December 30, 2019 Vertex Project #: 19E-00614-013

Spill Closure Report: El Presidente State 24 27 2 WA #005H
Unit P, Section 02, Township 24 South, Range 27 East
County: Eddy
API: 30-015-44483
Tracking Number: NRM1935232619

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

New Mexico Oil Conservation Division – District 2 – Artesia
811 South First Street
Artesia, New Mexico 88210

Marathon Oil Permian, LLC (Marathon) retained Vertex Resource Services Inc. (Vertex) to conduct a spill assessment and remediation for an oil release that occurred at El Presidente State 24 27 2 WA #005H, API 30-015-44483 (hereafter referred to as "El Presidente"). Marathon provided immediate notification of the spill to New Mexico Oil Conservation Division (NM OCD) District 2 on October 12, 2019, followed by submission of an initial C-141 Release Notification (Attachment 1) on October 28, 2019. The tracking number for this incident is NRM1935232619.

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) 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, with the understanding that any restoration of the site required as a result of this incident will be deferred until such time as oil and gas activities are terminated and the site is reclaimed per 19.15.29.13 NMAC.

Incident Description

On October 12, 2019, a release occurred at Marathon's El Presidente site when a rubber gasket on a sight glass failed. This incident resulted in the release of approximately 73.5 barrels (bbls) of oil into a lined secondary containment. A small section of the pad outside of containment was affected due to overspray. No oil was released into undisturbed areas or waterways. Upon discovery of the release, the gasket was repaired and an hydrovac truck was dispatched to the site to recover free liquids. Approximately 60 bbls of oil was recovered

from the secondary containment and removed for disposal off-site. Visibly saturated or oily soil outside of the lined containment was excavated and removed from site for disposal as part of the initial incident response.

Site Characterization

The release at El Presidente occurred on state-owned land, N 32.24021836, W 104.15572919, approximately 10 miles south of Carlsbad, New Mexico. The legal description for the site is Unit P, Section 02, Township 24 South, Range 27 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 farmland. An aerial photograph and site schematic are included in Attachment 2.

El Presidente 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 northwest portion of the constructed pad where the heater treaters are located.

The surrounding landscape has historically been associated with limestone hills, the summits of ridges and crests, and the foot slopes and toeslopes of low, elongated hills at elevations of 1,100 to 4,400 feet above sea level. The plant community has the aspect of a grassland/shrub mix, dominated by grasses, with shrubs common throughout, and a semiarid climate with average annual precipitation ranging between 7 and 15 inches. The dominant grass species are principally threeawns and black grama, and the dominant shrub species is creosote bush with some broom snakeweed and scattered mesquite. Large, connected bare areas are present throughout the terrain (United States Department of Agriculture, 2019). Limited to no vegetation is allowed to grow on the compacted production pad.

The Geological Map of New Mexico indicates the surface geology at El Presidente is comprised primarily of Qa – alluvium from the Holocene to upper Pleistocene, with some aspects of nearby Pr – Rustler formation (Upper Permian) consisting of siltstone, gypsum, sandstone and dolomite (New Mexico Bureau of Geology and Mineral Resources, 2014 – 2017). The National Resource Conservation Service (NRCS) Web Soil Survey characterizes the soil at the site as Upton gravelly loam predominantly found on fans and ridges. The soil is typically a gravelly loam over a layer of cemented material and deep, very gravelly loam. It tends to be well-drained with high runoff and very low available moisture levels in the soil profile (United States Department of Agriculture, 2019). There is medium potential for karst geology to be present near El Presidente (United States Department of the Interior – Bureau of Land Management, 2019).

There is no surface water located on-site. The nearest significant watercourse, as defined in Subsection P of 19.15.17.7 NMAC, is Bond Draw located approximately 3,430 feet south of the site (Google Earth Pro, 2019). There are no continuously flowing watercourses or significant 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.

The nearest active well to the site is a New Mexico Office of the State Engineer (NM OSE)-identified well from 2008 located approximately 4,700 feet to the southeast. Depth to groundwater at this well is 56 feet below ground surface (bgs). The shallowest depth to groundwater identified in the vicinity is a 2003 NM OSE well located approximately 4,800 feet southeast of the site with a depth of 27 feet bgs. The most recent United States Geological Survey (USGS) well is from 1993 and is located 2.5 miles northeast of the site. Data for that well shows a depth to groundwater at 57 feet bgs (United States Department of the Interior – United States Geological Survey 2019). The Chevron Texaco Depth to Ground Water map for Eddy County confirms that depth to groundwater in the vicinity of El Presidente is between 51 and 100 feet bgs (Chevron Texaco, 2005). 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 El Presidente 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 is determined to be associated with the following constituent concentration limits.

Table 1: Closure Criteria for Soils Impacted by a Release

Depth to Groundwater	Constituent	Limit
51 ≤ 100 feet	Chloride	10,000 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 = gasoline range organics + diesel range organics + motor oil range organics

[2] benzene, toluene, ethyl benzene and xylene

Remedial Actions

An initial spill inspection, completed on October 16, 2019, identified and mapped the boundaries of the remediated overspray area. The release area, including the impacted area within production equipment lined secondary containment and the area of impact outside of secondary containment, was determined to be approximately 60 feet long and 30 feet wide; the total affected area was determined to be 1,800 square feet. The Daily Field Report (DFR) associated with the site inspection is included as Attachment 4.

On October 28, 2019, after the production equipment secondary containment was cleaned, Vertex provided 48-hour notification of confirmation sampling and the liner inspection to NM OCD, as required by Subparagraph (a) of Paragraph (1) of Subsection D 19.15.29.12 NMAC (Attachment 5). On October 30, 2019, Vertex conducted a visual liner inspection of the production equipment secondary containment and collected a single composite confirmatory soil sample 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 sample was placed into a laboratory-provided container, 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 benzene, toluene, ethyl benzene and xylene (BTEX), and EPA Method 8015 for total petroleum hydrocarbon (TPH) including motor oil range organics (MRO), diesel range organics (DRO), and gasoline range organics (GRO). Final confirmatory sample analytical data is 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 the five-point composite sample. The confirmation sampling location is presented on Figure 1 (Attachment 2). Relevant equipment and prominent features/reference points at the site are mapped as well.

Closure Request

Vertex recommends no additional remediation action to address the release at El Presidente. Laboratory analysis for the confirmation sample showed constituent of concern concentration levels below NM OCD Closure Criteria for areas where depth to groundwater is greater than 50 feet and less than 100 feet bgs as shown in Table 1 above. The secondary containment liner appeared to be intact and had the ability to contain the leak in question, as shown in the inspection photographs (Attachment 4). There are no anticipated risks to human, ecological or hydrological receptors associated with the release site.

The area of overspray previously scraped has been backfilled with clean material to the extent necessary. As this portion of the release occurred on an active wellpad, Vertex requests that restoration and reclamation of the overspray area be deferred until such time as the tank battery is removed and the pad is reclaimed per 19.15.29.13 NMAC.

Vertex requests that this incident (no RP yet assigned) be closed as all closure requirements set forth in Subsection E of 19.15.29.12 and Subsections A to D of 19.15.29.13 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 October 12, 2019 release at El Presidente State 24 27 2 WA #005H.

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

Sincerely,

Natalie Gordon
PROJECT MANAGER

Attachments

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

References

Chevron Texaco. (2005). *Eddy Co. Depth to Ground Water, Water Wells, Facilities.*

Google Earth Pro. (2019). *Measured Distance from the Subject Site to Nearest Waterway.* Retrieved from https://earth.google.com.

New Mexico Bureau of Geology and Mineral Resources. (2019). *Interactive Geologic Map.* Retrieved from http://geoinfo.nmt.edu.

NM Office of the State Engineer, New Mexico Water Rights Reporting System. (2019). *Well Log/Meter Information Report.* Retrieved from http://nmwrrs.ose.state.nm.us/nmwrrs/meterReport.html.

New Mexico Oil Conservation Division. (2019). *Natural Resources and Wildlife Oil and Gas Releases*. Santa Fe, New Mexico.

New Mexico Water Rights Reporting System. (2019). *Water Column/Average Depth to Water Report.* Retrieved from http://nmwrrs.ose.state.nm.us/nmwrrs/waterColumn.html.

United States Department of Agriculture, Natural Resources Conservation Service, (2019). *Web Soil Survey*. Retrieved from https://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx.

United States Department of the Interior, Bureau of Land Management. (2019). *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. (2019). *Groundwater for New Mexico: Water Levels*. Retrieved from https://nwis.waterdata.usgs.gov/nm/nwis/gwlevels? .

Limitations

This report has been prepared for the sole benefit of Marathon Oil Permian, LLC. 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 Oil Permian, LLC. 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
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	
District RP	
Facility ID	
Application ID	

Release Notification

Responsible Party

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

Location of Release Source

Latitude 32.24021836 Longitude -104.15572919
(NAD 83 in decimal degrees to 5 decimal places)

Site Name EL PRESIDENTE STATE 24 27 2 WA #005H	Site Type Oil and gas drilling facility
Date Release Discovered 10/12/19	API# *(if applicable)* 30-015-44483

Unit Letter	Section	Township	Range	County
P	02	24S	27E	Eddy

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

Nature and Volume of Release

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

☒ Crude Oil	Volume Released (bbls) 73.5 bbls	Volume Recovered (bbls) 60 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)	Volume/Weight Released (provide units)	Volume/Weight Recovered (provide units)

Cause of Release

Operator reported a spill due to the rubber gaskets on a sight glass failing. An estimated 73.5 bbls of oil were released inside lined secondary containment and partially outside containment due to overspray. A vac truck was immediately dispatched to recover fluids and recovered 60 bbls. All spillage is contained on location.

Form C-141
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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? This was a major release as defined by NMAC 19.15.29.7(A) based on volume of material released.
If YES, was immediate notice given to the OCD? By whom? To whom? When and by what means (phone, email, etc)? Yes, to Mike Bratcher, Victoria Venegas, Robert Hamlet, Ryan Mann	

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: Isaac Castro Title: Environmental Professional

Signature: Isaac Castro Date: 10/28/19

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

OCD Only

Received by: _____ Date: _____

Form C-141
Page 3

State of New Mexico
Oil Conservation Division

Incident ID	NRM1935232619
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?	56 (ft bgs)
Did this release impact groundwater or surface water?	☐ Yes ☒ No
Are the lateral extents of the release within 300 feet of a continuously flowing watercourse or any other significant watercourse?	☐ Yes ☒ No
Are the lateral extents of the release within 200 feet of any lakebed, sinkhole, or playa lake (measured from the ordinary high-water mark)?	☐ Yes ☒ No
Are the lateral extents of the release within 300 feet of an occupied permanent residence, school, hospital, institution, or church?	☐ Yes ☒ No
Are the lateral extents of the release within 500 horizontal feet of a spring or a private domestic fresh water well used by less than five households for domestic or stock watering purposes?	☐ Yes ☒ No
Are the lateral extents of the release within 1000 feet of any other fresh water well or spring?	☐ Yes ☒ No
Are the lateral extents of the release within incorporated municipal boundaries or within a defined municipal fresh water well field?	☐ Yes ☒ No
Are the lateral extents of the release within 300 feet of a wetland?	☐ Yes ☒ No
Are the lateral extents of the release overlying a subsurface mine?	☐ Yes ☒ No
Are the lateral extents of the release overlying an unstable area such as karst geology?	☐ Yes ☒ No
Are the lateral extents of the release within a 100-year floodplain?	☐ Yes ☒ No
Did the release impact areas **not** on an exploration, development, production, or storage site?	☐ Yes ☒ No

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

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

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

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

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Page 4

State of New Mexico
Oil Conservation Division

Incident ID	NRM1935232619
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: 1/7/2020

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

OCD Only

Received by: _____ Date: _____

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	NRM1935232619
District RP	
Facility ID	
Application ID	

Closure

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

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

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

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

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

☒ Description of remediation activities

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

Printed Name: MELODIE SANJARI Title: ENVIRONMENTAL PROFESSIONAL

Signature: Melodie Sanjari Date: 1/7/2020

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

OCD Only

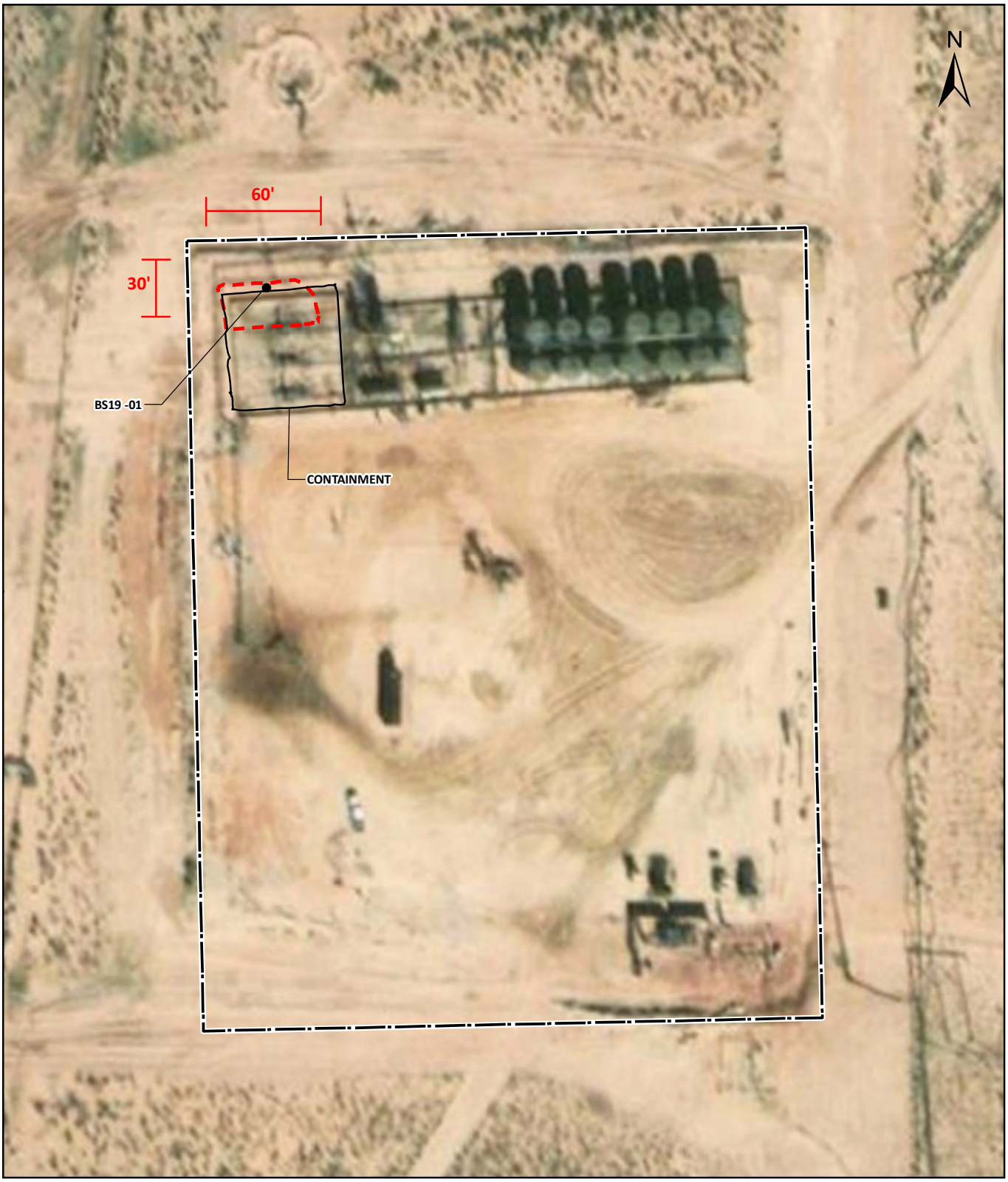
Received by: _____ Date: _____

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



LEGEND

- SOIL SAMPLE
- WELLPAD
- SPILL AREA

BS BASE SAMPLE

0 20 40 80 Ft

SCALE 1:1,000

Notes: Aerial Image from ESRI Digital Globe 2017

Site Schematic and Confirmatory Sample Locations
El Presidente State
24 27 2 WA #005H

DRAWN:	NM	FIGURE: 1
APPROVED:	SH	
DATE:	OCT 18/19	

VERSATILITY. EXPERTISE.

Document Path: C:\Users\tmocny\Documents\Natasha Mocny\Projects\Marathon\El Presidente State 24 27 2 WA 5H\Figure 5 - El Presidente State 24 27 2 WA 5H Final Confirmatory Portrait.mxd

ATTACHMENT 3

Closure Criteria Determination Worksheet			
Site Name: El Presidente State 24 27 2 WA #005H			
Spill Coordinates:		X: 32.24020	Y: -104.15570
Site Specific Conditions		Value	Unit
1	Depth to Groundwater	**56**	feet
2	Within 300 feet of any continuously flowing watercourse or any other significant watercourse	3,782	feet
3	Within 200 feet of any lakebed, sinkhole or playa lake (measured from the ordinary high-water mark)	9,575	feet
4	Within 300 feet from an occupied residence, school, hospital, institution or church	6,946	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**	4,951	feet
	ii) Within 1000 feet of any fresh water well or spring	8,556	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	3,782	feet
8	Within the area overlying a subsurface mine	No	(Y/N)
9	Within an unstable area (Karst Map)	Medium	Critical High Medium Low
10	Within a 100-year Floodplain	>100	year
NMAC 19.15.29.12 E (Table 1) Closure Criteria		51-100'	<50' 51-100' >100'

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 6416	q 4	Sec	Tws	Rng	X	Y	Distance
C 03260	C	STK	3	CLARAMAI R HAYHURST	ED	C 03260 POD1				Shallow	3 3 3		12	24S	27E	579994	3565935	1507
C 03837	C	PRO	0	DEVON ENERGY CO	ED	C 03260 POD1				Shallow	3 3 3		12	24S	27E	579994	3565935	1507
C 03838	C	PRO	0	DEVON ENERGY CO	ED	C 03260 POD1				Shallow	3 3 3		12	24S	27E	579994	3565935	1507
C 03839	C	PRO	0	DEVON ENERGY CO	ED	C 03260 POD1				Shallow	3 3 3		12	24S	27E	579994	3565935	1507
C 02976	C	STK	3	GEORGE BRANTLEY	ED	C 02976				Shallow	4 2 3		12	24S	27E	580519	3566195*	1531
SP 01349	CUB	IRR	2967.41	NM INTERSTATE STREAM COMM	ED	SP 01349					1 4		12	24S	27E	580832	3566301*	1677
C 03147	C	MUL	3	GEORGE BRANTLEY	ED	C 03147					3 3 3		12	24S	27E	579884	3565715	1692
C 03333	C	PRO	0	OGX RESOURCES LLC	ED	C 03147					3 3 3		12	24S	27E	579884	3565715	1692
C 03352	C	PRO	0	NOVA MUD	ED	C 03147					3 3 3		12	24S	27E	579884	3565715	1692
C 03869	C	STK	3	GEORGE BRANTLEY	ED	C 03869 POD1			NON		1 3 4		12	24S	27E	580677	3566039	1752
C 02937	C	PRO	0	MEWBOURNE OIL COMPANY	ED	C 02937					3 4 3		12	24S	27E	580315	3565789*	1763
C 02941	C	PRO	0	PATTERSON DRILLING	ED	C 02941					3 4 3		12	24S	27E	580315	3565789*	1763
					ED	C 02941 POD1					3 4 3		12	24S	27E	580315	3565789*	1763
SD 00431	CUB	IRR	840	POLLED ANGUS CATTLE COMPANY OF CARLSBAD	ED	SD 00431						2	10	24S	27E	577807	3566860*	1808
C 03032	C	DOL	3	GEORGE BRANTLEY	ED	C 03032					4 1 4		12	24S	27E	580931	3566200*	1818
C 03253	C	PRO	0	MEWBOURNE OIL	ED	C 03032					4 1 4		12	24S	27E	580931	3566200*	1818
C 00347	CUB	EXP	0	BRANTLEY GEORGE	ED	C 00347				Shallow	1 1		13	24S	27E	580010	3565479*	1951
C 01836	CUB	IRR	0	GEORGE BRANTLEY	ED	C 01836					1 1		13	24S	27E	580010	3565479*	1951

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

(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 03055	C	DOL	0	GEORGE BRANTLEY	ED	C 03055					2 3 4	12	24S	27E	580930	3565995*	1956
C 00365	CUB	IRR	185.7	CARLETON JOE O	ED	SP 01927					4	12	24S	27E	581032	3566097*	1962
C 00464	CUB	IRR	314.245	JACKIE DALE MCDONALD	ED	SP 01927					4	12	24S	27E	581032	3566097*	1962
C 00513	CUB	IRR	1422	PARDUE LIMITED COMPANY	ED	SP 01927					4	12	24S	27E	581032	3566097*	1962
C 00574	CUB	IRR	55.05	TOMMY JR. OR CARLA DUARTE	ED	SP 01927					4	12	24S	27E	581032	3566097*	1962
C 00738	CUB	IRR	343.5	W.J. BURKHAM	ED	SP 01927					4	12	24S	27E	581032	3566097*	1962
C 00750	CUB	IRR	74.7	BETH ANN BOTROS	ED	SP 01927					4	12	24S	27E	581032	3566097*	1962
C 00764	CUB	IRR	117.9	MIKE M. VASQUEZ	ED	SP 01927					4	12	24S	27E	581032	3566097*	1962
C 01082	CUB	IRR	240	DAMON U. BOND	ED	SP 01927					4	12	24S	27E	581032	3566097*	1962
SD 01886	CUB	IRR	100	DICK CALDERON	ED	SP 01927					4	12	24S	27E	581032	3566097*	1962
SP 01927	CUB	CLS	0	UNITED STATES OF AMERICA	ED	SP 01927		C			4	12	24S	27E	581032	3566097*	1962
SP 01927 1	CUB	IRR	2171.91	EDWARD F. JUDKINS	ED	SP 01927					4	12	24S	27E	581032	3566097*	1962
SP 01927 2	CUB	IRR	796.367	LUCAS BROTHERS	ED	SP 01927					4	12	24S	27E	581032	3566097*	1962
SP 01927 3	CUB	IRR	144.794	JULIAN SMITH	ED	SP 01927					4	12	24S	27E	581032	3566097*	1962
SP 01927 4	CUB	MDW	2800	CARLSBAD IRRIGATION DISTRICT	ED	SP 01927					4	12	24S	27E	581032	3566097*	1962
SP 01927 5	CUB	IRR	2413.209	D.R. HARKEY	ED	SP 01927					4	12	24S	27E	581032	3566097*	1962
SP 01927 6	CUB	IRR	108.596	DANIEL BEACH	ED	SP 01927					4	12	24S	27E	581032	3566097*	1962
SP 01927 7	CUB	IRR	5067.79	EDWARD F. JUDKIN	ED	SP 01927					4	12	24S	27E	581032	3566097*	1962
C 03037	C	DOL	3	GEORGE BRANTLEY	ED	C 03037				Shallow	4 3 4	12	24S	27E	580930	3565795*	2102
C 03246	C	PRO	0	MARBOB ENERGY CORP.	ED	C 01986					3 4 3	12	24S	27E	581302	3566124	2159
C 03300	C	PRO	0	YATES PETROLEUM	ED	C 01986					3 4 3	12	24S	27E	581302	3566124	2159
C 03311	C	PRO	0	MARBOB ENERGY	ED	C 01986					3 4 3	12	24S	27E	581302	3566124	2159

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

(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 03353	C	PRO	0	MARBOB ENERGY	ED	C 01986					3 4 3		12	24S	27E	581302	3566124	2159
C 03354	C	PRO	0	NOVA MUD	ED	C 01986					3 4 3		12	24S	27E	581302	3566124	2159
C 03031	C	DOL	3	ROBBY WALTERSCHEID	ED	C 03031				Shallow	1 3 3		35	23S	27E	578315	3569206*	2205
C 01646	CUB	IRR	0	GEORGE BRANTLEY	ED	C 01646 X						1	13	24S	27E	580221	3565275*	2205
C 01943	C	STK	3	GARY THOMPSON	ED	C 01943						1	13	24S	27E	580221	3565275*	2205
C 03740	C	DOL	0	GEORGE BRANTLEY	ED	C 03740 POD1					4 4 4		12	24S	27E	581283	3565795	2350
RA 00873	RA	IRR	0	LINDA A SCHULTZ	CH	RA 00873					1 2 1		10	24S	27E	577104	3567159*	2446
C 00342	CUB	CLS	0	UNION OIL CO. OF CALIFORNIA	ED	C 00342		C				4 1	13	24S	27E	580432	3565080*	2460
C 01646	CUB	IRR	0	GEORGE BRANTLEY	ED	C 01646 X 2						2	13	24S	27E	581045	3565286*	2572
					ED	C 01646							13	24S	27E	580641	3564866*	2737
C 00232	CUB	IRR	280.5	L.T. LEWIS	ED	C 00232					1 3 2		07	24S	28E	582362	3566826*	2873
C 01646	CUB	IRR	0	GEORGE BRANTLEY	ED	C 01646 X 3						3	13	24S	27E	580239	3564464*	2991
C 03145	C	STK	3	GEORGE BRANTLEY	ED	C 03145				Shallow	3 1 4		13	24S	27E	580749	3564579*	3044
C 02022	C	PRO	0	AMOCO PRODUCTION COMPANY	ED	C 02022				Shallow	1 4 3		31	23S	28E	581941	3569250*	3046
C 02955	C	PRO	0	MARBOB ENERGY	ED	C 02955					1 4 3		31	23S	28E	581941	3569250*	3046
C 03218	C	PRO	0	NADEL & GUSSMAN	ED	C 02022				Shallow	1 4 3		31	23S	28E	581941	3569250*	3046
C 01646	CUB	IRR	0	GEORGE BRANTLEY	ED	C 01646 X 4						4	13	24S	27E	581057	3564476*	3269
C 01244	C	DOL	3	BLAS L. URQUIDEZ	ED	C 01244				Shallow		4 4	06	24S	28E	582860	3567543*	3323
C 00364	CUB	CLS	0	A.J. CRAWFORD	ED	C 00364		C				1 2	09	24S	27E	575997	3567043*	3559
C 00821	C	PRO	0	UNION OIL CO. OF CALIFORNIA	ED	C 00821				Shallow		3 2	09	24S	27E	575996	3566635*	3621
C 01963	C	DOL	0	WILLA L MCPHEARSON	ED	C 01963						4 4	07	24S	28E	582877	3565921*	3638
SD 01886	CUB	IRR	100	DICK CALDERON	ED	SD 01886						4 4	07	24S	28E	582877	3565921*	3638

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

(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 6416	q 4	q	Sec	Tws	Rng	X	Y	Distance
C 04085	C	SAN	1	SUMMIT PERMIAN TRANS LLC	ED	C 04085 POD2	NA			Shallow	2	4	1	31	23S	28E	582082	3569982	3642
					ED	C 04085 POD1				Shallow	1	4	1	31	23S	28E	582039	3570027	3644
C 04205	C	PRO	0	B & R TRUCKING	ED	C 04085 POD1	NA			Shallow	1	4	1	31	23S	28E	582039	3570027	3644
C 04206	C	PRO	0	B & R TRUCKING	ED	C 04085 POD1	NA			Shallow	1	4	1	31	23S	28E	582039	3570027	3644
C 04207	C	PRO	0	B & R TRUCKING	ED	C 04085 POD1	NA			Shallow	1	4	1	31	23S	28E	582039	3570027	3644
C 04311	C	SAN	1	TRAVIS MANN	ED	C 04311 POD1	22215				2	1	4	31	23S	28E	582490	3569583	3685
C 00406	C	DOM	3	JAMES G. LAXSON	ED	C 00406				Shallow		1	1	08	24S	28E	583270	3567142*	3735
C 04281	C	SAN	1	TRAVIS MANN	ED	C 04281 POD1	22157			Shallow	2	4	1	31	23S	28E	582192	3570055	3771
C 03108	CUB	STK	6	LOVING RANCH WATTS LAND AND CATTLE	ED	C 03108					1	3	2	31	23S	28E	582348	3570063*	3887
C 01936	C	PRO	0	AMOCO PRODUCTION COMPANY	ED	C 01936						3	2	31	23S	28E	582449	3569964*	3894
C 01473	CUB	IRR	354	WILLIAM D. COLWELL	ED	C 01473				Shallow	1	1	3	25	23S	27E	579919	3571254*	3899
C 04037	C	SAN	1	SENDERO CARLSBAD MIDSTREAM LLC	ED	C 04037 POD1				Shallow	4	3	2	31	23S	28E	582575	3569872	3931
C 00361	CUB	CLS	0	C.D. DONAHO	ED	C 00361		C				3	3	08	24S	28E	583283	3565926*	4011
C 00365	CUB	IRR	185.7	CARLETON JOE O	ED	C 00365 S						3	3	08	24S	28E	583283	3565926*	4011
C 00054	CUB	IRR	0	ARTHUR LANCASTER	ED	C 00054					1	1	4	25	23S	27E	580727	3571263*	4066
C 00850	C	PRO	0	UNION OIL CO. OF CALIFORNIA	ED	C 00850				Shallow		2	3	09	24S	27E	575595	3566223*	4110
C 03366	C	DOL	0	DAN MOORE	ED	C 03366 POD1					4	1	2	31	23S	28E	582597	3570199	4162
C 04147	CUB	MON	0	EOG RESOURCES	ED	C 04147 POD1	NA		NON		4	1	3	24	24S	27E	580100	3562969	4438
C 02567	C	DOM	3	JEROME SMITH	ED	C 02567				Shallow	2	1	2	26	23S	27E	579314	3572049*	4681
C 01452	C	STK	3	WILLIAM DIESCHER	ED	C 01452				Shallow				22	24S	27E	577435	3563175*	4696
C 00365	CUB	IRR	185.7	CRAFT JAMES R	ED	C 00365				Shallow	2	4	1	17	24S	28E	583791	3565226*	4761
C 02942	C	PRO	0	SAMSON	ED	C 02942					3	4	3	23	24S	27E	578748	3562516*	4921

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

(acre ft per annum)

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(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 6416	q 4	Sec	Tws	Rng	X	Y	Distance
C 00010 A	CUB	IRR	28.8	WILLIAM E NYMAN	ED	C 00010			Shallow	1 2	2	25	23S	27E	581129	3572075*	4962
C 00010 AA	CUB	IRR	375.615	JOHN MORRIS	ED	C 00010 POD5				1 2	2	25	23S	27E	581129	3572075*	4962
C 00010 ENLGD	CUB	IRR	90	BRUCE D PARDUE TRUSTEE	ED	C 00010 ENLGD				1 2	2	25	23S	27E	581129	3572075*	4962
C 03197	C	DOL	3	DIANE WALTERS	ED	C 03197				4 4	3	24	23S	27E	580520	3572274*	4997

Record Count: 88

UTMNAD83 Radius Search (in meters):

Easting (X): 579541.29 **Northing (Y):** 3567373.21 **Radius:** 5000

Sorted by: Distance

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

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

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

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

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

(NAD83 UTM in meters)

(In feet)

POD Number	Code	POD Sub-basin	County	Q 64	Q 16	Q 4	Sec	Tws	Rng	X	Y	Distance	Depth Well	Depth Water	Water Column
C 03260 POD2	O	C	ED	1	3	3	12	24S	27E	580100	3565984	1497	80	56	24
C 03260 POD1		C	ED	3	3	3	12	24S	27E	579995	3565935	1507	80	56	24
C 02976		C	ED	4	2	3	12	24S	27E	580519	3566195*	1531	57	27	30
C 03147		C	ED	3	3	3	12	24S	27E	579885	3565715	1692	140		
C 00347		CUB	ED		1	1	13	24S	27E	580010	3565479*	1951	60	30	30
C 03037		C	ED	4	3	4	12	24S	27E	580930	3565795*	2102	116	25	91
C 03031		C	ED	1	3	3	35	23S	27E	578315	3569206*	2205	150	67	83
C 01943		C	ED			1	13	24S	27E	580221	3565275*	2205	30	25	5
C 03740 POD1		C	ED	4	4	4	12	24S	27E	581283	3565795	2350	340		
C 00342	C	CUB	ED		4	1	13	24S	27E	580432	3565080*	2460	2565		
C 00232		CUB	ED	1	3	2	07	24S	28E	582362	3566826*	2873	160		
C 03145		C	ED	3	1	4	13	24S	27E	580749	3564579*	3044	103	40	63
C 01244		C	ED		4	4	06	24S	28E	582860	3567543*	3323	109	70	39
C 00364	C	CUB	ED		1	2	09	24S	27E	575997	3567043*	3559	2270		
C 00821		C	ED		3	2	09	24S	27E	575996	3566635*	3621	97	50	47
C 04085 POD2		CUB	ED	2	4	1	31	23S	28E	582083	3569982	3642	240	100	140
C 04085 POD1		C	ED	1	4	1	31	23S	28E	582039	3570027	3644	250	200	50
C 00406		C	ED		1	1	08	24S	28E	583270	3567142*	3735	78	50	28
C 04281 POD1		C	ED	2	4	1	31	23S	28E	582193	3570055	3771	200	100	100
C 04037 POD1		C	ED	4	3	2	31	23S	28E	582576	3569872	3931	99	60	39
C 00361	C	CUB	ED		3	3	08	24S	28E	583283	3565926*	4011	2575		
C 00850		C	ED		2	3	09	24S	27E	575595	3566223*	4110	108	35	73
C 04147 POD1		CUB	ED	4	1	3	24	24S	27E	580101	3562969	4438	35		
C 00010 CLW191724	O	CUB	ED	2	3	2	25	23S	27E	580926	3571666*	4510	259		
C 02567		C	ED	2	1	2	26	23S	27E	579314	3572049*	4681	187	89	98
C 01452		C	ED				22	24S	27E	577435	3563175*	4696	95	70	25

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

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

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

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

POD Number	Code	POD Sub-basin	County	Q 64	Q 16	Q 4	Sec	Tws	Rng	X	Y	Distance	Depth Well	Depth Water	Water Column
C 00365		CUB	ED	2	4	1	17	24S	28E	583791	3565226*	4761	238	26	212
C 00010		CUB	ED	1	2	2	25	23S	27E	581129	3572075*	4962	250	103	147
C 00010 CLW191759	O	CUB	ED	1	2	2	25	23S	27E	581129	3572075*	4962	259		
C 00010 ENLGD		CUB	ED	1	2	2	25	23S	27E	581129	3572075*	4962	259		

Average Depth to Water: **63 feet**

Minimum Depth: **25 feet**

Maximum Depth: **200 feet**

Record Count: 30

UTMNAD83 Radius Search (in meters):

Easting (X): 579541.29 **Northing (Y):** 3567373.21 **Radius:** 5000

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

U.S. Fish and Wildlife Service
National Wetlands Inventory

El Presidente 5H - 3,782 ft to Riverine

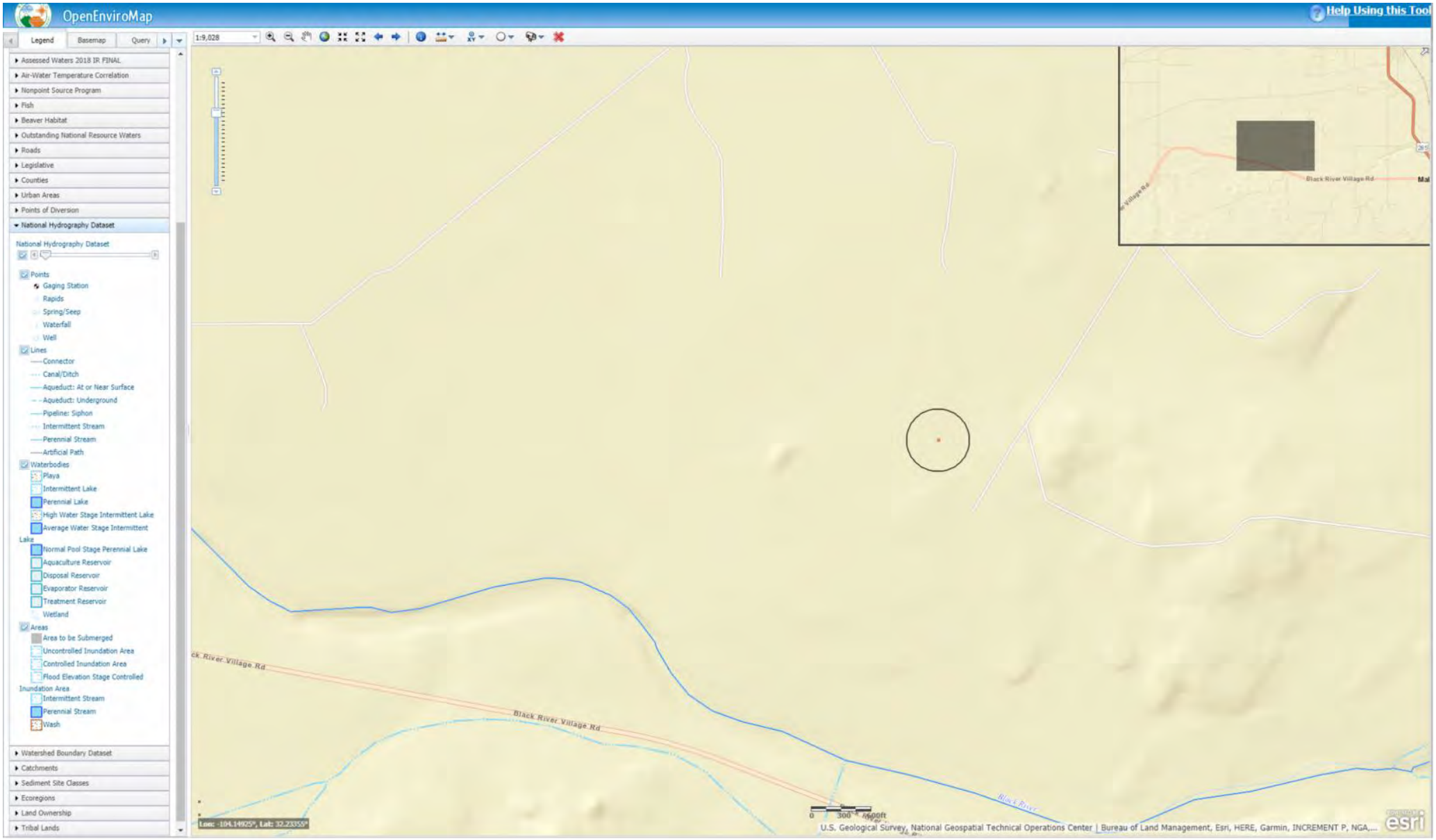
October 17, 2019

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.

National Wetlands Inventory (NWI)
This page was produced by the NWI mapper


OpenEnviroMap
Help Using this Tool
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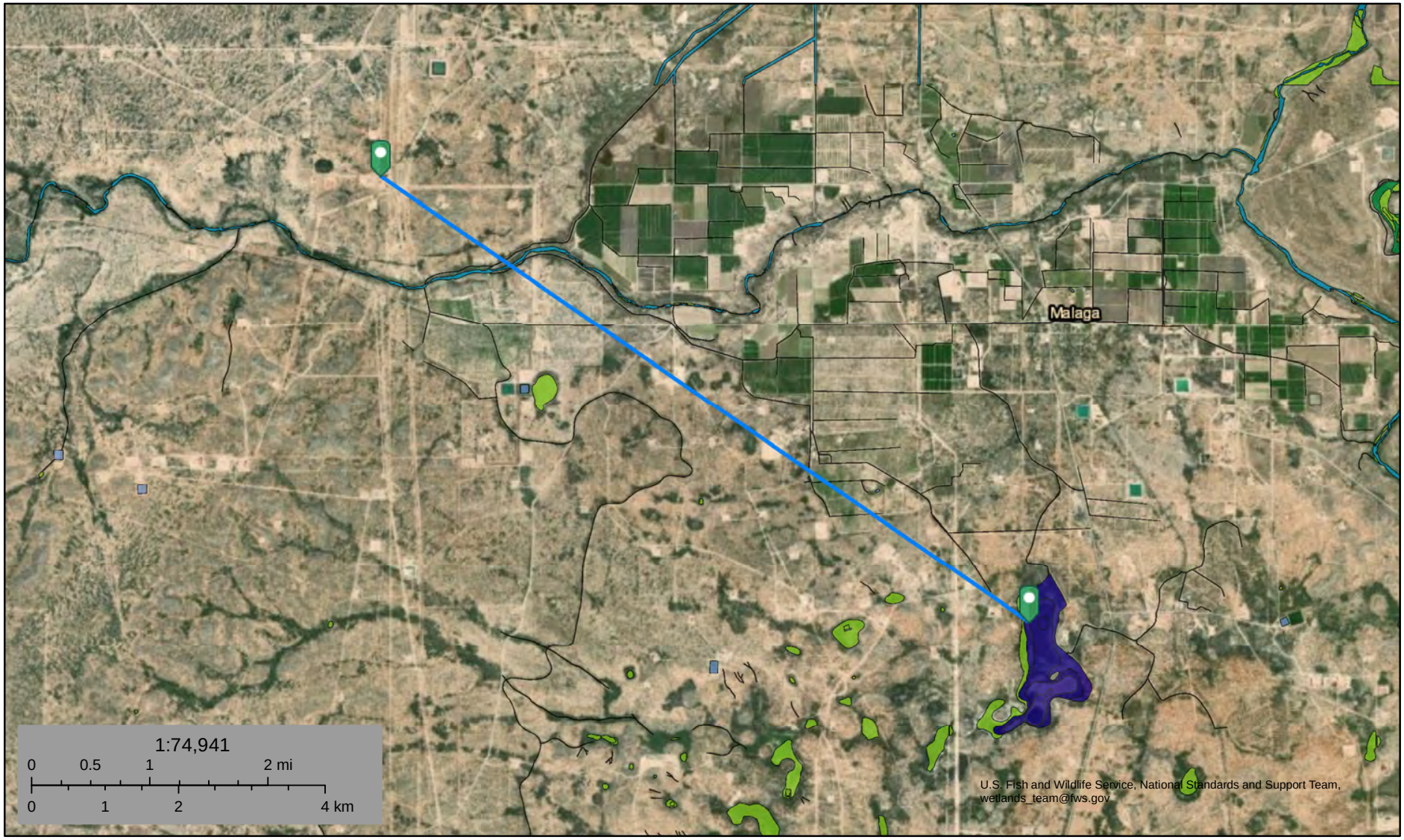
Assessed Waters 2018 IR FINAL
Air-Water Temperature Correlation
Nonpoint Source Program
Fish
Beaver Habitat
Outstanding National Resource Waters
Roads
Legislative
Counties
Urban Areas
Points of Diversion
National Hydrography Dataset
National Hydrography Dataset
Points
Gaging Station
Rapids
Spring/Seep
Waterfall
Well
Lines
Connector
Canal/Ditch
Aqueduct: At or Near Surface
Aqueduct: Underground
Pipeline: Siphon
Intermittent Stream
Perennial Stream
Artificial Path
Waterbodies
Playa
Intermittent Lake
Perennial Lake
High Water Stage Intermittent Lake
Average Water Stage Intermittent Lake
Normal Pool Stage Perennial Lake
Aquaculture Reservoir
Disposal Reservoir
Evaporator Reservoir
Treatment Reservoir
Wetland
Areas
Area to be Submerged
Uncontrolled Inundation Area
Controlled Inundation Area
Flood Elevation Stage Controlled Inundation Area
Intermittent Stream
Perennial Stream
Wash
Watershed Boundary Dataset
Catchments
Sediment Site Classes
Ecoregions
Land Ownership
Tribal Lands
Black River Village Rd
Black River
0
300
600ft
U.S. Geological Survey, National Geospatial Technical Operations Center | Bureau of Land Management, Esri, HERE, Garmin, INCREMENT P, NGA,...
esri

U.S. Fish and Wildlife Service
National Wetlands Inventory

El Presidente 5H - 29,857 ft to Lake



October 17, 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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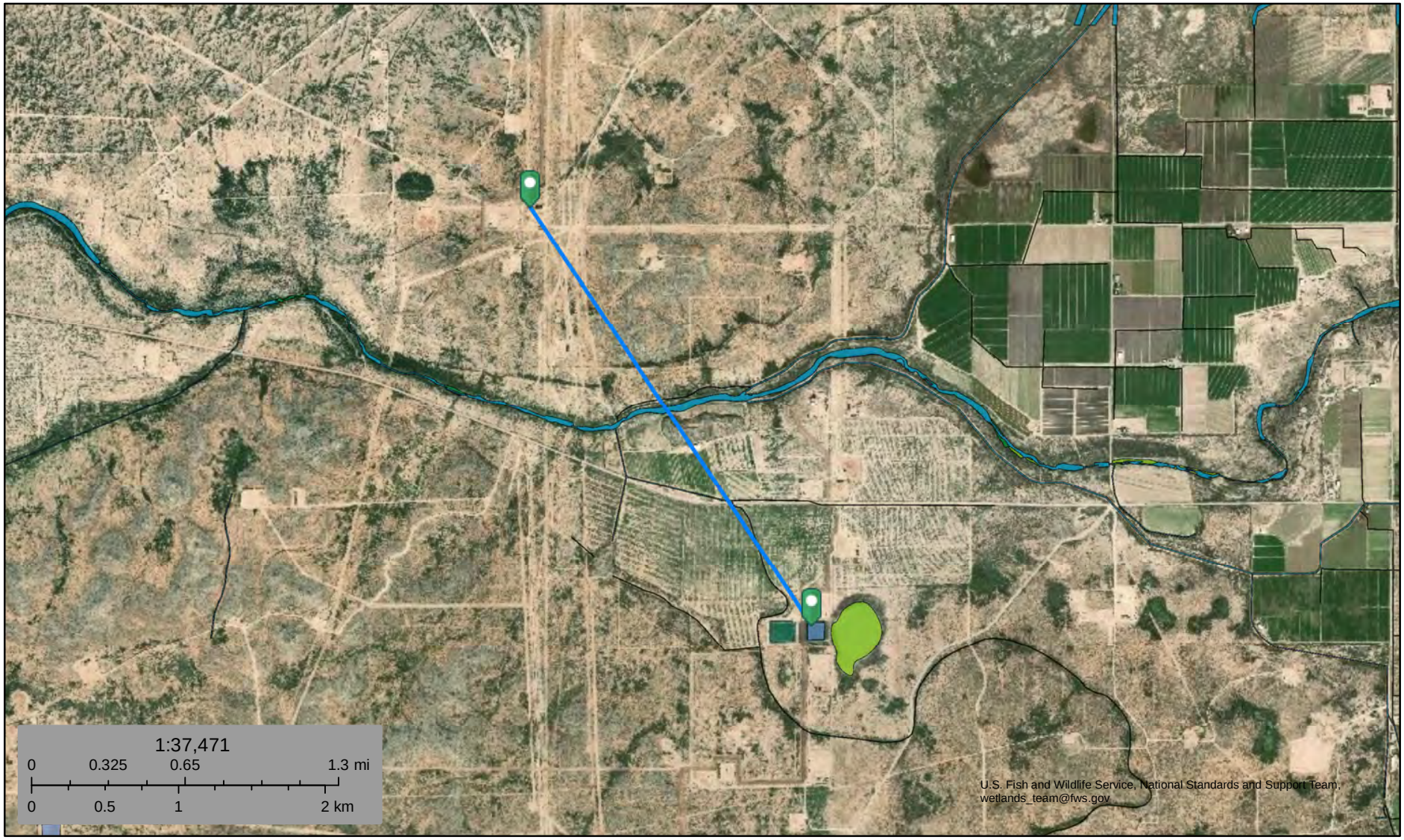
National Wetlands Inventory (NWI)
This page was produced by the NWI mapper

U.S. Fish and Wildlife Service
National Wetlands Inventory

El Presidente 5H - 9,575 ft to Pond



October 17, 2019

Wetlands

- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
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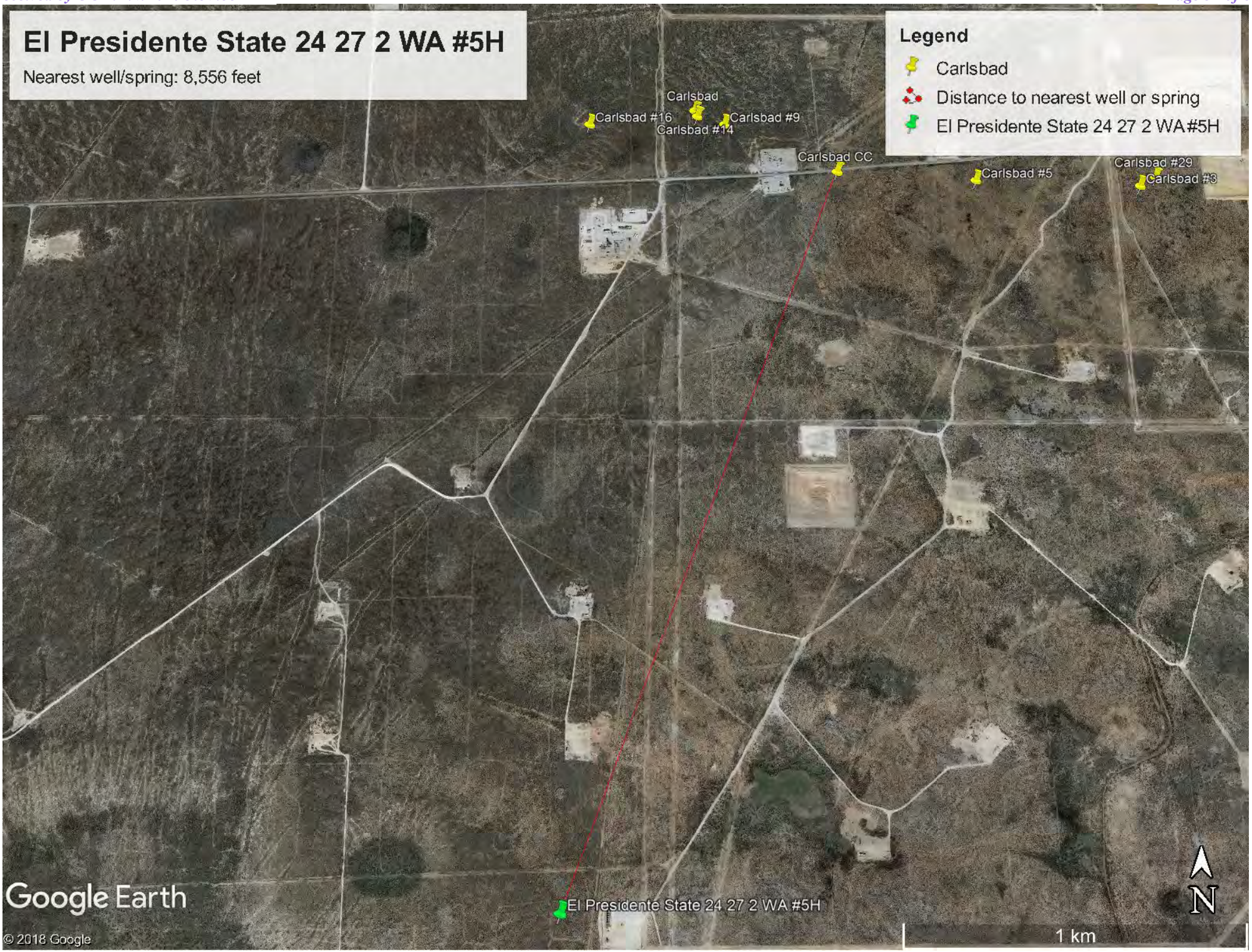
National Wetlands Inventory (NWI)
This page was produced by the NWI mapper


El Presidente State 24 27 2 WA #5H
Nearest residence: 6,946 Feet
Legend
Distance to Residence
El Presidente State 24 27 2 WA #5H
Resident
El Presidente State 24 27 2 WA #5H
Resident
Google Earth
© 2018 Google
1 km
N


El Presidente State 24 27 2 WA #5H
Nearest water well: 4,951.26 Feet
Legend
El Presidente State 24 27 2 WA #5H
Water Well - Livestock
El Presidente State 24 27 2 WA #5H
Water Well - Livestock
Google Earth
© 2018 Google
700 m
N


El Presidente State 24 27 2 WA #5H
Nearest well/spring: 8,556 feet
Legend
Carlsbad
Distance to nearest well or spring
El Presidente State 24 27 2 WA#5H
Carlsbad
Carlsbad #16
Carlsbad #14
Carlsbad #9
Carlsbad CC
Carlsbad #5
Carlsbad #29
Carlsbad #3
El Presidente State 24 27 2 WA #5H
Google Earth
© 2018 Google
1 km
N

U.S. Fish and Wildlife Service
National Wetlands Inventory

El Presidente 5H - 3,782 ft to Wetland

October 17, 2019

Wetlands

- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland
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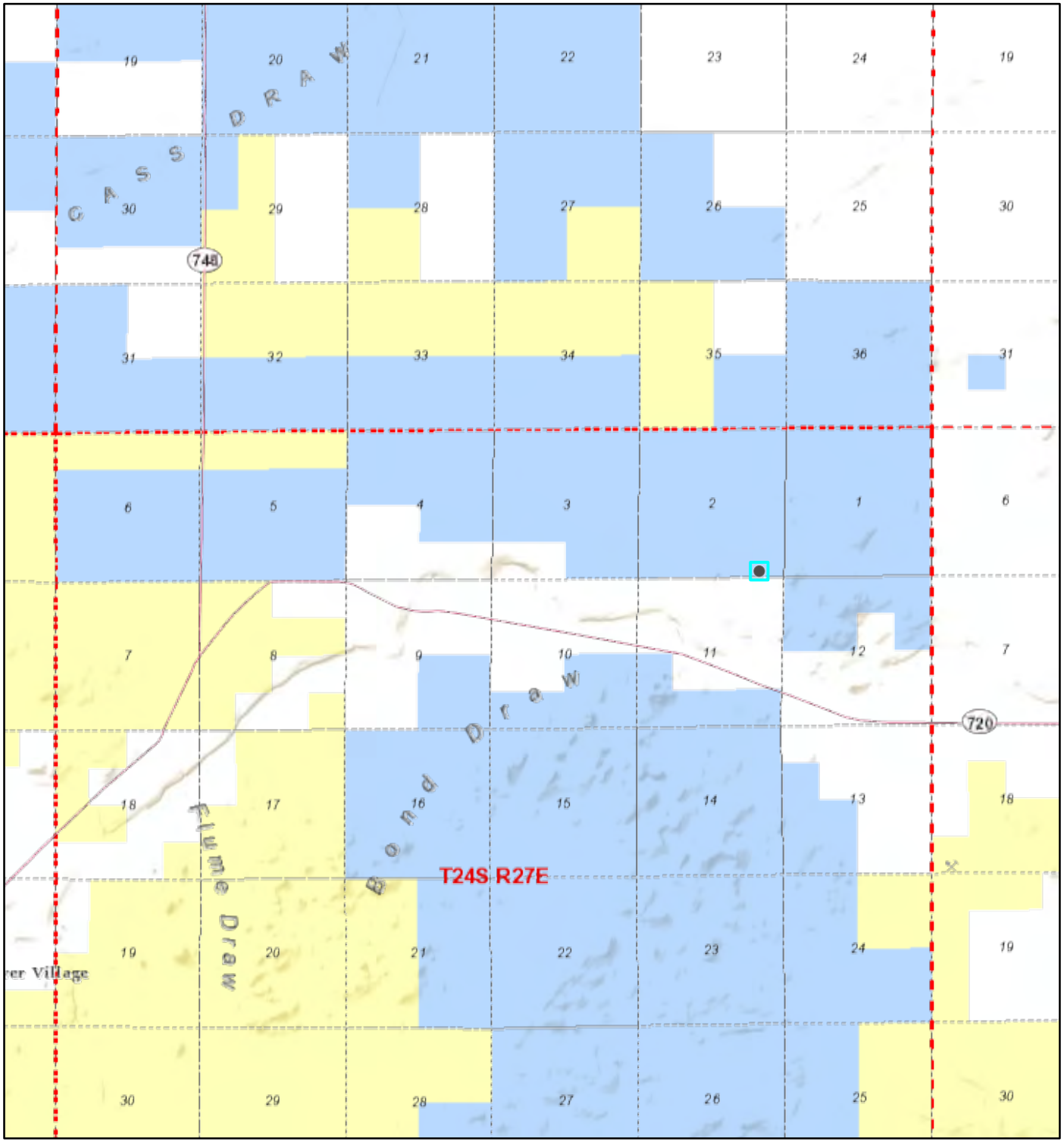
National Wetlands Inventory (NWI)
This page was produced by the NWI mapper

Active Mines near El Presidente 5H



10/17/2019, 3:51:04 PM

1:72,224

0 0.5 1 2 mi

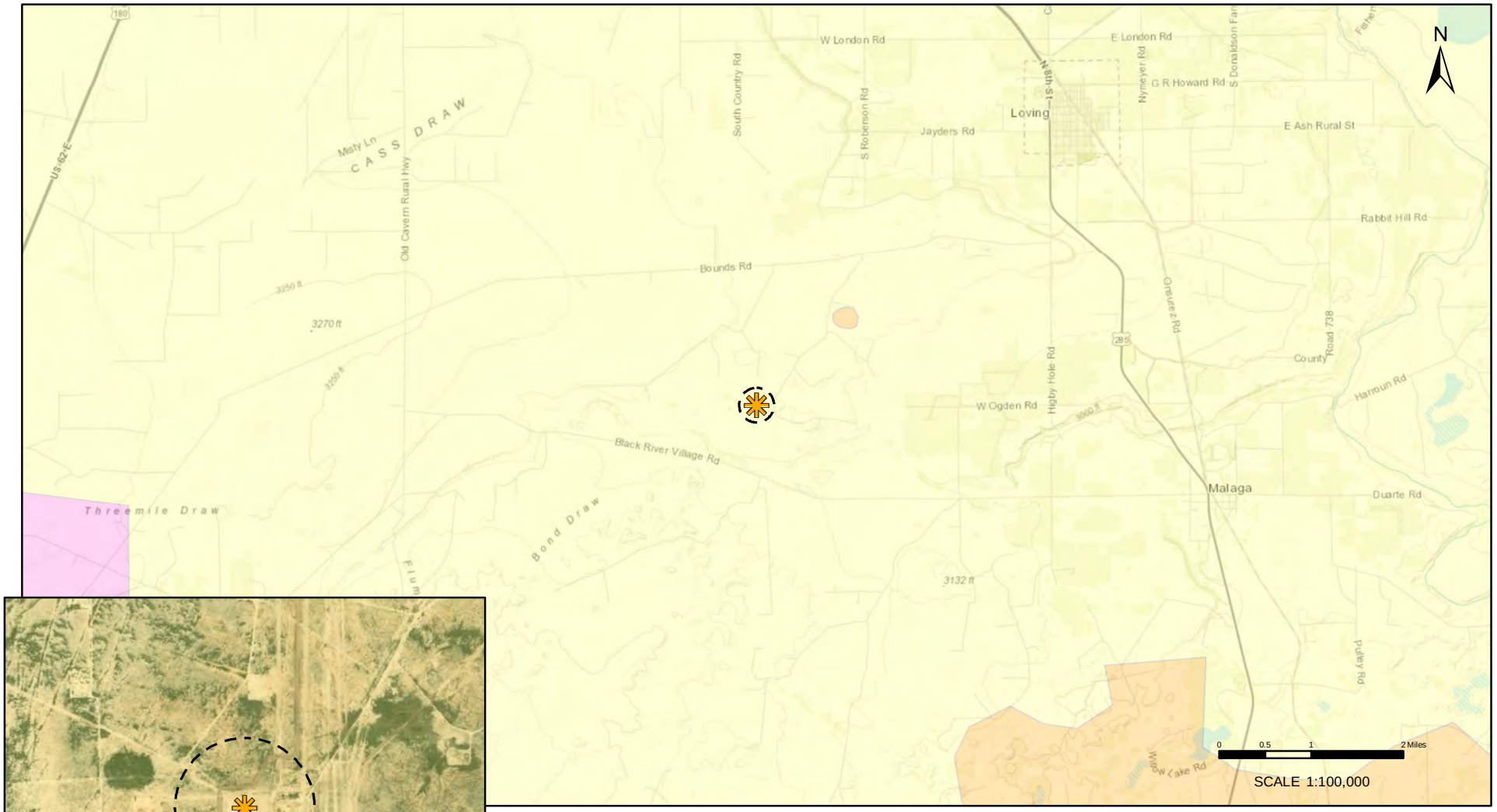
0 0.75 1.5 3 km

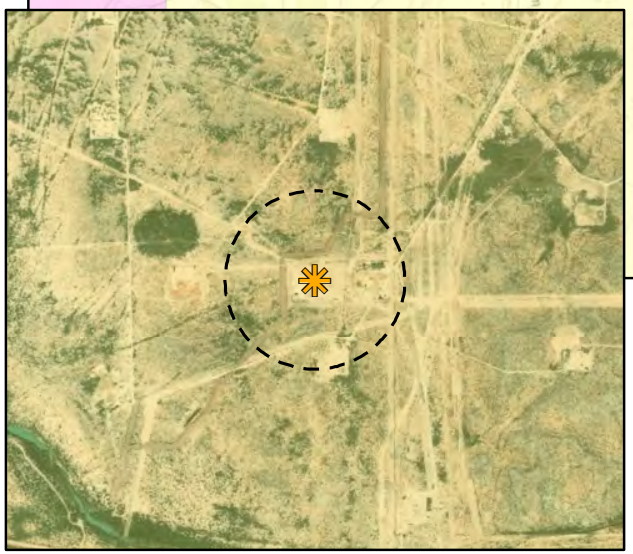
Registered Mines

Aggregate, Stone etc.

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)





LEGEND

- SITE
- 1000FT BUFFER

KARST POTENTIAL

- CRITICAL
- HIGH
- MEDIUM
- LOW

Notes: Aerial Image from ESRI Digital Globe 2018

MarathonOil

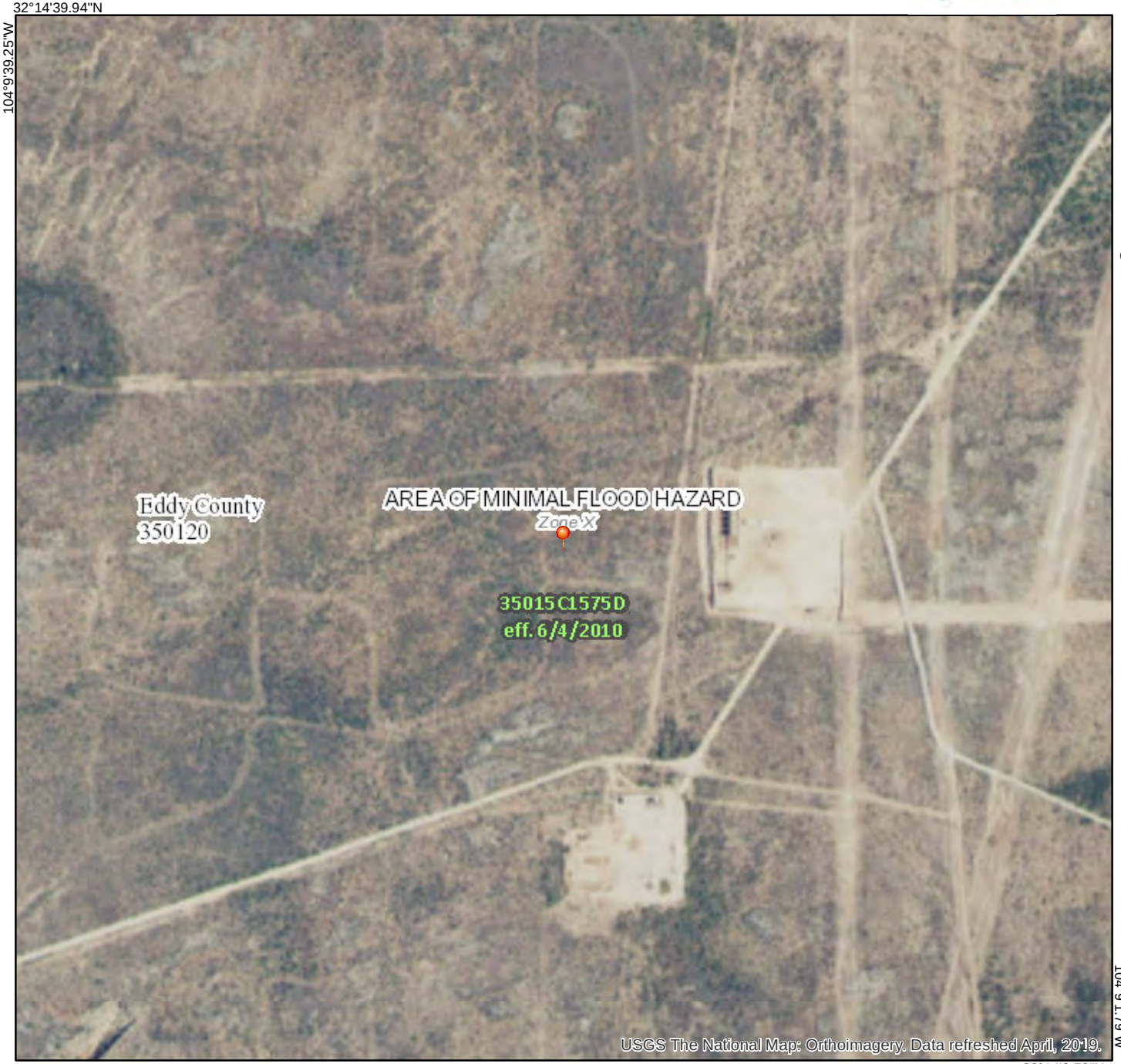
Karst Potential
El Presidente State
24 27 2 WA 5H

VERTEX

DRAWN:	NM	FIGURE: 1
APPROVED:	SH	
DATE:	OCT 18/19	

VERSATILITY. EXPERTISE.

National Flood Hazard Layer FIRMette



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 Cross Sections with 1% Annual Chance
  - 17.5 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.

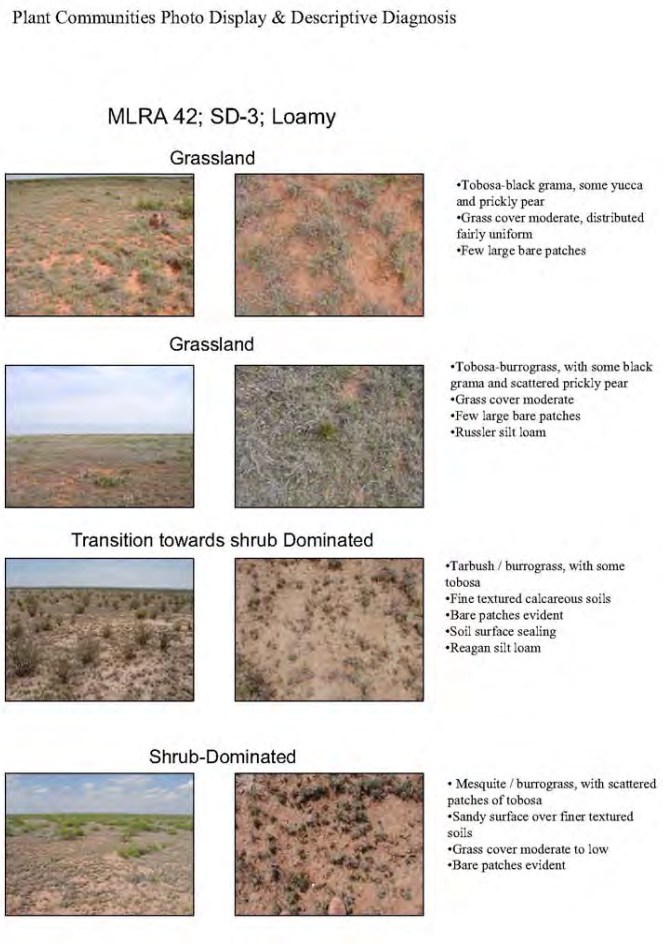
This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 10/17/2019 at 5:49:01 PM 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.

R042XC007NM — Loamy: Historic Climax Plant Community

Plant Community Photos



Historic Climax Plant Community

Plant Community Description

State Containing Historic Climax Plant Community

Grassland:

The historic plant community has a grassland aspect, dominated by grasses with shrubs and half-shrubs sparse and evenly distributed. Black grama, blue grama, and tobosa are the dominant grass species. There are a variety of perennial forbs and their production varies widely by season and year. Globemallow, verbena, groundsels, croton and filaree are forbs commonly found on this site. Fourwing saltbush and winterfat are two of the more palatable shrubs. The Loamy ecological site encompasses a wide variety of soils, with surface textures ranging from sandy loams to clay loams. Soil depths range from shallow to very deep and can include sub surface features such as calcic, petrocalcic, and gypsic horizons. These variations cause differences in plant community composition and dynamics. Black grama is found at highest densities on coarser textured sandy loams, with blue grama preferring finer textured loam and silt loam, and tobosa favoring lower landscape positions and loam to clay loam surface textures. Burrograss may often be the dominant grass species on silty soils, perhaps in part due to the seedlings ability to auger into and establish on physically crusted soils. Gypsum influenced soils typically have greater amounts of tobosa, burrograss, and ephedra. There is greater representation of sideoats and vine mesquite within the tobosa-blue grama community. Retrogression under continuous heavy grazing results in a decrease of black grama, blue grama, sideoats grama, plains bristlegrass, bush muhly, cane bluestem, vine mesquite, winterfat, and fourwing saltbush. Species such as burrograss, threeawns, sand dropseed, sand muhly, and broom snakeweed increase under continuous heavy grazing or prolonged periods of drought. Under continued retrogression burrograss can completely dominate the site. Creosotebush, tarbush, and mesquite, can also dominate. Cholla and prickly pear can increase on areas that are disturbed or overgrazed.

Diagnosis: Tobosa, black grama, and blue grama are the dominant species. Grass cover is uniformly distributed with few large bare areas. Shrubs are sparse and evenly distributed. Slopes range from level to gently sloping and usually display limited evidence of active rills and gully formation if plant cover remains intact. Litter movement associated with overland flow is limited to smaller size class litter and short distances.

Other shrubs include: yucca, mesquite, tarbush, cholla and creosote bush.

Other forbs include: desert holly, scorpionweed, bladderpod, flax, nama, fleabane, Indianwheat, Indian blanket flower, groundcherry, deerstongue, and rayless goldenrod.

Plant Community Tables

Plant Type	Low	Representative Value	High
Grass/Grasslike	585	833	1,080
Forb	39	55	72
Shrub/Vine	26	37	48
Totals	**650**	**925**	**1,200**

Grass/Grasslike				
Group	Plant Common Name	Plant Scientific Name	Annual Production Pounds Per Acre	
			Low	High
1: Warm Season			278	324
	tobosa	Pleuraphis mutica	278	324
2: Warm Season			9	46
	burrograss	Scleropogon brevifolius	9	46
3: Warm Season			231	278
	black grama	Bouteloua eriopoda	231	278
	blue grama	Bouteloua gracilis	231	278
4: Warm Season			28	46
	sideoats grama	Bouteloua curtipendula	28	46
5: Warm Season			46	93
	bush muhly	Muhlenbergia porteri	46	93
	plains bristlegrass	Setaria vulpiseta	46	93
6: Warm Season			9	28
	arizona cottontop	Digitaria californica	9	28
7: Warm Season			46	93
	perennial threeawn spp.	Aristida	46	93
	muhly	Muhlenbergia	46	93
	sand dropseed	Sporobolus cryptandrus	46	93
8: Warm Season			28	46

Forb				
Group	Plant Common Name	Plant Scientific Name	Annual Production Pounds Per Acre	
			Low	High
12: Forb			9	46
	threadleaf groundsel	Senecio flaccidus var. flaccidus	9	46
	gloemallow spp.	Sphaeralcea	9	46
			9	46
13: Forb			9	28
	croton spp.	Croton	9	28
	woolly groundsel	Packera cana	9	28
14: Forb			9	28
	Goodding's tansyaster	Machaeranthera pinnatifida ssp. gooddingii var. gooddingii	9	28
	woolly paperflower	Psilostrophe tagetina	9	28
15: Forb			9	28
	alfileria (redstem, storksbill)	Erodium cicutarium	9	28
	texas filaree	Erodium texanum	9	28
16: Forb			9	28

Shrub/Vine				
Group	Plant Common Name	Plant Scientific Name	Annual Production Pounds Per Acre	
			Low	High
9: Shrub			9	28
	fourwing saltbush	Atriplex canescens	9	28
	ephedra spp.	Ephedra	9	28
	winterfat	Krascheninnikovia lanata	9	28
10: Shrub			9	28
	javilina bush	Condalia ericoides	9	28
	broom snakeweed	Gutierrezia sarothrae	9	28
11: Shrubs			9	28

Growth Curve Name
R042XC007NM Loamy HCPC

Growth Curve Description
R042XC007NM Loamy HCPC Warm Season Plant Community.

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0%	0%	0%	5%	10%	10%	25%	30%	15%	5%	0%	0%

Vegetative Cover Type	Minimum	Maximum
Grass/grasslike	15.000%	30.000%
Forb	—	—
Shrub/vine/liana	—	—
Tree	—	—
Non-vascular plants	—	—
Biological crust	—	—
Non-Vegetative Cover Type	**Minimum**	**Maximum**
Litter	25.000%	30.000%
Surface fragments > 0.25" and <= 3"	—	—
Surface fragments > 3"	—	—
Bedrock	—	—
Water	—	—
Bare ground	40.000%	50.000%
Down wood, fine-small	—	—
Down wood, fine-medium	—	—
Down wood, fine-large	—	—
Down wood, coarse-small	—	—
Down wood, coarse-large	—	—
Tree snags	—	—
Hard snags	—	—
Soft snags	—	—

Eddy Area, New Mexico

UG—Upton gravelly loam, 0 to 9 percent slopes

Map Unit Setting

National map unit symbol: 1w64
Elevation: 1,100 to 4,400 feet
Mean annual precipitation: 7 to 15 inches
Mean annual air temperature: 60 to 70 degrees F
Frost-free period: 200 to 240 days
Farmland classification: Not prime farmland

Map Unit Composition

Upton and similar soils: 96 percent
Minor components: 4 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Upton

Setting

Landform: Fans, ridges
Landform position (three-dimensional): Side slope, rise
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Residuum weathered from limestone

Typical profile

H1 - 0 to 9 inches: gravelly loam
H2 - 9 to 13 inches: gravelly loam
H3 - 13 to 21 inches: cemented
H4 - 21 to 60 inches: very gravelly loam

Properties and qualities

Slope: 0 to 9 percent
Depth to restrictive feature: 7 to 20 inches to petrocalcic
Natural drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Low to moderately high (0.01 to 0.60 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 75 percent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 1.0
Available water storage in profile: Very low (about 1.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s

Hydrologic Soil Group: D
Ecological site: Shallow (R042XC025NM)
Hydric soil rating: No

Minor Components

Atoka
Percent of map unit: 1 percent
Ecological site: Loamy (R042XC007NM)
Hydric soil rating: No

Upton
Percent of map unit: 1 percent
Ecological site: Shallow (R042XC025NM)
Hydric soil rating: No

Atoka
Percent of map unit: 1 percent
Ecological site: Loamy (R042XC007NM)
Hydric soil rating: No

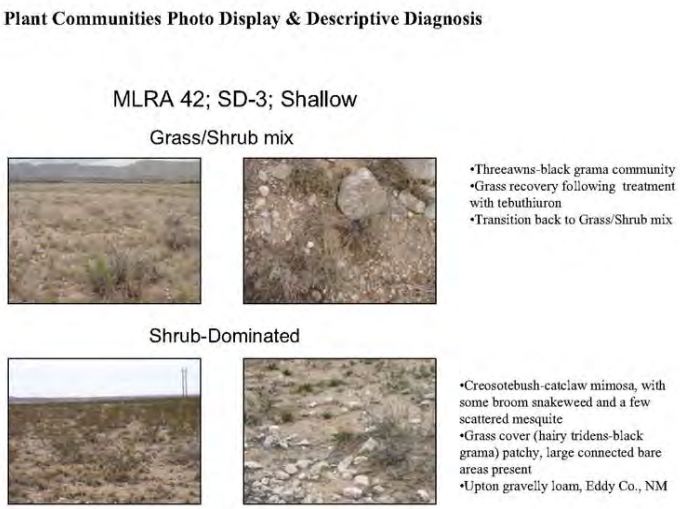
Reagan
Percent of map unit: 1 percent
Ecological site: Loamy (R042XC007NM)
Hydric soil rating: No

Data Source Information

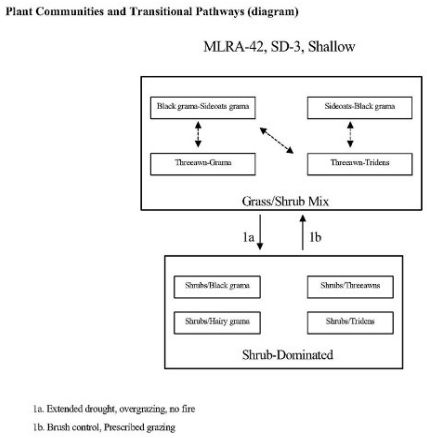
Soil Survey Area: Eddy Area, New Mexico
Survey Area Data: Version 15, Sep 15, 2019

R042XC025NM — Shallow Ecological Site

Plant Community Photos



Grass/Shrub Mix



State Transition Diagram for R042XC025NM — Shallow Ecological Site

Ecological Dynamics Description

Overview:

The Shallow site is associated with and Limestone Hills, Loamy, and Shallow Sandy sites. When associated with Limestone Hills, the Shallow site occurs on the summits, foot slopes and toeslopes of hills. Loamy sites often occur as areas between low elongated hills with rounded crests (Shallow site). When the Shallow Sandy site and Shallow site occur in association, the Shallow Sandy soils occupy the tops of low ridges and the Shallow site soils occur on the steeper sideslopes of the ridge. The historic plant community of the Shallow site has the aspect of a grassland/shrub mix, dominated by grasses, but with shrubs common throughout the site. Black grama is the dominant grass species; creosotebush, mesquite, and catclaw mimosa are common shrubs. Overgrazing and or extended drought can reduce grass cover, effect a change in grass species dominance, and may result in a shrub-dominated state. 1

ATTACHMENT 4

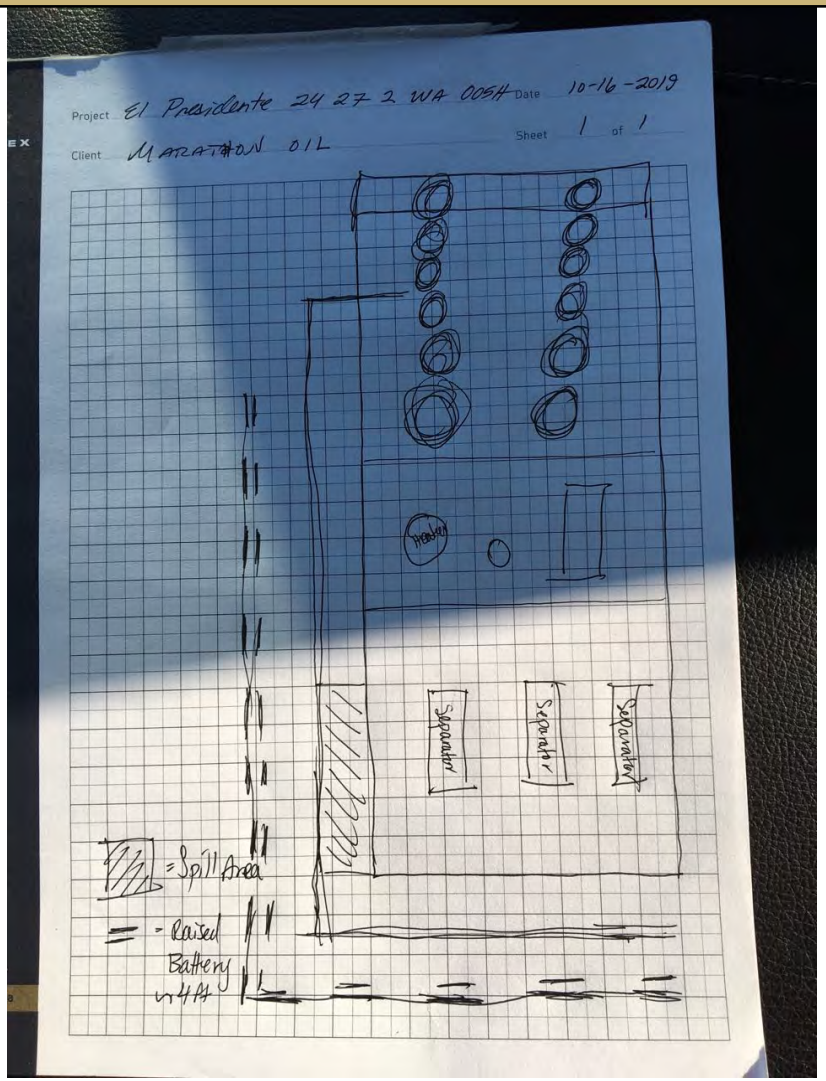
Daily Site Visit Report

Client:	Marathon Oil Permian LLC	Inspection Date:	10/16/2019
Site Location Name:	El Presidente State 24 27 2 WA #005H	Report Run Date:	10/17/2019 7:00 PM
Project Owner:	Isaac Castro	File (Project) #:	19E-00614
Project Manager:	Natalie Gordon	API #:	30-015-44483
Client Contact Name:	Isaac Castro	Reference	Sight Glass Spill
Client Contact Phone #:	(575) 988-0561		

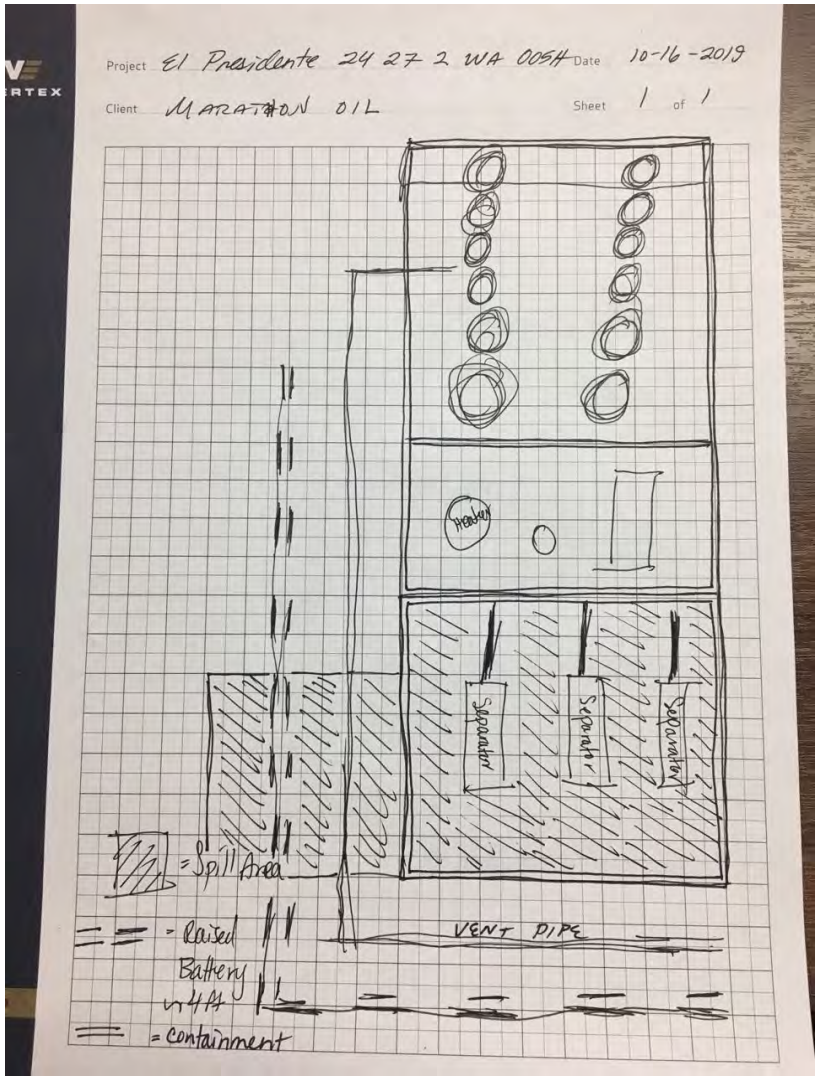
Summary of Times	
Left Office	10/16/2019 2:18 PM
Arrived at Site	10/16/2019 3:40 PM
Departed Site	10/16/2019 4:41 PM
Returned to Office	10/16/2019 6:00 PM

Daily Site Visit Report

Site Sketch



Daily Site Visit Report



Daily Site Visit Report

Summary of Daily Operations

15:57 Conduct initial site visit.

Next Steps & Recommendations

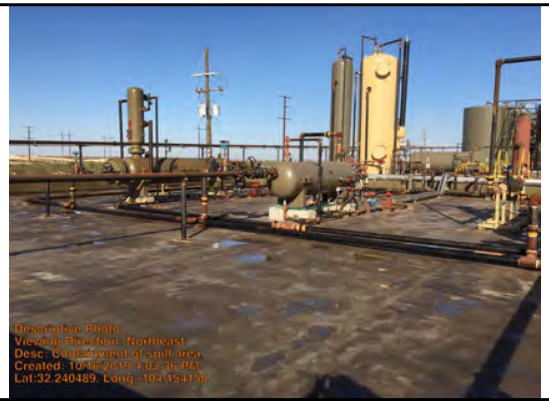
1

Daily Site Visit Report

Site Photos

Viewing Direction: East	**Viewing Direction**: East
	
Emergency excavation area and containment.	Containment area.
Viewing Direction: West	**Viewing Direction**: Southwest
	
Emergency excavation/spill area and containment.	Emergency excavation/spill area and containment.

Daily Site Visit Report

Viewing Direction: Northwest	**Viewing Direction**: West
	
Containment of spill area.	Containment of spill area.
Viewing Direction: Northeast	**Viewing Direction**: North
	
Containment of spill area.	Containment of spill area.

Daily Site Visit Report

Viewing Direction: North

Containment of spill area.

Viewing Direction: West

Excavated area.

Viewing Direction: East

Excavated area below spill - Waiting on Marathon for verification.

Daily Site Visit Report

Daily Site Visit Signature

Inspector: Sharlene Harvester

Signature: 

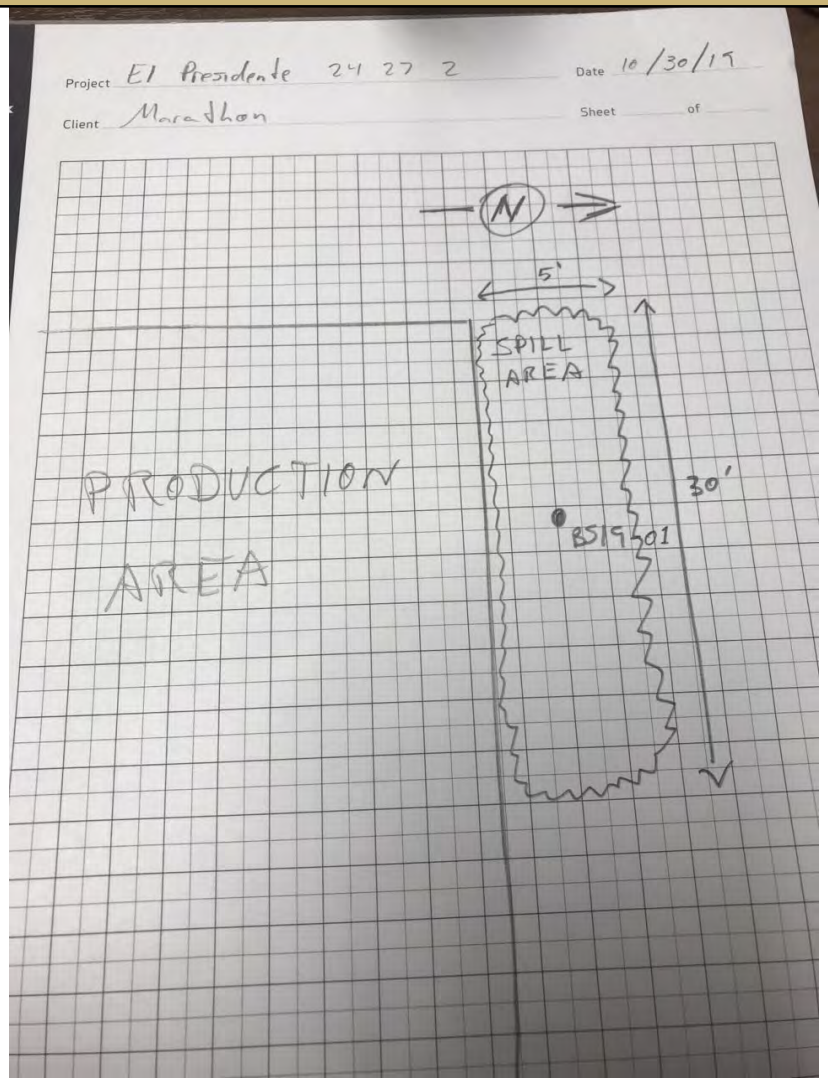
Daily Site Visit Report

Client:	Marathon Oil Permian LLC	Inspection Date:	10/30/2019
Site Location Name:	El Presidente State 24 27 2 WA #005H	Report Run Date:	10/31/2019 10:50 PM
Project Owner:	Isaac Castro	File (Project) #:	19E-00614
Project Manager:	Natalie Gordon	API #:	30-015-44483
Client Contact Name:	Isaac Castro	Reference	Sight Glass Spill
Client Contact Phone #:	(575) 988-0561		

Summary of Times	
Left Office	10/30/2019 1:30 PM
Arrived at Site	10/30/2019 2:00 PM
Departed Site	10/30/2019 3:30 PM
Returned to Office	10/30/2019 4:19 PM

Daily Site Visit Report

Site Sketch



Daily Site Visit Report

Summary of Daily Operations

14:38 Arrive on site.
Complete safety paperwork.
Field screen and obtain confirmatory sample.
Complete DFR.
Return to office.

Next Steps & Recommendations

1 Send sample for lab analysis.

2 Confirm lab results.

3 Backfill scrape area (tbd)

4 Close.

Sampling

ES-Base19-01

Depth ft	VOC PID	Petro Flag TPH ppm	Quantab Range ppm	Quantab Reading ppm	Lab Analysis	Picture	Trimble Location	Marked On Site Sketch?
0 ft.	0 ppm	454 ppm	Low (30-600 ppm)	430 ppm	BTEX (EPA SW-846 Method 8021B/8260B), Chloride (SW-4500 Cl), TPH (EPA SW-846 Method 8015M)	✓	32.24069125, -104.15414460	Yes

Daily Site Visit Report

Site Photos

Viewing Direction: East	**Viewing Direction**: West
	
Scrape area	Scrape area

Daily Site Visit Report

Depth Sample Photos

Sample Point ID: ES-Base19-01

Depth: 0 ft.

Daily Site Visit Report

Daily Site Visit Signature

Inspector: Austin Harris

Signature: 
Signature

Daily Site Visit Report

Client:	Marathon Oil Permian LLC	Inspection Date:	10/30/2019
Site Location Name:	El Presidente State 24 27 2 WA #005H	Report Run Date:	1/7/2020 3:55 PM
Project Owner:	Isaac Castro	File (Project) #:	19E-00614
Project Manager:	Natalie Gordon	API #:	30-015-44483
Client Contact Name:	Isaac Castro	Reference	Sight Glass Spill
Client Contact Phone #:	(575) 988-0561		

Summary of Times

Left Office	10/30/2019 3:31 PM
Arrived at Site	10/30/2019 3:31 PM
Departed Site	10/30/2019 3:56 PM
Returned to Office	10/30/2019 4:18 PM

Summary of Daily Operations

15:33 Arrive on site.
Complete safety paperwork.
Perform liner inspection.
Document.
Complete DFR.
Return to office.

Next Steps & Recommendations

1 Send report to client.

Daily Site Visit Report

Site Photos

Viewing Direction: North	**Viewing Direction**: East
	
West side production area	South side production area
Viewing Direction: East	**Viewing Direction**: East
	
Middle production area	Middle production area

Daily Site Visit Report

Viewing Direction: East	**Viewing Direction**: South
	
North end production area	East side production area
Viewing Direction: North	**Viewing Direction**: East
	
Heater treater contaminant west side	Heater treater contaminant south side

Daily Site Visit Report

Viewing Direction: Northeast	**Viewing Direction**: South
	
Heater treater contaminant north side	Heater treater contaminant south east corner
Viewing Direction: Northeast	**Viewing Direction**: East
	
Heater treater contaminant northeast corner	North side of tank battery from northwest corner

Daily Site Visit Report

Viewing Direction: South	**Viewing Direction**: West
	
West side tank battery from northwest corner	North side tank battery from northeast corner
Viewing Direction: West	**Viewing Direction**: West
	
Middle of tanks from east side	South side of tanks from southeast corner

Daily Site Visit Report

Viewing Direction: East

South side of tanks from southwest corner

Daily Site Visit Report

Daily Site Visit Signature

Inspector: Austin Harris

Signature: 
Signature

ATTACHMENT 5

Natalie Gordon

From: Dennis Williams
Sent: Monday, October 28, 2019 2:11 PM
To: Bratcher, Mike, EMNRD; Hamlet, Robert, EMNRD; Venegas, Victoria, EMNRD
Cc: icastro@marathonoil.com; Natalie Gordon; Dhugal Hanton
Subject: Marathon Oil – El Presidente State 24 27 2 WA 005H – Liner Inspection Notification - No RP Number Assigned

Afternoon All,

Please accept this email as 48hr notification that Vertex Resource Services Inc. has scheduled a liner inspection at the above named location on October 30, 2019 at 2:00 p.m. Austin Harris from Vertex will be on site performing the inspection and can be reached at 432-250-5003. If you need assistance with directions to site please do not hesitate to contact them. If you have any questions or concerns, please do not hesitate to contact me.

Dennis

Dennis Williams
Environmental Earthworks Advisor

Vertex Resource Group Ltd.
213 S. Mesa Street
Carlsbad, NM 88220

P 575.645.3111 Ext. 701
C 575.361.1137
F

www.vertex.ca

ATTACHMENT 6

Client Name: Marathon Oil Permian, LLC
Site Name: El Presidente State 24 27 2 WA #005H
Project #: 19E-00614-013
Lab Report: 641743

Table 2. Confirmatory Soil Sample - Depth to Groundwater 51 ft < 100 ft

Sample Description			Petroleum Hydrocarbons										Inorganic
			Volatile					Extractable					
Sample ID	Depth (ft)	Sample Date	Benzene	Toluene	Ethylbenzene	Xylenes (o&m)	BTEX (Total)	Gasoline Range Organics (GRO)	Diesel Range Organics (DRO)	Motor Oil Range Organics (MRO)	(GRO + DRO)	Total Petroleum Hydrocarbons (TPH)	Chloride
			(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
BS 19-01	0	10/31/2019	<0.000998	<0.000998	<0.000998	<0.00200	<0.000998	<49.9	59.9	<49.9	59.9	59.9	290

Bold and shaded indicates exceedance outside of applied action level

VERTEX

ATTACHMENT 7

Certificate of Analysis Summary 641743

Marathon Oil Company, Tulsa, OK

Project Name: El Presidente 24.27.2 WA 5H

Project Id: 19E-00614
Contact: Isaac Castro
Project Location:

Date Received in Lab: Thu Oct-31-19 02:45 pm
Report Date: 04-NOV-19
Project Manager: Jessica Kramer

Analysis Requested							
	Lab Id:	641743-001					
	Field Id:	BS19-01 0.0'					
	Depth:	0- ft					
	Matrix:	SOIL					
	Sampled:	Oct-30-19 15:00					
BTEX by EPA 8021B	***Extracted:***	Oct-31-19 15:00					
	Analyzed:	Oct-31-19 17:57					
	Units/RL:	mg/kg RL					
Benzene		<0.000998 0.000998					
Toluene		<0.000998 0.000998					
Ethylbenzene		<0.000998 0.000998					
m,p-Xylenes		<0.00200 0.00200					
o-Xylene		<0.000998 0.000998					
Total Xylenes		<0.000998 0.000998					
Total BTEX		<0.000998 0.000998					
Inorganic Anions by EPA 300	***Extracted:***	Oct-31-19 15:10					
	Analyzed:	Oct-31-19 17:39					
	Units/RL:	mg/kg RL					
Chloride		290 99.4					
TPH by SW8015 Mod	***Extracted:***	** ** ** **					
	Analyzed:	Oct-31-19 17:07					
	Units/RL:	mg/kg RL					
Gasoline Range Hydrocarbons (GRO)		<49.8 49.8					
Diesel Range Organics (DRO)		59.9 49.8					
Motor Oil Range Hydrocarbons (MRO)		<49.8 49.8					
Total TPH		59.9 49.8					

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

Version: 1.%

Jessica Kramer
Project Assistant

Analytical Report 641743

for

Marathon Oil Company

Project Manager: Isaac Castro

El Presidente 24.27.2 WA 5H

19E-00614

04-NOV-19

Collected By: Client

1089 N Canal Street
Carlsbad, NM 88220

Xenco-Houston (EPA Lab Code: TX00122):
Texas (T104704215-19-30), Arizona (AZ0765), Florida (E871002-24), Louisiana (03054)
Oklahoma (2017-142), North Carolina (681)

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

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

04-NOV-19

Project Manager: **Isaac Castro**
Marathon Oil Company
P. O. Box 22164
Tulsa, OK 74121-2164

Reference: XENCO Report No(s): **641743**
El Presidente 24.27.2 WA 5H
Project Address:

Isaac Castro:

We are reporting to you the results of the analyses performed on the samples received under the project name referenced above and identified with the XENCO Report Number(s) 641743. All results being reported under this Report Number apply to the samples analyzed and properly identified with a Laboratory ID number. Subcontracted analyses are identified in this report with either the NELAC certification number of the subcontract lab in the analyst ID field, or the complete subcontracted report attached to this report.

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

The validity and integrity of this report will remain intact as long as it is accompanied by this letter and reproduced in full, unless written approval is granted by XENCO Laboratories. This report will be filed for at least 5 years in our archives after which time it will be destroyed without further notice, unless otherwise arranged with you. The samples received, and described as recorded in Report No. 641743 will be filed for 45 days, and after that time they will be properly disposed without further notice, unless otherwise arranged with you. We reserve the right to return to you any unused samples, extracts or solutions related to them if we consider so necessary (e.g., samples identified as hazardous waste, sample sizes exceeding analytical standard practices, controlled substances under regulated protocols, etc).

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

Respectfully,

Jessica Kramer

Jessica Kramer
Project Assistant

Recipient of the Prestigious Small Business Administration Award of Excellence in 1994.
Certified and approved by numerous States and Agencies.
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Houston - Dallas - Midland - San Antonio - Phoenix - Oklahoma - Latin America

Sample Cross Reference 641743

Marathon Oil Company, Tulsa, OK

El Presidente 24.27.2 WA 5H

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
BS19-01 0.0'	S	10-30-19 15:00	0 ft	641743-001

CASE NARRATIVE

Client Name: Marathon Oil Company

Project Name: El Presidente 24.27.2 WA 5H

Project ID: *19E-00614*
Work Order Number(s): *641743*

Report Date: *04-NOV-19*
Date Received: *10/31/2019*

Sample receipt non conformances and comments:

None

Sample receipt non conformances and comments per sample:

None

Analytical non conformances and comments:

Batch: LBA-3106150 TPH by SW8015 Mod
Surrogate o-Terphenyl recovered below QC limits. Matrix interferences is suspected; data confirmed by re-analysis.
Samples affected are: 641648-001 S,641648-001 SD.

Batch: LBA-3106175 BTEX by EPA 8021B
Soil samples were not received in Terracore kits and therefore were prepared by method 5030.

Certificate of Analytical Results 641743

Marathon Oil Company, Tulsa, OK

El Presidente 24.27.2 WA 5H

Sample Id:	**BS19-01 0.0'**	Matrix:	Soil	Date Received:	10.31.19 14.45
Lab Sample Id:	641743-001	Date Collected:	10.30.19 15.00	Sample Depth:	0 ft

Analytical Method:	Inorganic Anions by EPA 300			Prep Method:	E300P
Tech:	MAB			% Moisture:	
Analyst:	MAB	Date Prep:	10.31.19 15.10	Basis:	Wet Weight
Seq Number:	3106108				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**290**	99.4	mg/kg	10.31.19 17.39		10

Analytical Method:	TPH by SW8015 Mod			Prep Method:	SW8015P
Tech:	DTH			% Moisture:	
Analyst:	DTH	Date Prep:	10.31.19 11.00	Basis:	Wet Weight
Seq Number:	3106150				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<49.8	49.8	mg/kg	10.31.19 17.07	U	1
Diesel Range Organics (DRO)	C10C28DRO	**59.9**	49.8	mg/kg	10.31.19 17.07		1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<49.8	49.8	mg/kg	10.31.19 17.07	U	1
Total TPH	PHC635	**59.9**	49.8	mg/kg	10.31.19 17.07		1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	76	%	70-135	10.31.19 17.07	
o-Terphenyl	84-15-1	75	%	70-135	10.31.19 17.07	

Certificate of Analytical Results 641743

Marathon Oil Company, Tulsa, OK

El Presidente 24.27.2 WA 5H

Sample Id:	**BS19-01 0.0'**	Matrix:	Soil	Date Received:	10.31.19 14.45
Lab Sample Id:	641743-001	Date Collected:	10.30.19 15.00	Sample Depth:	0 ft
Analytical Method:	BTEX by EPA 8021B			Prep Method:	SW5030B
Tech:	MAB			% Moisture:	
Analyst:	MAB	Date Prep:	10.31.19 15.00	Basis:	Wet Weight
Seq Number:	3106175				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.000998	0.000998	mg/kg	10.31.19 17.57	U	1
Toluene	108-88-3	<0.000998	0.000998	mg/kg	10.31.19 17.57	U	1
Ethylbenzene	100-41-4	<0.000998	0.000998	mg/kg	10.31.19 17.57	U	1
m,p-Xylenes	179601-23-1	<0.00200	0.00200	mg/kg	10.31.19 17.57	U	1
o-Xylene	95-47-6	<0.000998	0.000998	mg/kg	10.31.19 17.57	U	1
Total Xylenes	1330-20-7	<0.000998	0.000998	mg/kg	10.31.19 17.57	U	1
Total BTEX		<0.000998	0.000998	mg/kg	10.31.19 17.57	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
4-Bromofluorobenzene	460-00-4	118	%	70-130	10.31.19 17.57	
1,4-Difluorobenzene	540-36-3	101	%	70-130	10.31.19 17.57	

Flagging Criteria

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

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

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

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

F RPD exceeded lab control limits.

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

U Analyte was not detected.

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

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

K Sample analyzed outside of recommended hold time.

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

** Surrogate recovered outside laboratory control limit.

BRL Below Reporting Limit.

RL Reporting Limit

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

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

DL Method Detection Limit

NC Non-Calculable

SMP Client Sample **BLK** Method Blank

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

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

+ NELAC certification not offered for this compound.

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

QC Summary 641743

Marathon Oil Company

El Presidente 24.27.2 WA 5H

Analytical Method: Inorganic Anions by EPA 300 — Prep Method: E300P
Seq Number: 3106108 — Matrix: Solid — Date Prep: 10.31.19
MB Sample Id: 7689340-1-BLK — LCS Sample Id: 7689340-1-BKS — LCSD Sample Id: 7689340-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	<10.0	250	270	108	271	108	90-110	0	20	mg/kg	10.31.19 14:56	

Analytical Method: Inorganic Anions by EPA 300 — Prep Method: E300P
Seq Number: 3106108 — Matrix: Soil — Date Prep: 10.31.19
Parent Sample Id: 641648-001 — MS Sample Id: 641648-001 S — MSD Sample Id: 641648-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	2010	2470	4570	104	4580	104	90-110	0	20	mg/kg	10.31.19 15:15	

Analytical Method: Inorganic Anions by EPA 300 — Prep Method: E300P
Seq Number: 3106108 — Matrix: Soil — Date Prep: 10.31.19
Parent Sample Id: 641647-006 — MS Sample Id: 641647-006 S — MSD Sample Id: 641647-006 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	288	1260	1490	95	1470	94	90-110	1	20	mg/kg	10.31.19 17:01	

Analytical Method: TPH by SW8015 Mod — Prep Method: SW8015P
Seq Number: 3106150 — Matrix: Solid — Date Prep: 10.31.19
MB Sample Id: 7689349-1-BLK — LCS Sample Id: 7689349-1-BKS — LCSD Sample Id: 7689349-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Gasoline Range Hydrocarbons (GRO)	<50.0	1000	883	88	862	86	70-135	2	35	mg/kg	10.31.19 12:16	
Diesel Range Organics (DRO)	<50.0	1000	774	77	768	77	70-135	1	35	mg/kg	10.31.19 12:16	

Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
1-Chlorooctane	132		135		135		70-135	%	10.31.19 12:16
o-Terphenyl	133		126		129		70-135	%	10.31.19 12:16

Analytical Method: TPH by SW8015 Mod — Prep Method: SW8015P
Seq Number: 3106150 — Matrix: Solid — Date Prep: 10.31.19
MB Sample Id: 7689349-1-BLK

Parameter	MB Result	Units	Analysis Date	Flag
Motor Oil Range Hydrocarbons (MRO)	<50.0	mg/kg	10.31.19 11:56	

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

QC Summary 641743

Marathon Oil Company

El Presidente 24.27.2 WA 5H

Analytical Method: TPH by SW8015 Mod — Prep Method: SW8015P
Seq Number: 3106150 — Matrix: Soil — Date Prep: 10.31.19
Parent Sample Id: 641648-001 — MS Sample Id: 641648-001 S — MSD Sample Id: 641648-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Gasoline Range Hydrocarbons (GRO)	<50.0	1000	702	70	706	70	70-135	1	35	mg/kg	10.31.19 12:36	
Diesel Range Organics (DRO)	<50.0	1000	642	64	637	63	70-135	1	35	mg/kg	10.31.19 12:36	X

Surrogate	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1-Chlorooctane	70		71		70-135	%	10.31.19 12:36
o-Terphenyl	68	**	69	**	70-135	%	10.31.19 12:36

Analytical Method: BTEX by EPA 8021B — Prep Method: SW5030B
Seq Number: 3106175 — Matrix: Solid — Date Prep: 10.31.19
MB Sample Id: 7689419-1-BLK — LCS Sample Id: 7689419-1-BKS — LCSD Sample Id: 7689419-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	<0.00100	0.100	0.0936	94	0.100	100	70-130	7	35	mg/kg	10.31.19 10:21	
Toluene	<0.00100	0.100	0.0940	94	0.100	100	70-130	6	35	mg/kg	10.31.19 10:21	
Ethylbenzene	<0.00100	0.100	0.0980	98	0.105	105	71-129	7	35	mg/kg	10.31.19 10:21	
m,p-Xylenes	<0.00200	0.200	0.199	100	0.213	107	70-135	7	35	mg/kg	10.31.19 10:21	
o-Xylene	<0.00100	0.100	0.0982	98	0.106	106	71-133	8	35	mg/kg	10.31.19 10:21	

Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	98		99		102		70-130	%	10.31.19 10:21
4-Bromofluorobenzene	109		106		112		70-130	%	10.31.19 10:21

Analytical Method: BTEX by EPA 8021B — Prep Method: SW5030B
Seq Number: 3106175 — Matrix: Soil — Date Prep: 10.31.19
Parent Sample Id: 641648-001 — MS Sample Id: 641648-001 S — MSD Sample Id: 641648-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	<0.00100	0.100	0.0966	97	0.0840	84	70-130	14	35	mg/kg	10.31.19 11:02	
Toluene	<0.00100	0.100	0.0978	98	0.0842	84	70-130	15	35	mg/kg	10.31.19 11:02	
Ethylbenzene	<0.00100	0.100	0.102	102	0.0864	87	71-129	17	35	mg/kg	10.31.19 11:02	
m,p-Xylenes	<0.00201	0.201	0.207	103	0.176	88	70-135	16	35	mg/kg	10.31.19 11:02	
o-Xylene	<0.00100	0.100	0.103	103	0.0880	88	71-133	16	35	mg/kg	10.31.19 11:02	

Surrogate	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	99		100		70-130	%	10.31.19 11:02
4-Bromofluorobenzene	113		110		70-130	%	10.31.19 11:02

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

Chain of Custody

Houston,TX (281) 240-4200 Dallas,TX (214) 902-0300 San Antonio,TX (210) 509-3334
Midland,TX (432-704-5440) EL Paso,TX (915)585-3443 Lubbock,TX (806)794-1296 Carlsbad, NM (575)988-3199
Hobbs,NM (575-392-7550) Phoenix,AZ (480-355-0900) Atlanta,GA (770-449-8800) Tampa,FL (813-620-2000)
www.xenco.com

Work Order No: 641743

Page 1 of 1

Project Manager:	Isaac Castro	Bill to: (if different)	
Company Name:	Marathon Oil	Company Name:	
Address:	4111 S. Tidwell Rd.	Address:	
City, State ZIP:	Carlsbad NM 88220	City, State ZIP:	
Phone:	(575) 988-0561	Email:	lcastro@marathonoil.com

Work Order Comments

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

Project Name:	El Presidente 24.27.2 WA 5H	Turn Around	
Project Number:	19E-00614	Routine	☑
P.O. Number:		Rush:	
Sampler's Name:	Austin Harris	Due Date:	

SAMPLE RECEIPT			
Temp Blank:	Yes (No)	Wet Ice:	(Yes) No
Temperature (°C):	1.0	Thermometer ID	
Received Intact:	(Yes) No	T-NM-007	
Cooler Custody Seals:	Yes No (N/A)	Correction Factor:	-0.2
Sample Custody Seals:	Yes No (N/A)	Total Containers:	1

Sample Identification	Matrix	Date Sampled	Time Sampled	Depth	Number of Containers	BTEX SW8021	TPH SW8015	Chloride E300_CL
B319-01 0.0'	Soil	10-30-19	3:00 p	0.0'		X	X	X

ANALYSIS REQUEST

Work Order Notes

TAT starts the day recevied by the lab, if received by 4:30pm

Sample Comments

Total 200.7 / 6010 200.8 / 6020: 8RCRA 13PPM Texas 11 Al Sb As Ba Be B Cd Ca Cr Co Cu Fe Pb Mg Mn Mo Ni K Se Ag SiO2 Na Sr Tl Sn U V Zn
Circle Method(s) and Metal(s) to be analyzed **TCLP / SPLP 6010**: 8RCRA Sb As Ba Be Cd Cr Co Cu Pb Mn Mo Ni Se Ag Tl U **1631 / 245.1 / 7470 / 7471** : Hg

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

	Relinquished by: (Signature)	Received by: (Signature)	Date/Time	Relinquished by: (Signature)	Received by: (Signature)	Date/Time
1		Cortez P	10-31-19 14:45			
3				4		
5				6		

Revised Date 051418 Rev. 2018.1

XENCO Laboratories

Prelogin/Nonconformance Report- Sample Log-In

Client: Marathon Oil Company

Date/ Time Received: 10/31/2019 02:45:00 PM

Work Order #: 641743

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

Temperature Measuring device used : T-NM-007

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

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

Analyst: PH Device/Lot#:

Checklist completed by: Elizabeth McClellan Date: 10/31/2019

Checklist reviewed by: Jessica Kramer Date: 11/01/2019

Jessica Kramer