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	NCE2003747970
District RP	
Facility ID	
Application ID	

Release Notification

Responsible Party

Responsible Party Marathon Oil Permian LLC	OGRID 372098
Contact Name Melodie Sanjari	Contact Telephone 575-988-0561
Contact email msanjari@marathonoil.com	Incident # *(assigned by OCD)*
Contact mailing address 4111 S. Tidwell Rd., Carlsbad, NM 8220	

Location of Release Source

Latitude 32.39820387 Longitude -103.6683698
(NAD 83 in decimal degrees to 5 decimal places)

Site Name: Frizzle Fry 1H/2H/7H	Site Type: Oil & Gas Drilling Facility
Date Release Discovered 1/17/2020	API# *(if applicable)*

Unit Letter	Section	Township	Range	County
D	15	22S	32E	Lea

Surface Owner: ☐ State ☒ Federal ☐ Tribal ☐ Private (*Name:* _____)

Nature and Volume of Release

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

☐ Crude Oil	Volume Released (bbls)	Volume Recovered (bbls)
☐ Produced Water	Volume Released (bbls)	Volume Recovered (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) Fresh water, rain water and frac fluid	Volume/Weight Released (provide units) 55 bbls	Volume/Weight Recovered (provide units) 55 bbls

Cause of Release
During frac operations, a packing nut failure occurred on frac pump # 3084. The pump was shut down and was isolated until the end of the stage. While pumping operations continued frac fluid was being released through a damaged check valve and blown packing into the containment without being identified. All released fluid was contained on location. Due to presence of equipment and for safety reasons, remediation will take place after the frac is complete before flow back begins (~3 weeks from discovery).

March 20, 2020 Vertex Project #: 20E-00140-002

Spill Closure Report: Frizzle Fry 1H/2H/7H
Unit D, Section 15, Township 22 South, Range 32 East
County: Lea
API: 30-025-45892
Tracking Number: NCE2003747970

Prepared For: Marathon Oil Permian, LLC
4111 South Tidwell Road
Carlsbad, New Mexico 88220

New Mexico Oil Conservation Division – District 1 – Hobbs
1625 North French Drive
Hobbs, New Mexico 88240

Marathon Oil Permian, LLC (Marathon) retained Vertex Resource Services Inc. (Vertex) to conduct a spill assessment and remediation for a mixed frac fluid, freshwater and rainwater release that occurred at Frizzle Fry 1H/2H/7H, API 30-025-45892 (hereafter referred to as "Frizzle Fry"). Marathon provided notification of the spill to New Mexico Oil Conservation Division (NM OCD) District 1 and the Bureau of Land Management (BLM), who owns the property, on January 19, 2020, via email. The initial C-141 Release Notification (Attachment 1) was submitted on January 28, 2020. The NM OCD tracking number for this incident is NCE2003747970.

This letter provides a description of the spill assessment and remediation activities, and demonstrates that closure criteria established in 19.15.29.12 *New Mexico Administrative Code* (NMAC; New Mexico Oil Conservation Division, 2018) have been met and all applicable regulations are being followed. This document is intended to serve as a final report to obtain approval from NM OCD for closure of this release.

Incident Description

On January 17, 2020, a release occurred at Marathon's Frizzle Fry site when, after a packing nut failed on frac pump #3084 and it was shut down, frac fluid from continued pumping operations was released, unnoticed, through a damaged check valve and blown packing. This incident resulted in the release of approximately 55 barrels (bbls) of frac fluid mixed with freshwater onto a contingency liner that was emplaced prior to the start of fracking. A vac truck, which was available on-site at the time the release was discovered, recovered 55 bbls of liquid, consisting of a mix of frac fluid, freshwater and rainwater. The spill was contained on-site and no frac fluid was released into undisturbed areas or waterways.

Site Characterization

The release at Frizzle Fry occurred on BLM-owned land, N 32.39820387, W 103.6683698, approximately 30 miles east of Carlsbad, New Mexico. The legal description for the site is Unit D, Section 15, Township 22 South, Range 32 East, Lea County, New Mexico. This location is within the Permian Basin in southeast New Mexico and has historically been used for oil and gas exploration and production, and rangeland. An aerial photograph and site schematic are included in

Attachment 2.

Frizzle Fry is typical of oil and gas exploration and production sites in the western portion of the Permian Basin, and is currently used for oil and gas production, and storage. The following sections specifically describe the release area on the central portion of the wellpad where the wellheads are located.

The surrounding landscape is associated with sandy plains typical of elevations of 3,000 to 3,900 feet above sea level. The climate is semi-arid, with average annual precipitation ranging between 10 and 12 inches. Historically, the plant community was dominated by grasses, which stabilized the potentially erosive sandy soils; however, more recent conditions, resulting from fire suppression and extensive grazing, show increased woody plant abundance. The dominant grass species are dropseeds, threeawns and bluestems, and the dominant shrub species are shinnery oak and soapweed yucca. Bare areas are only occasionally present throughout the terrain (United States Department of Agriculture, Natural Resources Conservation Service, 2020). Limited to no vegetation is allowed to grow on the compacted wellpad.

The Geological Map of New Mexico indicates the surface geology at Frizzle Fry is comprised of a mix of Qp and Qep – piedmont alluvial and eolian deposits, that include eolian sands interlayed with piedmont-slope deposits (New Mexico Bureau of Geology and Mineral Resources, 2020). The Natural Resources Conservation Service (NRCS) Web Soil Survey characterizes the soil at the site as Pyote loamy fine sand, characterized by loamy fine sand over deep fine sandy loam. It tends to be well-drained with negligible runoff and low available moisture levels in the soil profile (United States Department of Agriculture, Natural Resources Conservation Service, 2020). There is low potential for karst geology to be present near Frizzle Fry (United States Department of the Interior, Bureau of Land Management, 2020).

There is no surface water located on-site. The nearest significant watercourse, as defined in Subsection P of 19.15.17.7 NMAC, is located approximately a half mile southeast of the site (United States Fish and Wildlife Service, 2020). There are no continuously flowing watercourses, lakebeds, sinkholes, playa lakes, or other critical water or community features as outlined in Paragraph (4) of Subsection C of 19.15.29.12 NMAC near Frizzle Fry.

The nearest active wells to the site include a United States Geologic Survey (USGS)-identified well from 1996, located approximately 1.3 miles southeast of the site, and a New Mexico Office of the State Engineer (NM OSE) well, located approximately 1.4 miles southeast of the site (New Mexico Office of the State Engineer, New Mexico Water Rights Reporting System, 2020). Depth to groundwater at the USGS well is 435 feet below ground surface (bgs; United States Department of the Interior, United States Geological Survey, 2020) and depth to groundwater at the NM OSE well is 360 feet bgs (New Mexico Office of the State Engineer, New Mexico Water Rights Reporting System, 2020). Documentation pertaining to site characterization and depth to groundwater determination is included in Attachment 3.

Closure Criteria Determination

Using site characterization information, a closure criteria determination worksheet (Attachment 3) was completed to determine if the release was subject to any of the special case scenarios outlined in Paragraph (4) of Subsection C of 19.15.29.12 NMAC.

Based on data included in the closure criteria determination worksheet, the release at Frizzle Fry is not subject to the requirements of Paragraph (4) of Subsection C of 19.15.29.12 NMAC and the closure criteria for the site are determined

to be associated with the following constituent concentration limits based on depth to groundwater.

Table 1. Closure Criteria for Soils Impacted by a Release

Depth to Groundwater	Constituent	Limit
>100 feet	Chloride	20,000 mg/kg
	TPH[1] (GRO + DRO + MRO)	2,500 mg/kg
	GRO + DRO	1,000 mg/kg
	BTEX[2]	50 mg/kg
	Benzene	10 mg/kg

[1]Total petroleum hydrocarbons (TPH) = gasoline range organics (GRO) + diesel range organics (DRO) + motor oil range organics (MRO)
[2]Benzene, toluene, ethylbenzene and xylenes (BTEX)

Remedial Actions

Because a temporary liner was in place at the time of the incident, soil sample field screening across the potentially impacted area showed no indications of the presence of hydrocarbons, chlorides or other contaminants of concern, and no excavation or remediation was necessary. On February 13, 2020, following completion of fracking activities, Vertex provided 48-hour notification of confirmation sampling to NM OCD, as required by Subparagraph (a) of Paragraph (1) of Subsection D 19.15.29.12 NMAC (Attachment 4). Confirmatory samples were collected on February 17, 2020. The Daily Field Report (DFR) associated with this visit is included in Attachment 5.

A total of 16 five-point composite confirmatory samples were collected at depths ranging between ground surface and 0.5 feet bgs from the area of potential impact where this release occurred on the wellpad. Each composite sample was representative of no more than 200 square feet per the alternate sampling method outlined in Subparagraph (c) of Paragraph (1) of Subsection D 19.15.29.12 NMAC, which does not require prior NM OCD approval. The composite samples were placed into laboratory-provided containers, preserved on ice, and submitted to a National Environmental Laboratory Accreditation Program (NELAP)-approved laboratory for chemical analysis.

Laboratory analyses included Method 300.0 for chlorides, Method 8021B for volatile organics, including BTEX, and EPA Method 8015 for TPH, including MRO, DRO and GRO. Confirmatory sample analytical data are summarized in Attachment 6. Laboratory data reports and chain of custody forms are included in Attachment 7.

A GeoExplorer 7000 Series Trimble global positioning system (GPS) unit was used to map the approximate center of each of the five-point composite samples. The confirmatory sample locations are presented on Figure 1 (Attachment 2). Relevant equipment and prominent features/reference points at the site were mapped as well.

Closure Request

Vertex does not recommend any additional remediation action to address the release at Frizzle Fry. Laboratory analyses of the final confirmatory samples showed constituent of concern concentration levels below NM OCD closure criteria for areas where depth to groundwater is greater than 100 feet bgs as shown in Table 1. There are no anticipated risks to human, ecological or hydrological receptors associated with the release site.

Based on the location of the release on an active wellpad, Vertex requests that restoration and reclamation of the release area be deferred until such time as the well is plugged, the wellpad and production equipment are removed, and the pad reclaimed per 19.15.29.13 NMAC regulations.

Vertex requests that this incident (NCE2003747970) be closed as all closure requirements set forth in Subsection E of 19.15.29.12 NMAC have been met. Marathon certifies that all information in this report and the attachments is correct, and that they have complied with all applicable closure requirements and conditions specified in Division rules and directives to meet NM OCD requirements to obtain closure on the January 17, 2020, release at Frizzle Fry 1H/2H/7H.

Should you have any questions or concerns, please do not hesitate to contact the undersigned at 505.506.0040 or ngordon@vertex.ca.

Sincerely,

Natalie Gordon
PROJECT MANAGER

Attachments

Attachment 1. NM OCD C-141 Report
Attachment 2. Site Schematic and Confirmatory Sample Locations
Attachment 3. Closure Criteria for Soils Impacted by a Release Research Determination Documentation
Attachment 4. Required 48-hr Notification of Confirmation Sampling to Regulatory Agencies
Attachment 5. Daily Field Report(s) with Photographs
Attachment 6. Confirmatory Sampling Laboratory Results
Attachment 7. Laboratory Data Reports/COCs

References

New Mexico Bureau of Geology and Mineral Resources. (2020). *Interactive Geologic Map.* Retrieved from http://geoinfo.nmt.edu.

New Mexico Office of the State Engineer, New Mexico Water Rights Reporting System. (2020). *Water Column/Average Depth to Water Report.* Retrieved from http://nmwrrs.ose.state.nm.us/nmwrrs/waterColumn.html.

New Mexico Oil Conservation Division. (2018). *New Mexico Administrative Code – Natural Resources and Wildlife Oil and Gas Releases*. Santa Fe, New Mexico.

United States Department of Agriculture, Natural Resources Conservation Service. (2020). *Web Soil Survey*. Retrieved from https://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx.

United States Department of the Interior, Bureau of Land Management. (2020). *New Mexico Cave/Karsts*. Retrieved from https://www.blm.gov/programs/recreation/recreation-programs/caves/new-mexico.

United States Department of the Interior, United States Geological Survey. (2020). *Groundwater for New Mexico: Water Levels*. Retrieved from https://nwis.waterdata.usgs.gov/nm/nwis/gwlevels?.

United States Fish and Wildlife Service. (2020). *National Wetlands Inventory*. Retrieved from https://www.fws.gov/wetlands/data/Mapper.html.

Limitations

This report has been prepared for the sole benefit of Marathon Oil Permian, LLC (Marathon). This document may not be used by any other person or entity, with the exception of the New Mexico Oil Conservation Division, without the express written consent of Vertex Resource Services Inc. (Vertex) and Marathon. Any use of this report by a third party, or any reliance on decisions made based on it, or damages suffered as a result of the use of this report are the sole responsibility of the user.

The information and conclusions contained in this report are based upon work undertaken by trained professional and technical staff in accordance with generally accepted scientific practices current at the time the work was performed. The conclusions and recommendations presented represent the best judgement of Vertex based on the data collected during the assessment. Due to the nature of the assessment and the data available, Vertex cannot warrant against undiscovered environmental liabilities. Conclusions and recommendations presented in this report should not be considered legal advice.

ATTACHMENT 1

District I
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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	
District RP	
Facility ID	
Application ID	

Release Notification

Responsible Party

Responsible Party Marathon Oil Permian LLC	OGRID 372098
Contact Name Melodie Sanjari	Contact Telephone 575-988-0561
Contact email msanjari@marathonoil.com	Incident # *(assigned by OCD)*
Contact mailing address 4111 S. Tidwell Rd., Carlsbad, NM 8220	

Location of Release Source

Latitude 32.39820387 Longitude -103.6683698
(NAD 83 in decimal degrees to 5 decimal places)

Site Name: Frizzle Fry 1H/2H/7H	Site Type: Oil & Gas Drilling Facility
Date Release Discovered 1/17/2020	API# *(if applicable)*

Unit Letter	Section	Township	Range	County
D	15	22S	32E	Lea

Surface Owner: ☐ State ☒ Federal ☐ Tribal ☐ Private (*Name:* _____)

Nature and Volume of Release

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

☐ Crude Oil	Volume Released (bbls)	Volume Recovered (bbls)
☐ Produced Water	Volume Released (bbls)	Volume Recovered (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) Fresh water, rain water and frac fluid	Volume/Weight Released (provide units) 55 bbls	Volume/Weight Recovered (provide units) 55 bbls

Cause of Release
During frac operations, a packing nut failure occurred on frac pump # 3084. The pump was shut down and was isolated until the end of the stage. While pumping operations continued frac fluid was being released through a damaged check valve and blown packing into the containment without being identified. All released fluid was contained on location. Due to presence of equipment and for safety reasons, remediation will take place after the frac is complete before flow back begins (~3 weeks from discovery).

State of New Mexico
Oil Conservation Division

Incident ID	
District RP	
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 party consider this a major release? Based on volume (>25 bbls)

If YES, was immediate notice given to the OCD? By whom? To whom? When and by what means (phone, email, etc)?

Yes by MOC (Melodie Sanjari) via email to NMOCD District 1 and BLM email addresses on 1/19. Delay was due to getting accurate measurement of bbls spilt and recovered

Initial Response

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

☒ The source of the release has been stopped.

☒ The impacted area has been secured to protect human health and the environment.

☒ Released materials have been contained via the use of berms or dikes, absorbent pads, or other containment devices.

☒ All free liquids and recoverable materials have been removed and managed appropriately.

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

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

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

Printed Name: Melodie Sanjari Title: Environmental Professional

Signature: Melodie Sanjari Date: 1/28/2020

email: msanjari@marathonoil.com Telephone: 575-988-0561

OCD Only

Received by: _____ Date: _____

State of New Mexico
Oil Conservation Division

Incident ID	NCE2003747970
District RP	
Facility ID	
Application ID	

Site Assessment/Characterization

This information must be provided to the appropriate district office no later than 90 days after the release discovery date.

What is the shallowest depth to groundwater beneath the area affected by the release?	360 (ft bgs)
Did this release impact groundwater or surface water?	☐ Yes ☒ No
Are the lateral extents of the release within 300 feet of a continuously flowing watercourse or any other significant watercourse?	☐ Yes ☒ No
Are the lateral extents of the release within 200 feet of any lakebed, sinkhole, or playa lake (measured from the ordinary high-water mark)?	☐ Yes ☒ No
Are the lateral extents of the release within 300 feet of an occupied permanent residence, school, hospital, institution, or church?	☐ Yes ☒ No
Are the lateral extents of the release within 500 horizontal feet of a spring or a private domestic fresh water well used by less than five households for domestic or stock watering purposes?	☐ Yes ☒ No
Are the lateral extents of the release within 1000 feet of any other fresh water well or spring?	☐ Yes ☒ No
Are the lateral extents of the release within incorporated municipal boundaries or within a defined municipal fresh water well field?	☐ Yes ☒ No
Are the lateral extents of the release within 300 feet of a wetland?	☐ Yes ☒ No
Are the lateral extents of the release overlying a subsurface mine?	☐ Yes ☒ No
Are the lateral extents of the release overlying an unstable area such as karst geology?	☐ Yes ☒ No
Are the lateral extents of the release within a 100-year floodplain?	☐ Yes ☒ No
Did the release impact areas **not** on an exploration, development, production, or storage site?	☐ Yes ☒ No

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

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

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

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

Form C-141
Page 4

State of New Mexico
Oil Conservation Division

Incident ID	NCE2003747970
District RP	
Facility ID	
Application ID	

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

Printed Name: Melodie Sanjari

Title: Environmental Professional

Signature: Melodie Sanjari

Date: 3/20/2020

email: msanjari@marathonoil.com

Telephone: 575-988-08753

OCD Only

Received by: _____

Date: _____

State of New Mexico
Oil Conservation Division

Incident ID	NCE2003747970
District RP	
Facility ID	
Application ID	

Closure

The responsible party must attach information demonstrating they have complied with all applicable closure requirements and any conditions or directives of the OCD. This demonstration should be in the form of a comprehensive report (electronic submittals in .pdf format are preferred) including a scaled site map, sampling diagrams, relevant field notes, photographs of any excavation prior to backfilling, laboratory data including chain of custody documents of final sampling, and a narrative of the remedial activities. Refer to 19.15.29.12 NMAC.

Closure Report Attachment Checklist: ***Each of the following items must be included in the closure report.***

☒ A scaled site and sampling diagram as described in 19.15.29.11 NMAC

☒ NA Photographs of the remediated site prior to backfill or photos of the liner integrity if applicable (Note: appropriate OCD District office must be notified 2 days prior to liner inspection)

☒ Laboratory analyses of final sampling (Note: appropriate ODC District office must be notified 2 days prior to final sampling)

☒ Description of remediation activities

I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to OCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the OCD does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to groundwater, surface water, human health or the environment. In addition, OCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations. The responsible party acknowledges they must substantially restore, reclaim, and re-vegetate the impacted surface area to the conditions that existed prior to the release or their final land use in accordance with 19.15.29.13 NMAC including notification to the OCD when reclamation and re-vegetation are complete.

Printed Name: Melodie Sanjari Title: Environmental Professional

Signature: Melodie Sanjari Date: 3/20/2020

email: msanjari@marathonoil.com Telephone: 575-988-08753

OCD Only

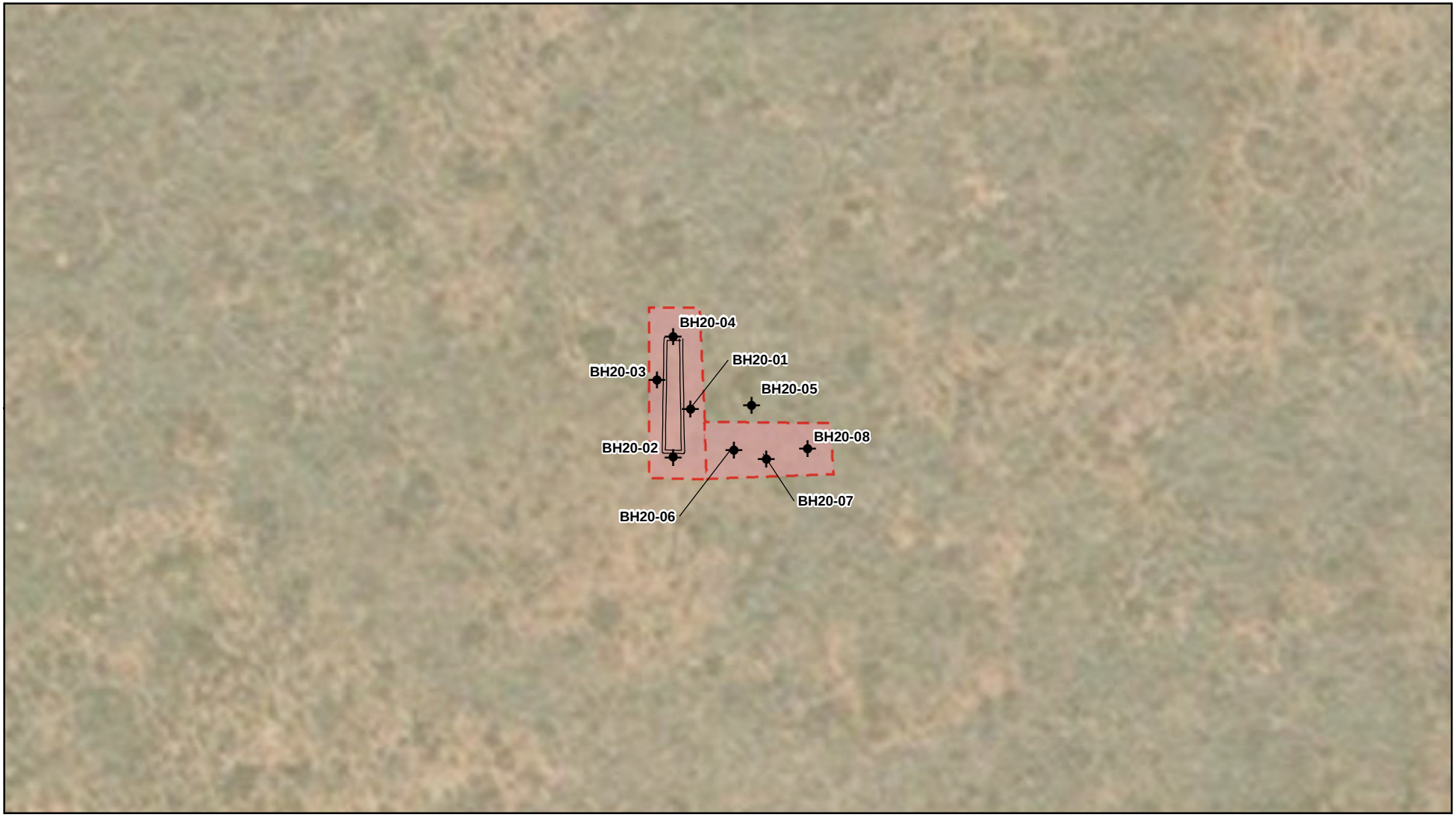
Received by: _____ Date: _____

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: _____

ATTACHMENT 2



Borehole

Secondary Containment

Spill (~3065 sq. ft.)

VERTEX

0 25 50 Feet

Map Center:
Lat/Long: 32.397571, -103.669196

NAD 1983 UTM Zone 13N
Date: Feb 18/20

N

Site Schematic and Confirmatory Sample Locations Frizzle Fry 1H, 2H, 7H

FIGURE: 1

MarathonOil

Geospatial data presented in this figure may be derived from external sources and Vertex does not assume any liability for inaccuracies. This figure is intended for reference use only and is not certified for legal, survey, or engineering purposes.

Note: Imagery from ESRI, 2016.

VERSATILITY. EXPERTISE.

Document Path: G:\1-Projects_US PROJECTS\Marathon\20E-00140002 - Frizzle Fry 1H, 2H, 7H\Fig 1 Frizzle Fry Inital and Confirmatory Schematic.mxd

ATTACHMENT 3

Table 1. Closure Criteria Determination			
Site Name: Frizzle Fry 1H/2H/7H			
Spill Coordinates:		X: 32.39820387	Y: -103.6683698
Site Specific Conditions		Value	Unit
1	Depth to Groundwater	**360.00**	feet
2	Within 300 feet of any continuously flowing watercourse or any other significant watercourse	2,165	feet
3	Within 200 feet of any lakebed, sinkhole or playa lake (measured from the ordinary high-water mark)	17,698	feet
4	Within 300 feet from an occupied residence, school, hospital, institution or church	51,545	feet
5	i) Within 500 feet of a spring or a private, domestic fresh water well used by less than five households for domestic or stock watering purposes, **or**	5,010	feet
	ii) Within 1000 feet of any fresh water well or spring	77,374	feet
6	Within incorporated municipal boundaries or within a defined municipal fresh water field covered under a municipal ordinance adopted pursuant to Section 3-27-3 NMSA 1978 as amended, unless the municipality specifically approves	No	(Y/N)
7	Within 300 feet of a wetland	1,710	feet
8	Within the area overlying a subsurface mine	No	(Y/N)
9	Within an unstable area (Karst Map)	Low	Critical High Medium Low
10	Within a 100-year Floodplain	Undetermined	year
NMAC 19.15.29.12 E (Table 1) Closure Criteria			<50' 51-100' >100'

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

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

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

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

POD Number	POD Sub-basin	County	Q 64	Q 16	Q 4	Sec	Tws	Rng	X	Y	Distance	Depth Well	Depth Water	Water Column
C 03717 POD1	C	LE	4	4	1	09	22S	32E	624094	3586365	1527	650		
C 02096	CUB	ED		2	3	14	22S	32E	627204	3584464*	2158	435	360	75
C 02821	C	LE	2	2	3	14	22S	32E	627303	3584563*	2211	540	340	200
CP 01701 POD1	CP	LE		1	3	35	21S	32E	626652	3589283	4175	840	560	280

Average Depth to Water: **420 feet**

Minimum Depth: **340 feet**

Maximum Depth: **560 feet**

Record Count: 4

UTMNAD83 Radius Search (in meters):

Easting (X): 625237.77 **Northing (Y):** 3585354.4 **Radius:** 5000

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

National Flood Hazard Layer FIRMette

FEMA

32°24'8.71"N

103°40'24.86"W

103°39'47.40"W

32°23'38.33"N

0 250 500 1,000 1,500 2,000 Feet

1:6,000

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 / 17.5 Cross Sections with 1% Annual Chance / Water Surface Elevation
- Coastal Transect
- Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

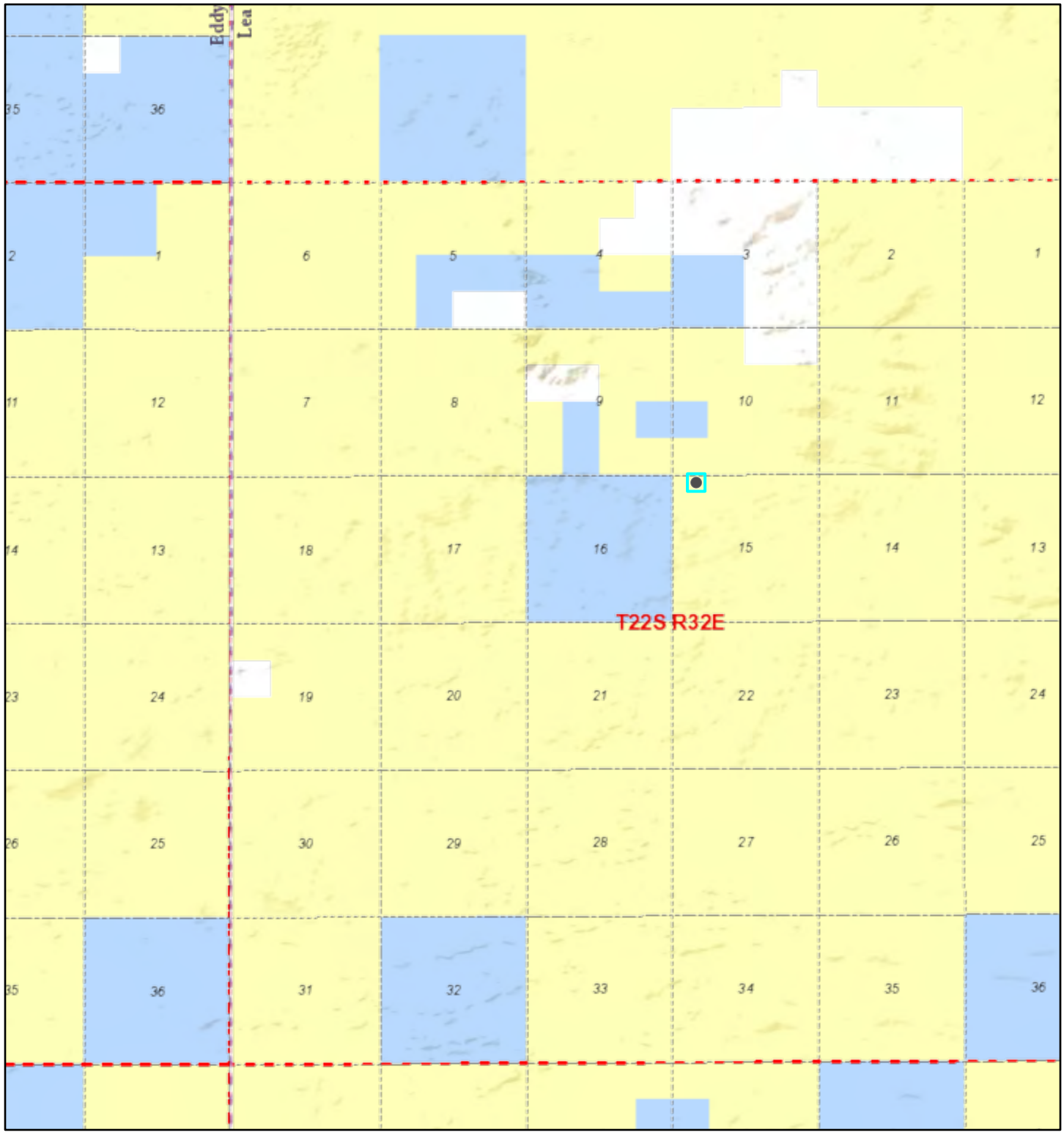
The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 10/24/2019 at 10:21:18 AM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

Active Mines Near Frizzle Fry Fed Com 15



10/24/2019, 9:22:41 AM

1:72,224

0 0.5 1 2 mi

0 0.75 1.5 3 km

U.S. Bureau of Land Management - New Mexico State Office, Sources: Esri, USGS, NOAA, Sources: Esri, Garmin, USGS, NPS

EMNRD MMD GIS Coordinator

NM Energy, Minerals and Natural Resources Department (http://nm-emnrd.maps.arcgis.com/apps/webappviewer/index.html?id=1b5e577974664d689b47790897ca2795)

New Mexico Office of the State Engineer

Active & Inactive Points of Diversion

(with Ownership Information)

(acre ft per annum)

(R=POD has been replaced and no longer serves this file, C=the file is closed)

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

(quarters are smallest to largest)

(NAD83 UTM in meters)

WR File Nbr	Sub basin	Use	Diversion	Owner	County	POD Number	Well Tag	Code	Grant	Source	q q q 6416 4	Sec	Tws	Rng	X	Y	Distance
C 03717	C	STK	3	SLASH 46 RANCH	LE	C 03717 POD1				Shallow	4 4 1	09	22S	32E	624093	3586365	1527
C 03771	C	STK	0	SLASH 46 INC	LE	C 03771 POD1					4 3 3	09	22S	32E	623603	3586306	1891
C 02096	CUB	STK	5.8	BUREAU OF LAND MANAGEMENT	ED	C 02096					2 3	14	22S	32E	627204	3584464*	2158
C 02821	C	DOL	3	THE JIMMY MILLS 2005 GST TRUST	LE	C 02821				Shallow	2 2 3	14	22S	32E	627303	3584563*	2211
C 03724	C	STK	0	BUREAU OF LAND MANAGEMENT	LE	C 03724 POD1					2 1 1	09	22S	32E	623578	3586992	2331
CP 01701	CP	COM	50	JIMMY MILLS 2005 GST TRUST	LE	CP 01701 POD1	NA			Artesian	1 3	35	21S	32E	626652	3589283	4175
C 02302	C	PRO	0	POGO PRODUCING COMPANY	LE	C 02302					1 2 2	26	22S	32E	627938	3582161*	4181
C 04144	CUB	MON	0	GHD SERVICES INC.	LE	C 04144 POD6	NA				4 1 3	07	22S	32E	620402	3585844	4860
					LE	C 04144 POD7					2 3 3	07	22S	32E	620367	3585748	4886

Record Count: 9

UTMNAD83 Radius Search (in meters):

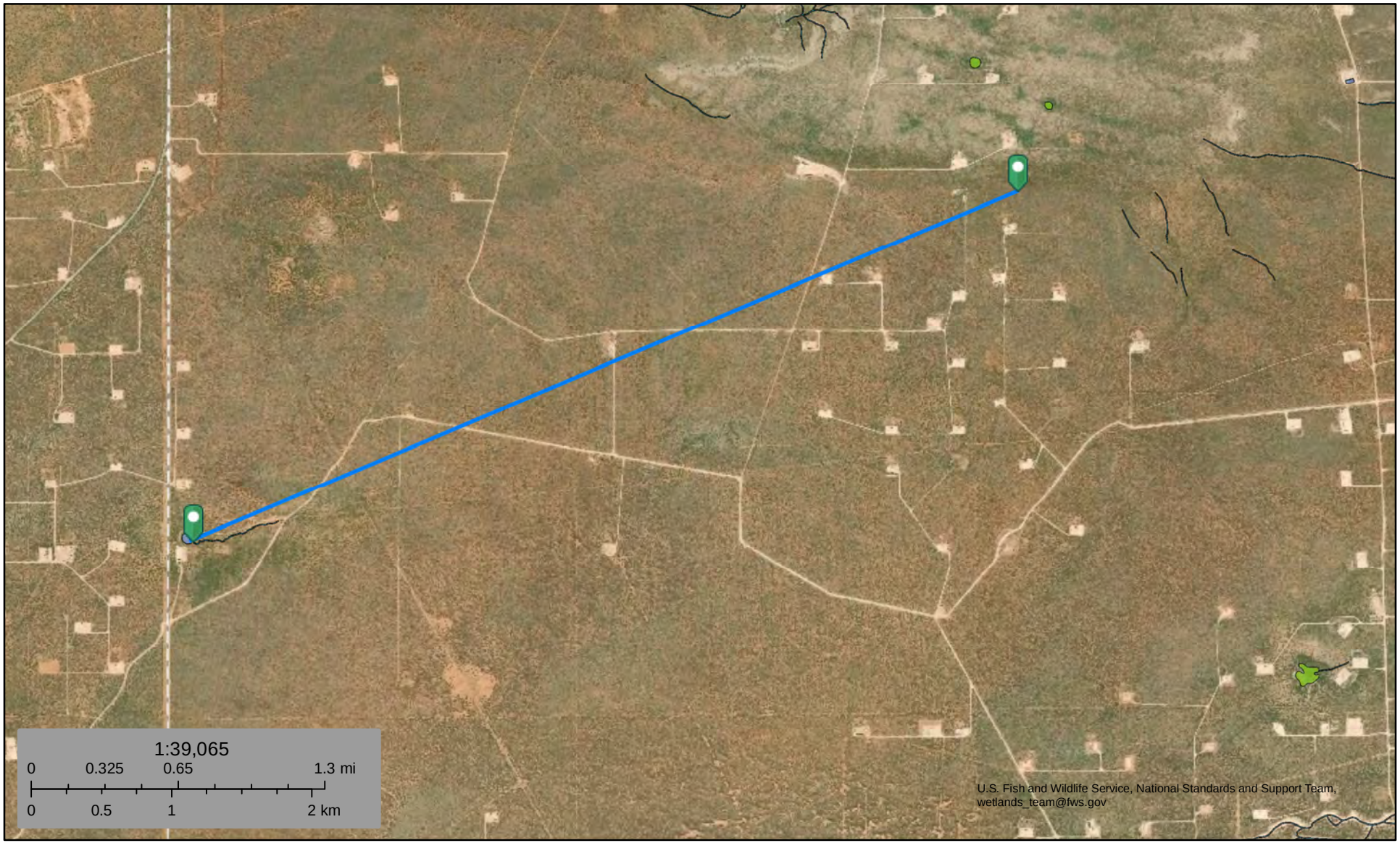
Easting (X): 625237.77 **Northing (Y):** 3585354.4 **Radius:** 5000

Sorted by: Distance

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

U.S. Fish and Wildlife Service
National Wetlands Inventory

Frizzle Fry 15 WXY 7H - 17,698 ft to pond

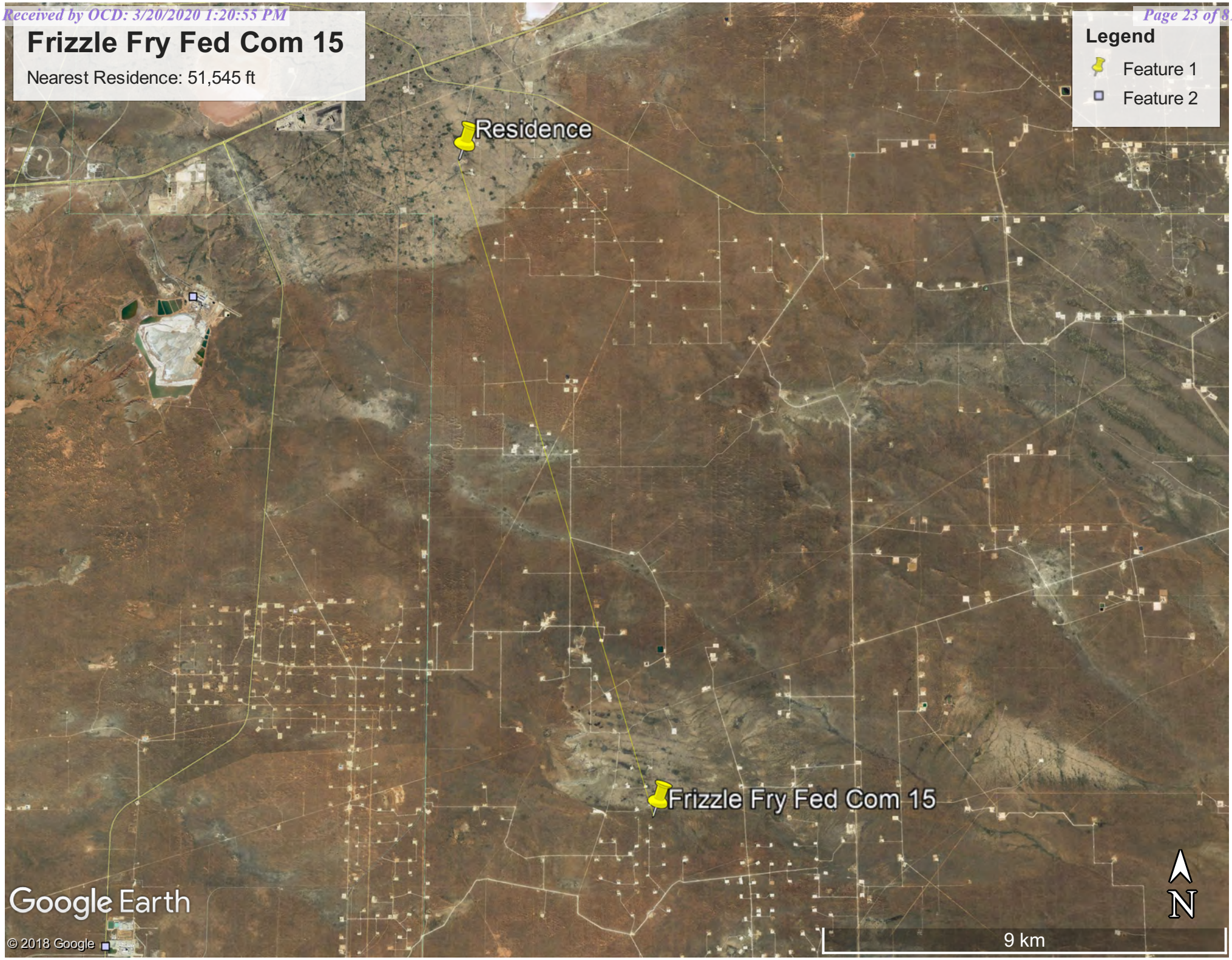


December 16, 2019

Wetlands

- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- Other
- Riverine

This map is for general reference only. The US Fish and Wildlife Service is not responsible for the accuracy or currentness of the base data shown on this map. All wetlands related data should be used in accordance with the layer metadata found on the Wetlands Mapper web site.


Frizzle Fry Fed Com 15
Nearest Residence: 51,545 ft
Legend
Feature 1
Feature 2
Residence
Frizzle Fry Fed Com 15
Google Earth
© 2018 Google
N
9 km

Soil Map—Lea County, New Mexico
(Frizzle Fry Fed Com 15)

Map Scale: 1:661 if printed on A landscape (11" x 8.5") sheet.

N

Meters
0 5 10 20 30

Feet
0 30 60 120 180

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 13N WGS84

Soil Map—Lea County, New Mexico
(Frizzle Fry Fed Com 15)

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Lea County, New Mexico
Survey Area Data: Version 16, Sep 15, 2019

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Dec 31, 2009—Sep 17, 2017

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
PT	Pyote loamy fine sand	1.8	100.0%
Totals for Area of Interest		**1.8**	**100.0%**

Lea County, New Mexico

PT—Pyote loamy fine sand

Map Unit Setting

National map unit symbol: dmqp
Elevation: 3,000 to 3,900 feet
Mean annual precipitation: 10 to 12 inches
Mean annual air temperature: 60 to 62 degrees F
Frost-free period: 190 to 200 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Pyote and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Pyote

Setting

Landform: Plains
Landform position (three-dimensional): Rise
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Sandy eolian deposits derived from sedimentary rock

Typical profile

A - 0 to 25 inches: loamy fine sand
Bt - 25 to 60 inches: fine sandy loam

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): High (2.00 to 6.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 5 percent
Gypsum, maximum in profile: 1 percent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 2.0
Available water storage in profile: Low (about 5.3 inches)

Interpretive groups

Land capability classification (irrigated): 6e
Land capability classification (nonirrigated): 7s

Hydrologic Soil Group: A
Ecological site: Loamy Sand (R042XC003NM)
Hydric soil rating: No

Minor Components

Maljamar
Percent of map unit: 8 percent
Ecological site: Loamy Sand (R042XC003NM)
Hydric soil rating: No

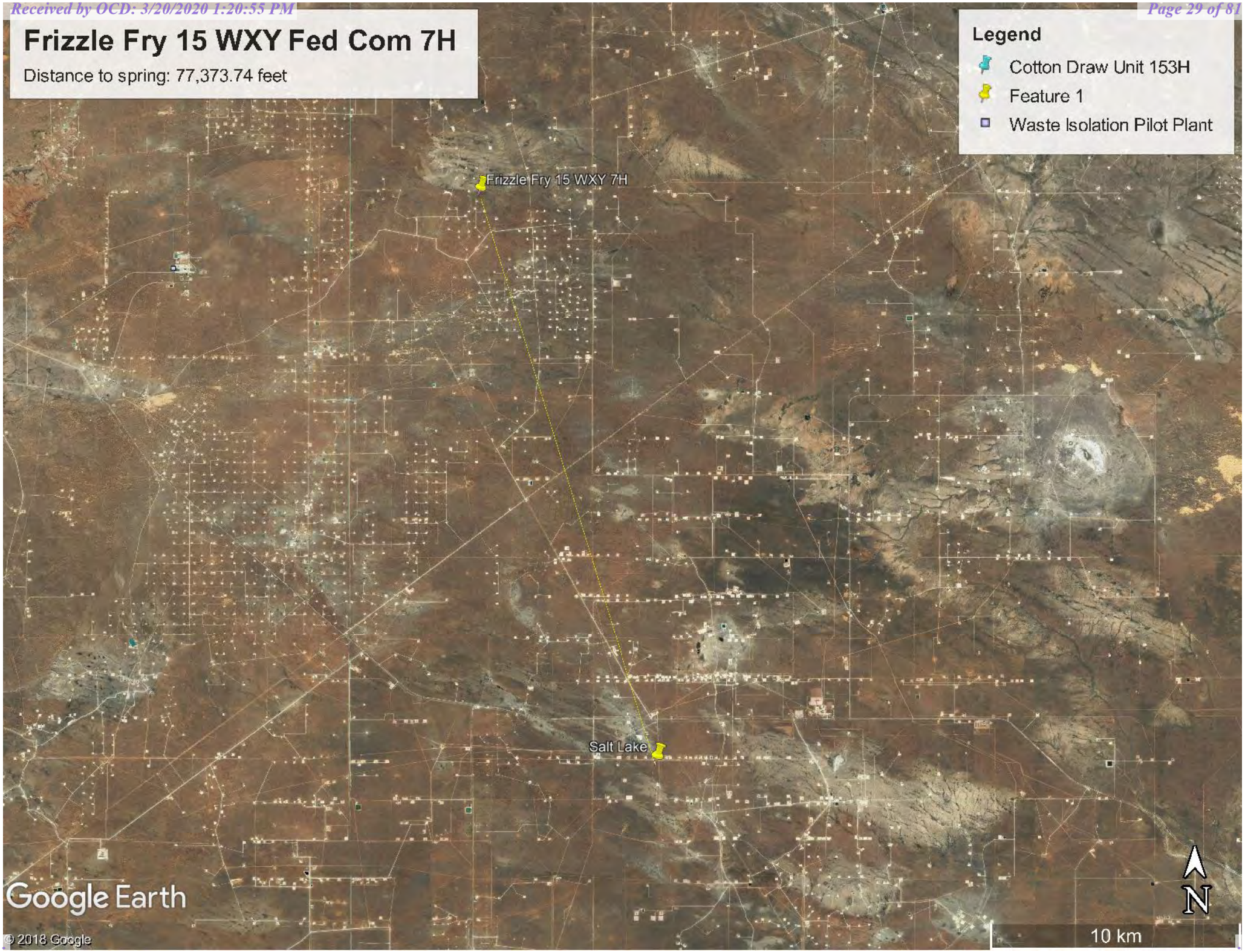
Palomas
Percent of map unit: 7 percent
Ecological site: Loamy Sand (R042XC003NM)
Hydric soil rating: No

Data Source Information

Soil Survey Area: Lea County, New Mexico
Survey Area Data: Version 16, Sep 15, 2019

Frizzle Fry 15 WXY Fed Com 7H

Distance to spring: 77,373.74 feet



National Water Information System: Web Interface

USGS Water Resources

Data Category: Site Information ▼ Geographic Area: United States ▼ GO

Click to hideNews Bulletins

- Introducing The Next Generation of USGS Water Data for the Nation
- Full News

USGS 322314103384301 22S.32E.14.32322

Available data for this site SUMMARY OF ALL AVAILABLE DATA ▼ GO

Well Site

DESCRIPTION:

Latitude 32°23'23", Longitude 103°38'53" NAD27
Lea County, New Mexico , Hydrologic Unit 13070007
Well depth: 435 feet
Land surface altitude: 3,717.00 feet above NGVD29.
Well completed in "Sunrise Formation" (231SNRS) local aquifer

AVAILABLE DATA:

Data Type	Begin Date	End Date	Count
Field groundwater-level measurements	1972-09-13	1996-02-20	5
Revisions	Unavailable (site:0) (timeseries:0)		

OPERATION:

Record for this site is maintained by the USGS New Mexico Water Science Center
Email questions about this site to New Mexico Water Science Center Water-Data Inquiries

---

Questions about sites/data?
Feedback on this web site
Automated retrievals
Help
Data Tips
Explanation of terms
Subscribe for system changes
News

U.S. Department of the Interior | U.S. Geological Survey

Title: NWIS Site Information for USA: Site Inventory
URL: https://waterdata.usgs.gov/nwis/inventory?agency_code=USGS&site_no=322314103384301

Page Contact Information: New Mexico Water Data Support Team
Page Last Modified: 2020-01-21 12:12:47 EST
0.43 0.41 caww02

National Water Information System: Web Interface

Click to hideNews Bulletins

- Introducing The Next Generation of USGS Water Data for the Nation
- Full News

USGS 322314103383601 22S.32E.14.32422

Available data for this site: SUMMARY OF ALL AVAILABLE DATA | GO

Well Site

DESCRIPTION:

Latitude 32°23'14", Longitude 103°38'36" NAD27
Lea County, New Mexico , Hydrologic Unit 13070007
Well depth: 380 feet
Land surface altitude: 3,740 feet above NAVD88.
Well completed in "Sunrise Formation" (231SNRS) local aquifer

AVAILABLE DATA:

Data Type	Begin Date	End Date	Count
Field groundwater-level measurements	1972-09-13	1972-09-13	1
Revisions	Unavailable (site:0) (timeseries:0)		

OPERATION:

Record for this site is maintained by the USGS New Mexico Water Science Center
Email questions about this site to New Mexico Water Science Center Water-Data Inquiries

---

Title: NWIS Site Information for USA: Site Inventory
URL: https://waterdata.usgs.gov/nwis/inventory?agency_code=USGS&site_no=322314103383601

National Water Information System: Web Interface

Click to hideNews Bulletins

- Introducing The Next Generation of USGS Water Data for the Nation
- Full News

USGS 322314103384301 22S.32E.14.32322

Available data for this site: SUMMARY OF ALL AVAILABLE DATA | GO

Well Site

DESCRIPTION:

Latitude 32°23'23", Longitude 103°38'53" NAD27
Lea County, New Mexico , Hydrologic Unit 13070007
Well depth: 435 feet
Land surface altitude: 3,717.00 feet above NGVD29.
Well completed in "Sunrise Formation" (231SNRS) local aquifer

AVAILABLE DATA:

Data Type	Begin Date	End Date	Count
Field groundwater-level measurements	1972-09-13	1996-02-20	5
Revisions	Unavailable (site:0) (timeseries:0)		

OPERATION:

Record for this site is maintained by the USGS New Mexico Water Science Center
Email questions about this site to New Mexico Water Science Center Water-Data Inquiries

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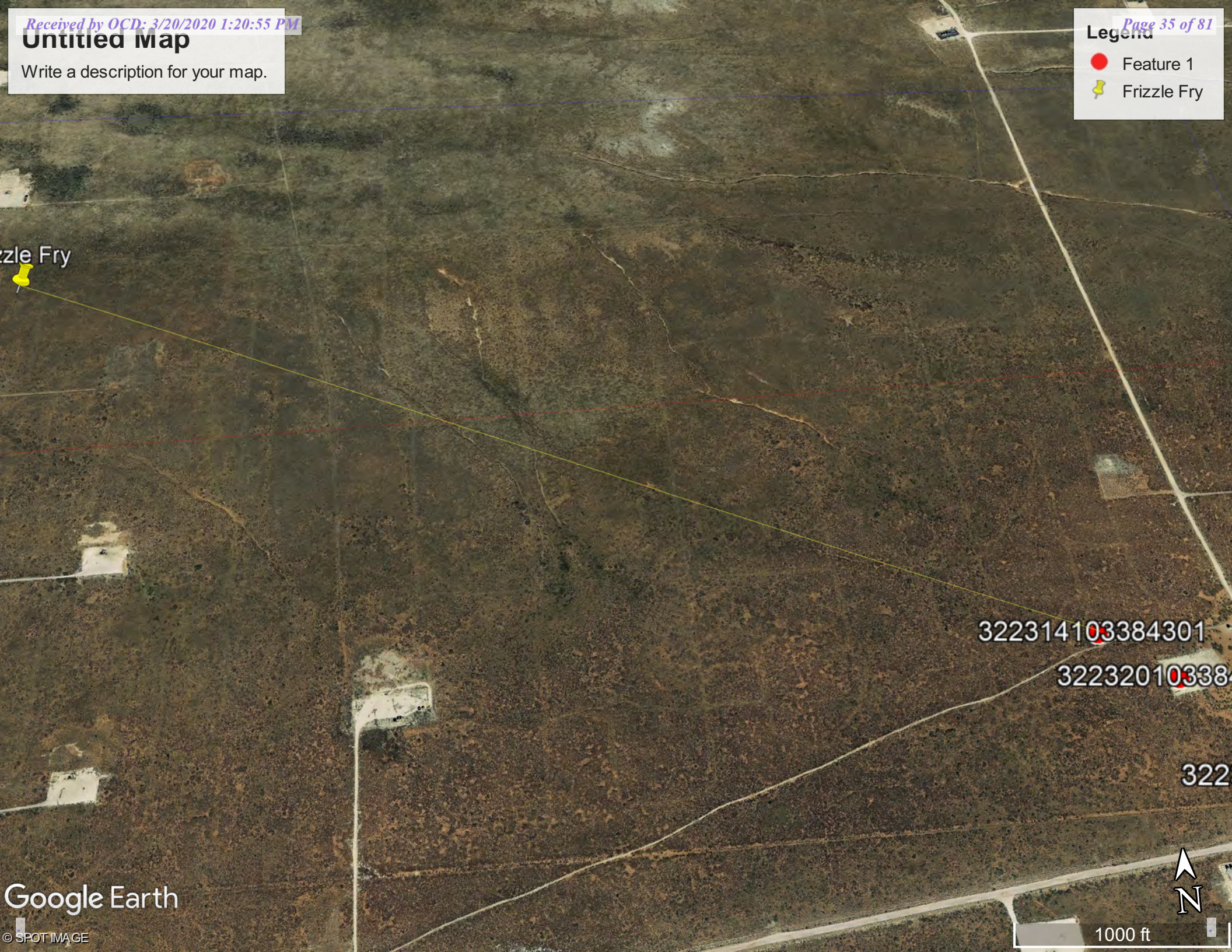
Untitled Map
Write a description for your map.
Legend
Feature 1
Frizzle Fry
zzle Fry
322314103384301
32232010338
322
Google Earth
© SPOT IMAGE
N
1000 ft

U.S. Fish and Wildlife Service
National Wetlands Inventory

Frizzle Fry 15: 2165 ft Watercourse

October 24, 2019

Wetlands

- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- Other
- Riverine

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New Mexico Office of the State Engineer
Wells with Well Log Information

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

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

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

(quarters are smallest to largest)

(NAD83 UTM in meters)

(in feet)

POD Number	POD Sub-basin Code	County	Source	q 6416	q 4	q	Sec	Tws	Rng	X	Y	Distance	Start Date	Finish Date	Log File Date	Depth Well	Depth Water	Driller	License Number
C 03717 POD1	C	LE	Shallow	4	4	1	09	22S	32E	624094	3586365	1527	08/04/2014	08/12/2014	08/26/2014	650		KEY, GARY	1058
C 02821	C	LE	Shallow	2	2	3	14	22S	32E	627303	3584563*	2211	06/12/2001	06/23/2001	10/04/2001	540	340		1348
CP 01701 POD1	CP	LE	Artesian		1	3	35	21S	32E	626652	3589283	4175	10/15/2018	11/29/2018	12/13/2018	840	560	WALLACE, BRYCE J.	1706

Record Count: 3

UTMNAD83 Radius Search (in meters):

Easting (X): 625237.77 **Northing (Y):** 3585354.4 **Radius:** 5000

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

U.S. Fish and Wildlife Service
National Wetlands Inventory

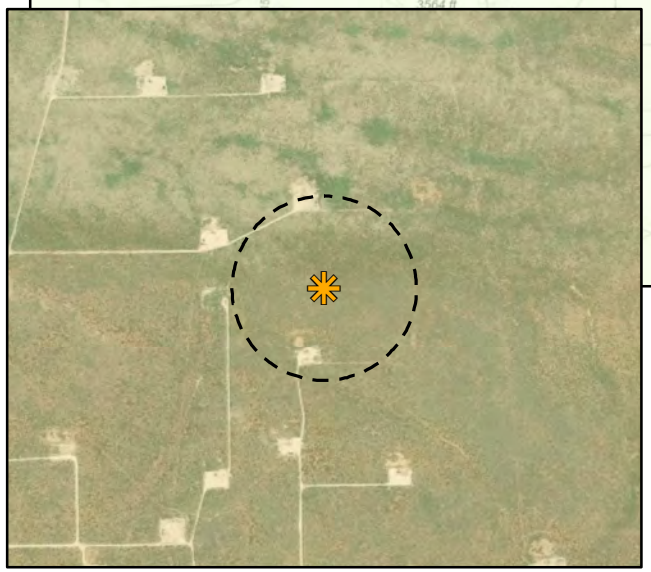
Frizzle Fry Fed Com 15: 1710 ft Wetland

October 24, 2019

Wetlands

- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- Other
- Riverine

This map is for general reference only. The US Fish and Wildlife Service is not responsible for the accuracy or currentness of the base data shown on this map. All wetlands related data should be used in accordance with the layer metadata found on the Wetlands Mapper web site.



N

Louis Whitlock Rd

3750 ft

3775 ft

3773 ft

Paduca Breaks Ln

0 0.5 1 2 Miles

SCALE 1:100,000

LEGEND

SITE

1000 FT BUFFER

KARST POTENTIAL

CRITICAL

HIGH

MEDIUM

LOW

Notes: Aerial Image from ESRI Digital Globe 2018

Marathon Oil

Karst Potential
Fizzie Fry
15 Fed Com

VERTEX

DRAWN:	NM
APPROVED:	SH
DATE:	DEC 17/19

FIGURE: **1**

VERSATILITY. EXPERTISE.

ATTACHMENT 4

Natalie Gordon

From: Natalie Gordon
Sent: Thursday, February 13, 2020 10:49 AM
To: emnrd-ocd-district1spills@state.nm.us; Mike Bratcher (mike.bratcher@state.nm.us); ramona.marcus@state.nm.us; blm_nm_cfo_spill@blm.gov; Wade , Kelsey; jamos@blm.gov
Cc: msanjari@marathonoil.com; Isaac Castro (icastro@marathonoil.com); Dennis Williams (DWilliams@vertex.ca)
Subject: NCE2003747970: Frizzle Fry 1H/2H/7H 48-hr Notification of Confirmation Sampling

All:

Please accept this email as 48-hr notification that Vertex Resource Services Inc. has scheduled confirmation sampling to be conducted at Frizzle Fry 15 WXY Federal Com 1H/5H/7H for a frac fluid and freshwater release that occurred on 01/17/2020. The initial C-141 was submitted on 01/28/2020 and Incident number NCE2003747970 has been assigned.

On Monday, February 17, 2020 beginning at 8:00 a.m., Vertex personnel will be onsite to assist with remediation. Following completion of remediation activities, Vertex will collect confirmation samples for closure of the above referenced incident. Confirmation sampling is planned to begin around 3:00 p.m.

This notification is intended to supersede the previous notification of confirmation sampling sent on February 6, 2020.

If you need assistance with directions to the site, or have any questions or concerns, please do not hesitate to contact me.

Thank you,
Natalie

ATTACHMENT 5

Daily Site Visit Report

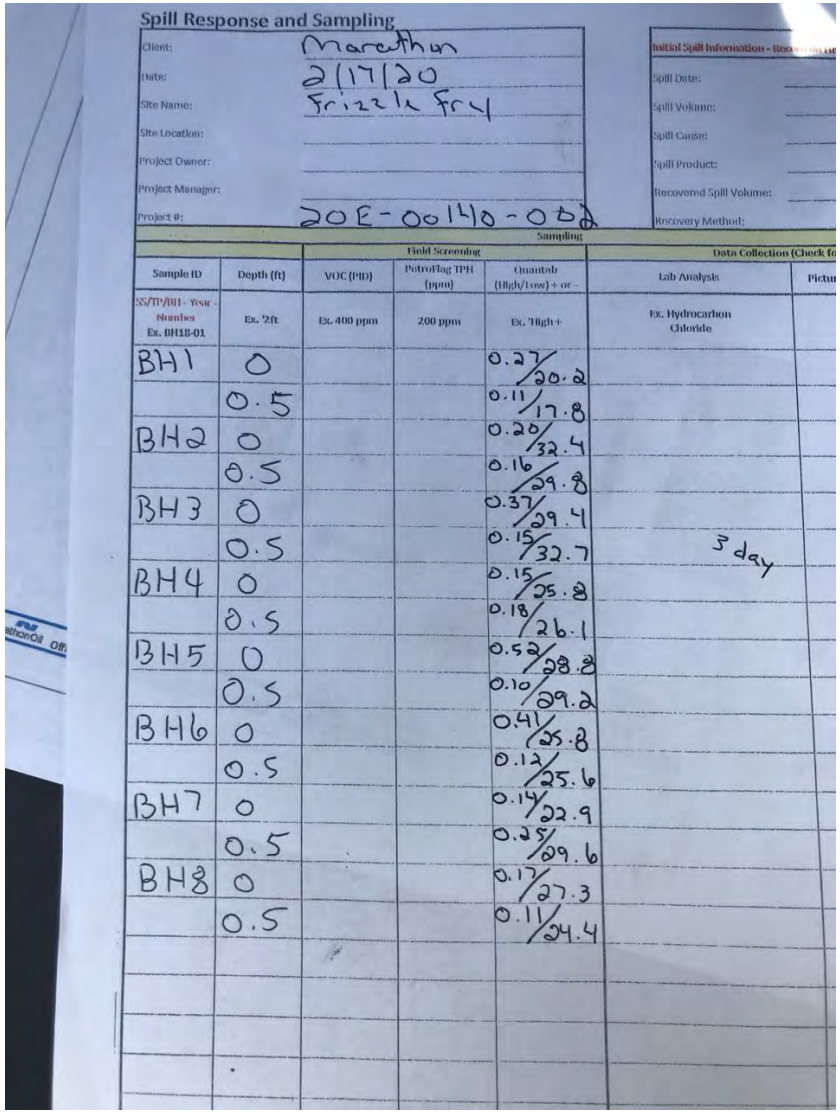
Client:	Marathon Oil Permian LLC	Inspection Date:	2/17/2020
Site Location Name:	Frizzle Fry 15 WXY Federal Com #007H	Report Run Date:	2/18/2020 1:34 AM
Project Owner:	Isaac Castro	File (Project) #:	19E-00614
Project Manager:	Natalie Gordon	API #:	30-025-45892
Client Contact Name:	Isaac Castro	Reference	Brine Water Release
Client Contact Phone #:	(575) 988-0561		

Summary of Times	
Left Office	2/17/2020 6:45 AM
Arrived at Site	2/17/2020 8:05 AM
Departed Site	
Returned to Office	

Daily Site Visit Report

Site Sketch

Daily Site Visit Report



Spill Response and Sampling

Client: Marathon
Date: 2/17/20
Site Name: Frizzle Fry
Site Location:
Project Owner:
Project Manager:
Project #: 20E-00140-002

Initial Spill Information - Reco
Spill Date:
Spill Volume:
Spill Cause:
Spill Product:
Recovered Spill Volume:
Recovery Method:

Sampling

Sample ID	Depth (ft)	Field Screening: VOC (PID)	Field Screening: PetroFlag TPH (ppm)	Field Screening: Quantab (High/Low) + or -	Data Collection (Check fo: Lab Analysis	Pictu
SS/TP/BH - Year - Number Ex. BH18-01	Ex. '2ft	Ex. 400 ppm	200 ppm	Ex. 'High +	Ex. Hydrocarbon Chloride	
BH1	0			0.27/20.2		
	0.5			0.11/17.8		
BH2	0			0.20/32.4		
	0.5			0.16/29.8		
BH3	0			0.37/29.4		
	0.5			0.15/32.7	3 day	
BH4	0			0.15/25.8		
	0.5			0.18/26.1		
BH5	0			0.52/28.8		
	0.5			0.10/29.2		
BH6	0			0.41/25.8		
	0.5			0.12/25.6		
BH7	0			0.14/22.9		
	0.5			0.25/29.6		
BH8	0			0.17/27.3		
	0.5			0.11/24.4		

Daily Site Visit Report

Summary of Daily Operations

8:06 Arrive on location. Safety paperwork guide excavation and collect confirmation samples

Next Steps & Recommendations

1

Daily Site Visit Report

Site Photos

Viewing Direction: South	**Viewing Direction**: West
	
Area where spill happened next to liner	Holes in liner and patch
Viewing Direction: East	**Viewing Direction**: North
	
Spill area	Sample point bh1-bh4

Daily Site Visit Report

Viewing Direction: East

Sample points bh5-8

Daily Site Visit Report

Daily Site Visit Signature

Inspector: Monica Peppin

Signature:

ATTACHMENT 6

Client Name: Marathon Oil Permian, LC
Site Name: Frizzle Fry 1H/2H/7H
NM OCD Incident Tracking Numbers: NCE2003747970
Project #: 20E-00140-002
Lab Report: 2002688

Table 2. Confirmatory Sampling Laboratory Results - Depth to Groundwater >100 ft

Sample Description			Field Screening			Petroleum Hydrocarbons							Inorganic
						Volatile		Extractable					
Sample ID	Depth (ft)	Sample Date	Volatile Organic Compounds (PID)	Extractable Organic Compounds (Petro Flag)	Inorganics (Quantab - High/Low)	Benzene	BTEX (Total)	Gasoline Range Organics (GRO)	Diesel Range Organics (DRO)	Motor Oil Range Organics (MRO)	(GRO + DRO)	Total Petroleum Hydrocarbons (TPH)	Chloride
			(ppm)	(ppm)	(+/-)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
BH 20-01	0	February 17, 2020	-	-	326	<0.024	<0.217	<4.8	23	89	23	112	150
BH 20-01	0.5	February 17, 2020	-	-	199	<0.024	<0.219	<4.9	<9.2	<46	<14.1	<60.1	<60
BH 20-02	0	February 17, 2020	-	-	<0	<0.025	<0.221	<4.9	<9.0	<45	<13.9	<58.9	61
BH 20-02	0.5	February 17, 2020	-	-	<0	<0.024	<0.217	<4.8	<9.3	<46	<14.1	<60.1	<60
BH 20-03	0	February 17, 2020	-	-	72	<0.024	<0.219	<4.9	64	78	64	142	190
BH 20-03	0.5	February 17, 2020	-	-	<0	<0.025	<0.221	<4.9	<9.0	<45	<13.9	<58.9	<60
BH 20-04	0	February 17, 2020	-	-	<0	<0.024	<0.217	<4.8	280	190	280	470	<60
BH 20-04	0.5	February 17, 2020	-	-	<0	<0.024	<0.216	<4.8	<9.3	<47	<14.1	<61.1	80
BH 20-05	0	February 17, 2020	-	-	314	<0.023	<0.210	<4.7	44	110	44	154	410
BH 20-05	0.5	February 17, 2020	-	-	<0	<0.024	<0.212	<4.7	<9.7	<48	<14.4	<62.4	<59
BH 20-06	0	February 17, 2020	-	-	285	<0.025	<0.224	<5.0	<9.7	<48	<14.7	<62.7	350
BH 20-06	0.5	February 17, 2020	-	-	<0	<0.023	<0.208	<4.6	<10.0	<50	<14.6	<64.6	<59
BH 20-07	0	February 17, 2020	-	-	21	<0.024	<0.219	<4.9	<9.3	<47	<14.2	<61.2	74
BH 20-07	0.5	February 17, 2020	-	-	<0	<0.024	<0.220	<4.9	<9.7	<48	<14.6	<62.6	140
BH 20-08	0	February 17, 2020	-	-	<0	<0.024	<0.217	<4.8	28	<49	28	28	130
BH 20-08	0.5	February 17, 2020	-	-	<0	<0.024	<0.216	<4.8	<9.0	<45	<13.8	<58.8	<60

"-" - Not applicable/assessed

Bold and shaded indicates exceedance outside of applied action level

VERTEX

ATTACHMENT 7

HALL ENVIRONMENTAL ANALYSIS LABORATORY

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

February 25, 2020

Natalie Gordon

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

RE: Frizzle Fry 1H 2H 7H OrderNo.: 2002688

Dear Natalie Gordon:

Hall Environmental Analysis Laboratory received 16 sample(s) on 2/18/2020 for the analyses presented in the following report.

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

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

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

Sincerely,

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order **2002688**
Date Reported: **2/25/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon Oil Company
Client Sample ID: BH20-01 0
Project: Frizzle Fry 1H 2H 7H
Collection Date: 2/17/2020 9:00:00 AM
Lab ID: 2002688-001 **Matrix:** SOIL **Received Date:** 2/18/2020 8:55:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **JMT**	
Chloride	150	60		mg/Kg	20	2/21/2020 1:03:06 AM	50574
EPA METHOD 8015D MOD: GASOLINE RANGE						Analyst: **JMR**	
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	2/21/2020 4:06:40 AM	50546
Surr: BFB	91.3	70-130		%Rec	1	2/21/2020 4:06:40 AM	50546
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**	
Diesel Range Organics (DRO)	23	9.6		mg/Kg	1	2/21/2020 11:22:48 AM	50563
Motor Oil Range Organics (MRO)	89	48		mg/Kg	1	2/21/2020 11:22:48 AM	50563
Surr: DNOP	89.9	55.1-146		%Rec	1	2/21/2020 11:22:48 AM	50563
EPA METHOD 8260B: VOLATILES SHORT LIST						Analyst: **JMR**	
Benzene	ND	0.024		mg/Kg	1	2/21/2020 4:06:40 AM	50546
Toluene	ND	0.048		mg/Kg	1	2/21/2020 4:06:40 AM	50546
Ethylbenzene	ND	0.048		mg/Kg	1	2/21/2020 4:06:40 AM	50546
Xylenes, Total	ND	0.097		mg/Kg	1	2/21/2020 4:06:40 AM	50546
Surr: 1,2-Dichloroethane-d4	93.2	70-130		%Rec	1	2/21/2020 4:06:40 AM	50546
Surr: 4-Bromofluorobenzene	94.3	70-130		%Rec	1	2/21/2020 4:06:40 AM	50546
Surr: Dibromofluoromethane	93.3	70-130		%Rec	1	2/21/2020 4:06:40 AM	50546
Surr: Toluene-d8	99.9	70-130		%Rec	1	2/21/2020 4:06:40 AM	50546

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

Qualifiers:

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

Analytical Report
Lab Order **2002688**
Date Reported: **2/25/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon Oil Company
Project: Frizzle Fry 1H 2H 7H
Lab ID: 2002688-002 **Matrix:** SOIL

Client Sample ID: BH20-01 0.5
Collection Date: 2/17/2020 9:05:00 AM
Received Date: 2/18/2020 8:55:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **JMT**	
Chloride	ND	60		mg/Kg	20	2/21/2020 12:50:46 AM	50574
EPA METHOD 8015D MOD: GASOLINE RANGE						Analyst: **JMR**	
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	2/21/2020 5:31:16 AM	50546
Surr: BFB	92.3	70-130		%Rec	1	2/21/2020 5:31:16 AM	50546
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**	
Diesel Range Organics (DRO)	ND	9.2		mg/Kg	1	2/21/2020 11:44:40 AM	50563
Motor Oil Range Organics (MRO)	ND	46		mg/Kg	1	2/21/2020 11:44:40 AM	50563
Surr: DNOP	92.5	55.1-146		%Rec	1	2/21/2020 11:44:40 AM	50563
EPA METHOD 8260B: VOLATILES SHORT LIST						Analyst: **JMR**	
Benzene	ND	0.024		mg/Kg	1	2/21/2020 5:31:16 AM	50546
Toluene	ND	0.049		mg/Kg	1	2/21/2020 5:31:16 AM	50546
Ethylbenzene	ND	0.049		mg/Kg	1	2/21/2020 5:31:16 AM	50546
Xylenes, Total	ND	0.097		mg/Kg	1	2/21/2020 5:31:16 AM	50546
Surr: 1,2-Dichloroethane-d4	91.2	70-130		%Rec	1	2/21/2020 5:31:16 AM	50546
Surr: 4-Bromofluorobenzene	95.9	70-130		%Rec	1	2/21/2020 5:31:16 AM	50546
Surr: Dibromofluoromethane	92.1	70-130		%Rec	1	2/21/2020 5:31:16 AM	50546
Surr: Toluene-d8	98.8	70-130		%Rec	1	2/21/2020 5:31:16 AM	50546

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

Qualifiers:

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

Analytical Report
Lab Order **2002688**
Date Reported: **2/25/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon Oil Company
Project: Frizzle Fry 1H 2H 7H
Lab ID: 2002688-003 **Matrix:** SOIL

Client Sample ID: BH20-02 0
Collection Date: 2/17/2020 9:10:00 AM
Received Date: 2/18/2020 8:55:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **JMT**	
Chloride	61	61		mg/Kg	20	2/20/2020 6:15:34 PM	50574
EPA METHOD 8015D MOD: GASOLINE RANGE						Analyst: **JMR**	
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	2/21/2020 6:56:10 AM	50546
Surr: BFB	89.7	70-130		%Rec	1	2/21/2020 6:56:10 AM	50546
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**	
Diesel Range Organics (DRO)	ND	9.0		mg/Kg	1	2/21/2020 12:06:32 PM	50563
Motor Oil Range Organics (MRO)	ND	45		mg/Kg	1	2/21/2020 12:06:32 PM	50563
Surr: DNOP	66.6	55.1-146		%Rec	1	2/21/2020 12:06:32 PM	50563
EPA METHOD 8260B: VOLATILES SHORT LIST						Analyst: **JMR**	
Benzene	ND	0.025		mg/Kg	1	2/21/2020 6:56:10 AM	50546
Toluene	ND	0.049		mg/Kg	1	2/21/2020 6:56:10 AM	50546
Ethylbenzene	ND	0.049		mg/Kg	1	2/21/2020 6:56:10 AM	50546
Xylenes, Total	ND	0.098		mg/Kg	1	2/21/2020 6:56:10 AM	50546
Surr: 1,2-Dichloroethane-d4	81.1	70-130		%Rec	1	2/21/2020 6:56:10 AM	50546
Surr: 4-Bromofluorobenzene	93.4	70-130		%Rec	1	2/21/2020 6:56:10 AM	50546
Surr: Dibromofluoromethane	99.7	70-130		%Rec	1	2/21/2020 6:56:10 AM	50546
Surr: Toluene-d8	99.1	70-130		%Rec	1	2/21/2020 6:56:10 AM	50546

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

Qualifiers:

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

Analytical Report
Lab Order **2002688**
Date Reported: **2/25/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon Oil Company
Project: Frizzle Fry 1H 2H 7H
Lab ID: 2002688-004 **Matrix:** SOIL

Client Sample ID: BH20-02 0.5
Collection Date: 2/17/2020 9:15:00 AM
Received Date: 2/18/2020 8:55:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **JMT**	
Chloride	ND	60		mg/Kg	20	2/20/2020 6:52:38 PM	50574
EPA METHOD 8015D MOD: GASOLINE RANGE						Analyst: **DJF**	
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	2/21/2020 2:53:22 PM	50546
Surr: BFB	104	70-130		%Rec	1	2/21/2020 2:53:22 PM	50546
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**	
Diesel Range Organics (DRO)	ND	9.3		mg/Kg	1	2/21/2020 12:28:21 PM	50563
Motor Oil Range Organics (MRO)	ND	46		mg/Kg	1	2/21/2020 12:28:21 PM	50563
Surr: DNOP	81.7	55.1-146		%Rec	1	2/21/2020 12:28:21 PM	50563
EPA METHOD 8260B: VOLATILES SHORT LIST						Analyst: **DJF**	
Benzene	ND	0.024		mg/Kg	1	2/21/2020 2:53:22 PM	50546
Toluene	ND	0.048		mg/Kg	1	2/21/2020 2:53:22 PM	50546
Ethylbenzene	ND	0.048		mg/Kg	1	2/21/2020 2:53:22 PM	50546
Xylenes, Total	ND	0.097		mg/Kg	1	2/21/2020 2:53:22 PM	50546
Surr: 1,2-Dichloroethane-d4	82.3	70-130		%Rec	1	2/21/2020 2:53:22 PM	50546
Surr: 4-Bromofluorobenzene	106	70-130		%Rec	1	2/21/2020 2:53:22 PM	50546
Surr: Dibromofluoromethane	89.6	70-130		%Rec	1	2/21/2020 2:53:22 PM	50546
Surr: Toluene-d8	103	70-130		%Rec	1	2/21/2020 2:53:22 PM	50546

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

Qualifiers:

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

Analytical Report
Lab Order **2002688**
Date Reported: **2/25/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon Oil Company
Project: Frizzle Fry 1H 2H 7H
Lab ID: 2002688-005 **Matrix:** SOIL

Client Sample ID: BH20-03 0
Collection Date: 2/17/2020 9:20:00 AM
Received Date: 2/18/2020 8:55:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **JMT**	
Chloride	190	60		mg/Kg	20	2/20/2020 12:17:26 PM	50555
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**	
Diesel Range Organics (DRO)	64	10		mg/Kg	1	2/21/2020 12:50:22 PM	50529
Motor Oil Range Organics (MRO)	78	50		mg/Kg	1	2/21/2020 12:50:22 PM	50529
Surr: DNOP	114	55.1-146		%Rec	1	2/21/2020 12:50:22 PM	50529
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	2/20/2020 1:26:59 PM	50517
Surr: BFB	82.2	66.6-105		%Rec	1	2/20/2020 1:26:59 PM	50517
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	ND	0.024		mg/Kg	1	2/20/2020 1:26:59 PM	50517
Toluene	ND	0.049		mg/Kg	1	2/20/2020 1:26:59 PM	50517
Ethylbenzene	ND	0.049		mg/Kg	1	2/20/2020 1:26:59 PM	50517
Xylenes, Total	ND	0.097		mg/Kg	1	2/20/2020 1:26:59 PM	50517
Surr: 4-Bromofluorobenzene	92.3	80-120		%Rec	1	2/20/2020 1:26:59 PM	50517

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

Qualifiers:

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

Analytical Report
Lab Order **2002688**
Date Reported: **2/25/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon Oil Company
Project: Frizzle Fry 1H 2H 7H
Lab ID: 2002688-006 **Matrix:** SOIL

Client Sample ID: BH20-03 0.5
Collection Date: 2/17/2020 9:25:00 AM
Received Date: 2/18/2020 8:55:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **JMT**	
Chloride	ND	60		mg/Kg	20	2/20/2020 1:19:10 PM	50555
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**	
Diesel Range Organics (DRO)	ND	9.0		mg/Kg	1	2/21/2020 1:12:13 PM	50529
Motor Oil Range Organics (MRO)	ND	45		mg/Kg	1	2/21/2020 1:12:13 PM	50529
Surr: DNOP	96.3	55.1-146		%Rec	1	2/21/2020 1:12:13 PM	50529
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	2/20/2020 2:37:30 PM	50517
Surr: BFB	81.5	66.6-105		%Rec	1	2/20/2020 2:37:30 PM	50517
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	ND	0.025		mg/Kg	1	2/20/2020 2:37:30 PM	50517
Toluene	ND	0.049		mg/Kg	1	2/20/2020 2:37:30 PM	50517
Ethylbenzene	ND	0.049		mg/Kg	1	2/20/2020 2:37:30 PM	50517
Xylenes, Total	ND	0.098		mg/Kg	1	2/20/2020 2:37:30 PM	50517
Surr: 4-Bromofluorobenzene	90.1	80-120		%Rec	1	2/20/2020 2:37:30 PM	50517

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

Qualifiers:

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

Analytical Report
Lab Order **2002688**
Date Reported: **2/25/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon Oil Company
Project: Frizzle Fry 1H 2H 7H
Lab ID: 2002688-007 **Matrix:** SOIL

Client Sample ID: BH20-04 0
Collection Date: 2/17/2020 9:30:00 AM
Received Date: 2/18/2020 8:55:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **JMT**	
Chloride	ND	60		mg/Kg	20	2/20/2020 1:31:31 PM	50555
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**	
Diesel Range Organics (DRO)	280	9.4		mg/Kg	1	2/21/2020 1:34:21 PM	50529
Motor Oil Range Organics (MRO)	190	47		mg/Kg	1	2/21/2020 1:34:21 PM	50529
Surr: DNOP	126	55.1-146		%Rec	1	2/21/2020 1:34:21 PM	50529
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	2/20/2020 3:48:14 PM	50517
Surr: BFB	83.0	66.6-105		%Rec	1	2/20/2020 3:48:14 PM	50517
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	ND	0.024		mg/Kg	1	2/20/2020 3:48:14 PM	50517
Toluene	ND	0.048		mg/Kg	1	2/20/2020 3:48:14 PM	50517
Ethylbenzene	ND	0.048		mg/Kg	1	2/20/2020 3:48:14 PM	50517
Xylenes, Total	ND	0.097		mg/Kg	1	2/20/2020 3:48:14 PM	50517
Surr: 4-Bromofluorobenzene	92.7	80-120		%Rec	1	2/20/2020 3:48:14 PM	50517

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

Qualifiers:

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

Analytical Report
Lab Order **2002688**
Date Reported: **2/25/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon Oil Company
Project: Frizzle Fry 1H 2H 7H
Lab ID: 2002688-008 **Matrix:** SOIL

Client Sample ID: BH20-04 0.5
Collection Date: 2/17/2020 9:35:00 AM
Received Date: 2/18/2020 8:55:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **JMT**	
Chloride	80	60		mg/Kg	20	2/20/2020 1:43:52 PM	50555
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**	
Diesel Range Organics (DRO)	ND	9.3		mg/Kg	1	2/21/2020 8:57:57 AM	50529
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	2/21/2020 8:57:57 AM	50529
Surr: DNOP	103	55.1-146		%Rec	1	2/21/2020 8:57:57 AM	50529
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	2/20/2020 5:21:17 PM	50517
Surr: BFB	85.1	66.6-105		%Rec	1	2/20/2020 5:21:17 PM	50517
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	ND	0.024		mg/Kg	1	2/20/2020 5:21:17 PM	50517
Toluene	ND	0.048		mg/Kg	1	2/20/2020 5:21:17 PM	50517
Ethylbenzene	ND	0.048		mg/Kg	1	2/20/2020 5:21:17 PM	50517
Xylenes, Total	ND	0.096		mg/Kg	1	2/20/2020 5:21:17 PM	50517
Surr: 4-Bromofluorobenzene	95.6	80-120		%Rec	1	2/20/2020 5:21:17 PM	50517

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

Qualifiers:

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

Analytical Report
Lab Order **2002688**
Date Reported: **2/25/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon Oil Company
Project: Frizzle Fry 1H 2H 7H
Lab ID: 2002688-009 **Matrix:** SOIL

Client Sample ID: BH20-05 0
Collection Date: 2/17/2020 9:40:00 AM
Received Date: 2/18/2020 8:55:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **JMT**	
Chloride	410	60		mg/Kg	20	2/20/2020 1:56:13 PM	50555
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**	
Diesel Range Organics (DRO)	44	9.0		mg/Kg	1	2/21/2020 10:14:43 AM	50529
Motor Oil Range Organics (MRO)	110	45		mg/Kg	1	2/21/2020 10:14:43 AM	50529
Surr: DNOP	114	55.1-146		%Rec	1	2/21/2020 10:14:43 AM	50529
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	2/20/2020 5:44:45 PM	50517
Surr: BFB	83.4	66.6-105		%Rec	1	2/20/2020 5:44:45 PM	50517
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	ND	0.023		mg/Kg	1	2/20/2020 5:44:45 PM	50517
Toluene	ND	0.047		mg/Kg	1	2/20/2020 5:44:45 PM	50517
Ethylbenzene	ND	0.047		mg/Kg	1	2/20/2020 5:44:45 PM	50517
Xylenes, Total	ND	0.093		mg/Kg	1	2/20/2020 5:44:45 PM	50517
Surr: 4-Bromofluorobenzene	92.8	80-120		%Rec	1	2/20/2020 5:44:45 PM	50517

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

Qualifiers:

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

Analytical Report
Lab Order **2002688**
Date Reported: **2/25/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon Oil Company
Project: Frizzle Fry 1H 2H 7H
Lab ID: 2002688-010 **Matrix:** SOIL

Client Sample ID: BH20-05 0.5
Collection Date: 2/17/2020 9:45:00 AM
Received Date: 2/18/2020 8:55:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **JMT**	
Chloride	ND	59		mg/Kg	20	2/20/2020 2:08:35 PM	50555
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**	
Diesel Range Organics (DRO)	ND	9.7		mg/Kg	1	2/21/2020 10:38:55 AM	50529
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	2/21/2020 10:38:55 AM	50529
Surr: DNOP	116	55.1-146		%Rec	1	2/21/2020 10:38:55 AM	50529
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	2/20/2020 6:08:12 PM	50517
Surr: BFB	82.5	66.6-105		%Rec	1	2/20/2020 6:08:12 PM	50517
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	ND	0.024		mg/Kg	1	2/20/2020 6:08:12 PM	50517
Toluene	ND	0.047		mg/Kg	1	2/20/2020 6:08:12 PM	50517
Ethylbenzene	ND	0.047		mg/Kg	1	2/20/2020 6:08:12 PM	50517
Xylenes, Total	ND	0.094		mg/Kg	1	2/20/2020 6:08:12 PM	50517
Surr: 4-Bromofluorobenzene	91.8	80-120		%Rec	1	2/20/2020 6:08:12 PM	50517

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

Qualifiers:

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

Analytical Report
Lab Order **2002688**
Date Reported: **2/25/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon Oil Company
Project: Frizzle Fry 1H 2H 7H
Lab ID: 2002688-011 **Matrix:** SOIL

Client Sample ID: BH20-06 0
Collection Date: 2/17/2020 9:50:00 AM
Received Date: 2/18/2020 8:55:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **JMT**	
Chloride	350	60		mg/Kg	20	2/20/2020 2:20:55 PM	50555
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**	
Diesel Range Organics (DRO)	ND	9.7		mg/Kg	1	2/21/2020 11:03:12 AM	50529
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	2/21/2020 11:03:12 AM	50529
Surr: DNOP	89.5	55.1-146		%Rec	1	2/21/2020 11:03:12 AM	50529
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	2/20/2020 6:31:41 PM	50517
Surr: BFB	81.4	66.6-105		%Rec	1	2/20/2020 6:31:41 PM	50517
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	ND	0.025		mg/Kg	1	2/20/2020 6:31:41 PM	50517
Toluene	ND	0.050		mg/Kg	1	2/20/2020 6:31:41 PM	50517
Ethylbenzene	ND	0.050		mg/Kg	1	2/20/2020 6:31:41 PM	50517
Xylenes, Total	ND	0.099		mg/Kg	1	2/20/2020 6:31:41 PM	50517
Surr: 4-Bromofluorobenzene	91.2	80-120		%Rec	1	2/20/2020 6:31:41 PM	50517

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

Qualifiers:

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

Analytical Report
Lab Order **2002688**
Date Reported: **2/25/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon Oil Company
Project: Frizzle Fry 1H 2H 7H
Lab ID: 2002688-012 **Matrix:** SOIL

Client Sample ID: BH20-06 0.5
Collection Date: 2/17/2020 9:55:00 AM
Received Date: 2/18/2020 8:55:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **JMT**	
Chloride	ND	59		mg/Kg	20	2/20/2020 2:33:16 PM	50555
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**	
Diesel Range Organics (DRO)	ND	10		mg/Kg	1	2/21/2020 11:27:11 AM	50529
Motor Oil Range Organics (MRO)	ND	50		mg/Kg	1	2/21/2020 11:27:11 AM	50529
Surr: DNOP	119	55.1-146		%Rec	1	2/21/2020 11:27:11 AM	50529
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	4.6		mg/Kg	1	2/20/2020 6:55:05 PM	50517
Surr: BFB	81.3	66.6-105		%Rec	1	2/20/2020 6:55:05 PM	50517
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	ND	0.023		mg/Kg	1	2/20/2020 6:55:05 PM	50517
Toluene	ND	0.046		mg/Kg	1	2/20/2020 6:55:05 PM	50517
Ethylbenzene	ND	0.046		mg/Kg	1	2/20/2020 6:55:05 PM	50517
Xylenes, Total	ND	0.093		mg/Kg	1	2/20/2020 6:55:05 PM	50517
Surr: 4-Bromofluorobenzene	90.3	80-120		%Rec	1	2/20/2020 6:55:05 PM	50517

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

Qualifiers:

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

Analytical Report
Lab Order **2002688**
Date Reported: **2/25/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon Oil Company
Project: Frizzle Fry 1H 2H 7H
Lab ID: 2002688-013 **Matrix:** SOIL

Client Sample ID: BH20-07 0
Collection Date: 2/17/2020 10:00:00 AM
Received Date: 2/18/2020 8:55:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **JMT**	
Chloride	74	60		mg/Kg	20	2/20/2020 2:45:36 PM	50555
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**	
Diesel Range Organics (DRO)	ND	9.3		mg/Kg	1	2/21/2020 11:51:20 AM	50529
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	2/21/2020 11:51:20 AM	50529
Surr: DNOP	122	55.1-146		%Rec	1	2/21/2020 11:51:20 AM	50529
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	2/20/2020 7:18:20 PM	50517
Surr: BFB	85.0	66.6-105		%Rec	1	2/20/2020 7:18:20 PM	50517
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	ND	0.024		mg/Kg	1	2/20/2020 7:18:20 PM	50517
Toluene	ND	0.049		mg/Kg	1	2/20/2020 7:18:20 PM	50517
Ethylbenzene	ND	0.049		mg/Kg	1	2/20/2020 7:18:20 PM	50517
Xylenes, Total	ND	0.097		mg/Kg	1	2/20/2020 7:18:20 PM	50517
Surr: 4-Bromofluorobenzene	94.8	80-120		%Rec	1	2/20/2020 7:18:20 PM	50517

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

Qualifiers:

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

Analytical Report
Lab Order **2002688**
Date Reported: **2/25/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon Oil Company
Project: Frizzle Fry 1H 2H 7H
Lab ID: 2002688-014 **Matrix:** SOIL

Client Sample ID: BH20-07 0.5
Collection Date: 2/17/2020 10:05:00 AM
Received Date: 2/18/2020 8:55:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **JMT**	
Chloride	140	60		mg/Kg	20	2/20/2020 2:57:58 PM	50555
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**	
Diesel Range Organics (DRO)	ND	9.7		mg/Kg	1	2/21/2020 12:15:32 PM	50529
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	2/21/2020 12:15:32 PM	50529
Surr: DNOP	103	55.1-146		%Rec	1	2/21/2020 12:15:32 PM	50529
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	2/20/2020 7:41:44 PM	50517
Surr: BFB	81.4	66.6-105		%Rec	1	2/20/2020 7:41:44 PM	50517
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	ND	0.024		mg/Kg	1	2/20/2020 7:41:44 PM	50517
Toluene	ND	0.049		mg/Kg	1	2/20/2020 7:41:44 PM	50517
Ethylbenzene	ND	0.049		mg/Kg	1	2/20/2020 7:41:44 PM	50517
Xylenes, Total	ND	0.098		mg/Kg	1	2/20/2020 7:41:44 PM	50517
Surr: 4-Bromofluorobenzene	90.7	80-120		%Rec	1	2/20/2020 7:41:44 PM	50517

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

Qualifiers:

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

Analytical Report
Lab Order **2002688**
Date Reported: **2/25/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon Oil Company
Project: Frizzle Fry 1H 2H 7H
Lab ID: 2002688-015 **Matrix:** SOIL

Client Sample ID: BH20-08 0
Collection Date: 2/17/2020 10:10:00 AM
Received Date: 2/18/2020 8:55:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **JMT**	
Chloride	130	60		mg/Kg	20	2/20/2020 3:10:19 PM	50555
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**	
Diesel Range Organics (DRO)	28	9.8		mg/Kg	1	2/21/2020 12:39:38 PM	50529
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	2/21/2020 12:39:38 PM	50529
Surr: DNOP	96.7	55.1-146		%Rec	1	2/21/2020 12:39:38 PM	50529
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	2/20/2020 8:05:12 PM	50517
Surr: BFB	84.4	66.6-105		%Rec	1	2/20/2020 8:05:12 PM	50517
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	ND	0.024		mg/Kg	1	2/20/2020 8:05:12 PM	50517
Toluene	ND	0.048		mg/Kg	1	2/20/2020 8:05:12 PM	50517
Ethylbenzene	ND	0.048		mg/Kg	1	2/20/2020 8:05:12 PM	50517
Xylenes, Total	ND	0.097		mg/Kg	1	2/20/2020 8:05:12 PM	50517
Surr: 4-Bromofluorobenzene	94.7	80-120		%Rec	1	2/20/2020 8:05:12 PM	50517

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

Qualifiers:

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

Analytical Report
Lab Order **2002688**
Date Reported: **2/25/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon Oil Company
Project: Frizzle Fry 1H 2H 7H
Lab ID: 2002688-016 **Matrix:** SOIL

Client Sample ID: BH20-08 0.5
Collection Date: 2/17/2020 10:15:00 AM
Received Date: 2/18/2020 8:55:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **JMT**	
Chloride	ND	60		mg/Kg	20	2/20/2020 3:47:21 PM	50555
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**	
Diesel Range Organics (DRO)	ND	9.0		mg/Kg	1	2/21/2020 1:03:41 PM	50529
Motor Oil Range Organics (MRO)	ND	45		mg/Kg	1	2/21/2020 1:03:41 PM	50529
Surr: DNOP	96.9	55.1-146		%Rec	1	2/21/2020 1:03:41 PM	50529
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	2/20/2020 8:28:36 PM	50517
Surr: BFB	82.1	66.6-105		%Rec	1	2/20/2020 8:28:36 PM	50517
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	ND	0.024		mg/Kg	1	2/20/2020 8:28:36 PM	50517
Toluene	ND	0.048		mg/Kg	1	2/20/2020 8:28:36 PM	50517
Ethylbenzene	ND	0.048		mg/Kg	1	2/20/2020 8:28:36 PM	50517
Xylenes, Total	ND	0.096		mg/Kg	1	2/20/2020 8:28:36 PM	50517
Surr: 4-Bromofluorobenzene	91.5	80-120		%Rec	1	2/20/2020 8:28:36 PM	50517

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

Qualifiers:

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

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2002688**
25-Feb-20

Client: Marathon Oil Company
Project: Frizzle Fry 1H 2H 7H

Sample ID: **MB-50555** SampType: **mblk** TestCode: **EPA Method 300.0: Anions**
Client ID: **PBS** Batch ID: **50555** RunNo: **66684**
Prep Date: **2/20/2020** Analysis Date: **2/20/2020** SeqNo: **2292639** Units: **mg/Kg**

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

Sample ID: **LCS-50555** SampType: **lcs** TestCode: **EPA Method 300.0: Anions**
Client ID: **LCSS** Batch ID: **50555** RunNo: **66684**
Prep Date: **2/20/2020** Analysis Date: **2/20/2020** SeqNo: **2292640** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	14	1.5	15.00	0	92.3	90	110			

Sample ID: **MB-50574** SampType: **mblk** TestCode: **EPA Method 300.0: Anions**
Client ID: **PBS** Batch ID: **50574** RunNo: **66684**
Prep Date: **2/20/2020** Analysis Date: **2/20/2020** SeqNo: **2292671** Units: **mg/Kg**

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

Sample ID: **LCS-50574** SampType: **lcs** TestCode: **EPA Method 300.0: Anions**
Client ID: **LCSS** Batch ID: **50574** RunNo: **66684**
Prep Date: **2/20/2020** Analysis Date: **2/20/2020** SeqNo: **2292672** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	14	1.5	15.00	0	91.9	90	110			

Qualifiers:

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

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2002688**
25-Feb-20

Client: Marathon Oil Company
Project: Frizzle Fry 1H 2H 7H

Sample ID: **LCS-50563** SampType: **LCS** TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **LCSS** Batch ID: **50563** RunNo: **66705**
Prep Date: **2/20/2020** Analysis Date: **2/21/2020** SeqNo: **2293289** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	48	10	50.00	0	96.7	70	130			
Surr: DNOP	4.3		5.000		86.7	55.1	146			

Sample ID: **MB-50563** SampType: **MBLK** TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **PBS** Batch ID: **50563** RunNo: **66705**
Prep Date: **2/20/2020** Analysis Date: **2/21/2020** SeqNo: **2293290** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	10								
Motor Oil Range Organics (MRO)	ND	50								
Surr: DNOP	9.1		10.00		91.4	55.1	146			

Sample ID: **MB-50529** SampType: **MBLK** TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **PBS** Batch ID: **50529** RunNo: **66705**
Prep Date: **2/19/2020** Analysis Date: **2/21/2020** SeqNo: **2293295** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	10								
Motor Oil Range Organics (MRO)	ND	50								
Surr: DNOP	12		10.00		118	55.1	146			

Sample ID: **LCS-50566** SampType: **LCS** TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **LCSS** Batch ID: **50566** RunNo: **66705**
Prep Date: **2/20/2020** Analysis Date: **2/21/2020** SeqNo: **2293857** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP	5.7		5.000		115	55.1	146			

Sample ID: **MB-50566** SampType: **MBLK** TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **PBS** Batch ID: **50566** RunNo: **66705**
Prep Date: **2/20/2020** Analysis Date: **2/21/2020** SeqNo: **2293858** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP	11		10.00		110	55.1	146			

Qualifiers:

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

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2002688**
25-Feb-20

Client: Marathon Oil Company
Project: Frizzle Fry 1H 2H 7H

Sample ID: **mb-50517** SampType: **MBLK** TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **PBS** Batch ID: **50517** RunNo: **66690**
Prep Date: **2/18/2020** Analysis Date: **2/20/2020** SeqNo: **2292345** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	5.0								
Surr: BFB	840		1000		84.4	66.6	105			

Sample ID: **lcs-50517** SampType: **LCS** TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **LCSS** Batch ID: **50517** RunNo: **66690**
Prep Date: **2/18/2020** Analysis Date: **2/20/2020** SeqNo: **2292346** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	21	5.0	25.00	0	83.8	80	120			
Surr: BFB	920		1000		91.8	66.6	105			

Sample ID: **2002688-006ams** SampType: **MS** TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **BH20-03 0.5** Batch ID: **50517** RunNo: **66690**
Prep Date: **2/18/2020** Analysis Date: **2/20/2020** SeqNo: **2292354** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	22	4.8	23.88	0	92.0	69.1	142			
Surr: BFB	880		955.1		92.3	66.6	105			

Sample ID: **2002688-006amsd** SampType: **MSD** TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **BH20-03 0.5** Batch ID: **50517** RunNo: **66690**
Prep Date: **2/18/2020** Analysis Date: **2/20/2020** SeqNo: **2292355** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	19	4.6	23.19	0	82.7	69.1	142	13.5	20	
Surr: BFB	850		927.6		91.3	66.6	105	0	0	

Qualifiers:

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

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2002688**
25-Feb-20

Client: Marathon Oil Company
Project: Frizzle Fry 1H 2H 7H

Sample ID: **mb-50517** SampType: **MBLK** TestCode: **EPA Method 8021B: Volatiles**
Client ID: **PBS** Batch ID: **50517** RunNo: **66690**
Prep Date: **2/18/2020** Analysis Date: **2/20/2020** SeqNo: **2292382** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.025								
Toluene	ND	0.050								
Ethylbenzene	ND	0.050								
Xylenes, Total	ND	0.10								
Surr: 4-Bromofluorobenzene	0.94		1.000		93.8	80	120			

Sample ID: **LCS-50517** SampType: **LCS** TestCode: **EPA Method 8021B: Volatiles**
Client ID: **LCSS** Batch ID: **50517** RunNo: **66690**
Prep Date: **2/18/2020** Analysis Date: **2/20/2020** SeqNo: **2292383** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.87	0.025	1.000	0	87.1	80	120			
Toluene	0.91	0.050	1.000	0	90.6	80	120			
Ethylbenzene	0.93	0.050	1.000	0	92.6	80	120			
Xylenes, Total	2.8	0.10	3.000	0	94.7	80	120			
Surr: 4-Bromofluorobenzene	0.96		1.000		95.8	80	120			

Sample ID: **2002688-005ams** SampType: **MS** TestCode: **EPA Method 8021B: Volatiles**
Client ID: **BH20-03 0** Batch ID: **50517** RunNo: **66690**
Prep Date: **2/18/2020** Analysis Date: **2/20/2020** SeqNo: **2292385** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.85	0.024	0.9747	0	87.2	78.5	119			
Toluene	0.90	0.049	0.9747	0	92.1	75.7	123			
Ethylbenzene	0.94	0.049	0.9747	0	96.2	74.3	126			
Xylenes, Total	2.9	0.097	2.924	0	97.9	72.9	130			
Surr: 4-Bromofluorobenzene	0.87		0.9747		89.5	80	120			

Sample ID: **2002688-005amsd** SampType: **MSD** TestCode: **EPA Method 8021B: Volatiles**
Client ID: **BH20-03 0** Batch ID: **50517** RunNo: **66690**
Prep Date: **2/18/2020** Analysis Date: **2/20/2020** SeqNo: **2292386** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.87	0.025	0.9843	0	88.2	78.5	119	2.01	20	
Toluene	0.92	0.049	0.9843	0	93.0	75.7	123	1.98	20	
Ethylbenzene	0.95	0.049	0.9843	0	96.7	74.3	126	1.46	20	
Xylenes, Total	2.9	0.098	2.953	0	98.2	72.9	130	1.33	20	
Surr: 4-Bromofluorobenzene	0.91		0.9843		92.1	80	120	0	0	

Qualifiers:

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

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2002688**
25-Feb-20

Client: Marathon Oil Company
Project: Frizzle Fry 1H 2H 7H

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

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	1.0	0.025	1.000	0	101	70	130			
Toluene	1.0	0.050	1.000	0	99.8	70	130			
Ethylbenzene	1.0	0.050	1.000	0	101	70	130			
Xylenes, Total	3.0	0.10	3.000	0	98.7	70	130			
Surr: 1,2-Dichloroethane-d4	0.46		0.5000		92.0	70	130			
Surr: 4-Bromofluorobenzene	0.46		0.5000		92.7	70	130			
Surr: Dibromofluoromethane	0.47		0.5000		94.7	70	130			
Surr: Toluene-d8	0.50		0.5000		99.6	70	130			

Sample ID: **mb-50546** SampType: **MBLK** TestCode: **EPA Method 8260B: Volatiles Short List**
Client ID: **PBS** Batch ID: **50546** RunNo: **66683**
Prep Date: **2/19/2020** Analysis Date: **2/20/2020** SeqNo: **2292073** Units: **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	0.48		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			

Sample ID: **2002688-002ams** SampType: **MS** TestCode: **EPA Method 8260B: Volatiles Short List**
Client ID: **BH20-01 0.5** Batch ID: **50546** RunNo: **66683**
Prep Date: **2/19/2020** Analysis Date: **2/21/2020** SeqNo: **2292741** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.98	0.023	0.9302	0	106	70	130			
Toluene	0.92	0.047	0.9302	0	98.7	70	130			
Ethylbenzene	0.94	0.047	0.9302	0	101	70	130			
Xylenes, Total	2.7	0.093	2.791	0	96.7	70	130			
Surr: 1,2-Dichloroethane-d4	0.43		0.4651		92.5	70	130			
Surr: 4-Bromofluorobenzene	0.43		0.4651		93.5	70	130			
Surr: Dibromofluoromethane	0.44		0.4651		95.0	70	130			
Surr: Toluene-d8	0.46		0.4651		98.2	70	130			

Qualifiers:

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

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2002688**
25-Feb-20

Client: Marathon Oil Company
Project: Frizzle Fry 1H 2H 7H

Sample ID: **2002688-002amsd** SampType: **MSD** TestCode: **EPA Method 8260B: Volatiles Short List**
Client ID: **BH20-01 0.5** Batch ID: **50546** RunNo: **66683**
Prep Date: **2/19/2020** Analysis Date: **2/21/2020** SeqNo: **2292742** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	1.1	0.025	0.9814	0	113	70	130	11.7	20	
Toluene	1.0	0.049	0.9814	0	105	70	130	11.1	20	
Ethylbenzene	1.1	0.049	0.9814	0	109	70	130	12.9	0	
Xylenes, Total	3.1	0.098	2.944	0	104	70	130	12.6	0	
Surr: 1,2-Dichloroethane-d4	0.44		0.4907		89.4	70	130	0	0	
Surr: 4-Bromofluorobenzene	0.47		0.4907		95.5	70	130	0	0	
Surr: Dibromofluoromethane	0.47		0.4907		95.9	70	130	0	0	
Surr: Toluene-d8	0.47		0.4907		96.4	70	130	0	0	

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

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

Sample ID: **mb-50537** SampType: **MBLK** TestCode: **EPA Method 8260B: Volatiles Short List**
Client ID: **PBS** Batch ID: **50537** RunNo: **66683**
Prep Date: **2/19/2020** Analysis Date: **2/20/2020** SeqNo: **2292745** Units: **%Rec**

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

Sample ID: **lcs-50596** SampType: **LCS** TestCode: **EPA Method 8260B: Volatiles Short List**
Client ID: **LCSS** Batch ID: **50596** RunNo: **66772**
Prep Date: **2/21/2020** Analysis Date: **2/24/2020** SeqNo: **2296301** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 1,2-Dichloroethane-d4	0.42		0.5000		83.8	70	130			
Surr: 4-Bromofluorobenzene	0.53		0.5000		105	70	130			
Surr: Dibromofluoromethane	0.43		0.5000		86.7	70	130			
Surr: Toluene-d8	0.51		0.5000		102	70	130			

Qualifiers:

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

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2002688**
25-Feb-20

Client: Marathon Oil Company
Project: Frizzle Fry 1H 2H 7H

Sample ID: **mb-50596** SampType: **MBLK** TestCode: **EPA Method 8260B: Volatiles Short List**
Client ID: **PBS** Batch ID: **50596** RunNo: **66772**
Prep Date: **2/21/2020** Analysis Date: **2/24/2020** SeqNo: **2296303** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 1,2-Dichloroethane-d4	0.43		0.5000		85.9	70	130			
Surr: 4-Bromofluorobenzene	0.52		0.5000		104	70	130			
Surr: Dibromofluoromethane	0.47		0.5000		94.6	70	130			
Surr: Toluene-d8	0.52		0.5000		104	70	130			

Qualifiers:

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

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2002688**
25-Feb-20

Client: Marathon Oil Company
Project: Frizzle Fry 1H 2H 7H

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

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	22	5.0	25.00	0	90.0	70	130			
Surr: BFB	470		500.0		94.4	70	130			

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

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	5.0								
Surr: BFB	460		500.0		92.5	70	130			

Sample ID: **2002688-001ams** SampType: **MS** TestCode: **EPA Method 8015D Mod: Gasoline Range**
Client ID: **BH20-01 0** Batch ID: **50546** RunNo: **66683**
Prep Date: **2/19/2020** Analysis Date: **2/21/2020** SeqNo: **2292846** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	23	4.9	24.63	2.662	83.3	70	130			
Surr: BFB	440		492.6		88.8	70	130			

Sample ID: **2002688-001amsd** SampType: **MSD** TestCode: **EPA Method 8015D Mod: Gasoline Range**
Client ID: **BH20-01 0** Batch ID: **50546** RunNo: **66683**
Prep Date: **2/19/2020** Analysis Date: **2/21/2020** SeqNo: **2292847** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	23	4.8	24.22	2.662	82.5	70	130	2.26	20	
Surr: BFB	430		484.5		89.7	70	130	0	0	

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

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: BFB	470		500.0		93.3	70	130			

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

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: BFB	450		500.0		89.8	70	130			

Qualifiers:

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

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2002688**
25-Feb-20

Client: Marathon Oil Company
Project: Frizzle Fry 1H 2H 7H

Sample ID: **lcs-50596**	SampType: **LCS**	TestCode: **EPA Method 8015D Mod: Gasoline Range**
Client ID: **LCSS**	Batch ID: **50596**	RunNo: **66772**
Prep Date: **2/21/2020**	Analysis Date: **2/24/2020**	SeqNo: **2295540** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: BFB	500		500.0		100	70	130			

Sample ID: **mb-50596**	SampType: **MBLK**	TestCode: **EPA Method 8015D Mod: Gasoline Range**
Client ID: **PBS**	Batch ID: **50596**	RunNo: **66772**
Prep Date: **2/21/2020**	Analysis Date: **2/24/2020**	SeqNo: **2295541** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: BFB	520		500.0		104	70	130			

Qualifiers:

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

HALL ENVIRONMENTAL ANALYSIS LABORATORY

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

Sample Log-In Check List

Client Name: ~~VERTEX CARLSBAD~~ Marathon 2/18/20 JNB Work Order Number: **2002688** RcptNo: **1**

Received By: Juan Rojas **2/18/2020 8:55:00 AM**

Completed By: **Isaiah Ortiz** **2/18/2020 9:53:45 AM** I-OK

Reviewed By: YG 2/18/20

Chain of Custody

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

Log In

3. Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
4. Were all samples received at a temperature of >0° C to 6.0°C	Yes ☑	No ☐	NA ☐
5. Sample(s) in proper container(s)?	Yes ☑	No ☐	
6. Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
7. Are samples (except VOA and ONG) properly preserved?	Yes ☑	No ☐	
8. Was preservative added to bottles?	Yes ☐	No ☑	NA ☐
9. Received at least 1 vial with headspace <1/4" for AQ VOA?	Yes ☐	No ☐	NA ☑
10. Were any sample containers received broken?	Yes ☐	No ☑	
11. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐	
12. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	
13. Is it clear what analyses were requested?	Yes ☑	No ☐	
14. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ☑	No ☐	

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

Adjusted? _____

Checked by: JR 2/18/20

Special Handling (if applicable)

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

Person Notified: _____ Date _____

By Whom: _____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding: _____

Client Instructions: _____

16. Additional remarks:

17. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	4.1	Good	Not Present			

Chain-of-Custody Record

Client: Marathon

Melodie Sanjari
Mailing Address:

Phone #:

email or Fax#:

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

Accreditation: ☐ Az Compliance
☐ NELAC ☐ Other

☐ EDD (Type)

Turn-Around Time:
☐ Standard ☐ Rush 3 day

Project Name:
Frizzle Fry 1H, 2H, 7H

Project #:
20E-00140-002

Project Manager:
Natalie Gordon

Sampler: MJP
On Ice: ☑ Yes ☐ No
# of Coolers: 1
Cooler Temp(including CF): 4.1-0=4.1 (°C)

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

Date	Time	Matrix	Sample Name	Container Type and #	Preservative Type	HEAL No. 2002688	BTEX / MTBE / TMB's (8021)	TPH:8015D(GRO / DRO / MRO)	8081 Pesticides/8082 PCB's	EDB (Method 504.1)	PAHs by 8310 or 8270SIMS	RCRA 8 Metals	Cl, F, Br, NO_3, NO_2, PO_4, SO_4	8260 (VOA)	8270 (Semi-VOA)	Total Coliform (Present/Absent)
2/17	9:00	Soil	BH20-01 0	4oz	ice	-001	✓	✓					✓			
	9:05		BH20-01 0.5			-002	✓	✓					✓			
	9:10		BH20-02 0			-003	✓	✓					✓			
	9:15		BH20-02 0.5			-004	✓	✓					✓			
	9:20		BH20-03 0			-005	✓	✓					✓			
	9:25		BH20-03 0.5			-006	✓	✓					✓			
	9:30		BH20-04 0			-007	✓	✓					✓			
	9:35		BH20-04 0.5			-008	✓	✓					✓			
	9:40		BH20-05 0			-009	✓	✓					✓			
	9:45		BH20-05 0.5			-010	✓	✓					✓			
	9:50		BH20-06 0			-011	✓	✓					✓			
	9:55		BH20-06 0.5			-012	✓	✓					✓			

Analysis Request

Date:	Time:	Relinquished by:	Received by:	Via:	Date	Time
2/17/20	1400				2/18/20	1400
2/17/20	1900			courier	2/18/20	8:55

Remarks:
Direct bill
Marathon
CC: Natalie Gordon
Vertex

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

Chain-of-Custody Record

Client: Marathon

Melodie Sanjari

Mailing Address:

Phone #:

email or Fax#:

QA/QC Package:

☐ Standard ☐ Level 4 (Full Validation)

Accreditation: ☐ Az Compliance

☐ NELAC ☐ Other

☐ EDD (Type)

Turn-Around Time:

☐ Standard ☐ Rush 3 day

Project Name:

Frizzle Fry 1H, 2H, 7H

Project #:

20E-00140-002

Project Manager:

Natalie Gordon

Sampler: MJP

On Ice: ☑ Yes ☐ No

# of Coolers: 1

Cooler Temp (including CF): 4.1-0=4.1 (°C)

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

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

Date	Time	Matrix	Sample Name	Container Type and #	Preservative Type	HEAL No. 2002688	BTEX / MTBE / TMB's (8021)	TPH:8015D(GRO / DRO / MRO)	8081 Pesticides/8082 PCB's	EDB (Method 504.1)	PAHs by 8310 or 8270SIMS	RCRA 8 Metals	Cl, F, Br, NO_3, NO_2, PO_4, SO_4	8260 (VOA)	8270 (Semi-VOA)	Total Coliform (Present/Absent)
2/17	10:00	Soil	BH20-07 0	4oz	ice	-013	✓	✓					✓			
↓	10:05	↓	BH20-07 0.5	↓	↓	-014	✓	✓					✓			
↓	10:10	↓	BH20-08 0	↓	↓	-015	✓	✓					✓			
↓	10:15	↓	BH20-08 0.5	↓	↓	-016	✓	✓					✓			

Date:	Time:	Relinquished by:	Received by:	Via:	Date	Time
2/17/20	1400				2/17/20	1400
2/17/20	1900			courier	2/18/20	8:55

Remarks: Direct bill Marathon. CC: Natalie Gordon Vertex

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