2020 Analysis Date: 2/20/2020					S	SeqNo: 2292850 Units: mg/Kg								
Analyte	Res	ult P	QL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual			
Gasoline Range Organi	cs (GRO)	23	5.0	25.00	0	91.2	70	130						
Surr: BFB	4	70		500.0		93.3	70	130						
Sample ID: mb-50	537 S	ampType	: Me	BLK	Tes	tCode: El	PA Method	8015D Mod:	Gasoline	Range				
Client ID: PBS		Batch ID	50	537	F	RunNo: 6	6683							
Prep Date: 2/19/	2020 Analy	/sis Date	2/	20/2020	S	SeqNo: 22	292851	Units: mg/k	٢g					
Analyte	Res	ult P	QL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual			
Gasoline Range Organi	cs (GRO)	ND	5.0											
Surr: BFB	4	50		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

Page 20 of 20

.

WO#: 2002628 21-Feb-20

HALL ENVIRONMENTAL ANALYSIS LABORATORY	Hall Environme TEL: 505-345- Website: ww	ental Analy 490 Albuquerq 3975 FAX: w.hallenvii	sis Laborat 11 Hawkins 10e, NM 87 505-345-4 ronmental.c	tory NE 109 107 com	NE 109 107 om RcptNo: 1				
Client Name: MARATHON OIL COMPA	Work Order Num	ber: 200	2628			RcptNo: 1			
Received By: Erin Melendrez ;	2/15/2020 12:35:0	0 PM		in	int	-			
Completed By: Erin Melendrez	2/15/2020 3:28:51	РМ		in	M.C.	-			
Reviewed By: ENH	2/17/20								
Chain of Custody									
1. Is Chain of Custody sufficiently complete?		Yes		No		Not Present			
2. How was the sample delivered?		Cou	rier						
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					
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 p	preserved?	Yes		No					
8. Was preservative added to bottles?		Yes		No	~				
9. Received at least 1 vial with headspace <1/4" fr	or AQ VOA?	Yes		No		NA 🔽	/		
10. Were any sample containers received broken?		Yes		No		# of preserved	/		
11 Door popopyork motok bettle lebele 2						bottles checked			
(Note discrepancies on chain of custody)		Yes		NO		(<2 or >12 unles	ss noted)		
12. Are matrices correctly identified on Chain of Cu	stody?	Yes	~	No		Adjusted?			
13. Is it clear what analyses were requested?		Yes	~	No		/			
14. Were all holding times able to be met?		Yes	~	No		Checked by: CP2	17170		
(If no, notify customer for authorization.)					1				
Special Handling (if applicable)									
15. Was client notified of all discrepancies with this	order?	Yes		No		NA 🗹			
Person Notified:	Date				-				
By Whom:	Via:	eMa	ail 🗌 Ph	ione 🖂	Fax [In Person			
Regarding:					L see				
Client Instructions:									
16. Additional remarks:									
17. Cooler Information									
Cooler No Temp °C Condition Seal	Intact Seal No	Seal Da	ate S	Signed E	3y				

Client:	hain	of-C	ustody Record	Turn-Arour	nd Time: rd □ Rusi	h				H			N\	/16	20	NM	EN	TAI	ceived by
Mailing	Address	escom			ne: 7 Fec	dComl				w	ww.h	allen	viron	D L	tal.co			OR	OCD: 9/1
				Project #:				490			207	- A	Duqu	ierqu	DAE	M 8/1	09		18/20
Phone	#:							Te	1. 50:	0-040	-397	Ana	vsis	Rec	uest	4107			
email o	r Fax#:			Project Mar	nager:		-	0				04			E)				18:
QA/QC □ Stan	Package: dard		□ Level 4 (Full Validation)	Sha	r Harv	ies ter	s (8021	O / MR(PCB's		CINIC	PO4. S			t/Abser				00 PM
Accredi	tation: AC	□ Az Co □ Othe	ompliance r	Sampler: On Ice:	🛱 Yes	□ No	/ TMB	RO / DR	s/8082	504.1)	01 02/1	NO ₃ ,		(A)	(Presen				
	(Type)			# of Cooler	s:)		TBE	D(GF	icide	por	1010	NO ⁶	7	-in	- El				
Date	Time	Matrix	Sample Name	Container Type and #	Preservative Type	HEAL NO. 7007628	BTEX/ M	TPH:80151	8081 Pest	EDB (Meth	PCRA 8 M	Cl) F, Br,	8260 (VO/	8270 (Sen	Total Colif	4			
1/17/20	1500	501	E-WS-COMP	4029	ice	-001	×	×			211	X							
1/18/20	1515		ES- comp - 4/5'			-002		1				T							
1/1/20	1800		S-WS-Ump			-003					341	1					5.1		
1/18/20	1800		FS-COMP-4'	· · · · ·		-004													
<u>u</u>	1630		W-WS-COMP			-005													
it	1600		W-WS-comp			-006					14								
n	1830		S-WS-COMP			-007				1	10								
1/19/20	1530		N-WS-Comp			-008										1.1			
	1800		FS- COMP- 17'			-009													
	1830		W-ws-comp			-010-													
	1835		E-WS-COMP			-011				1									
V	1840	4	NZ-WS-COMP	4		-012	4	+				V							
Date:	Time: (630 Time:	Retinquist	held by:	Received by:	Via:	Date Time 2 1 zo 630	Rem	rarks Ru For	: ZP	ou H,	Bid	- ho	Id	Sau	np	les			Page 1
Date: Time: Refinquished by: 219/220 900 2100			Received by: Via: OUrien Date Time 1235 2/15/20				Per	S	hello	1	rik	er	21	14/2	200) [6]:	5	48 of 19	

Client: Mailing	Addres	Mat (we	hon scom)	B Standar Project Nam	d □ Rus ne: 7 Fre	hl	HALL ENVIRONMENTAL ANALYSIS LABORATORY www.hallenvironmental.com													
				Project #:				49 Te	01 ⊢ el. 5(ławk 05-3₄	ins N 45-39	NE - 975	- Alt	ouqu Fax	ierqu 505	ue, N	M 8710 -4107)9		1/18/20
Phone	#:											A	naly	/sis	Rec	quest	t j			
email c	or Fax#:			Project Man	ager:	est.	=	Ô					04			nt)	-			18:
QA/QC	Package ndard		Level 4 (Full Validation)	Sho	n Han	nesue	's (802	O / MF	PCB's		SMISO		PO4, S			t/Abse				UU PM
Accred	itation: .AC	□ Az C □ Othe	ompliance er	Sampler: On Ice:	🛛 Yes	□ No	/ TMB	0 / DR	\$/8082	04.1)	or 827(NO ₂ ,		(A)	Presen				
) (Type)			# of Coolers	:	a stalkas jas as	H	(GR	cides	g po	310 0	etals	NO ₃ ,	0	0/-	rm (
Date	Time	Matrix	Sample Name	Cooler Temp Container Type and #	D(including CF): 4	3+0-2(CF)=4.5 (°C) HEAL NO. 7007628	BTEX/ MI	TPH:8015D	8081 Pestic	EDB (Meth	PAHs by 83	RCRA 8 Me	CIJF, Br, 1	8260 (VOA	8270 (Semi	Fotal Colifo				
19/20	1840	soil	NE-FS-COMP-71	4029	ī.ce	-013	X	x				Ī	V							+
1/19/20	1845	l	NW-FS · comp-7'		1	-014	X	X			_		5							
																			4	+
											-							\square	-	+
											-									-
Date:	Time:	Relinquist	ed by:	Received by:	Via:	Date Time	Rem	arks												
Date: 20	(630 Time: 4		ed by:	Received by:	Via: COUri	2/14/20 1630 er Date Time 1235		RUS	nn hel	ov ly '	Tu	f hi c ka	old	sa	-mj	oles	per	2		Page 149



Certificate of Analysis Summary 658990

Weston Solutions, Frisco, TX

Project Name: NF 7 #001

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

 Date Received in Lab:
 Wed 04.15.2020 16:35

 Report Date:
 04.20.2020 12:55

 Project Manager:
 Jessica Kramer

									0	6			
	Lab Id:	658990-00	1	658990-002		658990-0	03	658990-0	04	658990-0	05	658990-0	006
Analysis Requested	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	2)
Anulysis Kequesieu	Depth:	5-7 ft		12-14 ft		6.5-7.5 f	ft	4-5 ft		4-5 ft		6-12 ft	t
	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 1	2:36	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

Page 1 of 28

This analytical report, and the entire data package it represents, has been made for your exclusive and confidential use. The interpretations and results expressed throughout this analytical report represent the best judgment of XENCO Laboratories. XENCO Laboratories assumes no responsibility and makes no warranty to the end use of the data hereby presented. Our liability is limited to the amount invoiced for this work order unless otherwise agreed to in writing.

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

fession kenner

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

	Lab Id:	658990-0	07	658990-00	08	658990-0	09	658990-0	10	658990-0	11	658990-0)12
Analysis Requested	Field Id:	B-02 (6.5-7	7.5)	B-06 (3-4	F)	B-12 (6-12))	B-03 (16.5-17	.5)	B-08 (6-12)	B-07 (5.5-6	.5)
Anulysis Requesieu	Depth:	6.5-7.5 f	t	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 1	04.16.2020 12:36		04.16.2020 12:36		12:36	04.16.2020	12:36	04.16.2020 12:36	
	Analyzed:	04.16.2020	13:23	04.16.2020 1	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 1	12:00								
	Analyzed:			04.16.2020 1	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								

This analytical report, and the entire data package it represents, has been made for your exclusive and confidential use. The interpretations and results expressed throughout this analytical report represent the best judgment of XENCO Laboratories. XENCO Laboratories assumes no responsibility and makes no warranty to the end use of the data hereby presented. Our liability is limited to the amount invoiced for this work order unless otherwise agreed to in writing.

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

fession kenner

Jessica Kramer Project Manager

Final 1.001



Chloride

Certificate of Analysis Summary 658990

Weston Solutions, Frisco, TX

Project Name: NF 7 #001

Date Received in Lab: Wed 04.15.2020 16:35 **Project Id:** Report Date: 04.20.2020 12:55 Robert Appelt **Contact:** Project Manager: Jessica Kramer Carlsbad, NM **Project Location:** Lab Id: 658990-013 658990-014 658990-015 Field Id: B-09 (6-12) B-10 (6-12) B-11 (6-12) Analysis Requested 6-12 ft 6-12 ft Depth: 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 04.16.2020 12:36 04.16.2020 12:36 04.16.2020 12:36 Extracted: Analyzed: 04.16.2020 14:08 04.16.2020 14:26 04.16.2020 14:32

mg/kg

281

RL

10.1

mg/kg

905

RL

9.92

mg/kg

355

Units/RL:

RL

10.0

This analytical report, and the entire data package it represents, has been made for your exclusive and confidential use. The interpretations and results expressed throughout this analytical report represent the best judgment of XENCO Laboratories assumes no responsibility and makes no warranty to the end use of the data hereby presented. Our liability is limited to the amount invoiced for this work order unless otherwise agreed to in writing.

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

Jessica Vermer

Jessica Kramer Project Manager

Page 152 of 198

Final 1.001

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,

Jession Vermer

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

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

BKGD (5-7)
BKGD (12-14)
B-D1 (6.5-7.5)
B-04 (4-5)
B-05 (4-5)
B-13 (6-12)
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)
B-09 (6-12)
B-10 (6-12)
B-11 (6-12)

.





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: Lab Sample I	BKGD (5-7) d: 658990-001		Matrix: Date Col	lected:	Soil 04.14.2020 10:25		Date Received Sample Depth	l:04.1 : 5 - 7	5.2020 16: 7 ft	35
Analytical Mo Tech: Analyst:	ethod: Chloride by EPA MAB MAB	300	Date Prep	p:	04.16.2020 12:36		Prep Method: % Moisture: Basis:	E30 Wet	0P Weight	
Seq Number: Parameter	3123310	Cas Number	Result	RL	MDL	Units	Analysis Da	ate	Flag	Dil
Chloride		16887-00-6	360	9.9	6 0.353	mg/kg	04.16.2020 12	2:28		1

.



Weston Solutions, Frisco, TX

NF 7 #001

Sample Id: Lab Sample Id	BKGD (12-14) l: 658990-002		Matrix: Date Coll	ected:	Soil 04.14.2020 10:45		Date Received Sample Depth	l:04.15.: : 12 - 14	2020 16:3 4 ft	35
Analytical Me Tech: Analyst: Seq Number:	thod: Chloride by EPA MAB MAB 3123310	300	Date Prep):	04.16.2020 12:36		Prep Method: % Moisture: Basis:	E300P Wet W	/eight	
Parameter		Cas Number	Result	RL	MDL	Units	Analysis Da	nte	Flag	Dil
Chloride		16887-00-6	445	10.	1 0.357	mg/kg	04.16.2020 12	2:45		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	1:04.15	5.2020 16:3	35
Lab Sample Io	1: 658990-003		Date Colle	ected:	04.14.2020 12:10		Sample Depth	: 6.5 -	7.5 ft	
Analytical Me	thod: Chloride by EPA	300					Prep Method:	E300	Р	
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 Da	ate	Flag	Dil
Chloride		16887-00-6	489	9.9	0.353	mg/kg	04.16.2020 12	2:50		1

.

Certificate of Analytical Results 658990

Weston Solutions, Frisco, TX

NF 7 #001

Sample Id:	B-04 (4-5)		Matrix:		Soil		Date Received	1:04.15	5.2020 16:	35
Lab Sample Io	l: 658990-004		Date Colle	ected:	04.14.2020 13:00		Sample Depth	:4-5	ft	
Analytical Me	thod: Chloride by EPA	300					Prep Method:	E300	P	
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 Da	ate	Flag	Dil
Chloride		16887-00-6	134	9.9	4 0.352	mg/kg	04.16.2020 12	2:55		1

.

Certificate of Analytical Results 658990

Weston Solutions, Frisco, TX

NF 7 #001

Sample Id:	B-05 (4-5)		Matrix:		Soil		Date Received	1:04.1	5.2020 16:	35
Lab Sample I		Date Coll	lected:	04.14.2020 13:45		Sample Depth	:4-5	ft		
Analytical Me	ethod: Chloride by EPA	300					Prep Method:	E300	0P	
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 Da	ate	Flag	Dil
Chloride		16887-00-6	985	10.	0 0.355	mg/kg	04.16.2020 13	3:01		1

.

Certificate of Analytical Results 658990

Weston Solutions, Frisco, TX

NF 7 #001

Sample Id: B-13 (6-12) Lab Sample Id: 658990-006			Matrix: Date Colle	ected:	Soil 04.14.2020 14:30		Date Received Sample Depth	l:04.15 : 6 - 12	5.2020 16:: 2 ft	35
Analytical Me Tech: Analyst:	thod: Chloride by EPA MAB MAB	300	Date Prep	:	04.16.2020 12:36		Prep Method: % Moisture: Basis:	E300 Wet	P Weight	
Seq Number:	3123310									
Parameter		Cas Number	Result	RL	MDL	Units	Analysis Da	ate	Flag	Dil
Chloride		16887-00-6	646	9.9	2 0.351	mg/kg	04.16.2020 13	3:17		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	1:04.15	5.2020 16:3	35
Lab Sample Io	l: 658990-007		Date Colle	ected:	04.14.2020 16:20		Sample Depth	: 6.5 -	7.5 ft	
Analytical Me	thod: Chloride by EPA	300					Prep Method:	E300	Р	
Tech:	MAB						% Moisture:			
Analyst:	MAB		Date Prep	:	04.16.2020 12:36		Basis:	Wet Y	Weight	
Seq Number:	3123310									
Parameter		Cas Number	Result	RL	MDL	Units	Analysis Da	ate	Flag	Dil
Chloride		16887-00-6	75.5	10.	0 0.354	mg/kg	04.16.2020 13	3:23		1



.

Certificate of Analytical Results 658990

Weston Solutions, Frisco, TX

NF 7 #001

Sample Id:	B-06 (3-4)		Matrix:		Soil		Date Received	1:04.15	5.2020 16:	35
Lab Sample Id: 658990-008			Date Coll	ected:	04.14.2020 16:50		Sample Depth	: 3 - 4	ft	
Analytical Me	thod: Chloride by EPA	300					Prep Method:	E300)P	
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 Da	ate	Flag	Dil
Chloride		16887-00-6	977	9.9	90 0.350	mg/kg	04.16.2020 13	3:28		1

Analytical Method: TPH By SW8015	5 Mod					Prep Method: SV	V8015P		
Tech: DTH						% Moisture:			
Analyst: DTH		Date P	rep: 04	4.16.2020 12:00		Basis: We	et 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	% Recover	ry Units	Limits	s Analysis Date	e Flag		
1-Chlorooctane		111-85-3	99	%	70-135	04.16.2020 13:0	07		
o-Terphenyl		84-15-1	105	%	70-135	04.16.2020 13:0	07		

.

Certificate of Analytical Results 658990

Weston Solutions, Frisco, TX

NF 7 #001

Sample Id:	B-12 (6-12)		Matrix:		Soil		Date Received	1:04.1:	5.2020 16:	35
Lab Sample Io	l: 658990-009		Date Coll	lected:	04.14.2020 15:35		Sample Depth	:6 - 1	2 ft	
Analytical Me	thod: Chloride by EPA	300					Prep Method:	E300)P	
Tech:	MAB						% Moisture:			
Analyst:	MAB		Date Prep	o:	04.16.2020 12:36		Basis:	Wet	Weight	
Seq Number:	3123310									
Parameter		Cas Number	Result	RL	MDL	Units	Analysis Da	ate	Flag	Dil
Chloride		16887-00-6	9.85	9.9	00 0.350	mg/kg	04.16.2020 13	3:34	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	1:04.15	5.2020 16:3	35
Lab Sample Io	l: 658990-010		Date Coll	ected:	04.14.2020 09:50		Sample Depth	: 16.5	- 17.5 ft	
Analytical Me	thod: Chloride by EPA	300					Prep Method:	E300)P	
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 Da	ate	Flag	Dil
Chloride		16887-00-6	1350	10	00 3.55	mg/kg	04.16.2020 13	3:39		10

.

Certificate of Analytical Results 658990

Weston Solutions, Frisco, TX

NF 7 #001

Sample Id:	B-08 (6-12)		Matrix:	:	Soil		Date Received	1:04.1	5.2020 16:	35
Lab Sample I	Lab Sample Id: 658990-011				04.15.2020 10:55		Sample Depth	:6 - 1	2 ft	
Analytical Me	ethod: Chloride by EPA	300					Prep Method:	E300)P	
Tech:	MAB						% Moisture:			
Analyst:	MAB		Date Prep	o:	04.16.2020 12:36		Basis:	Wet	Weight	
Seq Number:	3123310									
Parameter		Cas Number	Result	RL	MDL	Units	Analysis Da	ate	Flag	Dil
Chloride		16887-00-6	334	9.9	8 0.353	mg/kg	04.16.2020 13	3:45		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	1:04.1:	5.2020 16:	35
Lab Sample I		Date Coll	lected:	04.15.2020 11:20		Sample Depth	: 5.5 -	6.5 ft		
Analytical Me	ethod: Chloride by EPA	300					Prep Method:	E300)P	
Tech:	MAB						% Moisture:			
Analyst:	MAB		Date Prep	o:	04.16.2020 12:36		Basis:	Wet	Weight	
Seq Number:	3123310									
Parameter		Cas Number	Result	RL	MDL	Units	Analysis Da	ate	Flag	Dil
Chloride		16887-00-6	386	10.	1 0.358	mg/kg	04.16.2020 14	4:02		1

.

Certificate of Analytical Results 658990

Weston Solutions, Frisco, TX

NF 7 #001

Sample Id:	B-09 (6-12)		Matrix:		Soil		Date Received	1:04.1	5.2020 16:	35
Lab Sample I	Lab Sample Id: 658990-013				04.15.2020 12:00		Sample Depth	:6 - 1	2 ft	
Analytical Me	ethod: Chloride by EPA	300					Prep Method:	E300)P	
Tech:	MAB						% Moisture:			
Analyst:	MAB		Date Prep	o:	04.16.2020 12:36		Basis:	Wet	Weight	
Seq Number:	3123310									
Parameter		Cas Number	Result	RL	MDL	Units	Analysis Da	ate	Flag	Dil
Chloride		16887-00-6	355	10.	0 0.355	mg/kg	04.16.2020 14	4:08		1

.

Certificate of Analytical Results 658990

Weston Solutions, Frisco, TX

NF 7 #001

Sample Id:	B-10 (6-12)		Matrix:		Soil		Date Received	1:04.1	5.2020 16:	.35		
Lab Sample I	d: 658990-014		Date Col	lected:	04.15.2020 12:45		Sample Depth: 6 - 12 ft					
Analytical Me	ethod: Chloride by EPA	300					Prep Method:	E300)P			
Tech:	MAB						% Moisture:					
Analyst:	MAB		Date Prep	p:	04.16.2020 12:36		Basis:	Wet	Weight			
Seq Number:	3123310											
Parameter		Cas Number	Result	RL	MDL	Units	Analysis Da	ate	Flag	Dil		
Chloride		16887-00-6	281	10.	.1 0.357	mg/kg	04.16.2020 14	4:26		1		

.

Certificate of Analytical Results 658990

Weston Solutions, Frisco, TX

NF 7 #001

Sample Id:	B-11 (6-12)		Matrix:		Soil		Date Received	1:04.1	5.2020 16:	.35
Lab Sample I	1: 658990-015		Date Coll	lected:	04.15.2020 13:30		Sample Depth	:0-1	2 π	
Analytical Me	ethod: Chloride by EPA	300					Prep Method:	E300)P	
Tech:	MAB						% Moisture:			
Analyst:	MAB		Date Prep	o :	04.16.2020 12:36		Basis:	Wet	Weight	
Seq Number:	3123310									
Parameter		Cas Number	Result	RL	MDL	Units	Analysis Da	ate	Flag	Dil
Chloride		16887-00-6	905	9.9	2 0.351	mg/kg	04.16.2020 14	4:32		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 Det	ection Limit	LOD Limit of Detection	
PQL	Practical Quantitation Limit	MQL Method Qua	ntitation Limit	LOQ Limit of Quantitation	n
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/Labor	ratory Control Sample Duplicate
MD/S	D Method Duplicate/Samp	le Duplicate	MS	Matrix Spike	MSD: Matrix Spike Duplicate
+ NE	ELAC 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: Seq Number:	Chloride by 3123310	Y EPA 30	0] I CS San	Matrix:	Solid 7701398-1	-BKS		Pr	ep Metho Date Pre	d: E30 p: 04.1	0P 6.2020 1398-1-BSD	
MB Sample Id.	//01396-1-1	MR	Snike			LCSD		Limits	%RPD	RPD	Units	Analysis	
Parameter		Result	Amount	Result	%Rec	Result	%Rec	Linits	/ora D	Limit	Omts	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	y EPA 30	0						Pr	ep Metho	d: E30	0P	
Seq Number:	3123310]	Matrix:	Soil				Date Pre	p: 04.1	6.2020	
Parent Sample Id:	658990-001			MS San	nple Id:	658990-00	01 S		MSI	O Sample	Id: 658	990-001 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	y EPA 30	0						Pr	ep Metho	d: E30	0P	
Seq Number:	3123310]	Matrix:	Soil				Date Pre	p: 04.1	6.2020	
Parent Sample Id:	658990-011			MS San	nple Id:	658990-01	1 S		MSI	O Sample	Id: 658	990-011 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 SV	V8015 M	od						Pr	ep Metho	d: SW	8015P	
Seq Number:	3123293]	Matrix:	Solid				Date Pre	p: 04.1	6.2020	
MB Sample Id:	7701402-1-	BLK		LCS San	nple Id:	7701402-1	-BKS		LCSI	O Sample	Id: 770	1402-1-BSD	
Parameter		MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Gasoline Range Hydrocarbo	ons (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	L0 %1	CS Rec	LCS Flag	LCSI %Re) LCSI c Flag) Li ç	mits	Units	Analysis Date	
1-Chlorooctane		91		1	08		107		70-	-135	%	04.16.2020 12:05	
o-Terphenyl		96		10	08		120		70-	-135	%	04.16.2020 12:05	
Analytical Method:	TPH By SV	V8015 M	od						Pr	ep Metho	d: SW	8015P	
Seq Number:	3123293]	Matrix:	Solid				Date Pre	p: 04.1	6.2020	
				MB San	nple Id:	7701402-1	-BLK						
Parameter				MB Result							Units	Analysis Date	Flag
Motor Oil Range Hydrocarb	oons (MRO)			<11.5							mg/kg	04.16.2020 11:45	

MS/MSD Percent Recovery Relative Percent Difference LCS/LCSD Recovery Log Difference

.

[D] = 100*(C-A) / B RPD = 200* | (C-E) / (C+E) | [D] = 100 * (C) / [B] 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

.

Page 24 of 28

Final 1.001



QC Summary 658990

Weston Solutions

NF 7 #001

Analytical Method: Seq Number: Parent Sample Id:	od	l MS San	Matrix: 1ple Id:	Prep Method: SW8015P ix: Soil Date Prep: 04.16.2020 Id: 658990-008 S MSD Sample Id: 658990-008						8015P .6.2020 990-008 SD			
Parameter		Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Gasoline Range Hydrocarbo	ns (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				M %I	IS Rec	MS Flag	MSD %Ree	o MSD c Flag) Li	mits	Units	Analysis Date	
1-Chlorooctane				1	15		119		70	-135	%	04.16.2020 13:28	
o-Terphenyl			112			118		70	-135	%	04.16.2020 13:28		

MS/MSD Percent Recovery Relative Percent Difference LCS/LCSD Recovery Log Difference

.

[D] = 100*(C-A) / B RPD = 200* | (C-E) / (C+E) | [D] = 100 * (C) / [B] 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: 658990

Houston, TX (281) 240-4200 Dallas, TX (214) 902-0300 San Antonio, TX (210) 509-3334

Project Manager: Rober	+ Appelt	Bill to: (if different	nt) N	120 -	- Melo-	Lie Sa	njari		1	Nork Order Con	nments
Company Name: Use Stor	n Schotrons	Company Nam	e: 1	lovat	non C	is	*	Program	n: UST/PST	PRP Brownfie	Ids RRC Superfund
Address: 2400 D	allas Prenv ste	20 Addres	s:					State	of Project:		
City, State ZIP: FVISCO	= , TX 75034	City, State ZI	P: C	arliste	NIM NIM	1		Reportin	g:Level II	evel III PST/US	
Phone: 24, 205.	4145 Ema	ill:			1			Deliveral	bles: EDD	ADaPT	Other:
Project Name: HF .7	Fed Con # 061	Turn Around				ANALYS	SIS REQU	JEST			Preservative Codes
Project Number:	Rou	utine Coe	· NA	NA						Me	OH: Me
Project Location Carlsba	Rus Rus	sh: 7AAY	0							No	ne: NO
Sampler's Name: Crystal	Spangler Due	e Date:	0							HN	03: HN
PO #:	PO #: Quote #:									H2	S04: H2
SAMPLE RECEIPT	emp Blank: Yes No Wet ic	e: (Yes) No	10	12						но	L: HI
Temperature (°C):	4 Thermomet	ter ID sie	1	5						Nat	OH: Na
Received Intact: (Yes	7	8						Zn	Acetate+ NaOH: Zn		
Cooler Custody Seals: Yes	N/A Correction Facto	r: -0.7 0	13							TAT	state the devices wind by the Lut
Sample Custody Seals: Yes	No N/A Total Container	s: 15 jo	9	Ha							received by 4:00pm
Sample Identification	Matrix Date Time Sampled Sampled	Depth N	2	4							Sample Comments
BKGD (5-7)	5 4/14/2020 1025	5-7' 1	X								
BKGD (12-14)	1 1045	12-14/	X							111 A. 19 (
B-D1 (6.5-75) 1210	65-7.51	X		-	10	-	-		1.1.1	
B-04 (4-5)	1300	4-51	X								
B-05 (4-5)	1335	4-5'	X								
B-13 (6-12)	1430	6-12	X	1.1							
B-02 (615-7.5)	1620	65-7.51	X								
B-06 (3-4)	1650	3-41	X	X							
B-12/6-12)	1535	6-12/	X								
B-03(16.5-17.5)	1 4/15/2020 D950	165-17.5-1	X								
Total 200.7 / 6010 200.8 / 6 Circle Method(s) and Metal(s)	to be analyzed TCLP / SP	13PPM Texas 11 LP 6010: 8RCRA	Al Sb Sb As E	As Ba Be Ba Be Cd	B Cd Ca Cr Co Cu	Cr Co Cu Pb Mn Mo	Fe Pb Mg Ni Se Ag	g Mn Mo g Tî U	Ni K Se Ag	SiO2 Na Sr T 163 1 /	ISn UVZn 245.1 / 7470 / 7471 : Hg
of service. Xenco will be liable only for the cost of Xenco. A minimum charge of \$75.00 will be a	of samples and shall not assume any responsibility of the samples and shall not assume any responsibility of the sach project and a charge of \$5 for	ase order from client comp nsibility for any losses or e each sample submitted to	kpenses inc Kenco, but i	o, its annates urred by the c not analyzed. T	lient if such loss hese terms will l	ors. It assigns es are due to ci be enforced unl	standard term ircumstances b less previously	s and condition eyond the con negotiated.	ntrol		
Relinquished by: (Signature)	Received by: (Signa	ture)	Date/1	Time	Relinqu	ished by:	(Signature		Received by	y: (Signature)	Date/Time
Bel	C P	4/1	5/202	0 1035	2						
	4				4						
					6						
											Revised Date 022619 Rev. 201



Chain of Custody

58990 Work Order No: le

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 Craslbad, 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

Company Name: IN Petron	Splithons	B	III to: (if differe	ent)	nelod	ne Sa	n javi		Work Order Comments					
Address: 2400 h	allas Parksh	1. St. 780	mpany Nam	ie: 1	rarat	hon C	Dil	Progra	am: UST/PST	PRP Brown	fields RRC Superfund			
City, State ZIP: FV30	TV 750	21	Addres	s:	- les	1 1100		Sta	te of Project:	_				
Phone: 214.2	25.4145	Email	ity, State ZI		arisp	ie, NIM		Report	ing:Level II	evel III [] PST/				
Project Name: UF	+ Ed Cont	Entre Enter		1				Deliver	rables: EDD	ADaPT	U Other:			
Project Number	FLC UNA-	UL Turn Aro	und Pres	. 10	1. 10	1 1	ANALYSIS F	EQUEST			Preservative Codes			
Project Location Courlste	dalma	Routine 1	Cod	NA	MA					A	leOH: Me			
Sampler's Name: Crustal	Sander	Due Date	77	0.0						N	lone: NO			
PO #: Quote #: SAMPLE RECEIPT Temp Blank: Yes No Wet Ice: Yes No Temperature (°C): Thermometer ID Received Intact: Uses Not				30						F	INO3: HN			
					~					E	12S04: H2			
				N.	N					H	ICL: HL			
				10	10					N	aOH: Na			
Cooler Custody Sealer Yes No N/A Correction Factor:					00						AT the the later that the later that the later			
Gample Custody Seals. Yes	NO N/A TO	otal Containers:	Der o	K	H					"	received by 4:00pm			
Sample Identification	Matrix Date Sampled	Time Sampled Dep	th yunn	12	F						Sample Comments			
B-08(6-12)	5 4/15/2	00 1055 6-	12/1	X							- and a contraction			
B-07 (5.5-6.5)		1120 5,5-	6.511	X										
B-09(6-12)		1200 6-1	21	X										
B-10 (6-12)		1245 6	21	×										
p-11 (6-12)	V V	1330 6	12/1	X										
					-									
			-		-									
					-	1								
			-		-									
Total 200 7 / 6040 200 8 / 6		awalaw maa oo												
Circle Method(s) and Metal(s)	to be analvzed	TCLP / SPI P 6010	Texas 11	AI Sb	As Ba Be	B Cd Ca C	r Co Cu Fe Pl	Mg Mn Mo	Ni K Se Ag	SiO2 Na Sr	TI Sn U V Zn			
lotice: Signature of this document and relinquis	hment of samples constitut	es a valid purchase order from	client company				D IVIN IVIO INI SI	e Ag TI U		1631	/245.1/7470 /7471 : Hg			
f service. Xenco will be liable only for the cost f Xenco. A minimum charge of \$75.00 will be an	of samples and shall not as	sume any responsibility for a	y losses or exp	enses inci	urred by the clie	ent if such losses	 It assigns standard are due to circumstar 	terms and conditi ces beyond the co	ions Introl					
Relinguished by: (Signature)	Receiver	Lbu: (Signoture)	submitted to Xe	nco, but n	ot analyzed. Th	ese terms will be	enforced unless previ	ously negotiated.						
The	Theceived)), (Signature)	ili-	Date/T	ime	Relinquis	shed by: (Signat	ure)	Received by	: (Signature)	Date/Time			
14	7		7/15	12020	1435	2								
						4								
						b.								
											Regional Diale 000040 Dec. page			

XENCO Laboratories

Prelogin/Nonconformance Report- Sample Log-In

Acceptable Temperature Range: 0 - 6 degC						
Air and Metal samples A	cceptable Range: Ambient					
Temperature Measuring	device used : T-NM-007					
eipt Checklist	Comments					
1.4						
Yes						
Yes						
Yes						
Yes						
Yes						
Yes						
No						
Yes						
Yes						
Yes						
Yes						
Yes						
Yes						
Yes						
Yes						
No						
N/A						
	Acceptable Temperature Air and Metal samples A Temperature Measuring eeipt Checklist 1.4 Yes Yes Yes Yes Yes Yes No Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes					

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

Analyst:

.

PH Device/Lot#:

Checklist completed by: Elizabeth McClellan Checklist reviewed by: Jessica Kramer

Date: 04.16.2020

Jessica Kramer

Date: 04.16.2020



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

	Lab Id:	661758-0	01	661758-002		661758-003		661758-004		661758-005		661758-0)06
Analysis Requested	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)
Analysis Requested	Depth:	6.5-7.5 1	t	20-21 ft		1-5.5 ft		1-5 ft		1-5.5 ft		1-5.5 f	ìt
	Matrix:	SOIL	SOIL		SOIL		SOIL			SOIL		SOIL	,
	Sampled:	05.14.2020	05.14.2020 09:40		05.14.2020 11:15		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	05.15.2020 17:15		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	05.15.2020 21:37		05.15.2020 21:43		05.15.2020 21:48		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

This analytical report, and the entire data package it represents, has been made for your exclusive and confidential use. The interpretations and results expressed throughout this analytical report represent the best judgment of XENCO Laboratories. XENCO Laboratories assumes no responsibility and makes no warranty to the end use of the data hereby presented. Our liability is limited to the amount invoiced for this work order unless otherwise agreed to in writing.

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

fession kenner

Jessica Kramer Project Manager

Final 1.000



Certificate of Analysis Summary 661758

Weston Solutions, Frisco, TX

Project Name: HF7 Fed Com#001

Project Id:Contact:Robert AppeltProject Location:Carlsbad NM

 Date Received in Lab:
 Fri 05.15.2020 11:07

 Report Date:
 05.19.2020 09:40

 Project Manager:
 Jessica Kramer

	Lab Id:	661758-00	07	661758-00	661758-008		09	661758-0	10		
Analysis Paguastad	Field Id:	B-05-2 (1-4	B-05-2 (1-4)		B-13-2-1 (2-6)		B-12-2-1 (0-4)				
Analysis Kequesieu	Depth:	1-4 ft	1-4 ft		2-6 ft		0-4 ft				
	Matrix:	SOIL	SOIL		SOIL		SOIL				
	Sampled:	05.14.2020	05.14.2020 13:30		05.14.2020 13:55		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 2	05.15.2020 22:53		05.15.2020 22:59		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		

This analytical report, and the entire data package it represents, has been made for your exclusive and confidential use. The interpretations and results expressed throughout this analytical report represent the best judgment of XENCO Laboratories. XENCO Laboratories assumes no responsibility and makes no warranty to the end use of the data hereby presented. Our liability is limited to the amount invoiced for this work order unless otherwise agreed to in writing.

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

fession kramer

Jessica Kramer Project Manager

Final 1.000

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,

Jession 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 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)
B-05-2 (1-4)
B-13-2-1 (2-6)
B-12-2-1 (0-4)
Dup -01

.

Sample Cross Reference 661758

Weston Solutions, Frisco, TX

HF7 Fed Com#001

Matrix	Date Collected	Sample Depth	Lab Sample Id
S	05.14.2020 09:40	6.5 - 7.5 ft	661758-001
S	05.14.2020 11:15	20 - 21 ft	661758-002
S	05.14.2020 11:30	1 - 5.5 ft	661758-003
S	05.14.2020 12:00	1 - 5 ft	661758-004
S	05.14.2020 12:20	1 - 5.5 ft	661758-005
S	05.14.2020 12:30	1 - 5.5 ft	661758-006
S	05.14.2020 13:30	1 - 4 ft	661758-007
S	05.14.2020 13:55	2 - 6 ft	661758-008
S	05.14.2020 14:30	0 - 4 ft	661758-009
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



Page 184 of 198

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 3 Tech: MAB	300			Prep Method: % Moisture:	E300P
Analyst: MAB		Date Prep:	05.15.2020 17:15	Basis:	Wet Weight
Seq Number: 3126178					
Parameter	Cas Number	Result RL	Units	Analysis Da	ite Flag Dil

492

Chloride

.

16887-00-6

9.98

mg/kg 05.15.2020 21:37

1



Page 185 of 198

Certificate of Analytical Results 661758

Weston Solutions, Frisco, TX

HF7 Fed Com#001

Sample Id: B-03-2-2 (20-21)		Matrix:	Soil	Date Receive	d:05.15.2020 11:	07
Lab Sample Id: 661758-002		Date Collected	1:05.14.2020 11:15	Sample Depth	n: 20 - 21 ft	
Analytical Method: Chloride by El Tech: MAB	PA 300			Prep Method: % Moisture:	E300P	
Analyst: MAB		Date Prep:	05.15.2020 17:15	Basis:	Wet Weight	
Seq Number: 3126178						
Parameter	Cas Number	Result RL	Ur	its Analysis D	ate Flag	Dil

757

Chloride

.

16887-00-6

9.98

mg/kg 05.15.2020 21:43

1

.

Page 8 of 21

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	1:05.15.2020 11:07
Lab Sample Id: 661758-003		Date Collected	1:05.14.2020 11:30	Sample Depth	: 1 - 5.5 ft
Analytical Method: Chloride by EP. Tech: MAB	A 300			Prep Method: % Moisture:	E300P
Analyst: MAB		Date Prep:	05.15.2020 17:15	Basis:	Wet Weight
Seq Number: 3126178					
Parameter	Cas Number	Result RL	Units	Analysis Da	ate Flag Dil

Chloride

.

16887-00-6 **205**

9.94

mg/kg 05.15.2020 21:48

1

.

Page 9 of 21



Certificate of Analytical Results 661758

Weston Solutions, Frisco, TX

HF7 Fed Com#001

Sample Id: B-06-3 (1-5)		Matrix:	Soil	Date Receive	d:05.15.2020 11:07
Lab Sample Id: 661758-004		Date Collecte	ed: 05.14.2020 12:00	Sample Deptl	n: 1 - 5 ft
Analytical Method: Chloride by EPA 3 Tech: MAB	300			Prep Method: % Moisture:	E300P
Analyst: MAB		Date Prep:	05.15.2020 17:15	Basis:	Wet Weight
Seq Number: 3126178					
Parameter	Cas Number	Result R	L Ur	its Analysis D	ate Flag Dil

Chloride

.

16887-00-6 **548**

9.98

mg/kg 05.15.2020 21:54

1

.

Page 10 of 21



Page 188 of 198

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 3 Tech: MAB	00			Prep Method: % Moisture:	Е300Р
Analyst: MAB Seq Number: 3126178		Date Prep:	05.15.2020 17:15	Basis:	Wet Weight
Parameter	Cas Number I	Result RL	Units	Analysis Da	nte Flag Dil

Chloride

.

16887-00-6 222

10.1

mg/kg 05.15.2020 22:00

1

.

Page 11 of 21



Page 189 of 198

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 3 Tech: MAB	00			Prep Method: % Moisture:	E300P
Analyst: MAB Seq Number: 3126180		Date Prep:	05.15.2020 17:17	Basis:	Wet Weight
Parameter	Cas Number	Result RL	Units	Analysis Da	te Flag Dil

749

Chloride

.

16887-00-6

9.90

mg/kg 05.15.2020 22:35

1

.

Page 12 of 21

Page 190 of 198

1

.

Certificate of Analytical Results 661758

Weston Solutions, Frisco, TX

HF7 Fed Com#001

Sample Id: B-05-2 (1-4)		Matrix:	Soil	Date Receive	d:05.15.2020 11:07
Lab Sample Id: 661758-007		Date Collected	1:05.14.2020 13:30	Sample Depth	n: 1 - 4 ft
Analytical Method: Chloride by EPA 3 Tech: MAB	800			Prep Method: % Moisture:	E300P
Analyst: MAB		Date Prep:	05.15.2020 17:17	Basis:	Wet Weight
Seq Number: 3126180					
Parameter	Cas Number	Result RL	Uni	ts Analysis D	ate Flag Dil

Chloride

.

16887-00-6 119

9.92

mg/kg 05.15.2020 22:53



Page 191 of 198

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	1:05.15.2020 11:07
Lab Sample Id: 661758-008		Date Collected	1:05.14.2020 13:55	Sample Depth	: 2 - 6 ft
Analytical Method: Chloride by EPA 3 Tech: MAB	00			Prep Method: % Moisture:	E300P
Analyst: MAB Seq Number: 3126180		Date Prep:	05.15.2020 17:17	Basis:	Wet Weight
Parameter	Cas Number	Result RL	Units	Analysis Da	ate Flag Dil

Chloride

.

16887-00-6 **244**

9.92

05.15.2020 22:59

mg/kg

1

.

Page 14 of 21



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	1:05.15.2020 11:07
Lab Sample Id: 661758-009		Date Collected	1:05.14.2020 14:30	Sample Depth	:0-4 ft
Analytical Method: Chloride by EPA Tech: MAB	300			Prep Method: % Moisture:	E300P
Analyst: MAB		Date Prep:	05.15.2020 17:17	Basis:	Wet Weight
Seq Number: 3126180					
Parameter	Cas Number	Result RL	Units	Analysis Da	ate Flag Dil

58.0

Chloride

.

16887-00-6

9.96

mg/kg 05.15.2020 23:05

1

.

Page 15 of 21



.

Certificate of Analytical Results 661758

Weston Solutions, Frisco, TX

HF7 Fed Com#001

Sample Id:	Dup -01		Matrix:	Soil		Date Received	1:05.15.	2020 11:0	07
Lab Sample Io	1: 661758-010		Date Coll	ected: 05.14.2020 00:00					
Analytical Me	ethod: Chloride by EPA	300				Prep Method:	E300P	•	
Tech:	MAB					% Moisture:			
Analyst:	MAB		Date Prep	: 05.18.2020 12:00		Basis:	Wet W	/eight	
Seq Number:	3126302								
Parameter		Cas Number	Result	RL	Units	Analysis D	ate	Flag	Dil
Chloride		16887-00-6	216	10.0	mg/kg	05.18.2020 1	5:40		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 Det	ection Limit	LOD Limit of Detection	
PQL	Practical Quantitation Limit	MQL Method Qua	ntitation Limit	LOQ Limit of Quantitation	n
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/Labor	ratory Control Sample Duplicate
MD/S	D Method Duplicate/Samp	le Duplicate	MS	Matrix Spike	MSD: Matrix Spike Duplicate
+ NE	ELAC 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: Seq Number: MB Sample Id:	Chloride by 3126178 7703456-1-I	7 EPA 3 (BLK)0	LCS Sar	Matrix: nple Id:	Solid 7703456-	1-BKS		P1 LCS	rep Metho Date Pr D Samplo	od: E30 ep: 05.1 e Id: 770	0P 15.2020 3456-1-BSD	
Parameter		MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Bosult	LCSD	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: Seq Number: MB Sample Id:	alytical Method:Chloride by EPA 300q Number:3126180B Sample Id:7703457-1-BL K			LCS Sar	Matrix: nple Id:	Solid 7703457-1-BKS			Prep Method: E300P Date Prep: 05.15.2020 LCSD Sample Id: 7703457-1-BSD				
Parameter		MB Result	Spike	LCS Result		LCSD Bosult	LCSD	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: Seq Number: MB Sample Id:	al Method: Chloride by EPA 300 ber: 3126302 bla Id: 7703548 1 PLK			Matrix: Solid				Prep Method: E300P Date Prep: 05.18.2020 LCSD Sample Id: 7703548-1-BSD					
Parameter		MB	Spike	LCS	LCS	LCSD	LCSD	Limits	%RPD	RPD	Units	Analysis	Flag
Chloride		Result <10.0	Amount 250	Result 250	%Rec 100	Result 248	%Rec 99	90-110	1	20	mg/kg	Date 05.18.2020 12:55	
Analytical Method: Seq Number:	Chloride by EPA 300 3126178			Matrix: Soil				Prep Method: E300P Date Prep: 05.15.2020					
Paramatar	001755-004	Parent	Spike	MS	MS	MSD	MSD	Limits	%RPD	RPD Sumpt	Units	Analysis	Flag
Chloride		Result 72.7	Amount 200	Result 261	%Rec 94	Result 262	%Rec 95	90-110	0	Limit 20	mg/kg	Date 05.15.2020 19:33	Thag
Analytical Method: Seq Number: Parent Sample Id:	Chloride by EPA 300 3126178			Matrix: Soil MS Sample Id: 6617			Soil 661755-014 S			Prep Method: E300P Date Prep: 05.15.2020 MSD Sample Id: 661755-014 SD			
Parameter		Parent	Spike	MS	MS	MSD	MSD	Limits	%RPD	RPD	Units	Analysis	Flag
Chloride		Result 87.3	Amount 202	Result 294	%Rec 102	Result 289	%Rec 101	90-110	2	Limit 20	mg/kg	Date 05.15.2020 20:56	8
Analytical Method: Seq Number:	Chloride by 3126180	7 EPA 30	00	MS Sat	Matrix:	Soil 661758-00)6 S		Pi	rep Metho Date Pr D Sample	od: E30 ep: 05.1	0P 15.2020 758-006 SD	
Davamata-	001/08-000	Parent	Spike	MS	MS	MSD	MSD	Limits	%RPD	RPD	Units	Analysis	Flag
r arameter		Result	Amount	Result	%Rec 99	Result	%Rec 99	90-110	0	Limit	mø/ko	Date 05.15.2020 22:41	1 lag
		777	170	JTJ	,,	747	,,	20 110	v	20	<u>6</u> , kg		

MS/MSD Percent Recovery Relative Percent Difference LCS/LCSD Recovery Log Difference

.

[D] = 100*(C-A) / B RPD = 200* | (C-E) / (C+E) | [D] = 100 * (C) / [B] 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

.

Page 18 of 21

Final 1.000



QC Summary 661758

Weston Solutions

HF7 Fed Com#001

Analytical Method:	Chloride by	EPA 300)						Pr	ep Metho	d: E30	0P	
Seq Number:	3126302]	Matrix:	Soil				Date Pre	ep: 05.1	8.2020	
Parent Sample Id:	661821-001			MS San	nple Id:	661821-00	01 S		MSI	O Sample	Id: 661	821-001 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							Pr	ep Metho	od: E30	0P	
Seq Number:	3126302]	Matrix:	Soil				Date Pre	ep: 05.1	8.2020	
Parent Sample Id:	661821-011			MS San	nple Id:	661821-01	1 S		MSI	O Sample	Id: 661	821-011 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 Relative Percent Difference LCS/LCSD Recovery Log Difference

.

[D] = 100*(C-A) / B RPD = 200* | (C-E) / (C+E) | [D] = 100 * (C) / [B] 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

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)	Work Order N	lo: <u>44178</u>
Phoenix, AZ (480) 355-0900 Atlanta, GA (770) 449-8800 Tampa, FL (813) 620-2000 West Palm Beach, FL (56	51) 689-6701 <u>www.xenco.com</u>	Page _ of _/
Company Name: 10 PSton Solutions Company Name: March 4000 Dil	Program: UST/PST PRP Brow	
Address: 2600 Dellas Prkny Stelle Address:	State of Project:	
City, State ZIP: Frisco, Tx 75034 City, State ZIP: Carlsbac, NM	Reporting:Level IILevel III PS	T/UST TRRP Level IV
Phone: 214, 205, 4145 Email:	Deliverables: EDD ADaP	T D Other:
Project Name: HF7 Fed Can # TD1 Turn Around ANALYSIS RE	QUEST	Preservative Codes
Project Number: Routine Code		MeOH: Me
Project Location Carlsbac, NM Rush: 7 DAY 0		None: NO
Sampler's Name: Cristal Spangler Due Date:		HNO3: HN
PO #: Quote #:		H2S04: H2
SAMPLE RECEIPT Temp Blank: Ves No Wet Ice: Yes No o V		HCL: HL
Temperature (°C): 1.4 Thermometer ID		NaOH: Na
Received Intact: Yes No T - NM OO4		Zn Acetate+ NaOH: Zn
Sample Custody Seals: Yes No N/A Total Containers: 12		TAT starts the day received by the lab, i received by 4:00pm
ab ID Sample Identification Matrix Date Sampled Time Sampled Depth E		Sample Comments
1 B-03-2-1 (6.5-25) 8 5/14/2020 0740 6.57.5 1 X		
2 B-03-2-200-21 1118 20-21		
1 B-01-2 (1 C) 130 1-2.5		
1 D UC D (1-5) 1/20 (-5)		
B-10-2-111-FF) 1230 185F3		kar Inch
7 B-15-2 (1-4) 1332 14 1		NOS/MISIS
8 3-13-2-1 (2-6) 1385 26 1		
7 B-12-2-1 (0-4) 1430 D-4		
0 Dup-01 + 4 0000 + X		
Total 200.7 / 6010 200.8 / 6020: Circle Method(s) and Metal(s) to be analyzed Structure of the total of total of the total of total	Mg Mn Mo Ni K Se Ag SiO2 Na S Ag TLU	Sr TI Sn U V Zn
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 to f 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 circumstance 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 previo	terms and conditions es beyond the control usly negotiated.	
Received by: (Signature) Received by: (Signature) Date/Time Relinquished by: (Signature)	ure) Received by: (Signature	e) Date/Time
She allthe 5/15/20 11:07 2		
6		

XENCO Laboratories

Prelogin/Nonconformance Report- Sample Log-In

Client: Weston Solutions	Acceptable Tem	Acceptable Temperature Range: 0 - 6 degC Air and Metal samples Acceptable Range: Ambient							
Date/ Time Received: 05.15.2020 11.07.00 AM	Air and Metal sa								
Work Order #: 661758	Temperature Measuring device used : T-NM-007								
Sample Rec	eipt 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 Vramer

Date: 05.18.2020