

2135 S. Loop 250 W
Midland, Texas 79703
United States
www.ghd.com

Our ref: 11220747

February 09, 2022

New Mexico Oil Conservation Division
District 1
1625 N. French Drive
Hobbs, New Mexico 88240

Groundwater Closure Request Report
Flamenco Federal #1 Release Site
EOG Resources Inc.
RP #s: 1RP-2281, 1 RP-2784, 1RP-2790, 1RP-4800 and 1RP-4801
L-7-22S-32E, Lea County, New Mexico

To Whom It May Concern:

1. Introduction

GHD Services, Inc. (GHD), on behalf of EOG Resources (EOG), submits this Groundwater Closure Request Report to the New Mexico Oil Conservation Division (NMOCD) District 1 Office. This Report provides documentation of the April 2021 perched water sampling event at the EOG Flamenco Federal #1 Release Site (Site). Additionally, the report summarizes additional soils investigative work conducted at the site which is covered in more detail under separate cover, Site Characterization and Soil Work Plan. This report provides evidence that the water found in the on-site monitoring wells is perched produced water from the spills that occurred rather than groundwater that should be protected. The Site is located in Unit Letter L Section 7 of Township 22 South and Range 32 East in Lea County, New Mexico. The GPS coordinates for the release site are 32.40333 N latitude and 103.72034 W longitude. The release occurred on land that is managed by the Bureau of Land Management (BLM). Figure 1 depicts the Site location. The EOG production facility and other site details are depicted on Figure 2, Site Details Map.

2. Background Information

2.1 Tin Horn Area Releases

- **1RP-2784** – The C-141 stated the release was due to a water line connection failure within the tin horn. The release occurred on July 12, 2011 and resulted in 150 barrels of produced water being released. A vacuum truck was call and approximately 100 barrels of produced water was recovered. Yates Petroleum Corporation (Yates), the operator at the time, submitted an initial C-141 to the NMOCD on July 22, 2011.
- **1RP-2790** – According to the initial C-141 the release was caused by a water line connection within the tin horn failing. The release occurred on October 21, 2011 and resulted in 275 barrels of produced water

being released. Approximately 260 barrels of produced water was recovered with the utilization of a vacuum truck. Yates submitted an initial C-141 to the NMOCD on November 2, 2011.

- **1RP-4800** – The initial C-141 stated the release was due to a failure of the water line connection at the tin horn. The release resulted in the release of 200 barrels of produced water and occurred on June 12, 2013. Nothing was recovered. An initial C-141 was prepared and submitted to the NMOCD on January 31, 2014.
- **1RP-4801** – According to the initial C-141 the release was due to a water line connection failure at the tin horn. The release occurred on August 4, 2013. The connection failure resulted in the release of 600 barrels of produced water with none being recovered. Yates prepared and submitted an initial C-141 to the NMOCD on January 31, 2014.

The four releases mentioned above resulted in approximately 865 barrels of produced water being unrecovered. The initial C-141s are provided as Attachment A.

2.2 Battery Area Release

- **1RP-2281** – According to the initial C-141, lightning struck a 750-barrel fiberglass gun barrel tank which caused a release and fire to occur. Four other tanks that were on location were also destroyed. The fire department was called, and the main water line was shut in. Approximately 100 barrels of oil and 600 barrels of produced water were released with none being recovered. The release occurred on August 11, 2009. The C-141 also stated the fluids broke through the battery berm and released to the west of the battery, off pad. The tank battery at the time was located at the west end of the battery and was rebuilt on east end of the battery. Yates submitted an initial C-141 on August 20, 2009.

This release resulted in approximately 600 barrels of produced water being unrecovered. The initial C-141 for this release is provided as Attachment A.

Ten (10) soil borings were completed at the Site during 2018 in order to assess the vertical and horizontal extent of the chloride contaminated soil (locations are shown on Figure 4). Depths of the soil borings ranged from 25 to 65 ft bgs. A hard caliche layer was encountered in soil boring MW-5 at 25 ft bgs and it was terminated. Soil borings that did not encounter water were grouted. In five soil borings where perched produced water was encountered, a monitor well was installed. Monitor wells MW-1, MW-2 and MW-3 were installed in January 2018 by White Drilling Company, Inc. of Clyde, Texas and monitor wells MW-8 and MW-9 were installed in August 2018 by Authentic Drilling, Inc. of Castle Rock, Colorado. All borings were advanced utilizing an air rotary drill rig. Monitor well locations can be found on Figure 2, Site Details Map.

Historical perched water sampling events were conducted on February 23, 2018, June 21, 2018, October 19, 2018, and January 11, 2019. Monitor wells MW-8 and MW-9 were not sampled due to a lack of perched water for sampling during the October 2018 and January 2019 sampling events. Sample results for monitor wells MW-1, MW-2, and MW-3 indicated high chloride and TDS concentrations. Chloride concentrations ranged from 6,900 mg/L in MW-2 on June 21, 2018, to 49,000 mg/L in MW-3 on October 19, 2018. TDS concentrations ranged from 15,300 in MW-2 on June 21, 2018, to 100,000 mg/l in MW-3 on January 11, 2019. There are more details in the 2018 Annual Groundwater Monitoring Report provided as Attachment E.

3. April 2021 Perched Water Sampling Event

Prior to gauging activity, fluid levels were gauged with an oil-water interface probe to the nearest hundredth of a foot. After recording all fluid levels, perched water samples were collected using low-flow sampling techniques. During the low purging process, geochemical field parameters including pH, conductivity, temperature, dissolved oxygen (DO), total dissolved solids (TDS) and oxidation-reduction potential (ORP) were recorded. Purging continued until these parameters stabilized or the well went dry. One duplicate sample was collected during the sampling event. Laboratory-supplied sample containers were filled directly from the low flow tubing. Groundwater samples were placed on ice and chilled to a temperature of approximately 4°C (40°F). Proper

chain-of-custody documentation accompanied the samples to Eurofins Xenco Environment testing in Carlsbad, New Mexico for analysis of BTEX by EPA Method 8021B, chloride by Method 300.0 and TDS.

On April 6, 2021, GHD went to the site and conducted a perched water sampling event. Samples were collected from monitor wells MW-1, MW-2, MW-3, MW-8 and MW-9. Low flow sampling could not be completed in MW-8 and MW-9 due to a lack of water. Grab samples were collected using disposable bailers. Analytical results indicate that all of the wells at the site have chloride and TDS concentrations over the New Mexico Water Quality Control Commission (NMWQCC) standards of 250 mg/L and 1,000 mg/L, respectively. Chloride concentrations ranged from 765 mg/L in MW-8 to 39,400 mg/L in MW-3 and TDS concentrations ranged from 2,630 mg/L in MW-8 to 72,500 mg/L in MW-3. No benzene, Toluene, Ethylbenzene, and Xylenes (BTEX) concentrations were detected in any of the wells. Laboratory reports and chain-of-custody documentation are provided as Attachment D.

4. 2021 Site Assessment Summary

From July 25, 2021, through August 18, 2021, two soil borings (MW-10 and MW-11) were installed to a depth of 105 feet below ground surface (bgs.) to determine depth to groundwater at the site. MW-10 was up gradient of the monitor wells and MW-11 was down gradient of MW-3 which is the well with the highest chloride and TDS concentrations. The borings were left open for seventy-two (72) hours and then were gauged with an interface probe to determine the presence or absence of groundwater. There was no water detected and the borings were plugged. Additionally, thirty-two (32) soil borings were installed to delineate soil impacts.

During the April 6, 2021, perched water sampling event the depth to water was measured in each well along with total depth. When the depth to water measurement is adjusted for the three (3) foot stick up the depth to water ranged from 52.83 feet in MW-1 to 63.83 feet in MW-8 from ground surface. The total depths of the wells ranged from 58.09 feet in MW-3 to 67.01 in MW-8 from ground surface. The soil borings had total depths that ranged from fifteen (15) feet to eighty (80) feet. Soil borings SB-12, SB-18, SB-21A, SB-33, SB-35, SB-36, SB-37, SB-38, MW-10, and MW-11, which are depicted on Figure 7, Boreholes ≥ 60 Feet, were all installed to a depth of sixty feet or greater and no water was detected in any of the borings. These deeper borings and wells support that naturally occurring groundwater is not present at the sampled locations and the perched water zone is discontinuous and of limited areal extent.

As mentioned in Section 2, Background Information, the four (4) releases that occurred at the tin horn area resulted in 865 barrels of produced water being unrecovered and the release at the battery area resulted in 600 barrels of produced water being unrecovered. A total of 1,485 barrels of produced water was left unrecovered at the site. If there was protectable groundwater shallower than 105 feet bgs at the site it would have been encountered during soil boring installation. The water that is present in the monitor wells is perched produced water that wasn't recovered from the five (5) releases that occurred at the site.

GHD and Cascade Drilling well logs and plugging reports are provided as Attachment B. The New Mexico State of Engineer (NMSOE) well permits, and the Bureau of Land Management (BLM) Sundry Notice are provided as Attachment C. The soils evaluation of the 2021 Site Assessment is covered in more detail under separate cover, Site Characterization and Soil Work Plan.

5. Site Hydrogeological Setting

GHD conducted research to evaluate the Site hydrogeological framework using both published literature and information derived from soil and groundwater assessment activities performed at this location. The objective of the studies are to properly document Site groundwater and hydrogeological conditions in this report for closure considerations.

In this remote part of Eddy-Lea County, New Mexico, the land is sparsely populated and sparingly utilized outside of oil and gas extraction and Potash mining activities. However, the Flamenco site is situated approximately two miles northeast of United States Department of Energy (DOE), Waste Isolation Pilot Plant (WIPP). As required by federal regulations, extensive WIPP Site Suitability Studies, including Environmental Impact Statement (EIS) processes and public hearings were conducted and included evaluation of the local hydrogeology and environmental risks associated with storing radioactive waste in the Permian Salado (salt) Formation approximately 3,500 feet below the ground surface. The installation of mine shafts through any significant groundwater bearing units were particularly scrutinized along with their risk potential as routes of exposure to radiation by human, health and the environment. Ultimately, the WIPP site was approved and has been operational in the storage of low-level radioactive waste since 1999. This approval signals any potential shallow groundwater at the Site is of very low significance for environmental impacts.

GHD reviewed several DOE publications including: *Summary Evaluation of the Waste Isolation Pilot Plant (WIPP) Site Suitability*, Wendall D. Weart (1983); *Geohydrology of the Proposed Waste Isolation Pilot Plant Site, Los Medanos Area, Southeastern New Mexico*, Jerry W. Mercer, (1983) USGS Water Resources Investigations Report 83-4016; *Geological Characterization Report, Waste Isolation Pilot Plant Site, Southeastern New Mexico*, SAND78-1596 (1978); and *Department of Energy, Environmental Impact Statement (EIS), Waste Isolation Pilot Plant* (October 1980) for this report. The following is a summary of findings of the literature review in association with proposed closure activities associated with groundwater management at the Site:

- The Culebra Dolomite Member of the (Permian) Rustler Formation is the most persistent and productive hydrologic unit in the vicinity of the WIPP site. This unit was studied in detail and is projected to be situated at a depth of approximately 750 to 900 feet below ground surface (bgs) at the Flamenco site. Total dissolved solids (TDS) for groundwater in the Culebra in the vicinity ranges from 3,200 mg/L to 420,000 mg/L.
- Ten well locations (H-1 through H-10) were drilled into the Culebra and completed for hydrologic testing as part of the WIPP groundwater evaluations for environmental site suitability studies. Lithologic and stratigraphic details from location H-5B were utilized to construct the Site Hydrogeology cross section on Figure 8. Attachment F provides selected excerpts from the referenced publications and a well report from the New Mexico Office of the State Engineer.
- The 1983 report notes that no groundwater was observed in WIPP hydrologic test holes from rocks above the Permian Rustler Formation – i.e., Dewey Lake, Triassic Dockum Group and Quaternary Alluvium. Furthermore, the 1980 EIS states that “no significant groundwater occurs in rocks above the Rustler Formation” in the WIPP and surrounding areas. No significant use of groundwater from these shallow units was ascertained at part of these hydrogeological studies.
- The publication’s evaluation of the hydrology of strata above the Rustler Formation indicate that groundwater may be present sparsely in small volumes in limited areal extent. These units were evaluated to be thin and discontinuous and are not persistent or mappable in the area in and around the WIPP site. Most of the shallow water is derived from meteoric sources and subsurface movement is restricted by the discontinuous nature of ‘perched zones’ having limited areal extent. Accumulation and recharge of groundwater in these shallow zones are also affected by low rainfall with relatively high evapotranspiration rates.

Detailed hydrogeological studies by the Department of Energy and other federal agencies support the finding that any shallow groundwater above the Rustler Formation is of very low consequence for environmental impacts – based on suitability evaluations of the (active) WIPP site and surrounding areas. Site-specific hydrogeological data from the Flamenco location shows that groundwater found at the site is not from meteoric or surface waters sources, but rather from the release of elevated TDS waters from oilfield produced water facilities. These pockets of released fluids occur in limited, discontinuous perched water zones. Naturally occurring groundwater was not found in soil borings advanced at this location and is assessed to be greater than 105 feet bgs at the Flamenco site.

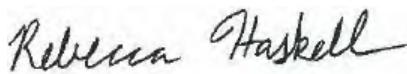
6. Groundwater Closure Request

GHD, on behalf of EOG, requests that the NMOCD grant closure to the perched groundwater portion of the releases and allow the wells to be plugged and abandoned based on the evidence presented in this report. The two soil borings, MW-10 and MW-11 installed to a depth of 105 feet bgs, were dry after 72 hours and have been plugged and abandoned. Numerous soil borings (Figure 7) installed outside of the perched groundwater area and within similar or deeper depths – were dry and support the limited nature of the occurrence of the shallow, perched zone and the absence of naturally occurring groundwater at the evaluated locations

Monitor wells MW-1, MW-2, MW-3, MW-8 and MW-9 are completed in shallow zones with high TDS concentrations. The water present at the site is discontinuous, perched produced water and the limited occurrence most likely is the result of the five (5) releases in the Tin Horn and Tank Battery areas which resulted in 1,485 barrels of produced water being unrecovered. Once the NMOCD grants permission, EOG will have the remaining five (5) wells plugged and abandoned.

If you have any questions or comments concerning this Groundwater Closure Request Report, please do not hesitate to contact our Midland office at (432) 686-0086.

Regards,



Becky Haskell
Senior Project Manager



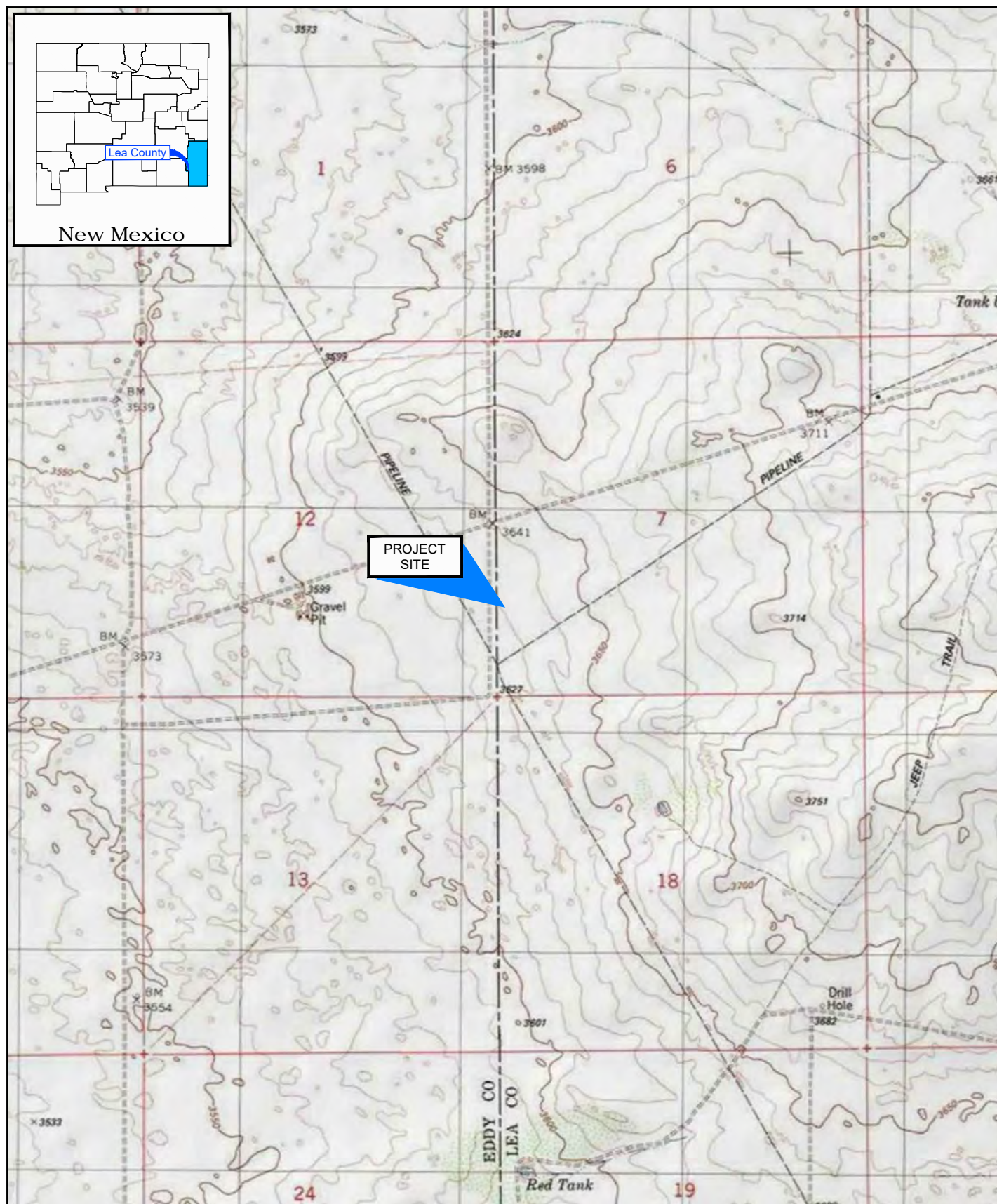
Tom Larson
Project Director

BH/TL/1

Encl. Figure 1 – Site Location Map
Figure 2 – Site Details Map
Figure 3 – April 2021 Perched Water Concentrations Map
Figure 4 – Perched Water Zone Elevation – April 2021
Figure 5 – April 2021 Chloride Isoconcentration Map
Figure 6 – April 2021 TDS Isoconcentration Map
Figure 7 – Boreholes ≥60 Feet
Figure 8 – Site Hydrogeology
Table 1 – Historical Perched Produced Water Elevations
Table 2 – Historical Perched Produced Water Analytical Results
Table 3 – Historical Perched Produced Water Natural Attenuation Parameters
Attachment A – Initial C-141s for 1RP-2281, 1RP-2784, 1RP- 2790, 1RP-4800 & 1RP-4801
Attachment B – GHD and Cascade Drilling Soil Boring Logs
Attachment C – NMSOE Well Permits and BLM Sundry
Attachment D – Laboratory Reports and Chain-of-Custody Documentation
Attachment E – 2018 Annual Groundwater Monitoring Report
Attachment F – Excerpts from Referenced WIPP Hydrogeological Studies

cc: James Kennedy

Figures



Source: USGS 7.5 Minute Quad "The Divide and Livingston Ridge, New Mexico"

Lat/Long: 32.402374° North, 103.722648° West

0 1000 2000ft



EOG RESOURCES
LEA COUNTY, NEW MEXICO
FLAMENCO FEDERAL No.1

11220747

Sep 13, 2021

SITE LOCATION MAP

FIGURE 1

Coordinate System:
NAD 1983 (2011) StatePlane-
New Mexico East (US Feet)

CAD File: \\ghdnet\ghd\US\Midland\Projects\562\11220747\Digital_Design\ACAD 2018\Figures\WorkPlan\11220747(Flamenco)GN-DL001.dwg



Source: Image © 2017 Google - Imagery Date: November 2, 2017

Lat/Long: 32.402374° North, 103.722648° West

060120ft

Coordinate System:
NAD 1983 (2011) StatePlane-
New Mexico East (US Feet)

NOTES:

- MW-10 and MW-11, TD 105' were dry and plugged in August 2021.
- Plugging reports and boring log details provided in Attachment B.

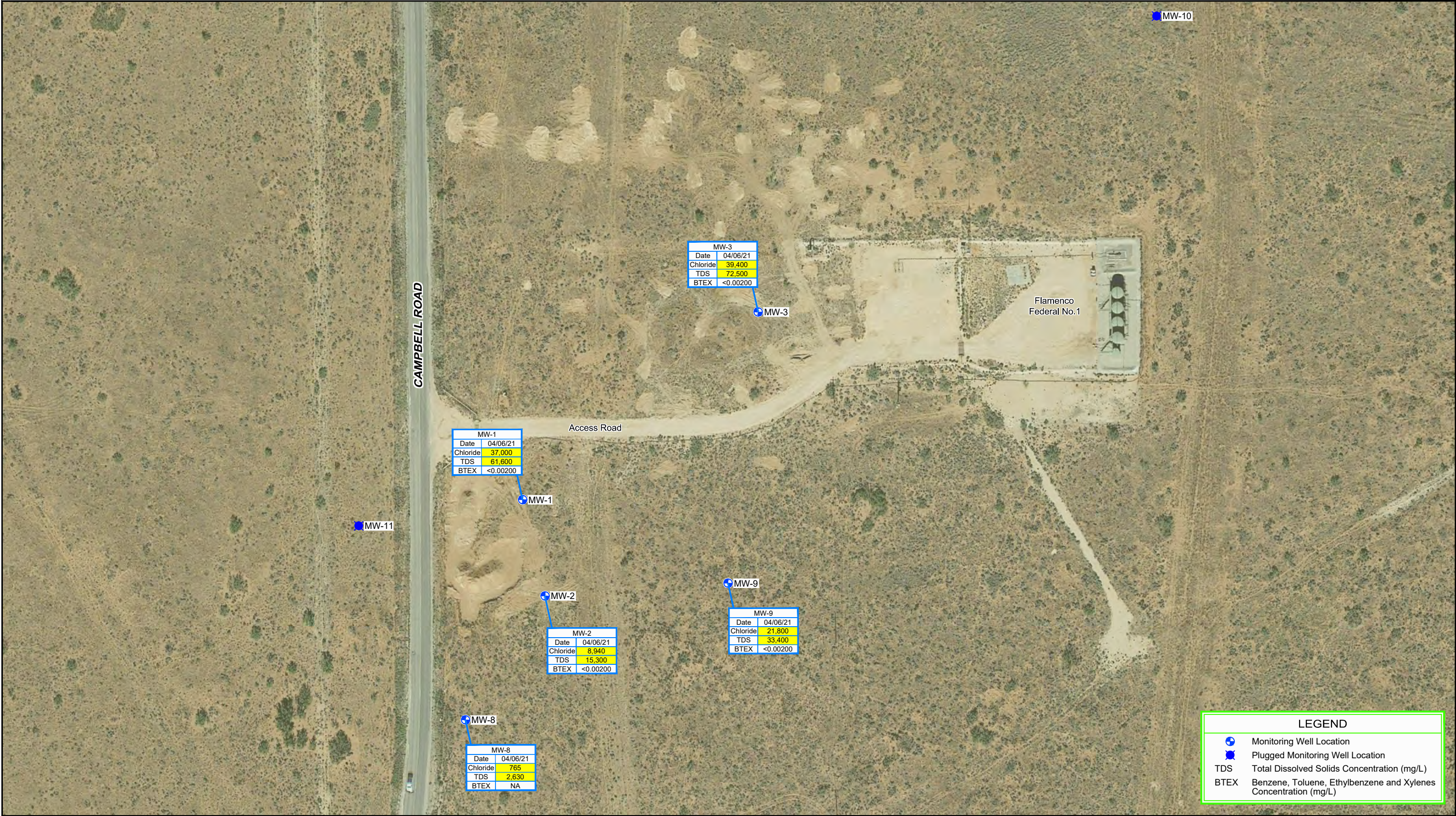
EOG RESOURCES
LEA COUNTY, NEW MEXICO
FLAMENCO FEDERAL No.1

SITE DETAILS MAP

11220747
Jan 19, 2022

FIGURE 2

Released to Imaging: 5/2/2022 3:21:00 PM



Source: Image © 2017 Google - Imagery Date: November 2, 2017

Lat/Long: 32.402374° North, 103.722648° West

NOTES:

- 1. Chloride groundwater sample results in milligrams/liter (mg/L).
- 2. TDS groundwater sample results in milligrams/liter (mg/L).
- 3. Yellow shaded cells exceed NMOCD RRAL.
- 4. Locations are approximate.
- 5. MW-10 and MW-11, TD 105' were dry and plugged on August 5, 2021. Plugging report on Attachment B.

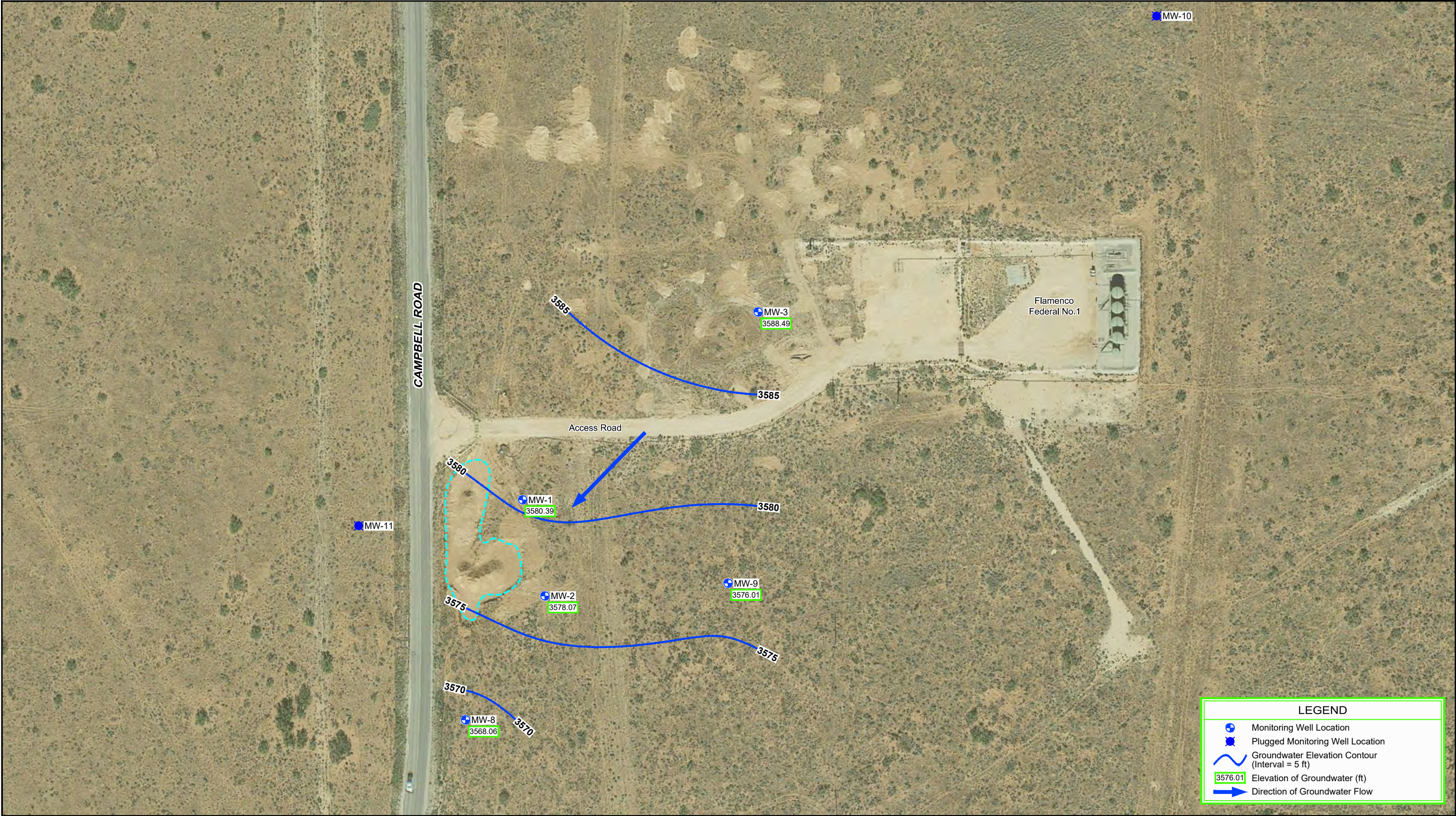


EOG RESOURCES
LEA COUNTY, NEW MEXICO
FLAMENCO FEDERAL No.1

11220747
Jan 19, 2022

APRIL 2021 PERCHED WATER CONCENTRATIONS MAP

FIGURE 3

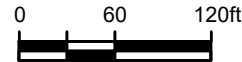


Source: Image © 2017 Google - Imagery Date: November 2, 2017

Lat/Long: 32.402374° North, 103.722648° West

NOTES:

1. Groundwater elevations indicated are from measurements obtained on April 6, 2021.
2. The apparent groundwater gradient and direction of flow were determined to be approximately 0.025 ft/ft to the southwest.
3. MW-10 and MW-11, TD 105' were dry and plugged on August 5, 2021. Plugging report on Attachment B.



Coordinate System:
NAD 1983 (2011) StatePlane-
New Mexico East (US Feet)



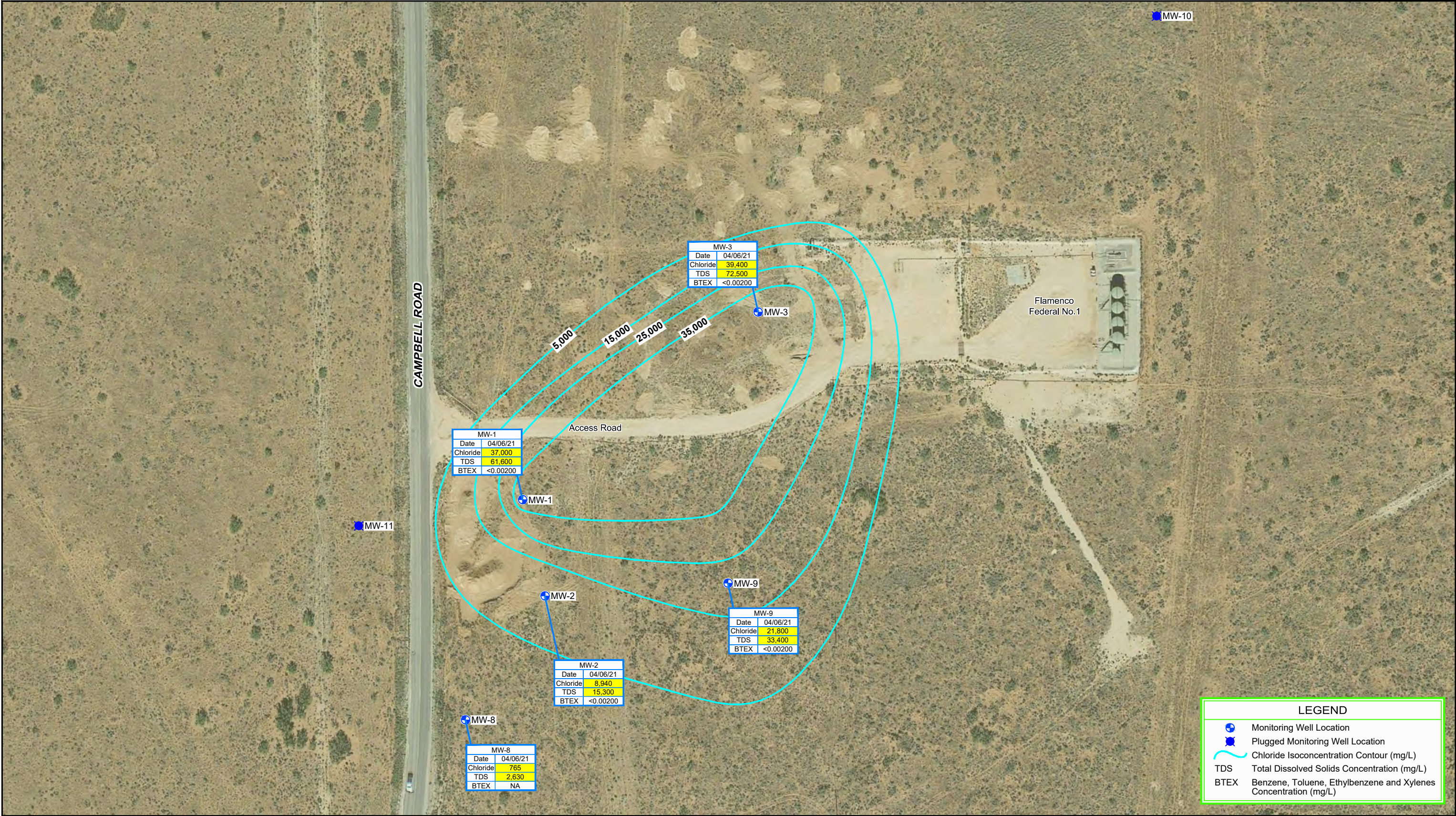
EOG RESOURCES
LEA COUNTY, NEW MEXICO
FLAMENCO FEDERAL No.1

PERCHED WATER ZONE ELEVATION - APRIL 2021

11220747

Jan 19, 2022

FIGURE 4



Source: Image © 2017 Google - Imagery Date: November 2, 2017

Lat/Long: 32.402374° North, 103.722648° West

NOTES:

- 1. Chloride groundwater sample results in milligrams/liter (mg/L).
- 2. TDS groundwater sample results in milligrams/liter (mg/L).
- 3. Yellow shaded cells exceed NMOCD RRAL.
- 4. Locations are approximate.
- 5. MW-10 and MW-11, TD 105' were dry and plugged on August 5, 2021. Plugging report on Attachment B.



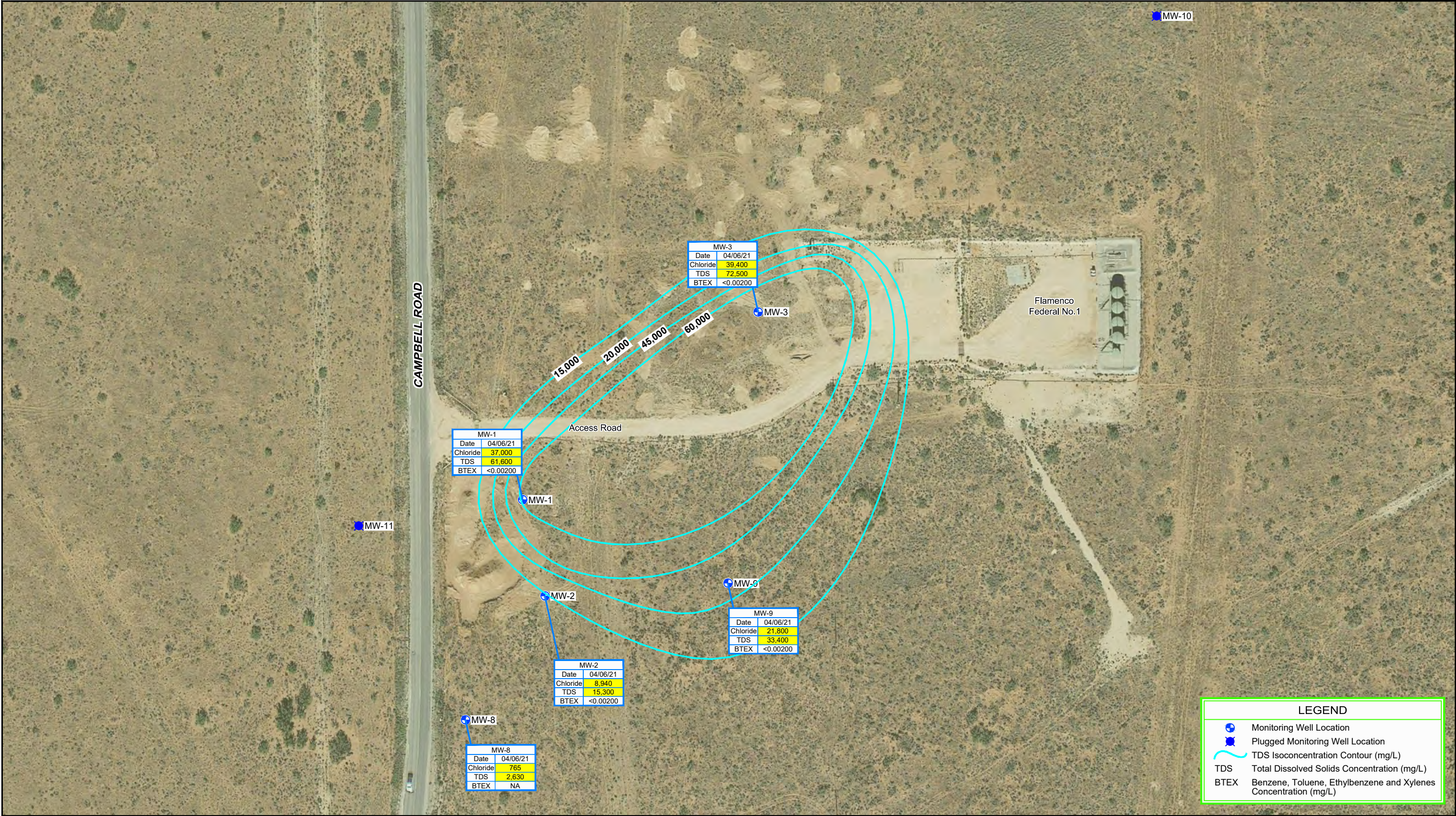
EOG RESOURCES
LEA COUNTY, NEW MEXICO
FLAMENCO FEDERAL No.1

APRIL 2021 CHLORIDE ISOCONCENTRATION MAP

11220747

Jan 19, 2022

FIGURE 5



Source: Image © 2017 Google - Imagery Date: November 2, 2017

Lat/Long: 32.402374° North, 103.722648° West

NOTES:

1. Chloride groundwater sample results in milligrams/liter (mg/L).
2. TDS groundwater sample results in milligrams/liter (mg/L).
3. Yellow shaded cells exceed NMOCD RRAL.
4. Locations are approximate.
5. MW-10 and MW-11, TD 105' were dry and plugged on August 5, 2021. Plugging report on Attachment B.



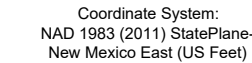
EOG RESOURCES
LEA COUNTY, NEW MEXICO
FLAMENCO FEDERAL No.1

APRIL 2021 TDS ISOCONCENTRATION MAP

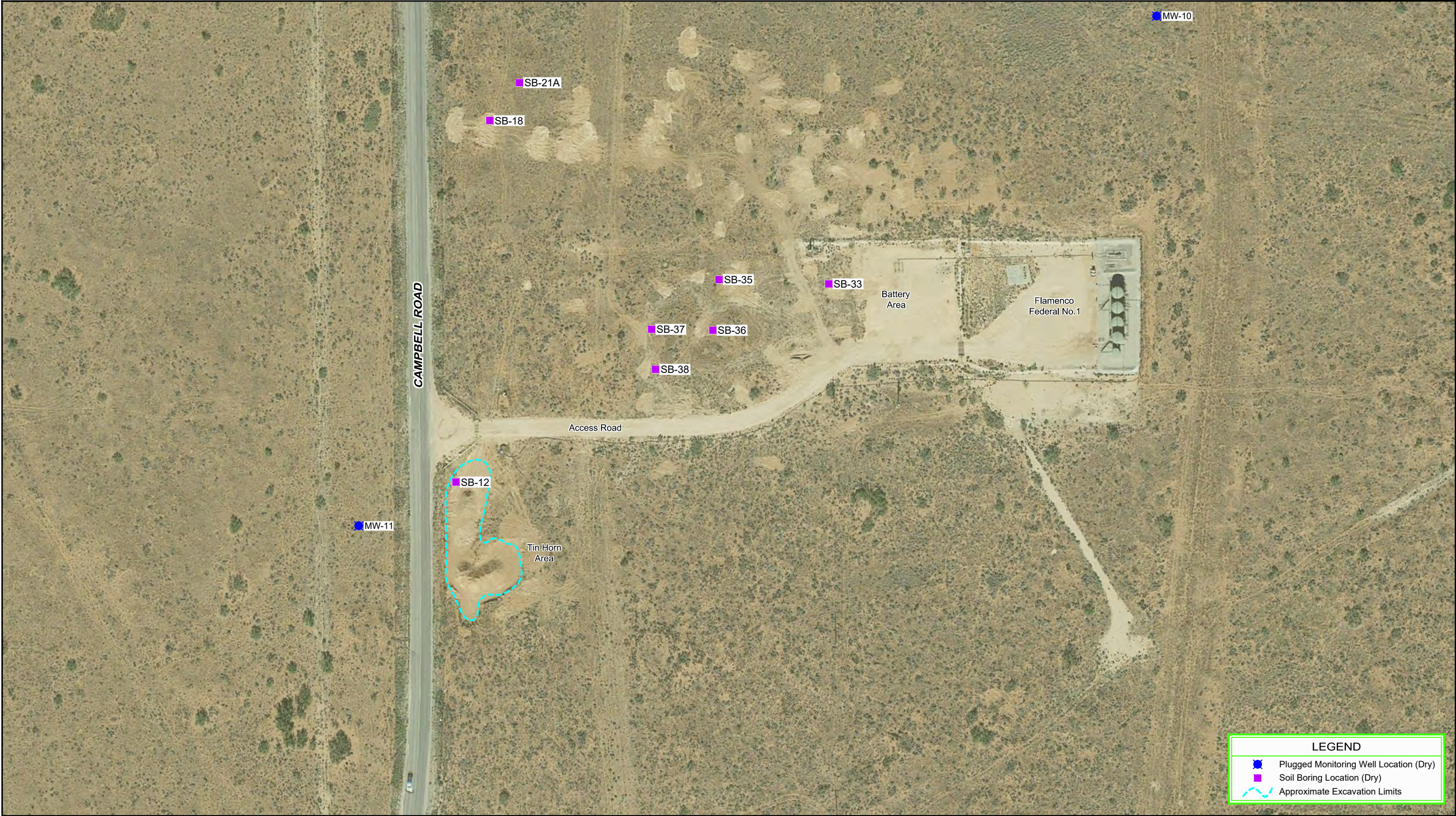
11220747

Jan 19, 2022

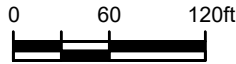
FIGURE 6



Coordinate System:
NAD 1983 (2011) StatePlane-
New Mexico East (US Feet)



Source: Image © 2017 Google - Imagery Date: November 2, 2017 Lat/Long: 32.402374° North, 103.722648° West



Coordinate System:
NAD 1983 (2011) StatePlane-
New Mexico East (US Feet)



NOTES:

- 1. MW-10 and MW-11, TD 105' were dry and plugged after 72 hours on August 5, 2021.
- 2. All soil borings ≥60 feet deep were dry and plugged.
- 3. Plugging reports and boring log details provided in Attachment B.

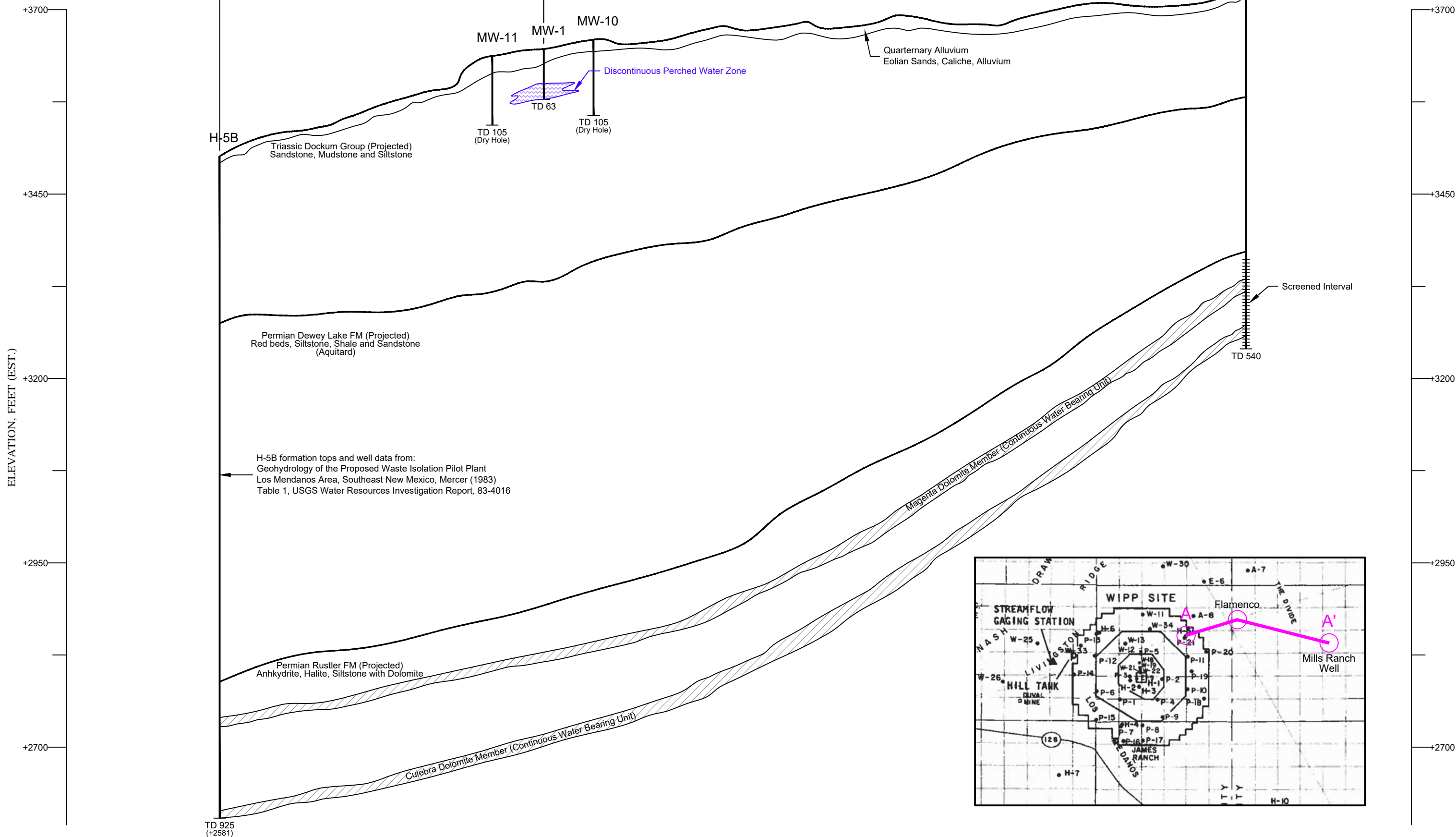


EOG RESOURCES
LEA COUNTY, NEW MEXICO
FLAMENCO FEDERAL No.1

DRY BOREHOLES ≥60 FEET

11220747
Jan 19, 2022

FIGURE 7



- NOTES:
- Horizontal scale is approximate.
 - Cross section modified after Figure 5 Mercer (1983) and Figure 4.3-1 and 4.4-1 Sandia Laboratories, Sand 78-1596 (1978).



EOG RESOURCES
LEA COUNTY, NEW MEXICO
FLAMENCO FEDERAL No.1

SITE HYDROGEOLOGY

11220747
Feb 1, 2022

FIGURE 8

Tables

Table 1

Historical Perched Produced Water Elevations
EOG Resources Inc.
Flamenco Federal #1
Lea County, New Mexico
1RP-2281, 2784, 2790, 4800 & 4801

Monitoring Well ID	Measurement Date	Top-of-Casing Elevation (Feet, NAVD88)	Depth to Water (feet BTOC)	Corrected Groundwater Elevation (Feet, NAVD88)	Total Depth of Well (feet BTOC)
MW-1	2/23/2018	3636.22	54.42	3581.80	--
MW-1	6/21/2018	3636.22	55.19	3581.03	--
MW-1	10/19/2018	3636.22	55.63	3580.59	--
MW-1	01/11/19	3636.22	55.17	3581.05	--
MW-1	04/06/21	3636.22	55.83	3580.39	63.64
MW-2	2/23/2018	3636.08	47.38	3588.70	--
MW-2	6/21/2018	3636.08	57.36	3578.72	--
MW-2	10/19/2018	3636.08	57.54	3578.54	--
MW-2	01/11/19	3636.08	57.21	3578.87	--
MW-2	04/06/21	3636.08	58.01	3578.07	63.2
MW-3	2/23/2018	3642.27	51.83	3590.44	--
MW-3	6/21/2018	3642.27	52.22	3590.05	--
MW-3	10/19/2018	3642.27	52.57	3589.70	--
MW-3	01/11/19	3642.27	52.44	3589.83	--
MW-3	04/06/21	3642.27	53.78	3588.49	61.09
MW-8	10/19/2018	3634.889	65.04	3569.85	--
MW-8	1/11/2019	3634.889	DRY	--	--
MW-8	4/6/2021	3634.889	66.83	3568.06	70.01
MW-9	10/19/2018	3641.13	66.87	3574.26	--
MW-9	1/11/2019	3641.13	DRY	--	--
MW-9	4/6/2021	3641.13	65.12	3576.01	66.29

Notes:

1. BTOC - Below Top-of-Casing

Table 2

Historical Perched Produced Water Analytical Results
EOG Resources Inc.
Flamenco Federal #1
Lea County, New Mexico
1RP-2281, 2784, 2790, 4800 & 4801

Sample I.D.	Sample Date	Chloride (mg/L)	TDS (mg/L)	BTEX
		250	1,000.0	
MW-1	2/23/2018	36,000	--	--
MW-1	6/21/2018	38,000	73,200	--
MW-1	10/19/2018	47,000	82,000	--
MW-1	1/11/2019	44,000	85,300	--
MW-1	4/6/2021	37,000	61,600	<0.00200
MW-2	2/23/2018	7,200	--	--
MW-2	6/21/2018	6,900	15,300	--
MW-2	10/19/2018	8,000	15,800	--
MW-2	1/11/2019	8,000	18,400	--
MW-2	4/6/2021	8,940	15,300	<0.00200
MW-3	2/23/2018	38,000	--	--
MW-3	6/21/2018	43,000	82,700	--
MW-3	10/19/2018	49,000	97,600	--
MW-3	1/11/2019	47,000	100,000	--
MW-3	4/6/2021	39,400	72,500	<0.00200
MW-8	4/6/2021	765	2,630	--
MW-9	4/6/2021	21,800	33,400	<0.00200
Dup-1	4/6/2021	788	2,820	<0.00200

Notes:

1. mg/L- milligrams per Liter
2. - Not Analyzed
10. Yellow shaded cells indicate results exceeding NMWQCC Standards
11. **Bold font Indicates laboratory detection.**

Table 3

Historical Perched Produced Water Natural Attenuation Parameters

EOG Resources Inc.
Flamenco Federal #1
Lea County, New Mexico

Monitoring Well ID	Measurement Date	Temperature	pH	Dissolved Oxygen	TDS (g/l)	Oxidation Reduction Potential	Conductivity
		(°Celsius)		(mg/L)		(mV)	(µS/cm)
MW-1	2/23/2018	18.58	N/A	10.92	51.14	315.00	78,692
MW-1	6/21/2018	21.48	6.07	25.67	0.745	--	1,142
MW-1	10/19/2018	18.10	6.38	9.22	63.61	213.00	97,859
MW-1	1/11/2019	16.76	6.15	4.52	69.44	146.40	90,049
MW-1	4/6/2021	22.1	6.87	4.78	--	107.00	91,000
MW-2	2/23/2018	18.07	N/A	13.38	12.55	294.3	19,260
MW-2	6/21/2018	20.15	6.73	19.39	7.418	--	11,406
MW-2	10/19/2018	18.37	6.82	12.96	13.98	-21.90	21,524
MW-2	1/11/2019	17.27	6.6	6.8	15.09	30.2	19,849
MW-2	4/6/2021	22.1	7.12	6.32	--	53.1	24,270
MW-3	2/23/2018	18.35	N/A	6.79	55.3	330.5	85,075
MW-3	6/21/2018	19.2	6.21	6.6	69.75	--	107,268
MW-3	10/19/2018	17.83	6.26	4.4	68.62	7.4	105,520
MW-3	1/11/2019	17.2	5.83	2.83	77.89	3.3	101,192
MW-3	4/6/2021	22.7	6.48	3.44	--	70.7	99,200
MW-8	4/6/2021	DRY	DRY	DRY	DRY	DRY	DRY
MW-9	4/6/2021	DRY	DRY	DRY	DRY	DRY	DRY

Notes:

mg/L - milligrams per Liter

mV - millivolts

µS/cm - microsiemens/centimeter

-- not analyzed

NS - Not sampled

Attachments

Attachment A

**Initial C-141s for 1RP-2281, 1RP-2784,
1RP- 2790, 1RP-4800 & 1RP-4801**

District I
1625 N French Dr, Hobbs, NM 88240
District II
1301 W. Grand Avenue, Artesia, NM 88210
District III
1000 Rio Brazos Road, Aztec, NM 87410
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico
Energy Minerals and Natural Resources
Oil Conservation Division
1220 South St. Francis Dr.
Santa Fe, NM 87505

RECEIVED
AUG 24 2009
HOBBSCOCD

Form C-141
Revised October 10, 2003

Submit 2 Copies to appropriate
District Office in accordance
with Rule 116 on back
side of form

Release Notification and Corrective Action

OPERATOR

☒ Initial Report ☐ Final Report

Name of Company Yates Petroleum Corporation	OGRID Number 25575	Contact Robert Asher
Address 104 S. 4 TH Street		Telephone No. 505-748-1471
Facility Name Flamenco Federal #1	API Number 30-025-31076	Facility Type SWD Battery

Surface Owner Federal	Mineral Owner Federal	Lease No. NM-84890
--------------------------	--------------------------	-----------------------

LOCATION OF RELEASE

API# 30-025-31076-00-00

Unit Letter L	Section 7	Township 22S	Range 32E	Feet from the 1650	North/South Line South	Feet from the 660	East/West Line West	County Lea
------------------	--------------	-----------------	--------------	-----------------------	---------------------------	----------------------	------------------------	---------------

Latitude 32.40333 Longitude 103.72034

NATURE OF RELEASE

Type of Release Oil & Produced Water	Volume of Release 100 B/O & 600 B/PW	Volume Recovered 0 B/O & 0 B/PW
Source of Release Gun Barrel	Date and Hour of Occurrence 8/11/2009, PM	Date and Hour of Discovery 8/11/2009, AM
Was Immediate Notice Given? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not Required	If YES, To Whom? Larry Johnson/NMOCD Hobbs (Voice mail & e-mail)	
By Whom? Robert Asher/YPC Environmental	Date and Hour 8/12/2009, AM	
Was a Watercourse Reached? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	If YES, Volume Impacting the Watercourse. N/A	
If a Watercourse was Impacted, Describe Fully.* N/A		

WATER @ 280'


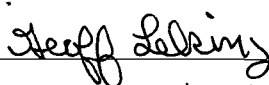
Describe Cause of Problem and Remedial Action Taken.*

Lightning struck 750 barrel fiberglass gun barrel tank, causing release and fire that destroyed 4 other tanks on location. Fire department called and main water line shut.

Describe Area Affected and Cleanup Action Taken.*

An approximate area of 120' X 120'. Produced water released from gun barrel broke through bermed tank battery and released in area west of the battery off location. Backhoe equipment started removing damaged tanks/equipment; impacted soils were excavated and taken to an NMOCD approved facility. Vertical and horizontal delineation samples will be taken and analysis ran for TPH & BTEX to determine next course of action taken. **Depth to Ground Water: >100' (approx. 280', per New Mexico Office of the State Engineer), Wellhead Protection Area: No, Distance to Surface Water Body: >1000', SITE RANKING IS 0.**

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

Signature: 	OIL CONSERVATION DIVISION	
Printed Name: Robert Asher	Approved by ENV ENGINEER: 	
Title: Environmental Regulatory Agent	Approval Date: 08/24/09	Expiration Date: 10/26/09
E-mail Address: boba@ypcnm.com	Conditions of Approval: DELINEATE TO CLEANUP, SUBMIT FINAL C-141 BY IRP-09-09-2281	
Date: Thursday, August 20, 2009	Phone: 505-748-4217	Attached <input type="checkbox"/> IRP-09-09-2281

* Attach Additional Sheets If Necessary

SAMPLING MUST INCLUDE
CHLORIDES.

Incident ID	
District RP	1RP-2281
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?	>100 (ft bgs)
Did this release impact groundwater or surface water?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release within 300 feet of a continuously flowing watercourse or any other significant watercourse?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> 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)?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release within 300 feet of an occupied permanent residence, school, hospital, institution, or church?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> 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?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release within 1000 feet of any other fresh water well or spring?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release within incorporated municipal boundaries or within a defined municipal fresh water well field?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release within 300 feet of a wetland?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release overlying a subsurface mine?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release overlying an unstable area such as karst geology?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release within a 100-year floodplain?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Did the release impact areas not on an exploration, development, production, or storage site?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> 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.

Incident ID	
District RP	1RP-2281
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: James F. Kennedy Title: Environmental Specialist
Signature: James F Kennedy Date: 2/9/22
email: James_Kennedy@eogresources.com Telephone: 432-848-9146

OCD Only

Received by: _____ Date: _____

Incident ID	
District RP	1RP-2281
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: James F. Kennedy Title: Environmental Specialist
Signature: James F Kennedy Date: 2/9/22
email: James_Kennedy@eogresources.com Telephone: 432-848-9146

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: Jennifer Nobui Date: 05/02/2022
Printed Name: Jennifer Nobui Title: Environmental Specialist A

District I
1625 N. French Dr., Hobbs, NM 88240
District II
1301 W. Grand Avenue, Artesia, NM 88210
District III
1000 Rio Brazos Road, Aztec, NM 87414
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505

HOBBS OCD
JUL 26 2011
RECEIVED

State of New Mexico
Energy Minerals and Natural Resources
Oil Conservation Division
1220 South St. Francis Dr.
Santa Fe, NM 87505

Form C-141
Revised October 10, 2003

Submit 2 Copies to appropriate
District Office in accordance
with Rule 116 on back
side of form

Release Notification and Corrective Action

OPERATOR

☒ Initial Report ☐ Final Report

Name of Company Yates Petroleum Corporation	OGRID Number 25575	Contact Robert Asher
Address 104 S. 4 TH Street	Telephone No. 575-748-1471	
Facility Name Flamenco Federal #1	API Number 30-025-31076	Facility Type SWD Battery
Surface Owner Federal	Mineral Owner Federal	Lease No. NM-84890

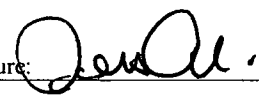
LOCATION OF RELEASE API# 30-025-31076

Unit Letter L	Section 7	Township 22S	Range 32E	Feet from the 1650	North/South Line South	Feet from the 660	East/West Line West	County Lea
------------------	--------------	-----------------	--------------	-----------------------	---------------------------	----------------------	------------------------	---------------

Latitude 32.40333 Longitude 103.72034

NATURE OF RELEASE

Type of Release Produced Water	Volume of Release 150 B/PW	Volume Recovered 100 B/PW
Source of Release Water line	Date and Hour of Occurrence 7/12/2011, AM	Date and Hour of Discovery 7/12/2011, AM
Was Immediate Notice Given? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not Required	If YES, To Whom? Maxey Brown/NMOCD II	
By Whom? Robert Asher/Yates Petroleum Corporation	Date and Hour 7/13/2011; PM	
Was a Watercourse Reached? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	If YES, Volume Impacting the Watercourse. N/A	
If a Watercourse was Impacted, Describe Fully.* N/A		
Describe Cause of Problem and Remedial Action Taken.* Water line connection in tin horn failed, causing release. Vacuum truck called.		
Describe Area Affected and Cleanup Action Taken.* An approximate area of 45' X 45'. Vacuum truck picked up remaining produced water. Impacted soils being excavated and taken to an NMOCD approved facility. Vertical and horizontal delineation samples will be taken and analysis ran for TPH & BTEX (Chlorides for documentation). If initial analytical results for TPH & BTEX are under RRAL's a Final Report, C-141 will be submitted to the OCD requesting closure. If the analytical results are above the RRAL a work plan will be submitted to the OCD. Depth to Ground Water: >100' (approx. 280', Section 14, T22S-R32E, NMOSE and approx 200' per the ChevronTexaco trend map), Wellhead Protection Area: No, Distance to Surface Water Body: >1000', SITE RANKING IS 0.		
I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to NMOCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the NMOCD marked as "Final Report" does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to ground water, surface water, human health or the environment. In addition, NMOCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations.		

Signature: 	OIL CONSERVATION DIVISION Accepted for Record Only	
Printed Name: Robert Asher	Approved by District Supervisor: <u>03/06/12</u>	
Title: Senior Environmental Regulatory Agent	Approval Date:	Expiration Date:
E-mail Address: boba@yatespetroleum.com	Conditions of Approval:	Attached <input type="checkbox"/>
Date: Friday, July 22, 2011 Phone: 575-748-4217	IRP- <u>3-12-2784</u>	

* Attach Additional Sheets If Necessary

Incident ID	
District RP	1RP-2784
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?	>100 (ft bgs)
Did this release impact groundwater or surface water?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release within 300 feet of a continuously flowing watercourse or any other significant watercourse?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> 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)?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release within 300 feet of an occupied permanent residence, school, hospital, institution, or church?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> 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?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release within 1000 feet of any other fresh water well or spring?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release within incorporated municipal boundaries or within a defined municipal fresh water well field?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release within 300 feet of a wetland?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release overlying a subsurface mine?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release overlying an unstable area such as karst geology?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release within a 100-year floodplain?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Did the release impact areas not on an exploration, development, production, or storage site?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> 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.

Incident ID	
District RP	1RP-2784
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: James F. Kennedy Title: Environmental Specialist
Signature: James F Kennedy Date: 2/9/22
email: James_Kennedy@eogresources.com Telephone: 432-848-9146

OCD Only

Received by: _____ Date: _____

Incident ID	
District RP	1RP-2784
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: James F. Kennedy Title: Environmental Specialist
Signature: James F Kennedy Date: 2/9/22
email: James_Kennedy@eogresources.com Telephone: 432-848-9146

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: _____

District I
1625 N. French Dr., Hobbs, NM 88240
District II
1301 W. Grand Avenue, Artesia, NM 88210
District III
1000 Rio Brazos Road, Aztec, NM 87410
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico
Energy Minerals and Natural Resources
Oil Conservation Division
1220 South St. Francis Dr.
Santa Fe, NM 87505

HOBBS OCD

NOV 03 2011

RECEIVED

Form C-141
Revised October 10, 2003

Submit 2 Copies to appropriate
District Office in accordance
with Rule 116 on back
side of form

Release Notification and Corrective Action

OPERATOR

☒ Initial Report ☐ Final Report

Name of Company Yates Petroleum Corporation	OGRID Number 25575	Contact Robert Asher
Address 104 S. 4 TH Street	Telephone No. 575-748-1471	
Facility Name Flamenco Federal #1	API Number 30-025-31076	Facility Type SWD Battery
Surface Owner Federal	Mineral Owner Federal	Lease No. NM-84890


LOCATION OF RELEASE

Unit Letter L	Section 7	Township 22S	Range 32E	Feet from the 1650	North/South Line South	Feet from the 660	East/West Line West	County Lea
------------------	--------------	-----------------	--------------	-----------------------	---------------------------	----------------------	------------------------	---------------

Latitude 32.40333 Longitude 103.72034

NATURE OF RELEASE

Type of Release Produced Water	Volume of Release 275 B/PW	Volume Recovered 260 B/PW
Source of Release Water line	Date and Hour of Occurrence 10/21/2011, AM	Date and Hour of Discovery 10/21/2011, AM
Was Immediate Notice Given? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not Required	If YES, To Whom? Geoffrey Leking/NMOCD II	
By Whom? Robert Asher/Yates Petroleum Corporation	Date and Hour 10/24/2011; PM	
Was a Watercourse Reached? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	If YES, Volume Impacting the Watercourse. N/A	
If a Watercourse was Impacted, Describe Fully.* N/A		
Describe Cause of Problem and Remedial Action Taken.* Water line connection in tin horn failed, causing release. Vacuum truck called.		
Describe Area Affected and Cleanup Action Taken.* Initial release amount was miscalculated when reported on 10/24/2011, correct amount released/recovered per this C-141 report. An approximate area of 60 X 75'. Vacuum truck picked up remaining produced water. Impacted soils being excavated and taken to an NMOCD approved facility. Vertical and horizontal delineation samples will be taken and analysis ran for TPH & BTEX (Chlorides in soils for documentation). If initial analytical results for TPH & BTEX are under RRAL's a Final Report, C-141 will be submitted to the OCD requesting closure. If the analytical results are above the RRAL a work plan will be submitted to the OCD. Depth to Ground Water: >100' (approx. 280', Section 14, T22S-R32E, NMOSE and approx 200' per the ChevronTexaco trend map), Wellhead Protection Area: No, Distance to Surface Water Body: >1000', SITE RANKING IS 0.		
I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to NMOCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the NMOCD marked as "Final Report" does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to ground water, surface water, human health or the environment. In addition, NMOCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations.		

Signature: 	OIL CONSERVATION DIVISION	
Printed Name: Robert Asher	Accepted for Record Only	
Title: Senior Environmental Regulatory Agent	Approved by District Supervisor: 3/30/12	
E-mail Address: boba@yatespetroleum.com	Approval Date:	Expiration Date:
Date: Wednesday, November 02, 2011 Phone: 575-748-4217	Conditions of Approval:	Attached <input type="checkbox"/>
	1RP- 3-12-2790	

* Attach Additional Sheets If Necessary

Incident ID	
District RP	1RP-2790
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?	>100 (ft bgs)
Did this release impact groundwater or surface water?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release within 300 feet of a continuously flowing watercourse or any other significant watercourse?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> 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)?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release within 300 feet of an occupied permanent residence, school, hospital, institution, or church?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> 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?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release within 1000 feet of any other fresh water well or spring?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release within incorporated municipal boundaries or within a defined municipal fresh water well field?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release within 300 feet of a wetland?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release overlying a subsurface mine?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release overlying an unstable area such as karst geology?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release within a 100-year floodplain?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Did the release impact areas not on an exploration, development, production, or storage site?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> 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.

Incident ID	
District RP	1RP-2790
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: James F. Kennedy Title: Environmental Specialist
Signature: James F Kennedy Date: 2/9/22
email: James_Kennedy@eogresources.com Telephone: 432-848-9146

OCD Only

Received by: _____ Date: _____

Incident ID	
District RP	1RP-2790
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: James F. Kennedy Title: Environmental Specialist
Signature: James F Kennedy Date: 2/9/22
email: James_Kennedy@eogresources.com Telephone: 432-848-9146

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: _____

District I
1625 N. French Dr., Hobbs, NM 88240
District II
1301 W. Grand Avenue, Artesia, NM 88210
District III
1000 Rio Brazos Road, Aztec, NM 87410
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico
Energy Minerals and Natural Resources
Oil Conservation Division
1220 South St. Francis Dr.
Santa Fe, NM 87505

Form C-141
Revised October 10, 2003

Submit 2 Copies to appropriate
District Office in accordance
with Rule 116 on back
side of form

Release Notification and Corrective Action

Initial

OPERATOR

☐ Initial Report ☒ Final Report

Name of Company Yates Petroleum Corporation	OGRID Number 25575	Contact Robert Asher
Address 104 S. 4 TH Street	Telephone No. 575-748-1471	
Facility Name Flamenco Federal #1	API Number 30-025-31076	Facility Type SWD Battery
Surface Owner Federal	Mineral Owner Federal	Lease No. NM-84890

LOCATION OF RELEASE

Unit Letter L	Section 7	Township 22S	Range 32E	Feet from the 1650	North/South Line South	Feet from the 660	East/West Line West	County Lea
------------------	--------------	-----------------	--------------	-----------------------	---------------------------	----------------------	------------------------	---------------

Latitude 32.40333 Longitude 103.72034

NATURE OF RELEASE

Type of Release Produced Water	Volume of Release 200 B/PW	Volume Recovered 0 B/PW
Source of Release Water line	Date and Hour of Occurrence 6/12/2013, AM	Date and Hour of Discovery 6/12/2013, AM
Was Immediate Notice Given? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not Required	If YES, To Whom? Geoffrey Leking/NMOCD II	
By Whom? Robert Asher/Yates Petroleum Corporation	Date and Hour 6/20/2013; PM	
Was a Watercourse Reached? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	If YES, Volume Impacting the Watercourse. N/A	

If a Watercourse was Impacted, Describe Fully.*
N/A.

Describe Cause of Problem and Remedial Action Taken.*
Water line connection at tin horn failed, causing release. Vacuum truck called.



Describe Area Affected and Cleanup Action Taken.*

An approximate area of 60 X 75'. Vertical and horizontal delineation samples will be taken and analysis ran for TPH & BTEX (Chlorides in soils for documentation). If initial analytical results for TPH & BTEX are under RRAL's a Final Report, C-141 will be submitted to the OCD requesting closure. If the analytical results are above the RRAL a work plan will be submitted to the OCD. **Depth to Ground Water: >100' (approx. 280', Section 14, T22S-R32E, NMOSE and approx 200' per the ChevronTexaco trend map), Wellhead Protection Area: No, Distance to Surface Water Body: >1000', SITE RANKING IS 0. Based on scope of work completed per the 10/18/2013 Work Plan (this release area was impacted by the 8/4/2013 release), Yates Petroleum Corporation requests closure.**

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

RECEIVED

By Olivia Yu at 8:47 am, Sep 06, 2017

Signature: 	OIL CONSERVATION DIVISION	
Printed Name: Robert Asher	Approved by 	
Title: NM Environmental Regulatory Supervisor	Approval Date: 9/6/2017	Expiration Date:
E-mail Address: boba@yatespetroleum.com	Conditions of Approval: see attached directive	Attached <input checked="" type="checkbox"/>
Date: Friday, January 31, 2014 Phone: 575-748-4217		

* Attach Additional Sheets If Necessary

1RP-4800

nOY1724932244

pOY1724941406

Incident ID	
District RP	1RP-4800
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?	>100 (ft bgs)
Did this release impact groundwater or surface water?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release within 300 feet of a continuously flowing watercourse or any other significant watercourse?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> 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)?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release within 300 feet of an occupied permanent residence, school, hospital, institution, or church?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> 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?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release within 1000 feet of any other fresh water well or spring?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release within incorporated municipal boundaries or within a defined municipal fresh water well field?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release within 300 feet of a wetland?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release overlying a subsurface mine?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release overlying an unstable area such as karst geology?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release within a 100-year floodplain?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Did the release impact areas not on an exploration, development, production, or storage site?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> 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.

Incident ID	
District RP	1RP-4800
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: James F. Kennedy Title: Environmental Specialist
Signature: James F Kennedy Date: 2/9/22
email: James_Kennedy@eogresources.com Telephone: 432-848-9146

OCD Only

Received by: _____ Date: _____

Incident ID	
District RP	1RP-4800
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: James F. Kennedy Title: Environmental Specialist
Signature: James F Kennedy Date: 2/9/22
email: James_Kennedy@eogresources.com Telephone: 432-848-9146

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: _____

District I
1625 N. French Dr., Hobbs, NM 88240
District II
1301 W. Grand Avenue, Artesia, NM 88210
District III
1000 Rio Brazos Road, Aztec, NM 87410
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico
Energy Minerals and Natural Resources
Oil Conservation Division
1220 South St. Francis Dr.
Santa Fe, NM 87505

Form C-141
Revised October 10, 2003

Submit 2 Copies to appropriate
District Office in accordance
with Rule 116 on back
side of form

Release Notification and Corrective Action

Initial

OPERATOR

☐ Initial Report ☒ Final Report

Name of Company Yates Petroleum Corporation	OGRID Number 25575	Contact Robert Asher
Address 104 S. 4 TH Street	Telephone No. 575-748-1471	
Facility Name Flamenco Federal #1	API Number 30-025-31076	Facility Type SWD Battery
Surface Owner Federal	Mineral Owner Federal	Lease No. NM-84890

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
L	7	22S	32E	1650	South	660	West	Lea

Latitude 32.40333 Longitude 103.72034

NATURE OF RELEASE

Type of Release Produced Water	Volume of Release 600 B/PW	Volume Recovered 0 B/PW
Source of Release Water line	Date and Hour of Occurrence 8/4/2013, AM	Date and Hour of Discovery 8/4/2013, AM
Was Immediate Notice Given? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not Required	If YES, To Whom? Geoffrey Leking/NMOCD II	
By Whom? Robert Asher/Yates Petroleum Corporation	Date and Hour 8/5/2013; PM	
Was a Watercourse Reached? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	If YES, Volume Impacting the Watercourse. N/A	

If a Watercourse was Impacted, Describe Fully.*
N/A

Describe Cause of Problem and Remedial Action Taken.*

Water line connection at tin horn failed, causing release. Vacuum truck called.



Describe Area Affected and Cleanup Action Taken.*

An approximate area of 60 X 75'. Vertical and horizontal delineation samples will be taken and analysis ran for TPH & BTEX (Chlorides in soils for documentation). If initial analytical results for TPH & BTEX are under RRAL's a Final Report, C-141 will be submitted to the OCD requesting closure. If the analytical results are above the RRAL a work plan will be submitted. Depth to Ground Water: >100' (approx. 280', Section 14, T22S-R32E, NMOSE and approx 200' per the ChevronTexaco trend map), Wellhead Protection Area: No, Distance to Surface Water Body: >1000', SITE RANKING IS 0. Based on scope of work completed per the 10/18/2013 Work Plan, Yates Petroleum Corporation requests closure.

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

RECEIVED

By Olivia Yu at 8:47 am, Sep 06, 2017

Signature: 	OIL CONSERVATION DIVISION	
Printed Name: Robert Asher	Approved by: 	
Title: NM Environmental Regulatory Supervisor	Approval Date: 9/6/2017	Expiration Date:
E-mail Address: boba@yatespetroleum.com	Conditions of Approval: see attached directive	Attached <input checked="" type="checkbox"/>
Date: Friday, January 31, 2014 Phone: 575-748-4217		

* Attach Additional Sheets If Necessary

1RP-4801

nOY1724941773

pOY1724942051

Incident ID	
District RP	1RP-4801
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?	>100 (ft bgs)
Did this release impact groundwater or surface water?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release within 300 feet of a continuously flowing watercourse or any other significant watercourse?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> 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)?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release within 300 feet of an occupied permanent residence, school, hospital, institution, or church?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> 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?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release within 1000 feet of any other fresh water well or spring?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release within incorporated municipal boundaries or within a defined municipal fresh water well field?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release within 300 feet of a wetland?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release overlying a subsurface mine?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release overlying an unstable area such as karst geology?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release within a 100-year floodplain?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Did the release impact areas not on an exploration, development, production, or storage site?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> 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.

Incident ID	
District RP	1RP-4801
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: James F. Kennedy Title: Environmental Specialist
Signature: James F Kennedy Date: 2/9/22
email: James_Kennedy@eogresources.com Telephone: 432-848-9146

OCD Only

Received by: _____ Date: _____

Incident ID	
District RP	1RP-4801
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: James F. Kennedy Title: Environmental Specialist
Signature: James F Kennedy Date: 2/9/22
email: James_Kennedy@eogresources.com Telephone: 432-848-9146

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 B

GHD and Cascade Drilling Soil Boring Logs



STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

Page 1 of 2

PROJECT NAME: Flamenco Federal #1

HOLE DESIGNATION: MW-10

PROJECT NUMBER: 11220747

DATE COMPLETED: August 3, 2021

CLIENT: EOG Resources

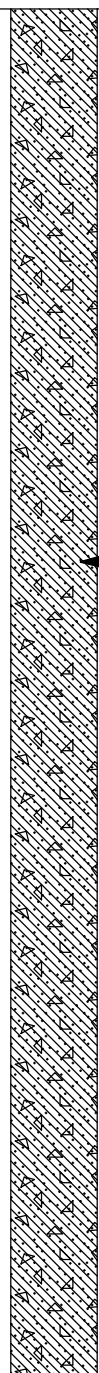
DRILLING METHOD: Sonic

LOCATION: Eddy County, New Mexico

FIELD PERSONNEL: C. Neligh

DRILLING CONTRACTOR: Cascade

DRILLER: Cole

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH BGS	SOIL BORING	SAMPLE				
				NUMBER	INTERVAL	REC (ft)	Cl (ppm)	PID (ppm)
5	SM-SILTY SAND, fine grained, red/brown, dry	4.00					<120	4.7
	CALICHE						<120	2.8
							<120	1.4
							<120	1.8
10	SC-CLAYEY SAND, fine grained, brown, dry	10.00					<120	6.8
15	SANDSTONE, fine to medium grained, tan, dry	15.00					<120	75.1
20							<120	1.6
25	SILTY SANDSTONE, fine grained, brown, dry	25.00					<120	54.9
30							<120	5.0
35							<120	4.3
40							<120	78.4
45							<120	2.7
50							<120	5.4
55							<120	6.4
60							<120	8.1
65	SANDSTONE, medium grained, gray/tan, dry	65.00					<120	21.3
70	SILTY SANDSTONE, fine to medium grained, brown/red, dry	70.00					<120	7.2

Cement-
Bentonite
Grout

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

File: I:\LOG DATABASE\8-CHAR\11-1122-11220747 FLAMENCO\11220747-CO.GPJ Library File: GHD_ENV\RO_V06.GLB Report: OVERBURDEN LOG Date: 10/27/21



STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

Page 2 of 2

PROJECT NAME: Flamenco Federal #1

HOLE DESIGNATION: MW-10

PROJECT NUMBER: 11220747

DATE COMPLETED: August 3, 2021

CLIENT: EOG Resources

DRILLING METHOD: Sonic

LOCATION: Eddy County, New Mexico

FIELD PERSONNEL: C. Neligh

DRILLING CONTRACTOR: Cascade

DRILLER: Cole

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH BGS	SOIL BORING	SAMPLE				
				NUMBER	INTERVAL	REC (ft)	Cl (ppm)	PID (ppm)
80	SANDSTONE, caliche powder, medium grained, white, dry	80.00					<120	7.1
85	CH-CLAY, fat, brown, dry	85.00					<120	11.1
90	SANDSTONE, fine to medium grained, tan/brown, dry	90.00					<120	3.0
95							<120	0.4
100							<120	3.4
105	END OF BOREHOLE @ 105.00ft BGS	105.00					<120	4.1
110	Boring was left open for 72 hours and then a water probe was used to determine the presence or absence of groundwater. No groundwater was detected and the boring was plugged.						<120	2.8
115								
120								
125								
130								
135								
140								
145								

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

File: I:\LOG DATABASE\8-CHAR\11-1122-11220747 FLAMENCO\11220747-CO.GPJ Library File: GHD_ENV\RO_V06.GLB Report: OVERBURDEN LOG Date: 10/27/21



STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

Page 1 of 2

PROJECT NAME: Flamenco Federal #1

HOLE DESIGNATION: MW-11

PROJECT NUMBER: 11220747

DATE COMPLETED: August 5, 2021

CLIENT: EOG Resources

DRILLING METHOD: Sonic

LOCATION: Eddy County, New Mexico

FIELD PERSONNEL: C. Neligh

DRILLING CONTRACTOR: Cascade

DRILLER: Cole

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH BGS	SOIL BORING	SAMPLE				
				NUMBER	INTERVAL	REC (ft)	Cl (ppm)	PID (ppm)
5	SM-SILTY SAND, fine grained, brown, dry						<120	6.4
							<120	0.8
	CALICHE	6.00					<120	1.1
10							<120	2.3
	SM-SILTY SAND, fine grained, brown, dry	10.00					<120	0.7
15							<120	2.0
20							<120	1.3
25	CL-SANDY CLAY, fine grained, brown, dry	25.00					<120	0.8
30	SANDSTONE, fine to medium grained, tan, dry	30.00					148	6.9
35	CH-CLAY, fat, brown, dry	35.00					<120	3.4
40							<120	2.1
45							<120	2.0
50							<120	1.7
55							<120	2.3
60							<120	1.3
65	SANDSTONE, fine grained, gray/white, dry	65.00					<120	2.3
70	CH-CLAY, fat, brown/red, dry	70.00					<120	1.6

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

File: I:\LOG DATABASE\8-CHAR\11-1122-11220747 FLAMENCO\11220747-CO.GPJ Library File: GHD_ENV\RO_V06.GLB Report: OVERBURDEN LOG Date: 10/27/21



STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

Page 2 of 2

PROJECT NAME: Flamenco Federal #1

HOLE DESIGNATION: MW-11

PROJECT NUMBER: 11220747

DATE COMPLETED: August 5, 2021

CLIENT: EOG Resources

DRILLING METHOD: Sonic

LOCATION: Eddy County, New Mexico

FIELD PERSONNEL: C. Neligh

DRILLING CONTRACTOR: Cascade

DRILLER: Cole

File: I:\LOG DATABASE\8-CHAR\11-1122-11220747 FLAMENCO\11220747-CO.GPJ Library File: GHD_ENV\RO_V06.GLB Report: OVERBURDEN LOG Date: 10/27/21

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH BGS	SOIL BORING	SAMPLE				
				NUMBER	INTERVAL	REC (ft)	Cl (ppm)	PID (ppm)
80	CLAYEY SANDSTONE, fine to medium grained, brown, dry	80.00					<120	22.9
85	SANDSTONE, medium grained, gray/white, dry	85.00					<120	38.8
90							<120	30.9
95							<120	20.3
100							<120	28.1
105	END OF BOREHOLE @ 105.00ft BGS	105.00					<120	87.1
110	Boring was left open for 72 hours and then a water probe was used to determine the presence or absence of groundwater. No groundwater was detected and the boring was plugged.						<120	78.1
115								
120								
125								
130								
135								
140								
145								

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE



STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

Page 1 of 1

PROJECT NAME: Flamenco Federal #1

HOLE DESIGNATION: SB-12

PROJECT NUMBER: 11220747

DATE COMPLETED: August 18, 2021

CLIENT: EOG Resources

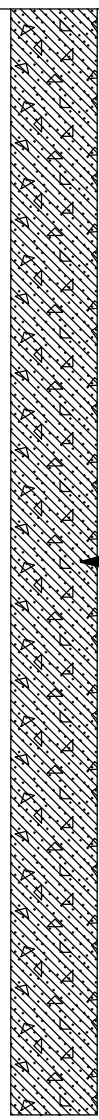
DRILLING METHOD: Sonic

LOCATION: Eddy County, New Mexico

FIELD PERSONNEL: C. Neligh

DRILLING CONTRACTOR: Cascade

DRILLER: Cole

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH BGS	SOIL BORING	SAMPLE				
				NUMBER	INTERVAL	REC (ft)	Cl (ppm)	PID (ppm)
5	SM-SILTY SAND, fine grained, brown, dry	2.00		2			<120	11.2
	CALICHE			4			>2604	0.4
	SM-SILTY SAND, fine grained, brown, dry	6.00					>2604	23.3
	CL-SANDY CLAY, fine grained, brown, dry	8.00					>2604	33.3
10	SM-SILTY SAND, fine grained, brown, dry	10.00					2400	36.6
15							>2604	33.4
20				20'			>2604	32.1
25	SANDSTONE, fine to medium grained, tan, dry	25.00					>2604	27.6
30							1648	55.2
35	CH-CLAY, fat, brown, dry	35.00					542	79.0
40				40'			108	54.0
45	SANDSTONE, fine to medium grained, brown, dry	45.00		45 45'			284	23.1
50	SANDSTONE, fine grained, brown, dry	50.00					310	19.4
55				55'			130	14.3
60	END OF BOREHOLE @ 60.00ft BGS This boring was dry.	60.00		60'			160	16.1

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

CHEMICAL ANALYSIS





STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

Page 1 of 1

PROJECT NAME: Flamenco Federal #1

HOLE DESIGNATION: SB-13

PROJECT NUMBER: 11220747

DATE COMPLETED: July 25, 2021

CLIENT: EOG Resources

DRILLING METHOD: Sonic

LOCATION: Eddy County, New Mexico

FIELD PERSONNEL: C. Neligh

DRILLING CONTRACTOR: Cascade

DRILLER: Cole

File: I:\LOG DATABASE\8-CHAR\11-1122-11220747 FLAMENCO\11220747-CO.GPJ Library File: GHD_ENV\RO_V06.GLB Report: OVERBURDEN LOG Date: 10/27/21

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH BGS	SOIL BORING	SAMPLE				
				NUMBER	INTERVAL	REC (ft)	Cl (ppm)	PID (ppm)
5	SM-SILTY SAND, fine grained, brown, dry			2				
				4			<108	1.8
	CALICHE	6.00					<108	38.7
		8.00					<108	29.8
10	SM-SILTY SAND, fine grained, brown, dry			10'			<108	154.2
							<108	16.8
15	- with fine gravel from 14.00 to 20.00ft BGS						<108	23.8
							<108	20.9
				18'			<108	219.8
20							<108	143
25	- with fine gravel from 25.00 to 30.00ft BGS						160	61.4
30	END OF BOREHOLE @ 30.00ft BGS	30.00		30'			<108	86.4
35	This boring was dry.							
40								
45								
50								
55								
60								
65								
70								

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

CHEMICAL ANALYSIS



STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

Page 1 of 1

PROJECT NAME: Flamenco Federal #1

HOLE DESIGNATION: SB-14

PROJECT NUMBER: 11220747

DATE COMPLETED: August 6, 2021

CLIENT: EOG Resources

DRILLING METHOD: Sonic


LOCATION: Eddy County, New Mexico

FIELD PERSONNEL: C. Neligh

DRILLING CONTRACTOR: Cascade

DRILLER: Cole

File: I:\LOG DATABASE\8-CHAR\11-1122-11220747 FLAMENCO\11220747-CO.GPJ Library File: GHD_ENV\RO_V06.GLB Report: OVERBURDEN LOG Date: 10/27/21

BRIEFING DOCUMENT: Caddis			BRIEFING DOCUMENT: Caddis					
DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH BGS	SOIL BORING	SAMPLE				
				NUMBER	INTERVAL	REC (ft)	Cl (ppm)	PID (ppm)
5	SM-SILTY SAND, fine grained, brown/red, dry	2.00		2			<120	2.8
	CALICHE			4			1136	50.8
	SM-SILTY SAND, fine grained, brown, dry	6.00					<120	2.7
						<120	1.3	
						<120	19.2	
15							1140	36.4
20	CH-CLAY, fat, brown, dry	20.00					1760	37.0
25				25'			>2572	19.5
30	SANDSTONE, fine to medium grained, white, dry	30.00		30'			136	34.3
35	END OF BOREHOLE @ 35.00ft BGS	35.00	35'			136	54.4	
40	This boring was dry.							
45								
50								
55								
60								
65								
70								

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

CHEMICAL ANALYSIS 



STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

Page 1 of 1

PROJECT NAME: Flamenco Federal #1

HOLE DESIGNATION: SB-15

PROJECT NUMBER: 11220747

DATE COMPLETED: August 6, 2021

CLIENT: EOG Resources

DRILLING METHOD: Sonic

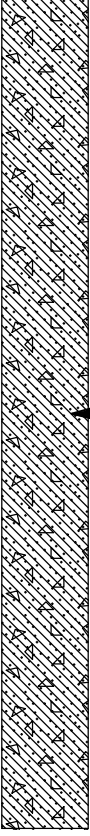
LOCATION: Eddy County, New Mexico

FIELD PERSONNEL: C. Neligh

DRILLING CONTRACTOR: Cascade

DRILLER: Cole

File: I:\LOG DATABASE\8-CHAR\11-1122-11220747 FLAMENCO\11220747-CO.GPJ Library File: GHD_ENV\RO_V06.GLB Report: OVERBURDEN LOG Date: 10/27/21

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH BGS	SOIL BORING	SAMPLE				
				NUMBER	INTERVAL	REC (ft)	Cl (ppm)	PID (ppm)
5	SM-SILTY SAND, fine grained, brown, dry	2.00		2			<120	2.6
	CALICHE	4.00		4			420	2.6
	SM-SILTY SAND, fine grained, brown, dry	8.00		6			>2460	16.2
10	CH-CLAY, fat, brown, dry	10.00					>2460	11.1
	SM-SILTY SAND, fine grained, brown, dry	25.00					>2460	8.3
15		30.00					>2460	9.3
20		35.00					2112	10.0
25	SILTY SANDSTONE, fine to medium grained, tan, dry	40.00					2112	12.3
30	SILTY SANDSTONE, fine to medium grained, white, dry	45.00					1716	13.1
35				35'			508	11.9
40	CH-CLAY, fat, brown, dry			40'			<120	3.2
45	END OF BOREHOLE @ 45.00ft BGS			45'			<120	4.3
50	This boring was dry.							
55								
60								
65								
70								

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

CHEMICAL ANALYSIS



STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

Page 1 of 1

PROJECT NAME: Flamenco Federal #1

HOLE DESIGNATION: SB-16

PROJECT NUMBER: 11220747

DATE COMPLETED: August 6, 2021

CLIENT: EOG Resources

DRILLING METHOD: Sonic

LOCATION: Eddy County, New Mexico

FIELD PERSONNEL: C. Neligh

DRILLING CONTRACTOR: Cascade

DRILLER: Cole

File: I:\LOG DATABASE\8-CHAR\11-1122-11220747 FLAMENCO\11220747-CO.GPJ Library File: GHD_ENV\RO_V06.GLB Report: OVERBURDEN LOG Date: 10/27/21

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH BGS	SOIL BORING	SAMPLE				
				NUMBER	INTERVAL	REC (ft)	Cl (ppm)	PID (ppm)
5	SM-SILTY SAND, fine grained, brown, dry	2.00		2			<120	1.3
	CALICHE	4.00		4			164	2.0
	SM-SILTY SAND, fine grained, brown, dry						<120	1.3
10				10'			<120	1.0
15							<120	1.3
20	END OF BOREHOLE @ 20.00ft BGS	20.00		20'			<120	15.6
25	This boring was dry.							
30								
35								
40								
45								
50								
55								
60								
65								
70								

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

CHEMICAL ANALYSIS



STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

Page 1 of 1

PROJECT NAME: Flamenco Federal #1

HOLE DESIGNATION: SB-17

PROJECT NUMBER: 11220747

DATE COMPLETED: July 26, 2021

CLIENT: EOG Resources

DRILLING METHOD: Sonic

LOCATION: Eddy County, New Mexico

FIELD PERSONNEL: C. Neligh

DRILLING CONTRACTOR: Cascade

DRILLER: Cole

File: I:\LOG DATABASE\8-CHAR\11-1122-11220747 FLAMENCO\11220747-CO.GPJ Library File: GHD_ENV\RO_V06.GLB Report: OVERBURDEN LOG Date: 10/27/21

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH BGS	SOIL BORING	SAMPLE				
				NUMBER	INTERVAL	REC (ft)	Cl (ppm)	PID (ppm)
5	SM-SILTY SAND, fine grained, red/brown, dry	5.00		2			<108	1.8
				4			<108	0.8
10	SM-SILTY SAND, fine grained, brown, dry			10'			<108	13.8
15	END OF BOREHOLE @ 15.00ft BGS	15.00		15'			<108	6.1
20	This boring was dry.							
25								
30								
35								
40								
45								
50								
55								
60								
65								
70								

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

CHEMICAL ANALYSIS



STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

Page 1 of 1

PROJECT NAME: Flamenco Federal #1

HOLE DESIGNATION: SB-18

PROJECT NUMBER: 11220747

DATE COMPLETED: August 11, 2021

CLIENT: EOG Resources

DRILLING METHOD: Sonic

LOCATION: Eddy County, New Mexico

FIELD PERSONNEL: C. Neligh

DRILLING CONTRACTOR: Cascade

DRILLER: Cole

File: I:\LOG DATABASE\8-CHAR\11-1122-11220747 FLAMENCO\11220747-CO.GPJ Library File: GHD_ENV\RO_V06.GLB Report: OVERBURDEN LOG Date: 10/27/21

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH BGS	SOIL BORING	SAMPLE				
				NUMBER	INTERVAL	REC (ft)	Cl (ppm)	PID (ppm)
5	SM-SILTY SAND, fine grained, brown, dry			2			<120	4.9
				4			<120	3.0
10							572	57.4
							852	22.9
							1772	23.6
15	SANDY CALICHE	15.00					>2604	5.2
20	SANDSTONE, fine to medium grained, brown, dry	20.00					>2604	12.6
25	SANDSTONE, medium grained, brown, dry	25.00					>2604	11.3
30				30'			>2604	12.6
35	CH-CLAY, fat, brown, dry	35.00					1772	14.1
40	SANDSTONE, fine to medium grained, tan, dry	40.00					>2604	13.0
45							1424	26.7
50	CH-CLAY, fat, brown, dry	50.00					792	24.8
55				55'			252	63.1
60				60'			188	25.7
65				65'			<120	8.5
70	END OF BOREHOLE @ 70.00ft BGS	70.00		70'			<120	11.3
	This boring was dry.							

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

CHEMICAL ANALYSIS



STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

Page 1 of 1

PROJECT NAME: Flamenco Federal #1

HOLE DESIGNATION: SB-19

PROJECT NUMBER: 11220747

DATE COMPLETED: August 11, 2021

CLIENT: EOG Resources

DRILLING METHOD: Sonic

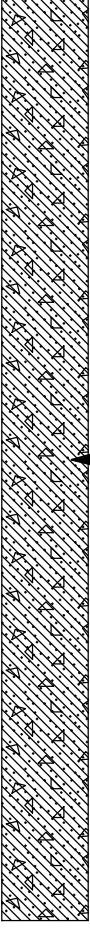
LOCATION: Eddy County, New Mexico

FIELD PERSONNEL: C. Neligh

DRILLING CONTRACTOR: Cascade

DRILLER: Cole

File: I:\LOG DATABASE\8-CHAR\11-1122-11220747 FLAMENCO\11220747-CO.GPJ Library File: GHD_ENV\RO_V06.GLB Report: OVERBURDEN LOG Date: 10/27/21

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH BGS	SOIL BORING	SAMPLE				
				NUMBER	INTERVAL	REC (ft)	Cl (ppm)	PID (ppm)
5	SM-SILTY SAND, fine grained, brown, dry	4.00		2			<120	5.3
	SANDY CALICHE			4			<120	1.6
		8.00					732	5.6
10	SM-SILTY SAND, fine grained, brown, dry						732	6.1
							732	3.9
15							1772	25.5
20	SANDSTONE, fine to medium grained, tan, dry	20.00		20'			2604	30.0
25	SANDSTONE, medium grained, tan/yellow, dry	25.00					852	28.0
30	CH-CLAY, fat, brown, dry	30.00					852	36.4
35							1772	41.7
40	SANDSTONE, medium grained, brown, dry	40.00					1068	5.1
45	SANDSTONE, fine to medium grained, tan, dry	45.00		45'			160	57.0
50	END OF BOREHOLE @ 50.00ft BGS	50.00		50'			<120	5.4
55	This boring was dry.							
60								
65								
70								

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

CHEMICAL ANALYSIS



STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

Page 1 of 1

PROJECT NAME: Flamenco Federal #1

HOLE DESIGNATION: SB-20

PROJECT NUMBER: 11220747

DATE COMPLETED: July 27, 2021

CLIENT: EOG Resources

DRILLING METHOD: Sonic

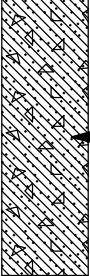
LOCATION: Eddy County, New Mexico

FIELD PERSONNEL: C. Neligh

DRILLING CONTRACTOR: Cascade

DRILLER: Cole

File: I:\LOG DATABASE\8-CHAR\11-1122-11220747 FLAMENCO\11220747-CO.GPJ Library File: GHD_ENV\RO_V06.GLB Report: OVERBURDEN LOG Date: 10/27/21

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH BGS	SOIL BORING	SAMPLE				
				NUMBER	INTERVAL	REC (ft)	Cl (ppm)	PID (ppm)
5	SM-SILTY SAND, fine grained, red/brown, dry			2			<120	0.5
				4			<120	0.2
10				10'			<120	6.9
15	END OF BOREHOLE @ 15.00ft BGS	15.00		15'			180	13.2
20	This boring was dry.							
25								
30								
35								
40								
45								
50								
55								
60								
65								
70								

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

CHEMICAL ANALYSIS 



STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

Page 1 of 1

PROJECT NAME: Flamenco Federal #1

HOLE DESIGNATION: SB-21

PROJECT NUMBER: 11220747

DATE COMPLETED: July 27, 2021

CLIENT: EOG Resources

DRILLING METHOD: Sonic

LOCATION: Eddy County, New Mexico

FIELD PERSONNEL: C. Neligh

DRILLING CONTRACTOR: Cascade

DRILLER: Cole

File: I:\LOG DATABASE\8-CHAR\11-1122-11220747 FLAMENCO\11220747-CO.GPJ Library File: GHD_ENV\RO_V06.GLB Report: OVERBURDEN LOG Date: 10/27/21

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH BGS	SOIL BORING	SAMPLE				
				NUMBER	INTERVAL	REC (ft)	Cl (ppm)	PI (ppm)
5	SM-SILTY SAND, fine grained, red/brown, dry			2			<120	0.4
				4			352	0.4
10				10'			>2492	70.5
15	SANDSTONE, fine to medium grained, tan/brown	15.00					>2492	30.0
20	END OF BOREHOLE @ 20.00ft BGS	20.00		20'			1380	47.6
25	This boring was dry.							
30								
35								
40								
45								
50								
55								
60								
65								
70								

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

CHEMICAL ANALYSIS





STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

Page 1 of 1

PROJECT NAME: Flamenco Federal #1

HOLE DESIGNATION: SB-21A

PROJECT NUMBER: 11220747

DATE COMPLETED: August 11, 2021

CLIENT: EOG Resources

DRILLING METHOD: Sonic

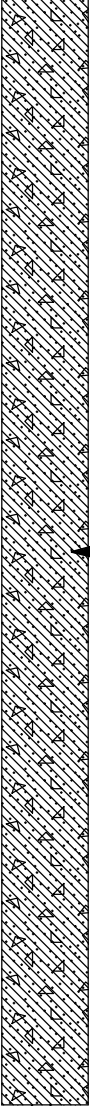
LOCATION: Eddy County, New Mexico

FIELD PERSONNEL: C. Neligh

DRILLING CONTRACTOR: Cascade

DRILLER: Cole

File: I:\LOG DATABASE\8-CHAR\11-1122-1\11220747 FLAMENCO\11220747-CO.GPJ Library File: GHD_ENV\RO_V06.GLB Report: OVERBURDEN LOG Date: 10/27/21

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH BGS	SOIL BORING	SAMPLE				
				NUMBER	INTERVAL	REC (ft)	Cl (ppm)	PID (ppm)
5	SM-SILTY SAND, fine grained, brown, dry	4.00		2			<120	3.6
	CALICHE			4			<120	6.1
							>2604	53.7
10	SANDSTONE, fine to medium grained, tan, dry	10.00					>2604	39.9
							>2604	36.2
15				15'			2056	64.6
20	SANDSTONE, medium grained, tan/yellow, dry	20.00					>2604	31.7
25							>2604	16.7
30	SANDSTONE, medium grained, brown, dry	30.00					1424	21.8
35				35'			>2604	26.7
40							2400	30.3
45	CH-CLAY, fat, brown, dry	45.00					<120	5.6
50							676	36.2
55				55'			160	34.1
60	END OF BOREHOLE @ 60.00ft BGS This boring was dry.	60.00		60'			<120	12.1

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

CHEMICAL ANALYSIS 



STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

Page 1 of 1

PROJECT NAME: Flamenco Federal #1

HOLE DESIGNATION: SB-21B

PROJECT NUMBER: 11220747

DATE COMPLETED: August 12, 2021

CLIENT: EOG Resources

DRILLING METHOD: Sonic

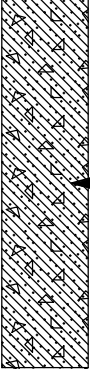
LOCATION: Eddy County, New Mexico

FIELD PERSONNEL: C. Neligh

DRILLING CONTRACTOR: Cascade

DRILLER: Cole

File: I:\LOG DATABASE\8-CHAR\11-1122-11220747 FLAMENCO\11220747-CO.GPJ Library File: GHD_ENV\RO_V06.GLB Report: OVERBURDEN LOG Date: 10/27/21

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH BGS	SOIL BORING	SAMPLE				
				NUMBER	INTERVAL	REC (ft)	Cl (ppm)	PID (ppm)
5	SM-SILTY SAND, fine grained, brown, dry	4.00	 Cement-Bentonite Grout	2			<120	5.3
	CALICHE	8.00		4			<120	0.9
				6			920	31.2
10	SANDSTONE, fine to medium grained, tan, dry	15.00					356	28.5
							188	23.7
15	SANDSTONE, medium grained, brown, dry	20.00		15'			<120	9.6
20	END OF BOREHOLE @ 20.00ft BGS			20'			<120	10.8
25	This boring was dry.							
30								
35								
40								
45								
50								
55								
60								
65								
70								

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

CHEMICAL ANALYSIS 



STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

Page 1 of 1

PROJECT NAME: Flamenco Federal #1

HOLE DESIGNATION: SB-21C

PROJECT NUMBER: 11220747

DATE COMPLETED: August 12, 2021

CLIENT: EOG Resources

DRILLING METHOD: Sonic

LOCATION: Eddy County, New Mexico

FIELD PERSONNEL: C. Neligh

DRILLING CONTRACTOR: Cascade

DRILLER: Cole

File: I:\LOG DATABASE\8-CHAR\11-1122-11220747 FLAMENCO\11220747-CO.GPJ Library File: GHD_ENV\RO_V06.GLB Report: OVERBURDEN LOG Date: 10/27/21

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH BGS	SOIL BORING	SAMPLE				
				NUMBER	INTERVAL	REC (ft)	Cl (ppm)	PID (ppm)
5	SM-SILTY SAND, fine grained, brown, dry			2			<120	5.8
				4			<120	4.7
				6			<120	19.3
	CALICHE	6.00					<120	15.6
	SANDY CALICHE	8.00					<120	14.7
10	SANDSTONE, fine to medium grained, tan, dry	10.00					<120	22.7
15				15'			<120	5.7
20	END OF BOREHOLE @ 20.00ft BGS	20.00		20'			<120	
25	This boring was dry.							
30								
35								
40								
45								
50								
55								
60								
65								
70								

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

CHEMICAL ANALYSIS





STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

Page 1 of 1

PROJECT NAME: Flamenco Federal #1

HOLE DESIGNATION: SB-22

PROJECT NUMBER: 11220747

DATE COMPLETED: August 11, 2021

CLIENT: EOG Resources

DRILLING METHOD: Sonic

LOCATION: Eddy County, New Mexico

FIELD PERSONNEL: C. Neligh

DRILLING CONTRACTOR: Cascade

DRILLER: Cole

File: I:\LOG DATABASE\8-CHAR\11-1122-11220747 FLAMENCO\11220747-CO.GPJ Library File: GHD_ENV\RO_V06.GLB Report: OVERBURDEN LOG Date: 10/27/21

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH BGS	SOIL BORING	SAMPLE				
				NUMBER	INTERVAL	REC (ft)	Cl (ppm)	PID (ppm)
5	SM-SILTY SAND, fine grained, brown, dry	4.00		2			120	4.7
	SANDY CALICHE			4			120	0.8
							356	11.2
							1648	13.1
10	SM-SILTY SAND, fine grained, brown, dry	10.00					>2604	23.0
15	SANDSTONE, fine to medium grained, gray/tan, dry	15.00		15'			>2604	5.7
20	SANDSTONE, fine to medium grained, brown, dry	20.00					>2604	6.3
25	SANDSTONE, fine to medium grained, tan/yellow, dry	25.00					2056	11.2
30	SANDSTONE, fine to medium grained, brown, dry	30.00		30'			1148	43.9
35							<120	9.5
40							572	4.0
45	SANDSTONE, fine to medium grained, tan, dry	45.00		45'			160	5.8
50	END OF BOREHOLE @ 50.00ft BGS	50.00		50'			<120	6.9
55	This boring was dry.							
60								
65								
70								

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

CHEMICAL ANALYSIS



STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

Page 1 of 1

PROJECT NAME: Flamenco Federal #1

HOLE DESIGNATION: SB-23

PROJECT NUMBER: 11220747

DATE COMPLETED: July 27, 2021

CLIENT: EOG Resources

DRILLING METHOD: Sonic

LOCATION: Eddy County, New Mexico

FIELD PERSONNEL: C. Neligh

DRILLING CONTRACTOR: Cascade

DRILLER: Cole

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH BGS	SOIL BORING	SAMPLE				
				NUMBER	INTERVAL	REC (ft)	Cl (ppm)	PID (ppm)
5	SM-SILTY SAND, fine grained, red/brown, dry			2			<120	1.1
				4				
10	SANDSTONE, fine to medium grained, tan, dry	10.00		10'			<120	0.6
13	- refusal at 13.00ft BGS	13.00					<120	29.2
15	END OF BOREHOLE @ 13.00ft BGS							
20	This boring was dry.							
25								
30								
35								
40								
45								
50								
55								
60								
65								
70								

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

CHEMICAL ANALYSIS

File: I:\LOG DATABASE\8-CHAR\11-1122-11220747 FLAMENCO\11220747-CO.GPJ Library File: GHD_ENV\RO_V06.GLB Report: OVERBURDEN LOG Date: 10/27/21



STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

Page 1 of 1

PROJECT NAME: Flamenco Federal #1

HOLE DESIGNATION: SB-24

PROJECT NUMBER: 11220747

DATE COMPLETED: August 10, 2021

CLIENT: EOG Resources

DRILLING METHOD: Sonic

LOCATION: Eddy County, New Mexico

FIELD PERSONNEL: C. Neligh

DRILLING CONTRACTOR: Cascade

DRILLER: Cole

File: I:\LOG DATABASE\8-CHAR\11-1122-11220747 FLAMENCO\11220747-CO.GPJ Library File: GHD_ENV\RO_V06.GLB Report: OVERBURDEN LOG Date: 10/27/21

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH BGS	SOIL BORING	SAMPLE				
				NUMBER	INTERVAL	REC (ft)	Cl (ppm)	PID (ppm)
5	SM-SILTY SAND, fine grained, brown, dry			2			<120	3.3
	CALICHE	4.00		4			<120	2.0
	SANDY CALICHE	6.00					1148	32.6
		8.00					1148	28.7
10	SM-SILTY SAND, fine to medium grained, brown, dry	10.00					1148	30.0
	SANDSTONE, medium grained, tan, dry							
15				15'			1772	52.9
20							356	52.0
25				25'			<120	36.5
30	END OF BOREHOLE @ 30.00ft BGS	30.00		30'			<120	61.1
35	This boring was dry.							
40								
45								
50								
55								
60								
65								
70								

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

CHEMICAL ANALYSIS



STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

Page 1 of 1

PROJECT NAME: Flamenco Federal #1

HOLE DESIGNATION: SB-25

PROJECT NUMBER: 11220747

DATE COMPLETED: August 10, 2021

CLIENT: EOG Resources

DRILLING METHOD: Sonic

LOCATION: Eddy County, New Mexico

FIELD PERSONNEL: C. Neligh

DRILLING CONTRACTOR: Cascade

DRILLER: Cole

File: I:\LOG DATABASE\8-CHAR\11-1122-11220747 FLAMENCO\11220747-CO.GPJ Library File: GHD_ENV\RO_V06.GLB Report: OVERBURDEN LOG Date: 10/27/21

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH BGS	SOIL BORING	SAMPLE				
				NUMBER	INTERVAL	REC (ft)	Cl (ppm)	PID (ppm)
5	SM-SILTY SAND, fine grained, brown, dry	4.00		2			<120	3.4
	CALICHE	6.00		4			<120	1.1
10	SM-SILTY SAND, fine grained, brown, dry						>2472	13.9
							>2472	16.8
15				15'			>2472	6.9
							>2472	5.3
20	SANDSTONE, fine to medium grained, brown, dry	20.00					1648	57.3
25							1772	40.6
30				30'			2008	62.2
35							356	40.5
40				40'			<120	89.6
45	END OF BOREHOLE @ 45.00ft BGS	45.00		45'			<120	49.6
50	This boring was dry.							
55								
60								
65								
70								

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

CHEMICAL ANALYSIS



STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

Page 1 of 1

PROJECT NAME: Flamenco Federal #1

HOLE DESIGNATION: SB-26

PROJECT NUMBER: 11220747

DATE COMPLETED: August 10, 2021

CLIENT: EOG Resources

DRILLING METHOD: Sonic

LOCATION: Eddy County, New Mexico

FIELD PERSONNEL: C. Neligh

DRILLING CONTRACTOR: Cascade

DRILLER: Cole

File: I:\LOG DATABASE\8-CHAR\11-1122-11220747 FLAMENCO\11220747-CO.GPJ Library File: GHD_ENV\RO_V06.GLB Report: OVERBURDEN LOG Date: 10/27/21

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH BGS	SOIL BORING	SAMPLE				
				NUMBER	INTERVAL	REC (ft)	Cl (ppm)	PID (ppm)
5	SM-SILTY SAND, fine grained, brown, dry			2			<120	3.2
	CALICHE	4.00		4			<120	1.6
	SANDY CALICHE	6.00					>2472	47.0
10	SM-SILTY SAND, fine grained, brown, dry	8.00					>2472	50.6
							>2472	58.8
15	SANDSTONE, fine to medium grained, tan/gray, dry	15.00		15'			>2472	71.1
20	CH-CLAY, fat, brown, dry	20.00					456	14.1
25				25'			160	39.7
30	END OF BOREHOLE @ 30.00ft BGS	30.00		30'			176	42.1
35	This boring was dry.							
40								
45								
50								
55								
60								
65								
70								

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

CHEMICAL ANALYSIS



STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

Page 1 of 1

PROJECT NAME: Flamenco Federal #1

HOLE DESIGNATION: SB-27

PROJECT NUMBER: 11220747

DATE COMPLETED: July 26, 2021

CLIENT: EOG Resources

DRILLING METHOD: Sonic

LOCATION: Eddy County, New Mexico

FIELD PERSONNEL: C. Neligh

DRILLING CONTRACTOR: Cascade

DRILLER: Cole

File: I:\LOG DATABASE\8-CHAR\11-1122-11220747 FLAMENCO\11220747-CO.GPJ Library File: GHD_ENV\RO_V06.GLB Report: OVERBURDEN LOG Date: 10/27/21

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH BGS	SOIL BORING	SAMPLE				
				NUMBER	INTERVAL	REC (ft)	Cl (ppm)	PID (ppm)
5	SM-SILTY SAND, fine grained, red/brown, dry			2			<120	1.2
				4			<120	0.8
10				10'			1136	5.8
15	CALICHE	15.00	Cement-Bentonite Grout	15'			<120	11.8
20	END OF BOREHOLE @ 20.00ft BGS	20.00					140	19.4
25	This boring was dry.							
30								
35								
40								
45								
50								
55								
60								
65								
70								

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

CHEMICAL ANALYSIS



STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

Page 1 of 1

PROJECT NAME: Flamenco Federal #1

HOLE DESIGNATION: SB-27A

PROJECT NUMBER: 11220747

DATE COMPLETED: August 12, 2021

CLIENT: EOG Resources

DRILLING METHOD: Sonic

LOCATION: Eddy County, New Mexico

FIELD PERSONNEL: C. Neligh

DRILLING CONTRACTOR: Cascade

DRILLER: Cole

File: I:\LOG DATABASE\8-CHAR\11-1122-11220747 FLAMENCO\11220747-CO.GPJ Library File: GHD_ENV\RO_V06.GLB Report: OVERBURDEN LOG Date: 10/27/21

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH BGS	SOIL BORING	SAMPLE				
				NUMBER	INTERVAL	REC (ft)	Cl (ppm)	PID (ppm)
5	SM-SILTY SAND, fine grained, brown, dry	4.00		2			<120	6.2
	CALICHE			4			<120	5.9
							<120	15.1
10	SM-SILTY SAND, fine grained, brown, dry	8.00		10'			<120	9.8
15				15'			<120	17.3
20	END OF BOREHOLE @ 20.00ft BGS	20.00		20'			188	17.1
25	This boring was dry.						160	21.2
30								
35								
40								
45								
50								
55								
60								
65								
70								

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

CHEMICAL ANALYSIS



STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

Page 1 of 1

PROJECT NAME: Flamenco Federal #1

HOLE DESIGNATION: SB-28

PROJECT NUMBER: 11220747

DATE COMPLETED: August 10, 2021

CLIENT: EOG Resources

DRILLING METHOD: Sonic

LOCATION: Eddy County, New Mexico

FIELD PERSONNEL: C. Neligh

DRILLING CONTRACTOR: Cascade

DRILLER: Cole

File: I:\LOG DATABASE\8-CHAR\11-1122-11220747 FLAMENCO\11220747-CO.GPJ Library File: GHD_ENV\RO_V06.GLB Report: OVERBURDEN LOG Date: 10/27/21

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH BGS	SOIL BORING	SAMPLE				
				NUMBER	INTERVAL	REC (ft)	Cl (ppm)	PID (ppm)
5	SM-SILTY SAND, fine grained, brown, dry	4.00		2			<120	3.8
	CALICHE	8.00		4			<120	1.7
							>2472	2.8
10	SANDY CALICHE	10.00					>2472	3.5
	SM-SILTY SAND, fine grained, brown, dry	15.00					>2472	3.1
15	SANDSTONE, fine to medium grained, tan/gray, dry	20.00		20'			2472	5.3
20		25.00		25'			>2472	10.2
25		30.00					1328	91.7
30	SANDSTONE, medium grained, brown, dry	35.00					612	44.3
35		40.00		40'			256	5.0
40		45.00		45'			216	61.4
45	END OF BOREHOLE @ 45.00ft BGS						196	79.3
50	This boring was dry.							
55								
60								
65								
70								

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

CHEMICAL ANALYSIS



STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

Page 1 of 1

PROJECT NAME: Flamenco Federal #1

HOLE DESIGNATION: SB-29

PROJECT NUMBER: 11220747

DATE COMPLETED: August 10, 2021

CLIENT: EOG Resources

DRILLING METHOD: Sonic

LOCATION: Eddy County, New Mexico

FIELD PERSONNEL: C. Neligh

DRILLING CONTRACTOR: Cascade

DRILLER: Cole

File: I:\LOG DATABASE\8-CHAR\11-1122-11220747 FLAMENCO\11220747-CO.GPJ Library File: GHD_ENV\RO_V06.GLB Report: OVERBURDEN LOG Date: 10/27/21

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH BGS	SOIL BORING	SAMPLE				
				NUMBER	INTERVAL	REC (ft)	Cl (ppm)	PID (ppm)
5	SM-SILTY SAND, fine grained, brown, dry			2			<120	3.2
	CALICHE	4.00		4			<120	2.9
							620	28.3
10	SANDY CALICHE	8.00					572	30.9
	SANDSTONE, fine to medium grained, brown, dry	10.00		10'			732	39.4
15				15'			<120	39.2
20							<120	14.6
25	END OF BOREHOLE @ 25.00ft BGS	25.00		25'			188	69.3
30	This boring was dry.							
35								
40								
45								
50								
55								
60								
65								
70								

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

CHEMICAL ANALYSIS





STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

Page 1 of 1

PROJECT NAME: Flamenco Federal #1

HOLE DESIGNATION: SB-30

PROJECT NUMBER: 11220747

DATE COMPLETED: August 9, 2021

CLIENT: EOG Resources

DRILLING METHOD: Sonic

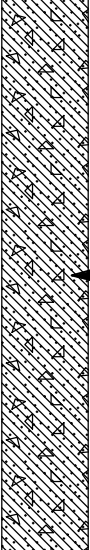
LOCATION: Eddy County, New Mexico

FIELD PERSONNEL: C. Neligh

DRILLING CONTRACTOR: Cascade

DRILLER: Cole

File: I:\LOG DATABASE\8-CHAR\11-1122-11220747 FLAMENCO\11220747-CO.GPJ Library File: GHD_ENV\RO_V06.GLB Report: OVERBURDEN LOG Date: 10/27/21

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH BGS	SOIL BORING	SAMPLE				
				NUMBER	INTERVAL	REC (ft)	Cl (ppm)	PID (ppm)
5	SM-SILTY SAND, fine grained, brown, dry	4.00		2			<120	3.5
	CALICHE			4			<120	1.7
							2296	13.8
10	SM-SILTY SAND, fine grained, brown, dry	10.00		8			2296	27.0
							2296	25.3
15								
20	SANDSTONE, fine to medium grained, tan, dry	20.00					608	12.2
							728	14.1
25	CH-CLAY, fat, brown, dry	25.00		25			212	55.4
30	END OF BOREHOLE @ 30.00ft BGS	30.00		30			144	23.0
35	This boring was dry.							
40								
45								
50								
55								
60								
65								
70								

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

CHEMICAL ANALYSIS 



STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

Page 1 of 1

PROJECT NAME: Flamenco Federal #1

HOLE DESIGNATION: SB-31

PROJECT NUMBER: 11220747

DATE COMPLETED: August 9, 2021

CLIENT: EOG Resources

DRILLING METHOD: Sonic

LOCATION: Eddy County, New Mexico

FIELD PERSONNEL: C. Neligh

DRILLING CONTRACTOR: Cascade

DRILLER: Cole

File: I:\LOG DATABASE\8-CHAR\11-1122-11220747 FLAMENCO\11220747-CO.GPJ Library File: GHD_ENV\RO_V06.GLB Report: OVERBURDEN LOG Date: 10/27/21

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH BGS	SOIL BORING	SAMPLE				
				NUMBER	INTERVAL	REC (ft)	Cl (ppm)	PID (ppm)
5	SM-SILTY SAND, fine grained, brown, dry			2			<120	7.1
				4			<120	1.3
10							>2472	14.6
							>2472	12.9
							>2472	36.8
15	SANDSTONE, medium grained, gray, dry	15.00	Cement-Bentonite Grout	15'			>2472	21.3
20							1240	17.0
25	CH-CLAY, fat, brown, dry	25.00		25'			168	49.8
30	END OF BOREHOLE @ 30.00ft BGS	30.00		30'			168	14.5
35	This boring was dry.							
40								
45								
50								
55								
60								
65								
70								

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

CHEMICAL ANALYSIS



STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

Page 1 of 1

PROJECT NAME: Flamenco Federal #1

HOLE DESIGNATION: SB-32

PROJECT NUMBER: 11220747

DATE COMPLETED: July 27, 2021

CLIENT: EOG Resources

DRILLING METHOD: Sonic

LOCATION: Eddy County, New Mexico

FIELD PERSONNEL: C. Neligh

DRILLING CONTRACTOR: Cascade

DRILLER: Cole

File: I:\LOG DATABASE\8-CHAR\11-1122-11220747 FLAMENCO\11220747-CO.GPJ Library File: GHD_ENV\RO_V06.GLB Report: OVERBURDEN LOG Date: 10/27/21

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH BGS	SOIL BORING	SAMPLE				
				NUMBER	INTERVAL	REC (ft)	Cl (ppm)	PID (ppm)
5	SM-SILTY SAND, fine grained, red/brown, dry			2			<120	1.6
				4			<120	0.8
10				10'			180	7.8
15	CALICHE	15.00		15'			540	8.1
20	END OF BOREHOLE @ 20.00ft BGS	20.00					415	63.8
25	This boring was dry.							
30								
35								
40								
45								
50								
55								
60								
65								
70								

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

CHEMICAL ANALYSIS





STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

Page 1 of 1

PROJECT NAME: Flamenco Federal #1

HOLE DESIGNATION: SB-33

PROJECT NUMBER: 11220747

DATE COMPLETED: August 8, 2021

CLIENT: EOG Resources

DRILLING METHOD: Sonic


LOCATION: Eddy County, New Mexico

FIELD PERSONNEL: C. Neligh

DRILLING CONTRACTOR: Cascade

DRILLER: Cole

File: I:\LOG DATABASE\8-CHAR\11-1122-11220747 FLAMENCO\11220747-CO.GPJ Library File: GHD_ENV\RO_V06.GLB Report: OVERBURDEN LOG Date: 10/27/21

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH BGS	SOIL BORING	SAMPLE				
				NUMBER	INTERVAL	REC (ft)	Cl (ppm)	PID (ppm)
5	SM-SILTY SAND, fine grained, brown, dry	4.00		2			<108	4.3
	CALICHE	6.00		4			<108	8.5
	SM-SILTY SAND, fine grained, brown, dry						<108	14.7
10							1648	24.3
							1908	22.0
15							1532	13.3
20	SANDSTONE, fine to medium grained, gray/tan, dry	20.00		20'			1908	15.5
25							1232	6.4
30	CH-CLAY, fat, brown, dry	30.00					1648	10.2
35	SANDSTONE, fine to medium grained, brown, dry	35.00					572	5.7
40							1740	13.0
45	CH-CLAY, fat, brown, dry	45.00					1864	15.2
50	SANDSTONE, fine to medium grained, brown, dry	50.00					256	40.7
55				55'			560	78.5
60	CH-CLAY, brown, dry	60.00		60'			144	67.0
65	END OF BOREHOLE @ 65.00ft BGS	65.00		65'			292	20.0
70	This boring was dry.							

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

CHEMICAL ANALYSIS 



STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

Page 1 of 1

PROJECT NAME: Flamenco Federal #1

HOLE DESIGNATION: SB-34

PROJECT NUMBER: 11220747

DATE COMPLETED: August 8, 2021

CLIENT: EOG Resources

DRILLING METHOD: Sonic

LOCATION: Eddy County, New Mexico

FIELD PERSONNEL: C. Neligh

DRILLING CONTRACTOR: Cascade

DRILLER: Cole

File: I:\LOG DATABASE\8-CHAR\11-1122-11220747 FLAMENCO\11220747-CO.GPJ Library File: GHD_ENV\RO_V06.GLB Report: OVERBURDEN LOG Date: 10/27/21

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH BGS	SOIL BORING	SAMPLE				
				NUMBER	INTERVAL	REC (ft)	Cl (ppm)	PID (ppm)
5	SM-SILTY SAND, fine grained, brown, dry	4.00		2			<120	2.6
	CALICHE			4			<120	5.1
				6			572	28.2
10	SM-SILTY SAND, fine grained, brown, dry	8.00					284	26.9
15				15			356	33.5
20							188	29.0
25	END OF BOREHOLE @ 25.00ft BGS	25.00		25			188	18.4
30	This boring was dry.						<108	10.0
35								
40								
45								
50								
55								
60								
65								
70								

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

CHEMICAL ANALYSIS



STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

Page 1 of 2

PROJECT NAME: Flamenco Federal #1

HOLE DESIGNATION: SB-35

PROJECT NUMBER: 11220747

DATE COMPLETED: August 17, 2021

CLIENT: EOG Resources

DRILLING METHOD: Sonic

LOCATION: Eddy County, New Mexico

FIELD PERSONNEL: C. Neligh

DRILLING CONTRACTOR: Cascade

DRILLER: Cole

File: I:\LOG DATABASE\8-CHAR\11-1122-11220747 FLAMENCO\11220747-CO.GPJ Library File: GHD_ENV\RO_V06.GLB Report: OVERBURDEN LOG Date: 10/27/21

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH BGS	SOIL BORING	SAMPLE				
				NUMBER	INTERVAL	REC (ft)	Cl (ppm)	PID (ppm)
5	SM-SILTY SAND, fine grained, brown, dry	4.00		2			<120	1.4
	CALICHE	6.00		4			156	0.9
	SM-SILTY SAND, fine grained, brown, dry						1792	3.8
10							1792	4.5
							1328	3.1
15							1648	23.8
20							1648	28.5
25	SANDSTONE, SANDSTONE, medium grained, tan, dry	25.00		25'			1648	31.0
30	CH-CLAY, fat, brown, dry	30.00					2048	18.6
35	SANDSTONE, fine to medium grained, brown, dry	35.00					2048	23.4
40	SANDSTONE, medium grained, tan/gray, dry	40.00		40'			320	45.0
45	SANDSTONE, fine to medium grained, tan, dry	45.00		45'			<120	26.4
50	SANDSTONE, fine to medium grained, brown, dry	50.00					188	2.8
55				55'			1068	5.8
60	CH-CLAY, fat, brown, dry	60.00					<120	76.2
65							160	38.6
70	SANDSTONE, medium grained, tan, dry	70.00					320	16.4

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

CHEMICAL ANALYSIS



STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

Page 2 of 2

PROJECT NAME: Flamenco Federal #1

HOLE DESIGNATION: SB-35

PROJECT NUMBER: 11220747

DATE COMPLETED: August 17, 2021

CLIENT: EOG Resources


DRILLING METHOD: Sonic

LOCATION: Eddy County, New Mexico

FIELD PERSONNEL: C. Neligh

DRILLING CONTRACTOR: Cascade

DRILLER: Cole

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH BGS	SOIL BORING	SAMPLE				
				NUMBER	INTERVAL	REC (ft)	Cl (ppm)	PID (ppm)
				75'			<120	19.6
80	SANDSTONE, fine to medium grained, brown, dry	75.00						
	END OF BOREHOLE @ 80.00ft BGS	80.00		80'			<120	4.9
85	This boring was dry.							
90								
95								
100								
105								
110								
115								
120								
125								
130								
135								
140								
145								

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

CHEMICAL ANALYSIS 

File: I:\LOG DATABASE\8-CHAR\11-1122-11220747 FLAMENCO\11220747-CO.GPJ Library File: GHD_ENV\RO_V06.GLB Report: OVERBURDEN LOG Date: 10/27/21



STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

Page 1 of 2

PROJECT NAME: Flamenco Federal #1

HOLE DESIGNATION: SB-36

PROJECT NUMBER: 11220747

DATE COMPLETED: August 8, 2021

CLIENT: EOG Resources

DRILLING METHOD: Sonic

LOCATION: Eddy County, New Mexico

FIELD PERSONNEL: C. Neligh

DRILLING CONTRACTOR: Cascade

DRILLER: Cole

File: I:\LOG DATABASE\8-CHAR\11-1122-1\11220747 FLAMENCO\11220747-CO.GPJ Library File: GHD_ENV\RO_V06.GLB Report: OVERBURDEN LOG Date: 10/27/21

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH BGS	SOIL BORING	SAMPLE				
				NUMBER	INTERVAL	REC (ft)	Cl (ppm)	PID (ppm)
5	SM-SILTY SAND, fine grained, brown, dry	4.00		2			<108	2.1
	CALICHE	8.00		4			<108	3.4
							2056	13.3
10	SM-SILTY SAND, fine grained, brown, dry						1648	10.4
							1232	11.1
15				15'			2400	19.3
20							1648	13.0
25	SANDSTONE, fine to medium grained, tan, dry	25.00					1648	29.3
30	CH-CLAY, fat, brown, dry	30.00					572	5.4
35	SANDSTONE, fine to medium grained, tan, dry	35.00					848	95.4
40							1148	142
45	SANDSTONE, fine to medium grained, brown, dry	45.00					1068	38.6
50	CH-CLAY, fat, brown, dry	50.00		50'			>2604	208.6
55	SANDSTONE, fine grained, gray, dry	55.00					480	85.9
60	CH-CLAY, fat, brown, dry	60.00		60'			<120	20.2
65				65'			320	49.8
70	MUDSTONE, very fine grained, brown/red, dry	70.00					420	3.7

Cement-Bentonite Grout

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

CHEMICAL ANALYSIS



STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

Page 2 of 2

PROJECT NAME: Flamenco Federal #1

HOLE DESIGNATION: SB-36

PROJECT NUMBER: 11220747

DATE COMPLETED: August 8, 2021

CLIENT: EOG Resources


DRILLING METHOD: Sonic

LOCATION: Eddy County, New Mexico

FIELD PERSONNEL: C. Neligh

DRILLING CONTRACTOR: Cascade

DRILLER: Cole

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH BGS	SOIL BORING	SAMPLE				
				NUMBER	INTERVAL	REC (ft)	Cl (ppm)	PID (ppm)
	SANDSTONE, medium grained, tan, dry	75.00		75			<120	11.4
80	END OF BOREHOLE @ 80.00ft BGS	80.00		80			<120	5.4
85	This boring was dry.							
90								
95								
100								
105								
110								
115								
120								
125								
130								
135								
140								
145								

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

CHEMICAL ANALYSIS 

File: I:\LOG DATABASE\8-CHAR\11-1122-11220747 FLAMENCO\11220747-CO.GPJ Library File: GHD_ENV\RO_V06.GLB Report: OVERBURDEN LOG Date: 10/27/21



STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

Page 1 of 1

PROJECT NAME: Flamenco Federal #1

HOLE DESIGNATION: SB-37

PROJECT NUMBER: 11220747

DATE COMPLETED: August 8, 2021

CLIENT: EOG Resources

DRILLING METHOD: Sonic


LOCATION: Eddy County, New Mexico

FIELD PERSONNEL: C. Neligh

DRILLING CONTRACTOR: Cascade

DRILLER: Cole

File: I:\LOG DATABASE\8-CHAR\11-1122-11220747 FLAMENCO\11220747-CO.GPJ Library File: GHD_ENV\RO_V06.GLB Report: OVERBURDEN LOG Date: 10/27/21

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH BGS	SOIL BORING	SAMPLE				
				NUMBER	INTERVAL	REC (ft)	Cl (ppm)	PID (ppm)
5	SM-SILTY SAND, fine grained, brown, dry	4.00		2			<120	1.2
	CALICHE			4			572	2.1
							1232	7.3
							1648	4.5
10	SM-SILTY SAND, fine grained, brown, dry	10.00					1908	4.5
15	SP-SILTY CALICHE SAND, medium grained, tan, dry	15.00					852	5.2
20	SM-SILTY SAND, fine grained, brown, dry	20.00					920	3.6
25							436	3.7
30	CH-CLAY, fat, brown, dry	30.00		30'			1908	53.0
35	SANDSTONE, fine to medium grained, tan, dry	35.00					1324	68.0
40							1908	67.0
45	CH-CLAY, fat, brown, dry	45.00		45'			732	86.7
50							1772	37.1
55	CL-SANDY CLAY, fine grained, gray, dry	55.00					1068	17.1
60	CH-CLAY, fat, brown, dry	60.00		60'			108	13.1
65	END OF BOREHOLE @ 65.00ft BGS	65.00		65'			<108	19.3
70	This boring was dry.							

Cement-Bentonite Grout

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

CHEMICAL ANALYSIS



STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

Page 1 of 1

PROJECT NAME: Flamenco Federal #1

HOLE DESIGNATION: SB-38

PROJECT NUMBER: 11220747

DATE COMPLETED: August 7, 2021

CLIENT: EOG Resources

DRILLING METHOD: Sonic

LOCATION: Eddy County, New Mexico

FIELD PERSONNEL: C. Neligh

DRILLING CONTRACTOR: Cascade

DRILLER: Cole

File: I:\LOG DATABASE\8-CHAR\11-1122-11220747 FLAMENCO\11220747-CO.GPJ Library File: GHD_ENV\RO_V06.GLB Report: OVERBURDEN LOG Date: 10/27/21

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH BGS	SOIL BORING	SAMPLE				
				NUMBER	INTERVAL	REC (ft)	Cl (ppm)	PID (ppm)
5	SM-SILTY SAND, fine grained, brown, dry	4.00		2			<120	0.3
	CALICHE	6.00		4			>1604	1.7
	SM-SILTY SAND, fine grained, brown, dry						>1604	12.5
10							>1604	9.7
							1232	11.0
15	CL-SANDY CLAY, fine grained, brown, dry	15.00					920	38.1
20	SM-SILTY SAND, fine grained, brown, dry	20.00		20'			2052	17.4
25							1424	33.0
30	SANDSTONE, fine to medium grained, tan to white, dry	30.00					856	19.7
35							856	67.3
40	SANDSTONE, medium grained, brown, dry	40.00		40'			676	105.3
45							1224	34.7
50	CH-CLAY, fat, brown, dry	50.00					1760	5.0
55	CLAYEY SANDSTONE, fine grained, brown, dry	55.00					1224	14.5
60				60'			252	19.3
65	END OF BOREHOLE @ 65.00ft BGS	65.00		65'			188	10.5
70	This boring was dry.							

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

CHEMICAL ANALYSIS



STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

Page 1 of 1

PROJECT NAME: Flamenco Federal #1

HOLE DESIGNATION: SB-39

PROJECT NUMBER: 11220747

DATE COMPLETED: July 26, 2021

CLIENT: EOG Resources

DRILLING METHOD: Sonic

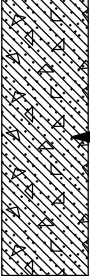
LOCATION: Eddy County, New Mexico

FIELD PERSONNEL: C. Neligh

DRILLING CONTRACTOR: Cascade

DRILLER: Cole

File: I:\LOG DATABASE\8-CHAR\11-1122-11220747 FLAMENCO\11220747-CO.GPJ Library File: GHD_ENV\RO_V06.GLB Report: OVERBURDEN LOG Date: 10/27/21

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH BGS	SOIL BORING	SAMPLE				
				NUMBER	INTERVAL	REC (ft)	Cl (ppm)	PID (ppm)
5	SM-SILTY SAND, fine grained, red/brown, dry			2			<120	0.8
				4			<120	0.5
10				10'			<120	7.3
15	END OF BOREHOLE @ 15.00ft BGS	15.00		15'			<120	20.1
20	This boring was dry.							
25								
30								
35								
40								
45								
50								
55								
60								
65								
70								

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

CHEMICAL ANALYSIS 



STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

Page 1 of 1

PROJECT NAME: Flamenco Federal #1

HOLE DESIGNATION: SB-40

PROJECT NUMBER: 11220747

DATE COMPLETED: July 26, 2021

CLIENT: EOG Resources

DRILLING METHOD: Sonic

LOCATION: Eddy County, New Mexico

FIELD PERSONNEL: C. Neligh

DRILLING CONTRACTOR: Cascade

DRILLER: Cole

File: I:\LOG DATABASE\8-CHAR\11-1122-11220747 FLAMENCO\11220747-CO.GPJ Library File: GHD_ENV\RO_V06.GLB Report: OVERBURDEN LOG Date: 10/27/21

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH BGS	SOIL BORING	SAMPLE				
				NUMBER	INTERVAL	REC (ft)	Cl (ppm)	PID (ppm)
5	SM-SILTY SAND, fine grained, red/brown, dry	4.00		2			<120	0.6
	SANDY CALICHE, fine grained, tan, dry			4			<120	0.5
10				10'			<120	5.1
15	SANDSTONE, fine to medium grained, gray	15.00		15'			1600	12.6
20	END OF BOREHOLE @ 20.00ft BGS	20.00					1604	5.6
25	This boring was dry.							
30								
35								
40								
45								
50								
55								
60								
65								
70								

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

CHEMICAL ANALYSIS



STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

Page 1 of 1

PROJECT NAME: Flamenco Federal #1

HOLE DESIGNATION: SB-40A

PROJECT NUMBER: 11220747

DATE COMPLETED: August 12, 2021

CLIENT: EOG Resources

DRILLING METHOD: Sonic

LOCATION: Eddy County, New Mexico

FIELD PERSONNEL: C. Neligh

DRILLING CONTRACTOR: Cascade

DRILLER: Cole

File: I:\LOG DATABASE\8-CHAR\11-1122-11220747 FLAMENCO\11220747-CO.GPJ Library File: GHD_ENV\RO_V06.GLB Report: OVERBURDEN LOG Date: 10/27/21

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH BGS	SOIL BORING	SAMPLE				
				NUMBER	INTERVAL	REC (ft)	Cl (ppm)	PID (ppm)
5	SM-SILTY SAND, fine grained, brown, dry	4.00		2			<120	6.1
	CALICHE	8.00		4			<120	2.8
							<120	5.0
10	SM-SILTY SAND, fine grained, brown, dry			10'			<120	6.1
							<120	7.1
15							<120	6.3
20	SANDSTONE, fine to medium grained, tan, dry	20.00		20'			187	6.3
25	END OF BOREHOLE @ 25.00ft BGS	25.00		25'			108	2.1
30	This boring was dry.							
35								
40								
45								
50								
55								
60								
65								
70								

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

CHEMICAL ANALYSIS



STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

Page 1 of 1

PROJECT NAME: Flamenco Federal #1

HOLE DESIGNATION: SB-41

PROJECT NUMBER: 11220747

DATE COMPLETED: July 27, 2021

CLIENT: EOG Resources

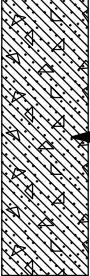
DRILLING METHOD: Sonic

LOCATION: Eddy County, New Mexico

FIELD PERSONNEL: C. Neligh

DRILLING CONTRACTOR: Cascade

DRILLER: Cole

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH BGS	SOIL BORING	SAMPLE				
				NUMBER	INTERVAL	REC (ft)	Cl (ppm)	PID (ppm)
5	SM-SILTY SAND, fine grained, red/brown, dry			2			<120	0.8
				4			<120	0.5
10				10'			<120	27.6
15	END OF BOREHOLE @ 15.00ft BGS	15.00		15'			<120	43.0
20	This boring was dry.							
25								
30								
35								
40								
45								
50								
55								
60								
65								
70								

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

CHEMICAL ANALYSIS



File: I:\LOG DATABASE\8-CHAR\11-1122-11220747 FLAMENCO\11220747-CO.GPJ Library File: GHD_ENV\RO_V06.GLB Report: OVERBURDEN LOG Date: 10/27/21



STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

Page 1 of 1

PROJECT NAME: Flamenco Federal #1

HOLE DESIGNATION: SB-42

PROJECT NUMBER: 11220747

DATE COMPLETED: July 27, 2021

CLIENT: EOG Resources

DRILLING METHOD: Sonic

LOCATION: Eddy County, New Mexico

FIELD PERSONNEL: C. Neligh

DRILLING CONTRACTOR: Cascade

DRILLER: Cole

File: I:\LOG DATABASE\8-CHAR\11-1122-11220747 FLAMENCO\11220747-CO.GPJ Library File: GHD_ENV\RO_V06.GLB Report: OVERBURDEN LOG Date: 10/27/21

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH BGS	SOIL BORING	SAMPLE				
				NUMBER	INTERVAL	REC (ft)	Cl (ppm)	PID (ppm)
5	SM-SILTY SAND, fine grained, red/brown, dry	4.00		2			<120	0.8
	CALICHE			4			<120	0.6
10	SANDSTONE, fine to medium grained, tan brown, dry	10.00		10'			<120	34.2
15	END OF BOREHOLE @ 15.00ft BGS	15.00		15'			<120	18.9
20	This boring was dry.							
25								
30								
35								
40								
45								
50								
55								
60								
65								
70								

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

CHEMICAL ANALYSIS



STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

Page 1 of 1

PROJECT NAME: Flamenco Federal #1

HOLE DESIGNATION: SB-43

PROJECT NUMBER: 11220747

DATE COMPLETED: August 18, 2021

CLIENT: EOG Resources

DRILLING METHOD: Sonic

LOCATION: Eddy County, New Mexico

FIELD PERSONNEL: C. Neligh

DRILLING CONTRACTOR: Cascade

DRILLER: Cole

File: I:\LOG DATABASE\8-CHAR\11-1122-11220747 FLAMENCO\11220747-CO.GPJ Library File: GHD_ENV\RO_V06.GLB Report: OVERBURDEN LOG Date: 10/27/21

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH BGS	SOIL BORING	SAMPLE				
				NUMBER	INTERVAL	REC (ft)	Cl (ppm)	PID (ppm)
5	SM-SILTY SAND, fine grained, brown, dry			2			>2604	3.2
				4			>2604	3.0
							>2604	11.0
							>2604	17.4
							>2604	32.6
15	CH-CLAY, fat, brown, dry	15.00					>2604	32.0
20	SM-SILTY SAND, fine grained, brown, dry	20.00					>2604	27.7
25	SANDSTONE, fine to medium grained, white, dry	25.00		25'			1648	38.3
30							792	37.2
35	CH-CLAY, fat, brown, dry	35.00		35'			2406	7.2
40				40'			160	13.3
45	SANDSTONE, medium grained, tan/yellow, dry	45.00		45'			160	38.3
50	CLAYEY SANDSTONE, brown, dry	50.00		50'			138	21.5
55	END OF BOREHOLE @ 55.00ft BGS	55.00		55'			<120	10.3
60	This boring was dry.							
65								
70								

Cement-Bentonite Grout

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

CHEMICAL ANALYSIS



STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

Page 1 of 1

PROJECT NAME: Flamenco Federal #1

HOLE DESIGNATION: SB-44

PROJECT NUMBER: 11220747

DATE COMPLETED: August 6, 2021

CLIENT: EOG Resources

DRILLING METHOD: Sonic

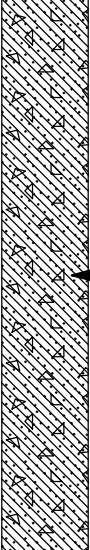
LOCATION: Eddy County, New Mexico

FIELD PERSONNEL: C. Neligh

DRILLING CONTRACTOR: Cascade

DRILLER: Cole

File: I:\LOG DATABASE\8-CHAR\11-1122-11220747 FLAMENCO\11220747-CO.GPJ Library File: GHD_ENV\RO_V06.GLB Report: OVERBURDEN LOG Date: 10/27/21

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH BGS	SOIL BORING	SAMPLE				
				NUMBER	INTERVAL	REC (ft)	Cl (ppm)	PID (ppm)
5	SM-SILTY SAND, fine grained, brown, dry	4.00	 Cement-Bentonite Grout	2			<120	2.1
	SANDY CALICHE, fine grained			4			<120	0.9
							1676	10.2
10	SM-SILTY SAND, fine grained, brown, dry	8.00		8			2176	7.8
							1472	4.5
15	CH-CLAY, brown, dry	15.00					436	14.1
20							735	11.5
25	SANDSTONE, fine to medium grained, gray/tan, dry	25.00		25			<120	14.5
30	END OF BOREHOLE @ 30.00ft BGS	30.00		30			<120	9.5
35	This boring was dry.							
40								
45								
50								
55								
60								
65								
70								

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

CHEMICAL ANALYSIS 



WELL RECORD & LOG

OFFICE OF THE STATE ENGINEER


www.ose.state.nm.us

1. GENERAL AND WELL LOCATION	OSE POD NO. (WELL NO.) POD 12		WELL TAG ID NO. PMW-10		OSE FILE NO(S) C-4144			
	WELL OWNER NAME(S) EOG Resources				PHONE (OPTIONAL) 432-848-9146			
	WELL OWNER MAILING ADDRESS 5509 Champions Drive				CITY Midland	STATE Texas		
					ZIP 79706			
	WELL LOCATION (FROM GPS)		DEGREES 32	MINUTES 24	SECONDS 15.17	N	* ACCURACY REQUIRED ONE TENTH OF A SECOND	
		LONGITUDE -103	43	11.00	W	* DATUM REQUIRED WGS 84		
DESCRIPTION RELATING WELL LOCATION TO STREET ADDRESS AND COMMON LANDMARKS PLSS (SECTION, TOWNSHIP, RANGE) WHERE AVAILABLE Approximately 10.5 south of US Highway 62/180								
2. DRILLING & CASING INFORMATION	LICENSE NO. 1664		NAME OF LICENSED DRILLER Shawn Cain			NAME OF WELL DRILLING COMPANY Cascade Drilling		
	DRILLING STARTED 8/3/21		DRILLING ENDED 8/3/21		DEPTH OF COMPLETED WELL (FT) NA	BORE HOLE DEPTH (FT) 105	DEPTH WATER FIRST ENCOUNTERED (FT) NA	
	COMPLETED WELL IS: <input type="checkbox"/> ARTESIAN <input type="checkbox"/> DRY HOLE <input type="checkbox"/> SHALLOW (UNCONFINED)					STATIC WATER LEVEL IN COMPLETED WELL (FT) NA		
	DRILLING FLUID: <input type="checkbox"/> AIR <input type="checkbox"/> MUD ADDITIVES SPECIFY:							
	DRILLING METHOD: <input type="checkbox"/> ROTARY <input type="checkbox"/> HAMMER <input type="checkbox"/> CABLE TOOL <input checked="" type="checkbox"/> OTHER - SPECIFY Roto Sonic							
	DEPTH (feet bgl) FROM TO		BORE HOLE DIAM (inches)	CASING MATERIAL AND/OR GRADE (include each casing string, and note sections of screen)	CASING CONNECTION TYPE (add coupling diameter)	CASING INSIDE DIAM. (inches)	CASING WALL THICKNESS (inches)	SLOT SIZE (inches)
3. ANNULAR MATERIAL	DEPTH (feet bgl) FROM TO		BORE HOLE DIAM (inches)	LIST ANNULAR SEAL MATERIAL AND GRAVEL PACK SIZE-RANGE BY INTERVAL		AMOUNT (cubic feet)	METHOD OF PLACEMENT	
	0 105		6	Cement with 5% Bentonite		23	Trimie Pumped	

FOR OSE INTERNAL USE

WR-20 WELL RECORD & LOG (Version 04/30/19)

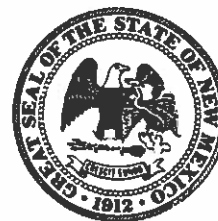
FILE NO.	POD NO.	TRN NO.
LOCATION	WELL TAG ID NO.	PAGE 1 OF 2

4. HYDROGEOLOGIC LOG OF WELL	DEPTH (feet bgl)		THICKNESS (feet)	COLOR AND TYPE OF MATERIAL ENCOUNTERED - INCLUDE WATER-BEARING CAVITIES OR FRACTURE ZONES (attach supplemental sheets to fully describe all units)	WATER BEARING? (YES / NO)		ESTIMATED YIELD FOR WATER- BEARING ZONES (gpm)
	FROM	TO					
	0	6	6	Fine Silty Sand Red/Brown	Y	✓ N	
	6	10	4	Caliche	Y	✓ N	
	10	15	5	Fine Clayey sand brown	Y	✓ N	
	15	25	10	Fine sandstone brown	Y	✓ N	
	25	65	40	Fine silty sandstone Brown	Y	✓ N	
	65	70	5	Medium Sandstone Gray	Y	✓ N	
	70	85	15	Fine silty sandstone Brown	Y	✓ N	
	85	90	5	Fine to Medium Sandstone	Y	✓ N	
	90	95	5	Fine - Very fine Fat Clay Brown	Y	N	
	95	105	10	Fine to medium sandstone	Y	N	
					Y	N	
					Y	N	
					Y	N	
					Y	N	
					Y	N	
					Y	N	
	METHOD USED TO ESTIMATE YIELD OF WATER-BEARING STRATA: <input type="checkbox"/> PUMP <input type="checkbox"/> AIR LIFT <input type="checkbox"/> BAILER <input type="checkbox"/> OTHER - SPECIFY:					TOTAL ESTIMATED WELL YIELD (gpm): 0.00	
	5. TEST; RIG SUPERVISION	WELL TEST	TEST RESULTS - ATTACH A COPY OF DATA COLLECTED DURING WELL TESTING, INCLUDING DISCHARGE METHOD, START TIME, END TIME, AND A TABLE SHOWING DISCHARGE AND DRAWDOWN OVER THE TESTING PERIOD.				
MISCELLANEOUS INFORMATION:							
PRINT NAME(S) OF DRILL RIG SUPERVISOR(S) THAT PROVIDED ONSITE SUPERVISION OF WELL CONSTRUCTION OTHER THAN LICENSEE: Jason Camp							
6. SIGNATURE	BY SIGNING BELOW, I CERTIFY THAT TO THE BEST OF MY KNOWLEDGE AND BELIEF, THE FOREGOING IS A TRUE AND CORRECT RECORD OF THE ABOVE DESCRIBED WELL. I ALSO CERTIFY THAT THE WELL TAG, IF REQUIRED, HAS BEEN INSTALLED AND THAT THIS WELL RECORD WILL ALSO BE FILED WITH THE PERMIT HOLDER WITHIN 30 DAYS AFTER THE COMPLETION OF WELL DRILLING.						
				Shawn Cain	11/19/21		
SIGNATURE OF DRILLER / PRINT SIGNEE NAME				DATE			

FOR OSE INTERNAL USE			WR-20 WELL RECORD & LOG (Version 04/30/2019)		
FILE NO.	POD NO.	TRN NO.			
LOCATION		WELL TAG ID NO.		PAGE 2 OF 2	



PLUGGING RECORD



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

I. GENERAL / WELL OWNERSHIP:

State Engineer Well Number: PMW-10

Well owner: EOG Resources

Phone No.: 432-848-9146

Mailing address: 5509 Champions Drive

City: Midland

State: Texas

Zip code: 79706

II. WELL PLUGGING INFORMATION:

- 1) Name of well drilling company that plugged well: Cascade Drilling
- 2) New Mexico Well Driller License No.: 1664 Expiration Date: 1/31/23
- 3) Well plugging activities were supervised by the following well driller(s)/rig supervisor(s): Cliff Hillman
- 4) Date well plugging began: 8/3/2021 Date well plugging concluded: 8/3/2021
- 5) GPS Well Location: Latitude: 32 deg, 24 min, 15.17 sec
Longitude: -103 deg, 43 min, 11.00 sec, WGS 84
- 6) Depth of well confirmed at initiation of plugging as: 105 ft below ground level (bgl),
by the following manner: tag line
- 7) Static water level measured at initiation of plugging: None ft bgl
- 8) Date well plugging plan of operations was approved by the State Engineer: 3/24/2021
- 9) Were all plugging activities consistent with an approved plugging plan? Yes If not, please describe differences between the approved plugging plan and the well as it was plugged (attach additional pages as needed):

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

For each interval plugged, describe within the following columns:

<u>Depth</u> (ft bgl)	<u>Plugging Material Used</u> (include any additives used)	<u>Volume of Material Placed</u> (gallons)	<u>Theoretical Volume of Borehole/ Casing</u> (gallons)	<u>Placement Method</u> (tremie pipe, other)	<u>Comments</u> ("casing perforated first", "open annular space also plugged", etc.)
	Neat Cement	185	162	Tremie	Boring no water

MULTIPLY BY AND OBTAIN

cubic feet	x	7.4805	= gallons
cubic yards	x	201.97	= gallons

III. SIGNATURE:

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

Sh C.

Signature of Well Driller

11/20/21

Date _____



WELL RECORD & LOG

OFFICE OF THE STATE ENGINEER

www.ose.state.nm.us

1. GENERAL AND WELL LOCATION	OSE POD NO. (WELL NO.) POD 13		WELL TAG ID NO. PMW-11		OSE FILE NO(S). C-4144			
	WELL OWNER NAME(S) EOG Resources				PHONE (OPTIONAL) 432-848-9146			
	WELL OWNER MAILING ADDRESS 5509 Champions Drive				CITY Midland	STATE Texas	ZIP 79706	
	WELL LOCATION (FROM GPS)	DEGREES LATITUDE 32	MINUTES 24	SECONDS 08.61 N	* ACCURACY REQUIRED: ONE TENTH OF A SECOND * DATUM REQUIRED: WGS 84			
	DESCRIPTION RELATING WELL LOCATION TO STREET ADDRESS AND COMMON LANDMARKS - PLSS (SECTION, TOWNSHIP, RANGE) WHERE AVAILABLE Approximately 10.5 south of US Highway 62/180							
2. DRILLING & CASING INFORMATION	LICENSE NO. 1664		NAME OF LICENSED DRILLER Shawn Cain			NAME OF WELL DRILLING COMPANY Cascade Drilling		
	DRILLING STARTED 8/5/21	DRILLING ENDED 8/5/21	DEPTH OF COMPLETED WELL (FT) NA	BORE HOLE DEPTH (FT) 105	DEPTH WATER FIRST ENCOUNTERED (FT) NA			
	COMPLETED WELL IS: <input type="checkbox"/> ARTESIAN <input checked="" type="checkbox"/> DRY HOLE <input type="checkbox"/> SHALLOW (UNCONFINED)				STATIC WATER LEVEL IN COMPLETED WELL (FT) NA			
	DRILLING FLUID: <input type="checkbox"/> AIR <input type="checkbox"/> MUD ADDITIVES - SPECIFY:							
	DRILLING METHOD: <input type="checkbox"/> ROTARY <input type="checkbox"/> HAMMER <input type="checkbox"/> CABLE TOOL <input checked="" type="checkbox"/> OTHER - SPECIFY: Roto Sonic							
	DEPTH (feet bgl) FROM TO		BORE HOLE DIAM. (inches)	CASING MATERIAL AND/OR GRADE (include each casing string, and note sections of screen)	CASING CONNECTION TYPE (add coupling diameter)	CASING INSIDE DIAM. (inches)	CASING WALL THICKNESS (inches)	SLOT SIZE (inches)
3. ANNULAR MATERIAL	DEPTH (feet bgl) FROM TO		BORE HOLE DIAM. (inches)	LIST ANNULAR SEAL MATERIAL AND GRAVEL PACK SIZE-RANGE BY INTERVAL	AMOUNT (cubic feet)	METHOD OF PLACEMENT		
	0 105		6	Cement with 5% Bentonite	23	Trimie Pumped		


FOR OSE INTERNAL USE

WR-20 WELL RECORD & LOG (Version 04/30/19)

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

4. HYDROGEOLOGIC LOG OF WELL	DEPTH (feet bgl)		THICKNESS (feet)	COLOR AND TYPE OF MATERIAL ENCOUNTERED - INCLUDE WATER-BEARING CAVITIES OR FRACTURE ZONES (attach supplemental sheets to fully describe all units)	WATER BEARING? (YES / NO)	ESTIMATED YIELD FOR WATER- BEARING ZONES (gpm)
	FROM	TO				
	0	6	6	Fine Silty Sand Red/Brown	Y ✓ N	
	6	10	4	Caliche	Y ✓ N	
	10	15	5	Fine Clayey sand brown	Y ✓ N	
	15	25	10	Fine sandstone brown	Y ✓ N	
	25	60	35	Fine silty sandstone Brown	Y ✓ N	
	60	70	10	Fat Clay Brown	Y ✓ N	
	70	85	15	Fine silty sandstone Brown	Y ✓ N	
	85	105	20	Fine to Medium Sandstone	Y ✓ N	
					Y N	
					Y N	
					Y N	
					Y N	
					Y N	
					Y N	
					Y N	
					Y N	
					Y N	
					Y N	
					Y N	
					Y N	
					Y N	
					Y N	
					Y N	
METHOD USED TO ESTIMATE YIELD OF WATER-BEARING STRATA: <input type="checkbox"/> PUMP <input type="checkbox"/> AIR LIFT <input type="checkbox"/> BAILER <input type="checkbox"/> OTHER - SPECIFY:					TOTAL ESTIMATED WELL YIELD (gpm): 0.00	

5. TEST, RIG SUPERVISION	WELL TEST	TEST RESULTS - ATTACH A COPY OF DATA COLLECTED DURING WELL TESTING, INCLUDING DISCHARGE METHOD, START TIME, END TIME, AND A TABLE SHOWING DISCHARGE AND DRAWDOWN OVER THE TESTING PERIOD.
	MISCELLANEOUS INFORMATION:	
	PRINT NAME(S) OF DRILL RIG SUPERVISOR(S) THAT PROVIDED ONSITE SUPERVISION OF WELL CONSTRUCTION OTHER THAN LICENSEE: Jason Camp	

6. SIGNATURE	BY SIGNING BELOW, I CERTIFY THAT TO THE BEST OF MY KNOWLEDGE AND BELIEF, THE FOREGOING IS A TRUE AND CORRECT RECORD OF THE ABOVE DESCRIBED WELL. I ALSO CERTIFY THAT THE WELL TAG, IF REQUIRED, HAS BEEN INSTALLED AND THAT THIS WELL RECORD WILL ALSO BE FILED WITH THE PERMIT HOLDER WITHIN 30 DAYS AFTER THE COMPLETION OF WELL DRILLING. <div style="display: flex; justify-content: space-between;"> <div>  SIGNATURE OF DRILLER / PRINT SIGNEE NAME </div> <div> Shawn Cain DATE </div> </div>
--------------	--

FOR USE INTERNAL USE

WR-20 WELL RECORD & LOG (Version 04/30/2019)

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



PLUGGING RECORD



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

I. GENERAL / WELL OWNERSHIP:


State Engineer Well Number: PMW-11
Well owner: EOG Resources Phone No.: 432-848-9146
Mailing address: 5509 Champions Drive
City: Midland State: Texas Zip code: 79706

II. WELL PLUGGING INFORMATION:

- 1) Name of well drilling company that plugged well: Cascade Drilling
- 2) New Mexico Well Driller License No.: 1664 Expiration Date: 1/31/23
- 3) Well plugging activities were supervised by the following well driller(s)/rig supervisor(s): Cliff Hillman
- 4) Date well plugging began: 8/5/2021 Date well plugging concluded: 8/5/2021
- 5) GPS Well Location: Latitude: 32 deg, 24 min, 8.61 sec
Longitude: -103 deg, 43 min, 23.28 sec, WGS 84
- 6) Depth of well confirmed at initiation of plugging as: 105 ft below ground level (bgl),
by the following manner: tag line
- 7) Static water level measured at initiation of plugging: None ft bgl
- 8) Date well plugging plan of operations was approved by the State Engineer: 3/24/2021
- 9) Were all plugging activities consistent with an approved plugging plan? Yes If not, please describe differences between the approved plugging plan and the well as it was plugged (attach additional pages as needed):

- For each interval plugged, describe within the following columns:**

III. SIGNATURE:


Signature of Well Driller

Date _____



WELL RECORD & LOG

OFFICE OF THE STATE ENGINEER


www.ose.state.nm.us

1. GENERAL AND WELL LOCATION	OSE POD NO. (WELL NO.) POD 14		WELL TAG ID NO. SB-12		OSE FILE NO(S). C-4144			
	WELL OWNER NAME(S) EOG Resources				PHONE (OPTIONAL) 432-848-9146			
	WELL OWNER MAILING ADDRESS 5509 Champions Drive				CITY Midland	STATE Texas	ZIP 79706	
	WELL LOCATION (FROM GPS)	DEGREES LATITUDE 32	MINUTES 24	SECONDS 09.24 N	* ACCURACY REQUIRED: ONE TENTH OF A SECOND * DATUM REQUIRED: WGS 84			
	DESCRIPTION RELATING WELL LOCATION TO STREET ADDRESS AND COMMON LANDMARKS - PLSS (SECTION, TOWNSHIP, RANGE) WHERE AVAILABLE Approximately 10.5 south of US Highway 62/180							
2. DRILLING & CASING INFORMATION	LICENSE NO. 1664		NAME OF LICENSED DRILLER Shawn Cain			NAME OF WELL DRILLING COMPANY Cascade Drilling		
	DRILLING STARTED 8/7/21	DRILLING ENDED 8/7/21	DEPTH OF COMPLETED WELL (FT) NA	BORE HOLE DEPTH (FT) 60	DEPTH WATER FIRST ENCOUNTERED (FT) NA			
	COMPLETED WELL IS: <input type="checkbox"/> ARTESIAN <input checked="" type="checkbox"/> DRY HOLE <input type="checkbox"/> SHALLOW (UNCONFINED)				STATIC WATER LEVEL IN COMPLETED WELL (FT) NA			
	DRILLING FLUID: <input type="checkbox"/> AIR <input type="checkbox"/> MUD ADDITIVES - SPECIFY:							
	DRILLING METHOD: <input type="checkbox"/> ROTARY <input type="checkbox"/> HAMMER <input type="checkbox"/> CABLE TOOL <input checked="" type="checkbox"/> OTHER - SPECIFY: Roto Sonic							
	DEPTH (feet bgl) FROM TO		BORE HOLE DIAM. (inches)	CASING MATERIAL AND/OR GRADE (include each casing string, and note sections of screen)	CASING CONNECTION TYPE (add coupling diameter)	CASING INSIDE DIAM. (inches)	CASING WALL THICKNESS (inches)	SLOT SIZE (inches)
3. ANNULAR MATERIAL	DEPTH (feet bgl) FROM TO		BORE HOLE DIAM. (inches)	LIST ANNULAR SEAL MATERIAL AND GRAVEL PACK SIZE-RANGE BY INTERVAL	AMOUNT (cubic feet)	METHOD OF PLACEMENT		
	0 60		6	Cement with 5% Bentonite	14	Trimie Pumped		

FOR OSE INTERNAL USE

WR-20 WELL RECORD & LOG (Version 04/30/19)

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

4. HYDROGEOLOGIC LOG OF WELL	DEPTH (feet bgl)		THICKNESS (feet)	COLOR AND TYPE OF MATERIAL ENCOUNTERED - INCLUDE WATER-BEARING CAVITIES OR FRACTURE ZONES (attach supplemental sheets to fully describe all units)	WATER BEARING? (YES / NO)	ESTIMATED YIELD FOR WATER- BEARING ZONES (gpm)
	FROM	TO				
	0	2	2	Fine Silty Sand Red/Brown	Y ✓ N	
	2	6	4	Caliche	Y ✓ N	
	6	8	2	Fine silty sand brown	Y ✓ N	
	8	10	2	Fine Sandy Clay Brown	Y ✓ N	
	10	30	20	Fine silty sand Brown	Y ✓ N	
	30	40	10	Fine to medium sandstone Brown	Y ✓ N	
	40	50	10	Very fat clay Brown	Y ✓ N	
	50	60	10	Fine to Medium Sandstone	Y ✓ N	
					Y N	
					Y N	
					Y N	
					Y N	
					Y N	
					Y N	
					Y N	
					Y N	
					Y N	
					Y N	
					Y N	
					Y N	
METHOD USED TO ESTIMATE YIELD OF WATER-BEARING STRATA:					TOTAL ESTIMATED WELL YIELD (gpm): 0.00	
<input type="checkbox"/> PUMP <input type="checkbox"/> AIR LIFT <input type="checkbox"/> BAILER <input type="checkbox"/> OTHER - SPECIFY:						
5. TEST; RIG SUPERVISION	WELL TEST	TEST RESULTS - ATTACH A COPY OF DATA COLLECTED DURING WELL TESTING, INCLUDING DISCHARGE METHOD, START TIME, END TIME, AND A TABLE SHOWING DISCHARGE AND DRAWDOWN OVER THE TESTING PERIOD.				
	MISCELLANEOUS INFORMATION:					
	PRINT NAME(S) OF DRILL RIG SUPERVISOR(S) THAT PROVIDED ONSITE SUPERVISION OF WELL CONSTRUCTION OTHER THAN LICENSEE: Jason Camp					
6. SIGNATURE	BY SIGNING BELOW, I CERTIFY THAT TO THE BEST OF MY KNOWLEDGE AND BELIEF, THE FOREGOING IS A TRUE AND CORRECT RECORD OF THE ABOVE DESCRIBED WELL. I ALSO CERTIFY THAT THE WELL TAG, IF REQUIRED, HAS BEEN INSTALLED AND THAT THIS WELL RECORD WILL ALSO BE FILED WITH THE PERMIT HOLDER WITHIN 30 DAYS AFTER THE COMPLETION OF WELL DRILLING.					
	 SIGNATURE OF DRILLER / PRINT SIGNED NAME				11/19/21 DATE	

FOR USE INTERNAL USE

WR-20 WELL RECORD & LOG (Version 04/30/2019)

FILE NO.

POD NO.

TRN NO.

LOCATION

WELL TAG ID NO.

PAGE 2 OF 2



PLUGGING RECORD



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

I. GENERAL / WELL OWNERSHIP:

State Engineer Well Number: SB-12

Well owner: EOG Resources

Phone No.: 432-848-9146

Mailing address: 5509 Champions Drive

City: Midland

State: Texas


Zip code: 79706

II. WELL PLUGGING INFORMATION:

- 1) Name of well drilling company that plugged well: Cascade Drilling
- 2) New Mexico Well Driller License No.: 1664 Expiration Date: 1/31/23
- 3) Well plugging activities were supervised by the following well driller(s)/rig supervisor(s):
Cliff Hillman
- 4) Date well plugging began: 8/7/2021 Date well plugging concluded: 8/7/2021
- 5) GPS Well Location: Latitude: 32 deg, 24 min, 9.24 sec
Longitude: -103 deg, 43 min, 21.72 sec, WGS 84
- 6) Depth of well confirmed at initiation of plugging as: 60 ft below ground level (bgl),
by the following manner: tag line
- 7) Static water level measured at initiation of plugging: None ft bgl
- 8) Date well plugging plan of operations was approved by the State Engineer: 3/24/2021
- 9) Were all plugging activities consistent with an approved plugging plan? Yes If not, please describe
differences between the approved plugging plan and the well as it was plugged (attach additional pages as needed):

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


For each interval plugged, describe within the following columns:

Depth (ft bgl)	Plugging Material Used (include any additives used)	Volume of Material Placed (gallons)	Theoretical Volume of Borehole/ Casing (gallons)	Placement Method (tremie pipe, other)	Comments ("casing perforated first", "open annular space also plugged", etc.)
	Neat Cement	110	93	Tremie	Boring no water

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

III. SIGNATURE:

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



Signature of Well Driller

11/20/21

Date



WELL RECORD & LOG

OFFICE OF THE STATE ENGINEER


www.ose.state.nm.us

1. GENERAL AND WELL LOCATION	OSE POD NO. (WELL NO.) POD 16		WELL TAG ID NO. SB-14		OSE FILE NO(S). C-4144			
	WELL OWNER NAME(S) EOG Resources				PHONE (OPTIONAL) 432-848-9146			
	WELL OWNER MAILING ADDRESS 5509 Champions Drive				CITY Midland	STATE Texas	ZIP 79706	
	WELL LOCATION (FROM GPS)	DEGREES LATITUDE 32	MINUTES 24	SECONDS 08.65 N	* ACCURACY REQUIRED: ONE TENTH OF A SECOND * DATUM REQUIRED: WGS 84			
		LONGITUDE -103	43	21.85 W				
DESCRIPTION RELATING WELL LOCATION TO STREET ADDRESS AND COMMON LANDMARKS - PLSS (SECTION, TOWNSHIP, RANGE) WHERE AVAILABLE Approximately 10.5 south of US Highway 62/180								
2. DRILLING & CASING INFORMATION	LICENSE NO. 1664		NAME OF LICENSED DRILLER Shawn Cain			NAME OF WELL DRILLING COMPANY Cascade Drilling		
	DRILLING STARTED 8/6/21	DRILLING ENDED 8/6/21	DEPTH OF COMPLETED WELL (FT) NA		BORE HOLE DEPTH (FT) 35	DEPTH WATER FIRST ENCOUNTERED (FT) NA		
	COMPLETED WELL IS: <input type="checkbox"/> ARTESIAN <input type="checkbox"/> DRY HOLE <input type="checkbox"/> SHALLOW (UNCONFINED)					STATIC WATER LEVEL IN COMPLETED WELL (FT) NA		
	DRILLING FLUID: <input type="checkbox"/> AIR <input type="checkbox"/> MUD ADDITIVES - SPECIFY:							
	DRILLING METHOD: <input type="checkbox"/> ROTARY <input type="checkbox"/> HAMMER <input type="checkbox"/> CABLE TOOL <input checked="" type="checkbox"/> OTHER - SPECIFY: Roto Sonic							
	DEPTH (feet bgl) FROM TO		BORE HOLE DIAM. (inches)	CASING MATERIAL AND/OR GRADE (include each casing string, and note sections of screen)	CASING CONNECTION TYPE (add coupling diameter)	CASING INSIDE DIAM. (inches)	CASING WALL THICKNESS (inches)	SLOT SIZE (inches)
3. ANNULAR MATERIAL	DEPTH (feet bgl) FROM TO		BORE HOLE DIAM. (inches)	LIST ANNULAR SEAL MATERIAL AND GRAVEL PACK SIZE-RANGE BY INTERVAL	AMOUNT (cubic feet)	METHOD OF PLACEMENT		
	0	35	6	Cement with 5% Bentonite	7.5	Trimie Pumped		

FOR OSE INTERNAL USE

WR-20 WELL RECORD & LOG (Version 04/30/19)

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

4. HYDROGEOLOGIC LOG OF WELL	DEPTH (feet bgl)		THICKNESS (feet)	COLOR AND TYPE OF MATERIAL ENCOUNTERED - INCLUDE WATER-BEARING CAVITIES OR FRACTURE ZONES (attach supplemental sheets to fully describe all units)	WATER BEARING? (YES / NO)		ESTIMATED YIELD FOR WATER- BEARING ZONES (gpm)
	FROM	TO					
	0	2	2	Fine Silty Sand Red/Brown	Y	✓ N	
	2	6	4	Caliche	Y	✓ N	
	6	20	14	Fine silty sand brown	Y	✓ N	
	20	30	10	Fat Clay Brown	Y	✓ N	
	30	35	5	Medium sandstone White	Y	✓ N	
					Y	N	
					Y	N	
					Y	N	
					Y	N	
					Y	N	
					Y	N	
					Y	N	
					Y	N	
					Y	N	
					Y	N	
					Y	N	
	METHOD USED TO ESTIMATE YIELD OF WATER-BEARING STRATA: <input type="checkbox"/> PUMP <input type="checkbox"/> AIR LIFT <input type="checkbox"/> BAILER <input type="checkbox"/> OTHER - SPECIFY:					TOTAL ESTIMATED WELL YIELD (gpm): 0.00	
	5. TEST; RIG SUPERVISION	WELL TEST	TEST RESULTS - ATTACH A COPY OF DATA COLLECTED DURING WELL TESTING, INCLUDING DISCHARGE METHOD, START TIME, END TIME, AND A TABLE SHOWING DISCHARGE AND DRAWDOWN OVER THE TESTING PERIOD.				
MISCELLANEOUS INFORMATION:							
PRINT NAME(S) OF DRILL RIG SUPERVISOR(S) THAT PROVIDED ONSITE SUPERVISION OF WELL CONSTRUCTION OTHER THAN LICENSEE: Cliff Hillman							
6. SIGNATURE	BY SIGNING BELOW, I CERTIFY THAT TO THE BEST OF MY KNOWLEDGE AND BELIEF, THE FOREGOING IS A TRUE AND CORRECT RECORD OF THE ABOVE DESCRIBED WELL. I ALSO CERTIFY THAT THE WELL TAG, IF REQUIRED, HAS BEEN INSTALLED AND THAT THIS WELL RECORD WILL ALSO BE FILED WITH THE PERMIT HOLDER WITHIN 30 DAYS AFTER THE COMPLETION OF WELL DRILLING.						
				Shawn Cain	11/19/21		
	SIGNATURE OF DRILLER / PRINT SIGNEE NAME				DATE		

FOR USE INTERNAL USE			WR-20 WELL RECORD & LOG (Version 04/30/2019)		
FILE NO.	POD NO.	TRN NO.			
LOCATION		WELL TAG ID NO.	PAGE 2 OF 2		



PLUGGING RECORD



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

I. GENERAL / WELL OWNERSHIP:

State Engineer Well Number: SB-14

Well owner: EOG Resources

Phone No.: 432-848-9146

Mailing address: 5509 Champions Drive

City: Midland

State: Texas

Zip code: 79706

II. WELL PLUGGING INFORMATION:

- 1) Name of well drilling company that plugged well: Cascade Drilling
- 2) New Mexico Well Driller License No.: 1664 Expiration Date: 1/31/23
- 3) Well plugging activities were supervised by the following well driller(s)/rig supervisor(s): Cliff Hillman
- 4) Date well plugging began: 8/6/2021 Date well plugging concluded: 8/6/2021
- 5) GPS Well Location: Latitude: 32 deg, 24 min, 8.65 sec
Longitude: -103 deg, 43 min, 21.85 sec, WGS 84
- 6) Depth of well confirmed at initiation of plugging as: 35 ft below ground level (bgl),
by the following manner: tag line
- 7) Static water level measured at initiation of plugging: None ft bgl
- 8) Date well plugging plan of operations was approved by the State Engineer: 3/24/2021
- 9) Were all plugging activities consistent with an approved plugging plan? Yes If not, please describe differences between the approved plugging plan and the well as it was plugged (attach additional pages as needed):

- For each interval plugged, describe within the following columns:**

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

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

Date _____



WELL RECORD & LOG

OFFICE OF THE STATE ENGINEER


www.ose.state.nm.us

1. GENERAL AND WELL LOCATION	OSE POD NO. (WELL NO.) POD 17		WELL TAG ID NO. SB-15		OSE FILE NO(S). C-4144	
	WELL OWNER NAME(S) EOG Resources				PHONE (OPTIONAL) 432-848-9146	
	WELL OWNER MAILING ADDRESS 5509 Champions Drive				CITY Midland	STATE Texas
					ZIP 79706	
	WELL LOCATION (FROM GPS)	DEGREES LATITUDE 32	MINUTES 24	SECONDS 08.09	N	* ACCURACY REQUIRED: ONE TENTH OF A SECOND
	LONGITUDE -103	43	21.79	W	* DATUM REQUIRED: WGS 84	
DESCRIPTION RELATING WELL LOCATION TO STREET ADDRESS AND COMMON LANDMARKS - PLSS (SECTION, TOWNSHIP, RANGE) WHERE AVAILABLE Approximately 10.5 south of US Highway 62/180						

2. DRILLING & CASING INFORMATION	LICENSE NO. 1664		NAME OF LICENSED DRILLER Shawn Cain			NAME OF WELL DRILLING COMPANY Cascade Drilling		
	DRILLING STARTED 8/6/21	DRILLING ENDED 8/6/21	DEPTH OF COMPLETED WELL (FT) NA	BORE HOLE DEPTH (FT) 45	DEPTH WATER FIRST ENCOUNTERED (FT) NA			
	COMPLETED WELL IS: <input type="checkbox"/> ARTESIAN <input type="checkbox"/> DRY HOLE <input type="checkbox"/> SHALLOW (UNCONFINED)					STATIC WATER LEVEL IN COMPLETED WELL (FT) NA		
	DRILLING FLUID: <input type="checkbox"/> AIR <input type="checkbox"/> MUD ADDITIVES - SPECIFY:							
	DRILLING METHOD: <input type="checkbox"/> ROTARY <input type="checkbox"/> HAMMER <input type="checkbox"/> CABLE TOOL <input checked="" type="checkbox"/> OTHER - SPECIFY: Roto Sonic							
	DEPTH (feet bgl) FROM TO		BORE HOLE DIAM (inches)	CASING MATERIAL AND/OR GRADE (include each casing string, and note sections of screen)	CASING CONNECTION TYPE (add coupling diameter)	CASING INSIDE DIAM (inches)	CASING WALL THICKNESS (inches)	SLOT SIZE (inches)

3. ANNULAR MATERIAL	DEPTH (feet bgl) FROM TO		BORE HOLE DIAM. (inches)	LIST ANNULAR SEAL MATERIAL AND GRAVEL PACK SIZE-RANGE BY INTERVAL	AMOUNT (cubic feet)	METHOD OF PLACEMENT
	0	45	6	Cement with 5% Bentonite	10	Trimie Pumped

FOR OSE INTERNAL USE				WR-20 WELL RECORD & LOG (Version 04/30/19)	
FILE NO.		POD NO.		TRN NO.	
LOCATION			WELL TAG ID NO.		PAGE 1 OF 2

4. HYDROGEOLOGIC LOG OF WELL	DEPTH (feet bgl)		THICKNESS (feet)	COLOR AND TYPE OF MATERIAL ENCOUNTERED - INCLUDE WATER-BEARING CAVITIES OR FRACTURE ZONES (attach supplemental sheets to fully describe all units)	WATER BEARING? (YES / NO)	ESTIMATED YIELD FOR WATER- BEARING ZONES (gpm)
	FROM	TO				
	0	2	2	Fine Silty Sand Red/Brown	Y ✓ N	
	2	4	2	Caliche	Y ✓ N	
	4	10	6	Fine silty sand brown	Y ✓ N	
	10	15	5	Fat Clay Brown	Y ✓ N	
	15	30	15	Fine silty sand Brown	Y ✓ N	
	30	42	12	Medium silty sandstone Tan	Y ✓ N	
	42	45	3	Fat clay Brown	Y ✓ N	
					Y N	
					Y N	
					Y N	
					Y N	
					Y N	
					Y N	
					Y N	
					Y N	
					Y N	
					Y N	
					Y N	
					Y N	
METHOD USED TO ESTIMATE YIELD OF WATER-BEARING STRATA:					TOTAL ESTIMATED WELL YIELD (gpm): 0.00	
<input type="checkbox"/> PUMP <input type="checkbox"/> AIR LIFT <input type="checkbox"/> BAILER <input type="checkbox"/> OTHER - SPECIFY:						
5. TEST; RIG SUPERVISION	WELL TEST	TEST RESULTS - ATTACH A COPY OF DATA COLLECTED DURING WELL TESTING, INCLUDING DISCHARGE METHOD, START TIME, END TIME, AND A TABLE SHOWING DISCHARGE AND DRAWDOWN OVER THE TESTING PERIOD.				
	MISCELLANEOUS INFORMATION:					
PRINT NAME(S) OF DRILL RIG SUPERVISOR(S) THAT PROVIDED ONSITE SUPERVISION OF WELL CONSTRUCTION OTHER THAN LICENSEE: Cliff Hillman						
6. SIGNATURE	BY SIGNING BELOW, I CERTIFY THAT TO THE BEST OF MY KNOWLEDGE AND BELIEF, THE FOREGOING IS A TRUE AND CORRECT RECORD OF THE ABOVE DESCRIBED WELL. I ALSO CERTIFY THAT THE WELL TAG, IF REQUIRED, HAS BEEN INSTALLED AND THAT THIS WELL RECORD WILL ALSO BE FILED WITH THE PERMIT HOLDER WITHIN 30 DAYS AFTER THE COMPLETION OF WELL DRILLING.					
	 SIGNATURE OF DRILLER / PRINT SIGNED NAME				11/19/21 DATE	

FOR USE INTERNAL USE

WR-20 WELL RECORD & LOG (Version 04/30/2019)

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



PLUGGING RECORD



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

I. GENERAL / WELL OWNERSHIP:

State Engineer Well Number: SB-15

Well owner: EOG Resources

Phone No.: 432-848-9146

Mailing address: 5509 Champions Drive

City: Midland State: Texas Zip code: 79706

II. WELL PLUGGING INFORMATION:

- 1) Name of well drilling company that plugged well: Cascade Drilling
- 2) New Mexico Well Driller License No.: 1664 Expiration Date: 1/31/23
- 3) Well plugging activities were supervised by the following well driller(s)/rig supervisor(s): Cliff Hillman
- 4) Date well plugging began: 8/6/2021 Date well plugging concluded: 8/6/2021
- 5) GPS Well Location: Latitude: 32 deg, 24 min, 8.09 sec
Longitude: -103 deg, 43 min, 21.79 sec, WGS 84
- 6) Depth of well confirmed at initiation of plugging as: 45 ft below ground level (bgl),
by the following manner: tag line
- 7) Static water level measured at initiation of plugging: None ft bgl
- 8) Date well plugging plan of operations was approved by the State Engineer: 3/24/2021
- 9) Were all plugging activities consistent with an approved plugging plan? Yes If not, please describe differences between the approved plugging plan and the well as it was plugged (attach additional pages as needed):

- For each interval plugged, describe within the following columns:**

III. SIGNATURE:


Signature of Well Driller

Date _____



WELL RECORD & LOG

OFFICE OF THE STATE ENGINEER

www.ose.state.nm.us

1. GENERAL AND WELL LOCATION	OSE POD NO. (WELL NO.) POD 18		WELL TAG ID NO. SB-16		OSE FILE NO(S) C-4144	
	WELL OWNER NAME(S) EOG Resources				PHONE (OPTIONAL) 432-848-9146	
	WELL OWNER MAILING ADDRESS 5509 Champions Drive				CITY Midland	STATE Texas
					ZIP 79706	
	WELL LOCATION (FROM GPS)	DEGREES 32	MINUTES 24	SECONDS 08.03	N	* ACCURACY REQUIRED: ONE TENTH OF A SECOND * DATUM REQUIRED: WGS 84
	LATITUDE	LONGITUDE	-103	43	20.99	
DESCRIPTION RELATING WELL LOCATION TO STREET ADDRESS AND COMMON LANDMARKS - PLSS (SECTION, TOWNSHIP, RANGE) WHERE AVAILABLE Approximately 10.5 south of US Highway 62/180						

2. DRILLING & CASING INFORMATION	LICENSE NO. 1664		NAME OF LICENSED DRILLER Shawn Cain			NAME OF WELL DRILLING COMPANY Cascade Drilling		
	DRILLING STARTED 8/6/21	DRILLING ENDED 8/6/21	DEPTH OF COMPLETED WELL (FT) NA	BORE HOLE DEPTH (FT) 20	DEPTH WATER FIRST ENCOUNTERED (FT) NA			
	COMPLETED WELL IS: <input type="checkbox"/> ARTESIAN <input type="checkbox"/> DRY HOLE <input type="checkbox"/> SHALLOW (UNCONFINED)					STATIC WATER LEVEL IN COMPLETED WELL (FT) NA		
	DRILLING FLUID: <input type="checkbox"/> AIR <input type="checkbox"/> MUD ADDITIVES - SPECIFY:							
	DRILLING METHOD: <input type="checkbox"/> ROTARY <input type="checkbox"/> HAMMER <input type="checkbox"/> CABLE TOOL <input checked="" type="checkbox"/> OTHER - SPECIFY: Roto Sonic							
	DEPTH (feet bgl)		BORE HOLE DIAM. (inches)	CASING MATERIAL AND/OR GRADE (include each casing string, and note sections of screen)	CASING CONNECTION TYPE (add coupling diameter)	CASING INSIDE DIAM. (inches)	CASING WALL THICKNESS (inches)	SLOT SIZE (inches)
	FROM	TO						

3. ANNULAR MATERIAL	DEPTH (feet bgl)		BORE HOLE DIAM. (inches)	LIST ANNULAR SEAL MATERIAL AND GRAVEL PACK SIZE-RANGE BY INTERVAL	AMOUNT (cubic feet)	METHOD OF PLACEMENT
	FROM	TO				
	0	20	6	Cement with 5% Bentonite	5	Trimie Pumped

FOR OSE INTERNAL USE

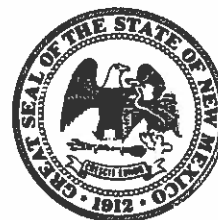
WR-20 WELL RECORD & LOG (Version 04/30/19)

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

FOR USE INTERNAL USE		WR-20 WELL RECORD & LOG (Version 04/30/2019)	
FILE NO.	POD NO.	TRN NO.	
LOCATION	WELL TAG ID NO.		PAGE 2 OF 2



PLUGGING RECORD



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

I. GENERAL / WELL OWNERSHIP:

State Engineer Well Number: SB-16
Well owner: EOG Resources Phone No.: 432-848-9146
Mailing address: 5509 Champions Drive
City: Midland State: Texas Zip code: 79706

II. WELL PLUGGING INFORMATION:

- 1) Name of well drilling company that plugged well: Cascade Drilling
- 2) New Mexico Well Driller License No.: 1664 Expiration Date: 1/31/23
- 3) Well plugging activities were supervised by the following well driller(s)/rig supervisor(s):
Cliff Hillman
- 4) Date well plugging began: 8/6/2021 Date well plugging concluded: 8/6/2021
- 5) GPS Well Location: Latitude: 32 deg, 24 min, 8.03 sec
Longitude: -103 deg, 43 min, 20.99 sec, WGS 84
- 6) Depth of well confirmed at initiation of plugging as: 20 ft below ground level (bgl),
by the following manner: tag line
- 7) Static water level measured at initiation of plugging: None ft bgl
- 8) Date well plugging plan of operations was approved by the State Engineer: 3/24/2021
- 9) Were all plugging activities consistent with an approved plugging plan? Yes If not, please describe differences between the approved plugging plan and the well as it was plugged (attach additional pages as needed):

- For each interval plugged, describe within the following columns:**

[illegible]

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

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

Bh C.

Signature of Well Driller

11/20/21

Date _____



WELL RECORD & LOG

OFFICE OF THE STATE ENGINEER


www.ose.state.nm.us

1. GENERAL AND WELL LOCATION	OSE POD NO. (WELL NO.) POD 19		WELL TAG ID NO. SB-17		OSE FILE NO(S). C-4144			
	WELL OWNER NAME(S) EOG Resources				PHONE (OPTIONAL) 432-848-9146			
	WELL OWNER MAILING ADDRESS 5509 Champions Drive				CITY Midland	STATE Texas	ZIP 79706	
	WELL LOCATION (FROM GPS)	DEGREES LATITUDE 32	MINUTES 24	SECONDS 08.04 N	* ACCURACY REQUIRED: ONE TENTH OF A SECOND			
		LONGITUDE -103	43	20.64 W	* DATUM REQUIRED: WGS 84			
DESCRIPTION RELATING WELL LOCATION TO STREET ADDRESS AND COMMON LANDMARKS - PLSS (SECTION, TOWNSHIP, RANGE) WHERE AVAILABLE Approximately 10.5 south of US Highway 62/180								
2. DRILLING & CASING INFORMATION	LICENSE NO. 1664		NAME OF LICENSED DRILLER Shawn Cain			NAME OF WELL DRILLING COMPANY Cascade Drilling		
	DRILLING STARTED 7/26/21	DRILLING ENDED 7/26/21	DEPTH OF COMPLETED WELL (FT) NA	BORE HOLE DEPTH (FT) 15	DEPTH WATER FIRST ENCOUNTERED (FT) NA			
	COMPLETED WELL IS: <input type="checkbox"/> ARTESIAN <input type="checkbox"/> DRY HOLE <input type="checkbox"/> SHALLOW (UNCONFINED)					STATIC WATER LEVEL IN COMPLETED WELL (FT) NA		
	DRILLING FLUID: <input type="checkbox"/> AIR <input type="checkbox"/> MUD ADDITIVES - SPECIFY:							
	DRILLING METHOD: <input type="checkbox"/> ROTARY <input type="checkbox"/> HAMMER <input type="checkbox"/> CABLE TOOL <input checked="" type="checkbox"/> OTHER - SPECIFY: Roto Sonic							
	DEPTH (feet bgl) FROM TO		BORE HOLE DIAM. (inches)	CASING MATERIAL AND/OR GRADE (include each casing string, and note sections of screen)	CASING CONNECTION TYPE (add coupling diameter)	CASING INSIDE DIAM. (inches)	CASING WALL THICKNESS (inches)	SLOT SIZE (inches)
3. ANNULAR MATERIAL	DEPTH (feet bgl) FROM TO		BORE HOLE DIAM. (inches)	LIST ANNULAR SEAL MATERIAL AND GRAVEL PACK SIZE-RANGE BY INTERVAL	AMOUNT (cubic feet)	METHOD OF PLACEMENT		
	0	15	6	Cement with 5% Bentonite	4	Trimie Pumped		

FOR USE INTERNAL USE

WR-20 WELL RECORD & LOG (Version 04/30/19)

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

4. HYDROGEOLOGIC LOG OF WELL	DEPTH (feet bgl)		THICKNESS (feet)	COLOR AND TYPE OF MATERIAL ENCOUNTERED - INCLUDE WATER-BEARING CAVITIES OR FRACTURE ZONES (attach supplemental sheets to fully describe all units)	WATER BEARING? (YES / NO)		ESTIMATED YIELD FOR WATER- BEARING ZONES (gpm)
	FROM	TO					
	0	2	2	Fine Silty Sand Red/Brown	Y	✓ N	
	2	15	13	Fine Silty sand	Y	✓ N	
					Y	N	
					Y	N	
					Y	N	
					Y	N	
					Y	N	
					Y	N	
					Y	N	
					Y	N	
					Y	N	
					Y	N	
					Y	N	
					Y	N	
					Y	N	
					Y	N	
	METHOD USED TO ESTIMATE YIELD OF WATER-BEARING STRATA: <input type="checkbox"/> PUMP <input type="checkbox"/> AIR LIFT <input type="checkbox"/> BAILER <input type="checkbox"/> OTHER - SPECIFY:					TOTAL ESTIMATED WELL YIELD (gpm): 0.00	
	5. TEST; RIG SUPERVISION	WELL TEST	TEST RESULTS - ATTACH A COPY OF DATA COLLECTED DURING WELL TESTING, INCLUDING DISCHARGE METHOD, START TIME, END TIME, AND A TABLE SHOWING DISCHARGE AND DRAWDOWN OVER THE TESTING PERIOD.				
MISCELLANEOUS INFORMATION:							
PRINT NAME(S) OF DRILL RIG SUPERVISOR(S) THAT PROVIDED ONSITE SUPERVISION OF WELL CONSTRUCTION OTHER THAN LICENSEE: Cliff Hillman							
6. SIGNATURE	BY SIGNING BELOW, I CERTIFY THAT TO THE BEST OF MY KNOWLEDGE AND BELIEF, THE FOREGOING IS A TRUE AND CORRECT RECORD OF THE ABOVE DESCRIBED WELL. I ALSO CERTIFY THAT THE WELL TAG, IF REQUIRED, HAS BEEN INSTALLED AND THAT THIS WELL RECORD WILL ALSO BE FILED WITH THE PERMIT HOLDER WITHIN 30 DAYS AFTER THE COMPLETION OF WELL DRILLING.						
				Shawn Cain	11/19/21		
	SIGNATURE OF DRILLER / PRINT SIGNEE NAME					DATE	

FOR USE INTERNAL USE			WR-20 WELL RECORD & LOG (Version 04/30/2019)		
FILE NO.		POD NO.		TRN NO.	
LOCATION			WELL TAG ID NO.		PAGE 2 OF 2



PLUGGING RECORD



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

I. GENERAL / WELL OWNERSHIP:

State Engineer Well Number: SB-17

Well owner: EOG Resources

Phone No.: 432-848-9146

Mailing address: 5509 Champions Drive

City: Midland

State: Texas

Zip code: 79706

II. WELL PLUGGING INFORMATION:

- 1) Name of well drilling company that plugged well: Cascade Drilling
- 2) New Mexico Well Driller License No.: 1664 Expiration Date: 1/31/23
- 3) Well plugging activities were supervised by the following well driller(s) rig supervisor(s):
Cliff Hillman
- 4) Date well plugging began: 7/26/2021 Date well plugging concluded: 7/26/2021
- 5) GPS Well Location: Latitude: 32 deg, 24 min, 8.04 sec
Longitude: -103 deg, 43 min, 20.64 sec, WGS 84
- 6) Depth of well confirmed at initiation of plugging as: 15 ft below ground level (bgl),
by the following manner: tag line
- 7) Static water level measured at initiation of plugging: None ft bgl
- 8) Date well plugging plan of operations was approved by the State Engineer: 3/24/2021
- 9) Were all plugging activities consistent with an approved plugging plan? Yes If not, please describe
differences between the approved plugging plan and the well as it was plugged (attach additional pages as needed):

- For each interval plugged, describe within the following columns:**

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

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

Date _____



WELL RECORD & LOG

OFFICE OF THE STATE ENGINEER

www.ose.state.nm.us

1. GENERAL AND WELL LOCATION	OSE POD NO. (WELL NO.) POD 20		WELL TAG ID NO. SB-18		OSE FILE NO(S) C-4144			
	WELL OWNER NAME(S) EOG Resources				PHONE (OPTIONAL) 432-848-9146			
	WELL OWNER MAILING ADDRESS 5509 Champions Drive				CITY Midland	STATE Texas	ZIP 79706	
	WELL LOCATION (FROM GPS)	DEGREES LATITUDE 32	MINUTES 24	SECONDS 13.89 N	* ACCURACY REQUIRED: ONE TENTH OF A SECOND			
		LONGITUDE -103	43	21.20 W	* DATUM REQUIRED: WGS 84			
DESCRIPTION RELATING WELL LOCATION TO STREET ADDRESS AND COMMON LANDMARKS - PLSS (SECTION, TOWNSHIP, RANGE) WHERE AVAILABLE Approximately 10.5 south of US Highway 62/180								
2. DRILLING & CASING INFORMATION	LICENSE NO. 1664		NAME OF LICENSED DRILLER Shawn Cain			NAME OF WELL DRILLING COMPANY Cascade Drilling		
	DRILLING STARTED 8/11/21	DRILLING ENDED 8/11/21	DEPTH OF COMPLETED WELL (FT) NA		BORE HOLE DEPTH (FT) 70	DEPTH WATER FIRST ENCOUNTERED (FT) NA		
	COMPLETED WELL IS: <input type="checkbox"/> ARTESIAN <input type="checkbox"/> DRY HOLE <input type="checkbox"/> SHALLOW (UNCONFINED)					STATIC WATER LEVEL IN COMPLETED WELL (FT) NA		
	DRILLING FLUID: <input type="checkbox"/> AIR <input type="checkbox"/> MUD ADDITIVES - SPECIFY:							
	DRILLING METHOD: <input type="checkbox"/> ROTARY <input type="checkbox"/> HAMMER <input type="checkbox"/> CABLE TOOL <input checked="" type="checkbox"/> OTHER - SPECIFY: Roto Sonic							
	DEPTH (feet bgl) FROM TO		BORE HOLE DIAM. (inches)	CASING MATERIAL AND/OR GRADE (include each casing string, and note sections of screen)	CASING CONNECTION TYPE (add coupling diameter)	CASING INSIDE DIAM. (inches)	CASING WALL THICKNESS (inches)	SLOT SIZE (inches)
3. ANNULAR MATERIAL	DEPTH (feet bgl) FROM TO		BORE HOLE DIAM. (inches)	LIST ANNULAR SEAL MATERIAL AND GRAVEL PACK SIZE-RANGE BY INTERVAL		AMOUNT (cubic feet)	METHOD OF PLACEMENT	
	0	70	6	Cement with 5% Bentonite		15	Trimie Pumped	

FOR OSE INTERNAL USE

WR-20 WELL RECORD & LOG (Version 04/30/19)

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

FOR OSE INTERNAL USE



PLUGGING RECORD



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

I. GENERAL / WELL OWNERSHIP:

State Engineer Well Number: SB-18

Well owner: EOG Resources

Phone No.: 432-848-9146

Mailing address: 5509 Champions Drive

City: Midland

State: Texas

Zip code: 79706

II. WELL PLUGGING INFORMATION:

- 1) Name of well drilling company that plugged well: Cascade Drilling
- 2) New Mexico Well Driller License No.: 1664 Expiration Date: 1/31/23
- 3) Well plugging activities were supervised by the following well driller(s)/rig supervisor(s): Cliff Hillman
- 4) Date well plugging began: 7/26/2021 Date well plugging concluded: 7/26/2021
- 5) GPS Well Location: Latitude: 32 deg, 24 min, 13.89 sec
Longitude: -103 deg, 43 min, 21.20 sec, WGS 84
- 6) Depth of well confirmed at initiation of plugging as: 70 ft below ground level (bgl),
by the following manner: tag line
- 7) Static water level measured at initiation of plugging: None ft bgl
- 8) Date well plugging plan of operations was approved by the State Engineer: 3/24/2021
- 9) Were all plugging activities consistent with an approved plugging plan? Yes If not, please describe differences between the approved plugging plan and the well as it was plugged (attach additional pages as needed):

- For each interval plugged, describe within the following columns:**

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

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

Date _____



WELL RECORD & LOG

OFFICE OF THE STATE ENGINEER

www.ose.state.nm.us

1. GENERAL AND WELL LOCATION	OSE POD NO. (WELL NO.) POD 21		WELL TAG ID NO. SB-19		OSE FILE NO(S). C-4144			
	WELL OWNER NAME(S) EOG Resources				PHONE (OPTIONAL) 432-848-9146			
	WELL OWNER MAILING ADDRESS 5509 Champions Drive				CITY Midland	STATE Texas	ZIP 79706	
	WELL LOCATION (FROM GPS)	DEGREES LATITUDE 32	MINUTES 24	SECONDS 13.69	N	* ACCURACY REQUIRED: ONE TENTH OF A SECOND		
		LONGITUDE -103	43	20.43	W	* DATUM REQUIRED: WGS 84		
DESCRIPTION RELATING WELL LOCATION TO STREET ADDRESS AND COMMON LANDMARKS - PLSS (SECTION, TOWNSHIP, RANGE) WHERE AVAILABLE Approximately 10.5 south of US Highway 62/180								
2. DRILLING & CASING INFORMATION	LICENSE NO. 1664		NAME OF LICENSED DRILLER Shawn Cain			NAME OF WELL DRILLING COMPANY Cascade Drilling		
	DRILLING STARTED 8/11/21	DRILLING ENDED 8/11/21	DEPTH OF COMPLETED WELL (FT) NA	BORE HOLE DEPTH (FT) 50	DEPTH WATER FIRST ENCOUNTERED (FT) NA			
	COMPLETED WELL IS: <input type="checkbox"/> ARTESIAN <input type="checkbox"/> DRY HOLE <input type="checkbox"/> SHALLOW (UNCONFINED)				STATIC WATER LEVEL IN COMPLETED WELL (FT) NA			
	DRILLING FLUID: <input type="checkbox"/> AIR <input type="checkbox"/> MUD ADDITIVES - SPECIFY:							
	DRILLING METHOD: <input type="checkbox"/> ROTARY <input type="checkbox"/> HAMMER <input type="checkbox"/> CABLE TOOL <input checked="" type="checkbox"/> OTHER - SPECIFY				Roto Sonic			
	DEPTH (feet bgl) FROM TO		BORE HOLE DIAM (inches)	CASING MATERIAL AND/OR GRADE (include each casing string, and note sections of screen)	CASING CONNECTION TYPE (add coupling diameter)	CASING INSIDE DIAM. (inches)	CASING WALL THICKNESS (inches)	SLOT SIZE (inches)
3. ANNULAR MATERIAL	DEPTH (feet bgl) FROM TO		BORE HOLE DIAM. (inches)	LIST ANNULAR SEAL MATERIAL AND GRAVEL PACK SIZE-RANGE BY INTERVAL	AMOUNT (cubic feet)	METHOD OF PLACEMENT		
	0	50	6	Cement with 5% Bentonite	11	Trimie Pumped		

FOR OSE INTERNAL USE

WR-20 WELL RECORD & LOG (Version 04/30/19)

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

Released to Imaging: 5/2/2022 3:21:00 PM

WR-20 WELL RECORD & LOG (Version 04/30/2019)

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



PLUGGING RECORD



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

I. GENERAL / WELL OWNERSHIP:

State Engineer Well Number: SB-19

Well owner: EOG Resources

Phone No.: 432-848-9146

Mailing address: 5509 Champions Drive

City: Midland

State: Texas

Zip code: 79706

II. WELL PLUGGING INFORMATION:

- 1) Name of well drilling company that plugged well: Cascade Drilling
- 2) New Mexico Well Driller License No.: 1664 Expiration Date: 1/31/23
- 3) Well plugging activities were supervised by the following well driller(s)/rig supervisor(s):
Cliff Hillman
- 4) Date well plugging began: 8/11/2021 Date well plugging concluded: 8/11/2021
- 5) GPS Well Location: Latitude: 32 deg, 24 min, 13.69 sec
Longitude: -103 deg, 43 min, 20.43 sec, WGS 84
- 6) Depth of well confirmed at initiation of plugging as: 50 ft below ground level (bgl),
by the following manner: tag line
- 7) Static water level measured at initiation of plugging: None ft bgl
- 8) Date well plugging plan of operations was approved by the State Engineer: 3/24/2021
- 9) Were all plugging activities consistent with an approved plugging plan? Yes If not, please describe differences between the approved plugging plan and the well as it was plugged (attach additional pages as needed):

- For each interval plugged, describe within the following columns:**

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

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

Date _____



WELL RECORD & LOG

OFFICE OF THE STATE ENGINEER
www.ose.state.nm.us

1. GENERAL AND WELL LOCATION	OSE POD NO. (WELL NO) POD 22		WELL TAG ID NO. SB-20		OSE FILE NO(S) C-4144	
	WELL OWNER NAME(S) EOG Resources				PHONE (OPTIONAL) 432-848-9146	
	WELL OWNER MAILING ADDRESS 5509 Champions Drive				CITY Midland	STATE Texas
					ZIP 79706	
	WELL LOCATION (FROM GPS)	DEGREES LATITUDE 32	MINUTES 24	SECONDS 13.25	N	* ACCURACY REQUIRED: ONE TENTH OF A SECOND
	LONGITUDE -103	43	21.14	W	* DATUM REQUIRED: WGS 84	
DESCRIPTION RELATING WELL LOCATION TO STREET ADDRESS AND COMMON LANDMARKS - PLSS (SECTION, TOWNSHIP, RANGE) WHERE AVAILABLE Approximately 10.5 south of US Highway 62/180						

2. DRILLING & CASING INFORMATION	LICENSE NO. 1664		NAME OF LICENSED DRILLER Shawn Cain			NAME OF WELL DRILLING COMPANY Cascade Drilling	
	DRILLING STARTED 7/27/21	DRILLING ENDED 7/27/21	DEPTH OF COMPLETED WELL (FT) NA	BORE HOLE DEPTH (FT) 15	DEPTH WATER FIRST ENCOUNTERED (FT) NA		
	COMPLETED WELL IS: <input type="checkbox"/> ARTESIAN <input type="checkbox"/> DRY HOLE <input type="checkbox"/> SHALLOW (UNCONFINED)					STATIC WATER LEVEL IN COMPLETED WELL (FT) NA	
	DRILLING FLUID: <input type="checkbox"/> AIR <input type="checkbox"/> MUD ADDITIVES - SPECIFY:						
	DRILLING METHOD: <input type="checkbox"/> ROTARY <input type="checkbox"/> HAMMER <input type="checkbox"/> CABLE TOOL <input checked="" type="checkbox"/> OTHER - SPECIFY: Roto Sonic						
	DEPTH (feet bgl) FROM TO		BORE HOLE DIAM (inches)	CASING MATERIAL AND/OR GRADE (include each casing string, and note sections of screen)	CASING CONNECTION TYPE (add coupling diameter)	CASING INSIDE DIAM. (inches)	CASING WALL THICKNESS (inches)

3. ANNULAR MATERIAL	DEPTH (feet bgl) FROM TO		BORE HOLE DIAM. (inches)	LIST ANNULAR SEAL MATERIAL AND GRAVEL PACK SIZE-RANGE BY INTERVAL	AMOUNT (cubic feet)	METHOD OF PLACEMENT
	0	15	6	Cement with 5% Bentonite	4	Trimie Pumped

FOR OSE INTERNAL USE				WR-20 WELL RECORD & LOG (Version 04/30/19)	
FILE NO.		POD NO.		TRN NO.	
LOCATION				WELL TAG ID NO.	
				PAGE 1 OF 2	

FOR OSE INTERNAL USE



PLUGGING RECORD



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

I. GENERAL / WELL OWNERSHIP:

State Engineer Well Number: SB-20

Well owner: EOG Resources

Phone No.: 432-848-9146

Mailing address: 5509 Champions Drive

City: Midland

State: Texas

Zip code: 79706

II. WELL PLUGGING INFORMATION:

- 1) Name of well drilling company that plugged well: Cascade Drilling
- 2) New Mexico Well Driller License No.: 1664 Expiration Date: 1/31/23
- 3) Well plugging activities were supervised by the following well driller(s)/rig supervisor(s): Cliff Hillman
- 4) Date well plugging began: 7/27/2021 Date well plugging concluded: 7/27/2021
- 5) GPS Well Location: Latitude: 32 deg, 24 min, 13.25 sec
Longitude: -103 deg, 43 min, 21.14 sec, WGS 84
- 6) Depth of well confirmed at initiation of plugging as: 15 ft below ground level (bgl),
by the following manner: tag line
- 7) Static water level measured at initiation of plugging: None ft bgl
- 8) Date well plugging plan of operations was approved by the State Engineer: 3/24/2021
- 9) Were all plugging activities consistent with an approved plugging plan? Yes If not, please describe differences between the approved plugging plan and the well as it was plugged (attach additional pages as needed):

- For each interval plugged, describe within the following columns:**

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

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

Signature of Well Driller

Date _____



WELL RECORD & LOG

OFFICE OF THE STATE ENGINEER

www.ose.state.nm.us

1. GENERAL AND WELL LOCATION	OSE POD NO. (WELL NO.) POD 23		WELL TAG ID NO. SB-21		OSE FILE NO(S). C-4144			
	WELL OWNER NAME(S) EOG Resources				PHONE (OPTIONAL) 432-848-9146			
	WELL OWNER MAILING ADDRESS 5509 Champions Drive				CITY Midland	STATE Texas	ZIP 79706	
	WELL LOCATION (FROM GPS)	DEGREES LATITUDE 32	MINUTES 24	SECONDS 14.08	N	* ACCURACY REQUIRED: ONE TENTH OF A SECOND		
	LONGITUDE	-103	43	20.80	W	* DATUM REQUIRED: WGS 84		
DESCRIPTION RELATING WELL LOCATION TO STREET ADDRESS AND COMMON LANDMARKS - PLSS (SECTION, TOWNSHIP, RANGE) WHERE AVAILABLE Approximately 10.5 south of US Highway 62/180								
2. DRILLING & CASING INFORMATION	LICENSE NO. 1664		NAME OF LICENSED DRILLER Shawn Cain			NAME OF WELL DRILLING COMPANY Cascade Drilling		
	DRILLING STARTED 7/27/21	DRILLING ENDED 7/27/21	DEPTH OF COMPLETED WELL (FT) NA		BORE HOLE DEPTH (FT) 20	DEPTH WATER FIRST ENCOUNTERED (FT) NA		
	COMPLETED WELL IS: <input type="checkbox"/> ARTESIAN <input type="checkbox"/> DRY HOLE <input type="checkbox"/> SHALLOW (UNCONFINED)					STATIC WATER LEVEL IN COMPLETED WELL (FT) NA		
	DRILLING FLUID: <input type="checkbox"/> AIR <input type="checkbox"/> MUD ADDITIVES - SPECIFY:							
	DRILLING METHOD: <input type="checkbox"/> ROTARY <input type="checkbox"/> HAMMER <input type="checkbox"/> CABLE TOOL <input checked="" type="checkbox"/> OTHER - SPECIFY: Roto Sonic							
	DEPTH (feet bgl)		BORE HOLE DIAM (inches)	CASING MATERIAL AND/OR GRADE (include each casing string, and note sections of screen)	CASING CONNECTION TYPE (add coupling diameter)	CASING INSIDE DIAM. (inches)	CASING WALL THICKNESS (inches)	SLOT SIZE (inches)
	FROM	TO						
3. ANNULAR MATERIAL	DEPTH (feet bgl)		BORE HOLE DIAM. (inches)	LIST ANNULAR SEAL MATERIAL AND GRAVEL PACK SIZE-RANGE BY INTERVAL	AMOUNT (cubic feet)	METHOD OF PLACEMENT		
	FROM	TO						
	0	20	6	Cement with 5% Bentonite	4.5	Trimie Pumped		

FOR OSE INTERNAL USE

WR-20 WELL RECORD & LOG (Version 04/30/19)

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

FOR USE INTERNAL USE		WR-20 WELL RECORD & LOG (Version 04/30/2019)	
FILE NO.	POD NO.	TRN NO.	
LOCATION	WELL TAG ID NO.		PAGE 2 OF 2



PLUGGING RECORD



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

I. GENERAL / WELL OWNERSHIP:

State Engineer Well Number: SB-21

Well owner: EOG Resources

Phone No.: 432-848-9146

Mailing address: 5509 Champions Drive

City: Midland

State: Texas

Zip code: 79706

II. WELL PLUGGING INFORMATION:

- 1) Name of well drilling company that plugged well: Cascade Drilling
- 2) New Mexico Well Driller License No.: 1664 Expiration Date: 1/31/23
- 3) Well plugging activities were supervised by the following well driller(s)/rig supervisor(s): Cliff Hillman
- 4) Date well plugging began: 7/27/2021 Date well plugging concluded: 7/27/2021
- 5) GPS Well Location: Latitude: 32 deg, 24 min, 14.08 sec
Longitude: -103 deg, 43 min, 20.80 sec, WGS 84
- 6) Depth of well confirmed at initiation of plugging as: 20 ft below ground level (bgl),
by the following manner: tag line
- 7) Static water level measured at initiation of plugging: None ft bgl
- 8) Date well plugging plan of operations was approved by the State Engineer: 3/24/2021
- 9) Were all plugging activities consistent with an approved plugging plan? Yes If not, please describe differences between the approved plugging plan and the well as it was plugged (attach additional pages as needed):

- For each interval plugged, describe within the following columns:**

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

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

11/20/21
Date



WELL RECORD & LOG

OFFICE OF THE STATE ENGINEER


www.ose.state.nm.us

1. GENERAL AND WELL LOCATION	OSE POD NO. (WELL NO.) POD 23		WELL TAG ID NO. SB-21A		OSE FILE NO(S) C-4144		
	WELL OWNER NAME(S) EOG Resources				PHONE (OPTIONAL) 432-848-9146		
	WELL OWNER MAILING ADDRESS 5509 Champions Drive				CITY Midland	STATE Texas	
					ZIP 79706		
	WELL LOCATION (FROM GPS)	DEGREES LATITUDE 32	MINUTES 24	SECONDS 14.35	N	* ACCURACY REQUIRED: ONE TENTH OF A SECOND	
	LONGITUDE -103	43	20.80	W	* DATUM REQUIRED: WGS 84		
DESCRIPTION RELATING WELL LOCATION TO STREET ADDRESS AND COMMON LANDMARKS - PLSS (SECTION, TOWNSHIP, RANGE) WHERE AVAILABLE Approximately 10.5 south of US Highway 62/180							
2. DRILLING & CASING INFORMATION	LICENSE NO. 1664		NAME OF LICENSED DRILLER Shawn Cain			NAME OF WELL DRILLING COMPANY Cascade Drilling	
	DRILLING STARTED 8/11/21	DRILLING ENDED 8/11/21	DEPTH OF COMPLETED WELL (FT) NA	BORE HOLE DEPTH (FT) 60	DEPTH WATER FIRST ENCOUNTERED (FT) NA		
	COMPLETED WELL IS: <input type="checkbox"/> ARTESIAN <input type="checkbox"/> DRY HOLE <input type="checkbox"/> SHALLOW (UNCONFINED)				STATIC WATER LEVEL IN COMPLETED WELL (FT) NA		
	DRILLING FLUID: <input type="checkbox"/> AIR <input type="checkbox"/> MUD ADDITIVES - SPECIFY:						
	DRILLING METHOD: <input type="checkbox"/> ROTARY <input type="checkbox"/> HAMMER <input type="checkbox"/> CABLE TOOL <input checked="" type="checkbox"/> OTHER - SPECIFY: Roto Sonic						
	DEPTH (feet bgl) FROM TO		BORE HOLE DIAM. (inches)	CASING MATERIAL AND/OR GRADE (include each casing string, and note sections of screen)	CASING CONNECTION TYPE (add coupling diameter)	CASING INSIDE DIAM. (inches)	CASING WALL THICKNESS (inches)
3. ANNULAR MATERIAL	DEPTH (feet bgl) FROM TO		BORE HOLE DIAM. (inches)	LIST ANNULAR SEAL MATERIAL AND GRAVEL PACK SIZE RANGE BY INTERVAL	AMOUNT (cubic feet)	METHOD OF PLACEMENT	
	0 60		6	Cement with 5% Bentonite	13	Trimie Pumped	

FOR OSE INTERNAL USE

WR-20 WELL RECORD & LOG (Version 04/30/19)

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

4. HYDROGEOLOGIC LOG OF WELL	DEPTH (feet bgl)		THICKNESS (feet)	COLOR AND TYPE OF MATERIAL ENCOUNTERED - INCLUDE WATER-BEARING CAVITIES OR FRACTURE ZONES (attach supplemental sheets to fully describe all units)	WATER BEARING? (YES / NO)	ESTIMATED YIELD FOR WATER- BEARING ZONES (gpm)
	FROM	TO				
	0	4	4	Fine Silty Sand Brown	Y ✓ N	
	4	10	6	Caliche	Y ✓ N	
	10	45	35	Medium to fine Sandstone	Y ✓ N	
	45	60	15	Fat Clay Brown	Y ✓ N	
					Y N	
					Y N	
					Y N	
					Y N	
					Y N	
					Y N	
					Y N	
					Y N	
					Y N	
					Y N	
					Y N	
					Y N	
					Y N	
					Y N	
					Y N	
					Y N	
					Y N	
METHOD USED TO ESTIMATE YIELD OF WATER-BEARING STRATA:					TOTAL ESTIMATED WELL YIELD (gpm): 0.00	
<input type="checkbox"/> PUMP <input type="checkbox"/> AIR LIFT <input type="checkbox"/> BAILER <input type="checkbox"/> OTHER - SPECIFY:						
5. TEST; RIG SUPERVISION	WELL TEST TEST RESULTS - ATTACH A COPY OF DATA COLLECTED DURING WELL TESTING, INCLUDING DISCHARGE METHOD, START TIME, END TIME, AND A TABLE SHOWING DISCHARGE AND DRAWDOWN OVER THE TESTING PERIOD.					
	MISCELLANEOUS INFORMATION: Step out boring					
	PRINT NAME(S) OF DRILL RIG SUPERVISOR(S) THAT PROVIDED ONSITE SUPERVISION OF WELL CONSTRUCTION OTHER THAN LICENSEE: Cliff Hillman					
6. SIGNATURE	BY SIGNING BELOW, I CERTIFY THAT TO THE BEST OF MY KNOWLEDGE AND BELIEF, THE FOREGOING IS A TRUE AND CORRECT RECORD OF THE ABOVE DESCRIBED WELL. I ALSO CERTIFY THAT THE WELL TAG, IF REQUIRED, HAS BEEN INSTALLED AND THAT THIS WELL RECORD WILL ALSO BE FILED WITH THE PERMIT HOLDER WITHIN 30 DAYS AFTER THE COMPLETION OF WELL DRILLING.					
	 Shawn Cain				11/20/21	
	SIGNATURE OF DRILLER / PRINT SIGNEE NAME				DATE	

FOR USE INTERNAL USE

WR-20 WELL RECORD & LOG (Version 04/30/2019)

FILE NO.

POD NO.

TRN NO.

LOCATION

WELL TAG ID NO.

PAGE 2 OF 2



PLUGGING RECORD



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

I. GENERAL / WELL OWNERSHIP:

State Engineer Well Number: SB-21A

Well owner: EOG Resources

Phone No.: 432-848-9146

Mailing address: 5509 Champions Drive

City: Midland

State: Texas

Zip code: 79706

II. WELL PLUGGING INFORMATION:

- 1) Name of well drilling company that plugged well: Cascade Drilling
- 2) New Mexico Well Driller License No.: 1664 Expiration Date: 1/31/23
- 3) Well plugging activities were supervised by the following well driller(s)/rig supervisor(s): Cliff Hillman
- 4) Date well plugging began: 8/11/2021 Date well plugging concluded: 8/11/2021
- 5) GPS Well Location: Latitude: 32 deg, 24 min, 14.35 sec
Longitude: -103 deg, 43 min, 20.80 sec, WGS 84
- 6) Depth of well confirmed at initiation of plugging as: 60 ft below ground level (bgl),
by the following manner: tag line
- 7) Static water level measured at initiation of plugging: None ft bgl
- 8) Date well plugging plan of operations was approved by the State Engineer: 3/24/2021
- 9) Were all plugging activities consistent with an approved plugging plan? Yes If not, please describe differences between the approved plugging plan and the well as it was plugged (attach additional pages as needed):

- For each interval plugged, describe within the following columns:**

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

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

11/20/21
Date



WELL RECORD & LOG

OFFICE OF THE STATE ENGINEER

www.ose.state.nm.us

1. GENERAL AND WELL LOCATION	OSE POD NO. (WELL NO.) POD 23		WELL TAG ID NO. SB-21B		OSE FILE NO(S). C-4144		
	WELL OWNER NAME(S) EOG Resources				PHONE (OPTIONAL) 432-848-9146		
	WELL OWNER MAILING ADDRESS 5509 Champions Drive				CITY Midland	STATE Texas	ZIP 79706
	WELL LOCATION (FROM GPS)	DEGREES LATITUDE 32	MINUTES 24	SECONDS 14.90 N	* ACCURACY REQUIRED: ONE TENTH OF A SECOND		
		LONGITUDE -103	43	20.47 W	* DATUM REQUIRED: WGS 84		
DESCRIPTION RELATING WELL LOCATION TO STREET ADDRESS AND COMMON LANDMARKS - PLSS (SECTION, TOWNSHIP, RANGE) WHERE AVAILABLE Approximately 10.5 south of US Highway 62/180							
2. DRILLING & CASING INFORMATION	LICENSE NO. 1664		NAME OF LICENSED DRILLER Shawn Cain			NAME OF WELL DRILLING COMPANY Cascade Drilling	
	DRILLING STARTED 8/12/21	DRILLING ENDED 8/12/21	DEPTH OF COMPLETED WELL (FT) NA	BORE HOLE DEPTH (FT) 20	DEPTH WATER FIRST ENCOUNTERED (FT) NA		
	COMPLETED WELL IS: <input type="checkbox"/> ARTESIAN <input type="checkbox"/> DRY HOLE <input type="checkbox"/> SHALLOW (UNCONFINED)				STATIC WATER LEVEL IN COMPLETED WELL (FT) NA		
	DRILLING FLUID: <input type="checkbox"/> AIR <input type="checkbox"/> MUD ADDITIVES - SPECIFY:						
	DRILLING METHOD: <input type="checkbox"/> ROTARY <input type="checkbox"/> HAMMER <input type="checkbox"/> CABLE TOOL <input checked="" type="checkbox"/> OTHER - SPECIFY: Roto Sonic						
	DEPTH (feet bgl) FROM TO		BORE HOLE DIAM. (inches)	CASING MATERIAL AND/OR GRADE (include each casing string, and note sections of screen)	CASING CONNECTION TYPE (add coupling diameter)	CASING INSIDE DIAM. (inches)	CASING WALL THICKNESS (inches)
3. ANNULAR MATERIAL	DEPTH (feet bgl) FROM TO		BORE HOLE DIAM. (inches)	LIST ANNULAR SEAL MATERIAL AND GRAVEL PACK SIZE-RANGE BY INTERVAL	AMOUNT (cubic feet)	METHOD OF PLACEMENT	
	0 20		6	Cement with 5% Bentonite	4.5	Trimie Pumped	

FOR OSE INTERNAL USE

WR-20 WELL RECORD & LOG (Version 04/30/19)

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

FOR USE INTERNAL USE		WR-20 WELL RECORD & LOG (Version 04/30/2019)	
FILE NO.	POD NO.	TRN NO.	
LOCATION	WELL TAG ID NO.		PAGE 2 OF 2



PLUGGING RECORD



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

I. GENERAL / WELL OWNERSHIP:

State Engineer Well Number: SB-21B

Well owner: EOG Resources

Phone No.: 432-848-9146

Mailing address: 5509 Champions Drive

City: Midland

State: Texas

Zip code: 79706

II. WELL PLUGGING INFORMATION:

- 1) Name of well drilling company that plugged well: Cascade Drilling
- 2) New Mexico Well Driller License No.: 1664 Expiration Date: 1/31/23
- 3) Well plugging activities were supervised by the following well driller(s)/rig supervisor(s):
Cliff Hillman
- 4) Date well plugging began: 8/12/2021 Date well plugging concluded: 8/12/2021
- 5) GPS Well Location: Latitude: 32 deg, 24 min, 14.90 sec
Longitude: -103 deg, 43 min, 20.47 sec, WGS 84
- 6) Depth of well confirmed at initiation of plugging as: 20 ft below ground level (bgl),
by the following manner: tag line
- 7) Static water level measured at initiation of plugging: None ft bgl
- 8) Date well plugging plan of operations was approved by the State Engineer: 3/24/2021
- 9) Were all plugging activities consistent with an approved plugging plan? Yes If not, please describe differences between the approved plugging plan and the well as it was plugged (attach additional pages as needed):

- For each interval plugged, describe within the following columns:**

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

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

Date _____



WELL RECORD & LOG

OFFICE OF THE STATE ENGINEER

www.ose.state.nm.us

1. GENERAL AND WELL LOCATION	OSE POD NO. (WELL NO.) POD 24		WELL TAG ID NO. SB-22		OSE FILE NO(S). C-4144			
	WELL OWNER NAME(S) EOG Resources				PHONE (OPTIONAL) 432-848-9146			
	WELL OWNER MAILING ADDRESS 5509 Champions Drive				CITY Midland	STATE Texas	ZIP 79706	
	WELL LOCATION (FROM GPS)	DEGREES LATITUDE 32		MINUTES 24	SECONDS 13.57	N		
		LONGITUDE -103		43	19.89	W		
* ACCURACY REQUIRED: ONE TENTH OF A SECOND * DATUM REQUIRED: WGS 84								
DESCRIPTION RELATING WELL LOCATION TO STREET ADDRESS AND COMMON LANDMARKS - PLSS (SECTION, TOWNSHIP, RANGE) WHERE AVAILABLE Approximately 10.5 south of US Highway 62/180								
2. DRILLING & CASING INFORMATION	LICENSE NO. 1664		NAME OF LICENSED DRILLER Shawn Cain			NAME OF WELL DRILLING COMPANY Cascade Drilling		
	DRILLING STARTED 8/11/21	DRILLING ENDED 8/11/21	DEPTH OF COMPLETED WELL (FT) NA		BORE HOLE DEPTH (FT) 50	DEPTH WATER FIRST ENCOUNTERED (FT) NA		
	COMPLETED WELL IS: <input type="checkbox"/> ARTESIAN <input type="checkbox"/> DRY HOLE <input type="checkbox"/> SHALLOW (UNCONFINED)					STATIC WATER LEVEL IN COMPLETED WELL (FT) NA		
	DRILLING FLUID: <input type="checkbox"/> AIR <input type="checkbox"/> MUD ADDITIVES - SPECIFY:							
	DRILLING METHOD: <input type="checkbox"/> ROTARY <input type="checkbox"/> HAMMER <input type="checkbox"/> CABLE TOOL <input checked="" type="checkbox"/> OTHER - SPECIFY: Roto Sonic							
	DEPTH (feet bgl)		BORE HOLE DIAM (inches)	CASING MATERIAL AND/OR GRADE (include each casing string, and note sections of screen)	CASING CONNECTION TYPE (add coupling diameter)	CASING INSIDE DIAM. (inches)	CASING WALL THICKNESS (inches)	SLOT SIZE (inches)
	FROM	TO						
3. ANNULAR MATERIAL	DEPTH (feet bgl)		BORE HOLE DIAM. (inches)	LIST ANNULAR SEAL MATERIAL AND GRAVEL PACK SIZE-RANGE BY INTERVAL	AMOUNT (cubic feet)	METHOD OF PLACEMENT		
	FROM	TO						
	0	50	6	Cement with 5% Bentonite	11	Trimie Pumped		

FOR OSE INTERNAL USE

WR-20 WELL RECORD & LOG (Version 04/30/19)

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

FOR USE INTERNAL USE		WR-20 WELL RECORD & LOG (Version 04/30/2019)	
FILE NO.	POD NO.	TRN NO.	
LOCATION		WELL TAG ID NO.	PAGE 2 OF 2



PLUGGING RECORD



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

I. GENERAL / WELL OWNERSHIP:

State Engineer Well Number: SB- 22

Well owner: EOG Resources

Phone No.: 432-848-9146

Mailing address: 5509 Champions Drive

City: Midland

State: Texas

Zip code: 79706

II. WELL PLUGGING INFORMATION:

- 1) Name of well drilling company that plugged well: Cascade Drilling
- 2) New Mexico Well Driller License No.: 1664 Expiration Date: 1/31/23
- 3) Well plugging activities were supervised by the following well driller(s)/rig supervisor(s): Cliff Hillman
- 4) Date well plugging began: 8/11/2021 Date well plugging concluded: 8/11/2021
- 5) GPS Well Location: Latitude: 32 deg, 24 min, 13.57 sec
Longitude: -103 deg, 43 min, 19.89 sec, WGS 84
- 6) Depth of well confirmed at initiation of plugging as: 50 ft below ground level (bgl),
by the following manner: tag line
- 7) Static water level measured at initiation of plugging: None ft bgl
- 8) Date well plugging plan of operations was approved by the State Engineer: 3/24/2021
- 9) Were all plugging activities consistent with an approved plugging plan? Yes If not, please describe differences between the approved plugging plan and the well as it was plugged (attach additional pages as needed):

- For each interval plugged, describe within the following columns:**

III. SIGNATURE:

SHC

11/20/21

Date _____



WELL RECORD & LOG

OFFICE OF THE STATE ENGINEER

www.ose.state.nm.us

1. GENERAL AND WELL LOCATION	OSE POD NO. (WELL NO.) POD 25		WELL TAG ID NO. SB-23		OSE FILE NO(S) C-4144		
	WELL OWNER NAME(S) EOG Resources				PHONE (OPTIONAL) 432-848-9146		
	WELL OWNER MAILING ADDRESS 5509 Champions Drive				CITY Midland	STATE Texas	
					ZIP 79706		
	WELL LOCATION (FROM GPS)	DEGREES LATITUDE 32	MINUTES 24	SECONDS 15.26	N	* ACCURACY REQUIRED: ONE TENTH OF A SECOND	
	LONGITUDE -103	43	18.14	W	* DATUM REQUIRED: WGS 84		
DESCRIPTION RELATING WELL LOCATION TO STREET ADDRESS AND COMMON LANDMARKS - PLSS (SECTION, TOWNSHIP, RANGE) WHERE AVAILABLE Approximately 10.5 south of US Highway 62/180							
2. DRILLING & CASING INFORMATION	LICENSE NO. 1664		NAME OF LICENSED DRILLER Shawn Cain			NAME OF WELL DRILLING COMPANY Cascade Drilling	
	DRILLING STARTED 7/27/21	DRILLING ENDED 7/27/21	DEPTH OF COMPLETED WELL (FT) NA		BORE HOLE DEPTH (FT) 13	DEPTH WATER FIRST ENCOUNTERED (FT) NA	
	COMPLETED WELL IS: <input type="checkbox"/> ARTESIAN <input type="checkbox"/> DRY HOLE <input type="checkbox"/> SHALLOW (UNCONFINED)					STATIC WATER LEVEL IN COMPLETED WELL (FT) NA	
	DRILLING FLUID: <input type="checkbox"/> AIR <input type="checkbox"/> MUD ADDITIVES - SPECIFY:						
	DRILLING METHOD: <input type="checkbox"/> ROTARY <input type="checkbox"/> HAMMER <input type="checkbox"/> CABLE TOOL <input checked="" type="checkbox"/> OTHER - SPECIFY: Roto Sonic						
	DEPTH (feet bgl) FROM TO		BORE HOLE DIAM. (inches)	CASING MATERIAL AND/OR GRADE (include each casing string, and note sections of screen)	CASING CONNECTION TYPE (add coupling diameter)	CASING INSIDE DIAM. (inches)	CASING WALL THICKNESS (inches)
3. ANNULAR MATERIAL	DEPTH (feet bgl) FROM TO		BORE HOLE DIAM. (inches)	LIST ANNULAR SEAL MATERIAL AND GRAVEL PACK SIZE-RANGE BY INTERVAL	AMOUNT (cubic feet)	METHOD OF PLACEMENT	
	0 13		6	Cement with 5% Bentonite	3	Trimie Pumped	

FOR OSE INTERNAL USE

WR-20 WELL RECORD & LOG (Version 04/30/19)

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

FOR OSE INTERNAL USE

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



PLUGGING RECORD



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

I. GENERAL / WELL OWNERSHIP:

State Engineer Well Number: SB-23

Well owner: EOG Resources

Phone No.: 432-848-9146

Mailing address: 5509 Champions Drive

City: Midland

State: Texas

Zip code: 79706

II. WELL PLUGGING INFORMATION:

- 1) Name of well drilling company that plugged well: Cascade Drilling
- 2) New Mexico Well Driller License No.: 1664 Expiration Date: 1/31/23
- 3) Well plugging activities were supervised by the following well driller(s)/rig supervisor(s): Cliff Hillman
- 4) Date well plugging began: 7/27/2021 Date well plugging concluded: 7/27/2021
- 5) GPS Well Location: Latitude: 32 deg, 24 min, 15.26 sec
Longitude: -103 deg, 43 min, 18.14 sec, WGS 84
- 6) Depth of well confirmed at initiation of plugging as: 13 ft below ground level (bgl),
by the following manner: tag line
- 7) Static water level measured at initiation of plugging: None ft bgl
- 8) Date well plugging plan of operations was approved by the State Engineer: 3/24/2021
- 9) Were all plugging activities consistent with an approved plugging plan? Yes If not, please describe differences between the approved plugging plan and the well as it was plugged (attach additional pages as needed):

- For each interval plugged, describe within the following columns:**

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

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

Date _____



WELL RECORD & LOG

OFFICE OF THE STATE ENGINEER

www.ose.state.nm.us

1. GENERAL AND WELL LOCATION	OSE POD NO. (WELL NO.) POD 26		WELL TAG ID NO. SB-24		OSE FILE NO(S) C-4144		
	WELL OWNER NAME(S) EOG Resources				PHONE (OPTIONAL) 432-848-9146		
	WELL OWNER MAILING ADDRESS 5509 Champions Drive				CITY Midland	STATE Texas	
					ZIP 79706		
	WELL LOCATION (FROM GPS)	DEGREES LATITUDE 32	MINUTES 24	SECONDS 14.62	N	* ACCURACY REQUIRED: ONE TENTH OF A SECOND * DATUM REQUIRED: WGS 84	
		LONGITUDE -103	43	18.21	W		
DESCRIPTION RELATING WELL LOCATION TO STREET ADDRESS AND COMMON LANDMARKS - PLSS (SECTION, TOWNSHIP, RANGE) WHERE AVAILABLE Approximately 10.5 south of US Highway 62/180							
2. DRILLING & CASING INFORMATION	LICENSE NO. 1664		NAME OF LICENSED DRILLER Shawn Cain			NAME OF WELL DRILLING COMPANY Cascade Drilling	
	DRILLING STARTED 7/27/21	DRILLING ENDED 7/27/21	DEPTH OF COMPLETED WELL (FT) NA	BORE HOLE DEPTH (FT) 30	DEPTH WATER FIRST ENCOUNTERED (FT) NA		
	COMPLETED WELL IS: <input type="checkbox"/> ARTESIAN <input type="checkbox"/> DRY HOLE <input type="checkbox"/> SHALLOW (UNCONFINED)					STATIC WATER LEVEL IN COMPLETED WELL (FT) NA	
	DRILLING FLUID: <input type="checkbox"/> AIR <input type="checkbox"/> MUD ADDITIVES - SPECIFY:						
	DRILLING METHOD: <input type="checkbox"/> ROTARY <input type="checkbox"/> HAMMER <input type="checkbox"/> CABLE TOOL <input checked="" type="checkbox"/> OTHER - SPECIFY: Roto Sonic						
	DEPTH (feet bgl) FROM TO		BORE HOLE DIAM. (inches)	CASING MATERIAL AND/OR GRADE (include each casing string, and note sections of screen)	CASING CONNECTION TYPE (add coupling diameter)	CASING INSIDE DIAM. (inches)	CASING WALL THICKNESS (inches)
3. ANNULAR MATERIAL	DEPTH (feet bgl) FROM TO		BORE HOLE DIAM. (inches)	LIST ANNULAR SEAL MATERIAL AND GRAVEL PACK SIZE-RANGE BY INTERVAL	AMOUNT (cubic feet)	METHOD OF PLACEMENT	
	0 30		6	Cement with 5% Bentonite	7	Trimie Pumped	

FOR OSE INTERNAL USE


WR-20 WELL RECORD & LOG (Version 04/30/19)

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

	DEPTH (feet bgl)		THICKNESS (feet)	COLOR AND TYPE OF MATERIAL ENCOUNTERED - INCLUDE WATER-BEARING CAVITIES OR FRACTURE ZONES (attach supplemental sheets to fully describe all units)	WATER BEARING? (YES / NO)	ESTIMATED YIELD FOR WATER- BEARING ZONES (gpm)
	FROM	TO				
	0	6	6	Fine Silty Sand Brown	Y ✓ N	
	6	10	4	Caliche	Y ✓ N	
	10	30	20	Medium sandstone Brown	Y ✓ N	
					Y N	
					Y N	
					Y N	
					Y N	
					Y N	
					Y N	
					Y N	
					Y N	
					Y N	
					Y N	
					Y N	
					Y N	
					Y N	
					Y N	
					Y N	
					Y N	
					Y N	
METHOD USED TO ESTIMATE YIELD OF WATER-BEARING STRATA: <input type="checkbox"/> PUMP <input type="checkbox"/> AIR LIFT <input type="checkbox"/> BAILER <input type="checkbox"/> OTHER – SPECIFY:					TOTAL ESTIMATED WELL YIELD (gpm): 0.00	

4. HYDROGEOLOGIC LOG OF WELL

	WELL TEST		TEST RESULTS - ATTACH A COPY OF DATA COLLECTED DURING WELL TESTING, INCLUDING DISCHARGE METHOD, START TIME, END TIME, AND A TABLE SHOWING DISCHARGE AND DRAWDOWN OVER THE TESTING PERIOD.
5. TEST; RIG SUPERVISION	MISCELLANEOUS INFORMATION:		
	PRINT NAME(S) OF DRILL RIG SUPERVISOR(S) THAT PROVIDED ONSITE SUPERVISION OF WELL CONSTRUCTION OTHER THAN LICENSEE: Cliff Hillman		

6. SIGNATURE	SIGNATURE OF DRILLER / PRINT SIGNED NAME	DATE
	 Shawn Cain	11/20/21

BY SIGNING BELOW, I CERTIFY THAT TO THE BEST OF MY KNOWLEDGE AND BELIEF, THE FOREGOING IS A TRUE AND CORRECT RECORD OF THE ABOVE DESCRIBED WELL. I ALSO CERTIFY THAT THE WELL TAG, IF REQUIRED, HAS BEEN INSTALLED AND THAT THIS WELL RECORD WILL ALSO BE FILED WITH THE PERMIT HOLDER WITHIN 30 DAYS AFTER THE COMPLETION OF WELL DRILLING.

FOR OSE INTERNAL USE		WR-20 WELL RECORD & LOG (Version 04/30/2019)	
FILE NO.	POD NO.	TRN NO.	
LOCATION		WELL TAG ID NO.	PAGE 2 OF 2



PLUGGING RECORD



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

I. GENERAL / WELL OWNERSHIP:

State Engineer Well Number: SB-24

Well owner: EOG Resources

Phone No.: 432-848-9146

Mailing address: 5509 Champions Drive

City: Midland

State: Texas

Zip code: 79706

II. WELL PLUGGING INFORMATION:

- 1) Name of well drilling company that plugged well: Cascade Drilling
- 2) New Mexico Well Driller License No.: 1664 Expiration Date: 1/31/23
- 3) Well plugging activities were supervised by the following well driller(s)/rig supervisor(s): Cliff Hillman
- 4) Date well plugging began: 7/27/2021 Date well plugging concluded: 7/27/2021
- 5) GPS Well Location: Latitude: 32 deg, 24 min, 14.62 sec
Longitude: -103 deg, 43 min, 18.21 sec, WGS 84
- 6) Depth of well confirmed at initiation of plugging as: 30 ft below ground level (bgl),
by the following manner: tag line
- 7) Static water level measured at initiation of plugging: None ft bgl
- 8) Date well plugging plan of operations was approved by the State Engineer: 3/24/2021
- 9) Were all plugging activities consistent with an approved plugging plan? Yes If not, please describe differences between the approved plugging plan and the well as it was plugged (attach additional pages as needed):

- For each interval plugged, describe within the following columns:**

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

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

Signature of Well Driller

Date _____



WELL RECORD & LOG

OFFICE OF THE STATE ENGINEER

www.ose.state.nm.us

1. GENERAL AND WELL LOCATION	OSE POD NO. (WELL NO.) POD 27		WELL TAG ID NO. SB-25		OSE FILE NO(S). C-4144		
	WELL OWNER NAME(S) EOG Resources				PHONE (OPTIONAL) 432-848-9146		
	WELL OWNER MAILING ADDRESS 5509 Champions Drive				CITY Midland	STATE Texas	ZIP 79706
	WELL LOCATION (FROM GPS)	DEGREES LATITUDE 32	MINUTES 24	SECONDS 14.17 N	* ACCURACY REQUIRED: ONE TENTH OF A SECOND		
		LONGITUDE -103	43	18.40 W	* DATUM REQUIRED: WGS 84		
DESCRIPTION RELATING WELL LOCATION TO STREET ADDRESS AND COMMON LANDMARKS - PLSS (SECTION, TOWNSHIP, RANGE) WHERE AVAILABLE Approximately 10.5 south of US Highway 62/180							
2. DRILLING & CASING INFORMATION	LICENSE NO. 1664		NAME OF LICENSED DRILLER Shawn Cain			NAME OF WELL DRILLING COMPANY Cascade Drilling	
	DRILLING STARTED 8/10/21	DRILLING ENDED 8/10/21	DEPTH OF COMPLETED WELL (FT) NA	BORE HOLE DEPTH (FT) 45	DEPTH WATER FIRST ENCOUNTERED (FT) NA		
	COMPLETED WELL IS: <input type="checkbox"/> ARTESIAN <input type="checkbox"/> DRY HOLE <input type="checkbox"/> SHALLOW (UNCONFINED)				STATIC WATER LEVEL IN COMPLETED WELL (FT) NA		
	DRILLING FLUID: <input type="checkbox"/> AIR <input type="checkbox"/> MUD ADDITIVES - SPECIFY:						
	DRILLING METHOD: <input type="checkbox"/> ROTARY <input type="checkbox"/> HAMMER <input type="checkbox"/> CABLE TOOL <input checked="" type="checkbox"/> OTHER - SPECIFY: Roto Sonic						
	DEPTH (feet bgl) FROM TO		BORE HOLE DIAM. (inches)	CASING MATERIAL AND/OR GRADE (include each casing string, and note sections of screen)	CASING CONNECTION TYPE (add coupling diameter)	CASING INSIDE DIAM. (inches)	CASING WALL THICKNESS (inches)
3. ANNULAR MATERIAL	DEPTH (feet bgl) FROM TO		BORE HOLE DIAM. (inches)	LIST ANNULAR SEAL MATERIAL AND GRAVEL PACK SIZE-RANGE BY INTERVAL	AMOUNT (cubic feet)	METHOD OF PLACEMENT	
	0 45		6	Cement with 5% Bentonite	10	Tremie Pumped	

FOR OSE INTERNAL USE

WR-20 WELL RECORD & LOG (Version 04/30/19)

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

FOR OSE INTERNAL USE		WR-20 WELL RECORD & LOG (Version 04/30/2019)	
FILE NO.	POD NO.	TRN NO.	
LOCATION	WELL TAG ID NO.		PAGE 2 OF 2



PLUGGING RECORD



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

I. GENERAL / WELL OWNERSHIP:

State Engineer Well Number: SB-25
 Well owner: EOG Resources Phone No.: 432-848-9146
 Mailing address: 5509 Champions Drive
 City: Midland State: Texas Zip code: 79706

II. WELL PLUGGING INFORMATION:

- 1) Name of well drilling company that plugged well: Cascade Drilling
- 2) New Mexico Well Driller License No.: 1664 Expiration Date: 1/31/23
- 3) Well plugging activities were supervised by the following well driller(s)/rig supervisor(s):
Cliff Hillman
- 4) Date well plugging began: 8/10/2021 Date well plugging concluded: 8/10/2021
- 5) GPS Well Location: Latitude: 32 deg, 24 min, 14.17 sec
 Longitude: -103 deg, 43 min, 18.40 sec, WGS 84
- 6) Depth of well confirmed at initiation of plugging as: 45 ft below ground level (bgl),
 by the following manner: tag line
- 7) Static water level measured at initiation of plugging: None ft bgl
- 8) Date well plugging plan of operations was approved by the State Engineer: 3/24/2021
- 9) Were all plugging activities consistent with an approved plugging plan? Yes If not, please describe differences between the approved plugging plan and the well as it was plugged (attach additional pages as needed):

- For each interval plugged, describe within the following columns:**

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

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

Date _____



WELL RECORD & LOG

OFFICE OF THE STATE ENGINEER

www.ose.state.nm.us

1. GENERAL AND WELL LOCATION	OSE POD NO. (WELL NO.) POD 28		WELL TAG ID NO. SB-26		OSE FILE NO(S). C-4144		
	WELL OWNER NAME(S) EOG Resources				PHONE (OPTIONAL) 432-848-9146		
	WELL OWNER MAILING ADDRESS 5509 Champions Drive				CITY Midland	STATE Texas	ZIP 79706
	WELL LOCATION (FROM GPS)	DEGREES LATITUDE		MINUTES 24	SECONDS 13.51	N	* ACCURACY REQUIRED: ONE TENTH OF A SECOND * DATUM REQUIRED: WGS 84
		LONGITUDE		-103	43	18.62	
DESCRIPTION RELATING WELL LOCATION TO STREET ADDRESS AND COMMON LANDMARKS - PLSS (SECTION, TOWNSHIP, RANGE) WHERE AVAILABLE Approximately 10.5 south of US Highway 62/180							


2. DRILLING & CASING INFORMATION	LICENSE NO. 1664		NAME OF LICENSED DRILLER Shawn Cain			NAME OF WELL DRILLING COMPANY Cascade Drilling		
	DRILLING STARTED 8/10/21	DRILLING ENDED 8/10/21	DEPTH OF COMPLETED WELL (FT) NA		BORE HOLE DEPTH (FT) 30	DEPTH WATER FIRST ENCOUNTERED (FT) NA		
	COMPLETED WELL IS: <input type="checkbox"/> ARTESIAN <input type="checkbox"/> DRY HOLE <input type="checkbox"/> SHALLOW (UNCONFINED)					STATIC WATER LEVEL IN COMPLETED WELL (FT) NA		
	DRILLING FLUID: <input type="checkbox"/> AIR <input type="checkbox"/> MUD ADDITIVES - SPECIFY:							
	DRILLING METHOD: <input type="checkbox"/> ROTARY <input type="checkbox"/> HAMMER <input type="checkbox"/> CABLE TOOL <input checked="" type="checkbox"/> OTHER - SPECIFY: Roto Sonic							
	DEPTH (feet bgl)		BORE HOLE DIAM. (inches)	CASING MATERIAL AND/OR GRADE (include each casing string, and note sections of screen)	CASING CONNECTION TYPE (add coupling diameter)	CASING INSIDE DIAM. (inches)	CASING WALL THICKNESS (inches)	SLOT SIZE (inches)
	FROM	TO						

3. ANNULAR MATERIAL	DEPTH (feet bgl)		BORE HOLE DIAM. (inches)	LIST ANNULAR SEAL MATERIAL AND GRAVEL PACK SIZE-RANGE BY INTERVAL	AMOUNT (cubic feet)	METHOD OF PLACEMENT
	FROM	TO				
	0	30	6	Cement with 5% Bentonite	6.6	Tremie Pumped

FOR OSE INTERNAL USE

WR-20 WELL RECORD & LOG (Version 04/30/19)

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

4. HYDROGEOLOGIC LOG OF WELL	DEPTH (feet bgl)		THICKNESS (feet)	COLOR AND TYPE OF MATERIAL ENCOUNTERED - INCLUDE WATER-BEARING CAVITIES OR FRACTURE ZONES (attach supplemental sheets to fully describe all units)	WATER BEARING? (YES / NO)	ESTIMATED YIELD FOR WATER- BEARING ZONES (gpm)
	FROM	TO				
	0	6	6	Fine Silty Sand Brown	Y ✓ N	
	6	10	4	Caliche	Y ✓ N	
	10	20	10	Fine silty sand Brown	Y ✓ N	
	20	25	5	Medium Sandstone	Y ✓ N	
	25	30	5	Fat Clay Brown	Y ✓ N	
					Y N	
					Y N	
					Y N	
					Y N	
					Y N	
					Y N	
					Y N	
					Y N	
					Y N	
					Y N	
					Y N	
					Y N	
					Y N	
					Y N	
					Y N	
					Y N	
					Y N	
METHOD USED TO ESTIMATE YIELD OF WATER-BEARING STRATA:					TOTAL ESTIMATED WELL YIELD (gpm): 0.00	
<input type="checkbox"/> PUMP <input type="checkbox"/> AIR LIFT <input type="checkbox"/> BAILER <input type="checkbox"/> OTHER - SPECIFY:						
5. TEST, RIG SUPERVISION	WELL TEST	TEST RESULTS - ATTACH A COPY OF DATA COLLECTED DURING WELL TESTING, INCLUDING DISCHARGE METHOD, START TIME, END TIME, AND A TABLE SHOWING DISCHARGE AND DRAWDOWN OVER THE TESTING PERIOD.				
	MISCELLANEOUS INFORMATION:					
PRINT NAME(S) OF DRILL RIG SUPERVISOR(S) THAT PROVIDED ONSITE SUPERVISION OF WELL CONSTRUCTION OTHER THAN LICENSEE: Cliff Hillman						
6. SIGNATURE	BY SIGNING BELOW, I CERTIFY THAT TO THE BEST OF MY KNOWLEDGE AND BELIEF, THE FOREGOING IS A TRUE AND CORRECT RECORD OF THE ABOVE DESCRIBED WELL. I ALSO CERTIFY THAT THE WELL TAG, IF REQUIRED, HAS BEEN INSTALLED AND THAT THIS WELL RECORD WILL ALSO BE FILED WITH THE PERMIT HOLDER WITHIN 30 DAYS AFTER THE COMPLETION OF WELL DRILLING.					
	 Shawn Cain				11/20/21	
	SIGNATURE OF DRILLER / PRINT SIGNEE NAME				DATE	

FOR USE INTERNAL USE

WR-20 WELL RECORD & LOG (Version 04/30/2019)

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



PLUGGING RECORD



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

I. GENERAL / WELL OWNERSHIP:

State Engineer Well Number: SB-26

Well owner: EOG Resources

Phone No.: 432-848-9146

Mailing address: 5509 Champions Drive

City: Midland

State: Texas

Zip code: 79706

II. WELL PLUGGING INFORMATION:

- 1) Name of well drilling company that plugged well: Cascade Drilling
- 2) New Mexico Well Driller License No.: 1664 Expiration Date: 1/31/23
- 3) Well plugging activities were supervised by the following well driller(s)/rig supervisor(s):
Cliff Hillman
- 4) Date well plugging began: 8/10/2021 Date well plugging concluded: 8/10/2021
- 5) GPS Well Location: Latitude: 32 deg, 24 min, 13.51 sec
Longitude: -103 deg, 43 min, 18.62 sec, WGS 84
- 6) Depth of well confirmed at initiation of plugging as: 30 ft below ground level (bgl),
by the following manner: tag line
- 7) Static water level measured at initiation of plugging: None ft bgl
- 8) Date well plugging plan of operations was approved by the State Engineer: 3/24/2021
- 9) Were all plugging activities consistent with an approved plugging plan? Yes If not, please describe differences between the approved plugging plan and the well as it was plugged (attach additional pages as needed):

- For each interval plugged, describe within the following columns:**

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

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

11/20/21
Date



WELL RECORD & LOG

OFFICE OF THE STATE ENGINEER

www.ose.state.nm.us

1. GENERAL AND WELL LOCATION	OSE POD NO. (WELL NO.) POD 29		WELL TAG ID NO. SB-27		OSE FILE NO(S). C-4144		
	WELL OWNER NAME(S) EOG Resources				PHONE (OPTIONAL) 432-848-9146		
	WELL OWNER MAILING ADDRESS 5509 Champions Drive				CITY Midland	STATE Texas	
					ZIP 79706		
	WELL LOCATION (FROM GPS)	DEGREES LATITUDE 32	MINUTES 24	SECONDS 12.90	N	* ACCURACY REQUIRED: ONE TENTH OF A SECOND	
	LONGITUDE -103	43	18.85	W	* DATUM REQUIRED: WGS 84		
DESCRIPTION RELATING WELL LOCATION TO STREET ADDRESS AND COMMON LANDMARKS - PLSS (SECTION, TOWNSHIP, RANGE) WHERE AVAILABLE Approximately 10.5 south of US Highway 62/180							
2. DRILLING & CASING INFORMATION	LICENSE NO. 1664		NAME OF LICENSED DRILLER Shawn Cain			NAME OF WELL DRILLING COMPANY Cascade Drilling	
	DRILLING STARTED 7/26/21	DRILLING ENDED 7/26/21	DEPTH OF COMPLETED WELL (FT) NA	BORE HOLE DEPTH (FT) 20	DEPTH WATER FIRST ENCOUNTERED (FT) NA		
	COMPLETED WELL IS: <input type="checkbox"/> ARTESIAN <input type="checkbox"/> DRY HOLE <input type="checkbox"/> SHALLOW (UNCONFINED)				STATIC WATER LEVEL IN COMPLETED WELL (FT) NA		
	DRILLING FLUID: <input type="checkbox"/> AIR <input type="checkbox"/> MUD ADDITIVES - SPECIFY:						
	DRILLING METHOD: <input type="checkbox"/> ROTARY <input type="checkbox"/> HAMMER <input type="checkbox"/> CABLE TOOL <input checked="" type="checkbox"/> OTHER - SPECIFY: Roto Sonic						
	DEPTH (feet bgl) FROM TO		BORE HOLE DIAM (inches)	CASING MATERIAL AND/OR GRADE (include each casing string, and note sections of screen)	CASING CONNECTION TYPE (add coupling diameter)	CASING INSIDE DIAM. (inches)	CASING WALL THICKNESS (inches)
3. ANNULAR MATERIAL	DEPTH (feet bgl) FROM TO		BORE HOLE DIAM. (inches)	LIST ANNULAR SEAL MATERIAL AND GRAVEL PACK SIZE-RANGE BY INTERVAL	AMOUNT (cubic feet)	METHOD OF PLACEMENT	
	0 20		6	Cement with 5% Bentonite	4.5	Trimie Pumped	

FOR OSE INTERNAL USE

WR-20 WELL RECORD & LOG (Version 04/30/19)

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

FOR OSE INTERNAL USE



PLUGGING RECORD



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

I. GENERAL / WELL OWNERSHIP:

State Engineer Well Number: SB-27

Well owner: EOG Resources

Phone No.: 432-848-9146

Mailing address: 5509 Champions Drive

City: Midland

State: Texas

Zip code: 79706

II. WELL PLUGGING INFORMATION:

- 1) Name of well drilling company that plugged well: Cascade Drilling
- 2) New Mexico Well Driller License No.: 1664 Expiration Date: 1/31/23
- 3) Well plugging activities were supervised by the following well driller(s)/rig supervisor(s): Cliff Hillman
- 4) Date well plugging began: 7/26/2021 Date well plugging concluded: 7/26/2021
- 5) GPS Well Location: Latitude: 32 deg, 24 min, 12.90 sec
Longitude: -103 deg, 43 min, 18.85 sec, WGS 84
- 6) Depth of well confirmed at initiation of plugging as: 20 ft below ground level (bgl),
by the following manner: tag line
- 7) Static water level measured at initiation of plugging: None ft bgl
- 8) Date well plugging plan of operations was approved by the State Engineer: 3/24/2021
- 9) Were all plugging activities consistent with an approved plugging plan? Yes If not, please describe differences between the approved plugging plan and the well as it was plugged (attach additional pages as needed):

- For each interval plugged, describe within the following columns:**

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

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

11/20/21
Date



WELL RECORD & LOG

OFFICE OF THE STATE ENGINEER


www.ose.state.nm.us

1. GENERAL AND WELL LOCATION	OSE POD NO. (WELL NO.) POD 29		WELL TAG ID NO. SB-27A		OSE FILE NO(S). C-4144			
	WELL OWNER NAME(S) EOG Resources				PHONE (OPTIONAL) 432-848-9146			
	WELL OWNER MAILING ADDRESS 5509 Champions Drive				CITY Midland	STATE Texas	ZIP 79706	
	WELL LOCATION (FROM GPS)	DEGREES LATITUDE 32	MINUTES 24	SECONDS 12.57 N	* ACCURACY REQUIRED: ONE TENTH OF A SECOND			
		LONGITUDE -103	43	18.87 W	* DATUM REQUIRED: WGS 84			
DESCRIPTION RELATING WELL LOCATION TO STREET ADDRESS AND COMMON LANDMARKS - PLSS (SECTION, TOWNSHIP, RANGE) WHERE AVAILABLE Approximately 10.5 south of US Highway 62/180								
2. DRILLING & CASING INFORMATION	LICENSE NO. 1664		NAME OF LICENSED DRILLER Shawn Cain			NAME OF WELL DRILLING COMPANY Cascade Drilling		
	DRILLING STARTED 8/12/21	DRILLING ENDED 8/12/21	DEPTH OF COMPLETED WELL (FT) NA		BORE HOLE DEPTH (FT) 20	DEPTH WATER FIRST ENCOUNTERED (FT) NA		
	COMPLETED WELL IS: <input type="checkbox"/> ARTESIAN <input type="checkbox"/> DRY HOLE <input type="checkbox"/> SHALLOW (UNCONFINED)					STATIC WATER LEVEL IN COMPLETED WELL (FT) NA		
	DRILLING FLUID: <input type="checkbox"/> AIR <input type="checkbox"/> MUD ADDITIVES - SPECIFY:							
	DRILLING METHOD: <input type="checkbox"/> ROTARY <input type="checkbox"/> HAMMER <input type="checkbox"/> CABLE TOOL <input checked="" type="checkbox"/> OTHER - SPECIFY: Roto Sonic							
	DEPTH (feet bgl)		BORE HOLE DIAM. (inches)	CASING MATERIAL AND/OR GRADE (include each casing string, and note sections of screen)	CASING CONNECTION TYPE (add coupling diameter)	CASING INSIDE DIAM. (inches)	CASING WALL THICKNESS (inches)	SLOT SIZE (inches)
	FROM	TO						
3. ANNULAR MATERIAL	DEPTH (feet bgl)		BORE HOLE DIAM. (inches)	LIST ANNULAR SEAL MATERIAL AND GRAVEL PACK SIZE-RANGE BY INTERVAL	AMOUNT (cubic feet)	METHOD OF PLACEMENT		
	FROM	TO						
	0	20	6	Cement with 5% Bentonite	4.5	Tremie Pumped		

FOR OSE INTERNAL USE

WR-20 WELL RECORD & LOG (Version 04/30/19)

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

4. HYDROGEOLOGIC LOG OF WELL	DEPTH (feet bgl)		THICKNESS (feet)	COLOR AND TYPE OF MATERIAL ENCOUNTERED - INCLUDE WATER-BEARING CAVITIES OR FRACTURE ZONES (attach supplemental sheets to fully describe all units)	WATER BEARING? (YES / NO)	ESTIMATED YIELD FOR WATER- BEARING ZONES (gpm)
	FROM	TO				
	0	4	4	Fine Silty Sand Brown	Y ✓ N	
	4	8	4	Caliche	Y ✓ N	
	8	20	12	Fine Silty Sand Brown	Y ✓ N	
					Y N	
					Y N	
					Y N	
					Y N	
					Y N	
					Y N	
					Y N	
					Y N	
					Y N	
					Y N	
					Y N	
					Y N	
					Y N	
					Y N	
					Y N	
					Y N	
					Y N	
					Y N	
					Y N	
METHOD USED TO ESTIMATE YIELD OF WATER-BEARING STRATA:					TOTAL ESTIMATED WELL YIELD (gpm): 0.00	
<input type="checkbox"/> PUMP <input type="checkbox"/> AIR LIFT <input type="checkbox"/> BAILER <input type="checkbox"/> OTHER - SPECIFY:						
5. TEST; RIG SUPERVISION	WELL TEST		TEST RESULTS - ATTACH A COPY OF DATA COLLECTED DURING WELL TESTING, INCLUDING DISCHARGE METHOD, START TIME, END TIME, AND A TABLE SHOWING DISCHARGE AND DRAWDOWN OVER THE TESTING PERIOD.			
	MISCELLANEOUS INFORMATION: Step Out boring					
	PRINT NAME(S) OF DRILL RIG SUPERVISOR(S) THAT PROVIDED ONSITE SUPERVISION OF WELL CONSTRUCTION OTHER THAN LICENSEE: Cliff Hillman					
6. SIGNATURE	BY SIGNING BELOW, I CERTIFY THAT TO THE BEST OF MY KNOWLEDGE AND BELIEF, THE FOREGOING IS A TRUE AND CORRECT RECORD OF THE ABOVE DESCRIBED WELL. I ALSO CERTIFY THAT THE WELL TAG, IF REQUIRED, HAS BEEN INSTALLED AND THAT THIS WELL RECORD WILL ALSO BE FILED WITH THE PERMIT HOLDER WITHIN 30 DAYS AFTER THE COMPLETION OF WELL DRILLING.					
	 SIGNATURE OF DRILLER / PRINT SIGNEE NAME				11/20/21 DATE	

FOR USE INTERNAL USE

WR-20 WELL RECORD & LOG (Version 04/30/2019)

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



PLUGGING RECORD



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

I. GENERAL / WELL OWNERSHIP:

State Engineer Well Number: SB-27A

Well owner: EOG Resources

Phone No.: 432-848-9146

Mailing address: 5509 Champions Drive

City: Midland

State: Texas

Zip code: 79706

II. WELL PLUGGING INFORMATION:

- 1) Name of well drilling company that plugged well: Cascade Drilling
- 2) New Mexico Well Driller License No.: 1664 Expiration Date: 1/31/23
- 3) Well plugging activities were supervised by the following well driller(s)/rig supervisor(s):
Cliff Hillman
- 4) Date well plugging began: 8/12/2021 Date well plugging concluded: 8/12/2021
- 5) GPS Well Location: Latitude: 32 deg, 24 min, 12.57 sec
Longitude: -103 deg, 43 min, 18.87 sec, WGS 84
- 6) Depth of well confirmed at initiation of plugging as: 20 ft below ground level (bgl),
by the following manner: tag line
- 7) Static water level measured at initiation of plugging: None ft bgl
- 8) Date well plugging plan of operations was approved by the State Engineer: 3/24/2021
- 9) Were all plugging activities consistent with an approved plugging plan? Yes If not, please describe differences between the approved plugging plan and the well as it was plugged (attach additional pages as needed):

- For each interval plugged, describe within the following columns:**

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

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

11/20/21
Date



WELL RECORD & LOG

OFFICE OF THE STATE ENGINEER

www.ose.state.nm.us

1. GENERAL AND WELL LOCATION	OSE POD NO. (WELL NO.) POD 30		WELL TAG ID NO. SB-28		OSE FILE NO(S). C-4144			
	WELL OWNER NAME(S) EOG Resources				PHONE (OPTIONAL) 432-848-9146			
	WELL OWNER MAILING ADDRESS 5509 Champions Drive				CITY Midland	STATE Texas	ZIP 79706	
	WELL LOCATION (FROM GPS)	DEGREES LATITUDE 32	MINUTES 24	SECONDS 13.22 N	* ACCURACY REQUIRED: ONE TENTH OF A SECOND * DATUM REQUIRED: WGS 84			
		LONGITUDE -103	43	18.11 W				
DESCRIPTION RELATING WELL LOCATION TO STREET ADDRESS AND COMMON LANDMARKS - PLSS (SECTION, TOWNSHIP, RANGE) WHERE AVAILABLE Approximately 10.5 south of US Highway 62/180								
2. DRILLING & CASING INFORMATION	LICENSE NO. 1664		NAME OF LICENSED DRILLER Shawn Cain			NAME OF WELL DRILLING COMPANY Cascade Drilling		
	DRILLING STARTED 8/10/21	DRILLING ENDED 8/10/21	DEPTH OF COMPLETED WELL (FT) NA		BORE HOLE DEPTH (FT) 45	DEPTH WATER FIRST ENCOUNTERED (FT) NA		
	COMPLETED WELL IS: <input type="checkbox"/> ARTESIAN <input type="checkbox"/> DRY HOLE <input type="checkbox"/> SHALLOW (UNCONFINED)					STATIC WATER LEVEL IN COMPLETED WELL (FT) NA		
	DRILLING FLUID: <input type="checkbox"/> AIR <input type="checkbox"/> MUD ADDITIVES - SPECIFY:							
	DRILLING METHOD: <input type="checkbox"/> ROTARY <input type="checkbox"/> HAMMER <input type="checkbox"/> CABLE TOOL <input checked="" type="checkbox"/> OTHER - SPECIFY: Roto Sonic							
	DEPTH (feet bgl) FROM TO		BORE HOLE DIAM. (inches)	CASING MATERIAL AND/OR GRADE (include each casing string, and note sections of screen)	CASING CONNECTION TYPE (add coupling diameter)	CASING INSIDE DIAM. (inches)	CASING WALL THICKNESS (inches)	SLOT SIZE (inches)
3. ANNULAR MATERIAL	DEPTH (feet bgl) FROM TO		BORE HOLE DIAM. (inches)	LIST ANNULAR SEAL MATERIAL AND GRAVEL PACK SIZE-RANGE BY INTERVAL		AMOUNT (cubic feet)	METHOD OF PLACEMENT	
	0	45	6	Cement with 5% Bentonite		10	Tremie Pumped	

FOR OSE INTERNAL USE

WR-20 WELL RECORD & LOG (Version 04/30/19)

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

FOR USE INTERNAL USE		WR-20 WELL RECORD & LOG (Version 04/30/2019)	
FILE NO.	POD NO.	TRN NO.	
LOCATION	WELL TAG ID NO.		PAGE 2 OF 2



PLUGGING RECORD



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

I. GENERAL / WELL OWNERSHIP:

State Engineer Well Number: SB-28

Well owner: EOG Resources

Phone No.: 432-848-9146

Mailing address: 5509 Champions Drive

City: Midland

State: Texas

Zip code: 79706

II. WELL PLUGGING INFORMATION:

- 1) Name of well drilling company that plugged well: Cascade Drilling
- 2) New Mexico Well Driller License No.: 1664 Expiration Date: 1/31/23
- 3) Well plugging activities were supervised by the following well driller(s)/rig supervisor(s): Cliff Hillman
- 4) Date well plugging began: 8/10/2021 Date well plugging concluded: 8/10/2021
- 5) GPS Well Location: Latitude: 32 deg, 24 min, 13.22 sec
Longitude: -103 deg, 43 min, 18.11 sec, WGS 84
- 6) Depth of well confirmed at initiation of plugging as: 45 ft below ground level (bgl),
by the following manner: tag line
- 7) Static water level measured at initiation of plugging: None ft bgl
- 8) Date well plugging plan of operations was approved by the State Engineer: 3/24/2021
- 9) Were all plugging activities consistent with an approved plugging plan? Yes If not, please describe differences between the approved plugging plan and the well as it was plugged (attach additional pages as needed):

- For each interval plugged, describe within the following columns:**

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

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

11/20/21
Date



WELL RECORD & LOG

OFFICE OF THE STATE ENGINEER

www.ose.state.nm.us

1. GENERAL AND WELL LOCATION	OSE POD NO. (WELL NO.) POD 31		WELL TAG ID NO. SB-29		OSE FILE NO(S). C-4144			
	WELL OWNER NAME(S) EOG Resources				PHONE (OPTIONAL) 432-848-9146			
	WELL OWNER MAILING ADDRESS 5509 Champions Drive				CITY Midland	STATE Texas	ZIP 79706	
	WELL LOCATION (FROM GPS)	DEGREES LATITUDE 32	MINUTES 24	SECONDS 14.40 N	* ACCURACY REQUIRED: ONE TENTH OF A SECOND			
		LONGITUDE -103	43	17.42 W	* DATUM REQUIRED: WGS 84			
DESCRIPTION RELATING WELL LOCATION TO STREET ADDRESS AND COMMON LANDMARKS - PLSS (SECTION, TOWNSHIP, RANGE) WHERE AVAILABLE Approximately 10.5 south of US Highway 62/180								
2. DRILLING & CASING INFORMATION	LICENSE NO. 1664		NAME OF LICENSED DRILLER Shawn Cain			NAME OF WELL DRILLING COMPANY Cascade Drilling		
	DRILLING STARTED 8/10/21	DRILLING ENDED 8/10/21	DEPTH OF COMPLETED WELL (FT) NA		BORE HOLE DEPTH (FT) 30	DEPTH WATER FIRST ENCOUNTERED (FT) NA		
	COMPLETED WELL IS: <input type="checkbox"/> ARTESIAN <input type="checkbox"/> DRY HOLE <input type="checkbox"/> SHALLOW (UNCONFINED)					STATIC WATER LEVEL IN COMPLETED WELL (FT) NA		
	DRILLING FLUID: <input type="checkbox"/> AIR <input type="checkbox"/> MUD ADDITIVES - SPECIFY:							
	DRILLING METHOD: <input type="checkbox"/> ROTARY <input type="checkbox"/> HAMMER <input type="checkbox"/> CABLE TOOL <input checked="" type="checkbox"/> OTHER - SPECIFY: Roto Sonic							
	DEPTH (feet bgl)		BORE HOLE DIAM. (inches)	CASING MATERIAL AND/OR GRADE (include each casing string, and note sections of screen)	CASING CONNECTION TYPE (add coupling diameter)	CASING INSIDE DIAM. (inches)	CASING WALL THICKNESS (inches)	SLOT SIZE (inches)
	FROM	TO						
3. ANNULAR MATERIAL	DEPTH (feet bgl)		BORE HOLE DIAM. (inches)	LIST ANNULAR SEAL MATERIAL AND GRAVEL PACK SIZE-RANGE BY INTERVAL	AMOUNT (cubic feet)	METHOD OF PLACEMENT		
	FROM	TO						
	0	30	6	Cement with 5% Bentonite	6.5	Tremie Pumped		


FOR OSE INTERNAL USE

WR-20 WELL RECORD & LOG (Version 04/30/19)

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

4. HYDROGEOLOGIC LOG OF WELL	DEPTH (feet bgl)		THICKNESS (feet)	COLOR AND TYPE OF MATERIAL ENCOUNTERED - INCLUDE WATER-BEARING CAVITIES OR FRACTURE ZONES (attach supplemental sheets to fully describe all units)	WATER BEARING? (YES / NO)	ESTIMATED YIELD FOR WATER- BEARING ZONES (gpm)
	FROM	TO				
	0	4	4	Fine Silty Sand Brown	Y ✓ N	
	4	8	4	Caliche	Y ✓ N	
	8	30	22	Medium Sandstone Brown	Y ✓ N	
					Y N	
					Y N	
					Y N	
					Y N	
					Y N	
					Y N	
					Y N	
					Y N	
					Y N	
					Y N	
					Y N	
					Y N	
					Y N	
					Y N	
					Y N	
					Y N	
					Y N	
METHOD USED TO ESTIMATE YIELD OF WATER-BEARING STRATA:					TOTAL ESTIMATED WELL YIELD (gpm):	
<input type="checkbox"/> PUMP <input type="checkbox"/> AIR LIFT <input type="checkbox"/> BAILER <input type="checkbox"/> OTHER - SPECIFY:					0.00	

5. TEST; RIG SUPERVISION	WELL TEST	TEST RESULTS - ATTACH A COPY OF DATA COLLECTED DURING WELL TESTING, INCLUDING DISCHARGE METHOD, START TIME, END TIME, AND A TABLE SHOWING DISCHARGE AND DRAWDOWN OVER THE TESTING PERIOD.
	MISCELLANEOUS INFORMATION:	
PRINT NAME(S) OF DRILL RIG SUPERVISOR(S) THAT PROVIDED ONSITE SUPERVISION OF WELL CONSTRUCTION OTHER THAN LICENSEE: Cliff Hillman		

6. SIGNATURE	BY SIGNING BELOW, I CERTIFY THAT TO THE BEST OF MY KNOWLEDGE AND BELIEF, THE FOREGOING IS A TRUE AND CORRECT RECORD OF THE ABOVE DESCRIBED WELL. I ALSO CERTIFY THAT THE WELL TAG, IF REQUIRED, HAS BEEN INSTALLED AND THAT THIS WELL RECORD WILL ALSO BE FILED WITH THE PERMIT HOLDER WITHIN 30 DAYS AFTER THE COMPLETION OF WELL DRILLING.	
	 _____ SIGNATURE OF DRILLER / PRINT SIGNEE NAME	Shawn Cain _____ DATE

FOR USE INTERNAL USE

WR-20 WELL RECORD & LOG (Version 04/30/2019)

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



PLUGGING RECORD



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

I. GENERAL / WELL OWNERSHIP:

State Engineer Well Number: SB-29

Well owner: EOG Resources

Phone No.: 432-848-9146

Mailing address: 5509 Champions Drive

City: Midland

State: Texas

Zip code: 79706

II. WELL PLUGGING INFORMATION:

- 1) Name of well drilling company that plugged well: Cascade Drilling
- 2) New Mexico Well Driller License No.: 1664 Expiration Date: 1/31/23
- 3) Well plugging activities were supervised by the following well driller(s)/rig supervisor(s):
Cliff Hillman
- 4) Date well plugging began: 8/10/2021 Date well plugging concluded: 8/10/2021
- 5) GPS Well Location: Latitude: 32 deg, 24 min, 14.40 sec
Longitude: -103 deg, 43 min, 17.42 sec, WGS 84
- 6) Depth of well confirmed at initiation of plugging as: 30 ft below ground level (bgl),
by the following manner: tag line
- 7) Static water level measured at initiation of plugging: None ft bgl
- 8) Date well plugging plan of operations was approved by the State Engineer: 3/24/2021
- 9) Were all plugging activities consistent with an approved plugging plan? Yes If not, please describe differences between the approved plugging plan and the well as it was plugged (attach additional pages as needed):

- For each interval plugged, describe within the following columns:**

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

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

11/20/21
Date



WELL RECORD & LOG

OFFICE OF THE STATE ENGINEER

www.ose.state.nm.us

1. GENERAL AND WELL LOCATION	OSE POD NO. (WELL NO.) POD 32		WELL TAG ID NO. SB-30		OSE FILE NO(S) C-4144		
	WELL OWNER NAME(S) EOG Resources				PHONE (OPTIONAL) 432-848-9146		
	WELL OWNER MAILING ADDRESS 5509 Champions Drive				CITY Midland	STATE Texas	
					ZIP 79706		
	WELL LOCATION (FROM GPS)	DEGREES LATITUDE 32	MINUTES 24	SECONDS 12.85	N	* ACCURACY REQUIRED: ONE TENTH OF A SECOND	
	LONGITUDE -103	43	16.97	W	* DATUM REQUIRED: WGS 84		
DESCRIPTION RELATING WELL LOCATION TO STREET ADDRESS AND COMMON LANDMARKS - PLSS (SECTION, TOWNSHIP, RANGE) WHERE AVAILABLE Approximately 10.5 south of US Highway 62/180							
2. DRILLING & CASING INFORMATION	LICENSE NO. 1664		NAME OF LICENSED DRILLER Shawn Cain			NAME OF WELL DRILLING COMPANY Cascade Drilling	
	DRILLING STARTED 8/9/21	DRILLING ENDED 8/9/21	DEPTH OF COMPLETED WELL (FT) NA		BORE HOLE DEPTH (FT) 30	DEPTH WATER FIRST ENCOUNTERED (FT) NA	
	COMPLETED WELL IS: <input type="checkbox"/> ARTESIAN <input type="checkbox"/> DRY HOLE <input type="checkbox"/> SHALLOW (UNCONFINED)					STATIC WATER LEVEL IN COMPLETED WELL (FT) NA	
	DRILLING FLUID: <input type="checkbox"/> AIR <input type="checkbox"/> MUD ADDITIVES - SPECIFY:						
	DRILLING METHOD: <input type="checkbox"/> ROTARY <input type="checkbox"/> HAMMER <input type="checkbox"/> CABLE TOOL <input checked="" type="checkbox"/> OTHER - SPECIFY: Roto Sonic						
	DEPTH (feet bgl) FROM TO		BORE HOLE DIAM. (inches)	CASING MATERIAL AND/OR GRADE (include each casing string, and note sections of screen)	CASING CONNECTION TYPE (add coupling diameter)	CASING INSIDE DIAM. (inches)	CASING WALL THICKNESS (inches)
3. ANNULAR MATERIAL	DEPTH (feet bgl) FROM TO		BORE HOLE DIAM. (inches)	LIST ANNULAR SEAL MATERIAL AND GRAVEL PACK SIZE-RANGE BY INTERVAL	AMOUNT (cubic feet)	METHOD OF PLACEMENT	
	0 30		6	Cement with 5% Bentonite	6.5	Tremie Pumped	

FOR OSE INTERNAL USE

WR-20 WELL RECORD & LOG (Version 04/30/19)

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

FOR OSE INTERNAL USE		WR-20 WELL RECORD & LOG (Version 04/30/2019)	
FILE NO.	POD NO.	TRN NO.	
LOCATION	WELL TAG ID NO.		PAGE 2 OF 2



PLUGGING RECORD



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

I. GENERAL / WELL OWNERSHIP:

State Engineer Well Number: SB-30

Well owner: EOG Resources

Phone No.: 432-848-9146

Mailing address: 5509 Champions Drive

City: Midland

State: Texas

Zip code: 79706

II. WELL PLUGGING INFORMATION:

- 1) Name of well drilling company that plugged well: Cascade Drilling
- 2) New Mexico Well Driller License No.: 1664 Expiration Date: 1/31/23
- 3) Well plugging activities were supervised by the following well driller(s)/rig supervisor(s): Cliff Hillman
- 4) Date well plugging began: 8/9/2021 Date well plugging concluded: 8/9/2021
- 5) GPS Well Location: Latitude: 32 deg, 24 min, 12.85 sec
Longitude: -103 deg, 43 min, 16.97 sec, WGS 84
- 6) Depth of well confirmed at initiation of plugging as: 30 ft below ground level (bgl),
by the following manner: tag line
- 7) Static water level measured at initiation of plugging: None ft bgl
- 8) Date well plugging plan of operations was approved by the State Engineer: 3/24/2021
- 9) Were all plugging activities consistent with an approved plugging plan? Yes If not, please describe differences between the approved plugging plan and the well as it was plugged (attach additional pages as needed):

- For each interval plugged, describe within the following columns:**

III. SIGNATURE:

Sh L.

11/20/21

Date _____



WELL RECORD & LOG

OFFICE OF THE STATE ENGINEER


www.ose.state.nm.us

1. GENERAL AND WELL LOCATION	OSE POD NO. (WELL NO.) POD 33		WELL TAG ID NO. SB-31		OSE FILE NO(S). C-4144				
	WELL OWNER NAME(S) EOG Resources				PHONE (OPTIONAL) 432-848-9146				
	WELL OWNER MAILING ADDRESS 5509 Champions Drive				CITY Midland	STATE Texas	ZIP 79706		
	WELL LOCATION (FROM GPS)	DEGREES LATITUDE 32	MINUTES 24	SECONDS 13.72 N	• ACCURACY REQUIRED: ONE TENTH OF A SECOND • DATUM REQUIRED: WGS 84				
		LONGITUDE -103	43	15.44 W					
DESCRIPTION RELATING WELL LOCATION TO STREET ADDRESS AND COMMON LANDMARKS - PLSS (SECTION, TOWNSHIP, RANGE) WHERE AVAILABLE Approximately 10.5 south of US Highway 62/180									
2. DRILLING & CASING INFORMATION	LICENSE NO. 1664		NAME OF LICENSED DRILLER Shawn Cain			NAME OF WELL DRILLING COMPANY Cascade Drilling			
	DRILLING STARTED 8/9/21		DRILLING ENDED 8/9/21		DEPTH OF COMPLETED WELL (FT) NA	BORE HOLE DEPTH (FT) 30	DEPTH WATER FIRST ENCOUNTERED (FT) NA		
	COMPLETED WELL IS: <input type="checkbox"/> ARTESIAN <input type="checkbox"/> DRY HOLE <input type="checkbox"/> SHALLOW (UNCONFINED)						STATIC WATER LEVEL IN COMPLETED WELL (FT) NA		
	DRILLING FLUID: <input type="checkbox"/> AIR <input type="checkbox"/> MUD ADDITIVES - SPECIFY:								
	DRILLING METHOD: <input type="checkbox"/> ROTARY <input type="checkbox"/> HAMMER <input type="checkbox"/> CABLE TOOL <input checked="" type="checkbox"/> OTHER - SPECIFY: Roto Sonic								
	DEPTH (feet bgl) FROM TO		BORE HOLE DIAM. (inches)	CASING MATERIAL AND/OR GRADE (include each casing string, and note sections of screen)		CASING CONNECTION TYPE (add coupling diameter)	CASING INSIDE DIAM. (inches)	CASING WALL THICKNESS (inches)	SLOT SIZE (inches)
3. ANNULAR MATERIAL	DEPTH (feet bgl) FROM TO		BORE HOLE DIAM. (inches)	LIST ANNULAR SEAL MATERIAL AND GRAVEL PACK SIZE-RANGE BY INTERVAL		AMOUNT (cubic feet)	METHOD OF PLACEMENT		
	0 30		6	Cement with 5% Bentonite		6.5	Tremie Pumped		

FOR OSE INTERNAL USE

WR-20 WELL RECORD & LOG (Version 04/30/19)

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

4. HYDROGEOLOGIC LOG OF WELL	DEPTH (feet bgl)		THICKNESS (feet)	COLOR AND TYPE OF MATERIAL ENCOUNTERED - INCLUDE WATER-BEARING CAVITIES OR FRACTURE ZONES (attach supplemental sheets to fully describe all units)	WATER BEARING? (YES / NO)	ESTIMATED YIELD FOR WATER- BEARING ZONES (gpm)
	FROM	TO				
	0	15	15	Fine Silty Sand Brown	Y ✓ N	
	15	25	10	Medium Sandstone Gray	Y ✓ N	
	25	30	5	Fat Clay	Y ✓ N	
					Y N	
					Y N	
					Y N	
					Y N	
					Y N	
					Y N	
					Y N	
					Y N	
					Y N	
					Y N	
					Y N	
					Y N	
					Y N	
					Y N	
					Y N	
					Y N	
					Y N	
					Y N	
METHOD USED TO ESTIMATE YIELD OF WATER-BEARING STRATA:					TOTAL ESTIMATED WELL YIELD (gpm): 0.00	
<input type="checkbox"/> PUMP <input type="checkbox"/> AIR LIFT <input type="checkbox"/> BAILER <input type="checkbox"/> OTHER - SPECIFY:						
5. TEST; RIG SUPERVISION	WELL TEST	TEST RESULTS - ATTACH A COPY OF DATA COLLECTED DURING WELL TESTING, INCLUDING DISCHARGE METHOD, START TIME, END TIME, AND A TABLE SHOWING DISCHARGE AND DRAWDOWN OVER THE TESTING PERIOD.				
	MISCELLANEOUS INFORMATION:					
	PRINT NAME(S) OF DRILL RIG SUPERVISOR(S) THAT PROVIDED ONSITE SUPERVISION OF WELL CONSTRUCTION OTHER THAN LICENSEE: Cliff Hillman					
6. SIGNATURE	BY SIGNING BELOW, I CERTIFY THAT TO THE BEST OF MY KNOWLEDGE AND BELIEF, THE FOREGOING IS A TRUE AND CORRECT RECORD OF THE ABOVE DESCRIBED WELL. I ALSO CERTIFY THAT THE WELL TAG, IF REQUIRED, HAS BEEN INSTALLED AND THAT THIS WELL RECORD WILL ALSO BE FILED WITH THE PERMIT HOLDER WITHIN 30 DAYS AFTER THE COMPLETION OF WELL DRILLING.					
	 SIGNATURE OF DRILLER / PRINT SIGNED NAME			Shawn Cain DATE		

FOR USE INTERNAL USE

WR-20 WELL RECORD & LOG (Version 04/30/2019)

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



PLUGGING RECORD



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

I. GENERAL / WELL OWNERSHIP:

State Engineer Well Number: SB-31

Well owner: EOG Resources

Phone No.: 432-848-9146

Mailing address: 5509 Champions Drive

City: Midland

State: Texas

Zip code: 79706

II. WELL PLUGGING INFORMATION:

- 1) Name of well drilling company that plugged well: Cascade Drilling
- 2) New Mexico Well Driller License No.: 1664 Expiration Date: 1/31/23
- 3) Well plugging activities were supervised by the following well driller(s)/rig supervisor(s): Cliff Hillman
- 4) Date well plugging began: 8/9/2021 Date well plugging concluded: 8/9/2021
- 5) GPS Well Location: Latitude: 32 deg, 24 min, 13.72 sec
Longitude: -103 deg, 43 min, 15.44 sec, WGS 84
- 6) Depth of well confirmed at initiation of plugging as: 30 ft below ground level (bgl),
by the following manner: tag line
- 7) Static water level measured at initiation of plugging: None ft bgl
- 8) Date well plugging plan of operations was approved by the State Engineer: 3/24/2021
- 9) Were all plugging activities consistent with an approved plugging plan? Yes If not, please describe differences between the approved plugging plan and the well as it was plugged (attach additional pages as needed):


For each interval plugged, describe within the following columns:

[illegible]

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

III. SIGNATURE:

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


Signature of Well Driller

11/20/21
Date



WELL RECORD & LOG

OFFICE OF THE STATE ENGINEER


www.ose.state.nm.us

1. GENERAL AND WELL LOCATION	OSE POD NO. (WELL NO.) POD 34		WELL TAG ID NO. SB-32		OSE FILE NO(S). C-4144			
	WELL OWNER NAME(S) EOG Resources				PHONE (OPTIONAL) 432-848-9146			
	WELL OWNER MAILING ADDRESS 5509 Champions Drive				CITY Midland	STATE Texas		
					ZIP 79706			
	WELL LOCATION (FROM GPS)	DEGREES LATITUDE 32	MINUTES 24	SECONDS 13.86	N	* ACCURACY REQUIRED: ONE TENTH OF A SECOND		
	LONGITUDE -103	43	14.75	W	* DATUM REQUIRED: WGS 84			
DESCRIPTION RELATING WELL LOCATION TO STREET ADDRESS AND COMMON LANDMARKS - PLSS (SECTION, TOWNSHIP, RANGE) WHERE AVAILABLE Approximately 10.5 south of US Highway 62/180								
2. DRILLING & CASING INFORMATION	LICENSE NO. 1664		NAME OF LICENSED DRILLER Shawn Cain			NAME OF WELL DRILLING COMPANY Cascade Drilling		
	DRILLING STARTED 7/27/21	DRILLING ENDED 7/27/21	DEPTH OF COMPLETED WELL (FT) NA		BORE HOLE DEPTH (FT) 20	DEPTH WATER FIRST ENCOUNTERED (FT) NA		
	COMPLETED WELL IS: <input type="checkbox"/> ARTESIAN <input type="checkbox"/> DRY HOLE <input type="checkbox"/> SHALLOW (UNCONFINED)					STATIC WATER LEVEL IN COMPLETED WELL (FT) NA		
	DRILLING FLUID: <input type="checkbox"/> AIR <input type="checkbox"/> MUD ADDITIVES - SPECIFY:							
	DRILLING METHOD: <input type="checkbox"/> ROTARY <input type="checkbox"/> HAMMER <input type="checkbox"/> CABLE TOOL <input checked="" type="checkbox"/> OTHER - SPECIFY: Roto Sonic							
	DEPTH (feet bgl)		BORE HOLE DIAM. (inches)	CASING MATERIAL AND/OR GRADE (include each casing string, and note sections of screen)	CASING CONNECTION TYPE (add coupling diameter)	CASING INSIDE DIAM. (inches)	CASING WALL THICKNESS (inches)	SLOT SIZE (inches)
	FROM	TO						
3. ANNULAR MATERIAL	DEPTH (feet bgl)		BORE HOLE DIAM. (inches)	LIST ANNULAR SEAL MATERIAL AND GRAVEL PACK SIZE-RANGE BY INTERVAL	AMOUNT (cubic feet)	METHOD OF PLACEMENT		
	FROM	TO						
	0	20	6	Cement with 5% Bentonite	4.5	Tremie Pumped		

FOR OSE INTERNAL USE

WR-20 WELL RECORD & LOG (Version 04/30/19)

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

4. HYDROGEOLOGIC LOG OF WELL	DEPTH (feet bgl)		THICKNESS (feet)	COLOR AND TYPE OF MATERIAL ENCOUNTERED - INCLUDE WATER-BEARING CAVITIES OR FRACTURE ZONES (attach supplemental sheets to fully describe all units)	WATER BEARING? (YES / NO)	ESTIMATED YIELD FOR WATER- BEARING ZONES (gpm)
	FROM	TO				
	0	15	15	Fine Silty Sand Brown	Y <input checked="" type="checkbox"/> N	
	15	20	5	Caliche	Y <input checked="" type="checkbox"/> N	
					Y N	
					Y N	
					Y N	
					Y N	
					Y N	
					Y N	
					Y N	
					Y N	
					Y N	
					Y N	
					Y N	
					Y N	
					Y N	
					Y N	
					Y N	
					Y N	
					Y N	
					Y N	
					Y N	
METHOD USED TO ESTIMATE YIELD OF WATER-BEARING STRATA:					TOTAL ESTIMATED WELL YIELD (gpm): 0.00	
<input type="checkbox"/> PUMP <input type="checkbox"/> AIR LIFT <input type="checkbox"/> BAILER <input type="checkbox"/> OTHER - SPECIFY:						
5. TEST; RIG SUPERVISION	WELL TEST	TEST RESULTS - ATTACH A COPY OF DATA COLLECTED DURING WELL TESTING, INCLUDING DISCHARGE METHOD, START TIME, END TIME, AND A TABLE SHOWING DISCHARGE AND DRAWDOWN OVER THE TESTING PERIOD.				
	MISCELLANEOUS INFORMATION:					
PRINT NAME(S) OF DRILL RIG SUPERVISOR(S) THAT PROVIDED ONSITE SUPERVISION OF WELL CONSTRUCTION OTHER THAN LICENSEE: Cliff Hillman						
6. SIGNATURE	BY SIGNING BELOW, I CERTIFY THAT TO THE BEST OF MY KNOWLEDGE AND BELIEF, THE FOREGOING IS A TRUE AND CORRECT RECORD OF THE ABOVE DESCRIBED WELL. I ALSO CERTIFY THAT THE WELL TAG, IF REQUIRED, HAS BEEN INSTALLED AND THAT THIS WELL RECORD WILL ALSO BE FILED WITH THE PERMIT HOLDER WITHIN 30 DAYS AFTER THE COMPLETION OF WELL DRILLING.					
	 Shawn Cain				11/20/21	
	SIGNATURE OF DRILLER / PRINT SIGNEE NAME				DATE	

FOR USE INTERNAL USE

WR-20 WELL RECORD & LOG (Version 04/30/2019)

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



PLUGGING RECORD



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

I. GENERAL / WELL OWNERSHIP:

State Engineer Well Number: SB-32

Well owner: EOG Resources

Phone No.: 432-848-9146

Mailing address: 5509 Champions Drive

City: Midland

State: Texas

Zip code: 79706

II. WELL PLUGGING INFORMATION:

- 1) Name of well drilling company that plugged well: Cascade Drilling
- 2) New Mexico Well Driller License No.: 1664 Expiration Date: 1/31/23
- 3) Well plugging activities were supervised by the following well driller(s)/rig supervisor(s):
Cliff Hillman
- 4) Date well plugging began: 7/27/2021 Date well plugging concluded: 7/27/2021
- 5) GPS Well Location: Latitude: 32 deg, 24 min, 13.86 sec
Longitude: -103 deg, 43 min, 14.75 sec, WGS 84
- 6) Depth of well confirmed at initiation of plugging as: 20 ft below ground level (bgl),
by the following manner: tag line
- 7) Static water level measured at initiation of plugging: None ft bgl
- 8) Date well plugging plan of operations was approved by the State Engineer: 3/24/2021
- 9) Were all plugging activities consistent with an approved plugging plan? Yes If not, please describe differences between the approved plugging plan and the well as it was plugged (attach additional pages as needed):

- For each interval plugged, describe within the following columns:**

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

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

Signature of Well Driller

Date _____



WELL RECORD & LOG

OFFICE OF THE STATE ENGINEER

www.ose.state.nm.us

1. GENERAL AND WELL LOCATION	OSE POD NO. (WELL NO.) POD 35		WELL TAG ID NO. SB-33		OSE FILE NO(S). C-4144			
	WELL OWNER NAME(S) EOG Resources				PHONE (OPTIONAL) 432-848-9146			
	WELL OWNER MAILING ADDRESS 5509 Champions Drive				CITY Midland	STATE Texas	ZIP 79706	
	WELL LOCATION (FROM GPS)	DEGREES LATITUDE 32	MINUTES 24	SECONDS 11.77 N	* ACCURACY REQUIRED: ONE TENTH OF A SECOND			
		LONGITUDE -103	43	16.05 W	* DATUM REQUIRED: WGS 84			
DESCRIPTION RELATING WELL LOCATION TO STREET ADDRESS AND COMMON LANDMARKS - PLSS (SECTION, TOWNSHIP, RANGE) WHERE AVAILABLE Approximately 10.5 south of US Highway 62/180								
2. DRILLING & CASING INFORMATION	LICENSE NO. 1664		NAME OF LICENSED DRILLER Shawn Cain			NAME OF WELL DRILLING COMPANY Cascade Drilling		
	DRILLING STARTED 8/8/21	DRILLING ENDED 8/8/21	DEPTH OF COMPLETED WELL (FT) NA		BORE HOLE DEPTH (FT) 65	DEPTH WATER FIRST ENCOUNTERED (FT) NA		
	COMPLETED WELL IS: <input type="checkbox"/> ARTESIAN <input type="checkbox"/> DRY HOLE <input type="checkbox"/> SHALLOW (UNCONFINED)					STATIC WATER LEVEL IN COMPLETED WELL (FT) NA		
	DRILLING FLUID: <input type="checkbox"/> AIR <input type="checkbox"/> MUD ADDITIVES - SPECIFY:							
	DRILLING METHOD: <input type="checkbox"/> ROTARY <input type="checkbox"/> HAMMER <input type="checkbox"/> CABLE TOOL <input checked="" type="checkbox"/> OTHER - SPECIFY: Roto Sonic							
	DEPTH (feet bgl) FROM TO		BORE HOLE DIAM. (inches)	CASING MATERIAL AND/OR GRADE (include each casing string, and note sections of screen)	CASING CONNECTION TYPE (add coupling diameter)	CASING INSIDE DIAM. (inches)	CASING WALL THICKNESS (inches)	SLOT SIZE (inches)
3. ANNULAR MATERIAL	DEPTH (feet bgl) FROM TO		BORE HOLE DIAM. (inches)	LIST ANNULAR SEAL MATERIAL AND GRAVEL PACK SIZE-RANGE BY INTERVAL		AMOUNT (cubic feet)	METHOD OF PLACEMENT	
	0	65	6	Cement with 5% Bentonite		10	Tremie Pumped	


FOR OSE INTERNAL USE

WR-20 WELL RECORD & LOG (Version 04/30/19)

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

DEPTH (feet bgl)		THICKNESS (feet)	COLOR AND TYPE OF MATERIAL ENCOUNTERED - INCLUDE WATER-BEARING CAVITIES OR FRACTURE ZONES (attach supplemental sheets to fully describe all units)	WATER BEARING? (YES / NO)	ESTIMATED YIELD FOR WATER- BEARING ZONES (gpm)
FROM	TO				
0	6	6	Fine Silty Sand Brown	Y ✓ N	
6	8	2	Caliche	Y ✓ N	
8	20	12	Fine silty sand Brown	Y ✓ N	
20	35	15	Medium Sandstone	Y ✓ N	
35	40	5	Fat Clay	Y ✓ N	
40	50	10	Medium Sandstone	Y ✓ N	
50	55	5	Fat Clay	Y ✓ N	
55	60	5	Medium sandstone	Y ✓ N	
60	65	5	Fat Clay	Y ✓ N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
METHOD USED TO ESTIMATE YIELD OF WATER-BEARING STRATA:				TOTAL ESTIMATED WELL YIELD (gpm): 0.00	
<input type="checkbox"/> PUMP <input type="checkbox"/> AIR LIFT <input type="checkbox"/> BAILER <input type="checkbox"/> OTHER - SPECIFY:					

5. TEST; RIG SUPERVISION	WELL TEST	TEST RESULTS - ATTACH A COPY OF DATA COLLECTED DURING WELL TESTING, INCLUDING DISCHARGE METHOD, START TIME, END TIME, AND A TABLE SHOWING DISCHARGE AND DRAWDOWN OVER THE TESTING PERIOD.
	MISCELLANEOUS INFORMATION:	
	PRINT NAME(S) OF DRILL RIG SUPERVISOR(S) THAT PROVIDED ONSITE SUPERVISION OF WELL CONSTRUCTION OTHER THAN LICENSEE: Cliff Hillman	

6. SIGNATURE	BY SIGNING BELOW, I CERTIFY THAT TO THE BEST OF MY KNOWLEDGE AND BELIEF, THE FOREGOING IS A TRUE AND CORRECT RECORD OF THE ABOVE DESCRIBED WELL. I ALSO CERTIFY THAT THE WELL TAG, IF REQUIRED, HAS BEEN INSTALLED AND THAT THIS WELL RECORD WILL ALSO BE FILED WITH THE PERMIT HOLDER WITHIN 30 DAYS AFTER THE COMPLETION OF WELL DRILLING.	
	 SIGNATURE OF DRILLER / PRINT SIGNEE NAME	Shawn Cain DATE 11/20/21

FOR USE INTERNAL USE

WR-20 WELL RECORD & LOG (Version 04/30/2019)

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



PLUGGING RECORD



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

I. GENERAL / WELL OWNERSHIP:

State Engineer Well Number: SB-33

Well owner: EOG Resources

Phone No.: 432-848-9146

Mailing address: 5509 Champions Drive

City: Midland

State: Texas

Zip code: 79706

II. WELL PLUGGING INFORMATION:

- 1) Name of well drilling company that plugged well: Cascade Drilling
- 2) New Mexico Well Driller License No.: 1664 Expiration Date: 1/31/23
- 3) Well plugging activities were supervised by the following well driller(s)/rig supervisor(s): Cliff Hillman
- 4) Date well plugging began: 8/8/2021 Date well plugging concluded: 8/8/2021
- 5) GPS Well Location: Latitude: 32 deg, 24 min, 11.77 sec
Longitude: -103 deg, 43 min, 16.05 sec, WGS 84
- 6) Depth of well confirmed at initiation of plugging as: 65 ft below ground level (bgl),
by the following manner: tag line
- 7) Static water level measured at initiation of plugging: None ft bgl
- 8) Date well plugging plan of operations was approved by the State Engineer: 3/24/2021
- 9) Were all plugging activities consistent with an approved plugging plan? Yes If not, please describe differences between the approved plugging plan and the well as it was plugged (attach additional pages as needed):

- For each interval plugged, describe within the following columns:**

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

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

Date _____



WELL RECORD & LOG

OFFICE OF THE STATE ENGINEER

www.ose.state.nm.us

1. GENERAL AND WELL LOCATION	OSE POD NO. (WELL NO.) POD 36		WELL TAG ID NO. SB-34		OSE FILE NO(S). C-4144			
	WELL OWNER NAME(S) EOG Resources				PHONE (OPTIONAL) 432-848-9146			
	WELL OWNER MAILING ADDRESS 5509 Champions Drive				CITY Midland	STATE Texas	ZIP 79706	
	WELL LOCATION (FROM GPS)	DEGREES LATITUDE 32	MINUTES 24	SECONDS 11.45 N	* ACCURACY REQUIRED: ONE TENTH OF A SECOND			
		LONGITUDE -103	43	16.62 W	* DATUM REQUIRED: WGS 84			
DESCRIPTION RELATING WELL LOCATION TO STREET ADDRESS AND COMMON LANDMARKS - PLSS (SECTION, TOWNSHIP, RANGE) WHERE AVAILABLE Approximately 10.5 south of US Highway 62/180								
2. DRILLING & CASING INFORMATION	LICENSE NO. 1664		NAME OF LICENSED DRILLER Shawn Cain			NAME OF WELL DRILLING COMPANY Cascade Drilling		
	DRILLING STARTED 8/8/21	DRILLING ENDED 8/8/21	DEPTH OF COMPLETED WELL (FT) NA		BORE HOLE DEPTH (FT) 25	DEPTH WATER FIRST ENCOUNTERED (FT) NA		
	COMPLETED WELL IS: <input type="checkbox"/> ARTESIAN <input type="checkbox"/> DRY HOLE <input type="checkbox"/> SHALLOW (UNCONFINED)					STATIC WATER LEVEL IN COMPLETED WELL (FT) NA		
	DRILLING FLUID: <input type="checkbox"/> AIR <input type="checkbox"/> MUD ADDITIVES - SPECIFY:							
	DRILLING METHOD: <input type="checkbox"/> ROTARY <input type="checkbox"/> HAMMER <input type="checkbox"/> CABLE TOOL <input checked="" type="checkbox"/> OTHER - SPECIFY: Roto Sonic							
	DEPTH (feet bgl) FROM TO		BORE HOLE DIAM (inches)	CASING MATERIAL AND/OR GRADE (include each casing string, and note sections of screen)	CASING CONNECTION TYPE (add coupling diameter)	CASING INSIDE DIAM. (inches)	CASING WALL THICKNESS (inches)	SLOT SIZE (inches)
3. ANNULAR MATERIAL	DEPTH (feet bgl) FROM TO		BORE HOLE DIAM. (inches)	LIST ANNULAR SEAL MATERIAL AND GRAVEL PACK SIZE-RANGE BY INTERVAL	AMOUNT (cubic feet)	METHOD OF PLACEMENT		
	0	25	6	Cement with 5% Bentonite	5.5	Tremie Pumped		

FOR OSE INTERNAL USE

WR-20 WELL RECORD & LOG (Version 04/30/19)

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

FOR OSE INTERNAL USE		WR-20 WELL RECORD & LOG (Version 04/30/2019)	
FILE NO.	POD NO.	TRN NO.	
LOCATION	WELL TAG ID NO.		PAGE 2 OF 2



PLUGGING RECORD



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

I. GENERAL / WELL OWNERSHIP:

State Engineer Well Number: SB-34

Well owner: EOG Resources

Phone No.: 432-848-9146

Mailing address: 5509 Champions Drive

City: Midland State: Texas Zip code: 79706

II. WELL PLUGGING INFORMATION:

- 1) Name of well drilling company that plugged well: Cascade Drilling
- 2) New Mexico Well Driller License No.: 1664 Expiration Date: 1/31/23
- 3) Well plugging activities were supervised by the following well driller(s)/rig supervisor(s): Cliff Hillman
- 4) Date well plugging began: 8/8/2021 Date well plugging concluded: 8/8/2021
- 5) GPS Well Location: Latitude: 32 deg, 24 min, 11.45 sec
Longitude: -103 deg, 43 min, 16.62 sec, WGS 84
- 6) Depth of well confirmed at initiation of plugging as: 25 ft below ground level (bgl),
by the following manner: tag line
- 7) Static water level measured at initiation of plugging: None ft bgl
- 8) Date well plugging plan of operations was approved by the State Engineer: 3/24/2021
- 9) Were all plugging activities consistent with an approved plugging plan? Yes If not, please describe differences between the approved plugging plan and the well as it was plugged (attach additional pages as needed):

- For each interval plugged, describe within the following columns:**

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

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

Date _____



WELL RECORD & LOG

OFFICE OF THE STATE ENGINEER


www.ose.state.nm.us

1. GENERAL AND WELL LOCATION	OSE POD NO. (WELL NO.) POD 37		WELL TAG ID NO. SB-35		OSE FILE NO(S). C-4144			
	WELL OWNER NAME(S) EOG Resources				PHONE (OPTIONAL) 432-848-9146			
	WELL OWNER MAILING ADDRESS 5509 Champions Drive				CITY Midland	STATE Texas	ZIP 79706	
	WELL LOCATION (FROM GPS)	DEGREES LATITUDE 32	MINUTES 24	SECONDS 11.77 N	* ACCURACY REQUIRED: ONE TENTH OF A SECOND			
		LONGITUDE -103	43	17.71 W	* DATUM REQUIRED: WGS 84			
DESCRIPTION RELATING WELL LOCATION TO STREET ADDRESS AND COMMON LANDMARKS - PLSS (SECTION, TOWNSHIP, RANGE) WHERE AVAILABLE Approximately 10.5 south of US Highway 62/180								
2. DRILLING & CASING INFORMATION	LICENSE NO. 1664		NAME OF LICENSED DRILLER Shawn Cain			NAME OF WELL DRILLING COMPANY Cascade Drilling		
	DRILLING STARTED 8/8/21	DRILLING ENDED 8/18/21	DEPTH OF COMPLETED WELL (FT) NA		BORE HOLE DEPTH (FT) 80	DEPTH WATER FIRST ENCOUNTERED (FT) NA		
	COMPLETED WELL IS: <input type="checkbox"/> ARTESIAN <input type="checkbox"/> DRY HOLE <input type="checkbox"/> SHALLOW (UNCONFINED)					STATIC WATER LEVEL IN COMPLETED WELL (FT) NA		
	DRILLING FLUID: <input type="checkbox"/> AIR <input type="checkbox"/> MUD ADDITIVES - SPECIFY:							
	DRILLING METHOD: <input type="checkbox"/> ROTARY <input type="checkbox"/> HAMMER <input type="checkbox"/> CABLE TOOL <input checked="" type="checkbox"/> OTHER - SPECIFY: Roto Sonic							
	DEPTH (feet bgl)		BORE HOLE DIAM. (inches)	CASING MATERIAL AND/OR GRADE (include each casing string, and note sections of screen)	CASING CONNECTION TYPE (add coupling diameter)	CASING INSIDE DIAM. (inches)	CASING WALL THICKNESS (inches)	SLOT SIZE (inches)
	FROM	TO						
3. ANNULAR MATERIAL	DEPTH (feet bgl)		BORE HOLE DIAM. (inches)	LIST ANNULAR SEAL MATERIAL AND GRAVEL PACK SIZE-RANGE BY INTERVAL	AMOUNT (cubic feet)	METHOD OF PLACEMENT		
	FROM	TO						
	0	80	6	Cement with 5% Bentonite	17	Tremie Pumped		

FOR OSE INTERNAL USE

WR-20 WELL RECORD & LOG (Version 04/30/19)

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

4. HYDROGEOLOGIC LOG OF WELL	DEPTH (feet bgl)		THICKNESS (feet)	COLOR AND TYPE OF MATERIAL ENCOUNTERED - INCLUDE WATER-BEARING CAVITIES OR FRACTURE ZONES (attach supplemental sheets to fully describe all units)	WATER BEARING? (YES / NO)	ESTIMATED YIELD FOR WATER- BEARING ZONES (gpm)
	FROM	TO				
	0	6	6	Fine Silty Sand Brown	Y ✓ N	
	6	8	2	Caliche	Y ✓ N	
	8	25	17	Fine silty sand Brown	Y ✓ N	
	25	30	5	Medium Sandstone	Y ✓ N	
	30	35	5	Fat Clay	Y ✓ N	
	35	60	25	Medium Sandstone	Y ✓ N	
	60	70	15	Fat Clay	Y ✓ N	
	70	80	10	Medium sandstone	Y ✓ N	
					Y N	
					Y N	
					Y N	
					Y N	
					Y N	
					Y N	
					Y N	
					Y N	
					Y N	
					Y N	
					Y N	
					Y N	
METHOD USED TO ESTIMATE YIELD OF WATER-BEARING STRATA:					TOTAL ESTIMATED WELL YIELD (gpm): 0.00	
<input type="checkbox"/> PUMP <input type="checkbox"/> AIR LIFT <input type="checkbox"/> BAILER <input type="checkbox"/> OTHER - SPECIFY:						
5. TEST; RIG SUPERVISION	WELL TEST	TEST RESULTS - ATTACH A COPY OF DATA COLLECTED DURING WELL TESTING, INCLUDING DISCHARGE METHOD, START TIME, END TIME, AND A TABLE SHOWING DISCHARGE AND DRAWDOWN OVER THE TESTING PERIOD.				
	MISCELLANEOUS INFORMATION:					
	PRINT NAME(S) OF DRILL RIG SUPERVISOR(S) THAT PROVIDED ONSITE SUPERVISION OF WELL CONSTRUCTION OTHER THAN LICENSEE: Cliff Hillman					
6. SIGNATURE	BY SIGNING BELOW, I CERTIFY THAT TO THE BEST OF MY KNOWLEDGE AND BELIEF, THE FOREGOING IS A TRUE AND CORRECT RECORD OF THE ABOVE DESCRIBED WELL. I ALSO CERTIFY THAT THE WELL TAG, IF REQUIRED, HAS BEEN INSTALLED AND THAT THIS WELL RECORD WILL ALSO BE FILED WITH THE PERMIT HOLDER WITHIN 30 DAYS AFTER THE COMPLETION OF WELL DRILLING.					
	 SIGNATURE OF DRILLER / PRINT SIGNEE NAME				11/20/21 DATE	

FOR USE INTERNAL USE

WR-20 WELL RECORD & LOG (Version 04/30/2019)

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



PLUGGING RECORD



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

I. GENERAL / WELL OWNERSHIP:

State Engineer Well Number: SB-35

Well owner: EOG Resources

Phone No.: 432-848-9146

Mailing address: 5509 Champions Drive

City: Midland

State: Texas

Zip code: 79706

II. WELL PLUGGING INFORMATION:

- 1) Name of well drilling company that plugged well: Cascade Drilling
- 2) New Mexico Well Driller License No.: 1664 Expiration Date: 1/31/23
- 3) Well plugging activities were supervised by the following well driller(s)/rig supervisor(s): Cliff Hillman
- 4) Date well plugging began: 8/8/2021 Date well plugging concluded: 8/18/2021
- 5) GPS Well Location: Latitude: 32 deg, 24 min, 11.77 sec
Longitude: -103 deg, 43 min, 17.71 sec, WGS 84
- 6) Depth of well confirmed at initiation of plugging as: 80 ft below ground level (bgl),
by the following manner: tag line
- 7) Static water level measured at initiation of plugging: None ft bgl
- 8) Date well plugging plan of operations was approved by the State Engineer: 3/24/2021
- 9) Were all plugging activities consistent with an approved plugging plan? Yes If not, please describe differences between the approved plugging plan and the well as it was plugged (attach additional pages as needed):

- For each interval plugged, describe within the following columns:**

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

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

Date _____



WELL RECORD & LOG

OFFICE OF THE STATE ENGINEER


www.ose.state.nm.us

1. GENERAL AND WELL LOCATION	OSE POD NO. (WELL NO.) POD 38		WELL TAG ID NO. SB-36		OSE FILE NO(S). C-4144		
	WELL OWNER NAME(S) EOG Resources				PHONE (OPTIONAL) 432-848-9146		
	WELL OWNER MAILING ADDRESS 5509 Champions Drive				CITY Midland	STATE Texas	
					ZIP 79706		
	WELL LOCATION (FROM GPS)	DEGREES LATITUDE 32	MINUTES 24	SECONDS 11.18	N	* ACCURACY REQUIRED: ONE TENTH OF A SECOND	
	LONGITUDE -103	43	17.82	W	* DATUM REQUIRED: WGS 84		
DESCRIPTION RELATING WELL LOCATION TO STREET ADDRESS AND COMMON LANDMARKS - PLSS (SECTION, TOWNSHIP, RANGE) WHERE AVAILABLE Approximately 10.5 south of US Highway 62/180							
2. DRILLING & CASING INFORMATION	LICENSE NO. 1664		NAME OF LICENSED DRILLER Shawn Cain			NAME OF WELL DRILLING COMPANY Cascade Drilling	
	DRILLING STARTED 8/8/21		DRILLING ENDED 8/8/21		DEPTH OF COMPLETED WELL (FT) NA	BORE HOLE DEPTH (FT) 80	DEPTH WATER FIRST ENCOUNTERED (FT) NA
	COMPLETED WELL IS: <input type="checkbox"/> ARTESIAN <input type="checkbox"/> DRY HOLE <input type="checkbox"/> SHALLOW (UNCONFINED)					STATIC WATER LEVEL IN COMPLETED WELL (FT) NA	
	DRILLING FLUID: <input type="checkbox"/> AIR <input type="checkbox"/> MUD ADDITIVES - SPECIFY:						
	DRILLING METHOD: <input type="checkbox"/> ROTARY <input type="checkbox"/> HAMMER <input type="checkbox"/> CABLE TOOL <input checked="" type="checkbox"/> OTHER - SPECIFY: Roto Sonic						
	DEPTH (feet bgl) FROM TO		BORE HOLE DIAM. (inches)	CASING MATERIAL AND/OR GRADE (include each casing string, and note sections of screen)	CASING CONNECTION TYPE (add coupling diameter)	CASING INSIDE DIAM. (inches)	CASING WALL THICKNESS (inches)
3. ANNULAR MATERIAL	DEPTH (feet bgl) FROM TO		BORE HOLE DIAM. (inches)	LIST ANNULAR SEAL MATERIAL AND GRAVEL PACK SIZE-RANGE BY INTERVAL	AMOUNT (cubic feet)	METHOD OF PLACEMENT	
	0 80		6	Cement with 5% Bentonite	17	Tremie Pumped	

FOR OSE INTERNAL USE

WR-20 WELL RECORD & LOG (Version 04/30/19)

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

4. HYDROGEOLOGIC LOG OF WELL	DEPTH (feet bgl)		THICKNESS (feet)	COLOR AND TYPE OF MATERIAL ENCOUNTERED - INCLUDE WATER-BEARING CAVITIES OR FRACTURE ZONES (attach supplemental sheets to fully describe all units)	WATER BEARING? (YES / NO)	ESTIMATED YIELD FOR WATER- BEARING ZONES (gpm)
	FROM	TO				
	0	4	4	Fine Silty Sand Brown	Y ✓ N	
	4	8	4	Caliche	Y ✓ N	
	8	25	17	Fine silty sand Brown	Y ✓ N	
	25	30	5	Medium Sandstone	Y ✓ N	
	30	35	5	Fat Clay	Y ✓ N	
	35	50	15	Medium Sandstone	Y ✓ N	
	50	55	5	Fat Clay	Y ✓ N	
	55	60	5	Medium sandstone	Y ✓ N	
	60	70	10	Fat Clay	Y ✓ N	
	70	80	10	Medium Sandstone	Y ✓ N	
					Y N	
					Y N	
					Y N	
					Y N	
					Y N	
					Y N	
					Y N	
					Y N	
					Y N	
					Y N	
METHOD USED TO ESTIMATE YIELD OF WATER-BEARING STRATA:					TOTAL ESTIMATED WELL YIELD (gpm): 0.00	
<input type="checkbox"/> PUMP <input type="checkbox"/> AIR LIFT <input type="checkbox"/> BAILER <input type="checkbox"/> OTHER - SPECIFY:						
5. TEST; RIG SUPERVISION	WELL TEST TEST RESULTS - ATTACH A COPY OF DATA COLLECTED DURING WELL TESTING, INCLUDING DISCHARGE METHOD, START TIME, END TIME, AND A TABLE SHOWING DISCHARGE AND DRAWDOWN OVER THE TESTING PERIOD.					
	MISCELLANEOUS INFORMATION:					
	PRINT NAME(S) OF DRILL RIG SUPERVISOR(S) THAT PROVIDED ONSITE SUPERVISION OF WELL CONSTRUCTION OTHER THAN LICENSEE: Cliff Hillman					
6. SIGNATURE	BY SIGNING BELOW, I CERTIFY THAT TO THE BEST OF MY KNOWLEDGE AND BELIEF, THE FOREGOING IS A TRUE AND CORRECT RECORD OF THE ABOVE DESCRIBED WELL. I ALSO CERTIFY THAT THE WELL TAG, IF REQUIRED, HAS BEEN INSTALLED AND THAT THIS WELL RECORD WILL ALSO BE FILED WITH THE PERMIT HOLDER WITHIN 30 DAYS AFTER THE COMPLETION OF WELL DRILLING.					
	 SIGNATURE OF DRILLER / PRINT SIGNEE NAME				11/20/21 DATE	

FOR USE INTERNAL USE

WR-20 WELL RECORD & LOG (Version 04/30/2019)

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



PLUGGING RECORD



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

I. GENERAL / WELL OWNERSHIP:

State Engineer Well Number: SB-36

Well owner: EOG Resources

Phone No.: 432-848-9146

Mailing address: 5509 Champions Drive

City: Midland

State: Texas

Zip code: 79706

II. WELL PLUGGING INFORMATION:

- 1) Name of well drilling company that plugged well: Cascade Drilling
- 2) New Mexico Well Driller License No.: 1664 Expiration Date: 1/31/23
- 3) Well plugging activities were supervised by the following well driller(s)/rig supervisor(s):
Cliff Hillman
- 4) Date well plugging began: 8/8/2021 Date well plugging concluded: 8/8/2021
- 5) GPS Well Location: Latitude: 32 deg, 24 min, 11.18 sec
Longitude: -103 deg, 43 min, 17.82 sec, WGS 84
- 6) Depth of well confirmed at initiation of plugging as: 80 ft below ground level (bgl),
by the following manner: tag line
- 7) Static water level measured at initiation of plugging: None ft bgl
- 8) Date well plugging plan of operations was approved by the State Engineer: 3/24/2021
- 9) Were all plugging activities consistent with an approved plugging plan? Yes If not, please describe
differences between the approved plugging plan and the well as it was plugged (attach additional pages as needed):

- For each interval plugged, describe within the following columns:**

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

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

Date _____



WELL RECORD & LOG

OFFICE OF THE STATE ENGINEER


www.ose.state.nm.us

1. GENERAL AND WELL LOCATION	OSE POD NO. (WELL NO.) POD 39		WELL TAG ID NO. SB-37		OSE FILE NO(S). C-4144			
	WELL OWNER NAME(S) EOG Resources				PHONE (OPTIONAL) 432-848-9146			
	WELL OWNER MAILING ADDRESS 5509 Champions Drive				CITY Midland	STATE Texas	ZIP 79706	
	WELL LOCATION (FROM GPS)	DEGREES LATITUDE 32	MINUTES 24	SECONDS 11.17 N	* ACCURACY REQUIRED: ONE TENTH OF A SECOND * DATUM REQUIRED: WGS 84			
LONGITUDE -103 43 18.73 W								
DESCRIPTION RELATING WELL LOCATION TO STREET ADDRESS AND COMMON LANDMARKS - PLSS (SECTION, TOWNSHIP, RANGE) WHERE AVAILABLE Approximately 10.5 south of US Highway 62/180								
2. DRILLING & CASING INFORMATION	LICENSE NO. 1664		NAME OF LICENSED DRILLER Shawn Cain			NAME OF WELL DRILLING COMPANY Cascade Drilling		
	DRILLING STARTED 8/7/21		DRILLING ENDED 8/7/21		DEPTH OF COMPLETED WELL (FT) NA	BORE HOLE DEPTH (FT) 65	DEPTH WATER FIRST ENCOUNTERED (FT) NA	
	COMPLETED WELL IS: <input type="checkbox"/> ARTESIAN <input type="checkbox"/> DRY HOLE <input type="checkbox"/> SHALLOW (UNCONFINED)						STATIC WATER LEVEL IN COMPLETED WELL (FT) NA	
	DRILLING FLUID: <input type="checkbox"/> AIR <input type="checkbox"/> MUD ADDITIVES - SPECIFY:							
	DRILLING METHOD: <input type="checkbox"/> ROTARY <input type="checkbox"/> HAMMER <input type="checkbox"/> CABLE TOOL <input checked="" type="checkbox"/> OTHER - SPECIFY: Roto Sonic							
	DEPTH (feet bgl)		BORE HOLE DIAM. (inches)	CASING MATERIAL AND/OR GRADE (include each casing string, and note sections of screen)	CASING CONNECTION TYPE (add coupling diameter)	CASING INSIDE DIAM. (inches)	CASING WALL THICKNESS (inches)	SLOT SIZE (inches)
	FROM	TO						
3. ANNULAR MATERIAL	DEPTH (feet bgl)		BORE HOLE DIAM. (inches)	LIST ANNULAR SEAL MATERIAL AND GRAVEL PACK SIZE-RANGE BY INTERVAL	AMOUNT (cubic feet)	METHOD OF PLACEMENT		
	FROM	TO						
	0	65	6	Cement with 5% Bentonite	14	Tremie Pumped		

FOR OSE INTERNAL USE

WR-20 WELL RECORD & LOG (Version 04/30/19)

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

	DEPTH (feet bgl)		THICKNESS (feet)	COLOR AND TYPE OF MATERIAL ENCOUNTERED - INCLUDE WATER-BEARING CAVITIES OR FRACTURE ZONES (attach supplemental sheets to fully describe all units)	WATER BEARING? (YES / NO)		ESTIMATED YIELD FOR WATER- BEARING ZONES (gpm)
	FROM	TO					
4. HYDROGEOLOGIC LOG OF WELL	0	4	4	Fine Silty Sand Brown	Y	✓ N	
	4	10	6	Caliche	Y	✓ N	
	10	30	20	Fine silty sand Brown	Y	✓ N	
	30	35	5	Fat Clay	Y	✓ N	
	35	45	10	Medium sandstone	Y	✓ N	
	45	65	20	Fat Clay	Y	✓ N	
					Y	N	
					Y	N	
					Y	N	
					Y	N	
					Y	N	
					Y	N	
					Y	N	
					Y	N	
					Y	N	
					Y	N	
					Y	N	
					Y	N	
					Y	N	
	METHOD USED TO ESTIMATE YIELD OF WATER-BEARING STRATA:					TOTAL ESTIMATED WELL YIELD (gpm): 0.00	
<input type="checkbox"/> PUMP <input type="checkbox"/> AIR LIFT <input type="checkbox"/> BAILER <input type="checkbox"/> OTHER - SPECIFY:							
5. TEST; RIG SUPERVISION	WELL TEST	TEST RESULTS - ATTACH A COPY OF DATA COLLECTED DURING WELL TESTING, INCLUDING DISCHARGE METHOD, START TIME, END TIME, AND A TABLE SHOWING DISCHARGE AND DRAWDOWN OVER THE TESTING PERIOD.					
	MISCELLANEOUS INFORMATION:						
	PRINT NAME(S) OF DRILL RIG SUPERVISOR(S) THAT PROVIDED ONSITE SUPERVISION OF WELL CONSTRUCTION OTHER THAN LICENSEE: Cliff Hillman						
6. SIGNATURE	BY SIGNING BELOW, I CERTIFY THAT TO THE BEST OF MY KNOWLEDGE AND BELIEF, THE FOREGOING IS A TRUE AND CORRECT RECORD OF THE ABOVE DESCRIBED WELL. I ALSO CERTIFY THAT THE WELL TAG, IF REQUIRED, HAS BEEN INSTALLED AND THAT THIS WELL RECORD WILL ALSO BE FILED WITH THE PERMIT HOLDER WITHIN 30 DAYS AFTER THE COMPLETION OF WELL DRILLING.						
	 SIGNATURE OF DRILLER / PRINT SIGNEE NAME			Shawn Cain DATE		11/20/21	

FOR USE INTERNAL USE		WR-20 WELL RECORD & LOG (Version 04/30/2019)	
FILE NO.	POD NO.	TRN NO.	
LOCATION	WELL TAG ID NO.	PAGE 2 OF 2	



PLUGGING RECORD



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

I. GENERAL / WELL OWNERSHIP:

State Engineer Well Number: SB-37

Well owner: EOG Resources

Phone No.: 432-848-9146

Mailing address: 5509 Champions Drive

City: Midland

State: Texas

Zip code: 79706

II. WELL PLUGGING INFORMATION:

- 1) Name of well drilling company that plugged well: Cascade Drilling
- 2) New Mexico Well Driller License No.: 1664 Expiration Date: 1/31/23
- 3) Well plugging activities were supervised by the following well driller(s)/rig supervisor(s):
Cliff Hillman
- 4) Date well plugging began: 8/7/2021 Date well plugging concluded: 8/7/2021
- 5) GPS Well Location: Latitude: 32 deg, 24 min, 11.17 sec
Longitude: -103 deg, 43 min, 18.73 sec, WGS 84
- 6) Depth of well confirmed at initiation of plugging as: 65 ft below ground level (bgl),
by the following manner: tag line
- 7) Static water level measured at initiation of plugging: None ft bgl
- 8) Date well plugging plan of operations was approved by the State Engineer: 3/24/2021
- 9) Were all plugging activities consistent with an approved plugging plan? Yes If not, please describe differences between the approved plugging plan and the well as it was plugged (attach additional pages as needed):

- For each interval plugged, describe within the following columns:**

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

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

Signature of Well Driller

Date _____



WELL RECORD & LOG

OFFICE OF THE STATE ENGINEER

www.ose.state.nm.us

1. GENERAL AND WELL LOCATION	OSE POD NO. (WELL NO.) POD 40		WELL TAG ID NO. SB-38		OSE FILE NO(S). C-4144			
	WELL OWNER NAME(S) EOG Resources				PHONE (OPTIONAL) 432-848-9146			
	WELL OWNER MAILING ADDRESS 5509 Champions Drive				CITY Midland	STATE Texas	ZIP 79706	
	WELL LOCATION (FROM GPS)	DEGREES LATITUDE 32	MINUTES 24	SECONDS 10.67 N	* ACCURACY REQUIRED: ONE TENTH OF A SECOND			
		LONGITUDE -103	43	18.71 W	* DATUM REQUIRED: WGS 84			
DESCRIPTION RELATING WELL LOCATION TO STREET ADDRESS AND COMMON LANDMARKS - PLSS (SECTION, TOWNSHIP, RANGE) WHERE AVAILABLE Approximately 10.5 south of US Highway 62/180								
2. DRILLING & CASING INFORMATION	LICENSE NO. 1664		NAME OF LICENSED DRILLER Shawn Cain			NAME OF WELL DRILLING COMPANY Cascade Drilling		
	DRILLING STARTED 8/7/21	DRILLING ENDED 8/7/21	DEPTH OF COMPLETED WELL (FT) NA		BORE HOLE DEPTH (FT) 65	DEPTH WATER FIRST ENCOUNTERED (FT) NA		
	COMPLETED WELL IS: <input type="checkbox"/> ARTESIAN <input type="checkbox"/> DRY HOLE <input type="checkbox"/> SHALLOW (UNCONFINED)					STATIC WATER LEVEL IN COMPLETED WELL (FT) NA		
	DRILLING FLUID: <input type="checkbox"/> AIR <input type="checkbox"/> MUD ADDITIVES - SPECIFY:							
	DRILLING METHOD: <input type="checkbox"/> ROTARY <input type="checkbox"/> HAMMER <input type="checkbox"/> CABLE TOOL <input checked="" type="checkbox"/> OTHER - SPECIFY: Roto Sonic							
	DEPTH (feet bgl) FROM TO		BORE HOLE DIAM (inches)	CASING MATERIAL AND/OR GRADE (include each casing string, and note sections of screen)	CASING CONNECTION TYPE (add coupling diameter)	CASING INSIDE DIAM. (inches)	CASING WALL THICKNESS (inches)	SLOT SIZE (inches)
3. ANNULAR MATERIAL	DEPTH (feet bgl) FROM TO		BORE HOLE DIAM (inches)	LIST ANNULAR SEAL MATERIAL AND GRAVEL PACK SIZE-RANGE BY INTERVAL		AMOUNT (cubic feet)	METHOD OF PLACEMENT	
	0	65	6	Cement with 5% Bentonite		14	Tremie Pumped	

FOR OSE INTERNAL USE

WR-20 WELL RECORD & LOG (Version 04/30/19)

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

FOR OSE INTERNAL USE



PLUGGING RECORD



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

I. GENERAL / WELL OWNERSHIP:

State Engineer Well Number: SB-38

Well owner: EOG Resources

Phone No.: 432-848-9146

Mailing address: 5509 Champions Drive

City: Midland

State: Texas

Zip code: 79706

II. WELL PLUGGING INFORMATION:

- 1) Name of well drilling company that plugged well: Cascade Drilling
- 2) New Mexico Well Driller License No.: 1664 Expiration Date: 1/31/23
- 3) Well plugging activities were supervised by the following well driller(s)/rig supervisor(s): Cliff Hillman
- 4) Date well plugging began: 8/7/2021 Date well plugging concluded: 8/7/2021
- 5) GPS Well Location: Latitude: 32 deg, 24 min, 10.67 sec
Longitude: -103 deg, 43 min, 18.71 sec, WGS 84
- 6) Depth of well confirmed at initiation of plugging as: 65 ft below ground level (bgl),
by the following manner: tag line
- 7) Static water level measured at initiation of plugging: None ft bgl
- 8) Date well plugging plan of operations was approved by the State Engineer: 3/24/2021
- 9) Were all plugging activities consistent with an approved plugging plan? Yes If not, please describe differences between the approved plugging plan and the well as it was plugged (attach additional pages as needed):

- For each interval plugged, describe within the following columns:**

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

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

11/20/21
Date



WELL RECORD & LOG

OFFICE OF THE STATE ENGINEER

www.ose.state.nm.us

1. GENERAL AND WELL LOCATION	OSE POD NO. (WELL NO.) POD 41		WELL TAG ID NO. SB-39		OSE FILE NO(S) C-4144				
	WELL OWNER NAME(S) EOG Resources				PHONE (OPTIONAL) 432-848-9146				
	WELL OWNER MAILING ADDRESS 5509 Champions Drive				CITY Midland	STATE Texas	ZIP 79706		
	WELL LOCATION (FROM GPS)	DEGREES LATITUDE 32	MINUTES 24	SECONDS 10.40 N	* ACCURACY REQUIRED: ONE TENTH OF A SECOND				
		LONGITUDE -103	43	19.46 W	* DATUM REQUIRED: WGS 84				
DESCRIPTION RELATING WELL LOCATION TO STREET ADDRESS AND COMMON LANDMARKS - PLSS (SECTION, TOWNSHIP, RANGE) WHERE AVAILABLE Approximately 10.5 south of US Highway 62/180									
2. DRILLING & CASING INFORMATION	LICENSE NO. 1664		NAME OF LICENSED DRILLER Shawn Cain			NAME OF WELL DRILLING COMPANY Cascade Drilling			
	DRILLING STARTED 7/26/21	DRILLING ENDED 7/26/21	DEPTH OF COMPLETED WELL (FT) NA		BORE HOLE DEPTH (FT) 15	DEPTH WATER FIRST ENCOUNTERED (FT) NA			
	COMPLETED WELL IS: <input type="checkbox"/> ARTESIAN <input type="checkbox"/> DRY HOLE <input type="checkbox"/> SHALLOW (UNCONFINED)					STATIC WATER LEVEL IN COMPLETED WELL (FT) NA			
	DRILLING FLUID: <input type="checkbox"/> AIR <input type="checkbox"/> MUD ADDITIVES - SPECIFY:								
	DRILLING METHOD: <input type="checkbox"/> ROTARY <input type="checkbox"/> HAMMER <input type="checkbox"/> CABLE TOOL <input checked="" type="checkbox"/> OTHER - SPECIFY: Roto Sonic								
	DEPTH (feet bgl) FROM TO		BORE HOLE DIAM. (inches)	CASING MATERIAL AND/OR GRADE (include each casing string, and note sections of screen)		CASING CONNECTION TYPE (add coupling diameter)	CASING INSIDE DIAM. (inches)	CASING WALL THICKNESS (inches)	SLOT SIZE (inches)
3. ANNULAR MATERIAL	DEPTH (feet bgl) FROM TO		BORE HOLE DIAM. (inches)	LIST ANNULAR SEAL MATERIAL AND GRAVEL PACK SIZE-RANGE BY INTERVAL		AMOUNT (cubic feet)	METHOD OF PLACEMENT		
	0	15	6	Cement with 5% Bentonite		3.5	Tremie Pumped		

FOR OSE INTERNAL USE

WR-20 WELL RECORD & LOG (Version 04/30/19)

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

FOR USE INTERNAL USE		WR-20 WELL RECORD & LOG (Version 04/30/2019)	
FILE NO.	POD NO.	TRN NO.	
LOCATION	WELL TAG ID NO.		PAGE 2 OF 2



PLUGGING RECORD



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

I. GENERAL / WELL OWNERSHIP:

State Engineer Well Number: SB-39

Well owner: EOG Resources

Phone No.: 432-848-9146

Mailing address: 5509 Champions Drive

City: Midland

State: Texas

Zip code: 79706

II. WELL PLUGGING INFORMATION:

- 1) Name of well drilling company that plugged well: Cascade Drilling
- 2) New Mexico Well Driller License No.: 1664 Expiration Date: 1/31/23
- 3) Well plugging activities were supervised by the following well driller(s)/rig supervisor(s): Cliff Hillman
- 4) Date well plugging began: 7/26/2021 Date well plugging concluded: 7/26/2021
- 5) GPS Well Location: Latitude: 32 deg, 24 min, 10.40 sec
Longitude: -103 deg, 43 min, 19.46 sec, WGS 84
- 6) Depth of well confirmed at initiation of plugging as: 15 ft below ground level (bgl),
by the following manner: tag line
- 7) Static water level measured at initiation of plugging: None ft bgl
- 8) Date well plugging plan of operations was approved by the State Engineer: 3/24/2021
- 9) Were all plugging activities consistent with an approved plugging plan? Yes If not, please describe differences between the approved plugging plan and the well as it was plugged (attach additional pages as needed):

- For each interval plugged, describe within the following columns:**

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

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

Date _____



WELL RECORD & LOG

OFFICE OF THE STATE ENGINEER

www.ose.state.nm.us

1. GENERAL AND WELL LOCATION	OSE POD NO. (WELL NO.) POD 42		WELL TAG ID NO. SB-40		OSE FILE NO(S). C-4144			
	WELL OWNER NAME(S) EOG Resources				PHONE (OPTIONAL) 432-848-9146			
	WELL OWNER MAILING ADDRESS 5509 Champions Drive				CITY Midland	STATE Texas	ZIP 79706	
	WELL LOCATION (FROM GPS)	DEGREES LATITUDE 32	MINUTES 24	SECONDS 12.92 N	* ACCURACY REQUIRED: ONE TENTH OF A SECOND * DATUM REQUIRED: WGS 84			
		LONGITUDE -103	43	19.97 W				
DESCRIPTION RELATING WELL LOCATION TO STREET ADDRESS AND COMMON LANDMARKS - PLSS (SECTION, TOWNSHIP, RANGE) WHERE AVAILABLE Approximately 10.5 south of US Highway 62/180								
2. DRILLING & CASING INFORMATION	LICENSE NO. 1664		NAME OF LICENSED DRILLER Shawn Cain			NAME OF WELL DRILLING COMPANY Cascade Drilling		
	DRILLING STARTED 7/26/21	DRILLING ENDED 7/26/21	DEPTH OF COMPLETED WELL (FT) NA		BORE HOLE DEPTH (FT) 20	DEPTH WATER FIRST ENCOUNTERED (FT) NA		
	COMPLETED WELL IS: <input type="checkbox"/> ARTESIAN <input type="checkbox"/> DRY HOLE <input type="checkbox"/> SHALLOW (UNCONFINED)					STATIC WATER LEVEL IN COMPLETED WELL (FT) NA		
	DRILLING FLUID: <input type="checkbox"/> AIR <input type="checkbox"/> MUD ADDITIVES - SPECIFY:							
	DRILLING METHOD: <input type="checkbox"/> ROTARY <input type="checkbox"/> HAMMER <input type="checkbox"/> CABLE TOOL <input checked="" type="checkbox"/> OTHER - SPECIFY: Roto Sonic							
	DEPTH (feet bgl) FROM TO		BORE HOLE DIAM. (inches)	CASING MATERIAL AND/OR GRADE (include each casing string, and note sections of screen)	CASING CONNECTION TYPE (add coupling diameter)	CASING INSIDE DIAM. (inches)	CASING WALL THICKNESS (inches)	SLOT SIZE (inches)
3. ANNULAR MATERIAL	DEPTH (feet bgl) FROM TO		BORE HOLE DIAM. (inches)	LIST ANNULAR SEAL MATERIAL AND GRAVEL PACK SIZE-RANGE BY INTERVAL		AMOUNT (cubic feet)	METHOD OF PLACEMENT	
	0	20	6	Cement with 5% Bentonite		4.5	Tremie Pumped	

FOR OSE INTERNAL USE

WR-20 WELL RECORD & LOG (Version 04/30/19)

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

FOR USE INTERNAL USE		WR-20 WELL RECORD & LOG (Version 04/30/2019)	
FILE NO.	POD NO.	TRN NO.	
LOCATION	WELL TAG ID NO.		PAGE 2 OF 2



PLUGGING RECORD



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

I. GENERAL / WELL OWNERSHIP:

State Engineer Well Number: SB-40

Well owner: EOG Resources

Phone No.: 432-848-9146

Mailing address: 5509 Champions Drive

City: Midland

State: Texas


Zip code: 79706

II. WELL PLUGGING INFORMATION:

- 1) Name of well drilling company that plugged well: Cascade Drilling
- 2) New Mexico Well Driller License No.: 1664 Expiration Date: 1/31/23
- 3) Well plugging activities were supervised by the following well driller(s)/rig supervisor(s):
Cliff Hillman
- 4) Date well plugging began: 7/26/2021 Date well plugging concluded: 7/26/2021
- 5) GPS Well Location: Latitude: 32 deg, 24 min, 12.92 sec
Longitude: -103 deg, 43 min, 19.97 sec, WGS 84
- 6) Depth of well confirmed at initiation of plugging as: 20 ft below ground level (bgl),
by the following manner: tag line
- 7) Static water level measured at initiation of plugging: None ft bgl
- 8) Date well plugging plan of operations was approved by the State Engineer: 3/24/2021
- 9) Were all plugging activities consistent with an approved plugging plan? Yes If not, please describe differences between the approved plugging plan and the well as it was plugged (attach additional pages as needed):

- For each interval plugged, describe within the following columns:**

III. SIGNATURE:


Signature of Well Driller

Date _____



WELL RECORD & LOG

OFFICE OF THE STATE ENGINEER

www.ose.state.nm.us

1. GENERAL AND WELL LOCATION	OSE POD NO. (WELL NO.) POD 42		WELL TAG ID NO. SB-40A		OSE FILE NO(S) C-4144			
	WELL OWNER NAME(S) EOG Resources				PHONE (OPTIONAL) 432-848-9146			
	WELL OWNER MAILING ADDRESS 5509 Champions Drive				CITY Midland	STATE Texas	ZIP 79706	
	WELL LOCATION (FROM GPS)	DEGREES LATITUDE 32	MINUTES 24	SECONDS 12.58 N	* ACCURACY REQUIRED: ONE TENTH OF A SECOND			
		LONGITUDE -103	43	20.02 W	* DATUM REQUIRED: WGS 84			
DESCRIPTION RELATING WELL LOCATION TO STREET ADDRESS AND COMMON LANDMARKS - PLSS (SECTION, TOWNSHIP, RANGE) WHERE AVAILABLE Approximately 10.5 south of US Highway 62/180								
2. DRILLING & CASING INFORMATION	LICENSE NO. 1664		NAME OF LICENSED DRILLER Shawn Cain			NAME OF WELL DRILLING COMPANY Cascade Drilling		
	DRILLING STARTED 8/12/21	DRILLING ENDED 8/12/21	DEPTH OF COMPLETED WELL (FT) NA	BORE HOLE DEPTH (FT) 25	DEPTH WATER FIRST ENCOUNTERED (FT) NA			
	COMPLETED WELL IS: <input type="checkbox"/> ARTESIAN <input type="checkbox"/> DRY HOLE <input type="checkbox"/> SHALLOW (UNCONFINED)				STATIC WATER LEVEL IN COMPLETED WELL (FT) NA			
	DRILLING FLUID: <input type="checkbox"/> AIR <input type="checkbox"/> MUD ADDITIVES - SPECIFY:							
	DRILLING METHOD: <input type="checkbox"/> ROTARY <input type="checkbox"/> HAMMER <input type="checkbox"/> CABLE TOOL <input checked="" type="checkbox"/> OTHER - SPECIFY: Roto Sonic							
	DEPTH (feet bgl) FROM TO		BORE HOLE DIAM. (inches)	CASING MATERIAL AND/OR GRADE (include each casing string, and note sections of screen)	CASING CONNECTION TYPE (add coupling diameter)	CASING INSIDE DIAM. (inches)	CASING WALL THICKNESS (inches)	SLOT SIZE (inches)
3. ANNULAR MATERIAL	DEPTH (feet bgl) FROM TO		BORE HOLE DIAM. (inches)	LIST ANNULAR SEAL MATERIAL AND GRAVEL PACK SIZE-RANGE BY INTERVAL	AMOUNT (cubic feet)	METHOD OF PLACEMENT		
	0	25	6	Cement with 5% Bentonite	5.5	Tremie Pumped		

FOR OSE INTERNAL USE

WR-20 WELL RECORD & LOG (Version 04/30/19)

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

FOR USE INTERNAL USE		WR-20 WELL RECORD & LOG (Version 04/30/2019)	
FILE NO.	POD NO.	TRN NO.	
LOCATION	WELL TAG ID NO.		PAGE 2 OF 2



PLUGGING RECORD



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

I. GENERAL / WELL OWNERSHIP:

State Engineer Well Number: SB-40A

Well owner: EOG Resources

Phone No.: 432-848-9146

Mailing address: 5509 Champions Drive

City: Midland

State: Texas

Zip code: 79706

II. WELL PLUGGING INFORMATION:

- 1) Name of well drilling company that plugged well: Cascade Drilling
- 2) New Mexico Well Driller License No.: 1664 Expiration Date: 1/31/23
- 3) Well plugging activities were supervised by the following well driller(s)/rig supervisor(s): Cliff Hillman
- 4) Date well plugging began: 8/12/2021 Date well plugging concluded: 8/12/2021
- 5) GPS Well Location: Latitude: 32 deg, 24 min, 12.58 sec
Longitude: -103 deg, 43 min, 20.02 sec, WGS 84
- 6) Depth of well confirmed at initiation of plugging as: 25 ft below ground level (bgl),
by the following manner: tag line
- 7) Static water level measured at initiation of plugging: None ft bgl
- 8) Date well plugging plan of operations was approved by the State Engineer: 3/24/2021
- 9) Were all plugging activities consistent with an approved plugging plan? Yes If not, please describe differences between the approved plugging plan and the well as it was plugged (attach additional pages as needed):

- For each interval plugged, describe within the following columns:**

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

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

Signature of Well Driller

Date _____



WELL RECORD & LOG

OFFICE OF THE STATE ENGINEER

www.ose.state.nm.us

1. GENERAL AND WELL LOCATION	OSE POD NO. (WELL NO.) POD 43		WELL TAG ID NO. SB-41		OSE FILE NO(S). C-4144			
	WELL OWNER NAME(S) EOG Resources				PHONE (OPTIONAL) 432-848-9146			
	WELL OWNER MAILING ADDRESS 5509 Champions Drive				CITY Midland	STATE Texas	ZIP 79706	
	WELL LOCATION (FROM GPS)	DEGREES 32		MINUTES 24	SECONDS 13.98	N		
		LONGITUDE -103		43	19.07	W		
* ACCURACY REQUIRED: ONE TENTH OF A SECOND * DATUM REQUIRED: WGS 84								
DESCRIPTION RELATING WELL LOCATION TO STREET ADDRESS AND COMMON LANDMARKS - PLSS (SECTION, TOWNSHIP, RANGE) WHERE AVAILABLE Approximately 10.5 south of US Highway 62/180								
2. DRILLING & CASING INFORMATION	LICENSE NO. 1664		NAME OF LICENSED DRILLER Shawn Cain			NAME OF WELL DRILLING COMPANY Cascade Drilling		
	DRILLING STARTED 7/2/21	DRILLING ENDED 7/2/21	DEPTH OF COMPLETED WELL (FT) NA		BORE HOLE DEPTH (FT) 15	DEPTH WATER FIRST ENCOUNTERED (FT) NA		
	COMPLETED WELL IS: <input type="checkbox"/> ARTESIAN <input type="checkbox"/> DRY HOLE <input type="checkbox"/> SHALLOW (UNCONFINED)					STATIC WATER LEVEL IN COMPLETED WELL (FT) NA		
	DRILLING FLUID: <input type="checkbox"/> AIR <input type="checkbox"/> MUD ADDITIVES - SPECIFY:							
	DRILLING METHOD: <input type="checkbox"/> ROTARY <input type="checkbox"/> HAMMER <input type="checkbox"/> CABLE TOOL <input checked="" type="checkbox"/> OTHER - SPECIFY: Roto Sonic							
	DEPTH (feet bgl) FROM TO		BORE HOLE DIAM. (inches)	CASING MATERIAL AND/OR GRADE (include each casing string, and note sections of screen)	CASING CONNECTION TYPE (add coupling diameter)	CASING INSIDE DIAM. (inches)	CASING WALL THICKNESS (inches)	SLOT SIZE (inches)
3. ANNULAR MATERIAL	DEPTH (feet bgl) FROM TO		BORE HOLE DIAM. (inches)	LIST ANNULAR SEAL MATERIAL AND GRAVEL PACK SIZE-RANGE BY INTERVAL	AMOUNT (cubic feet)	METHOD OF PLACEMENT		
	0 15		6	Cement with 5% Bentonite	3.5	Tremie Pumped		

FOR OSE INTERNAL USE

WR-20 WELL RECORD & LOG (Version 04/30/19)

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

FOR USE INTERNAL USE		WR-20 WELL RECORD & LOG (Version 04/30/2019)	
FILE NO.	POD NO.	TRN NO.	
LOCATION	WELL TAG ID NO.		PAGE 2 OF 2



PLUGGING RECORD



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

I. GENERAL / WELL OWNERSHIP:

State Engineer Well Number: SB-41

Well owner: EOG Resources

Phone No.: 432-848-9146

Mailing address: 5509 Champions Drive

City: Midland

State: Texas

Zip code: 79706

II. WELL PLUGGING INFORMATION:

- 1) Name of well drilling company that plugged well: Cascade Drilling
- 2) New Mexico Well Driller License No.: 1664 Expiration Date: 1/31/23
- 3) Well plugging activities were supervised by the following well driller(s)/rig supervisor(s):
Cliff Hillman
- 4) Date well plugging began: 7/2/2021 Date well plugging concluded: 7/2/2021
- 5) GPS Well Location: Latitude: 32 deg, 24 min, 13.98 sec
Longitude: -103 deg, 43 min, 19.07 sec, WGS 84
- 6) Depth of well confirmed at initiation of plugging as: 15 ft below ground level (bgl),
by the following manner: tag line
- 7) Static water level measured at initiation of plugging: None ft bgl
- 8) Date well plugging plan of operations was approved by the State Engineer: 3/24/2021
- 9) Were all plugging activities consistent with an approved plugging plan? Yes If not, please describe differences between the approved plugging plan and the well as it was plugged (attach additional pages as needed):

- For each interval plugged, describe within the following columns:**

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

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

Signature of Well Driller

Date _____



WELL RECORD & LOG

OFFICE OF THE STATE ENGINEER

www.ose.state.nm.us

1. GENERAL AND WELL LOCATION	OSE POD NO. (WELL NO.) POD 44		WELL TAG ID NO. SB-42		OSE FILE NO(S). C-4144			
	WELL OWNER NAME(S) EOG Resources				PHONE (OPTIONAL) 432-848-9146			
	WELL OWNER MAILING ADDRESS 5509 Champions Drive				CITY Midland	STATE Texas	ZIP 79706	
	WELL LOCATION (FROM GPS)	DEGREES LATITUDE	MINUTES 32	SECONDS 24	14.79	N		
		LONGITUDE	-103	43	18.64	W		
* ACCURACY REQUIRED: ONE TENTH OF A SECOND * DATUM REQUIRED: WGS 84								
DESCRIPTION RELATING WELL LOCATION TO STREET ADDRESS AND COMMON LANDMARKS - PLSS (SECTION, TOWNSHIP, RANGE) WHERE AVAILABLE Approximately 10.5 south of US Highway 62/180								
2. DRILLING & CASING INFORMATION	LICENSE NO. 1664		NAME OF LICENSED DRILLER Shawn Cain			NAME OF WELL DRILLING COMPANY Cascade Drilling		
	DRILLING STARTED 7/27/21	DRILLING ENDED 7/27/21	DEPTH OF COMPLETED WELL (FT) NA		BORE HOLE DEPTH (FT) 15	DEPTH WATER FIRST ENCOUNTERED (FT) NA		
	COMPLETED WELL IS: <input type="checkbox"/> ARTESIAN <input type="checkbox"/> DRY HOLE <input type="checkbox"/> SHALLOW (UNCONFINED)					STATIC WATER LEVEL IN COMPLETED WELL (FT) NA		
	DRILLING FLUID: <input type="checkbox"/> AIR <input type="checkbox"/> MUD ADDITIVES - SPECIFY:							
	DRILLING METHOD: <input type="checkbox"/> ROTARY <input type="checkbox"/> HAMMER <input type="checkbox"/> CABLE TOOL <input checked="" type="checkbox"/> OTHER - SPECIFY: Roto Sonic							
	DEPTH (feet bgl) FROM TO		BORE HOLE DIAM. (inches)	CASING MATERIAL AND/OR GRADE (include each casing string, and note sections of screen)	CASING CONNECTION TYPE (add coupling diameter)	CASING INSIDE DIAM. (inches)	CASING WALL THICKNESS (inches)	SLOT SIZE (inches)
3. ANNULAR MATERIAL	DEPTH (feet bgl) FROM TO		BORE HOLE DIAM. (inches)	LIST ANNULAR SEAL MATERIAL AND GRAVEL PACK SIZE-RANGE BY INTERVAL	AMOUNT (cubic feet)	METHOD OF PLACEMENT		
	0 15		6	Cement with 5% Bentonite	3.5	Tremie Pumped		


FOR OSE INTERNAL USE

WR-20 WELL RECORD & LOG (Version 04/30/19)

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

4. HYDROGEOLOGIC LOG OF WELL	DEPTH (feet bgl)		THICKNESS (feet)	COLOR AND TYPE OF MATERIAL ENCOUNTERED - INCLUDE WATER-BEARING CAVITIES OR FRACTURE ZONES (attach supplemental sheets to fully describe all units)	WATER BEARING? (YES / NO)	ESTIMATED YIELD FOR WATER- BEARING ZONES (gpm)
	FROM	TO				
	0	8	8	Fine Silty Sand Brown	Y <input checked="" type="checkbox"/> N	
	8	10	2	Caliche	Y <input checked="" type="checkbox"/> N	
	10	15	5	Medium Sandstone Brown	Y <input checked="" type="checkbox"/> N	
					Y <input type="checkbox"/> N	
					Y <input type="checkbox"/> N	
					Y <input type="checkbox"/> N	
					Y <input type="checkbox"/> N	
					Y <input type="checkbox"/> N	
					Y <input type="checkbox"/> N	
					Y <input type="checkbox"/> N	
					Y <input type="checkbox"/> N	
					Y <input type="checkbox"/> N	
					Y <input type="checkbox"/> N	
					Y <input type="checkbox"/> N	
					Y <input type="checkbox"/> N	
					Y <input type="checkbox"/> N	
					Y <input type="checkbox"/> N	
					Y <input type="checkbox"/> N	
					Y <input type="checkbox"/> N	
					Y <input type="checkbox"/> N	
					Y <input type="checkbox"/> N	
					Y <input type="checkbox"/> N	
METHOD USED TO ESTIMATE YIELD OF WATER-BEARING STRATA:					TOTAL ESTIMATED WELL YIELD (gpm):	
<input type="checkbox"/> PUMP <input type="checkbox"/> AIR LIFT <input type="checkbox"/> BAILER <input type="checkbox"/> OTHER - SPECIFY:					0.00	

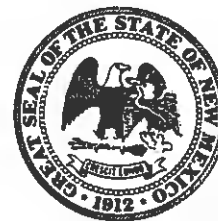
5. TEST; RIG SUPERVISION	WELL TEST	
	TEST RESULTS - ATTACH A COPY OF DATA COLLECTED DURING WELL TESTING, INCLUDING DISCHARGE METHOD, START TIME, END TIME, AND A TABLE SHOWING DISCHARGE AND DRAWDOWN OVER THE TESTING PERIOD.	
MISCELLANEOUS INFORMATION:		
PRINT NAME(S) OF DRILL RIG SUPERVISOR(S) THAT PROVIDED ONSITE SUPERVISION OF WELL CONSTRUCTION OTHER THAN LICENSEE: Cliff Hillman		

6. SIGNATURE
BY SIGNING BELOW, I CERTIFY THAT TO THE BEST OF MY KNOWLEDGE AND BELIEF, THE FOREGOING IS A TRUE AND CORRECT RECORD OF THE ABOVE DESCRIBED WELL. I ALSO CERTIFY THAT THE WELL TAG, IF REQUIRED, HAS BEEN INSTALLED AND THAT THIS WELL RECORD WILL ALSO BE FILED WITH THE PERMIT HOLDER WITHIN 30 DAYS AFTER THE COMPLETION OF WELL DRILLING.
<div>  <div>Shawn Cain</div> </div> <div> <div>11/20/21</div> <div>DATE</div> </div>
SIGNATURE OF DRILLER / PRINT SIGNEE NAME

FOR OSE INTERNAL USE		WR-20 WELL RECORD & LOG (Version 04/30/2019)	
FILE NO.	POD NO.	TRN NO.	
LOCATION		WELL TAG ID NO.	PAGE 2 OF 2



PLUGGING RECORD



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

I. GENERAL / WELL OWNERSHIP:

State Engineer Well Number: SB-42

Well owner: EOG Resources

Phone No.: 432-848-9146

Mailing address: 5509 Champions Drive

City: Midland

State: Texas

Zip code: 79706

II. WELL PLUGGING INFORMATION:

- 1) Name of well drilling company that plugged well: Cascade Drilling
- 2) New Mexico Well Driller License No.: 1664 Expiration Date: 1/31/23
- 3) Well plugging activities were supervised by the following well driller(s)/rig supervisor(s): Cliff Hillman
- 4) Date well plugging began: 7/27/2021 Date well plugging concluded: 7/27/2021
- 5) GPS Well Location: Latitude: 32 deg, 24 min, 14.79 sec
Longitude: -103 deg, 43 min, 18.64 sec, WGS 84
- 6) Depth of well confirmed at initiation of plugging as: 15 ft below ground level (bgl),
by the following manner: tag line
- 7) Static water level measured at initiation of plugging: None ft bgl
- 8) Date well plugging plan of operations was approved by the State Engineer: 3/24/2021
- 9) Were all plugging activities consistent with an approved plugging plan? Yes If not, please describe differences between the approved plugging plan and the well as it was plugged (attach additional pages as needed):

- For each interval plugged, describe within the following columns:**

MULTIPLY		BY	AND OBTAIN
cubic feet	x	7 4605	= gallons
cubic yards	x	201 97	= gallons

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

Signature of Well Driller

Date _____




WELL RECORD & LOG

OFFICE OF THE STATE ENGINEER

www.ose.state.nm.us

1. GENERAL AND WELL LOCATION	OSE POD NO. (WELL NO.) POD 45		WELL TAG ID NO. SB-43		OSE FILE NO(S). C-4144			
	WELL OWNER NAME(S) EOG Resources				PHONE (OPTIONAL) 432-848-9146			
	WELL OWNER MAILING ADDRESS 5509 Champions Drive				CITY Midland	STATE Texas	ZIP 79706	
	WELL LOCATION (FROM GPS)	DEGREES LATITUDE	MINUTES 32	SECONDS 24	8.90	* ACCURACY REQUIRED: ONE TENTH OF A SECOND		
		LONGITUDE	-103	43	21.50	* DATUM REQUIRED: WGS 84		
DESCRIPTION RELATING WELL LOCATION TO STREET ADDRESS AND COMMON LANDMARKS - PLSS (SECTION, TOWNSHIP, RANGE) WHERE AVAILABLE Approximately 10.5 south of US Highway 62/180								
2. DRILLING & CASING INFORMATION	LICENSE NO. 1664		NAME OF LICENSED DRILLER Shawn Cain			NAME OF WELL DRILLING COMPANY Cascade Drilling		
	DRILLING STARTED 8/6/21	DRILLING ENDED 8/6/21	DEPTH OF COMPLETED WELL (FT) NA		BORE HOLE DEPTH (FT) 55	DEPTH WATER FIRST ENCOUNTERED (FT) NA		
	COMPLETED WELL IS: <input type="checkbox"/> ARTESIAN <input type="checkbox"/> DRY HOLE <input type="checkbox"/> SHALLOW (UNCONFINED)					STATIC WATER LEVEL IN COMPLETED WELL (FT) NA		
	DRILLING FLUID: <input type="checkbox"/> AIR <input type="checkbox"/> MUD ADDITIVES - SPECIFY:							
	DRILLING METHOD: <input type="checkbox"/> ROTARY <input type="checkbox"/> HAMMER <input type="checkbox"/> CABLE TOOL <input checked="" type="checkbox"/> OTHER - SPECIFY: Roto Sonic							
	DEPTH (feet bgl) FROM TO		BORE HOLE DIAM. (inches)	CASING MATERIAL AND/OR GRADE (include each casing string, and note sections of screen)	CASING CONNECTION TYPE (add coupling diameter)	CASING INSIDE DIAM. (inches)	CASING WALL THICKNESS (inches)	SLOT SIZE (inches)
3. ANNULAR MATERIAL	DEPTH (feet bgl) FROM TO		BORE HOLE DIAM. (inches)	LIST ANNULAR SEAL MATERIAL AND GRAVEL PACK SIZE-RANGE BY INTERVAL	AMOUNT (cubic feet)	METHOD OF PLACEMENT		
	0	55	6	Cement with 5% Bentonite	12	Tremie Pumped		

FOR OSE INTERNAL USE			WR-20 WELL RECORD & LOG (Version 04/30/19)		
FILE NO.		POD NO.		TRN NO.	
LOCATION			WELL TAG ID NO.		PAGE 1 OF 2

4. HYDROGEOLOGIC LOG OF WELL	DEPTH (feet bgl)		THICKNESS (feet)	COLOR AND TYPE OF MATERIAL ENCOUNTERED - INCLUDE WATER-BEARING CAVITIES OR FRACTURE ZONES (attach supplemental sheets to fully describe all units)	WATER BEARING? (YES / NO)	ESTIMATED YIELD FOR WATER- BEARING ZONES (gpm)
	FROM	TO				
	0	15	15	Fine Silty Sand Brown	Y ✓ N	
	15	20	5	Fat Clay	Y ✓ N	
	20	25	5	Fine silty sand Brown	Y ✓ N	
	25	35	10	Medium Sandstone	Y ✓ N	
	35	45	10	Fat Clay	Y ✓ N	
	45	55	10	Clayey sandstone	Y ✓ N	
					Y N	
					Y N	
					Y N	
					Y N	
					Y N	
					Y N	
					Y N	
					Y N	
					Y N	
					Y N	
					Y N	
					Y N	
					Y N	
					Y N	
					Y N	
					Y N	
					Y N	
METHOD USED TO ESTIMATE YIELD OF WATER-BEARING STRATA:					TOTAL ESTIMATED WELL YIELD (gpm): 0.00	
<input type="checkbox"/> PUMP <input type="checkbox"/> AIR LIFT <input type="checkbox"/> BAILER <input type="checkbox"/> OTHER - SPECIFY:						
5. TEST; RIG SUPERVISION	WELL TEST	TEST RESULTS - ATTACH A COPY OF DATA COLLECTED DURING WELL TESTING, INCLUDING DISCHARGE METHOD, START TIME, END TIME, AND A TABLE SHOWING DISCHARGE AND DRAWDOWN OVER THE TESTING PERIOD.				
	MISCELLANEOUS INFORMATION:					
PRINT NAME(S) OF DRILL RIG SUPERVISOR(S) THAT PROVIDED ONSITE SUPERVISION OF WELL CONSTRUCTION OTHER THAN LICENSEE: Cliff Hillman						
6. SIGNATURE	BY SIGNING BELOW, I CERTIFY THAT TO THE BEST OF MY KNOWLEDGE AND BELIEF, THE FOREGOING IS A TRUE AND CORRECT RECORD OF THE ABOVE DESCRIBED WELL. I ALSO CERTIFY THAT THE WELL TAG, IF REQUIRED, HAS BEEN INSTALLED AND THAT THIS WELL RECORD WILL ALSO BE FILED WITH THE PERMIT HOLDER WITHIN 30 DAYS AFTER THE COMPLETION OF WELL DRILLING.					
	 SIGNATURE OF DRILLER / PRINT SIGNEE NAME				11/20/21 DATE	

FOR USE INTERNAL USE

WR-20 WELL RECORD & LOG (Version 04/30/2019)

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



PLUGGING RECORD



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

I. GENERAL / WELL OWNERSHIP:

State Engineer Well Number: SB-43

Well owner: EOG Resources

Phone No.: 432-848-9146

Mailing address: 5509 Champions Drive

City: Midland

State: Texas

Zip code: 79706

II. WELL PLUGGING INFORMATION:

- 1) Name of well drilling company that plugged well: Cascade Drilling
- 2) New Mexico Well Driller License No.: 1664 Expiration Date: 1/31/23
- 3) Well plugging activities were supervised by the following well driller(s)/rig supervisor(s):
Cliff Hillman
- 4) Date well plugging began: 8/6/2021 Date well plugging concluded: 8/6/2021
- 5) GPS Well Location: Latitude: 32 deg, 24 min, 8.90 sec
Longitude: -103 deg, 43 min, 21.50 sec, WGS 84
- 6) Depth of well confirmed at initiation of plugging as: 55 ft below ground level (bgl),
by the following manner: tag line
- 7) Static water level measured at initiation of plugging: None ft bgl
- 8) Date well plugging plan of operations was approved by the State Engineer: 3/24/2021
- 9) Were all plugging activities consistent with an approved plugging plan? Yes If not, please describe
differences between the approved plugging plan and the well as it was plugged (attach additional pages as needed):

- For each interval plugged, describe within the following columns:**

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

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

Signature of Well Driller

Date _____



WELL RECORD & LOG

OFFICE OF THE STATE ENGINEER

www.ose.state.nm.us

1. GENERAL AND WELL LOCATION	OSE POD NO. (WELL NO) POD 46		WELL TAG ID NO. SB-44		OSE FILE NO(S). C-4144		
	WELL OWNER NAME(S) EOG Resources				PHONE (OPTIONAL) 432-848-9146		
	WELL OWNER MAILING ADDRESS 5509 Champions Drive				CITY Midland	STATE Texas	
					ZIP 79706		
	WELL LOCATION (FROM GPS)	DEGREES LATITUDE 32	MINUTES 24	SECONDS 7.79	N	* ACCURACY REQUIRED: ONE TENTH OF A SECOND	
	LONGITUDE -103	43	21.53	W	* DATUM REQUIRED: WGS 84		
DESCRIPTION RELATING WELL LOCATION TO STREET ADDRESS AND COMMON LANDMARKS - PLSS (SECTION, TOWNSHIP, RANGE) WHERE AVAILABLE Approximately 10.5 south of US Highway 62/180							
2. DRILLING & CASING INFORMATION	LICENSE NO. 1664		NAME OF LICENSED DRILLER Shawn Cain			NAME OF WELL DRILLING COMPANY Cascade Drilling	
	DRILLING STARTED 8/6/21	DRILLING ENDED 8/6/21	DEPTH OF COMPLETED WELL (FT) NA	BORE HOLE DEPTH (FT) 30	DEPTH WATER FIRST ENCOUNTERED (FT) NA		
	COMPLETED WELL IS: <input type="checkbox"/> ARTESIAN <input type="checkbox"/> DRY HOLE <input type="checkbox"/> SHALLOW (UNCONFINED)				STATIC WATER LEVEL IN COMPLETED WELL (FT) NA		
	DRILLING FLUID: <input type="checkbox"/> AIR <input type="checkbox"/> MUD ADDITIVES - SPECIFY:						
	DRILLING METHOD: <input type="checkbox"/> ROTARY <input type="checkbox"/> HAMMER <input type="checkbox"/> CABLE TOOL <input checked="" type="checkbox"/> OTHER - SPECIFY: Roto Sonic						
	DEPTH (feet bgl) FROM TO		BORE HOLE DIAM (inches)	CASING MATERIAL AND/OR GRADE (include each casing string, and note sections of screen)	CASING CONNECTION TYPE (add coupling diameter)	CASING INSIDE DIAM. (inches)	CASING WALL THICKNESS (inches)
3. ANNULAR MATERIAL	DEPTH (feet bgl) FROM TO		BORE HOLE DIAM. (inches)	LIST ANNULAR SEAL MATERIAL AND GRAVEL PACK SIZE-RANGE BY INTERVAL	AMOUNT (cubic feet)	METHOD OF PLACEMENT	
	0 30		6	Cement with 5% Bentonite	6.5	Tremie Pumped	

FOR OSE INTERNAL USE

WR-20 WELL RECORD & LOG (Version 04/30/19)

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

FOR USE INTERNAL USE		WR-20 WELL RECORD & LOG (Version 04/30/2019)	
FILE NO.	POD NO.	TRN NO.	
LOCATION		WELL TAG ID NO.	PAGE 2 OF 2



PLUGGING RECORD



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

I. GENERAL / WELL OWNERSHIP:

State Engineer Well Number: SB-44

Well owner: EOG Resources

Phone No.: 432-848-9146

Mailing address: 5509 Champions Drive

City: Midland

State: Texas

Zip code: 79706

II. WELL PLUGGING INFORMATION:

- 1) Name of well drilling company that plugged well: Cascade Drilling
- 2) New Mexico Well Driller License No.: 1664 Expiration Date: 1/31/23
- 3) Well plugging activities were supervised by the following well driller(s)/rig supervisor(s): Cliff Hillman
- 4) Date well plugging began: 8/6/2021 Date well plugging concluded: 8/6/2021
- 5) GPS Well Location: Latitude: 32 deg, 24 min, 7.79 sec
Longitude: -103 deg, 43 min, 21.53 sec, WGS 84
- 6) Depth of well confirmed at initiation of plugging as: 30 ft below ground level (bgl),
by the following manner: tag line
- 7) Static water level measured at initiation of plugging: None ft bgl
- 8) Date well plugging plan of operations was approved by the State Engineer: 3/24/2021
- 9) Were all plugging activities consistent with an approved plugging plan? Yes If not, please describe differences between the approved plugging plan and the well as it was plugged (attach additional pages as needed):

- For each interval plugged, describe within the following columns:**

III. SIGNATURE:

Sh C.
Signature of Well Driller

Date _____

Attachment C

NMSOE Well Permits and BLM Sundry



STATE OF NEW MEXICO
OFFICE OF THE STATE ENGINEER
District 2 Office, Roswell, NM

John R. D'Antonio Jr., P.E.
State Engineer

1900 West Second Street
Roswell, New Mexico 88201
(575) 622-6521
FAX: (575) 623-8559

March 24, 2021

EOG Resources
c/o GHD Services
5509 Champions Dr
Albuquerque, NM 79706

RE: *Well Plugging Plan of Operations for C-4144-POD13/POD46*

Greetings:

Enclosed is your copy of Well Plugging Plan of Operations for the above referenced project, which has been approved subject to the attached Specific Conditions of Approval. The following conditions of approval have been developed to ensure compliance with the Rules and Regulations Governing Well Driller Licensing; Construction, Repair and Plugging of Wells 19.27.4 NMAC adopted June 13, 2017, by the State Engineer.

Aggrieval of this permit, or any of the conditions of approval therein, suspends the permit. No plugging operations shall occur while a permit is aggrieved.

Sincerely,

A handwritten signature in blue ink, appearing to read "C. Guillen", written over a horizontal line.

Claudia K. Guillen
Engineering Tech III
Water Resources Allocation Program

encl

Specific Conditions of Approval for C-4144-POD13-POD456

- 1) If groundwater is not encountered the borehole can be filled with drill cuttings or clean native fill up to 10 feet below ground surface. From 10 feet below ground surface to ground surface the borehole will be filled with bentonite. Bentonite chips shall be hydrated with 5 gallons of water per 50 pound sack.
- 2) The cement-bentonite slurry (bentonite powder) shall be mixed using a maximum of 5.2 gallons water per 94-lb sack Type II portland cement **PLUS** 0.65 gallons per 1% increase in bentonite up to a maximum 6% bentonite by dry weight ratio. Bentonite must be hydrated separately and then mixed.
 - a) Grout shall be tremied from the bottom up.
- 3) A completed Plugging Record form shall be submitted no later than 30 days after completion of the plugging.
- 4) Before any attempts are made to plug this well, the O.S.E. District II Office shall be notified 48 hours in advance of the anticipated schedule for plugging, so that an O.S.E. representative has the opportunity to witness the procedures, if deemed necessary.
- 5) Any deviation from this plan must obtain an approved variance from this office prior to implementation.
- 6) Aggrieval of this permit, or any of the conditions of approval therein, suspends the permit. No plugging operations shall occur while a permit is aggrieved.

Witness my hand and seal this 24th day of March A.D., 2021

John R. D'Antonio Jr., P.E., State Engineer

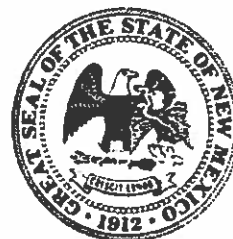
By: _____

Claudia K. Guillen
Engineering Tech III





WELL PLUGGING PLAN OF OPERATIONS



NOTE: A Well Plugging Plan of Operations shall be filed with and accepted by the Office of the State Engineer prior to plugging. This form may be used to plug a single well, or if you are plugging multiple monitoring wells on the same site using the same plugging methodology.

Alert! Your well may be eligible to participate in the Aquifer Mapping Program (AMP)-NM Bureau of Geology geoinfo.nmt.edu/resources/water/cgman/ if within an area of interest and meets the minimum construction requirements, such as there is still water in your well, and the well construction reflected in a well record and log is not compromised, contact AMP at 575-835-5038 or -6951, or by email nmbg-waterlevels@nmt.edu, prior to completing this prior form. Showing proof to the OSE that your well was accepted in this program, may delay the plugging of your well until a later date.

I. FILING FEE: There is no filing fee for this form.

II. GENERAL / WELL OWNERSHIP: ☒ Check here if proposing one plan for multiple monitoring wells on the same site and attaching WD-08m

Existing Office of the State Engineer POD Number (Well Number) for well to be plugged: SB-12 **C-4144**

Name of well owner: EOG Resources

Mailing address: 5509 Champions Drive County: _____

City: Midland State: Texas Zip code: 79706

Phone number: 432-848-9146 E-mail: James_kennedy@eogresources.com

III. WELL DRILLER INFORMATION:

Well Driller contracted to provide plugging services: White Drilling Company, Inc.

New Mexico Well Driller License No.: WD-1456 Expiration Date: 09-30-2022

IV. WELL INFORMATION: ☒ Check here if this plan describes method for plugging multiple monitoring wells on the same site and attach supplemental form WD-08m and skip to #2 in this section.

Note: A copy of the existing Well Record for the well(s) to be plugged should be attached to this plan.

1) GPS Well Location: Latitude: 32° deg, 24' min, 09.21" sec
Longitude: -103° deg, 43' min, 21.72" sec, NAD 83

2) Reason(s) for plugging well(s):

These are soil borings are not going to be wells. The plugging plans are for in case we encounter groundwater.

3) Was well used for any type of monitoring program? no If yes, please use section VII of this form to detail what hydrogeologic parameters were monitored. If the well was used to monitor contaminated or poor quality water, authorization from the New Mexico Environment Department may be required prior to plugging.

4) Does the well tap brackish, saline, or otherwise poor quality water? unknown If yes, provide additional detail, including analytical results and/or laboratory report(s): _____

5) Static water level: unknown feet below land surface / feet above land surface (circle one)

6) Depth of the well: unknown feet

- 7) Inside diameter of innermost casing: 4-3/8' inches.
- 8) Casing material: n/a
- 9) The well was constructed with:
☐ an open-hole production interval, state the open interval: _____
☐ a well screen or perforated pipe, state the screened interval(s): _____
- 10) What annular interval surrounding the artesian casing of this well is cement-grouted? _____
- 11) Was the well built with surface casing? _____ If yes, is the annulus surrounding the surface casing grouted or otherwise sealed? _____ If yes, please describe:
- 12) Has all pumping equipment and associated piping been removed from the well? _____ If not, describe remaining equipment and intentions to remove prior to plugging in Section VII of this form.

V. DESCRIPTION OF PLANNED WELL PLUGGING: ☐ If plugging method differs between multiple wells on same site, a separate form must be completed for each method.

Note: If this plan proposes to plug an artesian well in a way other than with cement grout, placed bottom to top with a tremie pipe, a detailed diagram of the well showing proposed final plugged configuration shall be attached, as well as any additional technical information, such as geophysical logs, that are necessary to adequately describe the proposal. Attach a copy of any signed OSE variance to this plugging plan.

Also, if this planned plugging plan requires a variance to 19.27.4 NMAC, attach a detailed variance request signed by the applicant.

- 1) Describe the method by which cement grout shall be placed in the well, or describe requested plugging methodology proposed for the well:

Tremie grout from bottom up.
- 2) Will well head be cut-off below land surface after plugging? _____

VI. PLUGGING AND SEALING MATERIALS:

Note: The plugging of a well that taps poor quality water may require the use of a specialty cement or specialty sealant. Attach a copy of the batch mix recipe from the cement company and/or product description for specialty cement mixes or any sealant that deviates from the list of OSE approved sealants.

- 1) For plugging intervals that employ cement grout, complete and attach Table A.
- 2) For plugging intervals that will employ approved non-cement based sealant(s), complete and attach Table B.
- 3) Theoretical volume of grout required to plug the well to land surface: 146 Gallons or 19.63 cf
- 4) Type of Cement proposed: Portland Cement w/5% Bentonite Grout - Type II
- 5) Proposed cement grout mix: 6 gallons of water per 94 pound sack of Portland cement.
- 6) Will the grout be: _____ batch-mixed and delivered to the site
X mixed on site

TABLE A - For plugging intervals that employ cement grout. Start with deepest interval.

	Interval 1 – deepest	Interval 2	Interval 3 – most shallow
			Note: if the well is non-artesian and breaches only one aquifer, use only this column.
Top of proposed interval of grout placement (ft bgl)	0 feet		
Bottom of proposed interval of grout placement (ft bgl)	100 feet		
Theoretical volume of grout required per interval (gallons)	146 Gallons		
Proposed cement grout mix gallons of water per 94-lb. sack of Portland cement	6 Gallons of Water		
Mixed on-site or batch-mixed and delivered?	On-Site		
Grout additive 1 requested	5% Bentonite Grout		
Additive 1 percent by dry weight relative to cement			
Grout additive 2 requested			
Additive 2 percent by dry weight relative to cement			

TABLE B - For plugging intervals that will employ approved non-cement based sealant(s). Start with deepest interval.

	Interval 1 – deepest	Interval 2	Interval 3 – most shallow
			Note: if the well is non-artesian and breaches only one aquifer, use only this column.
Top of proposed interval of sealant placement (ft bgl)			
Bottom of proposed sealant or grout placement (ft bgl)			
Theoretical volume of sealant required per interval (gallons)			
Proposed abandonment sealant (manufacturer and trade name)			



NEW MEXICO OFFICE OF THE STATE ENGINEER



ATTACHMENT to WD-08 Plan of Plugging MULTIPLE MONITORING WELL DESCRIPTIONS

This Attachment is to be completed if more than one (1) monitoring well is to be plugged using the same method.

Location (Required):									
<input checked="" type="checkbox"/> NM State Plane (NAD83) (Feet) <input type="checkbox"/> NM West Zone <input type="checkbox"/> NM Central Zone <input checked="" type="checkbox"/> NM East Zone		<input checked="" type="checkbox"/> UTM (NAD83) (Meters) <input type="checkbox"/> Zone 13N <input type="checkbox"/> Zone 12N		<input checked="" type="checkbox"/> Lat/Long (WGS84) (1/10 th of second)		OTHER (allowable only for move-from descriptions - see application form for format) <input type="checkbox"/> PLSS (quarters, section, township, range) <input type="checkbox"/> Hydrographic Survey, Map & Tract <input type="checkbox"/> Lot, Block & Subdivision <input type="checkbox"/> Grant			
OSE POD Number:	Other Well ID:	X or Longitude (ddmmss):	Y or Latitude (ddmmss):	Other Location Info (PLSS):	Casing ID- (inches):	Depth to Water- (ft bgs):	Total well Depth- (ft bgs):	Grout Volume:	Surface Casing (Y or N):
C-4144 POD 15	SB-13	-103°43'20.96"E	32°24'09.07"N				105-110ft	146gal.	
" 14	SB-14	-103°43'21.85"E	32°24'08.65"N						
" 17	SB-15	-103°43'21.79"E	32°24'08.09"N						
" 18	SB-16	-103°43'20.99"E	32°24'08.03"N						
" 19	SB-17	-103°43'20.64"E	32°24'08.04"N						
" 20	SB-18	-103°43'21.20"E	32°24'13.89"N						
" 21	SB-19	-103°43'20.43"E	32°24'13.69"N						
" 22	SB-20	-103°43'21.14"E	32°24'13.25"N						
" 23	SB-21	-103°43'20.80"E	32°24'13.25"N						
" 24	SB-22	-103°43'19.89"E	32°24'13.57"N						
" 25	SB-23	-103°43'18.14"E	32°24'15.26"N						
" 26	SB-24	-103°43'18.21"E	32°24'14.62"N						

FOR OSE INTERNAL USE

Multiple Monitoring POD Descriptions, Form wr-08m (Rev 7/31/19)

File Number: C-4144	Trn Number: 690620
Trans Description (optional): Plg Plan	



NEW MEXICO OFFICE OF THE STATE ENGINEER



ATTACHMENT to WD-08 Plan of Plugging MULTIPLE MONITORING WELL DESCRIPTIONS

This Attachment is to be completed if more than one (1) monitoring well is to be plugged using the same method.

Location (Required):									
<input checked="" type="checkbox"/> NM State Plane (NAD83) (Feet) <input type="checkbox"/> NM West Zone <input type="checkbox"/> NM Central Zone <input checked="" type="checkbox"/> NM East Zone		<input checked="" type="checkbox"/> UTM (NAD83) (Meters) <input type="checkbox"/> Zone 13N <input type="checkbox"/> Zone 12N		<input checked="" type="checkbox"/> Lat/Long (WGS84) (1/10 th of second)		OTHER (allowable only for move-from descriptions - see application form for format) <input type="checkbox"/> PLSS (quarters, section, township, range) <input type="checkbox"/> Hydrographic Survey, Map & Tract <input type="checkbox"/> Lot, Block & Subdivision <input type="checkbox"/> Grant			
OSE POD Number:	Other Well ID:	X or Longitude (ddmmss):	Y or Latitude (ddmmss):	Other Location Info (PLSS):	Casing ID- (inches):	Depth to Water- (ft bgs):	Total well Depth- (ft bgs):	Grout Volume:	Surface Casing (Y or N):
C-4144									
POD 27	SB-25	-103°43'18.40"E	32°24'14.17"N				105-110ft	144 gal	
" 28	SB-26	-103°43'18.62"E	32°24'13.51"N						
" 29	SB-27	-103°43'18.85"E	32°24'12.90"N						
" 30	SB-28	-103°43'18.11"E	32°24'13.22"N						
" 31	SB-29	-103°43'17.42"E	32°24'14.55"N						
" 32	SB-30	-103°43'16.97"E	32°24'12.85"N						
" 33	SB-31	-103°43'15.44"E	32°24'13.72"N						
" 34	SB-32	-103°43'14.75"E	32°24'13.86"N						
" 35	SB-33	-103°43'16.05"E	32°24'11.77"N						
" 36	SB-34	-103°43'16.62"E	32°24'11.45"N						
" 37	SB-35	-103°43'17.73"E	32°24'11.83"N						
" 38	SB-36	-103°43'17.82"E	32°24'11.18"N						

FOR OSE INTERNAL USE Multiple Monitoring POD Descriptions, Form wr-08m (Rev 7/31/19)

File Number: C-4144	Trn Number: 690620
Trans Description (optional): Plg Plan	



NEW MEXICO OFFICE OF THE STATE ENGINEER



ATTACHMENT to WD-08 Plan of Plugging MULTIPLE MONITORING WELL DESCRIPTIONS

This Attachment is to be completed if more than one (1) monitoring well is to be plugged using the same method.

Location (Required):									
<input checked="" type="checkbox"/> NM State Plane (NAD83) (Feet) <input type="checkbox"/> NM West Zone <input type="checkbox"/> NM Central Zone <input checked="" type="checkbox"/> NM East Zone		<input checked="" type="checkbox"/> UTM (NAD83) (Meters) <input type="checkbox"/> Zone 13N <input type="checkbox"/> Zone 12N		<input checked="" type="checkbox"/> Lat/Long (WGS84) (1/10 th of second)		OTHER (allowable only for move-from descriptions - see application form for format) <input type="checkbox"/> PLSS (quarters, section, township, range) <input type="checkbox"/> Hydrographic Survey, Map & Tract <input type="checkbox"/> Lot, Block & Subdivision <input type="checkbox"/> Grant			
OSE POD Number:	Other Well ID:	X or Longitude (ddmmss):	Y or Latitude (ddmmss):	Other Location Info (PLSS):	Casing ID- (inches):	Depth to Water- (ft bgs):	Total well Depth- (ft bgs):	Grout Volume:	Surface Casing (Y or N)
POD 39	SB-37	-103°43'18.73"E	32°24'11.17"N				105-110ft	14 legal	
" 40	SB-38	-103°43'18.71"E	32°24'10.67"N						
" 41	SB-39	-103°43'19.46"E	32°24'10.40"N						
" 42	SB-40	-103°43'17.69"E	32°24'11.09"N						
" 43	SB-41	-103°43'19.07"E	32°24'13.98"N						
" 44	SB-42	-103°43'18.64"E	32°24'14.79"N						
" 45	SB-43	-103°43'21.50"E	32°24'08.90"N						
" 46	SB-44	-103°43'21.53"E	32°24'07.79"N						
POD 13	PMW-10	-103°43'10.85" E	32°24'15.43"						
POD 14	PMW-11	-103°43'23.28" E	32°24'08.82" N						

FOR USE INTERNAL USE Multiple Monitoring POD Descriptions, Form wr-08m (Rev 7/31/19)

File Number: C-4144	Trn Number: 690620
Trans Description (optional): PLg Plan	

File No. C-4144



NEW MEXICO OFFICE OF THE STATE ENGINEER

WR-07 APPLICATION FOR PERMIT TO DRILL

A WELL WITH NO WATER RIGHT

(check applicable box):

For fees, see State Engineer website: <http://www.ose.state.nm.us/>

- Purpose:
- ☐ Exploratory Well (Pump test) ☐ Pollution Control And/Or Recovery ☐ Ground Source Heat Pump
- ☒ Monitoring Well ☐ Construction Site/Public Works Dewatering ☐ Other(Describe):
- ☐ Mine Dewatering

A separate permit will be required to apply water to beneficial use regardless if use is consumptive or nonconsumptive.

☒ Temporary Request - Requested Start Date: 2/9/21

Requested End Date: TBD

Plugging Plan of Operations Submitted? ☒ Yes ☐ No

1. APPLICANT(S)

Name: EOG Resources	Name: GHD Services
Contact or Agent: <input type="checkbox"/> check here if Agent James Kennedy	Contact or Agent: <input checked="" type="checkbox"/> check here if Agent Charles Neligh
Mailing Address: 5509 Champions Drive	Mailing Address: 6121 Indian School Rd NE #200
City: Midland	City: Albuquerque
State: Texas	State: New Mexico
Zip Code: 79706	Zip Code: 87110
Phone: 432-848-9146 <input type="checkbox"/> Home <input checked="" type="checkbox"/> Cell	Phone: 716-818-0224 <input type="checkbox"/> Home <input checked="" type="checkbox"/> Cell
Phone (Work):	Phone (Work):
E-mail (optional): James_kennedy@eogresources.com	E-mail (optional): Charles.Neligh@ghd.com

FOR OSE INTERNAL USE

Application for Permit, Form WR-07, Rev 11/17/16

File No. C-4144	Trn. No.: 690620	Receipt No.: 2-43110
Trans Description (optional): MON		
Sub-Basin: CUB	PCW/LOG Due Date: 3/25/2022	

Page 1 of 3

2. WELL(S) Describe the well(s) applicable to this application.

Location Required: Coordinate location must be reported in NM State Plane (NAD 83), UTM (NAD 83), or Latitude/Longitude (Lat/Long - WGS84).

District II (Roswell) and District VII (Cimarron) customers, provide a PLSS location in addition to above.

☒ NM State Plane (NAD83) (Feet)

☐ NM West Zone

☒ NM East Zone

☐ NM Central Zone

☒ UTM (NAD83) (Meters)

☐ Zone 12N

☒ Zone 13N

☒ Lat/Long (WGS84) (to the nearest 1/10th of second)

Well Number (if known):	X or Easting or Longitude:	Y or Northing or Latitude:	Provide if known: -Public Land Survey System (PLSS) (Quarters or Halves, Section, Township, Range) OR - Hydrographic Survey Map & Tract; OR - Lot, Block & Subdivision; OR - Land Grant Name
C-4144 POD12 PMW-10	-103°43'10.85" E	32°24'15.43"	T22s, R32E, Q7
C-4144 POD13 PMW-11	-103°43'23.28" E	32°24'08.82" N	T22S, R31E, Q12
C-4144 POD14 SB-12	-103°43'21.72" E	32°24'09.21" N	T22s, R32E, Q7
C-4144 POD15 SB-13	-103°43'20.96" E	32°24'09.07" N	T22s, R32E, Q7
C-4144 POD16 SB-14	-103°43'21.85" E	32°24'08.65" N	T22s, R32E, Q7

NOTE: If more well locations need to be described, complete form WR-08 (Attachment 1 – POD Descriptions)

Additional well descriptions are attached: ☒ Yes ☐ No If yes, how many 30

Other description relating well to common landmarks, streets, or other:

Aprox 10.5 miles south of us hwy 62/180

Well is on land owned by: BLM - Sundry included

Well Information: NOTE: If more than one (1) well needs to be described, provide attachment. Attached? ☒ Yes ☐ No
If yes, how many 5

Approximate depth of well (feet): 105-110'BGS

Outside diameter of well casing (inches): 2"

Driller Name: White Drilling Co.

Driller License Number: WD-1456

3. ADDITIONAL STATEMENTS OR EXPLANATIONS

Well construction will be a 2-in dia. PVC casing with a 15-20 ft. 0.010-in slotted screen. Grade 10/20 silica sand pack will be placed in the annulus to 2 ft. above the screen. A 2ft. thick hydrated bentonite plug will be placed on top of the sand pack followed by cement/bentonite grout to the surface.

The soil borings will be advanced in order to help delineated the extent of the impact. If groundwater is encountered a monitoring well may be constructed.

the duration of planned monitoring will continue until NMOCD grants remedial Site closure.

FOR OSE INTERNAL USE

Application for Permit, Form WR-07

File No.: C-4144

Trn No.: 690620

Page 2 of 3

SPECIFIC REQUIREMENTS: The applicant must include the following, as applicable to each well type. Please check the appropriate boxes, to indicate the information has been included and/or attached to this application:

Exploratory: <input type="checkbox"/> Include a description of any proposed pump test, if applicable.	Pollution Control and/or Recovery: <input type="checkbox"/> Include a plan for pollution control/recovery, that includes the following: <input type="checkbox"/> A description of the need for the pollution control or recovery operation. <input type="checkbox"/> The estimated maximum period of time for completion of the operation. <input type="checkbox"/> The annual diversion amount. <input type="checkbox"/> The annual consumptive use amount. <input type="checkbox"/> The maximum amount of water to be diverted and injected for the duration of the operation. <input type="checkbox"/> The method and place of discharge. <input type="checkbox"/> The method of measurement of water produced and discharged. <input type="checkbox"/> The source of water to be injected. <input type="checkbox"/> The method of measurement of water injected. <input type="checkbox"/> The characteristics of the aquifer. <input type="checkbox"/> The method of determining the resulting annual consumptive use of water and depletion from any related stream system. <input type="checkbox"/> Proof of any permit required from the New Mexico Environment Department. <input type="checkbox"/> An access agreement if the applicant is not the owner of the land on which the pollution plume control or recovery well is to be located.	Construction De-Watering: <input type="checkbox"/> Include a description of the proposed dewatering operation. <input type="checkbox"/> The estimated duration of the operation. <input type="checkbox"/> The maximum amount of water to be diverted. <input type="checkbox"/> A description of the need for the dewatering operation, and, <input type="checkbox"/> A description of how the diverted water will be disposed of.	Mine De-Watering: <input type="checkbox"/> Include a plan for pollution control/recovery, that includes the following: <input type="checkbox"/> A description of the need for mine dewatering. <input type="checkbox"/> The estimated maximum period of time for completion of the operation. <input type="checkbox"/> The source(s) of the water to be diverted. <input type="checkbox"/> The geohydrologic characteristics of the aquifer(s). <input type="checkbox"/> The maximum amount of water to be diverted per annum. <input type="checkbox"/> The maximum amount of water to be diverted for the duration of the operation. <input type="checkbox"/> The quality of the water. <input type="checkbox"/> The method of measurement of water diverted. <input type="checkbox"/> The recharge of water to the aquifer. <input type="checkbox"/> Description of the estimated area of hydrologic effect of the project. <input type="checkbox"/> The method and place of discharge. <input type="checkbox"/> An estimation of the effects on surface water rights and underground water rights from the mine dewatering project. <input type="checkbox"/> A description of the methods employed to estimate effects on surface water rights and underground water rights. <input type="checkbox"/> Information on existing wells, rivers, springs, and wetlands within the area of hydrologic effect.
Monitoring: <input checked="" type="checkbox"/> Include the reason for the monitoring well, and, <input checked="" type="checkbox"/> The duration of the planned monitoring.		Ground Source Heat Pump: <input type="checkbox"/> Include a description of the geothermal heat exchange project. <input type="checkbox"/> The number of boreholes for the completed project and required depths. <input type="checkbox"/> The time frame for constructing the geothermal heat exchange project, and, <input type="checkbox"/> The duration of the project. <input type="checkbox"/> Preliminary surveys, design data, and additional information shall be included to provide all essential facts relating to the request.	

ACKNOWLEDGEMENT

I, We (name of applicant(s)), Charles Neligh of GHD on behalf of EOG Resources
Print Name(s)

affirm that the foregoing statements are true to the best of (my, our) knowledge and belief

Charles Neligh
Digitally signed by Charles Neligh
Date: 2021.02.11 14:45:32 -07'00'
Applicant Signature

[Signature]
Applicant Signature



ACTION OF THE STATE ENGINEER

This application is:

☒ approved ☐ partially approved ☐ denied

provided it is not exercised to the detriment of any others having existing rights, and is not contrary to the conservation of water in New Mexico nor detrimental to the public welfare and further subject to the attached conditions of approval.

Witness my hand and seal this 25 day of March 20 21 for the State Engineer.

John R. D'Antonio Jr., P.E., State Engineer

By: [Signature]
Signature

Juan Hernandez
Print

Title: Water Resources Manager I
Print

FOR OSE INTERNAL USE

Application for Permit, Form WR-07

File No.: C-4144

Trn No.: 690620



NEW MEXICO OFFICE OF THE STATE ENGINEER



ATTACHMENT 1 POINT OF DIVERSION DESCRIPTIONS

This Attachment is to be completed if more than one (1) point of diversion is described on an Application or Declaration.

a. Is this a: <input type="checkbox"/> Move-From Point of Diversion(s) <input type="checkbox"/> Move-To Point of Diversion(s)		b. Information on Attachment(s): Number of points of diversion involved in the application: <u>35</u> Total number of pages attached to the application: <u>5</u>	
<input type="checkbox"/> Surface Point of Diversion OR <input checked="" type="checkbox"/> Well			
Name of ditch, acequia, or spring:			
Stream or water course:			
Tributary of:			
c. Location (Required): Required: Move to POD location coordinate must be either New Mexico State Plane (NAD 83), UTM (NAD 83), or Lat/Long (WGS84)			
NM State Plane (NAD83) (feet) NM West Zone <input type="checkbox"/> NM Central Zone <input type="checkbox"/> NM East Zone <input type="checkbox"/>	UTM (NAD83) (meters) Zone 13N <input type="checkbox"/> Zone 12N <input type="checkbox"/>	<input checked="" type="checkbox"/> Lat/Long-- (WGS84) 1/10 th of second	OTHER (allowable only for move-from descriptions - see application form for format) <input checked="" type="checkbox"/> PLSS (quarters, section, township, range) <input type="checkbox"/> Hydrographic Survey, Map & Tract <input type="checkbox"/> Lot, Block & Subdivision <input type="checkbox"/> Grant
POD Number: <u>C-4144</u> <u>POD 17</u> SB-15	X or Longitude -103°43'21.79"E	Y or Latitude 32°24'08.09"N	Other Location Description: T22s, R32E, Q7
POD Number: <u>C-4144</u> <u>POD 18</u> SB-16	X or Longitude -103°43'20.99"E	Y or Latitude 32°24'08.03"N	Other Location Description: T22s, R32E, Q7
POD Number: <u>C-4144</u> <u>POD 19</u> SB-17	X or Longitude -103°43'20.64"E	Y or Latitude 32°24'08.04"N	Other Location Description: T22s, R32E, Q7
POD Number: <u>C-4144</u> <u>POD 20</u> SB-18	X or Longitude -103°43'21.20"E	Y or Latitude 32°24'13.89"N	Other Location Description: T22s, R32E, Q7
POD Number: <u>C-4144</u> <u>POD 21</u> SB-19	X or Longitude -103°43'20.43"E	Y or Latitude 32°24'13.69"N	Other Location Description: T22s, R32E, Q7
POD Number: <u>C-4144</u> <u>POD 22</u> SB-20	X or Longitude -103°43'21.14"E	Y or Latitude 32°24'13.25"N	Other Location Description: T22s, R32E, Q7
POD Number: <u>C-4144</u> <u>POD 23</u> SB-21	X or Longitude -103°43'20.80"E	Y or Latitude 32°24'13.25"N	Other Location Description: T22s, R32E, Q7
POD Number: <u>C-4144</u> <u>POD 24</u> SB-22	X or Longitude -103°43'19.89"E	Y or Latitude 32°24'13.57"N	Other Location Description: T22s, R32E, Q7
POD Number: <u>C-4144</u> <u>POD 25</u> SB-23	X or Longitude -103°43'18.14"E	Y or Latitude 32°24'15.26"N	Other Location Description: T22s, R32E, Q7

FOR OSE INTERNAL USE

Form wr-08

POD DESCRIPTIONS - ATTACHMENT 1

File Number: C-4144

Trn Number: 690620

Trans Description (optional): MON



NEW MEXICO OFFICE OF THE STATE ENGINEER



ATTACHMENT 1 POINT OF DIVERSION DESCRIPTIONS

This Attachment is to be completed if more than one (1) point of diversion is described on an Application or Declaration.

a. Is this a: <input type="checkbox"/> Move-From Point of Diversion(s) <input type="checkbox"/> Move-To Point of Diversion(s)		b. Information on Attachment(s): Number of points of diversion involved in the application: <u>35</u> Total number of pages attached to the application: <u>5</u>	
<input type="checkbox"/> Surface Point of Diversion OR <input checked="" type="checkbox"/> Well			
Name of ditch, acequia, or spring:			
Stream or water course:			
Tributary of:			
c. Location (Required): Required: Move to POD location coordinate must be either New Mexico State Plane (NAD 83), UTM (NAD 83), or Lat/Long (WGS84)			
NM State Plane (NAD83) (feet) NM West Zone <input type="checkbox"/> NM Central Zone <input type="checkbox"/> NM East Zone <input type="checkbox"/>	UTM (NAD83) (meters) Zone 13N <input type="checkbox"/> Zone 12N <input type="checkbox"/>	<input checked="" type="checkbox"/> Lat/Long-- (WGS84) 1/10 th of second	OTHER (allowable only for move-from descriptions - see application form for format) <input checked="" type="checkbox"/> PLSS (quarters, section, township, range) <input type="checkbox"/> Hydrographic Survey, Map & Tract <input type="checkbox"/> Lot, Block & Subdivision <input type="checkbox"/> Grant
POD Number: <u>C-4144</u> <u>SB-24</u> <u>POD 26</u>	X or Longitude -103°43'18.21"E	Y or Latitude 32°24'14.62"N	Other Location Description: T22s, R32E, Q7
POD Number: <u>C-4144</u> <u>SB-25</u> <u>POD 27</u>	X or Longitude -103°43'18.40"E	Y or Latitude 32°24'14.17"N	Other Location Description: T22s, R32E, Q7
POD Number: <u>C-4144</u> <u>SB-26</u> <u>POD 28</u>	X or Longitude -103°43'18.62"E	Y or Latitude 32°24'13.51"N	Other Location Description: T22s, R32E, Q7
POD Number: <u>C-4144</u> <u>SB-27</u> <u>POD 29</u>	X or Longitude -103°43'18.85"E	Y or Latitude 32°24'12.90"N	Other Location Description: T22s, R32E, Q7
POD Number: <u>C-4144</u> <u>SB-28</u> <u>POD 30</u>	X or Longitude -103°43'18.11"E	Y or Latitude 32°24'13.22"N	Other Location Description: T22s, R32E, Q7
POD Number: <u>C-4144</u> <u>SB-29</u> <u>POD 31</u>	X or Longitude -103°43'17.42"E	Y or Latitude 32°24'14.55"N	Other Location Description: T22s, R32E, Q7
POD Number: <u>C-4144</u> <u>SB-30</u> <u>POD 32</u>	X or Longitude -103°43'16.97"E	Y or Latitude 32°24'12.85"N	Other Location Description: T22s, R32E, Q7
POD Number: <u>C-4144</u> <u>SB-31</u> <u>POD 33</u>	X or Longitude -103°43'15.44"E	Y or Latitude 32°24'13.72"N	Other Location Description: T22s, R32E, Q7
POD Number: <u>C-4144</u> <u>SB-32</u> <u>POD 34</u>	X or Longitude -103°43'14.75"E	Y or Latitude 32°24'13.86"N	Other Location Description: T22s, R32E, Q7

FOR OSE INTERNAL USE

Form wr-08

POD DESCRIPTIONS - ATTACHMENT 1

File Number: <u>C-4144</u>	Trn Number: <u>690620</u>
Trans Description (optional): <u>MON</u>	



NEW MEXICO OFFICE OF THE STATE ENGINEER



ATTACHMENT 1 POINT OF DIVERSION DESCRIPTIONS

This Attachment is to be completed if more than one (1) point of diversion is described on an Application or Declaration.

a. Is this a: <input type="checkbox"/> Move-From Point of Diversion(s) <input type="checkbox"/> Move-To Point of Diversion(s)		b. Information on Attachment(s): Number of points of diversion involved in the application: <u>35</u> Total number of pages attached to the application: <u>5</u>	
<input type="checkbox"/> Surface Point of Diversion OR <input checked="" type="checkbox"/> Well			
Name of ditch, acequia, or spring:			
Stream or water course:			
Tributary of:			
c. Location (Required): Required: Move to POD location coordinate must be either New Mexico State Plane (NAD 83), UTM (NAD 83), or Lat/Long (WGS84)			
NM State Plane (NAD83) (feet) NM West Zone <input type="checkbox"/> NM Central Zone <input type="checkbox"/> NM East Zone <input type="checkbox"/>	UTM (NAD83) (meters) Zone 13N <input type="checkbox"/> Zone 12N <input type="checkbox"/>	<input checked="" type="checkbox"/> Lat/Long— (WGS84) 1/10 th of second	OTHER (allowable only for move-from descriptions - see application form for format) <input checked="" type="checkbox"/> PLSS (quarters, section, township, range) <input type="checkbox"/> Hydrographic Survey, Map & Tract <input type="checkbox"/> Lot, Block & Subdivision <input type="checkbox"/> Grant
POD Number: <u>C-4144</u> SB-33 <u>POD 35</u>	X or Longitude -103°43'16.05"E	Y or Latitude 32°24'11.77"N	Other Location Description: T22s, R32E, Q7
POD Number: <u>C-4144</u> SB-34 <u>POD 36</u>	X or Longitude -103°43'16.62"E	Y or Latitude 32°24'11.45"N	Other Location Description: T22s, R32E, Q7
POD Number: <u>C-4144</u> SB-35 <u>POD 37</u>	X or Longitude -103°43'17.73"E	Y or Latitude 32°24'11.83"N	Other Location Description: T22s, R32E, Q7
POD Number: <u>C-4144</u> SB-36 <u>POD 38</u>	X or Longitude -103°43'17.82"E	Y or Latitude 32°24'11.18"N	Other Location Description: T22s, R32E, Q7
POD Number: <u>C-4144</u> SB-37 <u>POD 39</u>	X or Longitude -103°43'18.73"E	Y or Latitude 32°24'11.17"N	Other Location Description: T22s, R32E, Q7
POD Number: <u>C-4144</u> SB-38 <u>POD 40</u>	X or Longitude -103°43'18.71"E	Y or Latitude 32°24'10.67"N	Other Location Description: T22s, R32E, Q7
POD Number: <u>C-4144</u> SB-39 <u>POD 41</u>	X or Longitude -103°43'19.46"E	Y or Latitude 32°24'10.40"N	Other Location Description: T22s, R32E, Q7
POD Number: <u>C-4144</u> SB-40 <u>POD 42</u>	X or Longitude -103°43'17.69"E	Y or Latitude 32°24'11.09"N	Other Location Description: T22s, R32E, Q7
POD Number: <u>C-4144</u> SB-41 <u>POD 43</u>	X or Longitude -103°43'19.07"E	Y or Latitude 32°24'13.98"N	Other Location Description: T22s, R32E, Q7

FOR OSE INTERNAL USE

Form wr-08

POD DESCRIPTIONS - ATTACHMENT 1

File Number: <u>C-4144</u>	Trn Number: <u>690620</u>
Trans Description (optional): <u>MON</u>	



NEW MEXICO OFFICE OF THE STATE ENGINEER



ATTACHMENT 1 POINT OF DIVERSION DESCRIPTIONS

This Attachment is to be completed if more than one (1) point of diversion is described on an Application or Declaration.

a. Is this a: <input type="checkbox"/> Move-From Point of Diversion(s) <input type="checkbox"/> Move-To Point of Diversion(s)		b. Information on Attachment(s): Number of points of diversion involved in the application: <u>35</u> Total number of pages attached to the application: <u>5</u>	
<input type="checkbox"/> Surface Point of Diversion OR <input checked="" type="checkbox"/> Well			
Name of ditch, acequia, or spring:			
Stream or water course:			
Tributary of:			
c. Location (Required): Required: Move to POD location coordinate must be either New Mexico State Plane (NAD 83), UTM (NAD 83), or Lat/Long (WGS84)			
NM State Plane (NAD83) (feet) NM West Zone <input type="checkbox"/> NM Central Zone <input type="checkbox"/> NM East Zone <input checked="" type="checkbox"/>	UTM (NAD83) (meters) Zone 13N <input checked="" type="checkbox"/> Zone 12N <input type="checkbox"/>	<input checked="" type="checkbox"/> Lat/Long- (WGS84) 1/10 th of second	OTHER (allowable only for move-from descriptions - see application form for format) <input checked="" type="checkbox"/> PLSS (quarters, section, township, range) <input type="checkbox"/> Hydrographic Survey, Map & Tract <input type="checkbox"/> Lot, Block & Subdivision <input type="checkbox"/> Grant
POD Number: <u>C-4144</u> SB-42 <u>POD 44</u>	X or Longitude -103°43'18.64"E	Y or Latitude 32°24'14.79"N	Other Location Description: T22s, R32E, Q7
POD Number: <u>C-4144</u> SB-43 <u>POD 45</u>	X or Longitude -103°43'21.50"E	Y or Latitude 32°24'08.90"N	Other Location Description: T22s, R32E, Q7
POD Number: <u>C-4144</u> SB-44 <u>POD 46</u>	X or Longitude -103°43'21.53"E	Y or Latitude 32°24'07.79"N	Other Location Description: T22s, R32E, Q7
POD Number:	X or Longitude	Y or Latitude	Other Location Description:
POD Number:	X or Longitude	Y or Latitude	Other Location Description:
POD Number:	X or Longitude	Y or Latitude	Other Location Description:
POD Number:	X or Longitude	Y or Latitude	Other Location Description:
POD Number:	X or Longitude	Y or Latitude	Other Location Description:
POD Number:	X or Longitude	Y or Latitude	Other Location Description:

FOR OSE INTERNAL USE

Form wr-08

POD DESCRIPTIONS - ATTACHMENT 1

File Number: <u>C-4144</u>	Trn Number: <u>690420</u>
Trans Description (optional): <u>MON</u>	

**NEW MEXICO STATE ENGINEER OFFICE
PERMIT TO EXPLORE**

SPECIFIC CONDITIONS OF APPROVAL

- 17-1A Depth of the well shall not exceed the thickness of the valley fill.
- 17-4 No water shall be appropriated and beneficially used under this permit.
- 17-6 The well authorized by this permit shall be plugged completely using the following method per Rules and Regulations Governing Well Driller Licensing, Construction, Repair and Plugging of Wells; Subsection C of 19.27.4.30 NMAC unless an alternative plugging method is proposed by the well owner and approved by the State Engineer upon completion of the permitted use. All pumping appurtenance shall be removed from the well prior to plugging. To plug a well, the entire well shall be filled from the bottom upwards to ground surface using a tremie pipe. The bottom of the tremie shall remain submerged in the sealant throughout the entire sealing process; other placement methods may be acceptable and approved by the state engineer. The well shall be plugged with an office of the state engineer approved sealant for use in the plugging of non-artesian wells. The well driller shall cut the casing off at least four (4) feet below ground surface and fill the open hole with at least two vertical feet of approved sealant. The driller must fill or cover any open annulus with sealant. Once the sealant has cured, the well driller or well owner may cover the seal with soil. A Plugging Report for said well shall be filed with the Office of the State Engineer in a District Office within 30 days of completion of the plugging.
- 17-7 The Permittee shall utilize the highest and best technology available to ensure conservation of water to the maximum extent practical.

Trn Desc: C 04144 POD12-46

File Number: C 04144

Trn Number: 690620

**NEW MEXICO STATE ENGINEER OFFICE
PERMIT TO EXPLORE**

SPECIFIC CONDITIONS OF APPROVAL (Continued)

- 17-B The well shall be drilled by a driller licensed in the State of New Mexico in accordance with 72-12-12 NMSA 1978. A licensed driller shall not be required for the construction of a well driven without the use of a drill rig, provided that the casing shall not exceed two and three-eighths (2 3/8) inches outside diameter.
- 17-C The well driller must file the well record with the State Engineer and the applicant within 30 days after the well is drilled or driven. It is the well owner's responsibility to ensure that the well driller files the well record.
The well driller may obtain the well record form from any District Office or the Office of the State Engineer website.
- 17-P The well shall be constructed, maintained, and operated to prevent inter-aquifer exchange of water and to prevent loss of hydraulic head between hydrogeologic zones.
- 17-Q The State Engineer retains jurisdiction over this permit.
- 17-R Pursuant to section 72-8-1 NMSA 1978, the permittee shall allow the State Engineer and OSE representatives entry upon private property for the performance of their respective duties, including access to the ditch or acequia to measure flow and also to the well for meter reading and water level measurement.
- LOG The Point of Diversion C 04144 POC28 must be completed and the Well Log filed on or before 03/25/2022.
- LOG The Point of Diversion C 04144 POD12 must be completed and the Well Log filed on or before 03/25/2022.

Trn Desc: C 04144 POD12-46

File Number: C 04144

Trn Number: 690620

**NEW MEXICO STATE ENGINEER OFFICE
PERMIT TO EXPLORE**

SPECIFIC CONDITIONS OF APPROVAL (Continued)

LOG The Point of Diversion C 04144 POD13 must be completed and the Well Log filed on or before 03/25/2022.

LOG The Point of Diversion C 04144 POD14 must be completed and the Well Log filed on or before 03/25/2022.

LOG The Point of Diversion C 04144 POD15 must be completed and the Well Log filed on or before 03/25/2022.

LOG The Point of Diversion C 04144 POD16 must be completed and the Well Log filed on or before 03/25/2022.

LOG The Point of Diversion C 04144 POD17 must be completed and the Well Log filed on or before 03/25/2022.

LOG The Point of Diversion C 04144 POD18 must be completed and the Well Log filed on or before 03/25/2022.

LOG The Point of Diversion C 04144 POD19 must be completed and the Well Log filed on or before 03/25/2022.

LOG The Point of Diversion C 04144 POD20 must be completed and the Well Log filed on or before 03/25/2022.

LOG The Point of Diversion C 04144 POD21 must be completed and the Well Log filed on or before 03/25/2022.

LOG The Point of Diversion C 04144 POD22 must be completed and the Well Log filed on or before 03/25/2022.

Trn Desc: C 04144 POD12-46

File Number: C 04144

Trn Number: 690620

**NEW MEXICO STATE ENGINEER OFFICE
PERMIT TO EXPLORE**

SPECIFIC CONDITIONS OF APPROVAL (Continued)

LOG The Point of Diversion C 04144 POD23 must be completed and the Well Log filed on or before 03/25/2022.

LOG The Point of Diversion C 04144 POD24 must be completed and the Well Log filed on or before 03/25/2022.

LOG The Point of Diversion C 04144 POD25 must be completed and the Well Log filed on or before 03/25/2022.

LOG The Point of Diversion C 04144 POD26 must be completed and the Well Log filed on or before 03/25/2022.

LOG The Point of Diversion C 04144 POD27 must be completed and the Well Log filed on or before 03/25/2022.

LOG The Point of Diversion C 04144 POD29 must be completed and the Well Log filed on or before 03/25/2022.

LOG The Point of Diversion C 04144 POD30 must be completed and the Well Log filed on or before 03/25/2022.

LOG The Point of Diversion C 04144 POD31 must be completed and the Well Log filed on or before 03/25/2022.

LOG The Point of Diversion C 04144 POD32 must be completed and the Well Log filed on or before 03/25/2022.

LOG The Point of Diversion C 04144 POD33 must be completed and the Well Log filed on or before 03/25/2022.

Trn Desc: C 04144 POD12-46

File Number: C 04144

Trn Number: 690620

**NEW MEXICO STATE ENGINEER OFFICE
PERMIT TO EXPLORE**

SPECIFIC CONDITIONS OF APPROVAL (Continued)

LOG The Point of Diversion C 04144 POD34 must be completed and the Well Log filed on or before 03/25/2022.

LOG The Point of Diversion C 04144 POD35 must be completed and the Well Log filed on or before 03/25/2022.

LOG The Point of Diversion C 04144 POD36 must be completed and the Well Log filed on or before 03/25/2022.

LOG The Point of Diversion C 04144 POD37 must be completed and the Well Log filed on or before 03/25/2022.

LOG The Point of Diversion C 04144 POD38 must be completed and the Well Log filed on or before 03/25/2022.

LOG The Point of Diversion C 04144 POD39 must be completed and the Well Log filed on or before 03/25/2022.

LOG The Point of Diversion C 04144 POD40 must be completed and the Well Log filed on or before 03/25/2022.

LOG The Point of Diversion C 04144 POD41 must be completed and the Well Log filed on or before 03/25/2022.

LOG The Point of Diversion C 04144 POD42 must be completed and the Well Log filed on or before 03/25/2022.

LOG The Point of Diversion C 04144 POD43 must be completed and the Well Log filed on or before 03/25/2022.

Trn Desc: C 04144 POD12-46

File Number: C 04144

Trn Number: 690620

NEW MEXICO STATE ENGINEER OFFICE
PERMIT TO EXPLORE

SPECIFIC CONDITIONS OF APPROVAL (Continued)

- LOG The Point of Diversion C 04144 POD44 must be completed and the Well Log filed on or before 03/25/2022.
- LOG The Point of Diversion C 04144 POD45 must be completed and the Well Log filed on or before 03/25/2022.
- LOG The Point of Diversion C 04144 POD46 must be completed and the Well Log filed on or before 03/25/2022.

IT IS THE PERMITTEES RESPONSIBILITY TO OBTAIN ALL AUTHORIZATIONS AND PERMISSIONS TO DRILL ON PROPERTY OF OTHER OWNERSHIP BEFORE COMMENCING ACTIVITIES UNDER THIS PERMIT.

ACTION OF STATE ENGINEER

Notice of Intention Rcvd:	Date Rcvd. Corrected:
Formal Application Rcvd: 03/10/2021	Pub. of Notice Ordered:
Date Returned - Correction:	Affidavit of Pub. Filed:

This application is approved provided it is not exercised to the detriment of any others having existing rights, and is not contrary to the conservation of water in New Mexico nor detrimental to the public welfare of the state; and further subject to the specific conditions listed previously.

Witness my hand and seal this 25 day of Mar A.D., 2021

John R. D Antonio, Jr., P.E., State Engineer

By:

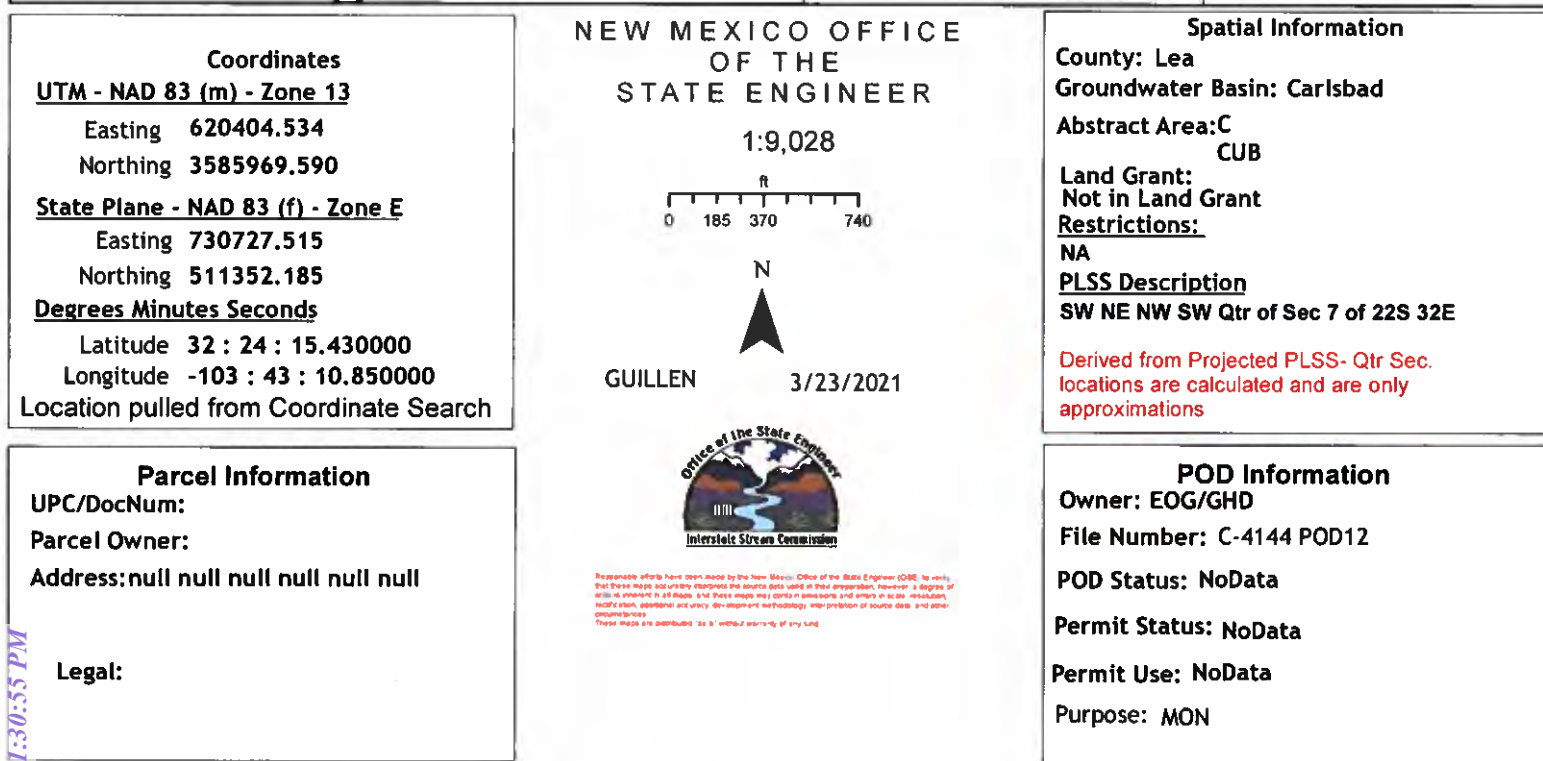
JUAN HERNADEZ

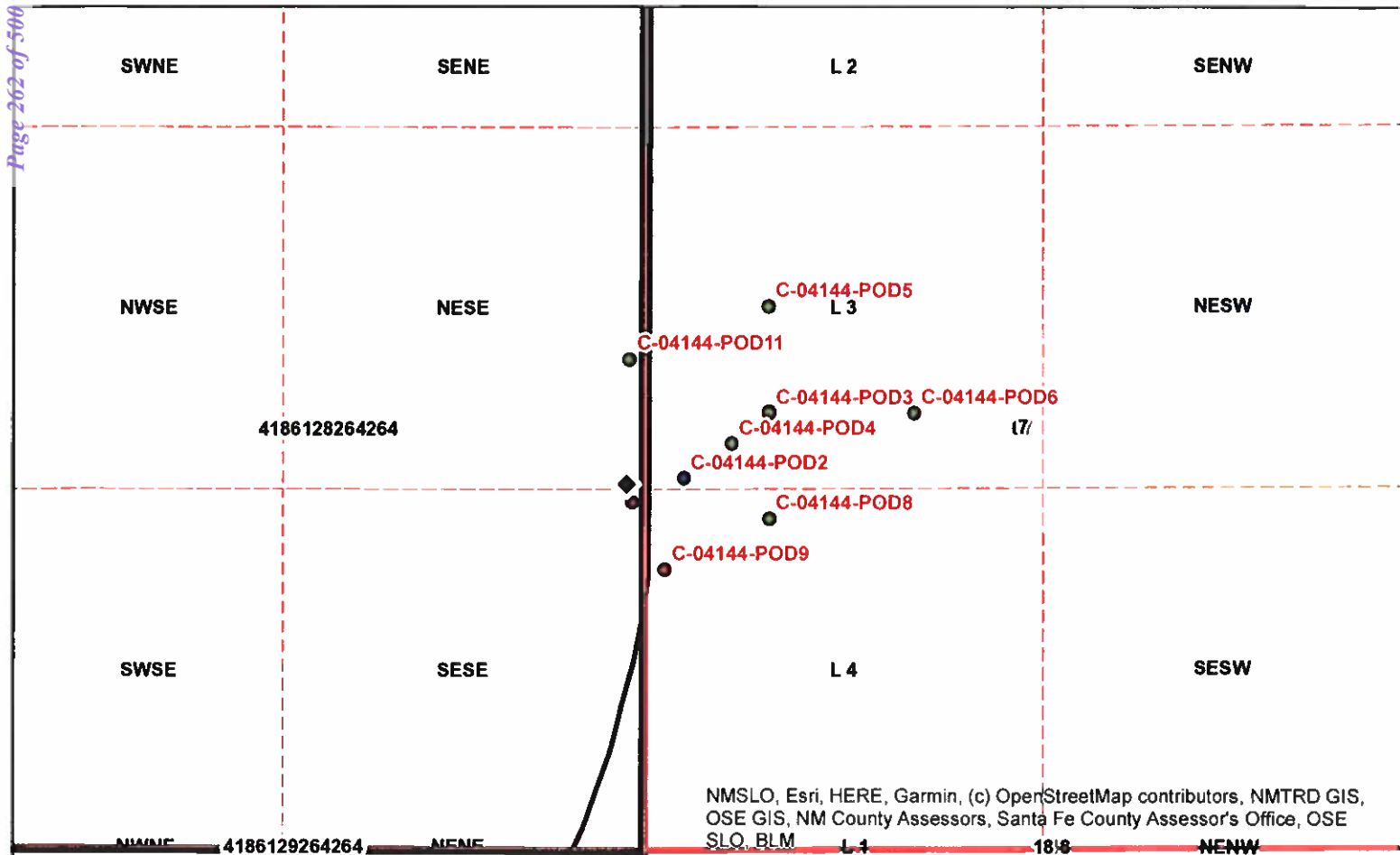


Trn Desc: C 04144 POD12-46

File Number: C 04144

Trn Number: 690620





Coordinates

UTM - NAD 83 (m) - Zone 13

Easting 620082.236
 Northing 3585762.152

State Plane - NAD 83 (ft) - Zone E

Easting 729665.704
 Northing 510678.108

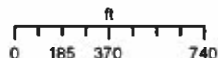
Degrees Minutes Seconds

Latitude 32 : 24 : 8.820000
 Longitude -103 : 43 : 23.280000

Location pulled from Coordinate Search

NEW MEXICO OFFICE OF THE STATE ENGINEER

1:9,028



N

GUILLEN

3/23/2021



Reasonable efforts have been made by the New Mexico Office of the State Engineer (OSE) to verify that these maps and surveys represent the source data used in their preparation, however, a degree of error is inherent in all maps, and these maps may contain some errors and omissions. No warranty, express or implied, is made by the OSE for the accuracy, completeness, or timeliness of the information contained herein. These maps are distributed "as is" without warranty of any kind.

Spatial Information

County: Eddy

Groundwater Basin: Carlsbad

Abstract Area: C
 CUB

Land Grant:
 Not in Land Grant
 Restrictions:

NA

PLSS Description

SESENESE Qtr of Sec 12 of 022S 031E

Derived from CADNSDI- Qtr Sec. locations are calculated and are only approximations

Parcel Information

UPC/DocNum: 4186128264264

Parcel Owner: BUREAU OF LAND

Address: null null null

Legal: Quarter: NE S: 12 T: 22S R: 31E Quarter: NW S: 12 T: 22S R: 31E Quarter: SW S: 12 T: 22S R: 31E Quarter: SE S: 12 T: 22S R: 31E ALL MAP# 280-12 LOC CARLSBAD EXEMPT

POD Information

Owner: EOG/GHD

File Number: C-4144 POD13

POD Status: NoData

Permit Status: NoData

Permit Use: NoData

Purpose: MON

◆ Coord Search Location

New Mexico State Trust Lands



Chaves County Parcels 2020



Eddy County Parcels 2020



Sections



BLM Land Grant

PLSSTownship

PLSSFirstDiv...

PLSSSecond...

GIS WATERS
ODs

Subsurface Estate

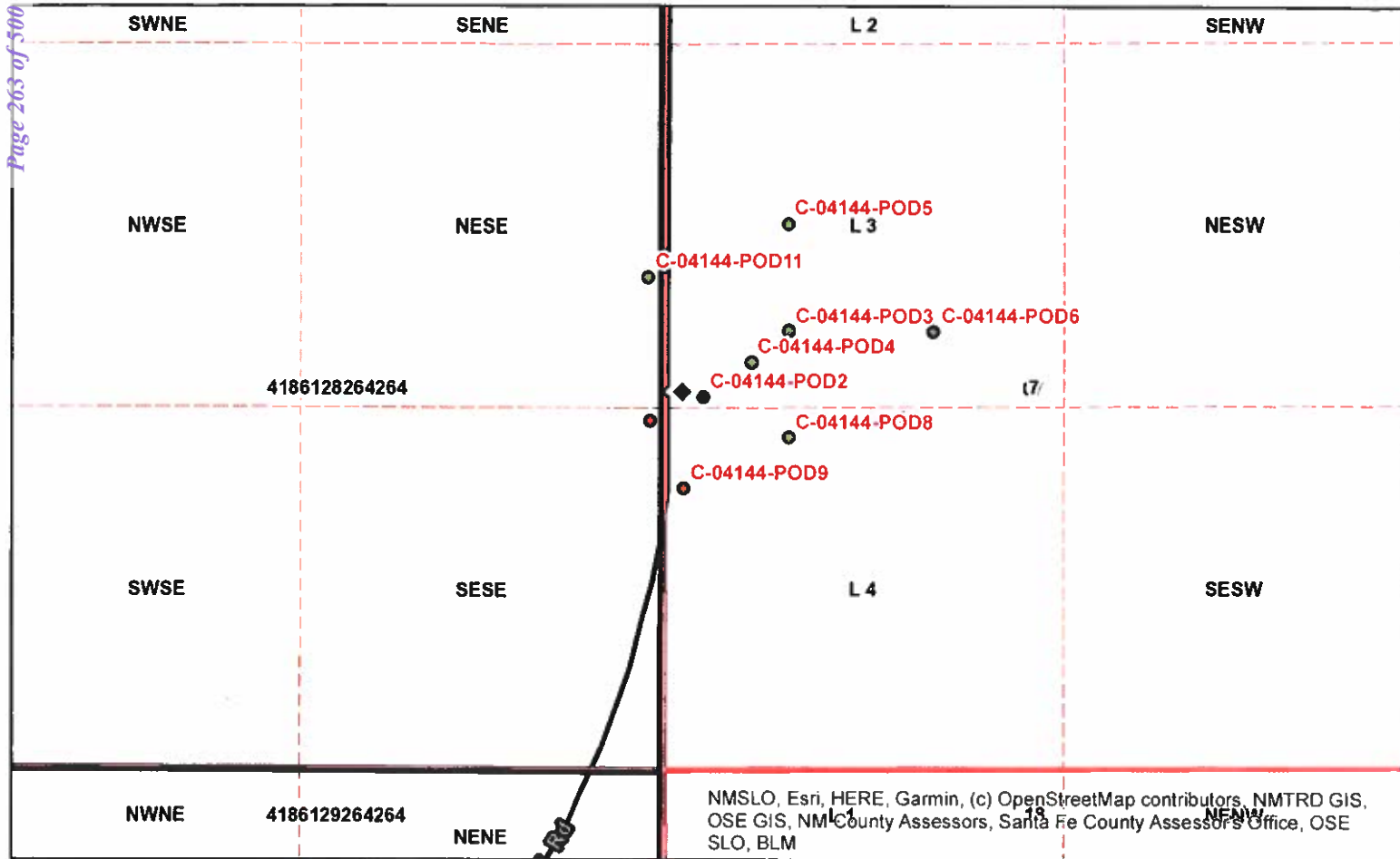


Surface Estate



Both Estates

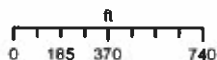
- Active
- Pending
- Plugged



Coordinates
UTM - NAD 83 (m) - Zone 13
 Easting 620122.848
 Northing 3585774.649
State Plane - NAD 83 (f) - Zone E
 Easting 729799.221
 Northing 510718.284
Degrees Minutes Seconds
 Latitude 32 : 24 : 9.210000
 Longitude -103 : 43 : 21.720000
 Location pulled from Coordinate Search

NEW MEXICO OFFICE
 OF THE
 STATE ENGINEER

1:9,028



GUILLEN

3/23/2021



Reasonable efforts have been made by the New Mexico Office of the State Engineer (OSE) to ensure that these maps accurately represent the source data used in their production. However, a degree of error is inherent in all maps. In these maps, certain lines, points, and areas are shown. No warranty, representation, or guarantee is made by the OSE regarding the accuracy, completeness, or timeliness of the information contained in these maps. The user assumes all responsibility for the use of the information contained in these maps. The OSE is not responsible for any errors or omissions in these maps.

Spatial Information

County: Lea
Groundwater Basin: Carlsbad
Abstract Area: C
CUB
Land Grant:
 Not in Land Grant
Restrictions:
 NA
PLSS Description
 SW SW NW SW Qtr of Sec 7 of 22S 32E
 Derived from Projected PLSS- Qtr Sec.
 locations are calculated and are only
 approximations

Parcel Information
UPC/DocNum:
Parcel Owner:
 Address: null null null null null null

Legal:

POD Information

Owner: EOG/GHD
File Number: C-4144 POD14
POD Status: NoData
Permit Status: NoData
Permit Use: NoData
Purpose: MON

◆ Coord Search
 Location

**New Mexico State
 Trust Lands**

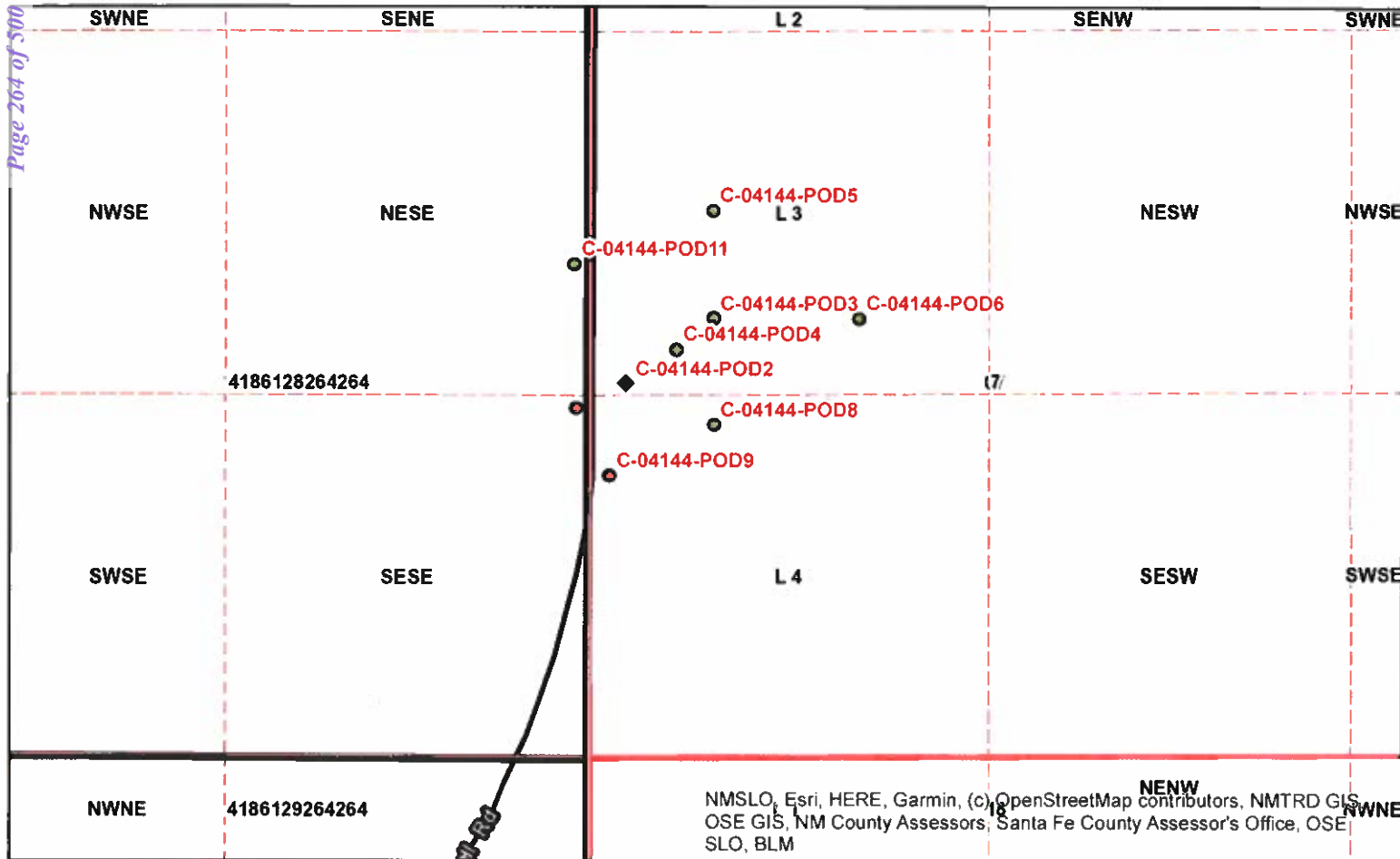
□ Chaves County
 Parcels 2020
 □ Eddy County
 Parcels 2020
 □ Sections
 BLM Land
 Grant

□ PLSSTownship
 □ PLSSFirstDiv...
 □ PLSSSecond...

**GIS WATERS
 ODs**

Subsurface
 Estate
 Surface Estate
 Both Estates

● Active
 ● Pending
 ● Plugged



Coordinates
UTM - NAD 83 (m) - Zone 13
 Easting 620142.755
 Northing 3585770.575
State Plane - NAD 83 (f) - Zone E
 Easting 729864.457
 Northing 510704.508
Degrees Minutes Seconds
 Latitude 32 : 24 : 9.070000
 Longitude -103 : 43 : 20.960000
 Location pulled from Coordinate Search

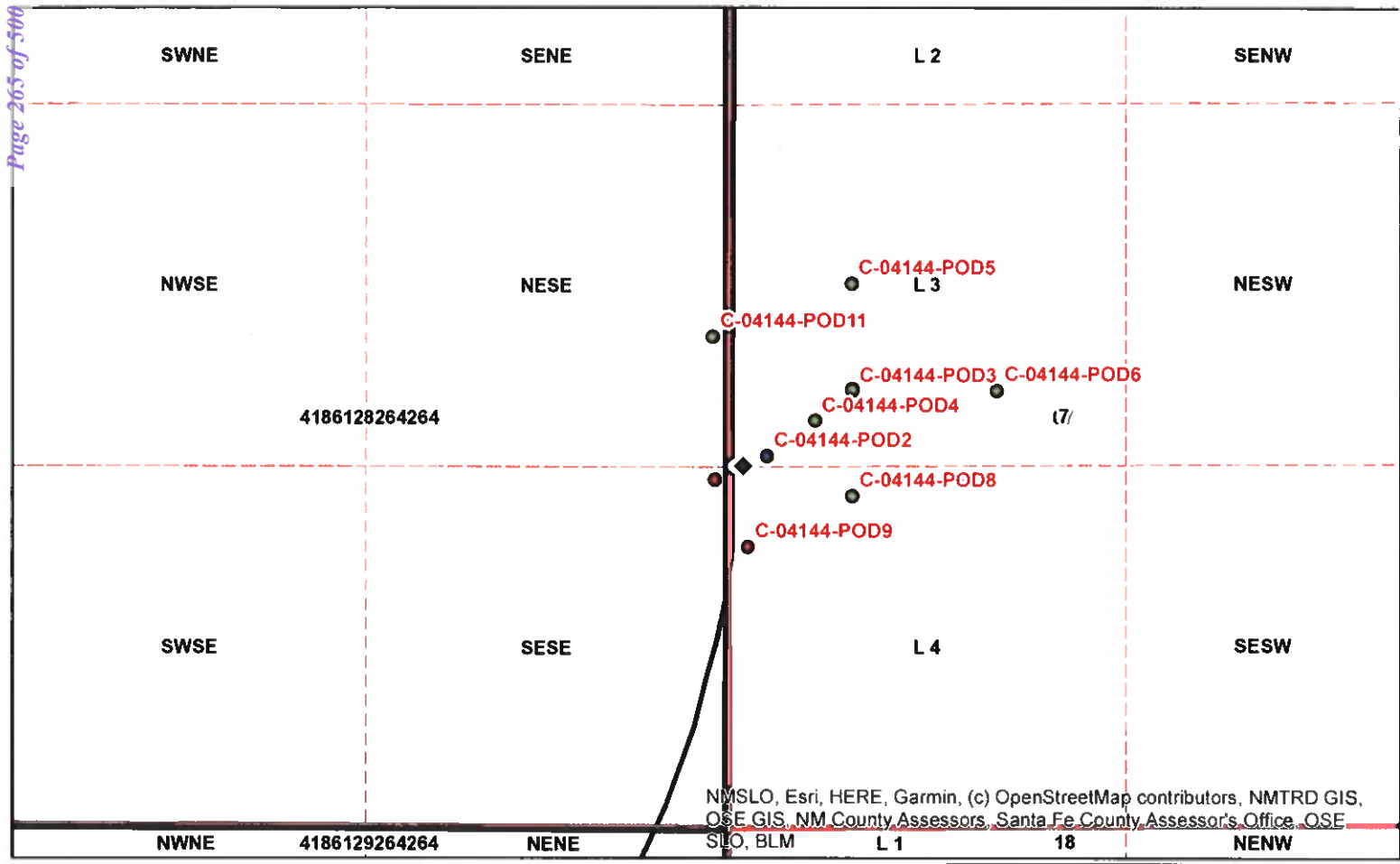
NEW MEXICO OFFICE
 OF THE
 STATE ENGINEER
 1:9,028
 0 185 370 740
 N
 GUILLEN 3/23/2021


Spatial Information
 County: Lea
 Groundwater Basin: Carlsbad
 Abstract Area: C
 CUB
 Land Grant:
 Not in Land Grant
 Restrictions:
 NA
PLSS Description
 SW SW NW SW Qtr of Sec 7 of 22S 32E
 Derived from Projected PLSS- Qtr Sec.
 locations are calculated and are only
 approximations

Parcel Information
 UPC/DocNum:
 Parcel Owner:
 Address: null null null null null null
 Legal:

POD Information
 Owner: EOG/GHD
 File Number: C-4144 POD15
 POD Status: NoData
 Permit Status: NoData
 Permit Use: NoData
 Purpose: MON

- Coord Search Location
- New Mexico State Trust Lands
 - Subsurface Estate
 - Surface Estate
 - Both Estates
- Chaves County Parcels 2020
- Eddy County Parcels 2020
- Sections
- BLM Land Grant
- PLSS Township
- PLSS First Div...
- PLSS Second...
- Active
- Pending
- Plugged



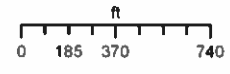
Coordinates
UTM - NAD 83 (m) - Zone 13
Easting 620119.658
Northing 3585757.364
State Plane - NAD 83 (f) - Zone E
Easting 729788.399
Northing 510661.629
Degrees Minutes Seconds
Latitude 32 : 24 : 8.650000
Longitude -103 : 43 : 21.850000
Location pulled from Coordinate Search

Parcel Information
UPC/DocNum:
Parcel Owner:
Address:null null null null null null

Legal:

NEW MEXICO OFFICE
OF THE
STATE ENGINEER

1:9,028



GUILLÉN 3/23/2021



Responses were prepared by the New Mexico Office of the State Engineer (OSE) to all (1) that this map accurately represents the source data used in their preparation, however, a degree of error is inherent in all maps, and these maps are as accurate as the source data and the methods used in their preparation, and (2) that these maps are not intended to be used for any purpose other than the one for which they were prepared. These maps are distributed as a public service and are not a warranty of any kind.

Spatial Information
County: Lea
Groundwater Basin: Carlsbad
Abstract Area: C
CUB
Land Grant:
Not in Land Grant
Restrictions:
NA
PLSS Description
NW NW SW SW Qtr of Sec 7 of 22S 32E

Derived from Projected PLSS- Qtr Sec.
locations are calculated and are only
approximations

POD Information
Owner: EOG/GHD
File Number: C-4144 POD16
POD Status: NoData
Permit Status: NoData
Permit Use: NoData
Purpose: MON

- ◆ Coord Search Location

GIS WATERS

ODs

 - Active
 - Pending
 - Plugged
- New Mexico State Trust Lands**

 - Subsurface Estate
 - Surface Estate
 - Both Estates
- Chaves County Parcels 2020

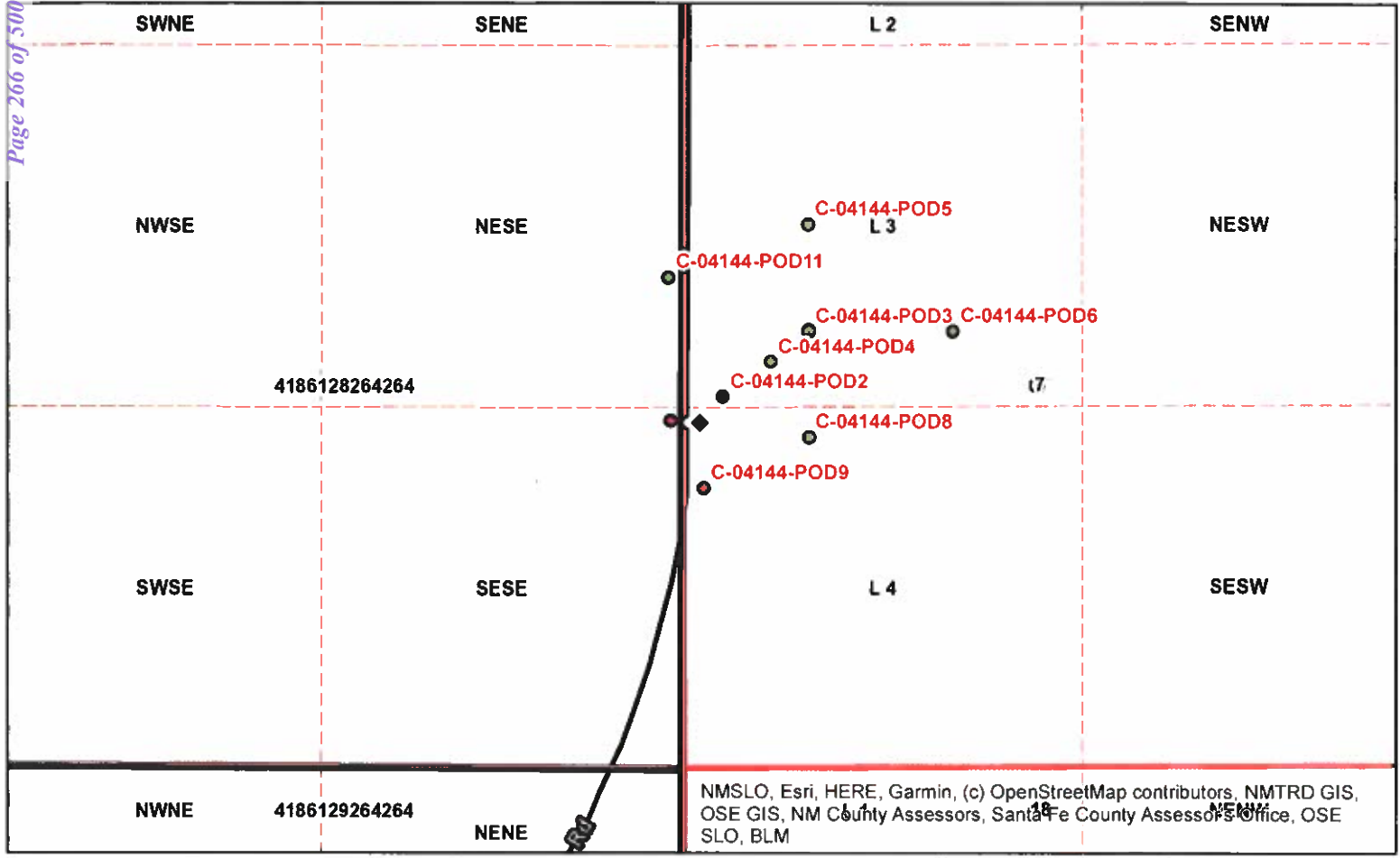
□ Eddy County Parcels 2020

□ Sections


□ BLM Land Grant
- PLSSTownship

□ PLSSFirstDiv...

□ PLSSSecond...



Coordinates
UTM - NAD 83 (m) - Zone 13
Easting 620121.431
Northing 3585740.137
State Plane - NAD 83 (f) - Zone E
Easting 729793.866
Northing 510605.067
Degrees Minutes Seconds
Latitude 32 : 24 : 8.090000
Longitude -103 : 43 : 21.790000
Location pulled from Coordinate Search

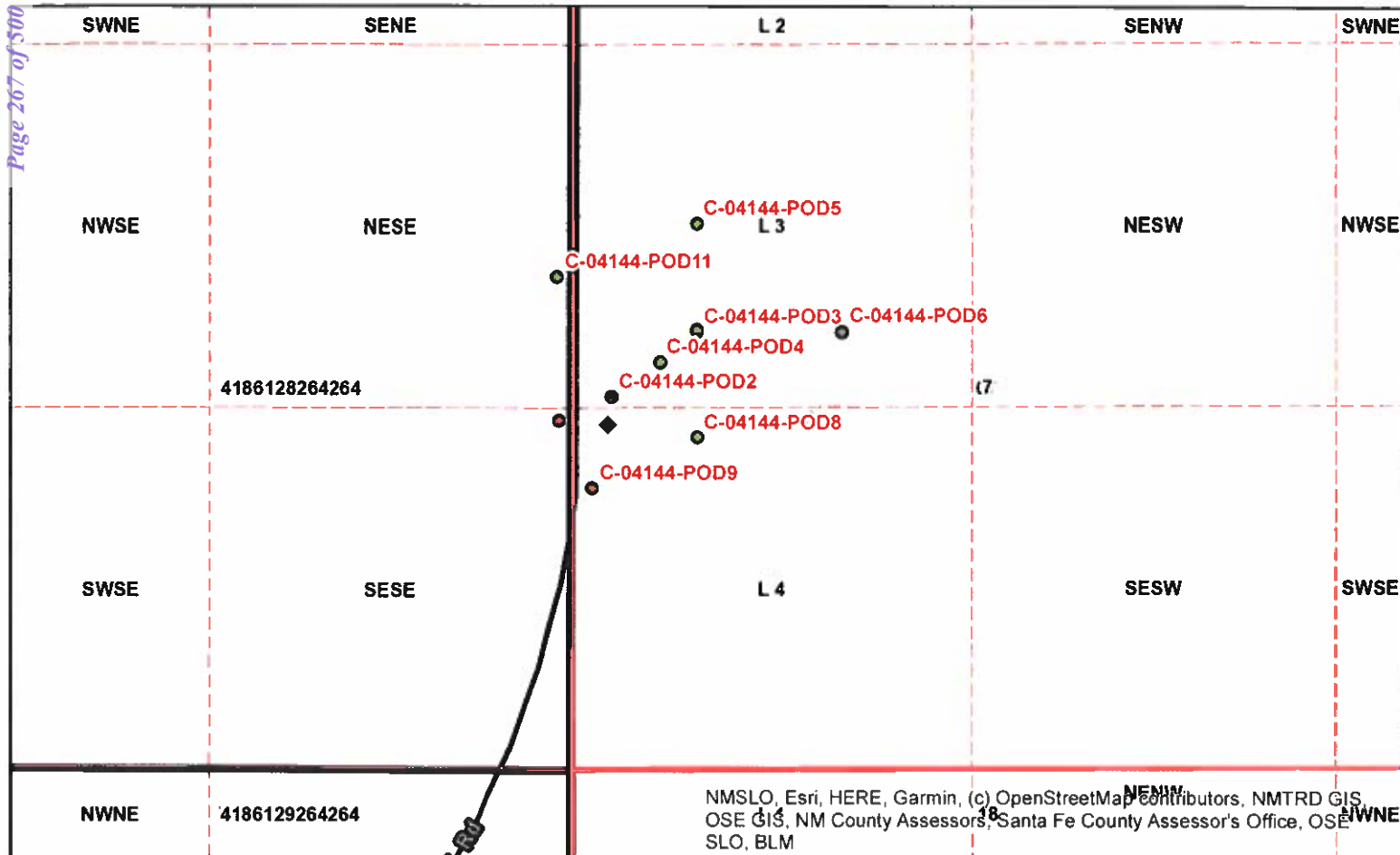
NEW MEXICO OFFICE
OF THE
STATE ENGINEER
1:9,028
0 185 370 740
N
GUILLEN 3/23/2021

Response efforts have been made by the New Mexico Office of the State Engineer (OSE) to verify that these maps accurately represent the source data used in their production, however, a degree of error is inherent in all maps, and these maps may contain errors and omissions. The OSE does not warrant, represent, or assume any liability for the use of these maps. These maps are distributed as is without warranty of any kind.

Spatial Information
County: Lea
Groundwater Basin: Carlsbad
Abstract Area: C
CUB
Land Grant:
Not in Land Grant
Restrictions:
NA
PLSS Description
NW NW SW SW Qtr of Sec 7 of 22S 32E
Derived from Projected PLSS- Qtr Sec.
locations are calculated and are only
approximations

Parcel Information
UPC/DocNum:
Parcel Owner:
Address: null null null null null null
Legal:

POD Information
Owner: EOG/GHD
File Number: C-4144 POD17
POD Status: NoData
Permit Status: NoData
Permit Use: NoData
Purpose: MON

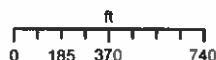
- | | | | |
|-------------------------|-------------------------------------|------------------------------|-------------------|
| ◆ Coord Search Location | New Mexico State Trust Lands | □ Chaves County Parcels 2020 | □ PLSSTownship |
| IS WATERS | Subsurface Estate | □ Eddy County Parcels 2020 | □ PLSSFirstDiv... |
| ODs | Surface Estate | □ Sections | □ PLSSSecond... |
| ● Active | Both Estates | □ BLM Land Grant | |
| ● Pending | | | |
| ● Plugged | | | |



Coordinates
UTM - NAD 83 (m) - Zone 13
 Easting 620142.354
 Northing 3585738.539
State Plane - NAD 83 (f) - Zone E
 Easting 729862.486
 Northing 510599.395
Degrees Minutes Seconds
 Latitude 32 : 24 : 8.030000
 Longitude -103 : 43 : 20.990000
 Location pulled from Coordinate Search

NEW MEXICO OFFICE
 OF THE
 STATE ENGINEER

1:9,028



GUILLEN

3/23/2021



Readers should be aware that the New Mexico Office of the State Engineer (OSE) does not warrant the accuracy of the data used in this report, nor does it warrant the accuracy of the data used in this report, nor does it warrant the accuracy of the data used in this report. These maps are distributed as is, without warranty of any kind.

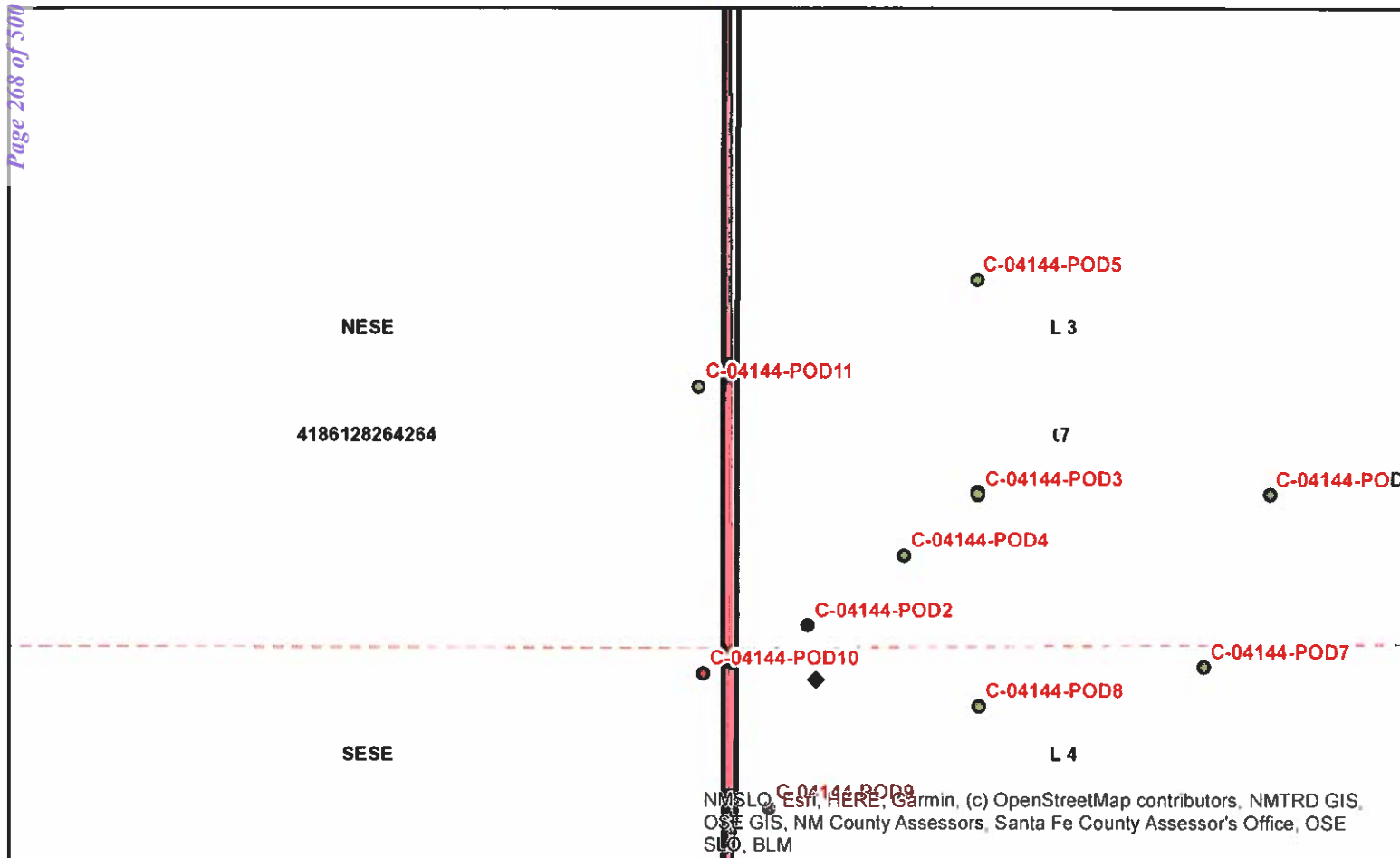
Spatial Information

County: Lea
Groundwater Basin: Carlsbad
Abstract Area: C
CUB
Land Grant:
 Not in Land Grant
Restrictions:
 NA
PLSS Description
 NW NW SW SW Qtr of Sec 7 of 22S 32E
 Derived from Projected PLSS- Qtr Sec
 locations are calculated and are only
 approximations

Parcel Information
 UPC/DocNum:
 Parcel Owner:
 Address:null null null null null null
 Legal:

POD Information
 Owner: EOG/GHD
 File Number: C-4144 POD18
 POD Status: NoData
 Permit Status: NoData
 Permit Use: NoData
 Purpose: MON

- ◆ Coord Search Location
- Active
- Pending
- Plugged
- New Mexico State Trust Lands**
- Subsurface Estate
- Surface Estate
- Both Estates
- Chaves County Parcels 2020
- Eddy County Parcels 2020
- Sections
- BLM Land Grant
- PLSSTownship
- PLSSFirstDiv...
- PLSSSecond...



Coordinates

UTM - NAD 83 (m) - Zone 13

Easting 620151.494

Northing 3585738.957

State Plane - NAD 83 (ft) - Zone E

Easting 729892.486

Northing 510600.577

Degrees Minutes Seconds

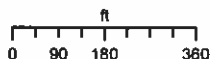
Latitude 32 : 24 : 8.040000

Longitude -103 : 43 : 20.640000

Location pulled from Coordinate Search

NEW MEXICO OFFICE
OF THE
STATE ENGINEER

1:4,514



GUILLEN

3/23/2021



Available electronically from the New Mexico Office of the State Engineer (OSE) to verify that these maps accurately represent the source data used in their preparation. However, a degree of error is inherent in all maps, and these maps may contain errors and omissions. The OSE, its staff, and its contractors do not warrant the accuracy, completeness, or reliability of the data, and the OSE is not responsible for any errors or omissions. These maps are distributed "as is" without warranty of any kind.

Spatial Information

County: Lea

Groundwater Basin: Carlsbad

Abstract Area: C
CUBLand Grant:
Not in Land Grant

Restrictions:

NA

PLSS Description

NW NW SW SW Qtr of Sec 7 of 22S 32E

Derived from Projected PLSS- Qtr Sec.
locations are calculated and are only
approximations

Parcel Information

UPC/DocNum:

Parcel Owner:

Address: null null null null null null

Legal:

POD Information

Owner: EOG/GHD

File Number: C-4144 POD19

POD Status: NoData

Permit Status: NoData

Permit Use: NoData

Purpose: MON

◆ Coord Search
Location

New Mexico State
Trust Lands

IS WATERS
ODs

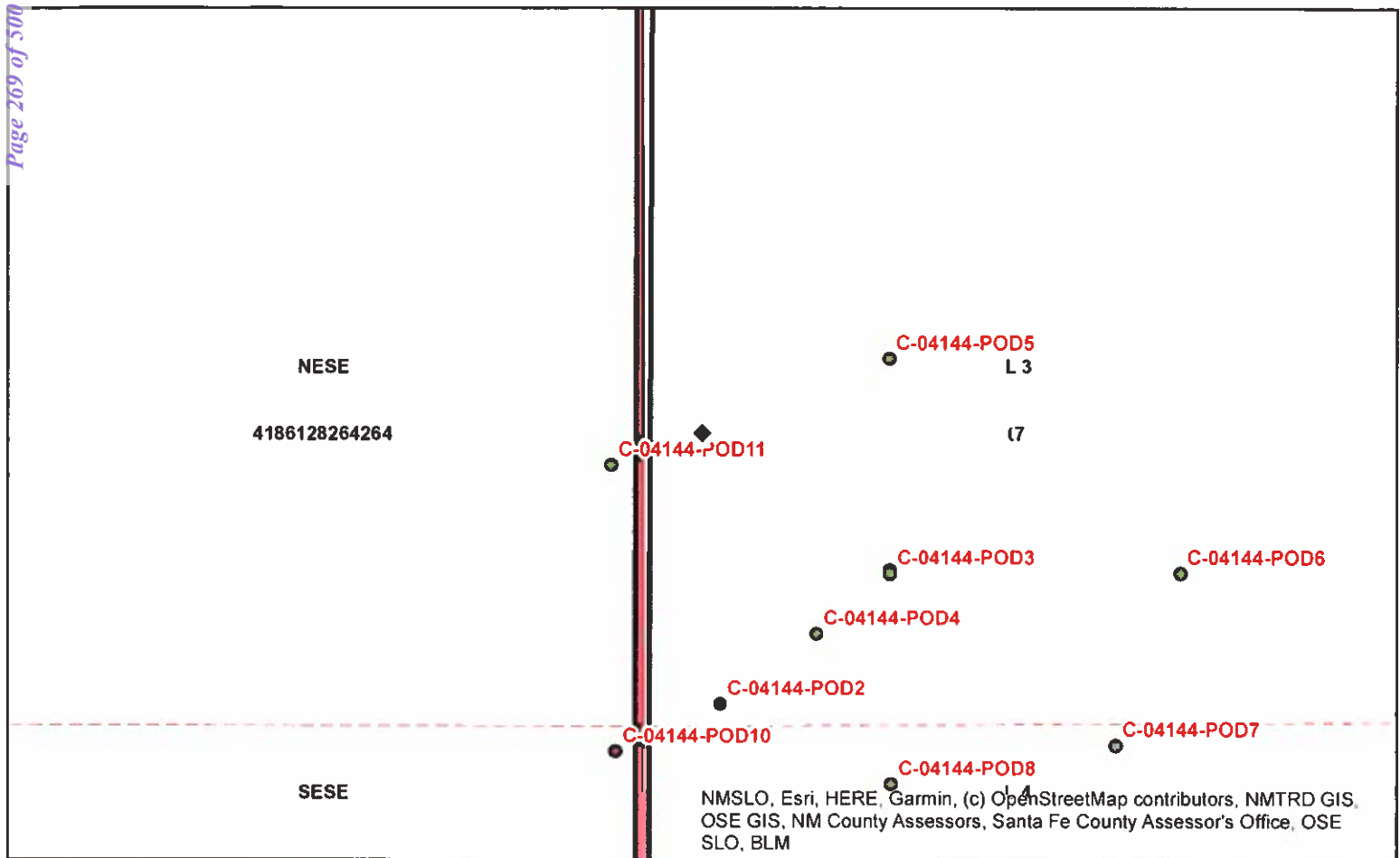
Subsurface
Estate

- Active
- Pending
- Plugged

- Surface Estate
- Both Estates

- Chaves County
Parcels 2020
- Eddy County
Parcels 2020
- Sections
- BLM Land
Grant

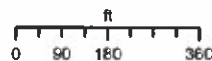
- PLSS Township
- PLSS First Div...
- PLSS Second...



Coordinates
UTM - NAD 83 (m) - Zone 13
 Easting 620134.711
 Northing 3585918.931
State Plane - NAD 83 (f) - Zone E
 Easting 729841.099
 Northing 511191.478
Degrees Minutes Seconds
 Latitude 32 : 24 : 13.890000
 Longitude -103 : 43 : 21.200000
 Location pulled from Coordinate Search

NEW MEXICO OFFICE
 OF THE
 STATE ENGINEER

1:4,514



GUILLEN

3/23/2021



Disclaimer: While no claim is made by the New Mexico Office of the State Engineer (OSE) as to the accuracy of the data used in this projection, however, a degree of error is inherent in all maps. This map is for informational purposes only and should not be used for any other purpose. The OSE is not responsible for any errors or omissions in this map. The OSE is not responsible for any errors or omissions in this map. The OSE is not responsible for any errors or omissions in this map.

Spatial Information
 County: Lea
 Groundwater Basin: Carlsbad
 Abstract Area: C
 CUB
 Land Grant:
 Not in Land Grant
 Restrictions:
 NA
PLSS Description
 NW SW NW SW Qtr of Sec 7 of 22S 32E
 Derived from Projected PLSS- Qtr Sec.
 locations are calculated and are only
 approximations

Parcel Information
 UPC/DocNum:
 Parcel Owner:
 Address: null null null null null null
 Legal:

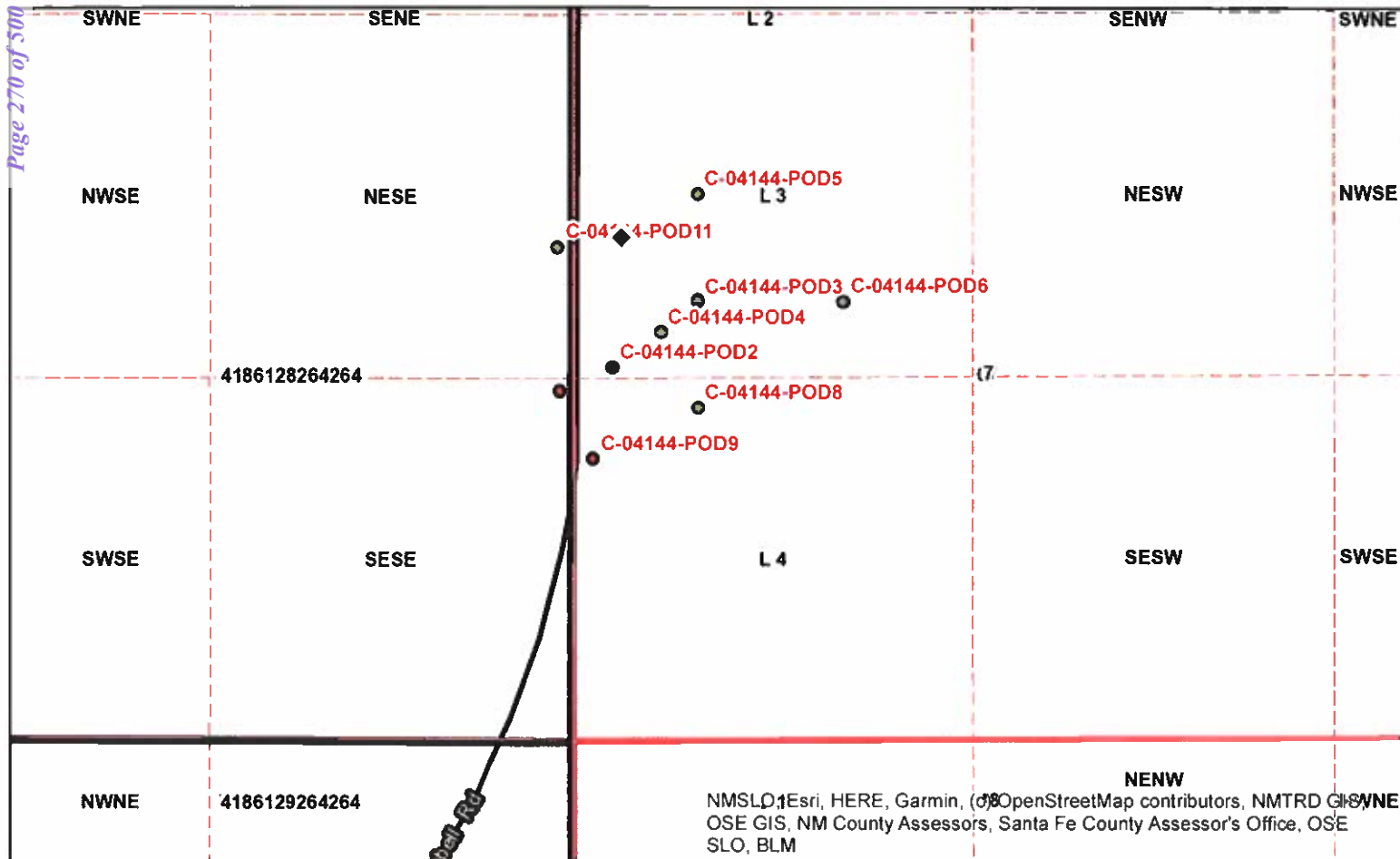
POD Information
 Owner: EOG/GHD
 File Number: C-4144 POD20
 POD Status: NoData
 Permit Status: NoData
 Permit Use: NoData
 Purpose: MON

◆ Coord Search Location
 IS WATERS
 ODs
 ● Active
 ● Pending
 ● Plugged

New Mexico State Trust Lands
 Subsurface Estate
 Surface Estate
 Both Estates

□ Chaves County
 Parcels 2020
 □ Eddy County
 Parcels 2020
 □ Sections
 BLM Land
 Grant

□ PLSSTownship
 □ PLSSFirstDiv...
 □ PLSSSecond...



Coordinates

UTM - NAD 83 (m) - Zone 13

Easting 620154.901

Northing 3585913.013

State Plane - NAD 83 (f) - Zone E

Easting 729907.227

Northing 511171.644

Degrees Minutes Seconds

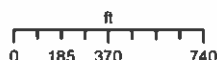
Latitude 32 : 24 : 13.690000

Longitude -103 : 43 : 20.430000

Location pulled from Coordinate Search

NEW MEXICO OFFICE OF THE STATE ENGINEER

1:9,028



N

GUIILLEN

3/23/2021



Response efforts have been made by the New Mexico Office of the State Engineer (OSE) to verify that these maps accurately represent the source data used in their production. However, a degree of error is inherent in all maps, and this is especially true in areas with steep slopes, high elevation, rapid change, position, accuracy, development methodology, interpretation of source data, and other considerations. These maps are provided "as is" without warranty of any kind.

Spatial Information

County: Lea

Groundwater Basin: Carlsbad

Abstract Area: C

CUB

Land Grant:

Not in Land Grant

Restrictions:

NA

PLSS Description

NW SW NW SW Qtr of Sec 7 of 22S 32E

Derived from Projected PLSS- Qtr Sec.
locations are calculated and are only
approximations

Parcel Information

UPC/DocNum:

Parcel Owner:

Address: null null null null null null

Legal:

POD Information

Owner: EOG/GHD

File Number: C-4144 POD21

POD Status: NoData

Permit Status: NoData

Permit Use: NoData

Purpose: MON

Coord Search
Location

New Mexico State
Trust Lands

Chaves County
Parcels 2020

PLSSTownship

GIS WATERS
ODs

Subsurface
Estate

Eddy County
Parcels 2020

PLSSFirstDiv...

Active

Surface Estate

Sections

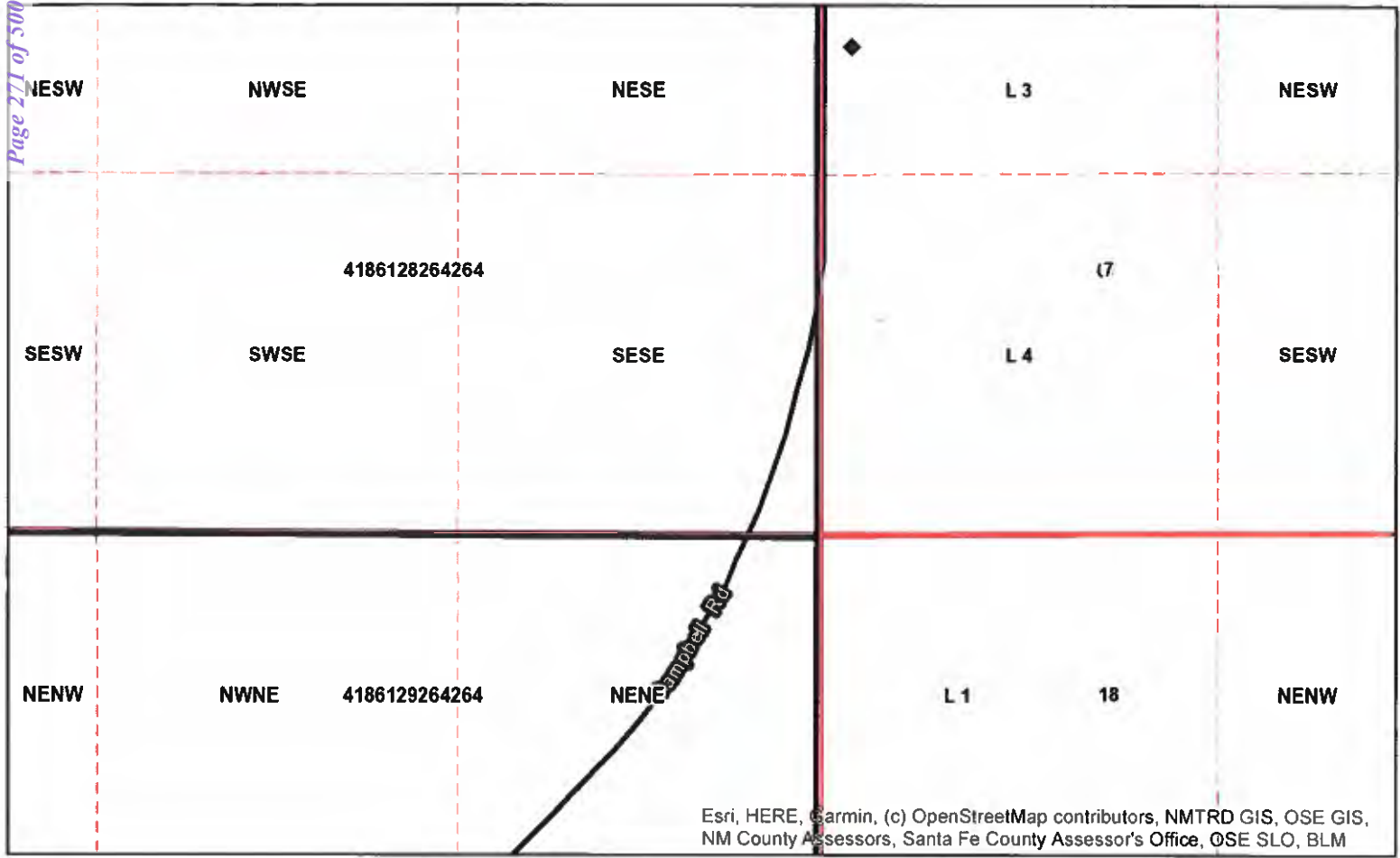
PLSSSecond...

Pending

Both Estates

BLM Land
Grant

Plugged



Coordinates
UTM - NAD 83 (m) - Zone 13
Easting 620136.514
Northing 3585899.241
State Plane - NAD 83 (f) - Zone E
Easting 729846.612
Northing 511126.832
Degrees Minutes Seconds
Latitude 32 : 24 : 13.250000
Longitude -103 : 43 : 21.140000
Location pulled from Coordinate Search

Parcel Information
UPC/DocNum:
Parcel Owner:
Address:null null null null null null

Legal:

NEW MEXICO OFFICE
OF THE
STATE ENGINEER

1:9,028

0 185 370 740

N

GUILLEN 3/24/2021

Office of the State Engineer
Interstate Stream Commission

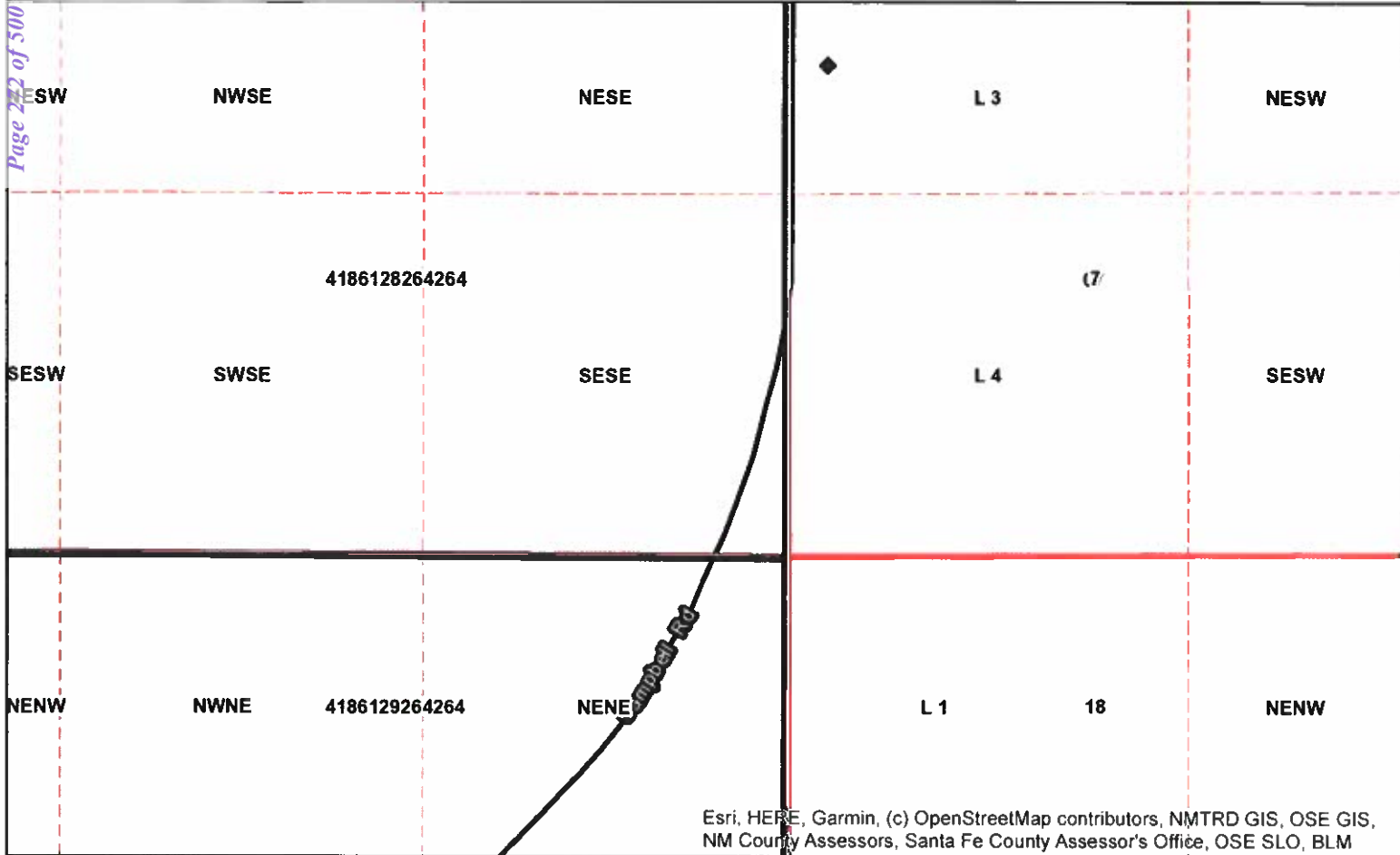
Reasonable efforts have been made by the New Mexico Office of the State Engineer to verify that these maps accurately represent the source data used in their preparation. However, a degree of error is inherent in all maps. All third parties who rely on these maps do so at their own risk. The State Engineer, its employees, and its contractors assume no liability for any errors or omissions. These maps are distributed as is without warranty of any kind.

Spatial Information
County: Lea
Groundwater Basin: Carlsbad
Abstract Area:C
CUB
Land Grant:
Not in Land Grant
Restrictions:
NA
PLSS Description
NW SW NW SW Qtr of Sec 7 of 22S 32E

Derived from Projected PLSS Qtr Sec
locations are calculated and are only
approximations

POD Information
Owner: EOG/GHD
File Number: C-4144 POD22
POD Status: NoData
Permit Status: NoData
Permit Use: NoData
Purpose: MON

- ◆ Coord Search Location
- Eddy County Parcels 2020
- Sections
- BLM Land Grant
- PLSSTownship
- PLSSFirstDiv...
- PLSSSecond...

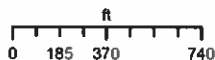


Esri, HERE, Garmin, (c) OpenStreetMap contributors, NMTRD GIS, OSE GIS, NM County Assessors, Santa Fe County Assessor's Office, OSE SLO, BLM

Coordinates
UTM - NAD 83 (m) - Zone 13
 Easting 620145.396
 Northing 3585899.348
State Plane - NAD 83 (f) - Zone E
 Easting 729875.761
 Northing 511126.999
Degrees Minutes Seconds
 Latitude 32 : 24 : 13.250000
 Longitude -103 : 43 : 20.800000
 Location pulled from Coordinate Search

NEW MEXICO OFFICE
OF THE
STATE ENGINEER

1:9,028



GUILLEN 3/24/2021



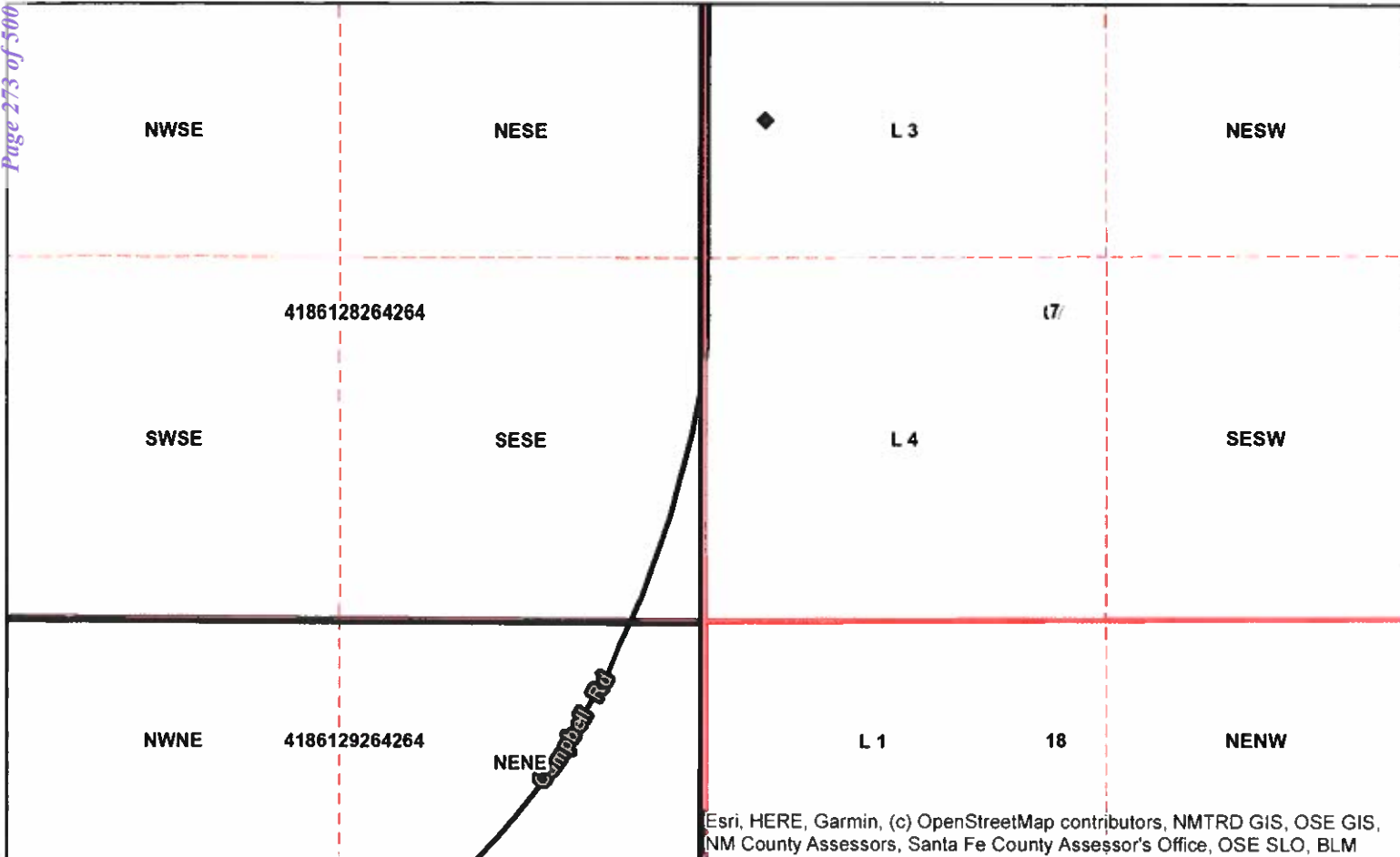
Response where it is based upon the New Mexico Office of the State Engineer (OSE) to verify that these maps accurately represent the source data used in their production. However, a degree of error is inherent in all maps, and these maps may contain errors and a lack of scale resolution, vector plan, positional accuracy, development methodology, interpretation of source data, and other circumstances. These maps are distributed as a virtual reality of any kind.

Spatial Information
 County: Lea
 Groundwater Basin: Carlsbad
 Abstract Area: C
 CUB
 Land Grant:
 Not in Land Grant
Restrictions:
 NA
PLSS Description
 NW SW NW SW Qtr of Sec 7 of 22S 32E
 Derived from Projected PLSS- Qtr Sec.
 locations are calculated and are only
 approximations

Parcel Information
 UPC/DocNum:
 Parcel Owner:
 Address: null null null null null null
 Legal:

POD Information
 Owner: EOG/GHD
 File Number: C-4144 POD23
 POD Status: NoData
 Permit Status: NoData
 Permit Use: NoData
 Purpose: MON

- ◆ Coord Search Location
- Eddy County Parcels 2020
- Sections
- BLM Land Grant
- PLSSTownship
- PLSSFirstDiv...
- PLSSSecond...

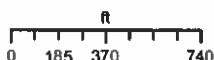


Esri, HERE, Garmin, (c) OpenStreetMap contributors, NMTRD GIS, OSE GIS, NM County Assessors, Santa Fe County Assessor's Office, OSE SLO, BLM

Coordinates
UTM - NAD 83 (m) - Zone 13
 Easting 620169.052
 Northing 3585909.486
State Plane - NAD 83 (f) - Zone E
 Easting 729953.591
 Northing 511159.782
Degrees Minutes Seconds
 Latitude 32 : 24 : 13.570000
 Longitude -103 : 43 : 19.890000
 Location pulled from Coordinate Search

NEW MEXICO OFFICE
OF THE
STATE ENGINEER

1:9,028



N

GUILLEN

3/24/2021



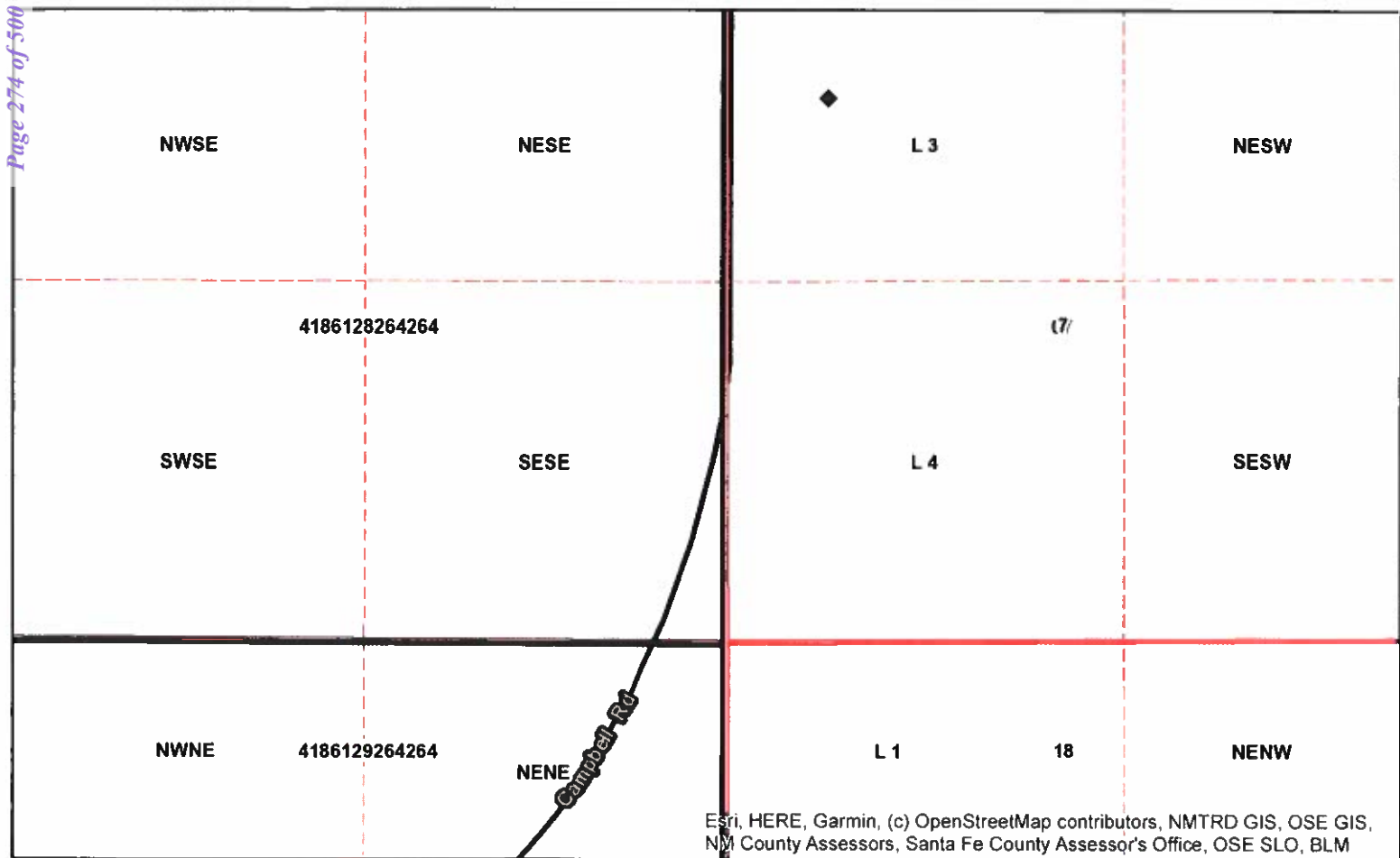
Readme: This map is a work product of the New Mexico Office of the State Engineer (OSE) to be used for informational purposes only. It is not intended to be used for legal or regulatory purposes. The OSE does not warrant the accuracy, completeness, or reliability of the information contained in this map. The OSE is not responsible for any errors or omissions in this map. The OSE is not responsible for any damages or losses resulting from the use of this map. The OSE is not responsible for any claims, damages, or losses resulting from the use of this map. The OSE is not responsible for any claims, damages, or losses resulting from the use of this map.

Spatial Information
 County: Lea
 Groundwater Basin: Carlsbad
 Abstract Area: C
 CUB
 Land Grant:
 Not in Land Grant
 Restrictions:
 NA
PLSS Description
 NW SW NW SW Qtr of Sec 7 of 22S 32E
 Derived from Projected PLSS- Qtr Sec.
 locations are calculated and are only
 approximations

Parcel Information
 UPC/DocNum:
 Parcel Owner:
 Address: null null null null null null
 Legal:

POD Information
 Owner: EOG/GHD
 File Number: C-4144 POD 24
 POD Status: NoData
 Permit Status: NoData
 Permit Use: NoData
 Purpose: MON

- ◆ Coord Search Location
- Eddy County Parcels 2020
- Sections
- BLM Land Grant
- PLSSTownship
- PLSSFirstDiv...
- PLSSSecond...



Esri, HERE, Garmin, (c) OpenStreetMap contributors, NMTRD GIS, OSE GIS, NM County Assessors, Santa Fe County Assessor's Office, OSE SLO, BLM

Coordinates
UTM - NAD 83 (m) - Zone 13

Easting 620214.148
Northing 3585962.076

State Plane - NAD 83 (f) - Zone E

Easting 730102.642
Northing 511331.424

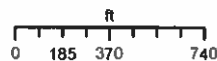
Degrees Minutes Seconds

Latitude 32 : 24 : 15.260000
Longitude -103 : 43 : 18.140000

Location pulled from Coordinate Search

**NEW MEXICO OFFICE
OF THE
STATE ENGINEER**

1:9,028



GUILLEN

3/24/2021



Reproduction of this map is prohibited by the New Mexico Office of the State Engineer (OSE) without the written permission of the OSE. The OSE is not responsible for any errors or omissions in this map. The OSE is not responsible for any damages or losses resulting from the use of this map. The OSE is not responsible for any claims or liabilities resulting from the use of this map. The OSE is not responsible for any claims or liabilities resulting from the use of this map.

Spatial Information

County: Lea
Groundwater Basin: Carlsbad
Abstract Area: C
CUB
Land Grant:
Not in Land Grant
Restrictions:
NA
PLSS Description
SE NW NW SW Qtr of Sec 7 of 22S 32E

Derived from Projected PLSS- Qtr Sec
locations are calculated and are only
approximations

Parcel Information

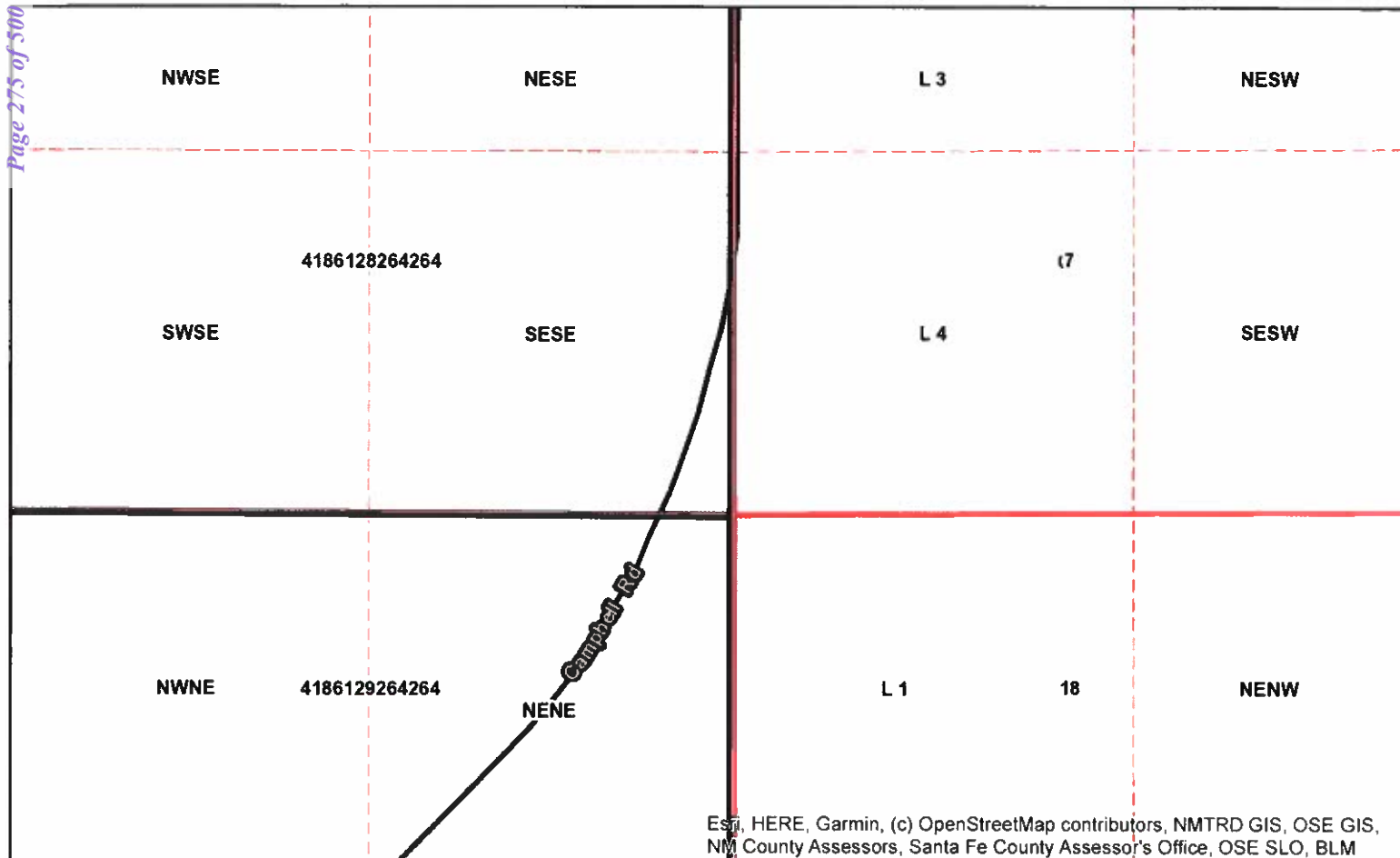
UPC/DocNum:
Parcel Owner:
Address: null null null null null null

Legal:

POD Information

Owner: EOG/GHD
File Number: C-4122 POD25
POD Status: NoData
Permit Status: NoData
Permit Use: NoData
Purpose: MON

- ◆ Coord Search Location
- Eddy County Parcels 2020
- Sections
- BLM Land Grant
- PLSSTownship
- PLSSFirstDiv...
- PLSSSecond...



Esri, HERE, Garmin, (c) OpenStreetMap contributors, NMTRD GIS, OSE GIS, NM County Assessors, Santa Fe County Assessor's Office, OSE SLO, BLM

Coordinates

UTM - NAD 83 (m) - Zone 13

Easting 620212.555

Northing 3585942.345

State Plane - NAD 83 (f) - Zone E

Easting 730097.011

Northing 511266.714

Degrees Minutes Seconds

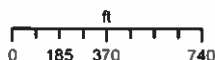
Latitude 32 : 24 : 14.620000

Longitude -103 : 43 : 18.210000

Location pulled from Coordinate Search

NEW MEXICO OFFICE OF THE STATE ENGINEER

1:9,028



N



GUILLEN

3/24/2021



Readers should be aware that the New Mexico Office of the State Engineer (OSE) will verify that these maps accurately represent the source data used in their production. However, a degree of error is inherent in all maps, and these maps may contain errors and omissions. Therefore, the user assumes all responsibility for any errors. These maps are provided as a reference only and are not to be used for any other purpose.

Spatial Information

County: Lea

Groundwater Basin: Carlsbad

Abstract Area: C

CUB

Land Grant:

Not in Land Grant

Restrictions:

NA

PLSS Description

NE SW NW SW Qtr of Sec 7 of 22S 32E

Derived from Projected PLSS- Qtr Sec
locations are calculated and are only
approximations

Parcel Information

UPC/DocNum:

Parcel Owner:

Address: null null null null null null

Legal:

POD Information

Owner: EOG/GHD

File Number: C-4144 POD26

POD Status: NoData

Permit Status: NoData

Permit Use: NoData

Purpose: MON



Eddy County
Parcels 2020



PLSSSecond...



Sections



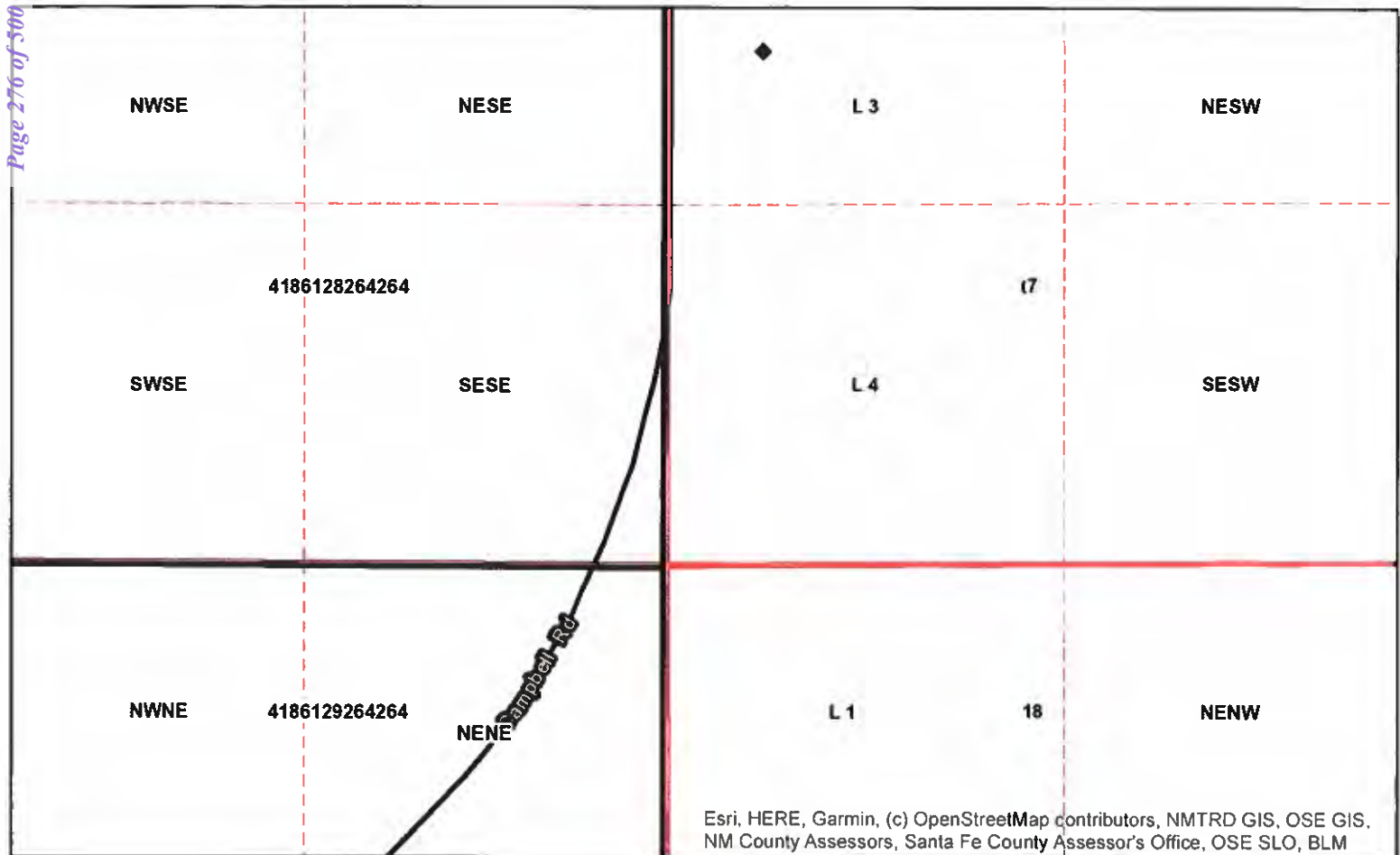
BLM Land
Grant



PLSSTownship



PLSSFirstDiv...

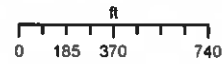


Esri, HERE, Garmin, (c) OpenStreetMap contributors, NMTRD GIS, OSE GIS, NM County Assessors, Santa Fe County Assessor's Office, OSE SLO, BLM

Coordinates
UTM - NAD 83 (m) - Zone 13
Easting 620207.757
Northing 3585928.428
State Plane - NAD 83 (f) - Zone E
Easting 730080.982
Northing 511221.146
Degrees Minutes Seconds
Latitude 32 : 24 : 14.170000
Longitude -103 : 43 : 18.400000
Location pulled from Coordinate Search

NEW MEXICO OFFICE
OF THE
STATE ENGINEER

1:9,028



N

GUILLEN

3/24/2021



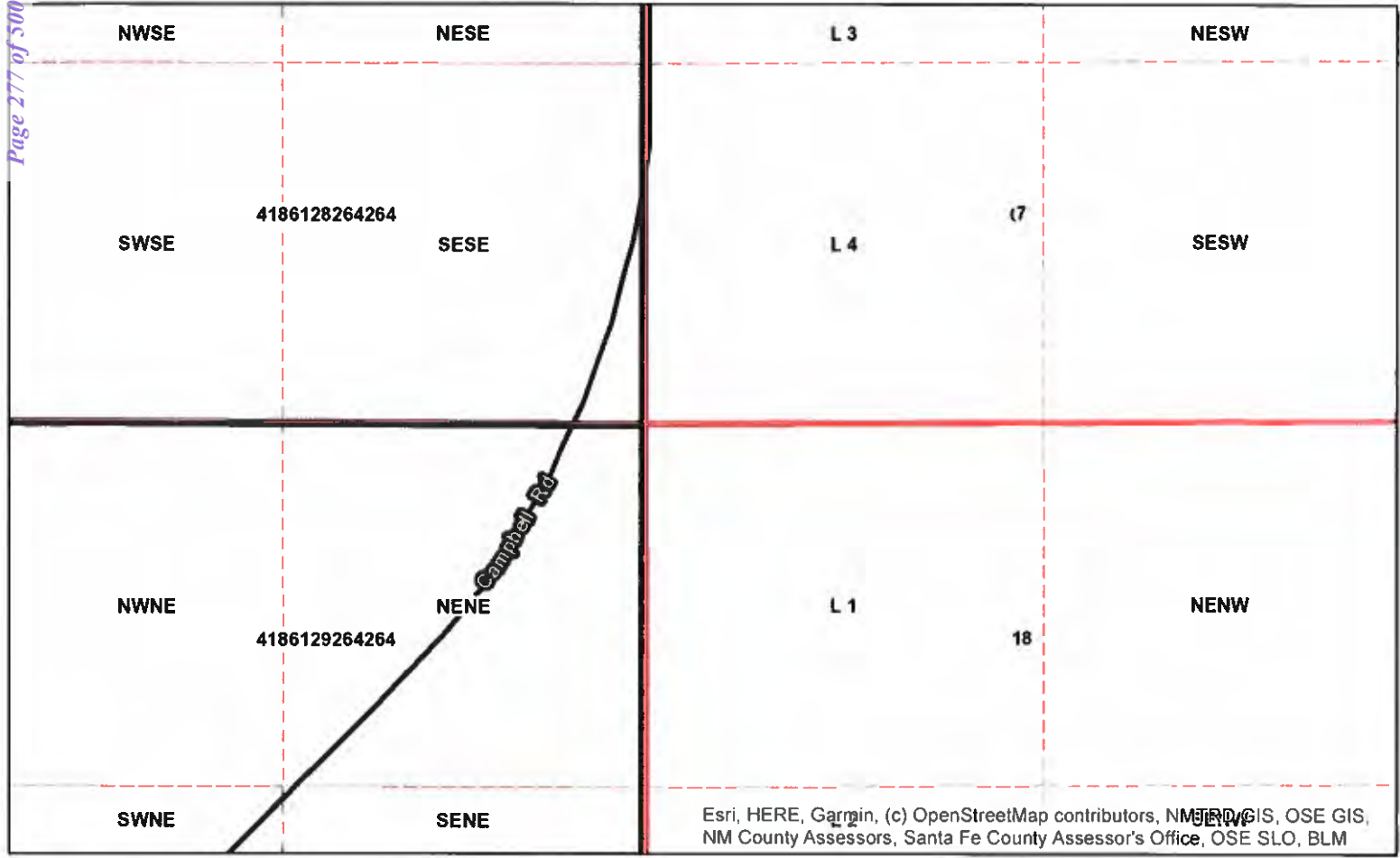
Reasonable efforts have been made by the New Mexico Office of the State Engineer (OSE) to verify that these maps accurately represent the source data used in their preparation, however, a degree of error is involved in all maps, and these maps may contain omissions and errors of omission, commission, positional accuracy, data acquisition methodology, interpretation of source data, and other imperfections. These maps are distributed as a "without warranty of any kind."

Spatial Information
County: Lea
Groundwater Basin: Carlsbad
Abstract Area:C
CUB
Land Grant:
Not in Land Grant
Restrictions:
NA
PLSS Description
NE SW NW SW Qtr of Sec 7 of 22S 32E
Derived from Projected PLSS- Qtr Sec
locations are calculated and are only
approximations

Parcel Information
UPC/DocNum:
Parcel Owner:
Address:null null null null null null
Legal:

POD Information
Owner: EOG/GHD
File Number: C-4144 POD27
POD Status: NoData
Permit Status: NoData
Permit Use: NoData
Purpose: MON

- ◆ Coord Search Location
- Eddy County Parcels 2020
- Sections
- BLM Land Grant
- PLSSTownship
- PLSSFirstDiv...
- PLSSSecond...



Coordinates
UTM - NAD 83 (m) - Zone 13
Easting 620202.253
Northing 3585908.035
State Plane - NAD 83 (f) - Zone E
Easting 730062.503
Northing 511154.341
Degrees Minutes Seconds
Latitude 32 : 24 : 13.510000
Longitude -103 : 43 : 18.620000
Location pulled from Coordinate Search

Parcel Information
UPC/DocNum:
Parcel Owner:
Address:null null null null null null

Legal:

NEW MEXICO OFFICE
OF THE
STATE ENGINEER

1:9,028

0 185 370 740

N

GUILLEN 3/24/2021

Office of the State Engineer
Interstate Stream Commission

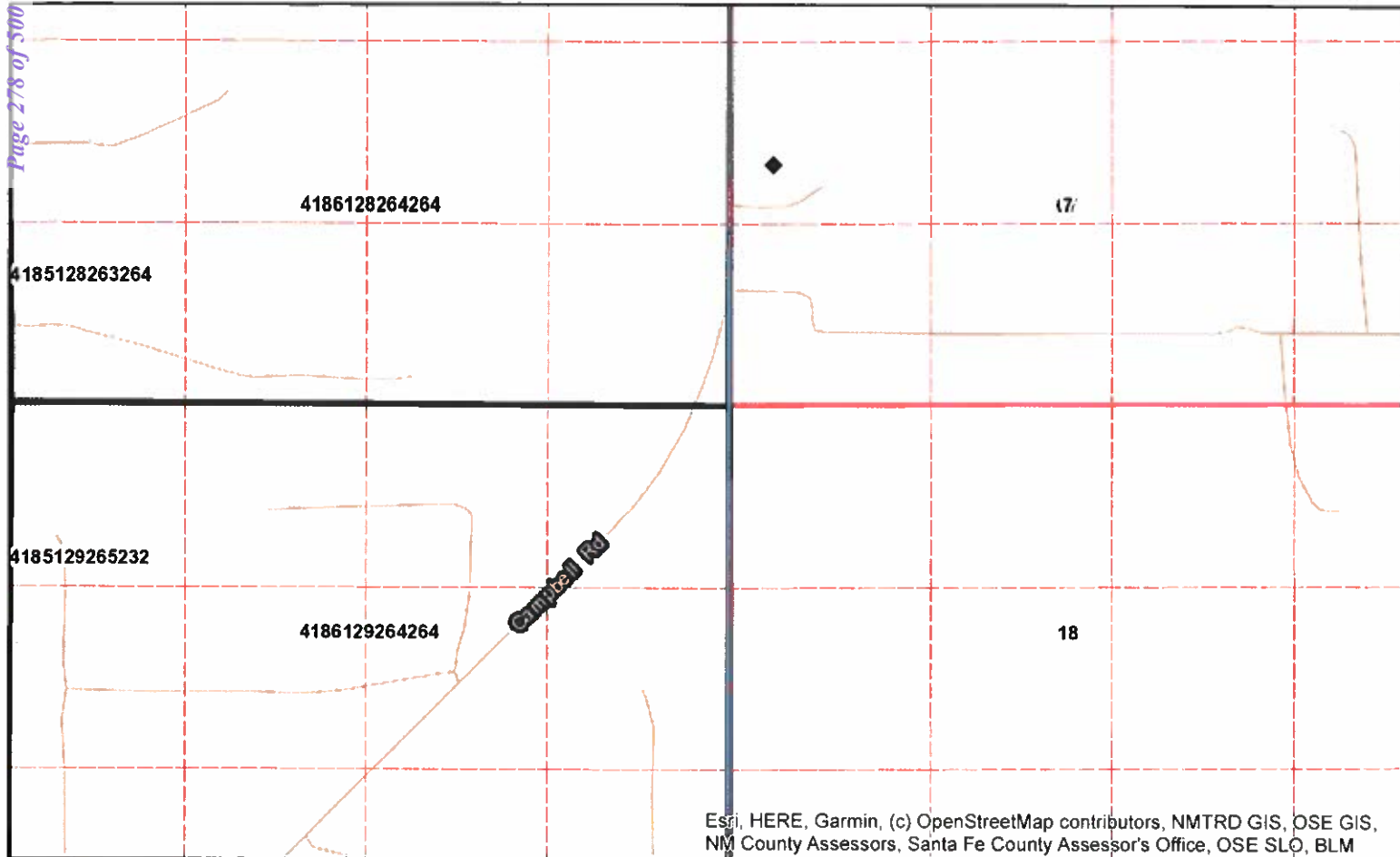
Responsible for the data used in this map is the New Mexico Office of the State Engineer (OSE). It is to be noted that these maps are not intended to be used as a legal document, but rather as a guide. The OSE does not warrant the accuracy of the data used in this map, and the user assumes all responsibility for the use of the data. These maps are distributed "as is" without warranty of any kind.

Spatial Information
County: Lea
Groundwater Basin: Carlsbad
Abstract Area:C
CUB
Land Grant:
Not in Land Grant
Restrictions:
NA
PLSS Description
NW SW NW SW Qtr of Sec 7 of 22S 32E

Derived from Projected PLSS- Qtr Sec
locations are calculated and are only
approximations

POD Information
Owner: EOG/GHD
File Number: C-4144 POD28
POD Status: NoData
Permit Status: NoData
Permit Use: NoData
Purpose: MON

- ☐ Eddy County Parcels 2020
- ☐ Lea County Parcels 2020
- ☐ Sections
- ☐ BLM Land Grant
- ☐ PLSSTownship
- ☐ PLSSFirstDiv...
- ☐ PLSSSecond...



Esri, HERE, Garmin, (c) OpenStreetMap contributors, NMTRD GIS, OSE GIS, NM County Assessors, Santa Fe County Assessor's Office, OSE SLO, BLM

Coordinates

UTM - NAD 83 (m) - Zone 13

Easting 620196.468

Northing 3585889.178

State Plane - NAD 83 (f) - Zone E

Easting 730043.138

Northing 511092.585

Degrees Minutes Seconds

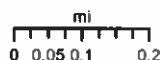
Latitude 32 : 24 : 12.900000

Longitude -103 : 43 : 18.850000

Location pulled from Coordinate Search

NEW MEXICO OFFICE OF THE STATE ENGINEER

1:18,056



GUILLEN

3/24/2021



Readers should be aware that the New Mexico Office of the State Engineer (OSE) does not verify the accuracy of the data used in this report. The OSE is not responsible for any errors or omissions in the data. The OSE is not responsible for any errors or omissions in the data. The OSE is not responsible for any errors or omissions in the data.

Spatial Information

County: Lea

Groundwater Basin: Carlsbad

Abstract Area: C

CUB

Land Grant:

Not in Land Grant

Restrictions:

NA

PLSS Description

NW SW NW SW Qtr of Sec 7 of 22S 32E

Derived from Projected PLSS- Qtr Sec.
locations are calculated and are only
approximations

Parcel Information

UPC/DocNum:

Parcel Owner:

Address: null null null null null null

Legal:

POD Information

Owner: EOG/GHD

File Number: C-4144 POD29

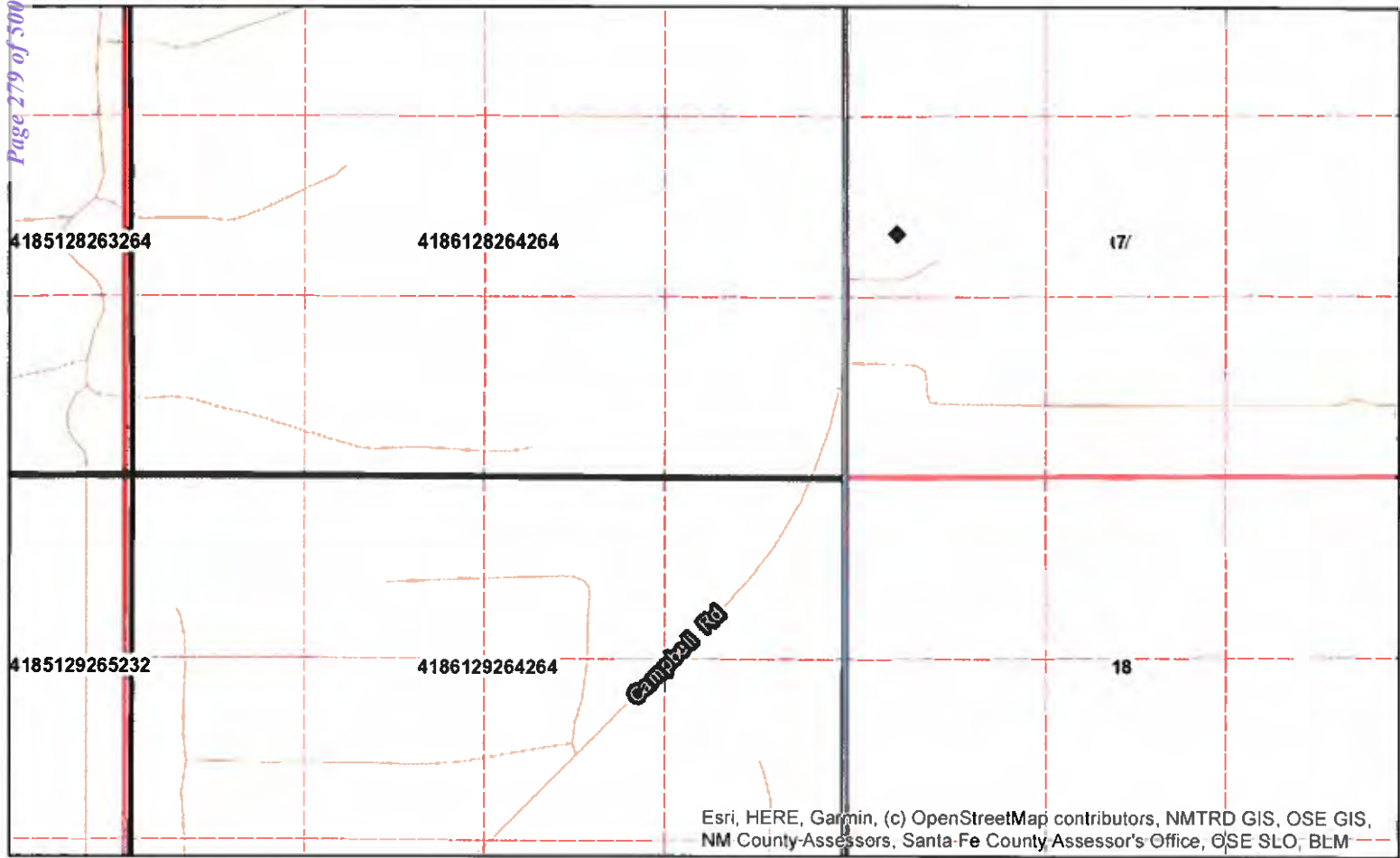
POD Status: NoData

Permit Status: NoData

Permit Use: NoData

Purpose: MON

- ◆ Coord Search Location
- Eddy County Parcels 2020
- Lea County Parcels 2020
- Sections
- BLM Land Grant
- PLSSTownship
- PLSSFirstDiv...
- PLSSSecond...

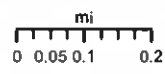


Esri, HERE, Garmin, (c) OpenStreetMap contributors, NMTRD GIS, OSE GIS, NM County-Assessors, Santa Fe County Assessor's Office, OSE SLO, BLM

Coordinates
UTM - NAD 83 (m) - Zone 13
Easting 620215.683
Northing 3585899.264
State Plane - NAD 83 (f) - Zone E
Easting 730106.393
Northing 511125.285
Degrees Minutes Seconds
Latitude 32 : 24 : 13.220000
Longitude -103 : 43 : 18.110000
Location pulled from Coordinate Search

NEW MEXICO OFFICE
OF THE
STATE ENGINEER

1:18,056



GUILLEN

3/24/2021



Response efforts have been made by the New Mexico Office of the State Engineer (OSE) to verify that these maps accurately integrate the source data used in their production; however, a degree of error is inherent in all maps, and these maps may contain omissions and inaccuracies. Revision, modification, and/or deletion of source data and/or other information may occur without notice. These maps are distributed as a "best effort" only.

Spatial Information
County: Lea
Groundwater Basin: Carlsbad
Abstract Area: C
CUB
Land Grant: Not in Land Grant
Restrictions: NA
PLSS Description
NE SW NW SW Qtr of Sec 7 of 22S 32E

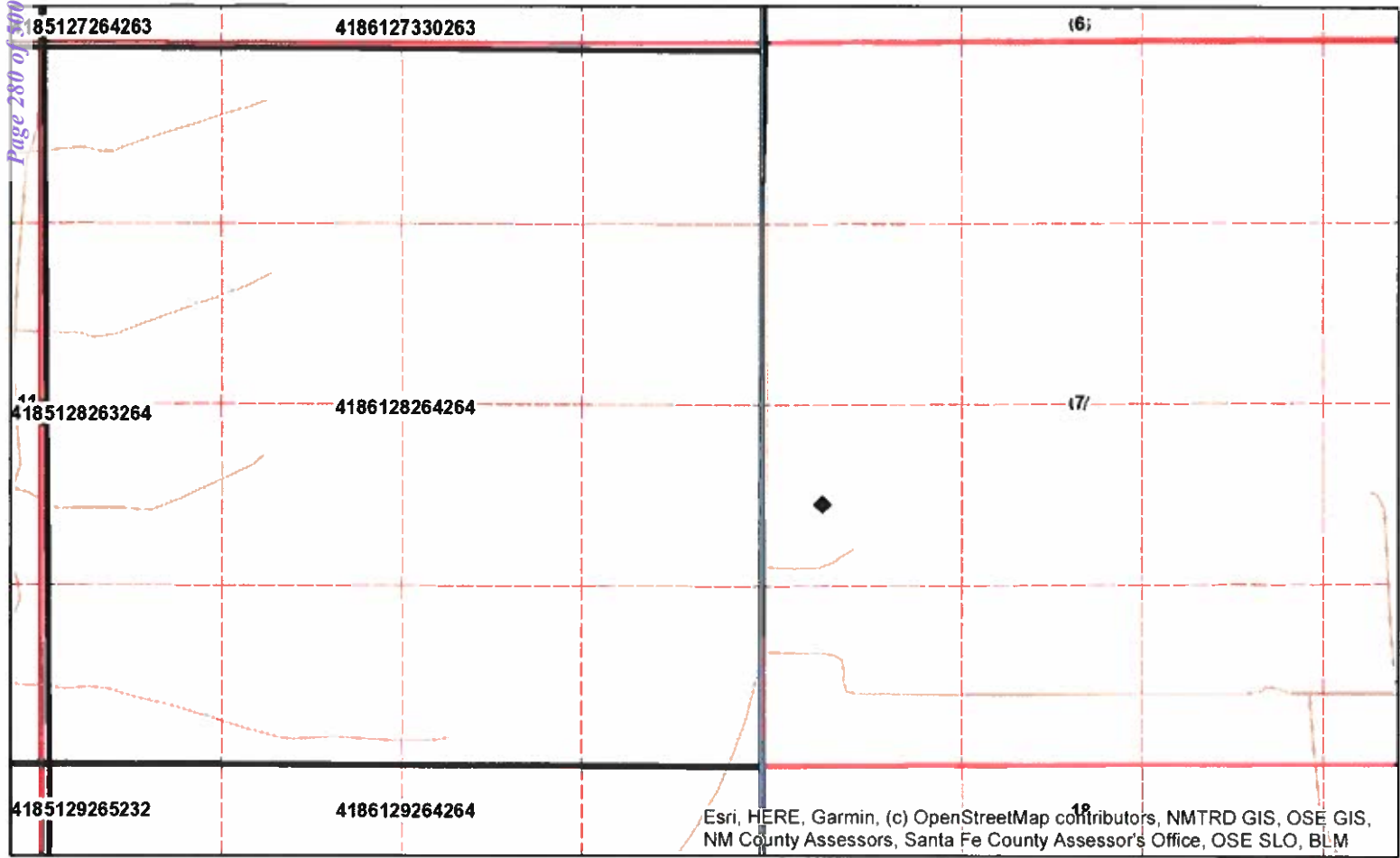
Derived from Projected PLSS- Qtr Sec locations are calculated and are only approximations

Parcel Information
UPC/DocNum:
Parcel Owner:
Address: null null null null null null

Legal:

POD Information
Owner: EOG/GHD
File Number: C-4144 POD30
POD Status: NoData
Permit Status: NoData
Permit Use: NoData
Purpose: MON

- ◆ Coord Search Location
- Eddy County Parcels 2020
- Lea County Parcels 2020
- Sections
- BLM Land Grant
- PLSSTownship
- PLSSFirstDiv...
- PLSSSecond...

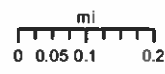


Esri, HERE, Garmin, (c) OpenStreetMap contributors, NMTRD GIS, OSE GIS, NM County Assessors, Santa Fe County Assessor's Office, OSE SLO, BLM

Coordinates
UTM - NAD 83 (m) - Zone 13
Easting 620233.219
Northing 3585940.436
State Plane - NAD 83 (f) - Zone E
Easting 730164.778
Northing 511260.028
Degrees Minutes Seconds
Latitude 32 : 24 : 14.550000
Longitude -103 : 43 : 17.420000
Location pulled from Coordinate Search

NEW MEXICO OFFICE
OF THE
STATE ENGINEER

1:18,056



GUILLEN

3/24/2021



Reasonable efforts have been made by the New Mexico Office of the State Engineer (OSE) to verify that these maps and other information represent the source data used in the preparation. However, a degree of error is inherent in all maps, and these maps may contain errors and omissions. The OSE, its employees, contractors, and others do not warrant the accuracy, completeness, or reliability of the information. These maps are distributed as is without warranty of any kind.

Spatial Information
County: Lea
Groundwater Basin: Carlsbad
Abstract Area: C
CUB
Land Grant:
Not in Land Grant
Restrictions:
NA
PLSS Description
NE SW NW SW Qtr of Sec 7 of 22S 32E

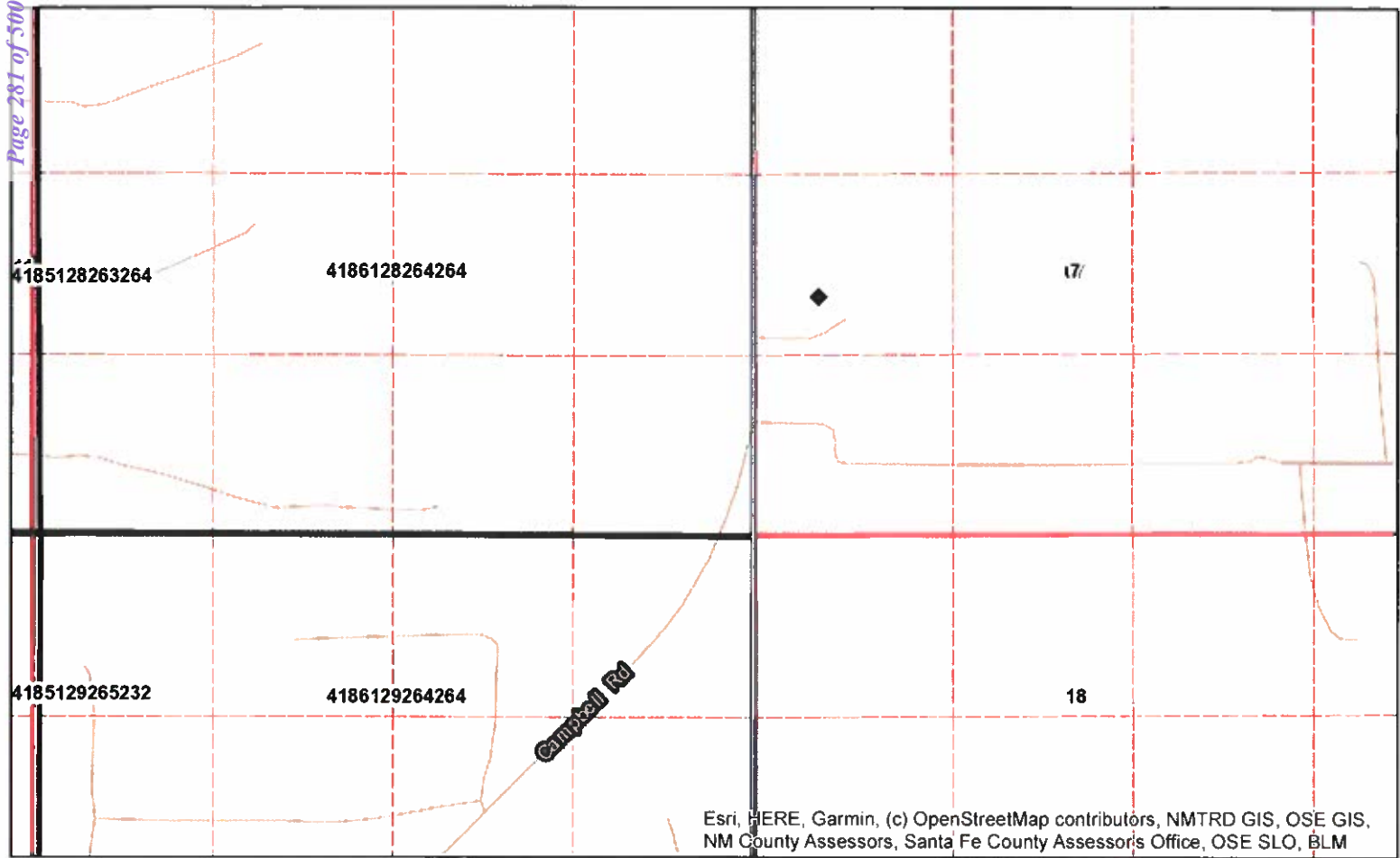
Derived from Projected PLSS- Qtr Sec.
locations are calculated and are only
approximations

Parcel Information
UPC/DocNum:
Parcel Owner:
Address: null null null null null null

Legal:

POD Information
Owner: EOG/GHD
File Number: C-4144 POD31
POD Status: NoData
Permit Status: NoData
Permit Use: NoData
Purpose: MON

- ◆ Coord Search Location
- Eddy County Parcels 2020
- Lea County Parcels 2020
- Sections
- BLM Land Grant
- PLSSTownship
- PLSSFirstDiv...
- PLSSSecond...

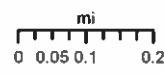


Esri, HERE, Garmin, (c) OpenStreetMap contributors, NMTRD GIS, OSE GIS, NM County Assessors, Santa Fe County Assessor's Office, OSE SLO, BLM

Coordinates
UTM - NAD 83 (m) - Zone 13
Easting 620245.602
Northing 3585888.226
State Plane - NAD 83 (f) - Zone E
Easting 730204.340
Northing 511088.454
Degrees Minutes Seconds
Latitude 32 : 24 : 12.850000
Longitude -103 : 43 : 16.970000
Location pulled from Coordinate Search

NEW MEXICO OFFICE
OF THE
STATE ENGINEER

1:18,056



GUILLEN

3/24/2021



Readme: While this is a map made by the New Mexico Office of the State Engineer (OSE) to verify that their maps and survey integrated the source data used in their processing, there is a degree of error inherent in all maps, and these maps may contain errors and/or not be the latest, most current, available, accurate, complete and technology interpretation of source data. No other promises made. These maps are distributed "as is" without warranty of any kind.

Spatial Information

County: Lea
Groundwater Basin: Carlsbad
Abstract Area: C
CUB
Land Grant:
Not in Land Grant
Restrictions:
NA
PLSS Description
NE SW NW SW Qtr of Sec 7 of 22S 32E

Derived from Projected PLSS- Qtr Sec.
locations are calculated and are only
approximations

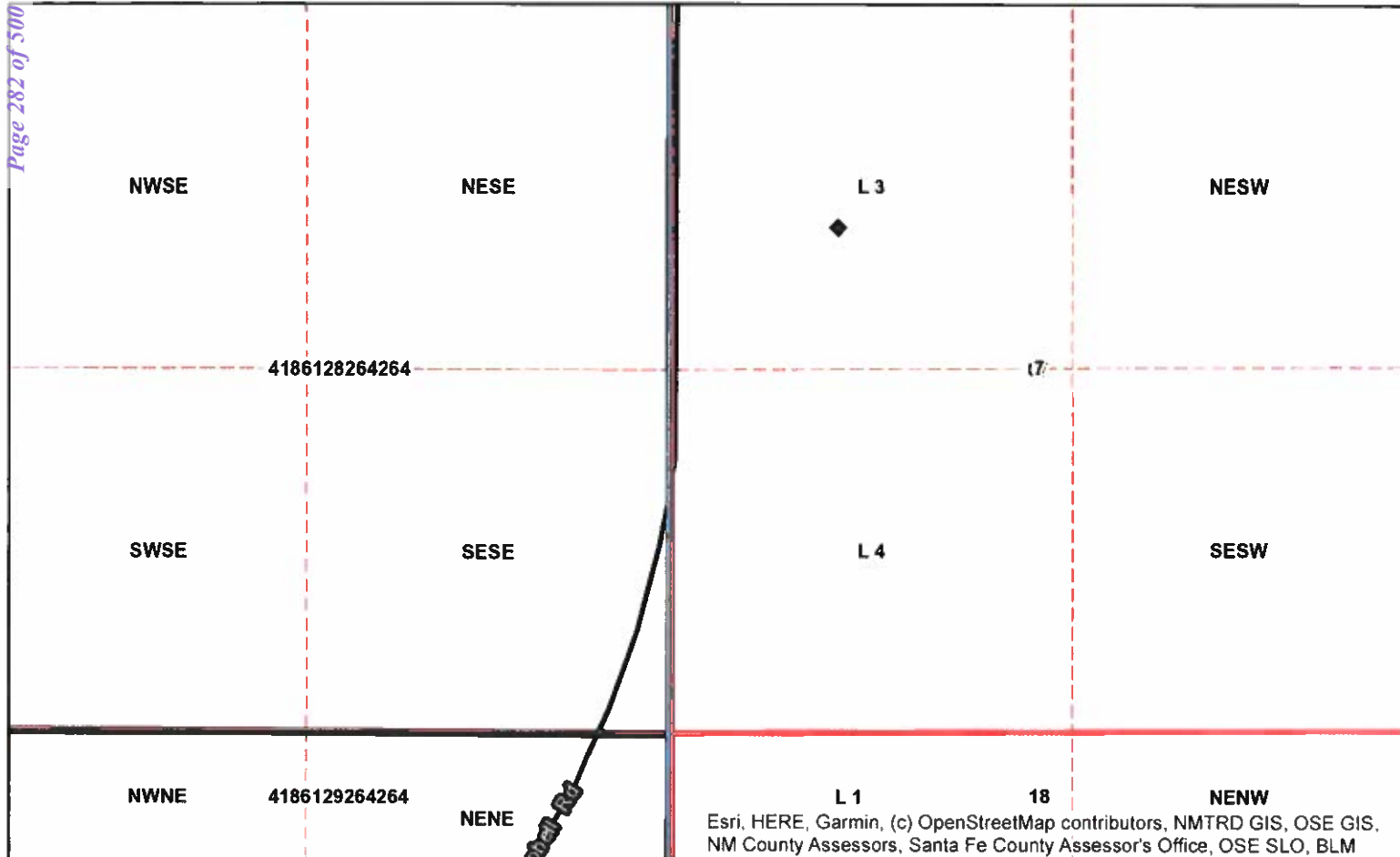
Parcel Information
UPC/DocNum:
Parcel Owner:
Address: null null null null null null

Legal:

POD Information

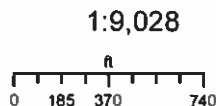
Owner: EOG/GIS
File Number: C-4144 POD32
POD Status: NoData
Permit Status: NoData
Permit Use: NoData
Purpose: MON

- ◆ Coord Search Location
- Eddy County Parcels 2020
- Lea County Parcels 2020
- Sections
- BLM Land Grant
- PLSSTownship
- PLSSFirstDiv...
- PLSSSecond...



Coordinates
UTM - NAD 83 (m) - Zone 13
 Easting 620285.252
 Northing 3585915.496
State Plane - NAD 83 (f) - Zone E
 Easting 730335.004
 Northing 511177.124
Degrees Minutes Seconds
 Latitude 32 : 24 : 13.720000
 Longitude -103 : 43 : 15.440000
 Location pulled from Coordinate Search

NEW MEXICO OFFICE
 OF THE
 STATE ENGINEER



N
 GUILLEN 3/24/2021



Responsible parties have been made by the New Mexico Office of the State Engineer (OSE) to verify that these maps do not contain any errors. The OSE does not warrant the accuracy of the data or the results of the maps. The OSE is not responsible for any errors or omissions in the data or the results of the maps. The OSE is not responsible for any errors or omissions in the data or the results of the maps.

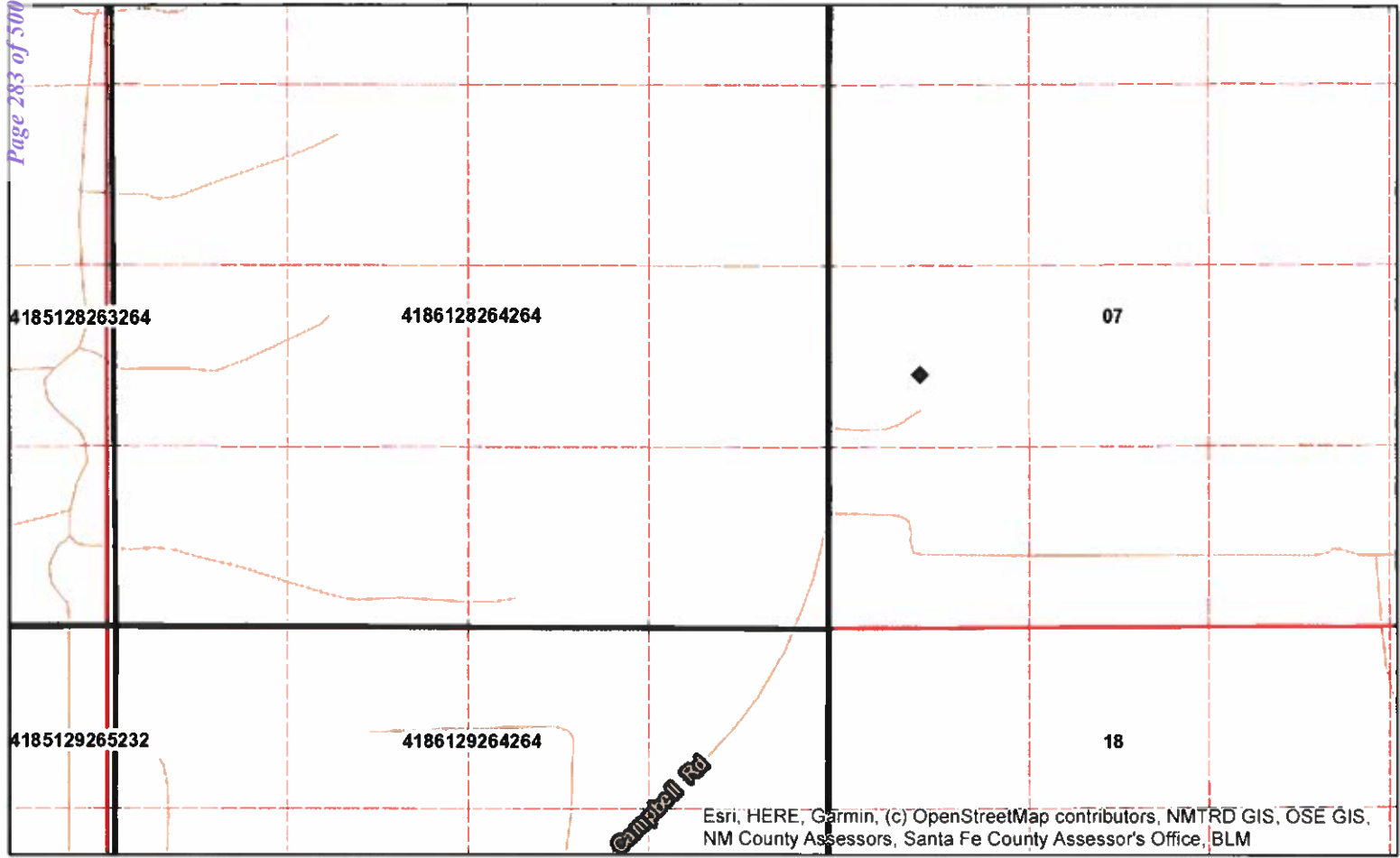
Spatial Information
 County: Lea
 Groundwater Basin: Carlsbad
 Abstract Area: C
 CUB
 Land Grant:
 Not in Land Grant
 Restrictions:
 NA
PLSS Description
 NE SW NW SW Qtr of Sec 7 of 22S 32E
 Derived from Projected PLSS- Qtr Sec.
 locations are calculated and are only
 approximations

Parcel Information
 UPC/DocNum:
 Parcel Owner:
 Address:null null null null null null

Legal:

POD Information
 Owner: EOG/GIS
 File Number: C-4144 POD33
 POD Status: NoData
 Permit Status: NoData
 Permit Use: NoData
 Purpose: MON

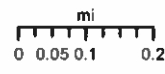
- ◆ Coord Search Location
- Eddy County Parcels 2020
- Lea County Parcels 2020
- Sections
- BLM Land Grant
- PLSSTownship
- PLSSFirstDiv...
- PLSSSecond...



Coordinates
UTM - NAD 83 (m) - Zone 13
Easting 620303.226
Northing 3585920.023
State Plane - NAD 83 (f) - Zone E
Easting 730394.077
Northing 511191.610
Degrees Minutes Seconds
Latitude 32 : 24 : 13.860000
Longitude -103 : 43 : 14.750000
Location pulled from Coordinate Search

NEW MEXICO OFFICE
OF THE
STATE ENGINEER

1:18,056



GUILLEN

3/25/2021



Readme information has been made by the New Mexico Office of the State Engineer (OSE) so far that these maps are not intended to be used as a legal document, however, a degree of care is intended in the maps and the OSE may contain some errors. The OSE is not responsible for the accuracy, reliability, or completeness of the information or data contained in the maps. These maps are distributed "as is" without warranty of any kind.

Spatial Information
County: Lea
Groundwater Basin: Carlsbad
Abstract Area: C
CUB
Land Grant:
Not in Land Grant
Restrictions:
NA
PLSS Description
NE SW NW SW Qtr of Sec 7 of 22S 32E

Derived from Projected PLSS- Qtr Sec.
locations are calculated and are only
approximations

Parcel Information
UPC/DocNum:
Parcel Owner:
Address: null null null null null null

Legal:

POD Information
Owner: EOG/GHD
File Number: C-4144 POD34
POD Status: NoData
Permit Status: NoData
Permit Use: NoData
Purpose: MON

- ◆ Coord Search Location
- Eddy County Parcels 2020
- Lea County Parcels 2020
- BLM Land Grant
- PLSSTownship
- PLSSFirstDiv...
- PLSSSecond...

NESE

L 3

NESW

4186128264264

07

SESE

L 4

SESW

Esri, HERE, Garmin, (c) OpenStreetMap contributors, NMT RD GIS, OSE GIS,
NM County Assessors, Santa Fe County Assessor's Office, BLM

Coordinates**UTM - NAD 83 (m) - Zone 13**

Easting 620270.034

Northing 3585855.255

State Plane - NAD 83 (f) - Zone E

Easting 730283.837

Northing 510979.766

Degrees Minutes Seconds

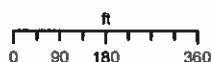
Latitude 32 : 24 : 11.770000

Longitude -103 : 43 : 16.050000

Location pulled from Coordinate Search

NEW MEXICO OFFICE
OF THE
STATE ENGINEER

1:4,514



GUILLEN

3/25/2021



Responsible where he is given made by the New Mexico Office of the State Engineer (OSE) to verify that these maps accurately represent the source data used in their preparation. These maps are not a substitute for a survey or other official record. The maps are not to be used for any purpose other than for the information they contain. The maps are not to be used for any purpose other than for the information they contain. The maps are not to be used for any purpose other than for the information they contain.

Spatial Information

County: Lea

Groundwater Basin: Carlsbad

Abstract Area: C

CUB

Land Grant:

Not in Land Grant

Restrictions:

NA

PLSS Description

SE SW NW SW Qtr of Sec 7 of 22S 32E

Derived from Projected PLSS- Qtr Sec.
locations are calculated and are only
approximations

Parcel Information

UPC/DocNum:

Parcel Owner:

Address: null null null null null

Legal:

POD Information

Owner: EOG/GHD

File Number: C-4144 POD35

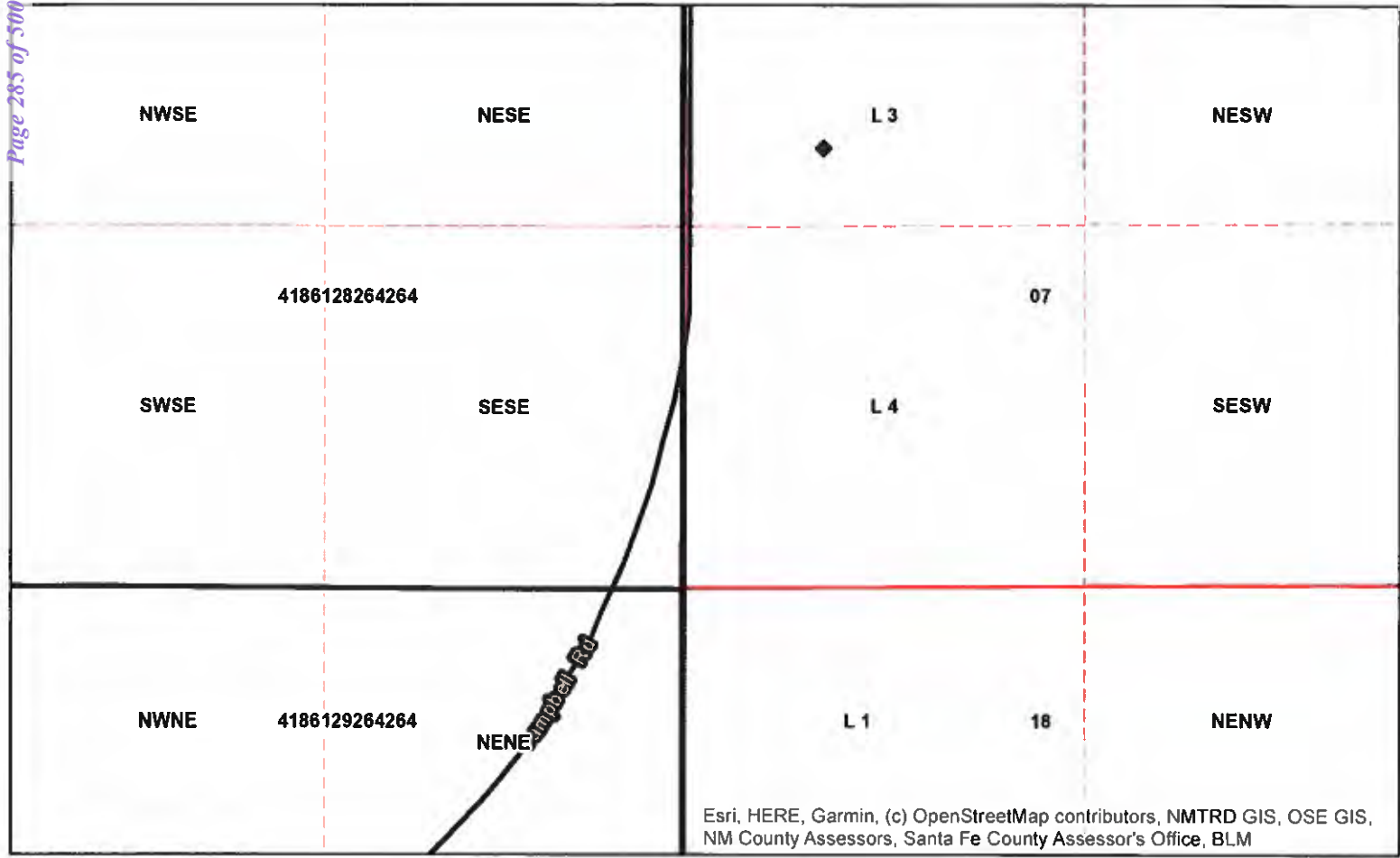
POD Status: NoData

Permit Status: NoData

Permit Use: NoData

Purpose: MON

- ◆ Coord Search Location
- Eddy County Parcels 2020
- Lea County Parcels 2020
- BLM Land Grant
- PLSSTownship
- PLSSFirstDiv...
- PLSSSecond...

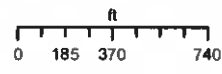


Esri, HERE, Garmin, (c) OpenStreetMap contributors, NMTRD GIS, OSE GIS, NM County Assessors, Santa Fe County Assessor's Office, BLM

Coordinates
UTM - NAD 83 (m) - Zone 13
Easting 620255.261
Northing 3585845.223
State Plane - NAD 83 (f) - Zone E
Easting 730235.156
Northing 510947.148
Degrees Minutes Seconds
Latitude 32 : 24 : 11.450000
Longitude -103 : 43 : 16.620000
Location pulled from Coordinate Search

NEW MEXICO OFFICE
OF THE
STATE ENGINEER

1:9,028



GUILLEN

3/25/2021



Responses which have been made by the New Mexico Office of the State Engineer (OSE) to the public's request for information are based on the best information available at the time of the request. The OSE does not warrant the accuracy, completeness, or timeliness of the information provided. The OSE is not responsible for any errors or omissions in this information. The OSE is not responsible for any damages, including consequential damages, arising from the use of this information. This map is the property of the OSE and is loaned to you. It is not to be reproduced or distributed without the written consent of the OSE.

Spatial Information
County: Lea
Groundwater Basin: Carlsbad
Abstract Area: C
CUB
Land Grant:
Not in Land Grant
Restrictions:
NA
PLSS Description
SE SW NW SW Qtr of Sec 7 of 22S 32E

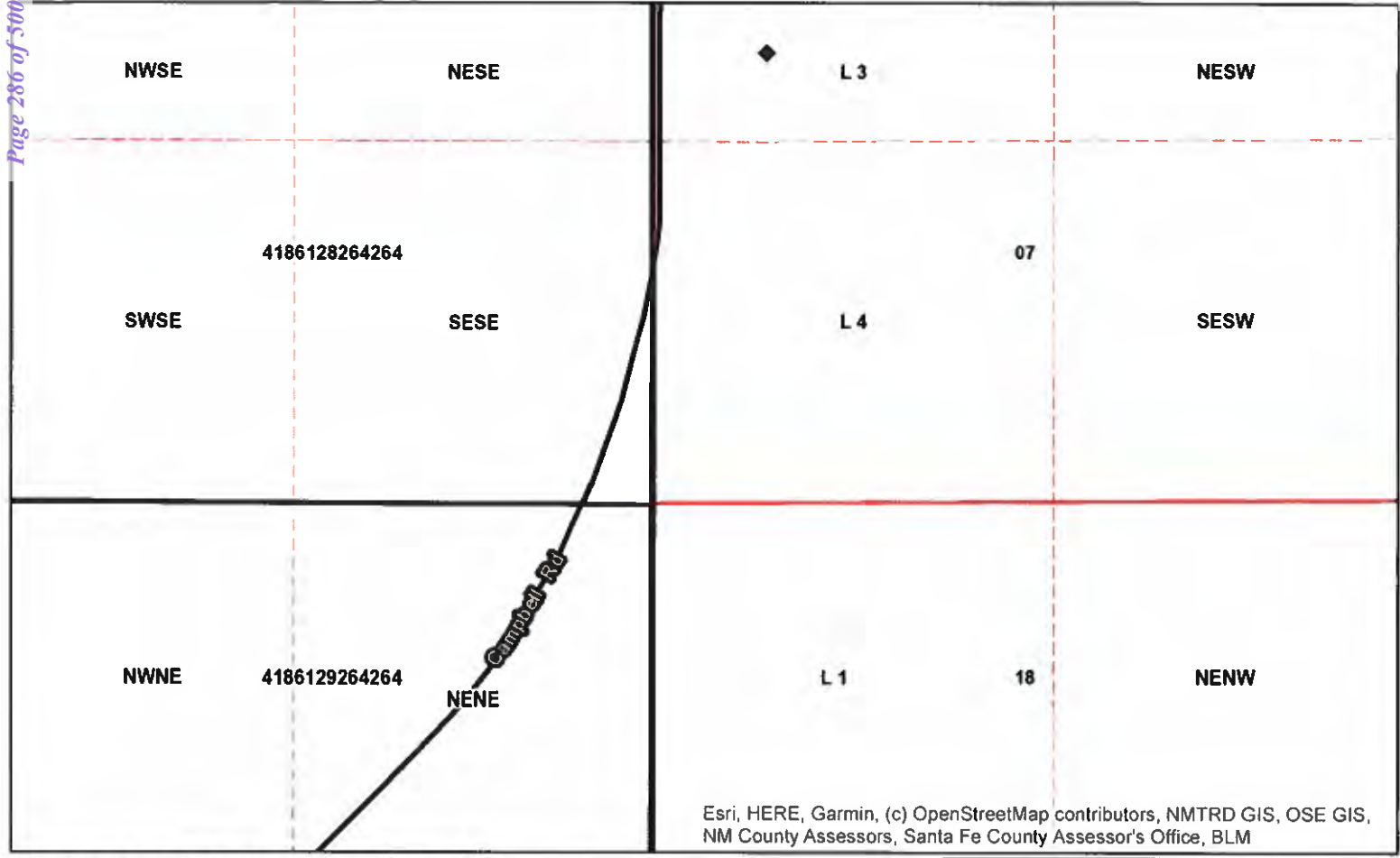
Derived from Projected PLSS- Qtr Sec
locations are calculated and are only
approximations

Parcel Information
UPC/DocNum:
Parcel Owner:
Address: null null null null null null

Legal:

POD Information
Owner: OSE/GHD
File Number: C-4144 POD36
POD Status: NoData
Permit Status: NoData
Permit Use: NoData
Purpose: MON

- ◆ Coord Search Location
- Eddy County Parcels 2020
- Lea County Parcels 2020
- BLM Land Grant
- PLSSTownship
- PLSSFirstDiv...
- PLSSSecond...

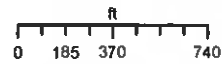


Esri, HERE, Garmin, (c) OpenStreetMap contributors, NMTRD GIS, OSE GIS, NM County Assessors, Santa Fe County Assessor's Office, BLM

Coordinates
UTM - NAD 83 (m) - Zone 13
Easting 620226.122
Northing 3585856.578
State Plane - NAD 83 (f) - Zone E
Easting 730139.774
Northing 510985.005
Degrees Minutes Seconds
Latitude 32 : 24 : 11.830000
Longitude -103 : 43 : 17.730000
Location pulled from Coordinate Search

NEW MEXICO OFFICE
OF THE
STATE ENGINEER

1:9,028



GUILLEN

3/25/2021



Reproduction of this map is prohibited by the New Mexico Office of the State Engineer. No part of this map may be reproduced, stored in a retrieval system, or transmitted in any form or by any means, electronic, mechanical, photocopying, recording, or by any information storage and retrieval system, without the prior written permission of the New Mexico Office of the State Engineer.

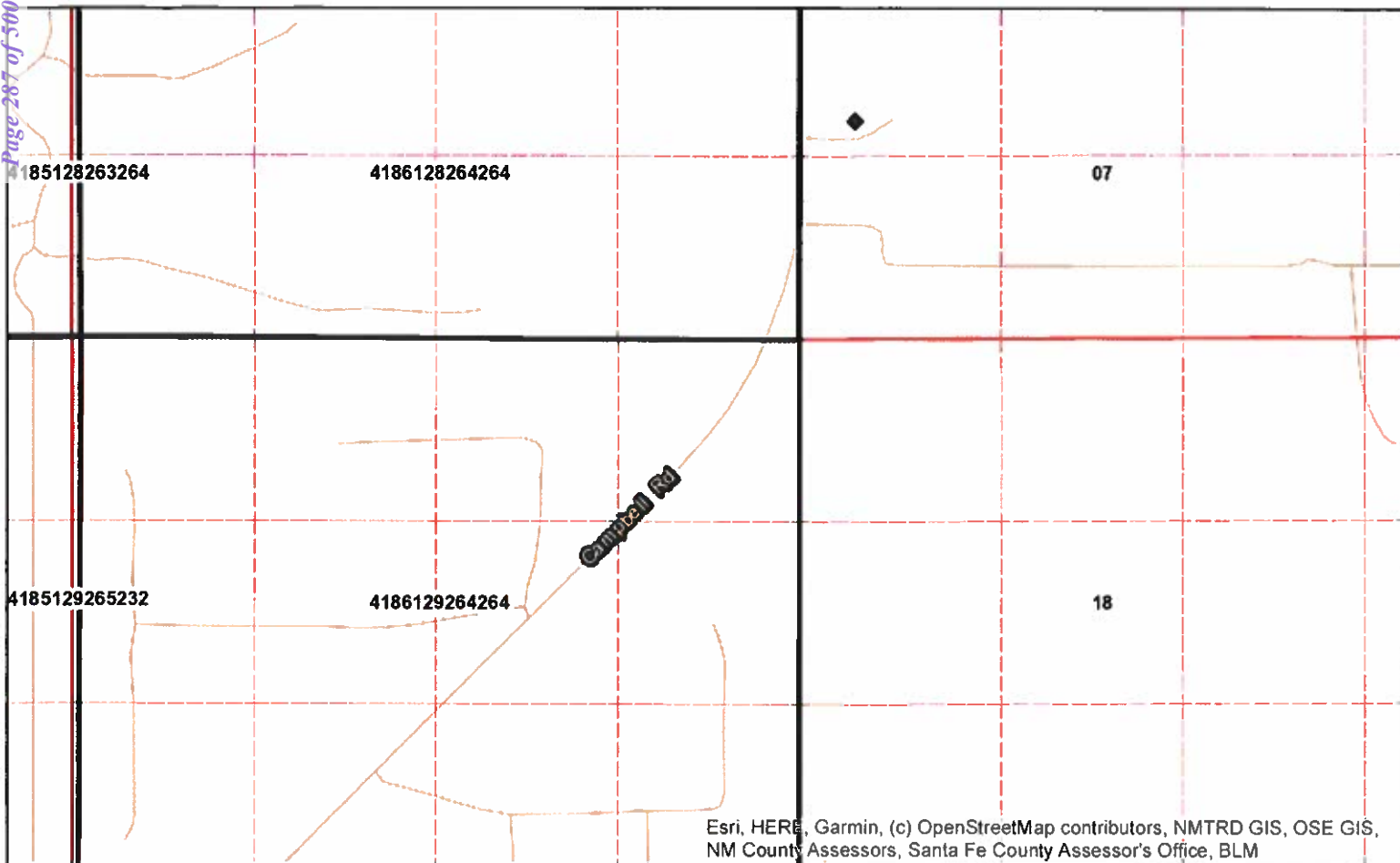
Spatial Information
County: Lea
Groundwater Basin: Carlsbad
Abstract Area: C
CUB
Land Grant:
Not in Land Grant
Restrictions:
NA
PLSS Description
SE SW NW SW Qtr of Sec 7 of 22S 32E

Derived from Projected PLSS- Qtr Sec
locations are calculated and are only
approximations

Parcel Information
UPC/DocNum:
Parcel Owner:
Address: null null null null null null

Legal:

POD Information
Owner: EOG/GHD
File Number: C-4144 POD37
POD Status: NoData
Permit Status: NoData
Permit Use: NoData
Purpose: MON



Coordinates

UTM - NAD 83 (m) - Zone 13

Easting 620224.010

Northing 3585836.533

State Plane - NAD 83 (f) - Zone E

Easting 730132.435

Northing 510919.274

Degrees Minutes Seconds

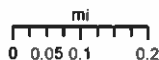
Latitude 32 : 24 : 11.180000

Longitude -103 : 43 : 17.820000

Location pulled from Coordinate Search

NEW MEXICO OFFICE
OF THE
STATE ENGINEER

1:18.056



GUILLÉN

3/25/2021



Reliable earth maps were made by the New Mexico Office of the State Engineer (1961) to verify the first maps accurately reference the source data used in their preparation, however, a degree of error is inevitable in maps and these maps may contain additional errors. Scale, regulation, rectification, position, accuracy and mapmaking methodology interpretation of source data is no other circumstances.

These maps are distributed as is without warranty of any kind.

Spatial Information

County: Lea

Groundwater Basin: Carlsbad

Abstract Area:C

CUB

Land Grant:

Not in Land Grant

Restrictions:

NA

PLSS Description

SE SW NW SW Qtr of Sec 7 of 22S 32E

Derived from Projected PLSS- Qtr Sec
locations are calculated and are only
approximations

Parcel Information

UPC/DocNum:

Parcel Owner:

Address: null null null null null null

Legal:

POD Information

Owner: EOG/GHD








File Number: C-4144 POD38

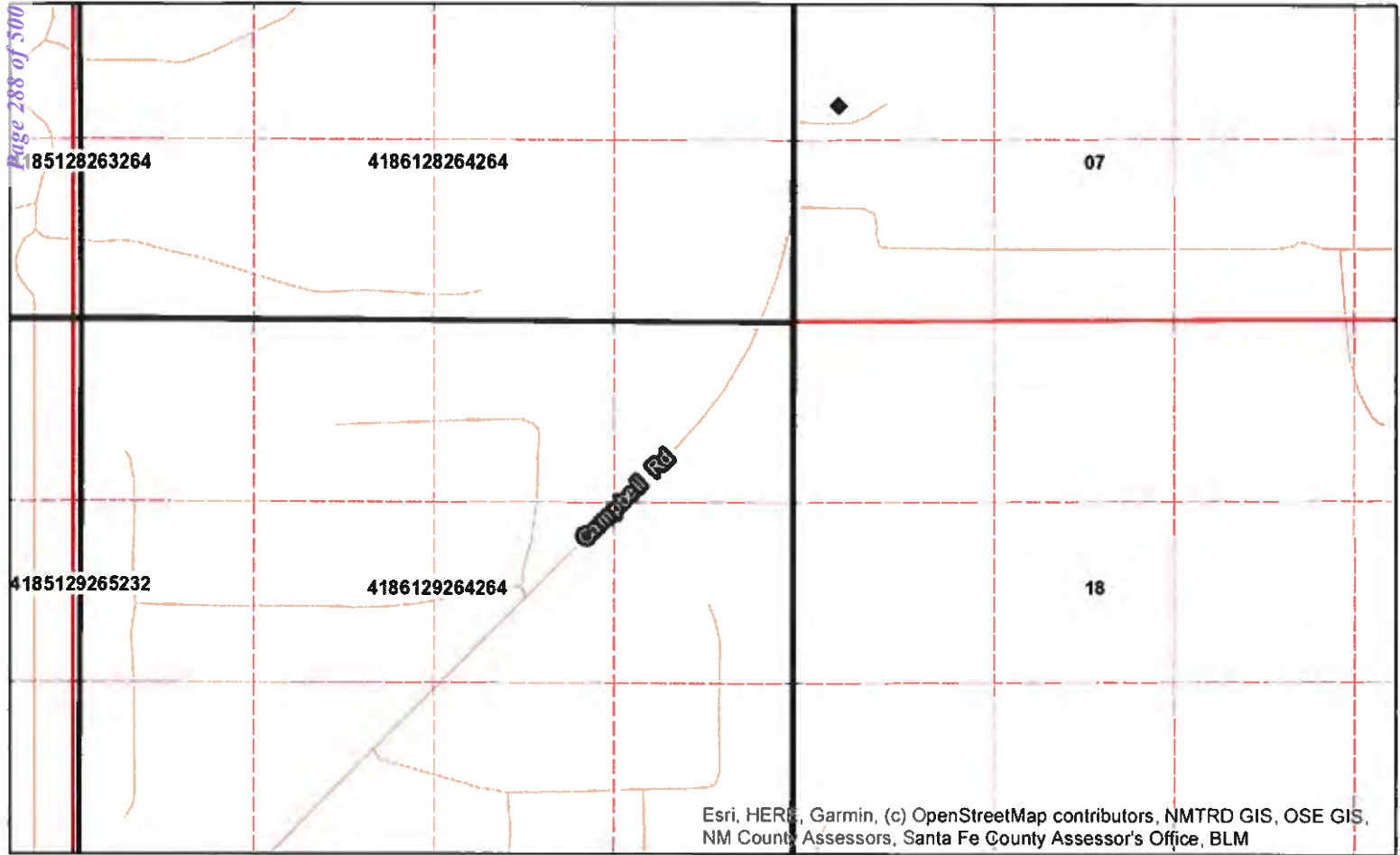
POD Status: NoData

Permit Status: NoData

Permit Use: NoData

Purpose: MON

-  Coord Search Location
 Eddy County Parcels 2020
 Lea County Parcels 2020
 BLM Land Grant
-  PLSSTownship
 PLSSFirstDiv...
 PLSSSecond...

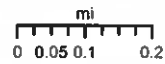


Esri, HERE, Garmin, (c) OpenStreetMap contributors, NMTRD GIS, OSE GIS, NM County Assessors, Santa Fe County Assessor's Office, BLM

Coordinates
UTM - NAD 83 (m) - Zone 13
Easting 620200.240
Northing 3585835.941
State Plane - NAD 83 (f) - Zone E
Easting 730054.425
Northing 510917.817
Degrees Minutes Seconds
Latitude 32 : 24 : 11.170000
Longitude -103 : 43 : 18.730000
Location pulled from Coordinate Search

NEW MEXICO OFFICE
OF THE
STATE ENGINEER

1:18,056



GUILLEN 3/25/2021



Reactive staff have been made by the New Mexico Office of the State Engineer (OSE) to verify that these map documents reflect the source data used in their preparation. However, a degree of error inherent in all maps and data sets may exist in the data and maps. In order to ensure the accuracy, precision, and reliability of the data and maps, the OSE has implemented a quality assurance process. These maps are distributed as is without warranty of any kind.

Spatial Information

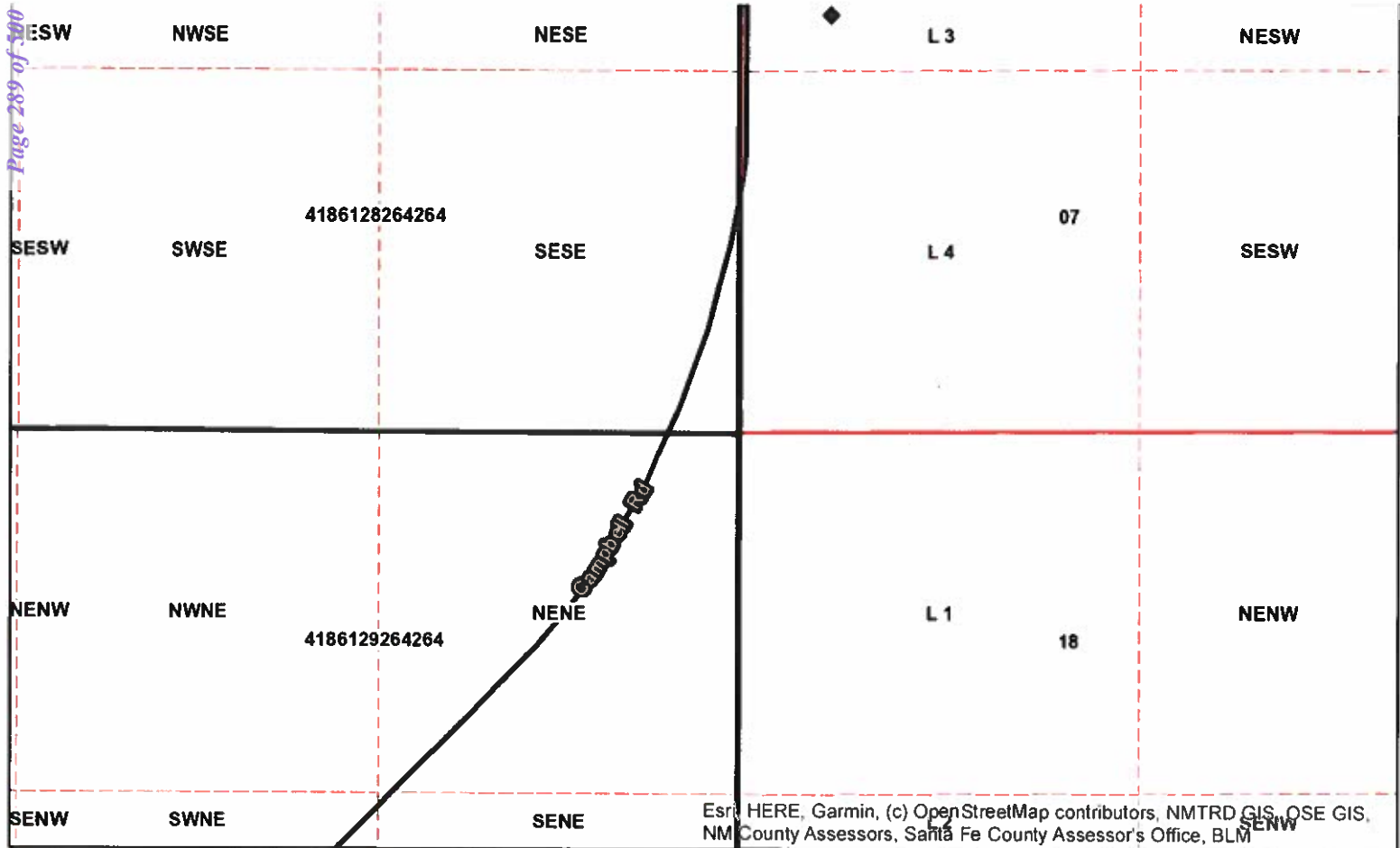
County: Lea
Groundwater Basin: Carlsbad
Abstract Area: C
CUB
Land Grant:
Not in Land Grant
Restrictions:
NA
PLSS Description
SW SW NW SW Qtr of Sec 7 of 22S 32E

Derived from Projected PLSS- Qtr Sec
locations are calculated and are only
approximations

Parcel Information
UPC/DocNum:
Parcel Owner:
Address: null null null null null null
Legal:

POD Information
Owner: EOG/GHD
File Number: C-4144 POD39
POD Status: NoData
Permit Status: NoData
Permit Use: NoData
Purpose: MON

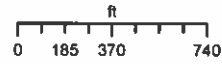
- ◆ Coord Search Location
- Eddy County Parcels 2020
- Lea County Parcels 2020
- BLM Land Grant
- PLSSTownship
- PLSSFirstDiv...
- PLSSSecond...



Coordinates
UTM - NAD 83 (m) - Zone 13
Easting 620200.947
Northing 3585820.550
State Plane - NAD 83 (f) - Zone E
Easting 730056.429
Northing 510867.299
Degrees Minutes Seconds
Latitude 32 : 24 : 10.670000
Longitude -103 : 43 : 18.710000
Location pulled from Coordinate Search

NEW MEXICO OFFICE
OF THE
STATE ENGINEER

1:9,028



GUILLEN

3/25/2021



Responsible efforts have been made by the New Mexico Office of the State Engineer (OSE) to verify that these maps accurately represent the source data used in their preparation. However, a degree of error is inherent in all maps, and the OSE does not warrant the accuracy or reliability of the information shown on these maps. The OSE is not responsible for any errors or omissions that may appear in these maps. These maps are distributed "as is" without warranty of any kind.

Spatial Information
County: Lea
Groundwater Basin: Carlsbad
Abstract Area: C
CUB
Land Grant:
Not in Land Grant
Restrictions:
NA
PLSS Description
SW SW NW SW Qtr of Sec 7 of 22S 32E

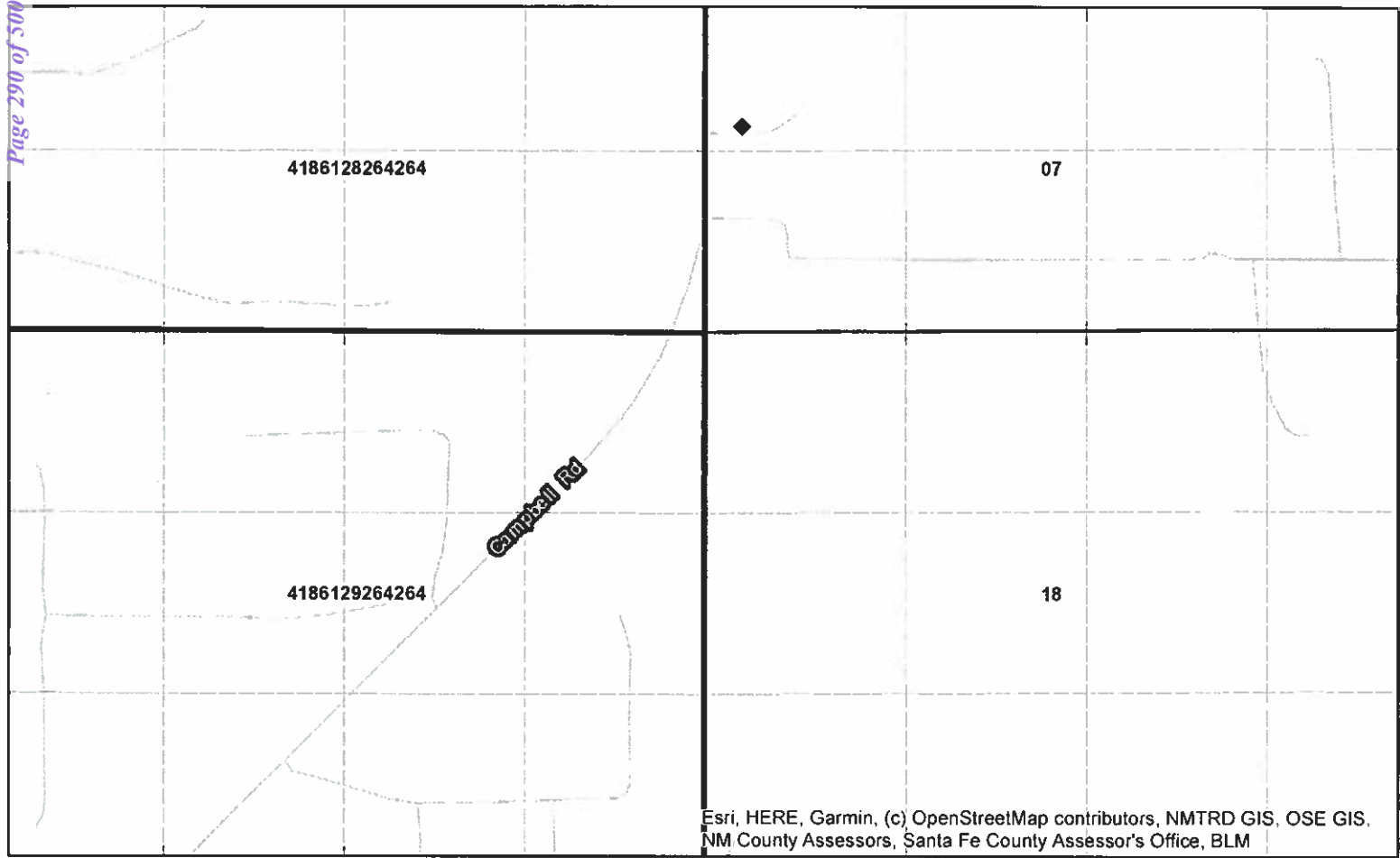
Derived from Projected PLSS- Qtr Sec.
locations are calculated and are only
approximations

Parcel Information
UPC/DocNum:
Parcel Owner:
Address: null null null null null null

Legal:

POD Information
Owner: EOG/GHD
File Number: C-4144 POD40
POD Status: NoData
Permit Status: NoData
Permit Use: NoData
Purpose: MON

- ◆ Coord Search Location
- Eddy County Parcels 2020
- Lea County Parcels 2020
- BLM Land Grant
- PLSS Township
- PLSS First Div...
- PLSS Second...

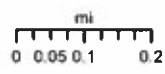


Esri, HERE, Garmin, (c) OpenStreetMap contributors, NMTRD GIS, OSE GIS, NM County Assessors, Santa Fe County Assessor's Office, BLM

Coordinates
UTM - NAD 83 (m) - Zone 13
Easting 620181.453
Northing 3585812.001
State Plane - NAD 83 (f) - Zone E
Easting 729992.286
Northing 510839.647
Degrees Minutes Seconds
Latitude 32 : 24 : 10.400000
Longitude -103 : 43 : 19.460000
Location pulled from Coordinate Search

NEW MEXICO OFFICE
OF THE
STATE ENGINEER

1:18,056



GUILLEN

3/25/2021



Information presented on this map is derived from the best available data as of the date of publication. The State Engineer and the Office of the State Engineer do not warrant the accuracy or completeness of the information presented on this map. The user of this map assumes all liability for any errors or omissions. The State Engineer and the Office of the State Engineer are not responsible for any damages or losses resulting from the use of this map.

Spatial Information
County: Lea
Groundwater Basin: Carlsbad
Abstract Area: C
CUB
Land Grant:
Not in Land Grant
Restrictions:
NA
PLSS Description
SW SW NW SW Qtr of Sec 7 of 22S 32E

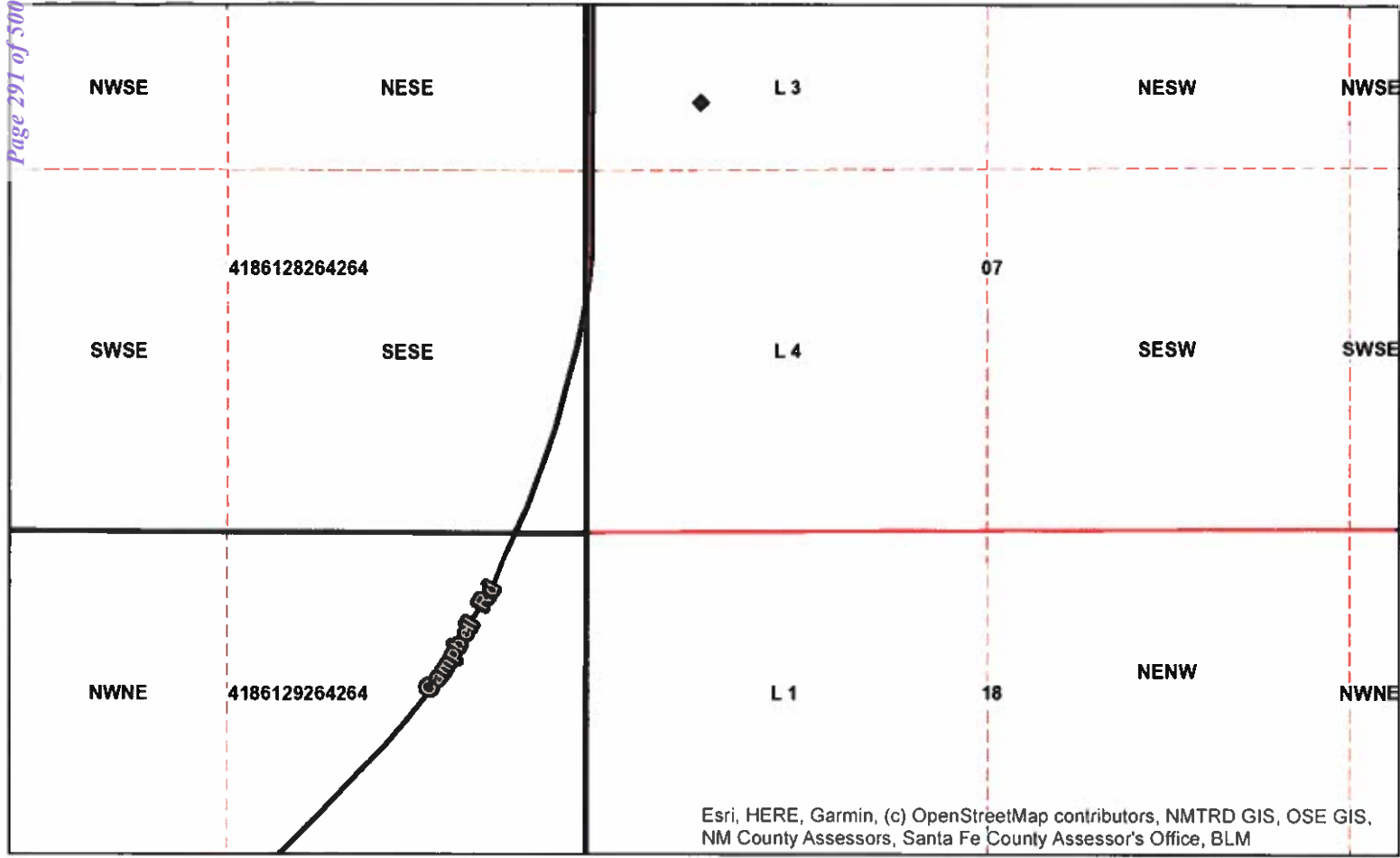
Derived from Projected PLSS- Qtr Sec
locations are calculated and are only
approximations

Parcel Information
UPC/DocNum:
Parcel Owner:
Address: null null null null null null

Legal:

POD Information
Owner: EOG/GHD
File Number: C-4144 POD41
POD Status: NoData
Permit Status: NoData
Permit Use: NoData
Purpose: MON

- ◆ Coord Search Location
- Eddy County Parcels 2020
- Lea County Parcels 2020
- BLM Land Grant
- PLSSTownship
- PLSSFirstDiv...
- PLSSSecond...

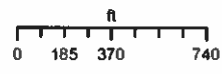


Esri, HERE, Garmin, (c) OpenStreetMap contributors, NMTRD GIS, OSE GIS, NM County Assessors, Santa Fe County Assessor's Office, BLM

Coordinates
UTM - NAD 83 (m) - Zone 13
Easting 620227.440
Northing 3585833.802
State Plane - NAD 83 (f) - Zone E
Easting 730143.632
Northing 510910.243
Degrees Minutes Seconds
Latitude 32 : 24 : 11.090000
Longitude -103 : 43 : 17.690000
Location pulled from Coordinate Search

NEW MEXICO OFFICE
OF THE
STATE ENGINEER

1:9,028



GUILLÉN

3/25/2021



Available efforts have been made by the New Mexico Office of the State Engineer (OSE) to verify that these maps accurately represent the source data used in their preparation, however, a degree of error is inherent in all maps, and these maps may contain errors and omissions. The OSE does not warrant, represent, or assume any responsibility for the accuracy, completeness, or timeliness of the information provided. These maps are distributed as is, without warranty of any kind.

Spatial Information
County: Lea
Groundwater Basin: Carlsbad
Abstract Area: C
CUB
Land Grant:
Not in Land Grant
Restrictions:
NA
PLSS Description
SE SW NW SW Qtr of Sec 7 of 22S 32E

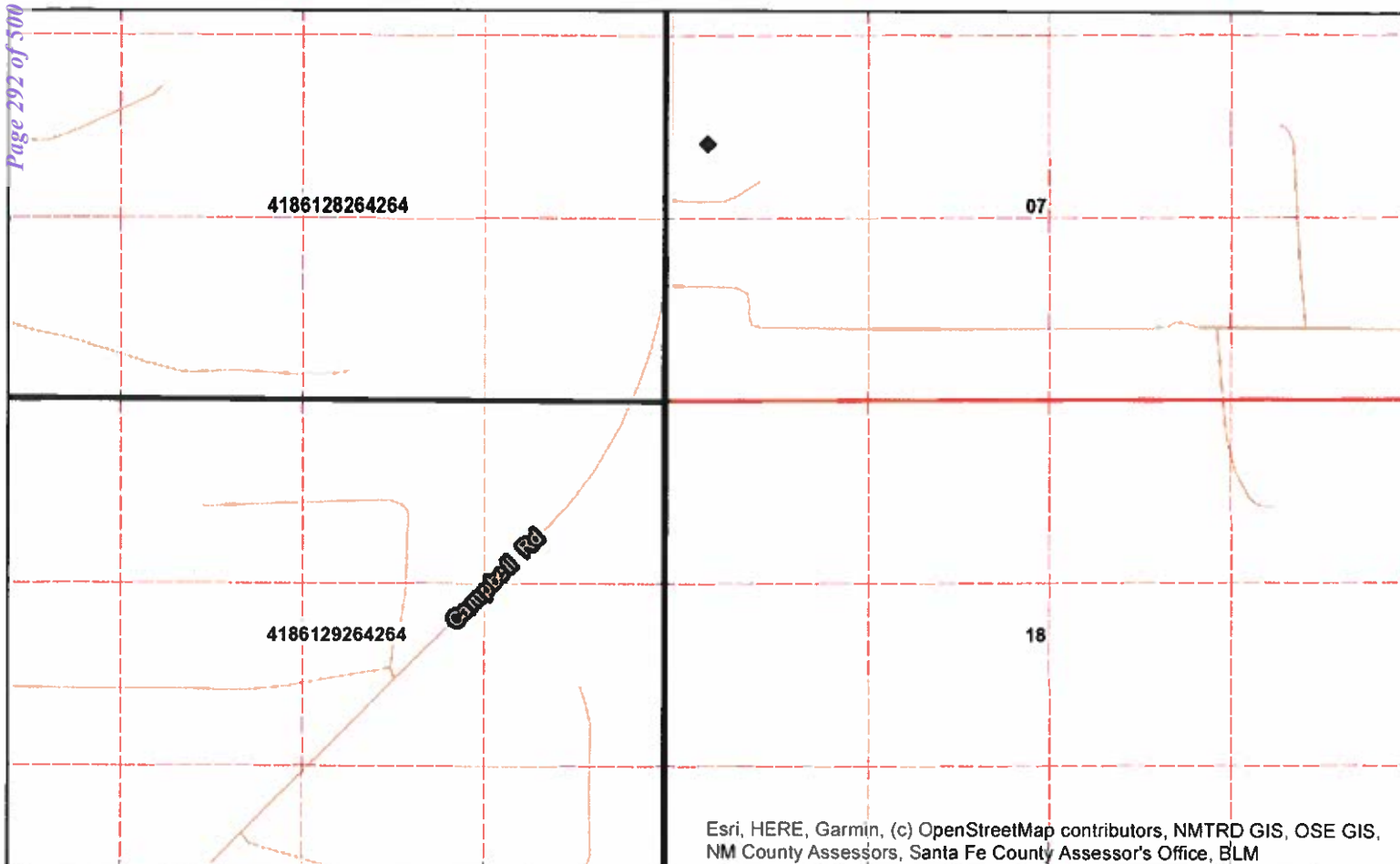
Derived from Projected PLSS- Qtr Sec.
locations are calculated and are only
approximations

Parcel Information
UPC/DocNum:
Parcel Owner:
Address: null null null null null null

Legal:

POD Information
Owner: EOG/GHD
File Number: C-4144 POD42
POD Status: NoData
Permit Status: NoData
Permit Use: NoData
Purpose: MON

- ◆ Coord Search Location
- Eddy County Parcels 2020
- Lea County Parcels 2020
- BLM Land Grant
- PLSSTownship
- PLSSFirstDiv...
- PLSSSecond...

**Coordinates****UTM - NAD 83 (m) - Zone 13**

Easting 620190.323

Northing 3585922.368

State Plane - NAD 83 (f) - Zone E

Easting 730023.653

Northing 511201.617

Degrees Minutes Seconds

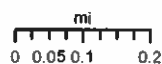
Latitude 32 : 24 : 13.980000

Longitude -103 : 43 : 19.070000

Location pulled from Coordinate Search

**NEW MEXICO OFFICE
OF THE
STATE ENGINEER**

1:18,056



GUILLEN

3/25/2021



Reasonable effort has been made by the New Mexico Office of the State Engineer (OSE) to verify that these maps accurately represent the source data used in their preparation. However, it is possible that there are errors in the maps, and these maps may contain errors that are not shown on the map. The OSE, its employees, and its contractors do not warrant the accuracy or completeness of the data shown on these maps. These maps are distributed "as is" without warranty of any kind.

Spatial Information

County: Lea

Groundwater Basin: Carlsbad

Abstract Area: C

CUB

Land Grant:

Not in Land Grant

Restrictions:

NA

PLSS Description

NW SW NW SW Qtr of Sec 7 of 22S 32E

Derived from Projected PLSS- Qtr Sec.
locations are calculated and are only
approximations

Parcel Information

UPC/DocNum:

Parcel Owner:

Address: null null null null null null

Legal:

POD Information

Owner: EOG/GHD

File Number: C-4144 POD43

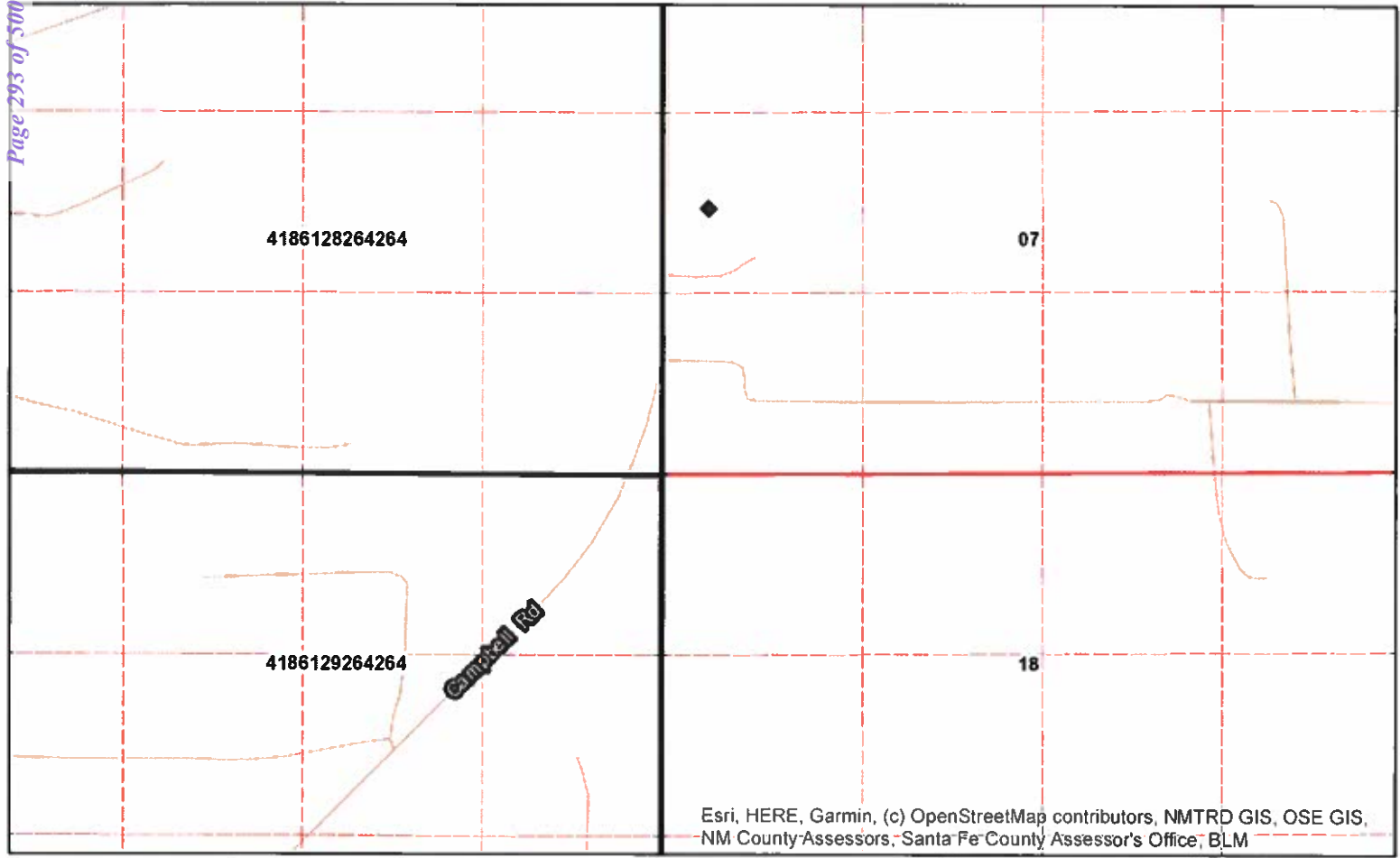
POD Status: NoData

Permit Status: NoData

Permit Use: NoData

Purpose: MON

- ◆ Coord Search Location
- Eddy County Parcels 2020
- Lea County Parcels 2020
- BLM Land Grant
- PLSSTownship
- PLSSFirstDiv...
- PLSSSecond...

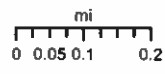


Esri, HERE, Garmin, (c) OpenStreetMap contributors, NMTRD GIS, OSE GIS, NM County Assessors, Santa Fe County Assessor's Office, BLM

Coordinates
UTM - NAD 83 (m) - Zone 13
Easting 620201.259
Northing 3585947.446
State Plane - NAD 83 (f) - Zone E
Easting 730060.049
Northing 511283.683
Degrees Minutes Seconds
Latitude 32 : 24 : 14.790000
Longitude -103 : 43 : 18.640000
Location pulled from Coordinate Search

NEW MEXICO OFFICE
OF THE
STATE ENGINEER

1:18,056



GUILLEN

3/25/2021



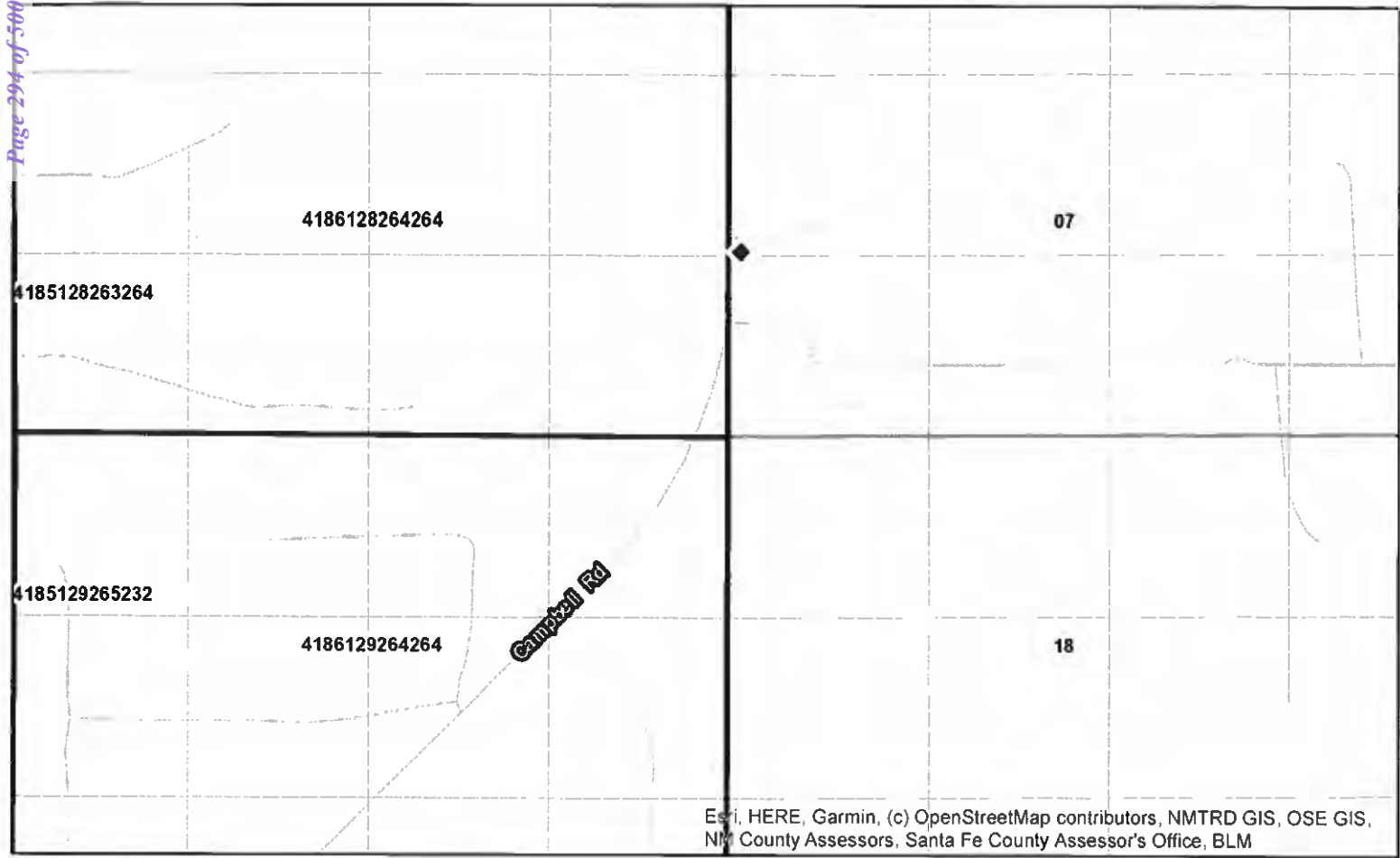
Responsibility for the accuracy of the data shown on this map is the responsibility of the user. The New Mexico Office of the State Engineer (OSE) does not verify the accuracy of the data shown on this map. The OSE is not responsible for any errors or omissions in the data shown on this map. The OSE is not responsible for any errors or omissions in the data shown on this map. The OSE is not responsible for any errors or omissions in the data shown on this map.

Spatial Information
County: Lea
Groundwater Basin: Carlsbad
Abstract Area: C
CUB
Land Grant:
Not in Land Grant
Restrictions:
NA
PLSS Description
NW SW NW SW Qtr of Sec 7 of 22S 32E
Derived from Projected PLSS- Qtr Sec.
locations are calculated and are only approximations

Parcel Information
UPC/DocNum:
Parcel Owner:
Address: null null null null null null
Legal:

POD Information
Owner: EOG/GHD
File Number: C-4144 POD44
POD Status: NoData
Permit Status: NoData
Permit Use: NoData
Purpose: MON

- ◆ Coord Search Location
- Eddy County Parcels 2020
- Lea County Parcels 2020
- BLM Land Grant
- PLSSTownship
- PLSSFirstDiv...
- PLSSSecond...



Esri, HERE, Garmin, (c) OpenStreetMap contributors, NMTRD GIS, OSE GIS, NM County Assessors, Santa Fe County Assessor's Office, BLM

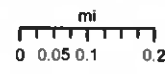
Coordinates
UTM - NAD 83 (m) - Zone 13
Easting 620128.710
Northing 3585765.172
State Plane - NAD 83 (f) - Zone E
Easting 729818.260
Northing 510687.064
Degrees Minutes Seconds
Latitude 32 : 24 : 8.900000
Longitude -103 : 43 : 21.500000
Location pulled from Coordinate Search

Parcel Information
UPC/DocNum:
Parcel Owner:
Address:null null null null null null

Legal:

NEW MEXICO OFFICE
OF THE
STATE ENGINEER

1:18,056



GUILLEN

3/25/2021



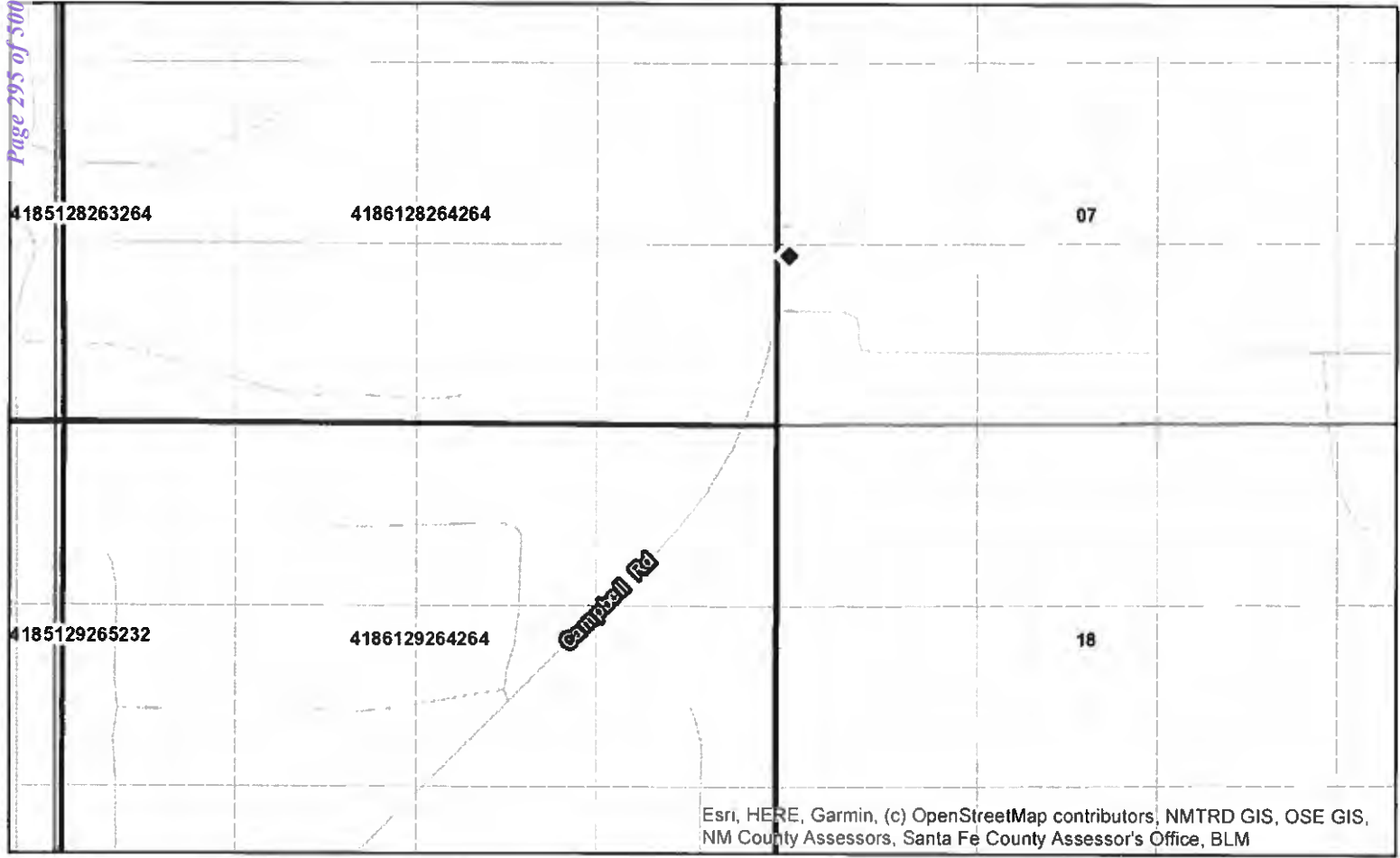
Office of the State Engineer
Interstate Stream Commission
1000 E. University Avenue, Suite 100
Albuquerque, NM 87106
505.243.2200
www.nmstateengineer.com

Spatial Information
County: Lea
Groundwater Basin: Carlsbad
Abstract Area:C
CUB
Land Grant:
Not in Land Grant
Restrictions:
NA
PLSS Description
SW SW NW SW Qtr of Sec 7 of 22S 32E

Derived from Projected PLSS- Qtr Sec
locations are calculated and are only
approximations

POD Information
Owner: EOG/GHD
File Number: C-4144 POD45
POD Status: NoData
Permit Status: NoData
Permit Use: NoData
Purpose: MON

- ☒ Coord Search Location
- ☐ Eddy County Parcels 2020
- ☐ Lea County Parcels 2020
- ☐ BLM Land Grant
- ☐ PLSSTownship
- ☐ PLSSFirstDiv...
- ☐ PLSSSecond...

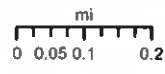


Esri, HERE, Garmin, (c) OpenStreetMap contributors, NMTRD GIS, OSE GIS, NM County Assessors, Santa Fe County Assessor's Office, BLM

Coordinates
UTM - NAD 83 (m) - Zone 13
Easting 620128.334
Northing 3585730.980
State Plane - NAD 83 (f) - Zone E
Easting 729816.329
Northing 510574.878
Degrees Minutes Seconds
Latitude 32 : 24 : 7.790000
Longitude -103 : 43 : 21.530000
Location pulled from Coordinate Search

NEW MEXICO OFFICE
OF THE
STATE ENGINEER

1:18,056



GUILLEN

3/25/2021



Spatial Information
County: Lea
Groundwater Basin: Carlsbad
Abstract Area: C
CUB
Land Grant:
Not in Land Grant
Restrictions:
NA
PLSS Description
NW NW SW SW Qtr of Sec 7 of 22S 32E

Derived from Projected PLSS- Qtr Sec
locations are calculated and are only
approximations

Parcel Information
UPC/DocNum:
Parcel Owner:
Address: null null null null null null

Legal:

POD Information
Owner: EOG/GHD
File Number: C-4144 POD46
POD Status: NoData
Permit Status: NoData
Permit Use: NoData
Purpose: MON

- ◆ Coord Search Location
- Eddy County Parcels 2020
- Lea County Parcels 2020
- BLM Land Grant
- PLSSTownship
- PLSSFirstDiv...
- PLSSSecond...

John R. D Antonio, Jr., P.E.
State Engineer



Roswell Office
1900 WEST SECOND STREET
ROSWELL, NM 88201

**STATE OF NEW MEXICO
OFFICE OF THE STATE ENGINEER**

Trn Nbr: 690620
File Nbr: C 04144

Mar. 25, 2021

ALAN BRANDON
GHD SERVICES INC.
6121 INDIAN SCHOOL RD NE
ALBUQUERQUE, NM 87110

Greetings:

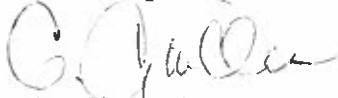
Your approved copy of the above numbered permit to drill a well for non-consumptive purposes is enclosed. You must obtain an additional permit if you intend to use the water. It is your responsibility to provide the contracted well driller with a copy of the permit that must be made available during well drilling activities.

Carefully review the attached conditions of approval for all specific permit requirements.

- * If use of this well is temporary in nature and the well will be plugged at the end of the well usage, the OSE must initially approve of the plugging. If plugging approval is not conditioned in this permit, the applicant must submit a Plugging Plan of Operations for approval prior to the well being plugged. The Plugging Record must be properly completed and submitted to the OSE within 30 days of the well plugging.
- * If the final intended purpose and condition requires a well ID tag and meter installation, the applicant must immediately send a completed meter report form to this office.
- * The well record and log must be submitted within 30 days of the completion of the well or if the attempt was a dry hole.
- * This permit expires and will be cancelled if no well is drilled and/or a well log is not received by the date set forth in the conditions of approval.

Appropriate forms can be downloaded from the OSE website www.ose.state.nm.us.

Sincerely,


Claudia Guillen
(575) 622-6521

Enclosure

explore

Attachment D

Laboratory Reports and Chain-of-Custody Documentation



Environment Testing America

ANALYTICAL REPORT

Eurofins Xenco, Carlsbad
1089 N Canal St.
Carlsbad, NM 88220
Tel: (575)988-3199

Laboratory Job ID: 890-492-1

Laboratory Sample Delivery Group: 11220747/02

Client Project/Site: Flamenco Federal #1

For:

GHD Services Inc.
2135 South Loop 250 West
Midland, Texas 79703

Attn: Becky Haskell

A handwritten signature in black ink, appearing to read "Debbie Simmons".

Authorized for release by:
4/27/2021 10:26:20 AM

Debbie Simmons, Project Manager
(281)240-4200
debbie.simmons@eurofinset.com

LINKS

Review your project
results through
TotalAccess

Have a Question?



Visit us at:

www.eurofinsus.com/Env

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

Client: GHD Services Inc.
Project/Site: Flamenco Federal #1

Laboratory Job ID: 890-492-1
SDG: 11220747/02

Table of Contents

Cover Page	1
Table of Contents	2
Definitions/Glossary	3
Case Narrative	4
Client Sample Results	5
Surrogate Summary	8
QC Sample Results	9
QC Association Summary	11
Lab Chronicle	12
Certification Summary	14
Method Summary	15
Sample Summary	16
Chain of Custody	17
Receipt Checklists	20

1
2
3
4
5
6
7
8
9
10
11
12
13
14

Definitions/Glossary

Client: GHD Services Inc.
Project/Site: Flamenco Federal #1

Job ID: 890-492-1
SDG: 11220747/02

Qualifiers

GC VOA

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
U	Indicates the analyte was analyzed for but not detected.

HPLC/IC

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

General Chemistry

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: GHD Services Inc.
Project/Site: Flamenco Federal #1

Job ID: 890-492-1
SDG: 11220747/02

Job ID: 890-492-1

Laboratory: Eurofins Xenco, Carlsbad

Narrative

Job Narrative 890-492-1

Receipt

The samples were received on 4/6/2021 3:25 PM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 19.2°C

Receipt Exceptions

Insufficient sample volume was provided for the following sample for the <FRACTION_METHOD> analysis: MW-9 (890-492-5). One liter container not full for sample MW-9 for TDS

GC VOA

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

HPLC/IC

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

General Chemistry

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Client Sample Results

Client: GHD Services Inc.
Project/Site: Flamenco Federal #1

Job ID: 890-492-1
SDG: 11220747/02

Client Sample ID: MW-1

Lab Sample ID: 890-492-1

Date Collected: 04/06/21 11:50

Matrix: Water

Date Received: 04/06/21 15:25

Method: 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00200	U	0.00200	0.000408	mg/L			04/08/21 17:33	1
Toluene	0.000594	J	0.00200	0.000367	mg/L			04/08/21 17:33	1
Ethylbenzene	<0.00200	U	0.00200	0.000657	mg/L			04/08/21 17:33	1
m-Xylene & p-Xylene	<0.00400	U	0.00400	0.000629	mg/L			04/08/21 17:33	1
o-Xylene	<0.00200	U	0.00200	0.000642	mg/L			04/08/21 17:33	1
Xylenes, Total	<0.00400	U	0.00400	0.00100	mg/L			04/08/21 17:33	1
Total BTEX	<0.00200	U	0.00200	0.00100	mg/L			04/08/21 17:33	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	111		70 - 130		04/08/21 17:33	1
1,4-Difluorobenzene (Surr)	101		70 - 130		04/08/21 17:33	1

Method: 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	37000		250	10.5	mg/L			04/18/21 19:51	500

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	61600		5000	5000	mg/L			04/10/21 15:16	1

Client Sample ID: MW-2

Lab Sample ID: 890-492-2

Date Collected: 04/06/21 12:40

Matrix: Water

Date Received: 04/06/21 15:25

Method: 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00200	U	0.00200	0.000408	mg/L			04/08/21 22:06	1
Toluene	<0.00200	U	0.00200	0.000367	mg/L			04/08/21 22:06	1
Ethylbenzene	<0.00200	U	0.00200	0.000657	mg/L			04/08/21 22:06	1
m-Xylene & p-Xylene	<0.00400	U	0.00400	0.000629	mg/L			04/08/21 22:06	1
o-Xylene	<0.00200	U	0.00200	0.000642	mg/L			04/08/21 22:06	1
Xylenes, Total	<0.00400	U	0.00400	0.00100	mg/L			04/08/21 22:06	1
Total BTEX	<0.00200	U	0.00200	0.00100	mg/L			04/08/21 22:06	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	117		70 - 130		04/08/21 22:06	1
1,4-Difluorobenzene (Surr)	102		70 - 130		04/08/21 22:06	1

Method: 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	8940		50.0	2.10	mg/L			04/18/21 19:56	100

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	15300		500	500	mg/L			04/10/21 15:16	1

Eurofins Xenco, Carlsbad

Client Sample Results

Client: GHD Services Inc.
Project/Site: Flamenco Federal #1

Job ID: 890-492-1
SDG: 11220747/02

Client Sample ID: MW-3

Lab Sample ID: 890-492-3

Date Collected: 04/06/21 13:20

Matrix: Water

Date Received: 04/06/21 15:25

Method: 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00200	U	0.00200	0.000408	mg/L			04/08/21 22:27	1
Toluene	<0.00200	U	0.00200	0.000367	mg/L			04/08/21 22:27	1
Ethylbenzene	<0.00200	U	0.00200	0.000657	mg/L			04/08/21 22:27	1
m-Xylene & p-Xylene	<0.00400	U	0.00400	0.000629	mg/L			04/08/21 22:27	1
o-Xylene	<0.00200	U	0.00200	0.000642	mg/L			04/08/21 22:27	1
Xylenes, Total	<0.00400	U	0.00400	0.00100	mg/L			04/08/21 22:27	1
Total BTEX	<0.00200	U	0.00200	0.00100	mg/L			04/08/21 22:27	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	111		70 - 130		04/08/21 22:27	1
1,4-Difluorobenzene (Surr)	99		70 - 130		04/08/21 22:27	1

Method: 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	39400		250	10.5	mg/L			04/18/21 20:01	500

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	72500		5000	5000	mg/L			04/10/21 15:16	1

Client Sample ID: MW-8

Lab Sample ID: 890-492-4

Date Collected: 04/06/21 14:20

Matrix: Water

Date Received: 04/06/21 15:25

Method: 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00200	U	0.00200	0.000408	mg/L			04/08/21 22:47	1
Toluene	<0.00200	U	0.00200	0.000367	mg/L			04/08/21 22:47	1
Ethylbenzene	<0.00200	U	0.00200	0.000657	mg/L			04/08/21 22:47	1
m-Xylene & p-Xylene	<0.00400	U	0.00400	0.000629	mg/L			04/08/21 22:47	1
o-Xylene	<0.00200	U	0.00200	0.000642	mg/L			04/08/21 22:47	1
Xylenes, Total	<0.00400	U	0.00400	0.00100	mg/L			04/08/21 22:47	1
Total BTEX	<0.00200	U	0.00200	0.00100	mg/L			04/08/21 22:47	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	114		70 - 130		04/08/21 22:47	1
1,4-Difluorobenzene (Surr)	102		70 - 130		04/08/21 22:47	1

Method: 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	765		25.0	1.05	mg/L			04/18/21 20:06	50

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	2630		200	200	mg/L			04/10/21 15:16	1

Eurofins Xenco, Carlsbad

Client Sample Results

Client: GHD Services Inc.
Project/Site: Flamenco Federal #1

Job ID: 890-492-1
SDG: 11220747/02

Client Sample ID: MW-9

Lab Sample ID: 890-492-5

Date Collected: 04/06/21 14:00

Matrix: Water

Date Received: 04/06/21 15:25

Method: 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00200	U	0.00200	0.000408	mg/L			04/08/21 23:08	1
Toluene	<0.00200	U	0.00200	0.000367	mg/L			04/08/21 23:08	1
Ethylbenzene	<0.00200	U	0.00200	0.000657	mg/L			04/08/21 23:08	1
m-Xylene & p-Xylene	<0.00400	U	0.00400	0.000629	mg/L			04/08/21 23:08	1
o-Xylene	<0.00200	U	0.00200	0.000642	mg/L			04/08/21 23:08	1
Xylenes, Total	<0.00400	U	0.00400	0.00100	mg/L			04/08/21 23:08	1
Total BTEX	<0.00200	U	0.00200	0.00100	mg/L			04/08/21 23:08	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	118		70 - 130		04/08/21 23:08	1
1,4-Difluorobenzene (Surr)	103		70 - 130		04/08/21 23:08	1

Method: 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	21800		100	4.21	mg/L			04/18/21 20:11	200

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	33400		1000	1000	mg/L			04/10/21 15:16	1

Client Sample ID: Dup-1

Lab Sample ID: 890-492-6

Date Collected: 04/06/21 00:00

Matrix: Water

Date Received: 04/06/21 15:25

Method: 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00200	U	0.00200	0.000408	mg/L			04/08/21 23:28	1
Toluene	<0.00200	U	0.00200	0.000367	mg/L			04/08/21 23:28	1
Ethylbenzene	<0.00200	U	0.00200	0.000657	mg/L			04/08/21 23:28	1
m-Xylene & p-Xylene	<0.00400	U	0.00400	0.000629	mg/L			04/08/21 23:28	1
o-Xylene	<0.00200	U	0.00200	0.000642	mg/L			04/08/21 23:28	1
Xylenes, Total	<0.00400	U	0.00400	0.00100	mg/L			04/08/21 23:28	1
Total BTEX	<0.00200	U	0.00200	0.00100	mg/L			04/08/21 23:28	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	115		70 - 130		04/08/21 23:28	1
1,4-Difluorobenzene (Surr)	101		70 - 130		04/08/21 23:28	1

Method: 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	788		25.0	1.05	mg/L			04/18/21 20:16	50

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	2820		200	200	mg/L			04/10/21 15:16	1

Eurofins Xenco, Carlsbad

Surrogate Summary

Client: GHD Services Inc.
Project/Site: Flamenco Federal #1

Job ID: 890-492-1
SDG: 11220747/02

Method: 8021B - Volatile Organic Compounds (GC)

Matrix: Water

Prep Type: Total/NA

Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	BFB1	DFBZ1
		(70-130)	(70-130)
890-492-1	MW-1	111	101
890-492-2	MW-2	117	102
890-492-3	MW-3	111	99
890-492-4	MW-8	114	102
890-492-5	MW-9	118	103
890-492-6	Dup-1	115	101
LCS 880-1527/3	Lab Control Sample	103	94
LCSD 880-1527/4	Lab Control Sample Dup	103	98
MB 880-1527/8	Method Blank	105	96

Surrogate Legend

BFB = 4-Bromofluorobenzene (Surr)

DFBZ = 1,4-Difluorobenzene (Surr)

QC Sample Results

Client: GHD Services Inc.
Project/Site: Flamenco Federal #1

Job ID: 890-492-1
SDG: 11220747/02

Method: 8021B - Volatile Organic Compounds (GC)

Lab Sample ID: MB 880-1527/8

Matrix: Water

Analysis Batch: 1527

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00200	U	0.00200	0.000408	mg/L			04/08/21 16:03	1
Toluene	<0.00200	U	0.00200	0.000367	mg/L			04/08/21 16:03	1
Ethylbenzene	<0.00200	U	0.00200	0.000657	mg/L			04/08/21 16:03	1
m-Xylene & p-Xylene	<0.00400	U	0.00400	0.000629	mg/L			04/08/21 16:03	1
o-Xylene	<0.00200	U	0.00200	0.000642	mg/L			04/08/21 16:03	1
Xylenes, Total	<0.00400	U	0.00400	0.00100	mg/L			04/08/21 16:03	1
Total BTEX	<0.00200	U	0.00200	0.00100	mg/L			04/08/21 16:03	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	105		70 - 130		04/08/21 16:03	1
1,4-Difluorobenzene (Surr)	96		70 - 130		04/08/21 16:03	1

Lab Sample ID: LCS 880-1527/3

Matrix: Water

Analysis Batch: 1527

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	0.100	0.1034		mg/L		103	70 - 130
Toluene	0.100	0.1155		mg/L		116	70 - 130
Ethylbenzene	0.100	0.1192		mg/L		119	70 - 130
m-Xylene & p-Xylene	0.200	0.2423		mg/L		121	70 - 130
o-Xylene	0.100	0.1170		mg/L		117	70 - 130

Surrogate	LCS %Recovery	LCS Qualifier	Limits
4-Bromofluorobenzene (Surr)	103		70 - 130
1,4-Difluorobenzene (Surr)	94		70 - 130

Lab Sample ID: LCSD 880-1527/4

Matrix: Water

Analysis Batch: 1527

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Benzene	0.100	0.1132		mg/L		113	70 - 130	9	20
Toluene	0.100	0.1194		mg/L		119	70 - 130	3	20
Ethylbenzene	0.100	0.1203		mg/L		120	70 - 130	1	20
m-Xylene & p-Xylene	0.200	0.2468		mg/L		123	70 - 130	2	20
o-Xylene	0.100	0.1207		mg/L		121	70 - 130	3	20

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
4-Bromofluorobenzene (Surr)	103		70 - 130
1,4-Difluorobenzene (Surr)	98		70 - 130

Eurofins Xenco, Carlsbad

QC Sample Results

Client: GHD Services Inc.
Project/Site: Flamenco Federal #1

Job ID: 890-492-1
SDG: 11220747/02

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 880-1981/38

Matrix: Water

Analysis Batch: 1981

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	<0.500	U	0.500	0.0210	mg/L			04/18/21 17:44	1

Lab Sample ID: LCS 880-1981/39

Matrix: Water

Analysis Batch: 1981

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	25.0	25.71		mg/L		103	90 - 110

Lab Sample ID: LCSD 880-1981/40

Matrix: Water

Analysis Batch: 1981

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	25.0	25.75		mg/L		103	90 - 110	0	20

Method: SM 2540C - Solids, Total Dissolved (TDS)

Lab Sample ID: MB 880-1676/1

Matrix: Water

Analysis Batch: 1676

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	<25.0	U	25.0	25.0	mg/L			04/10/21 15:16	1

Lab Sample ID: LCS 880-1676/2

Matrix: Water

Analysis Batch: 1676

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Dissolved Solids	1000	1044		mg/L		104	80 - 120

Lab Sample ID: LCSD 880-1676/3

Matrix: Water

Analysis Batch: 1676

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Total Dissolved Solids	1000	989.0		mg/L		99	80 - 120	NaN	10

Lab Sample ID: 890-492-1 DU

Matrix: Water

Analysis Batch: 1676

Client Sample ID: MW-1

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Total Dissolved Solids	61600		61500		mg/L		0.2	10

Eurofins Xenco, Carlsbad

QC Association Summary

Client: GHD Services Inc.
Project/Site: Flamenco Federal #1

Job ID: 890-492-1
SDG: 11220747/02

GC VOA

Analysis Batch: 1527

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-492-1	MW-1	Total/NA	Water	8021B	
890-492-2	MW-2	Total/NA	Water	8021B	
890-492-3	MW-3	Total/NA	Water	8021B	
890-492-4	MW-8	Total/NA	Water	8021B	
890-492-5	MW-9	Total/NA	Water	8021B	
890-492-6	Dup-1	Total/NA	Water	8021B	
MB 880-1527/8	Method Blank	Total/NA	Water	8021B	
LCS 880-1527/3	Lab Control Sample	Total/NA	Water	8021B	
LCSD 880-1527/4	Lab Control Sample Dup	Total/NA	Water	8021B	

HPLC/IC

Analysis Batch: 1981

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-492-1	MW-1	Total/NA	Water	300.0	
890-492-2	MW-2	Total/NA	Water	300.0	
890-492-3	MW-3	Total/NA	Water	300.0	
890-492-4	MW-8	Total/NA	Water	300.0	
890-492-5	MW-9	Total/NA	Water	300.0	
890-492-6	Dup-1	Total/NA	Water	300.0	
MB 880-1981/38	Method Blank	Total/NA	Water	300.0	
LCS 880-1981/39	Lab Control Sample	Total/NA	Water	300.0	
LCSD 880-1981/40	Lab Control Sample Dup	Total/NA	Water	300.0	

General Chemistry

Analysis Batch: 1676

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-492-1	MW-1	Total/NA	Water	SM 2540C	
890-492-2	MW-2	Total/NA	Water	SM 2540C	
890-492-3	MW-3	Total/NA	Water	SM 2540C	
890-492-4	MW-8	Total/NA	Water	SM 2540C	
890-492-5	MW-9	Total/NA	Water	SM 2540C	
890-492-6	Dup-1	Total/NA	Water	SM 2540C	
MB 880-1676/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 880-1676/2	Lab Control Sample	Total/NA	Water	SM 2540C	
LCSD 880-1676/3	Lab Control Sample Dup	Total/NA	Water	SM 2540C	
890-492-1 DU	MW-1	Total/NA	Water	SM 2540C	

Eurofins Xenco, Carlsbad

Lab Chronicle

Client: GHD Services Inc.
Project/Site: Flamenco Federal #1

Job ID: 890-492-1
SDG: 11220747/02

Client Sample ID: MW-1

Date Collected: 04/06/21 11:50

Date Received: 04/06/21 15:25

Lab Sample ID: 890-492-1

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8021B		1	1527	04/08/21 17:33	AJ	XM
Total/NA	Analysis	300.0		500	1981	04/18/21 19:51	CH	XM
Total/NA	Analysis	SM 2540C		1	1676	04/10/21 15:16	SC	XM

Client Sample ID: MW-2

Date Collected: 04/06/21 12:40

Date Received: 04/06/21 15:25

Lab Sample ID: 890-492-2

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8021B		1	1527	04/08/21 22:06	AJ	XM
Total/NA	Analysis	300.0		100	1981	04/18/21 19:56	CH	XM
Total/NA	Analysis	SM 2540C		1	1676	04/10/21 15:16	SC	XM

Client Sample ID: MW-3

Date Collected: 04/06/21 13:20

Date Received: 04/06/21 15:25

Lab Sample ID: 890-492-3

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8021B		1	1527	04/08/21 22:27	AJ	XM
Total/NA	Analysis	300.0		500	1981	04/18/21 20:01	CH	XM
Total/NA	Analysis	SM 2540C		1	1676	04/10/21 15:16	SC	XM

Client Sample ID: MW-8

Date Collected: 04/06/21 14:20

Date Received: 04/06/21 15:25

Lab Sample ID: 890-492-4

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8021B		1	1527	04/08/21 22:47	AJ	XM
Total/NA	Analysis	300.0		50	1981	04/18/21 20:06	CH	XM
Total/NA	Analysis	SM 2540C		1	1676	04/10/21 15:16	SC	XM

Client Sample ID: MW-9

Date Collected: 04/06/21 14:00

Date Received: 04/06/21 15:25

Lab Sample ID: 890-492-5

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8021B		1	1527	04/08/21 23:08	AJ	XM
Total/NA	Analysis	300.0		200	1981	04/18/21 20:11	CH	XM
Total/NA	Analysis	SM 2540C		1	1676	04/10/21 15:16	SC	XM

Eurofins Xenco, Carlsbad

Lab Chronicle

Client: GHD Services Inc.
Project/Site: Flamenco Federal #1

Job ID: 890-492-1
SDG: 11220747/02

Client Sample ID: Dup-1
Date Collected: 04/06/21 00:00
Date Received: 04/06/21 15:25

Lab Sample ID: 890-492-6
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8021B		1	1527	04/08/21 23:28	AJ	XM
Total/NA	Analysis	300.0		50	1981	04/18/21 20:16	CH	XM
Total/NA	Analysis	SM 2540C		1	1676	04/10/21 15:16	SC	XM

Laboratory References:
XM = Eurofins Xenco, Midland, 1211 W. Florida Ave, Midland, TX 79701, TEL (432)704-5440

Accreditation/Certification Summary

Client: GHD Services Inc.
Project/Site: Flamenco Federal #1

Job ID: 890-492-1
SDG: 11220747/02

Laboratory: Eurofins Xenco, Midland

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	Identification Number	Expiration Date
Texas	NELAP	T104704400-20-21	06-30-21

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
300.0		Water	Chloride
8021B		Water	Total BTEX
SM 2540C		Water	Total Dissolved Solids

Eurofins Xenco, Carlsbad

Method Summary

Client: GHD Services Inc.
Project/Site: Flamenco Federal #1

Job ID: 890-492-1
SDG: 11220747/02

Method	Method Description	Protocol	Laboratory
8021B	Volatile Organic Compounds (GC)	SW846	XM
300.0	Anions, Ion Chromatography	MCAWW	XM
SM 2540C	Solids, Total Dissolved (TDS)	SM	XM
5030B	Purge and Trap	SW846	XM

Protocol References:

MCAWW = "Methods For Chemical Analysis Of Water And Wastes", EPA-600/4-79-020, March 1983 And Subsequent Revisions.

SM = "Standard Methods For The Examination Of Water And Wastewater"

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

XM = Eurofins Xenco, Midland, 1211 W. Florida Ave, Midland, TX 79701, TEL (432)704-5440

Eurofins Xenco, Carlsbad

Sample Summary

Client: GHD Services Inc.
Project/Site: Flamenco Federal #1

Job ID: 890-492-1
SDG: 11220747/02

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
890-492-1	MW-1	Water	04/06/21 11:50	04/06/21 15:25	
890-492-2	MW-2	Water	04/06/21 12:40	04/06/21 15:25	
890-492-3	MW-3	Water	04/06/21 13:20	04/06/21 15:25	
890-492-4	MW-8	Water	04/06/21 14:20	04/06/21 15:25	
890-492-5	MW-9	Water	04/06/21 14:00	04/06/21 15:25	
890-492-6	Dup-1	Water	04/06/21 00:00	04/06/21 15:25	

Eurofins Xenco, Carlsbad



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
 Hobbs, NM (575-392-7550) Phoenix, AZ (480-355-0900) Atlanta, GA (770-449-8800) Tampa, FL (813-620-2000)

Work Order No: _____

www.xenco.com

Page _____ of _____

Project Manager:	Becky Haskell	Bill to: (if different)	James Kennedy
Company Name:	GHD	Company Name:	EOG Resources
Address:	2135 S. Loop 250 W.	Address:	5509 Champions Drive
City, State ZIP:	Midland, TX, 79703	City, State ZIP:	Midland TX
Phone:	432-203-8471	Email:	becky.haskell@ghd.com & Christopher.Knight@ghd.com

Work Order Comments	
Program: <input type="checkbox"/> PST <input type="checkbox"/> PRP <input type="checkbox"/> Brownfields <input type="checkbox"/> RRC <input type="checkbox"/> Superfund	
State of Project:	
Reporting: Level II <input type="checkbox"/> Level III <input type="checkbox"/> PST/UST <input type="checkbox"/> TRRP Level IV <input type="checkbox"/>	
Deliverables: EDD <input type="checkbox"/> ADaPT <input type="checkbox"/> Other:	

ANALYSIS REQUEST										Work Order Notes																																																																																																																																																																														
Project Name:	Flamenco Federal #1									 890-492 Chain of Custody																																																																																																																																																																														
Project Number:	11220747/02																																																																																																																																																																																							
P.O. Number:																																																																																																																																																																																								
Sampler's Name:																																																																																																																																																																																								
<table border="1"> <thead> <tr> <th colspan="2">SAMPLE RECEIPT</th> <th colspan="2">Temp Blank</th> <th colspan="2">Yes</th> <th colspan="2">No</th> <th colspan="2">Wet Ice</th> <th colspan="2">Yes</th> <th colspan="2">No</th> </tr> <tr> <td colspan="2">Temperature (°C):</td> <td colspan="2">19.4</td> <td colspan="2"></td> <td colspan="2"></td> <td colspan="2"></td> <td colspan="2"></td> <td colspan="2"></td> </tr> <tr> <td colspan="2">Received Intact:</td> <td colspan="2">Yes</td> <td colspan="2">No</td> <td colspan="2">T-NM-007</td> <td colspan="2"></td> <td colspan="2"></td> <td colspan="2"></td> </tr> <tr> <td colspan="2">Cooler Custody Seals:</td> <td colspan="2">Yes</td> <td colspan="2">No</td> <td colspan="2">N/A</td> <td colspan="2"></td> <td colspan="2"></td> <td colspan="2"></td> </tr> <tr> <td colspan="2">Sample Custody Seals:</td> <td colspan="2">Yes</td> <td colspan="2">No</td> <td colspan="2">N/A</td> <td colspan="2"></td> <td colspan="2"></td> <td colspan="2"></td> </tr> </thead> <tbody> <tr> <th>Sample Identification</th> <th>Matrix</th> <th>Date Sampled</th> <th>Time Sampled</th> <th>Depth</th> <th colspan="9">Number of Containers</th> </tr> <tr> <td>MW-1</td> <td>GW</td> <td>4/6/21</td> <td>1130</td> <td>DTW</td> <td>4</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td colspan="5">BTX 8021/8260</td> </tr> <tr> <td>MW-2</td> <td></td> <td></td> <td>1240</td> <td></td> <td>4</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td colspan="5"></td> </tr> <tr> <td>MW-3</td> <td></td> <td></td> <td>1320</td> <td></td> <td>4</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td colspan="5"></td> </tr> <tr> <td>MW-8</td> <td></td> <td></td> <td>1400</td> <td></td> <td>4</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td colspan="5"></td> </tr> <tr> <td>MW-9</td> <td></td> <td></td> <td>1400</td> <td></td> <td>4</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td colspan="5"></td> </tr> <tr> <td>Dup-1</td> <td>GW</td> <td>-</td> <td>-</td> <td>DTW</td> <td>4</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td colspan="5"></td> </tr> </tbody> </table>										SAMPLE RECEIPT		Temp Blank		Yes		No		Wet Ice		Yes		No		Temperature (°C):		19.4												Received Intact:		Yes		No		T-NM-007								Cooler Custody Seals:		Yes		No		N/A								Sample Custody Seals:		Yes		No		N/A								Sample Identification	Matrix	Date Sampled	Time Sampled	Depth	Number of Containers									MW-1	GW	4/6/21	1130	DTW	4	X	X	X	X	BTX 8021/8260					MW-2			1240		4	X	X	X	X						MW-3			1320		4	X	X	X	X						MW-8			1400		4	X	X	X	X						MW-9			1400		4	X	X	X	X						Dup-1	GW	-	-	DTW	4	X	X	X	X						TAT starts the day received by the lab, if received by 4:30pm Sample Comments Sampled @ 1420 MW-9 (2) not full container
SAMPLE RECEIPT		Temp Blank		Yes		No		Wet Ice		Yes		No																																																																																																																																																																												
Temperature (°C):		19.4																																																																																																																																																																																						
Received Intact:		Yes		No		T-NM-007																																																																																																																																																																																		
Cooler Custody Seals:		Yes		No		N/A																																																																																																																																																																																		
Sample Custody Seals:		Yes		No		N/A																																																																																																																																																																																		
Sample Identification	Matrix	Date Sampled	Time Sampled	Depth	Number of Containers																																																																																																																																																																																			
MW-1	GW	4/6/21	1130	DTW	4	X	X	X	X	BTX 8021/8260																																																																																																																																																																														
MW-2			1240		4	X	X	X	X																																																																																																																																																																															
MW-3			1320		4	X	X	X	X																																																																																																																																																																															
MW-8			1400		4	X	X	X	X																																																																																																																																																																															
MW-9			1400		4	X	X	X	X																																																																																																																																																																															
Dup-1	GW	-	-	DTW	4	X	X	X	X																																																																																																																																																																															

Total	200.7 / 6010	200.8 / 6020:	8RCRA 13PPM Texas 11	Al	Sb	As	Ba	Be	B	Cd	Ca	Co	Cu	Fe	Pb	Mg	Mn	Mo	Ni	K	Se	Ag	SiO2	Na	Sr	Ti	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 Ti U 1631 / 245.1 / 7470 / 7471 : Hg																											

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

Relinquished by: (Signature)	Received by: (Signature)	Date/Time	Relinquished by: (Signature)	Received by: (Signature)	Date/Time
		4/6/21 @ 1300	Garbey Ordanez		4/6/21 15:25

Revised Date 05/14/18 Rev 2018.1



Chain of Custody

Work Order No: _____

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
 Hobbs, NM (575-392-7550) Phoenix, AZ (480-355-0900) Atlanta, GA (770-449-8800) Tampa, FL (813-620-2000)

www.xenco.com Page _____ of _____

Project Manager:	Becky Haskell	Bill to: (if different)	James Kennedy
Company Name:	GHD	Company Name:	EOG Resources
Address:	2135 S. Loop 250 W.	Address:	5509 Champions Drive
City, State ZIP:	Midland, TX 79703	City, State ZIP:	Midland TX
Phone:	432-203-8471	Email:	becky.haskell@ghd.com & Christopher.Knight@ghd.com

Work Order Comments	
Program: <input type="checkbox"/> PST <input type="checkbox"/> PRP <input type="checkbox"/> Brownfields <input type="checkbox"/> RRC <input type="checkbox"/> Superfund	
State of Project:	
Reporting: Level II <input type="checkbox"/> Level III <input type="checkbox"/> PST/UST <input type="checkbox"/> TRRP	Level IV <input type="checkbox"/>
Deliverables: EDD <input type="checkbox"/> ADaPT <input type="checkbox"/> Other:	

Project Name:	Flamenco Federal #1	Turn Around
Project Number:	11220747/02	Routine <input checked="" type="checkbox"/>
P.O. Number:		Rush:
Sampler's Name:		Due Date:

SAMPLE RECEIPT		Temp Blank	Yes	No	Wet Ice	Yes	No
Temperature (°C):	19.4	Yes	No	Thermometer ID			
Received Intact:	(Yes) No	T-NM-007					
Cooler Custody Seals:	Yes (No) N/A	Correction Factor: 19.2					
Sample Custody Seals:	Yes (No) N/A	Total Containers:					

Sample Identification	Matrix	Date Sampled	Time Sampled	Depth	Number of Containers	BTEX 8021/8260	Chloride	TDS
MW-1	GW	4/6/21	1130	DTW	4	X	X	X
MW-2			1240		4	X	X	X
MW-3			1320		4	X	X	X
MW-8			1400		4	X	X	X
MW-9			1400		4	X	X	X
Dup-1	GW	-	-	DTW	4	X	X	X

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 Ti 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 Ti 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
1 <i>[Signature]</i>	2 <i>Garby Ordonez</i>	4/6/21 15:25
3	4	
5	6	

Revised Date 051418 Rev. 2018.1

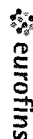
Eurofins Xenco, Carlsbad

1089 N Canal St.

Carlsbad, NM 88220

Phone: 575-988-3199 Fax: 575-988-3199

Chain of Custody Record



Environment Testing America

[illegible]

Login Sample Receipt Checklist

Client: GHD Services Inc.

Job Number: 890-492-1

SDG Number: 11220747/02

Login Number: 492**List Number: 1****Creator: Clifton, Cloe****List Source: Eurofins Carlsbad**

Question	Answer	Comment
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	

Login Sample Receipt Checklist

Client: GHD Services Inc.

Job Number: 890-492-1

SDG Number: 11220747/02

Login Number: 492**List Number: 2****Creator: Mireles, David****List Source: Eurofins Midland****List Creation: 04/07/21 03:23 PM**

Question	Answer	Comment
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	

Attachment E

2018 Annual Groundwater Monitoring Report



2018 Annual Groundwater Monitoring Report

Flamenco Fed #1
Lea, New Mexico

EOG Resources Inc.





Table of Contents

1.	Introduction.....	1
2.	Background Information	1
2.1	Tin Horn Area.....	1
2.2	Battery Area	2
3.	GHD Assessment Summary	2
3.1	Tin Horn Area Releases (1RP-2790, 1RP-4800, and 1RP-4801)	2
3.2	Battery Area Release (1RP-2281)	3
4.	Soil Borings and Monitoring Well Installation	3
4.1	Soil Borings and Monitor Well Installation Activities	3
5.	Groundwater Monitoring.....	4
5.1	Groundwater Monitoring Methodology.....	4
5.2	Groundwater Monitoring Analytical Results	4
6.	Conclusion and Recommendations	5

Figure Index

Figure 1	Site Location Map
Figure 2	Tin Horn Assessment Sample Location Map
Figure 3	Battery Area Assessment Sample Location Map
Figure 4	Site Details and 2018 Soil Boring Sample Concentrations Map
Figure 5	2018/2019 Groundwater Concentrations Map
Figure 6	Groundwater Gradient Map - June 2018
Figure 7	Groundwater Gradient Map - October 2018
Figure 8	Groundwater Gradient Map - January 2019



Table Index

Table 1	Summary of Soil Analytical Data - 2018
Table 2	Fluid Levels and Groundwater Elevations
Table 3	Field Parameters Summary
Table 4	Groundwater Analytical Results Summary

Appendix Index

Appendix A	Soil Analytical Laboratory Results
Appendix B	Soil Boring Logs and Monitoring Well Details
Appendix C	NMSOE Well Permits and BLM Sundry
Appendix D	Monitoring Well Surveys
Appendix E	Groundwater Analytical Laboratory Results



1. Introduction

GHD Services Inc. (GHD) is pleased to present the results of groundwater monitoring well installation and quarterly groundwater monitoring conducted in 2018 and January 2019 at the Flamenco Fed #1 (Site). The Site is located within Unit L, Section 7, Township 22 South, Range 32 East, in Lea County, New Mexico (Figure 1). EOG Resources, Inc. (EOG) is the current Site producer. Surface ownership is that of the U.S. Bureau of Land Management (BLM).

2. Background Information

2.1 Tin Horn Area

The Site is an active well site located approximately 30 miles east of Carlsbad, New Mexico. According to EOG supplied data, a release of approximately 275 barrels (bbls) of produced water occurred when a water line connection in a tin horn failed. Approximately 260 bbls of produced water was recovered utilizing a vacuum truck. The release was discovered on October 21, 2011. A C-141 Form was submitted to the New Mexico Oil Conservation Division (NMOCD) on November 2, 2011 and remediation permit number 1RP-2790 was assigned. GHD was unable to determine if the final C-141 was approved.

A second release occurred on June 12, 2013 that consisted of 200 bbls of produced water. None of the produced water was recovered. A third release occurred on August 4, 2013 that consisted of 600 bbls of produced water, none of which was recovered. Both of these releases were also the result of a water line failure at a tin horn and occurred at the same location as the first release. Yates Petroleum Corporation (Yates), former Site producer, submitted a C-141 Form to the NMOCD and BLM on August 5, 2013 regarding the third release. A final C-141, dated January 31, 2014 was prepared, but was not approved by NMOCD. However, GHD was unable to determine if a remediation permit number was assigned to these releases. However, the releases were assigned 1RPs-4800 and 4801 by NMOCD on September 6, 2017.

Initial delineation samples were collected for the first release on November 30, 2011 by Yates. One composite soil sample, consisting of soil from three areas, was collected from depths of 1, 2, and 3 feet below ground surface (ft bgs). The samples were submitted to Xenco Laboratories (Xenco) in Odessa, Texas for analyses of chloride by EPA Method 300, benzene, toluene, ethylbenzene, and xylenes (BTEX) by EPA Method 8021B, and gasoline and diesel range total petroleum hydrocarbons (TPH) by EPA Method 8015. None of the samples contained BTEX or TPH constituents above the laboratory reporting limit (LRL). Chloride concentrations ranged from 4,210 to 8,260 milligrams per kilogram (mg/kg).

Initial delineation samples were collected for the second and third releases on August 21, 2013 by Yates. One composite soil sample, consisting of soil from three areas, was collected from depths of 1, 2, and 3 ft bgs. The samples were submitted to Cardinal Laboratories in Hobbs, New Mexico for analysis of chloride by method SM4500CL-B, BTEX by EPA Method 8021B, and TPH by EPA Method 8015. None of the samples contained BTEX or TPH constituents above the LRL. Chloride concentrations ranged from 7,730 to 11,400 mg/kg. Additional samples were collected and analyzed



between September 24, 2013 and January 24, 2014. Chloride concentrations exceeding the Recommended Remediation Action Limits (RRALs) were encountered to a depth of 8 ft bgs. Two samples collected at 8 ft bgs at two locations contained chloride concentrations of 2,460 and 4,200 mg/kg.

2.2 Battery Area

According to EOG-obtained information, a release of approximately 100 bbl of oil and 600 bbls of produced water occurred when lightning struck a 750 bbl fiberglass gun tank causing a fire that destroyed four other tanks. None of the oil and produced water was recovered. The release was discovered on August 11, 2009. A C-141 Form was submitted to the NMOCD and the BLM on August 20, 2009 and 1RP-2281 was assigned. A final C-141 was submitted to the NMOCD on April 13, 2010; however, there was no indication that it was approved.

Initial delineation samples were collected for the release on August 27, 2009 by Yates. One composite soil sample from three areas was collected from depths of 3, 4, 5, and 6 ft bgs. The samples were submitted to Xenco analysis of chloride by EPA Method 300.0, BTEX by EPA Method 8021B, and TPH by EPA Method 8015. Total BTEX concentrations ranged from below the LRLs to 1.922 mg/kg and total TPH constituents ranged from below the LRLs to 2,800 mg/kg. Chloride concentrations ranged from 1,210 to 8,310 mg/kg.

Soil contaminated with TPH constituents above the applicable NMOCD Site-specific RRALs extended to a depth of 2 ft bgs and chloride contaminated soil exceeding the RRAL extended to a depth of 6 ft bgs.

Yates excavated the soil to a depth of 1 to 2 ft bgs and disposed of it at an NMOCD-approved facility. Yates proposed to remove 2 feet of soil from the pad and blend it with soils in the pasture to a depth of 3 ft bgs and reseed the area. The work was reportedly completed by Yates.

Yates collected three additional composite samples from three areas at depths of 3, 4, and 5 ft bgs on March 30, 2010. The samples were submitted to Xenco for chloride analysis by EPA Method 300.0. Chloride concentrations ranged from 824 to 8,310 mg/kg with the highest concentration from the sample collected at 5 ft bgs.

3. GHD Assessment Summary

Based on the above assumed Site history, GHD performed additional assessments to assess the horizontal and vertical extent of chlorides in the subsurface. A summary of GHD's assessment activities is presented below.

3.1 Tin Horn Area Releases (1RP-2790, 1RP-4800, and 1RP-4801)

- GHD performed assessment activities that included test pits, excavation oversight, and soil sampling (see attached Figure 2).
- Approximately 600 cubic yards of soil were excavated and stockpiled on-site (for possible future reuse).



- The horizontal extent of impacted soil was assessed to the north, east, and south. Chloride-impacted soil with concentrations above the RRALs remain to the west due to the fence line and close proximity to Campbell Road.
- GHD advanced two soil borings (SB-2 and SB-3) to depths of 50 and 30 ft bgs, respectively.
- Groundwater was encountered at approximately 50 ft in SB-2 and the soil boring was terminated. Installation of a well was attempted, however, the boring collapsed.
- Laboratory soil chloride concentrations ranged from below the LRL to 9,000 mg/kg with the highest concentration found in TP-11 at a depth of 10 ft bgs during the above activities. The sample collected from 50 ft bgs in SB-2 contained a chloride concentration of 650 mg/kg.

3.2 Battery Area Release (1RP-2281)

- GHD performed assessment activities that included test pits, soil borings, and soil sampling (Figure 3).
- Analytical soil chloride concentrations ranged from below the LRL to 13,000 milligrams per kilogram (mg/kg) during the above activities.
- The horizontal extent of chloride-impacted soils was assessed to the east, south, and west. Chloride-impacted soil has not been assessed to the northwest.
- Soil chloride concentrations of 780 and 1,200 mg/kg were encountered at a depth of 45 ft bgs.

4. Soil Borings and Monitoring Well Installation

4.1 Soil Borings and Monitor Well Installation Activities

Ten soil borings were completed at the Site during 2018 in order to assess the vertical and horizontal extent of the chloride contaminated soil (locations are shown on Figure 4). Depths of the soil borings ranged from 25 to 65 ft bgs. A hard caliche layer was encountered in soil boring MW-5 at 25 ft bgs and it was terminated. Soil borings that did not encounter water were grouted. In five soil borings where groundwater was encountered, a monitoring well was installed. Soil samples were collected from the soil borings utilizing a split spoon sampler and select samples were submitted to Hall Environmental Analysis Laboratory (HEAL) of Albuquerque, New Mexico. The samples were analyzed for chloride by EPA Method 300. Chloride concentrations ranged from below the LRL to 2,200 mg/kg with the highest concentrations found in the soil from the MW-1 soil boring at a depth of 40 ft bgs.

The results are summarized on Table 1 and the analytical reports are included in Appendix A. Soil boring Logs with Well Completion Diagrams are included as Appendix B.

Monitoring wells MW-1, MW-2 and MW-3 were installed in January 2018 by White Drilling Company, Inc. of Clyde, Texas and wells MW-8 and MW-9 were installed in August 2018 by Authentic Drilling, Inc. of Castle Rock, Colorado. All borings were advanced utilizing an air rotary drill rig.



Prior to well installation, the appropriate permits were obtained from the New Mexico Office of the State Engineer and from the BLM. Copies are included in Appendix C. The soil boring locations were cleared via New Mexico One Call prior to mobilization.

Wells were constructed of 2-inch diameter flush-threaded schedule 40 polyvinyl chloride (PVC) casing and 0.020-inch slot PVC screen. Wells were completed to a depth of approximately 65-70 ft bgs with 20 ft of screen.

The annulus of each constructed monitoring well was backfilled with a 10/20 silica sand filter pack to approximately 2 ft above the top of the screen interval. An approximate 2 to 5-foot thick 3/8-inch bentonite chip seal was placed on top of the sand and hydrated. The remainder of each well annulus was grouted to the ground surface with a 95% Portland cement/ 5% bentonite powder grout. Each monitor well was constructed with a stick-up well completion in a concrete pad rising 2 to 3 ft above ground surface.

The well locations and tops of casing were surveyed by a New Mexico licensed surveyor from High Mesa Consulting Group of Albuquerque, New Mexico. A copies of the surveys are included in Appendix D.

5. Groundwater Monitoring

Monitor wells MW-1, MW-2 and MW-3 were gauged and sampled in 2018 during February, June and October. Monitor wells MW-8 and MW-9 were installed in August 2018 but were not sampled at installation or during the October 2018 and January 2019 sampling events due to insufficient water volume.

5.1 Groundwater Monitoring Methodology

Prior to collection of groundwater samples, the depth to groundwater in each well was measured using an oil/water interface probe. Fluid levels and groundwater elevations are detailed in Table 2.

A groundwater potentiometric surface map was created using gauging data from the June 2018, October 2018, and January 2019 quarterly monitoring events and are presented as Figures 5 through 8.

Site wells containing a sufficient quantity of water were purged of at least three casing volumes of groundwater using a 1.5-inch diameter, polyethylene bailer prior to sampling. Groundwater quality parameters including pH, temperature, conductivity, dissolved oxygen, and oxidation reduction potential were collected using a multi parameter groundwater quality sonde and are summarized on Table 3. Following collection, groundwater samples were labeled, placed on ice, and submitted to HEAL for analyses of chlorides and Total Dissolved Solids (TDS) by EPA Method 300.0. Field parameter data is included in Table 3.

5.2 Groundwater Monitoring Analytical Results

The following New Mexico Water Quality Control Commission (NMWQCC) groundwater standard exceedances are reported:



2018: February, June, and October

- Chloride concentrations exceeded the NMWQCC groundwater standard of 250 mg/L in all Site wells for all sampling events. Chloride concentrations ranged from 6,900 mg/L to 49,000 mg/L.
- TDS concentrations exceeded the NMWQCC groundwater standard of 1,000 mg/L in all Site wells for all sampling events. TDS concentrations ranged from 15,300 mg/L to 97,600 mg/L.

2019: January

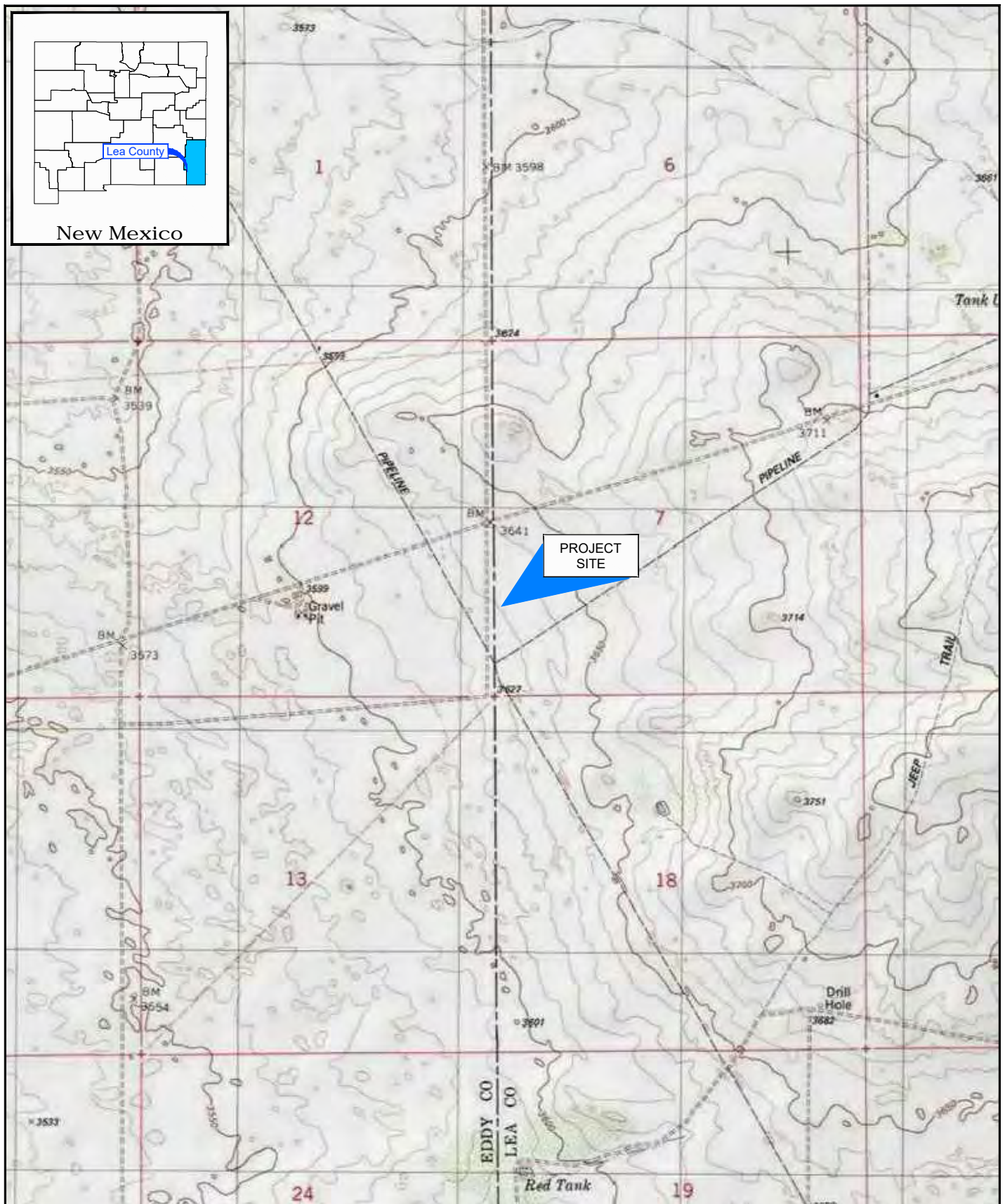
- Chloride concentrations exceeded the NMWQCC groundwater standard of 250 mg/L in all Site wells. Chloride concentrations ranged from 8,000 mg/L to 47,000 mg/L.
- TDS concentrations exceeded the NMWQCC groundwater standard of 1,000 mg/L in all Site wells. TDS concentrations ranged from 18,400 mg/L to 100,000 mg/L.

A summary of laboratory results is shown on Figure 3 and included on Table 4. Copies of Laboratory Analytical Reports for the 2018 and 2019 groundwater sampling events are included in Appendix E.

6. Conclusion and Recommendations

Based on the analytical data collected from Site groundwater monitoring wells, chloride and TDS concentrations exceeded the NMWQCC standards in all wells sampled for all sampling periods. GHD recommends the installation of a groundwater monitoring well in the hydraulically up-gradient direction to ascertain background groundwater quality, specifically, TDS concentration. If the groundwater concentration of TDS is established above 10,000 mg/kg in the background well, then in accordance with 20 NMAC 20.6.2.3103, the aquifer beneath the Site is not protected and Site closure will be requested.

Figures



Source: USGS 7.5 Minute Quad "The Divide and Livingston Ridge, New Mexico"

Lat/Long: 32.402374° North, 103.722648° West

0 1000 2000ft

Coordinate System:
NAD 1983 (2011) StatePlane-
New Mexico East (US Feet)



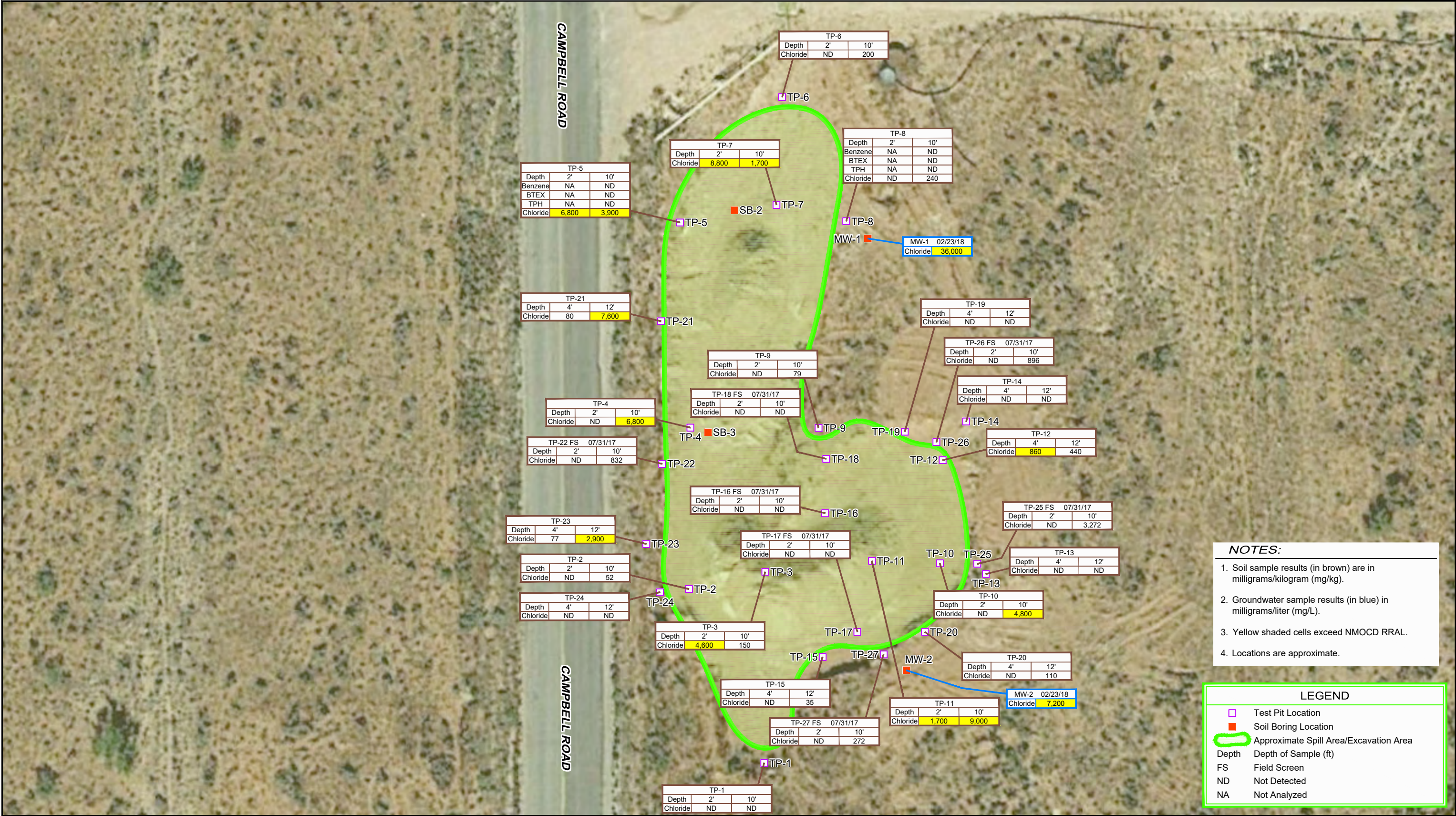
EOG RESOURCES
LEA COUNTY, NEW MEXICO
FLAMENCO FEDERAL No.1

SITE LOCATION MAP

088210-34

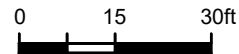
Jun 21, 2017

FIGURE 1



Source: Image © 2016 Google - Imagery Date: February 1, 2017

Lat/Long: 32.402374° North, 103.722648° West



Coordinate System:
NAD 1983 (2011) StatePlane-
New Mexico East (US Feet)

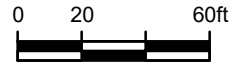
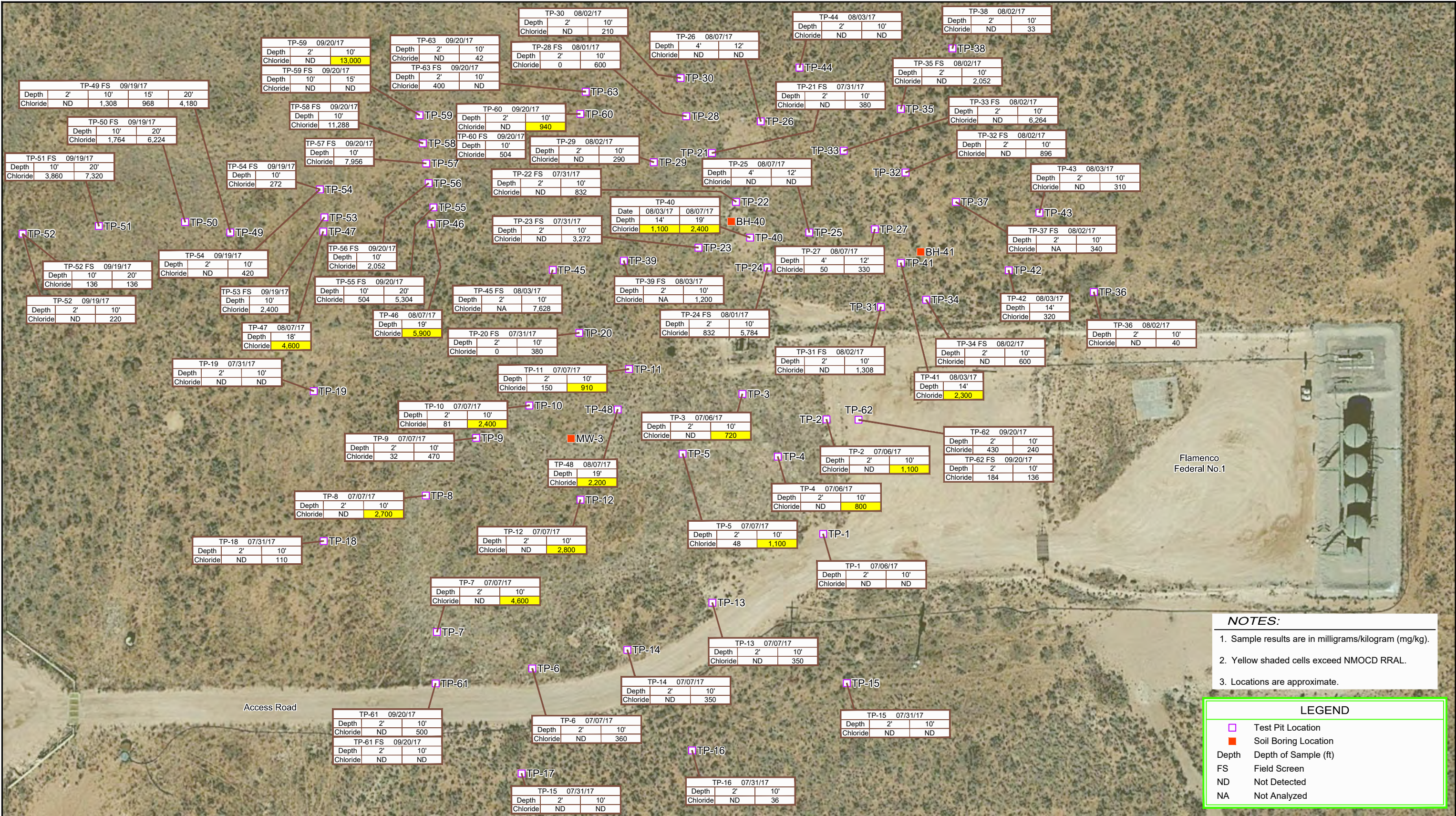


EOG RESOURCES
LEA COUNTY, NEW MEXICO
FLAMENCO FEDERAL No.1
TIN HORN ASSESSMENT
SAMPLE LOCATION MAP

088210-34

Feb 18, 2019

FIGURE 2



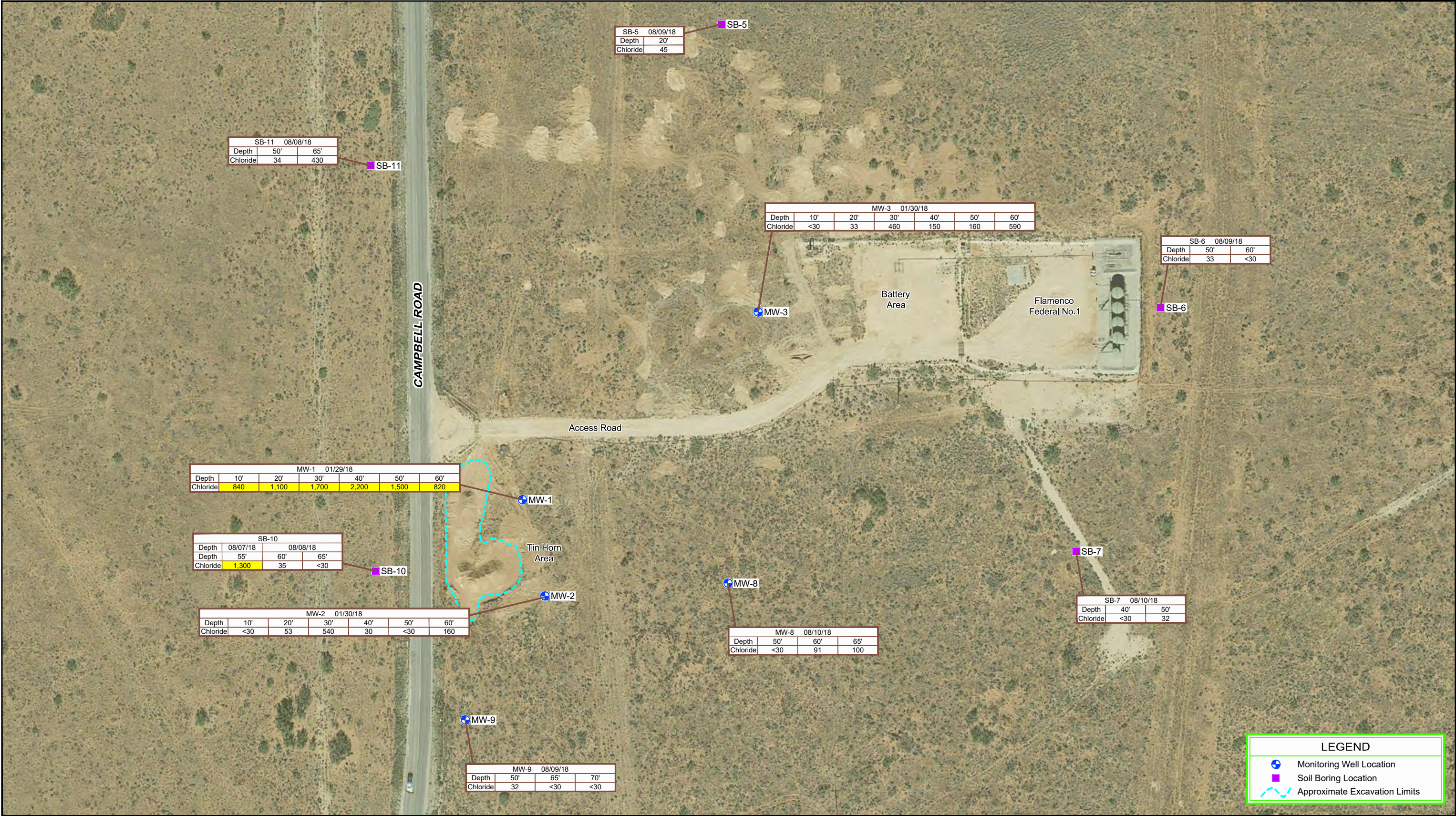
Coordinate System:
NAD 1983 (2011) StatePlane-
New Mexico East (US Feet)



EOG RESOURCES
LEA COUNTY, NEW MEXICO
FLAMENCO FEDERAL No.1 - BATTERY AREA
BATTERY AREA ASSESSMENT
SAMPLE LOCATION MAP

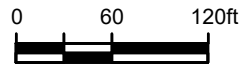
088210-34
Jun 18, 2018

FIGURE 3



Source: Image © 2017 Google - Imagery Date: November 2, 2017

Lat/Long: 32.402374° North, 103.722648° West



Coordinate System:
NAD 1983 (2011) StatePlane-
New Mexico East (US Feet)



NOTES:

- Chloride groundwater sample results in milligrams/kilogram (mg/kg).
- Yellow shaded cells exceed NMOCd RRAL.
- Locations are approximate.



EOG RESOURCES
LEA COUNTY, NEW MEXICO
FLAMENCO FEDERAL No.1
SITE DETAILS AND 2018
SOIL BORING SAMPLE CONCENTRATIONS MAP

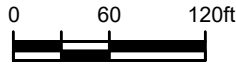
088210-34
Feb 18, 2019

FIGURE 4



Source: Image © 2017 Google - Imagery Date: November 2, 2017

Lat/Long: 32.402374° North, 103.722648° West



Coordinate System:
NAD 1983 (2011) StatePlane-
New Mexico East (US Feet)



NOTES:

1. Chloride groundwater sample results in milligrams/liter (mg/L).
2. TDS groundwater sample results in milligrams/liter (mg/L).
3. Yellow shaded cells exceed NMOCD RRAL.
4. Locations are approximate.



EOG RESOURCES
LEA COUNTY, NEW MEXICO
FLAMENCO FEDERAL No.1

088210-34
Feb 18, 2019

2018/2019 GROUNDWATER CONCENTRATIONS MAP

FIGURE 5



Source: Image © 2017 Google - Imagery Date: November 2, 2017

Lat/Long: 32.402374° North, 103.722648° West

0 60 120ft

Coordinate System:
NAD 1983 (2011) StatePlane-
New Mexico East (US Feet)



NOTES:

1. Groundwater elevations indicated are from measurements obtained on June 21, 2018.
2. The apparent groundwater gradient and direction of flow were determined to be approximately 0.024 ft/ft to the southwest.



EOG RESOURCES
LEA COUNTY, NEW MEXICO
FLAMENCO FEDERAL No.1

GROUNDWATER GRADIENT MAP - JUNE 2018

088210-34

Feb 18, 2019

FIGURE 6



Source: Image © 2017 Google - Imagery Date: November 2, 2017

Lat/Long: 32.402374° North, 103.722648° West

0 60 120ft

Coordinate System:
NAD 1983 (2011) StatePlane-
New Mexico East (US Feet)



NOTES:

1. Groundwater elevations indicated are from measurements obtained on October 19, 2018.
2. The apparent groundwater gradient and direction of flow were determined to be approximately 0.045 ft/ft to the southwest.



EOG RESOURCES
LEA COUNTY, NEW MEXICO
FLAMENCO FEDERAL No.1

088210-34

Feb 18, 2019

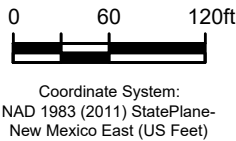
GROUNDWATER GRADIENT MAP - OCTOBER 2018

FIGURE 7



Source: Image © 2017 Google - Imagery Date: November 2, 2017

Lat/Long: 32.402374° North, 103.722648° West



NOTES:

1. Groundwater elevations indicated are from measurements obtained on January 11, 2019.
2. The apparent groundwater gradient and direction of flow were determined to be approximately 0.025 ft/ft to the southwest.



EOG RESOURCES
LEA COUNTY, NEW MEXICO
FLAMENCO FEDERAL No.1

088210-34
Feb 18, 2019

GROUNDWATER GRADIENT MAP - JANUARY 2019

FIGURE 8

Tables

Table 1
Summary of Soil Analytical Data - 2018
EOG Resources Inc.
Flamenco Fed #1
Lea County, New Mexico

Page 1 of 1

Sample ID	Monitoring Well ID	Depth (feet)	Date	Chloride
088210-34-012918-MG-MW-5-10'	MW-1	10	1/29/2018	840
088210-34-012918-MG-MW-5-20'	MW-1	20	1/29/2018	1,100
088210-34-012918-MG-MW-5-30'	MW-1	30	1/29/2018	1,700
088210-34-012918-MG-MW-5-40'	MW-1	40	1/29/2018	2,200
088210-34-012918-MG-MW-5-50'	MW-1	50	1/29/2018	1,500
088210-34-012918-MG-MW-5-60'	MW-1	60	1/29/2018	820
088210-34-013018-MG-MW-6-10'	MW-2	10	1/30/2018	<30
088210-34-013018-MG-MW-6-20'	MW-2	20	1/30/2018	53
088210-34-013018-MG-MW-6-30'	MW-2	30	1/30/2018	540
088210-34-013018-MG-MW-6-40'	MW-2	40	1/30/2018	30
088210-34-013018-MG-MW-6-50'	MW-2	50	1/30/2018	<30
088210-34-013018-MG-MW-6-60'	MW-2	60	1/30/2018	160
088210-34-013018-MG-MW-7-10'	MW-3	10	1/30/2018	<30
088210-34-013018-MG-MW-7-20'	MW-3	20	1/30/2018	33
088210-34-013018-MG-MW-7-30'	MW-3	30	1/30/2018	460
088210-34-013018-MG-MW-7-40'	MW-3	40	1/30/2018	150
088210-34-013018-MG-MW-7-50'	MW-3	50	1/30/2018	160
088210-34-013018-MG-MW-7-60'	MW-3	60	1/30/2018	590
088210-34-080918-JP-SB-5-20	--	20	8/9/2018	45
088210-34-080918-JP-SB-6-50	--	50	8/9/2018	33
088210-34-080918-JP-SB-6-60	--	60	8/9/2018	<30
088210-34-081018-JP-SB-7-40	--	40	8/10/2018	<30
088210-34-081018-JP-SB-7-50	--	50	8/10/2018	32
088210-34-081018-JP-SB-8-50	MW-8	50	8/10/2018	<30
088210-34-081018-JP-SB-8-60	MW-8	60	8/10/2018	91
088210-34-081018-JP-SB-8-65	MW-8	65	8/10/2018	100
088210-34-080918-JP-SB-9-50	MW-9	50	8/9/2018	32
088210-34-080918-JP-SB-9-65	MW-9	65	8/9/2018	<30
088210-34-080918-JP-SB-9-70	MW-9	70	8/9/2018	<30
088210-34-080718-JP-SB-10-55	--	55	8/7/2018	1,300
088210-34-080818-JP-SB-10-60	--	60	8/8/2018	35
088210-34-080818-JP-SB-10-65	--	65	8/8/2018	<30
088210-34-080818-JP-SB-11-50	--	50	8/8/2018	34
088210-34-080818-JP-SB-11-65	--	65	8/8/2018	430
NMOCD RRALs (Total Ranking Score =20)				600

Notes:

All sample results are in milligrams per kilogram

NA = Not Analyzed

NMOCD = New Mexico Oil Conservation Division

RRALs = Recommended Remediation Action Limits

Highlighted = Exceeds NMOCD RRAL

Table 2
Fluid Levels and Groundwater Elevations
EOG Resources Inc.
Flamenco Fed #1
Lea County, New Mexico

Well	TOC Elevation (ft)	Date	Depth to Water (ft)	GW Elevation (ft)
MW-1	3636.22	2/23/2018	54.42	3,581.80
		6/21/2018	55.19	3,581.03
		10/19/2018	55.63	3,580.59
		1/11/2019	55.17	3,581.05
MW-2	3636.08	2/23/2018	47.38	3,588.70
		6/21/2018	57.36	3,578.72
		10/19/2018	57.54	3,578.54
		1/11/2019	57.21	3,578.87
MW-3	3642.27	2/23/2018	51.83	3,590.44
		6/21/2018	52.22	3,590.05
		10/19/2018	52.57	3,589.70
		1/11/2019	52.44	3,589.83
MW-8	3634.889	10/19/2018	65.04	3,569.85
		1/11/2019	Dry	
MW-9	3641.131	10/19/2018	66.87	3,574.26
		1/11/2019	Dry	

Table 3
Field Parameters Summary
EOG Resources Inc.
Flamenco Fed #1
Lea County, New Mexico

Well ID	Sample Date	Temperature (°C)	pH	TDS (g/L)	Conductivity (µS/cm)	DO (mg/L)	ORP (mV)	Volume (gallons)
MW-1	2/23/2018	18.58	NA	51.14	78,692	10.92	315	--
	6/21/2018	21.48	6.07	0.754	1,142	25.67	--	4.05
	10/19/2018	18.1	6.38	63.61	97,859	9.22	213	4.5
	1/11/2019	16.76	6.15	69.44	90,094	4.52	146.4	3.5
MW-2	2/23/2018	18.07	NA	12.55	19,260	13.38	294.3	--
	6/21/2018	20.15	6.73	7.418	11,406	19.39	--	3
	10/19/2018	18.37	6.82	13.98	21,524	12.96	-21.9	3
	1/11/2019	17.27	6.60	15.09	19,849	6.80	30.2	2.5
MW-3	2/23/2018	18.35	NA	55.3	85,075	6.79	330.5	--
	6/21/2018	19.21	6.21	69.75	107,268	6.6	--	4.5
	10/19/2018	17.83	6.26	68.62	105,520	4.4	7.4	4.5
	1/11/2019	17.20	5.83	77.89	101,192	2.83	3.3	3.5

--= not measured

Table 4
Groundwater Analytical Results Summary
EOG Resources Inc.
Flamenco Fed #1
Lea County, New Mexico

Page 1 of 1

Well ID	Sample ID	Date	Chloride (mg/L)	TDS (mg/L)
NMWQCC Standard			250	1,000
MW-1	W-088210-34-022318-JP-MW-1	2/23/2018	36,000	--
	W-088210-34-062118-PL-MW-1	6/21/2018	38,000	73,200
	GW-088210-34-101918-PL-MW-1	10/19/2018	47,000	82,000
	GW-088210-34-011119-MM-MW-1	1/11/2019	44,000	85,300
MW-2	W-088210-34-022318-JP-MW-2	2/23/2018	7,200	--
	W-088210-34-062118-PL-MW-2	6/21/2018	6,900	15,300
	GW-088210-34-101918-PL-MW-2	10/19/2018	8,000	15,800
	GW-088210-34-011119-MM-MW-2	1/11/2019	8,000	18,400
MW-3	W-088210-34-022318-JP-MW-3	2/23/2018	38,000	--
	W-088210-34-062118-PL-MW-3	6/21/2018	43,000	82,700
	GW-088210-34-101918-PL-MW-3	10/19/2018	49,000	97,600
	GW-088210-34-011119-MM-MW-3	1/11/2019	47,000	100,000

-- = not measured

Appendices

Appendix A

Soil Analytical Laboratory Results



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

February 20, 2018

Bernie Bockisch

GHD

6121 Indian School Road, NE #200

Albuquerque, NM 87110

TEL: (505) 884-0672

FAX

RE: Flamenco

OrderNo.: 1802125

Dear Bernie Bockisch:

Hall Environmental Analysis Laboratory received 18 sample(s) on 2/2/2018 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 #NM0190

Sincerely,

A handwritten signature in black ink, appearing to read 'Andy Freeman', is written over a horizontal line.

Andy Freeman

Laboratory Manager

4901 Hawkins NE

Albuquerque, NM 87109

Analytical Report

Lab Order: 1802125

Date Reported: 2/20/2018

Hall Environmental Analysis Laboratory, Inc.

CLIENT: GHD
Project: Flamenco

Lab Order: 1802125

Lab ID: 1802125-001 **Collection Date:** 1/29/2018 12:30:00 PM
Client Sample ID: S-088210-34-012918-MG-MW-5-10' **Matrix:** SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 300.0: ANIONS Analyst: MRA							
Chloride	840	30		mg/Kg	20	2/13/2018 1:11:56 PM	36495

Lab ID: 1802125-002 **Collection Date:** 1/29/2018 12:40:00 PM
Client Sample ID: S-088210-34-012918-MG-MW-5-20' **Matrix:** SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 300.0: ANIONS Analyst: MRA							
Chloride	1100	30		mg/Kg	20	2/13/2018 1:49:10 PM	36495

Lab ID: 1802125-003 **Collection Date:** 1/29/2018 12:45:00 PM
Client Sample ID: S-088210-34-012918-MG-MW-5-30' **Matrix:** SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 300.0: ANIONS Analyst: CJS							
Chloride	1700	75		mg/Kg	50	2/16/2018 5:40:11 PM	36495

Lab ID: 1802125-004 **Collection Date:** 1/29/2018 12:55:00 PM
Client Sample ID: S-088210-34-012918-MG-MW-5-40' **Matrix:** SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 300.0: ANIONS Analyst: CJS							
Chloride	2200	75		mg/Kg	50	2/16/2018 5:52:36 PM	36495

Lab ID: 1802125-005 **Collection Date:** 1/29/2018 1:00:00 PM
Client Sample ID: S-088210-34-012918-MG-MW-5-50' **Matrix:** SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 300.0: ANIONS Analyst: CJS							
Chloride	1500	75		mg/Kg	50	2/16/2018 6:05:01 PM	36495

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	Page 1 of 5
	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 Quantitative Limit	RL	Reporting Detection Limit	
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified	

Analytical Report

Lab Order: 1802125

Date Reported: 2/20/2018

Hall Environmental Analysis Laboratory, Inc.

CLIENT: GHD
Project: Flamenco

Lab Order: 1802125

Lab ID: 1802125-006 **Collection Date:** 1/29/2018 1:15:00 PM

Client Sample ID: S-088210-34-012918-MG-MW-5-60' **Matrix:** SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 300.0: ANIONS Analyst: MRA							
Chloride	820	30		mg/Kg	20	2/13/2018 2:38:47 PM	36495

Lab ID: 1802125-007 **Collection Date:** 1/30/2018 9:45:00 AM

Client Sample ID: S-088210-34-013018-MG-MW-6-10' **Matrix:** SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 300.0: ANIONS Analyst: MRA							
Chloride	ND	30		mg/Kg	20	2/13/2018 3:16:01 PM	36495

Lab ID: 1802125-008 **Collection Date:** 1/30/2018 9:50:00 AM

Client Sample ID: S-088210-34-013018-MG-MW-6-20' **Matrix:** SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 300.0: ANIONS Analyst: MRA							
Chloride	53	30		mg/Kg	20	2/13/2018 3:28:26 PM	36495

Lab ID: 1802125-009 **Collection Date:** 1/30/2018 9:55:00 AM

Client Sample ID: S-088210-34-013018-MG-MW-6-30' **Matrix:** SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 300.0: ANIONS Analyst: MRA							
Chloride	540	30		mg/Kg	20	2/13/2018 3:40:51 PM	36495

Lab ID: 1802125-010 **Collection Date:** 1/30/2018 10:00:00 AM

Client Sample ID: S-088210-34-013018-MG-MW-6-40' **Matrix:** SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 300.0: ANIONS Analyst: MRA							
Chloride	30	30		mg/Kg	20	2/13/2018 3:53:15 PM	36495

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	Page 2 of 5
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range	
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit	
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified	

Analytical Report

Lab Order: 1802125

Date Reported: 2/20/2018

Hall Environmental Analysis Laboratory, Inc.

CLIENT: GHD
Project: Flamenco

Lab Order: 1802125

Lab ID: 1802125-011 **Collection Date:** 1/30/2018 10:05:00 AM
Client Sample ID: S-088210-34-013018-MG-MW-6-50' **Matrix:** SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 300.0: ANIONS Analyst: MRA							
Chloride	ND	30		mg/Kg	20	2/13/2018 4:05:39 PM	36495

Lab ID: 1802125-012 **Collection Date:** 1/30/2018 10:10:00 AM
Client Sample ID: S-088210-34-013018-MG-MW-6-60' **Matrix:** SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 300.0: ANIONS Analyst: MRA							
Chloride	160	30		mg/Kg	20	2/13/2018 4:18:03 PM	36495

Lab ID: 1802125-013 **Collection Date:** 1/30/2018 11:00:00 AM
Client Sample ID: S-088210-34-013018-MG-MW-7-10' **Matrix:** SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 300.0: ANIONS Analyst: CJS							
Chloride	ND	30		mg/Kg	20	2/14/2018 11:16:25 AM	36522

Lab ID: 1802125-014 **Collection Date:** 1/30/2018 11:05:00 AM
Client Sample ID: S-088210-34-013018-MG-MW-7-20' **Matrix:** SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 300.0: ANIONS Analyst: CJS							
Chloride	33	30		mg/Kg	20	2/14/2018 11:28:50 AM	36522

Lab ID: 1802125-015 **Collection Date:** 1/30/2018 11:10:00 AM
Client Sample ID: S-088210-34-013018-MG-MW-7-30' **Matrix:** SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 300.0: ANIONS Analyst: CJS							
Chloride	460	30		mg/Kg	20	2/14/2018 11:41:15 AM	36522

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	Page 3 of 5
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range	
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit	
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified	

Analytical Report

Lab Order: 1802125

Date Reported: 2/20/2018

Hall Environmental Analysis Laboratory, Inc.

CLIENT: GHD
Project: Flamenco

Lab Order: 1802125

Lab ID: 1802125-016 **Collection Date:** 1/30/2018 11:15:00 AM
Client Sample ID: S-088210-34-013018-MG-MW-7-40' **Matrix:** SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 300.0: ANIONS Analyst: CJS							
Chloride	150	30		mg/Kg	20	2/14/2018 11:53:39 AM	36522

Lab ID: 1802125-017 **Collection Date:** 1/30/2018 11:20:00 AM
Client Sample ID: S-088210-34-013018-MG-MW-7-50' **Matrix:** SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 300.0: ANIONS Analyst: CJS							
Chloride	160	30		mg/Kg	20	2/14/2018 12:06:04 PM	36522

Lab ID: 1802125-018 **Collection Date:** 1/30/2018 11:23:00 AM
Client Sample ID: S-088210-34-013018-MG-MW-7-60' **Matrix:** SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 300.0: ANIONS Analyst: CJS							
Chloride	590	30		mg/Kg	20	2/14/2018 1:08:06 PM	36522

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	Page 4 of 5
	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 Quantitative Limit	RL	Reporting Detection Limit	
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified	

QC SUMMARY REPORT**Hall Environmental Analysis Laboratory, Inc.**

WO#: 1802125

20-Feb-18

Client: GHD
Project: Flamenco

Sample ID	MB-36495		SampType: mblk		TestCode: EPA Method 300.0: Anions					
Client ID:	PBS		Batch ID: 36495		RunNo: 49085					
Prep Date:	2/13/2018		Analysis Date: 2/13/2018		SeqNo: 1583564		Units: mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	1.5								

Sample ID	LCS-36495		SampType: lcs		TestCode: EPA Method 300.0: Anions					
Client ID:	LCSS		Batch ID: 36495		RunNo: 49085					
Prep Date:	2/13/2018		Analysis Date: 2/13/2018		SeqNo: 1583565		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-36522		SampType: mblk		TestCode: EPA Method 300.0: Anions					
Client ID:	PBS		Batch ID: 36522		RunNo: 49121					
Prep Date:	2/14/2018		Analysis Date: 2/14/2018		SeqNo: 1584649		Units: mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	1.5								

Sample ID	LCS-36522		SampType: lcs		TestCode: EPA Method 300.0: Anions					
Client ID:	LCSS		Batch ID: 36522		RunNo: 49121					
Prep Date:	2/14/2018		Analysis Date: 2/14/2018		SeqNo: 1584650		Units: mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	14	1.5	15.00	0	93.9	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 Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified



Hall Environmental Analysis Laboratory
4901 Hawkes NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-1107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: GHD

Work Order Number: 1802125

Rep No: 1

Received By: Erin Melendrez 2/2/2018 10:35:00 AM

Completed By: Erin Melendrez 2/2/2018 1:19:49 PM

Reviewed By: *AS 02/02/18*

Labeled By DDS

Chain of Custody

1. Is Chain of Custody 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 $>0^{\circ}\text{C}$ 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. VOA vials have zero headspace? Yes ☐ No ☐ No VOA Vials ☒
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: _____

Special Handling (if applicable)

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

Person Notified:	_____	Date:	_____
By Whom:	_____	Via:	<input type="checkbox"/> eMail <input type="checkbox"/> Phone <input type="checkbox"/> Fax <input type="checkbox"/> 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	0.4	Good	Yes			

Chain-of-Custody Record

Client: CHD Services

Turn-Around Time:

☐ Standard ☐ Rush

**HALL ENVIRONMENTAL
ANALYSIS LABORATORY**

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

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

Mailing Address: 6121 Indian School Rd
NE Albuquerque, NM 87110 Ste 200
Phone #: 505 841 0672

Project Name:

Flamenco

Project #:

0.8210.34

email or Fax#: Bernard.Bakischpohl.com

Project Manager:

Bernard Boekisch

QA/QC Package:

☐ Standard ☐ Level 4 (Full Validation)

Accreditation

☐ NELAP ☐ Other

Sampler: Michael Gant

On Ice: ☒ Yes ☐ No

☐ EDD (Type)

Sample Temperature: 4 - 10 (C/F) = 40 (C/F)

[illegible]

Date:	Time:	Relinquished by:
-------	-------	------------------

Received by:

Date	Time
------	------

Remarks:

2/1/18 BSO


Akan

Shh

2/1/18 DFE

*per skip

Date:	Time:
2/1/18	1900

Relinquished by: 

Received by:

Date _____ Time _____

li/A counter 2/2/18 1035

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.

www.hallenvironmental.com

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

Analysis Request

Sample Temperature: $4 - 0.01 \text{ CF} = 0.4$

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 noted on the analytical report.



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

August 21, 2018

Alan Brandon

GHD

6121 Indian School Road, NE #200

Albuquerque, NM 87110

TEL: (505) 884-0672

FAX

RE: Flamenco

OrderNo.: 1808832

Dear Alan Brandon:

Hall Environmental Analysis Laboratory received 15 sample(s) on 8/14/2018 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,

A handwritten signature in black ink, appearing to read 'Andy Freeman', is written over a white background.

Andy Freeman

Laboratory Manager

4901 Hawkins NE

Albuquerque, NM 87109

Analytical Report

Lab Order: 1808832

Date Reported: 8/21/2018

Hall Environmental Analysis Laboratory, Inc.

CLIENT: GHD
Project: Flamenco

Lab Order: 1808832**Lab ID:** 1808832-001 **Collection Date:** 8/8/2018 1:30:00 PM**Client Sample ID:** S-088210-34-080818-JP-SB-10-60 **Matrix:** SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch ID
----------	--------	-----	------	-------	----	---------------	----------

EPA METHOD 300.0: ANIONS

Analyst: MRA

Chloride	35	30		mg/Kg	20	8/20/2018 12:35:08 PM	39874
----------	----	----	--	-------	----	-----------------------	-------

Lab ID: 1808832-002 **Collection Date:** 8/8/2018 1:35:00 PM**Client Sample ID:** S-088210-34-080818-JP-SB-10-65 **Matrix:** SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch ID
----------	--------	-----	------	-------	----	---------------	----------

EPA METHOD 300.0: ANIONS

Analyst: MRA

Chloride	ND	30		mg/Kg	20	8/20/2018 1:12:22 PM	39874
----------	----	----	--	-------	----	----------------------	-------

Lab ID: 1808832-003 **Collection Date:** 8/8/2018 4:38:00 PM**Client Sample ID:** S-088210-34-080818-JP-SB-11-50 **Matrix:** SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch ID
----------	--------	-----	------	-------	----	---------------	----------

EPA METHOD 300.0: ANIONS

Analyst: MRA

Chloride	34	30		mg/Kg	20	8/20/2018 1:24:46 PM	39874
----------	----	----	--	-------	----	----------------------	-------

Lab ID: 1808832-004 **Collection Date:** 8/8/2018 5:00:00 PM**Client Sample ID:** S-088210-34-080818-JP-SB-11-65 **Matrix:** SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch ID
----------	--------	-----	------	-------	----	---------------	----------

EPA METHOD 300.0: ANIONS

Analyst: MRA

Chloride	430	30		mg/Kg	20	8/20/2018 1:37:10 PM	39874
----------	-----	----	--	-------	----	----------------------	-------

Lab ID: 1808832-005 **Collection Date:** 8/9/2018 9:50:00 AM**Client Sample ID:** S-088210-34-080918-JP-SB-6-50 **Matrix:** SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch ID
----------	--------	-----	------	-------	----	---------------	----------

EPA METHOD 300.0: ANIONS

Analyst: MRA

Chloride	33	30		mg/Kg	20	8/20/2018 1:49:35 PM	39874
----------	----	----	--	-------	----	----------------------	-------

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 Quantitative Limit	RL	Reporting Detection Limit

Page 1 of 4

Analytical Report

Lab Order: 1808832

Date Reported: 8/21/2018

Hall Environmental Analysis Laboratory, Inc.

CLIENT: GHD
Project: Flamenco

Lab Order: 1808832**Lab ID:** 1808832-006 **Collection Date:** 8/9/2018 10:20:00 AM**Client Sample ID:** S-088210-34-080918-JP-SB-6-60 **Matrix:** SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch ID
----------	--------	-----	------	-------	----	---------------	----------

EPA METHOD 300.0: ANIONS

Analyst: MRA

Chloride	ND	30		mg/Kg	20	8/20/2018 2:02:00 PM	39874
----------	----	----	--	-------	----	----------------------	-------

Lab ID: 1808832-007 **Collection Date:** 8/9/2018 12:05:00 PM**Client Sample ID:** S-088210-34-080918-JP-SB-5-20 **Matrix:** SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch ID
----------	--------	-----	------	-------	----	---------------	----------

EPA METHOD 300.0: ANIONS

Analyst: MRA

Chloride	45	30		mg/Kg	20	8/20/2018 2:14:24 PM	39874
----------	----	----	--	-------	----	----------------------	-------

Lab ID: 1808832-008 **Collection Date:** 8/9/2018 4:00:00 PM**Client Sample ID:** S-088210-34-080918-JP-SB-9-60 **Matrix:** SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch ID
----------	--------	-----	------	-------	----	---------------	----------

EPA METHOD 300.0: ANIONS

Analyst: MRA

Chloride	ND	30		mg/Kg	20	8/20/2018 2:26:49 PM	39874
----------	----	----	--	-------	----	----------------------	-------

Lab ID: 1808832-009 **Collection Date:** 8/9/2018 4:40:00 PM**Client Sample ID:** S-088210-34-080918-JP-SB-9-70 **Matrix:** SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch ID
----------	--------	-----	------	-------	----	---------------	----------

EPA METHOD 300.0: ANIONS

Analyst: MRA

Chloride	ND	30		mg/Kg	20	8/20/2018 3:04:02 PM	39874
----------	----	----	--	-------	----	----------------------	-------

Lab ID: 1808832-010 **Collection Date:** 8/10/2018 9:47:00 AM**Client Sample ID:** S-088210-34-081018-JP-SB-8-65 **Matrix:** SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch ID
----------	--------	-----	------	-------	----	---------------	----------

EPA METHOD 300.0: ANIONS

Analyst: MRA

Chloride	100	30		mg/Kg	20	8/20/2018 3:16:27 PM	39874
----------	-----	----	--	-------	----	----------------------	-------

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 Quantitative Limit	RL	Reporting Detection Limit

Page 2 of 4

Analytical Report

Lab Order: 1808832

Date Reported: 8/21/2018

Hall Environmental Analysis Laboratory, Inc.

CLIENT: GHD
Project: Flamenco

Lab Order: 1808832**Lab ID:** 1808832-011 **Collection Date:** 8/10/2018 9:30:00 AM**Client Sample ID:** S-088210-34-081018-JP-SB-8-60 **Matrix:** SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch ID
----------	--------	-----	------	-------	----	---------------	----------

EPA METHOD 300.0: ANIONS

Analyst: MRA

Chloride	91	30		mg/Kg	20	8/20/2018 3:28:52 PM	39874
----------	----	----	--	-------	----	----------------------	-------

Lab ID: 1808832-012 **Collection Date:** 8/10/2018 12:00:00 PM**Client Sample ID:** S-088210-34-081018-JP-SB-7-50 **Matrix:** SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch ID
----------	--------	-----	------	-------	----	---------------	----------

EPA METHOD 300.0: ANIONS

Analyst: MRA

Chloride	32	30		mg/Kg	20	8/20/2018 3:41:17 PM	39874
----------	----	----	--	-------	----	----------------------	-------

Lab ID: 1808832-013 **Collection Date:** 8/10/2018 12:45:00 PM**Client Sample ID:** S-088210-34-081018-JP-SB-7-40 **Matrix:** SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch ID
----------	--------	-----	------	-------	----	---------------	----------

EPA METHOD 300.0: ANIONS

Analyst: MRA

Chloride	ND	30		mg/Kg	20	8/20/2018 3:53:42 PM	39874
----------	----	----	--	-------	----	----------------------	-------

Lab ID: 1808832-015 **Collection Date:** 8/10/2018 9:15:00 AM**Client Sample ID:** S-088210-34-081018-JP-SB-8-50 **Matrix:** SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch ID
----------	--------	-----	------	-------	----	---------------	----------

EPA METHOD 300.0: ANIONS

Analyst: MRA

Chloride	ND	30		mg/Kg	20	8/20/2018 4:06:06 PM	39874
----------	----	----	--	-------	----	----------------------	-------

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 Quantitative Limit

- 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 Detection Limit

Page 3 of 4

QC SUMMARY REPORT**Hall Environmental Analysis Laboratory, Inc.**

WO#: 1808832

21-Aug-18

Client: GHD
Project: Flamenco

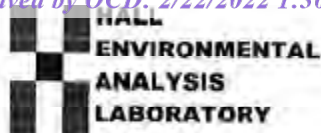
Sample ID	LCS-39874	SampType:	lcs	TestCode:	EPA Method 300.0: Anions					
Client ID:	LCSS	Batch ID:	39874	RunNo:	53555					
Prep Date:	8/20/2018	Analysis Date:	8/20/2018	SeqNo:	1766307	Units:	mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	14	1.5	15.00	0	92.7	90	110			

Sample ID	MB-39874	SampType:	mbk	TestCode:	EPA Method 300.0: Anions					
Client ID:	PBS	Batch ID:	39874	RunNo:	53555					
Prep Date:	8/20/2018	Analysis Date:	8/20/2018	SeqNo:	1766308	Units:	mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	1.5								

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 Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

Page 4 of 4



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: GHD

Work Order Number: 1808832

RcptNo: 1

Received By: Isaiah Ortiz

8/14/2018 11:30:00 AM

Completed By: Ashley Gallegos

8/14/2018 2:28:30 PM

Reviewed By:

Labeled by:

JAB 08/14/18

Chain of Custody

1. Is Chain of Custody 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 $>0^{\circ}\text{C}$ 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. VOA vials have zero headspace? Yes ☐ No ☐ No VOA Vials ☒
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 /or pH: (2 or >2 unless noted)
Adjusted? JAB 08/14/18
Checked by:

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:

Sample SB-8-65 not received.

17 Cooler Information

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	2.3	Good	Yes			

Released to Imaging: 5/2/2022 3:21:00 PM

Turn-Around Time: 5 DAY TURN

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

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

Analysis Request

Mailing Address: 6121 Indian School Rd

Project Name:

Flamenco

NE Suite 200 Albuquerque NM 87110

Project #:

088210-34

Phone #: 505 884 0672

Project Manager:

email or Fax#: Alan.Brandon@ghd.com

Alan Brandon

QA/QC Package:

Sampler: Joshua Pigg / Mike

☐ Standard

On Ice: ☒ Yes ☐ No

Accreditation

Sample Temperature: 33-10 (CF) 2.3

☐ NELAP ☐ Other☐ EDD (Type)[illegible]

Date:	Time:	Relinquished by:
-------	-------	------------------

8/13/18/100

Relinquished by:

Received 1/3:

Date	Time
------	------

8/13/18 1000

Remarks

Date	Time
------	------

3/12/10 ✓ 1972

Relinquished by

Received by:

Date	Time
------	------

→ carrier of the virus

Released to Imaging: 5/2/2022 3:21:00 PM

Turn-Around Time:

5 Day Turn

☒ Standard ☐ Rush

Project Name:

Flamenco

Project #:

088210-34

Project Manager:

Alan - Brandon

☐ Standard ☐ Level 4 (Full Validation)

Sampler: Joshua Pigg

☐ NELAP ☐ Other

On Ice: ☒ Yes ☐ No

EDD (Type)

Sample Temperature: 33.10 (°C) ± 3

Air Bubbles (Y or N)

Relinquished by:

Received by:

Date	Time
------	------

Remarks:

sample SB-8-65 not reviewed 8/15

Relinquished by:

Received by:

Date _____ Time _____

IG courier 8/14/18 1130



**HALL ENVIRONMENTAL
ANALYSIS LABORATORY**

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

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

Analysis Request



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

August 27, 2018

Alan Brandon

GHD

6121 Indian School Road, NE #200

Albuquerque, NM 87110

TEL: (505) 884-0672

FAX

RE: Flamenco

OrderNo.: 1808911

Dear Alan Brandon:

Hall Environmental Analysis Laboratory received 2 sample(s) on 8/15/2018 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,

A handwritten signature in black ink, appearing to read 'Andy Freeman', is written over a horizontal line.

Andy Freeman

Laboratory Manager

4901 Hawkins NE

Albuquerque, NM 87109

Analytical Report

Lab Order: 1808911

Date Reported: 8/27/2018

Hall Environmental Analysis Laboratory, Inc.

CLIENT: GHD
Project: Flamenco

Lab Order: 1808911**Lab ID:** 1808911-001**Collection Date:** 8/7/2018 1:20:00 PM**Client Sample ID:** S-088210-34-080718-JP-SB-10-55**Matrix:** SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch ID
----------	--------	-----	------	-------	----	---------------	----------

EPA METHOD 300.0: ANIONS

Analyst: MRA

Chloride	1300	75		mg/Kg	50	8/24/2018 5:11:57 PM	39891
----------	------	----	--	-------	----	----------------------	-------

Lab ID: 1808911-002**Collection Date:** 8/9/2018 3:32:00 PM**Client Sample ID:** S-088210-34-080718-JP-SB-9-50**Matrix:** SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch ID
----------	--------	-----	------	-------	----	---------------	----------

EPA METHOD 300.0: ANIONS

Analyst: MRA

Chloride	32	30		mg/Kg	20	8/20/2018 6:10:13 PM	39891
----------	----	----	--	-------	----	----------------------	-------

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 Quantitative Limit	RL	Reporting Detection Limit

Page 1 of 2

QC SUMMARY REPORT**Hall Environmental Analysis Laboratory, Inc.**WO#: **1808911****27-Aug-18**

Client: GHD
Project: Flamenco

Sample ID MB-39891	SampType: mblk			TestCode: EPA Method 300.0: Anions						
Client ID: PBS	Batch ID: 39891			RunNo: 53555						
Prep Date: 8/20/2018	Analysis Date: 8/20/2018			SeqNo: 1766339	Units: mg/Kg					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	1.5								

Sample ID LCS-39891	SampType: lcs			TestCode: EPA Method 300.0: Anions						
Client ID: LCSS	Batch ID: 39891			RunNo: 53555						
Prep Date: 8/20/2018	Analysis Date: 8/20/2018			SeqNo: 1766340	Units: mg/Kg					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	14	1.5	15.00	0	91.8	90	110			

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
PQL Practical Quantitative 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 Detection Limit
W Sample container temperature is out of limit as specified

Page 2 of 2



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: GHD

Work Order Number: 1808911

RcptNo: 1

Received By: Ashley Gallegos

8/15/2018 8:40:00 AM

Completed By: Ashley Gallegos

8/15/2018 9:47:30 AM

Reviewed By: ID

8/15/18

labeled by: ENM 8/15/18

Chain of Custody1. Is Chain of Custody complete? Yes ☒ No ☐ Not Present ☐2. How was the sample delivered? CourierLog In3. Was an attempt made to cool the samples? Yes ☒ No ☐ NA ☐4. Were all samples received at a temperature of $>0^{\circ}\text{C}$ 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. VOA vials have zero headspace? Yes ☐ No ☐ No VOA Vials ☒10. Were any sample containers received broken? Yes ☐ No ☒11. Does paperwork match bottle labels? Yes ☒ No ☐

(Note discrepancies on chain of custody)

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? Yes ☒ No ☐

(If no, notify customer for authorization.)

of preserved
bottles checked
for pH:

02 or >12 unless noted)

Adjusted? _____

Checked by: _____

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	3.3	Good	Yes			

Released to Imaging: 5/2/2022 3:21:00 PM

[illegible]

Date: 8/14/81	Time: 1900	Relinquished by: [Signature]
---------------	------------	------------------------------

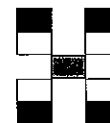
Container Type and #	Preservative Type	HEAL No. 1808911
-------------------------	----------------------	---------------------

402 glass Jar	ICE
---------------	-----

Received by:

Date 1/18 Time 0840

Remarks:



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

Analysis Request

[illegible]

Appendix B

Soil Boring Logs and Monitoring Well Details



STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

Page 1 of 1

PROJECT NAME: FLAMENCO FED NO. 1

HOLE DESIGNATION: MW-5/SB-5

PROJECT NUMBER: 088210-34

DATE COMPLETED: 9 August 2018

CLIENT: EOG RESOURCES

DRILLING METHOD: AIR ROTARY

LOCATION: LEA COUNTY, NEW MEXICO

FIELD PERSONNEL: M. GANT

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH ft	BOREHOLE	SAMPLE				
				NUMBER	INTERVAL	REC (%)	'N' VALUE	Chloride (mg/kg)
2	SM-SILTY SAND, few gravel, very fine grained, poorly graded, whitish pink, dry							
4								
6								
8								
10								
12								
14								
16								
18								
20	- very hard at 20.0ft BGS			SB-5-20				<1.0
22								
24								
25	- REFUSAL at 25.0ft BGS	25.00						
26	END OF BOREHOLE @ 25.0ft BGS							
28								
30								
32								
34								

BACKFILLED
WITH
BENTONITE
CHIPS AND
SOIL
CUTTINGS

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

OVERBURDEN LOG 088210-34-WI.GPJ GHD_Corp 4/9/18



STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

Page 1 of 2

PROJECT NAME: FLAMENCO FED NO. 1

HOLE DESIGNATION: MW-7

PROJECT NUMBER: 088210-34




DATE COMPLETED: 10 August 2018

CLIENT: EOG RESOURCES

DRILLING METHOD: AIR ROTARY

LOCATION: LEA COUNTY, NEW MEXICO

FIELD PERSONNEL: J. PIGG

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH ft	BOREHOLE	SAMPLE				
				NUMBER	INTERVAL	REC (%)	N' VALUE	Chloride (mg/kg)
2	SP-SAND, with fines, fine to medium grained, cohesive, low plasticity, yellow/reddish brown, dry							
4								
6								
8								
10								
12								
14								
16								
18								
20	SM-SILTY SAND, fine to very fine grained, low plasticity, well sorted, reddish brown, dry	20.00		MW-7-20				<1
22								
24								
26								
28								
30								
32				MW-7-30				<1
34								

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

OVERBURDEN LOG 088210-34-WI.GPJ GHD Corp 4/9/18



STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

Page 2 of 2

PROJECT NAME: FLAMENCO FED NO. 1
PROJECT NUMBER: 088210-34
CLIENT: EOG RESOURCES
LOCATION: LEA COUNTY, NEW MEXICO

HOLE DESIGNATION: MW-7
DATE COMPLETED: 10 August 2018
DRILLING METHOD: AIR ROTARY
FIELD PERSONNEL: J. PIGG

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH ft	BOREHOLE	SAMPLE				
				NUMBER	INTERVAL	REC (%)	'N' VALUE	Chloride (mg/kg)
36	- very fine grained, medium plasticity, reddish yellow at 40.0ft BGS	50.00		MW-7-40				<1
38								
40								
42								
44								
46								
48								
50								
52								
54								
56								
58								
60								
62								
64								
66								
68								
	END OF BOREHOLE @ 50.0ft BGS	50.00		MW-7-50				<1

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

OVERBURDEN LOG 088210-34-WI.GPJ GHD_Corp 4/9/18



STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

Page 1 of 2

PROJECT NAME: FLAMENCO FED NO. 1

HOLE DESIGNATION: MW-8

PROJECT NUMBER: 088210-34

DATE COMPLETED: 10 August 2018

CLIENT: EOG RESOURCES

DRILLING METHOD: AIR ROTARY

LOCATION: LEA COUNTY, NEW MEXICO

FIELD PERSONNEL: J. PIGG

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH ft	BOREHOLE	SAMPLE				
				NUMBER	INTERVAL	REC (%)	'N' VALUE	Chloride (mg/kg)
2	SP-SAND, with gravel and fines, fine to medium grained, low plasticity, reddish brown, dry							
4								
6								
8								
10								
12								
14								
16								
18								
20								
22								
24								
26								
28								
30								
32								
34								
	SP/GP-SAND/GRAVEL, trace fines, medium to coarse grained, poor plasticity, light gray, dry	30.00		MW-8-20				<1
				MW-8-30				<1

BACKFILLED
WITH
BENTONITE
CHIPS AND
SOIL

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

OVERBURDEN LOG 088210-34-WI.GPJ GHD_Corp 4/9/18



STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

Page 2 of 2

PROJECT NAME: FLAMENCO FED NO. 1

HOLE DESIGNATION: MW-8

PROJECT NUMBER: 088210-34

DATE COMPLETED: 10 August 2018

CLIENT: EOG RESOURCES

DRILLING METHOD: AIR ROTARY

LOCATION: LEA COUNTY, NEW MEXICO

FIELD PERSONNEL: J. PIGG

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH ft	BOREHOLE	SAMPLE				
				NUMBER	INTERVAL	REC (%)	'N' VALUE	Chloride (mg/kg)
36			CUTTINGS					
38								
40	CL-SILTY CLAY, some sand, very fine grained, moderate plasticity, well graded, dark reddish brown, dry	40.00		MW-8-40				<1
42								
44								
46								
48								
50	- reddish brown at 50.0ft BGS			MW-8-50				<1
52								
54								
56								
58								
60	ML-SANDY SILT, some 3mm gravel, very fine grained, moderate to low plasticity, reddish gray/brown, dry	60.00		MW-8-60				<1
62								
64								
66	END OF BOREHOLE @ 65.0ft BGS	65.00		MW-8-65				124
68								

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

OVERBURDEN LOG 088210-34-WI.GPJ GHD_Corp 4/9/18



STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

Page 1 of 2

PROJECT NAME: FLAMENCO FED NO. 1

HOLE DESIGNATION: SB-10

PROJECT NUMBER: 088210-34

DATE COMPLETED: 8 August 2018

CLIENT: EOG RESOURCES

DRILLING METHOD: AI ROTARY

LOCATION: LEA COUNTY, NEW MEXICO

FIELD PERSONNEL: M. GANT

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH ft	BOREHOLE	SAMPLE				
				NUMBER	INTERVAL	REC (%)	'N' VALUE	Chloride (mg/kg)
2	SM-SILTY SAND, with gravel, very fine grained, poorly graded, reddish yellow, dry							
4								
6								
8								
10								
12								
14								
16								
18								
20				SB-10-20				<1
22								
24				SB-10-25				<1
26								
28								
30		30.00		SB-10-30				<1
32	SP/CL-SAND/CLAY, very fine cemented sand, lean clay, poorly graded, reddish brown, dry							
34								

BACKFILLED
WITH
BENTONITE
CHIPS AND
SOIL

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

OVERBURDEN LOG 088210-34-WI.GPJ GHD_Corp 4/9/18



STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

Page 2 of 2

PROJECT NAME: FLAMENCO FED NO. 1

HOLE DESIGNATION: SB-10

PROJECT NUMBER: 088210-34

DATE COMPLETED: 8 August 2018

CLIENT: EOG RESOURCES

DRILLING METHOD: AI ROTARY

LOCATION: LEA COUNTY, NEW MEXICO

FIELD PERSONNEL: M. GANT

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH ft	BOREHOLE	SAMPLE				
				NUMBER	INTERVAL	REC (%)	'N' VALUE	Chloride (mg/kg)
36	SP-SAND, fine to medium grained, cemented, poorly graded, gray/brown, dry	35.00	CUTTINGS	SB-10-35				<1
38								
40				SB-10-40				<1
42								
44	SM-SILTY SAND, very fine grained, well graded, reddish brown, dry	45.00		SB-10-45				<1
46								
48								
50				SB-10-50				<1
52	CL-SILTY CLAY, very fine grained, well graded, brown	55.00		SB-10-55				892
54								
56								
58								
60	- light brown at 60.0ft BGS			SB-10-60				<1
62								
64								
66	END OF BOREHOLE @ 65.0ft BGS	65.00		SB-10-65				<1
68								

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

OVERBURDEN LOG 088210-34-WI.GPJ GHD_Corp 4/9/18



STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

Page 1 of 2

PROJECT NAME: FLAMENCO FED NO. 1

HOLE DESIGNATION: SB-11

PROJECT NUMBER: 088210-34

DATE COMPLETED: 8 August 2018

CLIENT: EOG RESOURCES

DRILLING METHOD: AIR ROTARY

LOCATION: LEA COUNTY, NEW MEXICO

FIELD PERSONNEL: M. GANT

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH ft	BOREHOLE	SAMPLE				
				NUMBER	INTERVAL	REC (%)	'N' VALUE	Chloride (mg/kg)
2	SM-SILTY SAND, trace 1-3mm pebbles), very fine grained, reddish brown, dry							
4								
6								
8								
10								
12								
14								
16								
18								
20	- 1-5mm pebbles, reddish yellow/brown at 20.0ft BGS			SB-11-20				<1
22								
24								
26								
28								
30	ML-CLAYEY SILT, with sand, trace pebbles, very fine grained, dark brown, with red, dry	30.00		SB-11-30				<1
32								
34								

BACKFILLED
WITH
BENTONITE
CHIPS AND
SOIL

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

OVERBURDEN LOG 088210-34-WI.GPJ GHD_Corp 4/9/18



STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

Page 2 of 2

PROJECT NAME: FLAMENCO FED NO. 1

HOLE DESIGNATION: SB-11

PROJECT NUMBER: 088210-34

DATE COMPLETED: 8 August 2018

CLIENT: EOG RESOURCES

DRILLING METHOD: AIR ROTARY

LOCATION: LEA COUNTY, NEW MEXICO

FIELD PERSONNEL: M. GANT

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH ft	BOREHOLE	SAMPLE				
				NUMBER	INTERVAL	REC (%)	'N' VALUE	Chloride (mg/kg)
36			CUTTINGS					
38								
40	SM-SILTY SAND, with clay, some 1-4mm pebbles, very fine grained, light reddish brown, dry	40.00		SB-11-40				<1
42								
44								
46								
48								
50	CL-SILTY CLAY, with fine sand, very fine grained, light brown, with reddish tint, slightly moist	50.00		SB-11-50				<1
52								
54								
56								
58								
60	- trace fine sand and cohesive clay, fine grained, reddish brown at 60.0ft BGS			SB-11-60				<1
62								
64								
66	END OF BOREHOLE @ 65.0ft BGS	65.00		SB-11-65				<6
68								

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

OVERBURDEN LOG 088210-34-WI.GPJ GHD_Corp 4/9/18



STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

Page 1 of 2

PROJECT NAME: FLAMENCO FED NO. 1

HOLE DESIGNATION: SB-6

PROJECT NUMBER: 088210-34

DATE COMPLETED: 9 August 2018

CLIENT: EOG RESOURCES

DRILLING METHOD: AIR ROTARY

LOCATION: LEA COUNTY, NEW MEXICO

FIELD PERSONNEL: M. GANT

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH ft	BOREHOLE	SAMPLE				
				NUMBER	INTERVAL	REC (%)	'N' VALUE	Chloride (mg/kg)
2	SM-SILTY SAND, with silt, trace gravel, loose, very fine grained, plastic, well graded, reddish yellow, dry							
4								
6								
8								
10								
12								
14								
16								
18								
20	- poorly graded, increase in yellow at 20.0ft BGS			SB-6-20				<1
22								
24								
26								
28								
30	CL/ML-CLAYEY SILT, with 2-14mm gravel, with sand, very fine grained, medium plasticity, poorly graded, tannish yellow, dry	30.00	BACKFILLED WITH BENTONITE CHIPS AND SOIL CUTTINGS	SB-6-30				<1
32								
34								

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

OVERBURDEN LOG 088210-34-WI.GPJ GHD_Corp 4/9/18



STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

Page 2 of 2

PROJECT NAME: FLAMENCO FED NO. 1
PROJECT NUMBER: 088210-34
CLIENT: EOG RESOURCES
LOCATION: LEA COUNTY, NEW MEXICO

HOLE DESIGNATION: SB-6
DATE COMPLETED: 9 August 2018
DRILLING METHOD: AIR ROTARY
FIELD PERSONNEL: M. GANT

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH ft	BOREHOLE	SAMPLE				
				NUMBER	INTERVAL	REC (%)	'N' VALUE	Chloride (mg/kg)
36								
38								
40	- increase in sand and gravel content at 40.0ft BGS			SB-6-40				<1
42								
44								
46								
48								
50	ML-SANDY SILT, with 1-4mm gravel, very fine grained, medium to low plasticity, well graded, reddish yellow/brown, dry	50.00		SB-6-50				<1
52								
54								
56								
58								
60	END OF BOREHOLE @ 60.0ft BGS	60.00		SB-6-60				<1
62								
64								
66								
68								

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

OVERBURDEN LOG 088210-34-WI.GPJ GHD_Corp 4/9/18

Appendix C

NMSOE Well Permits and BLM Sundry



STATE OF NEW MEXICO
OFFICE OF THE STATE ENGINEER
District 2 Office, Roswell, NM

Tom Blaine, P.E.
State Engineer

DISTRICT II
1900 West Second St.
Roswell, New Mexico 88201
Phone: (575) 622-6521
Fax: (575) 623-8559

Trn Nbr : 612679
File Nbr: C-4144

August 28, 2017

Christine Mathews
GHD Services Inc.
6121 Indian School RD NE
Albuquerque NM 87110

Zane Kurts
EOG Resources
5509 Champion Drive
Midland TX 79706

GREETINGS:

Enclosed is your copy of the above numbered permit that has been approved subject to the conditions set forth on the approval page. In accordance with the conditions of approval, the well can only be tested for 10 cumulative days, and the well is to be plugged on or before 08/28/2018, unless a permit to use the water is acquired from this office.

A well Record & Log (OSE Form wr-20) shall be filed in this office within thirty (30) days after completion of drilling, but no later than 08/28/2018.

Appropriate forms can be downloaded from the OSE website www.ose.state.nm.us or will be mailed upon request.

Sincerely,

A handwritten signature in black ink, appearing to read "Alvaro Alvarado".

Alvaro Alvarado
Water Resources Professional

ENCLOSURE
cc Santa Fe

File No.

NEW MEXICO OFFICE OF THE STATE ENGINEER



WR-07 APPLICATION FOR PERMIT TO DRILL

A WELL WITH NO WATER RIGHT

(check applicable box):

For fees, see State Engineer website: <http://www.ose.state.nm.us/>

Purpose:	<input type="checkbox"/> Pollution Control And/Or Recovery	<input type="checkbox"/> Ground Source Heat Pump
<input type="checkbox"/> Exploratory Well (Pump test)	<input type="checkbox"/> Construction Site/Public Works Dewatering	<input type="checkbox"/> Other(Describe):
<input checked="" type="checkbox"/> Monitoring Well	<input type="checkbox"/> Mine Dewatering	

A separate permit will be required to apply water to beneficial use regardless if use is consumptive or nonconsumptive.

☒ Temporary Request - Requested Start Date: 8/28/2017 Requested End Date: TBD

Plugging Plan of Operations Submitted? ☐ Yes ☒ No

1. APPLICANT(S)

Name: GHD Services Inc. on behalf of EOG Resources	Name: EOG Resources
Contact or Agent: <input checked="" type="checkbox"/> check here if Agent Christine Mathews	Contact or Agent: <input type="checkbox"/> check here if Agent Zane Kurtz
Mailing Address: 6121 Indian School Rd NE	Mailing Address: 5509 Champion Drive
City: Albuquerque	City: Midland
State: New Mexico	State: Texas
Zip Code: 87110	Zip Code: 79706
Phone: 505-269-0088 <input type="checkbox"/> Home <input checked="" type="checkbox"/> Cell	Phone: (432) 425-2023 <input checked="" type="checkbox"/> Home <input checked="" type="checkbox"/> Cell
Phone (Work):	Phone (Work):
E-mail (optional): chrsitine.mathews@ghd.com	E-mail (optional): Zane_Kurtz@eogresources.com

FOR OSE INTERNAL USE

Application for Permit, Form WR-07, Rev 11/17/16

File No.: C-4144	Trn. No.: 612677	Receipt No.: 2-38532
Trans Description (optional): C-4144-Pool thru C-4144-Pool		
Sub-Basin: C	PCW/LOG Due Date: 8-28-2018	

Page 1 of 3

2. WELL(S) Describe the well(s) applicable to this application.

Location Required: Coordinate location must be reported in NM State Plane (NAD 83), UTM (NAD 83), or Latitude/Longitude (Lat/Long - WGS84).
District II (Roswell) and District VII (Cimarron) customers, provide a PLSS location in addition to above.

☐ NM State Plane (NAD83) (Feet)
 ☐ UTM (NAD83) (Meters)
 ☒ Lat/Long (WGS84) (to the nearest 1/10th of second)

☐ NM West Zone
 ☐ Zone 12N

☐ NM East Zone
 ☐ Zone 13N

Well Number (if known):	X or Easting or Longitude:	Y or Northing or Latitude:	Provide if known: -Public Land Survey System (PLSS) (Quarters or Halves, Section, Township, Range) OR - Hydrographic Survey Map & Tract; OR - Lot, Block & Subdivision; OR - Land Grant Name
MW-1	-103 43' 21.51"W	32 24' 09.12"N	
MW-2	-103 43' 21.21"	32 24' 07.85"	
MW-3	-103 43' 17.16"	32 24' 11.34"	
MW-4	-103 43' 18.74"	32 24' 10.25"	

NOTE: If more well locations need to be described, complete form WR-08 (Attachment 1 – POD Descriptions)
 Additional well descriptions are attached: ☐ Yes ☒ No If yes, how many _____

Other description relating well to common landmarks, streets, or other:
 Just east of Campbell Rd. General site coordinates are 32.402374, -103.722648

Well is on land owned by: Bureau of Land Management - *Sundry included*

Well Information: NOTE: If more than one (1) well needs to be described, provide attachment. Attached? ☐ Yes ☒ No
 If yes, how many _____

Approximate depth of well (feet): 35	Outside diameter of well casing (inches): 2
Driller Name: EnviroDrill Inc	Driller License Number: WD 1186

3. ADDITIONAL STATEMENTS OR EXPLANATIONS

Well construction is 2-in. dia. PVC casing with 15-20 ft. length 0.010-in. slotted screen. A 10/20 grade silica sand pack will be placed in annulus around screen to 2 ft. above top of screen. A 2 ft. thick hydrated bentonite plug will be placed on top of the sand pack, and followed by cement/bentonite grout to surface.

Monitoring wells are being installed at the request of NMOCD to assess groundwater quality.

The duration of planned monitoring will continue until NMOCD grants remedial Site closure.

FOR OSE INTERNAL USE

Application for Permit, Form WR-07

File No.: C-4144

Trn No.: 612679

Page 2 of 3

4. SPECIFIC REQUIREMENTS: The applicant must include the following, as applicable to each well type. Please check the appropriate boxes, to indicate the information has been included and/or attached to this application:

Exploratory: <input type="checkbox"/> Include a description of any proposed pump test, if applicable.	Pollution Control and/or Recovery: <input type="checkbox"/> Include a plan for pollution control/recovery, that includes the following: <input type="checkbox"/> A description of the need for the pollution control or recovery operation. <input type="checkbox"/> The estimated maximum period of time for completion of the operation. <input type="checkbox"/> The annual diversion amount. <input type="checkbox"/> The annual consumptive use amount. <input type="checkbox"/> The maximum amount of water to be diverted and injected for the duration of the operation. <input type="checkbox"/> The method and place of discharge. <input type="checkbox"/> The method of measurement of water produced and discharged. <input type="checkbox"/> The source of water to be injected. <input type="checkbox"/> The method of measurement of water injected. <input type="checkbox"/> The characteristics of the aquifer. <input type="checkbox"/> The method of determining the resulting annual consumptive use of water and depletion from any related stream system. <input type="checkbox"/> Proof of any permit required from the New Mexico Environment Department. <input type="checkbox"/> An access agreement if the applicant is not the owner of the land on which the pollution plume control or recovery well is to be located.	Construction De-Watering: <input type="checkbox"/> Include a description of the proposed dewatering operation, <input type="checkbox"/> The estimated duration of the operation, <input type="checkbox"/> The maximum amount of water to be diverted, <input type="checkbox"/> A description of the need for the dewatering operation, and, <input type="checkbox"/> A description of how the diverted water will be disposed of.	Mine De-Watering: <input type="checkbox"/> Include a plan for pollution control/recovery, that includes the following: <input type="checkbox"/> A description of the need for mine dewatering. <input type="checkbox"/> The estimated maximum period of time for completion of the operation. <input type="checkbox"/> The source(s) of the water to be diverted. <input type="checkbox"/> The geohydrologic characteristics of the aquifer(s). <input type="checkbox"/> The maximum amount of water to be diverted per annum. <input type="checkbox"/> The maximum amount of water to be diverted for the duration of the operation. <input type="checkbox"/> The quality of the water. <input type="checkbox"/> The method of measurement of water diverted. <input type="checkbox"/> The recharge of water to the aquifer. <input type="checkbox"/> Description of the estimated area of hydrologic effect of the project. <input type="checkbox"/> The method and place of discharge. <input type="checkbox"/> An estimation of the effects on surface water rights and underground water rights from the mine dewatering project. <input type="checkbox"/> A description of the methods employed to estimate effects on surface water rights and underground water rights. <input type="checkbox"/> Information on existing wells, rivers, springs, and wetlands within the area of hydrologic effect.
Monitoring: <input checked="" type="checkbox"/> Include the reason for the monitoring well, and, <input checked="" type="checkbox"/> The duration of the planned monitoring.		Ground Source Heat Pump: <input type="checkbox"/> Include a description of the geothermal heat exchange project, <input type="checkbox"/> The number of boreholes for the completed project and required depths. <input type="checkbox"/> The time frame for constructing the geothermal heat exchange project, and, <input type="checkbox"/> The duration of the project. <input type="checkbox"/> Preliminary surveys, design data, and additional information shall be included to provide all essential facts relating to the request.	

ACKNOWLEDGEMENT

I, We (name of applicant(s)), Christine Mathews of GHD Services, Inc. on behalf of EOG Resources

Print Name(s)

affirm that the foregoing statements are true to the best of (my, our) knowledge and belief.

Applicant Signature

Applicant Signature

ACTION OF THE STATE ENGINEER

This application is:

☒ approved

☐ partially approved

☐ denied

provided it is not exercised to the detriment of any others having existing rights, and is not contrary to the conservation of water in New Mexico nor detrimental to the public welfare and further subject to the attached conditions of approval.

Witness my hand and seal this 28 day of August 20 17, for the State Engineer,

Tom Blane, P.E.

State Engineer

By: DR. OHL
Signature

Print

Title: Water Resources Professional
Print



FOR OSE INTERNAL USE

Application for Permit, Form WR-07

File No.: C-4144

Trn No.: 612679

**NEW MEXICO STATE ENGINEER OFFICE
PERMIT TO EXPLORE**

SPECIFIC CONDITIONS OF APPROVAL

- 17-1A Depth of the well shall not exceed the thickness of the valley fill.
- 17-4 No water shall be appropriated and beneficially used under this permit.
- 17-7 The Permittee shall utilize the highest and best technology available to ensure conservation of water to the maximum extent practical.
- 17-B The well shall be drilled by a driller licensed in the State of New Mexico in accordance with 72-12-12 NMSA 1978. A licensed driller shall not be required for the construction of a well driven without the use of a drill rig, provided that the casing shall not exceed two and three-eighths (2 3/8) inches outside diameter.
- 17-C The well driller must file the well record with the State Engineer and the applicant within 30 days after the well is drilled or driven. It is the well owner's responsibility to ensure that the well driller files the well record.
The well driller may obtain the well record form from any District Office or the Office of the State Engineer website.
- 17-C2 No water shall be diverted from this well except for testing purposes which shall not exceed ten (10) cumulative days, and well shall be plugged or capped on or before , unless a permit to use water from this well is acquired from the Office of the State Engineer.

NEW MEXICO STATE ENGINEER OFFICE
PERMIT TO EXPLORE

SPECIFIC CONDITIONS OF APPROVAL (Continued)

- 17-P The well shall be constructed, maintained, and operated to prevent inter-aquifer exchange of water and to prevent loss of hydraulic head between hydrogeologic zones.
- 17-Q The State Engineer retains jurisdiction over this permit.
- LOG The Point of Diversion C 04144 POD1 must be completed and the Well Log filed on or before 08/28/2018.
- LOG The Point of Diversion C 04144 POD2 must be completed and the Well Log filed on or before 08/28/2018.
- LOG The Point of Diversion C 04144 POD3 must be completed and the Well Log filed on or before 08/28/2018.
- LOG The Point of Diversion C 04144 POD4 must be completed and the Well Log filed on or before 08/28/2018.

ACTION OF STATE ENGINEER

Notice of Intention Rcvd:	Date Rcvd. Corrected:
Formal Application Rcvd: 08/18/2017	Pub. of Notice Ordered:
Date Returned - Correction:	Affidavit of Pub. Filed:

This application is approved provided it is not exercised to the detriment of any others having existing rights, and is not contrary to the conservation of water in New Mexico nor detrimental to the public welfare of the state; and further subject to the specific conditions listed previously.

Witness my hand and seal this 28 day of Aug A.D., 2017

Tom Blaine, P.E., State Engineer

By: 
Alvaro Alvarado

Trn Desc: C 04144-POD1 THRU POD4

File Number: C 04144

Trn Number: 612679

OFFICE OF THE STATE ENGINEER/INTERSTATE STREAM COMMISSION – ROSWELL OFFICE

OFFICIAL RECEIPT NUMBER: 2 - 38532 DATE: 8-18-17 FILE NO.: _____
 TOTAL: \$20.00 RECEIVED: Twenty \$00 DOLLARS CHECK NO.: 1131 CASH: _____
 PAYOR: CHRISTINE MATTHEWS ADDRESS: 3810 Cottonwood Rd NE CITY: Albq STATE: NM
 ZIP: 87111 RECEIVED BY: DD

INSTRUCTIONS: Indicate the number of actions to the left of the appropriate type of filing. Complete the receipt information. **Original** to payor; **pink** copy to Program Support/ASD; and **yellow** copy for Water Rights. If a mistake is made, void the original and all copies and submit to Program Support/ASD as part of your daily deposit.

A. Ground Water Filing Fees

- | | | |
|------------------|---|-----------|
| ___ 1. | Change of Ownership of Water Right | \$ 2.00 |
| ___ 2. | Application to Appropriate or Supplement Domestic 72-12-1 Well | \$ 125.00 |
| ___ 3. | Application to Repair or Deepen 72-12-1 Well | \$ 75.00 |
| ___ 4. | Application for Replacement 72-12-1 Well | \$ 75.00 |
| ___ 5. | Application to Change Purpose of Use 72-12-1 Well | \$ 75.00 |
| ___ 6. | Application for Stock Well/Temp. Use | \$ 5.00 |
| <hr/> | | |
| ___ 7. | Application to Appropriate Irrigation, Municipal, or Commercial Use | \$ 25.00 |
| ___ 8. | Declaration of Water Right | \$ 1.00 |
| ___ 9. | Application for Supplemental Non 72-12-1 Well | \$ 25.00 |
| ___ 10. | Application to Change Place or Purpose of Use Non 72-12-1 Well | \$ 25.00 |
| ___ 11. | Application to Change Point of Diversion and Place and/or Purpose of Use from Surface Water to Ground Water | \$ 50.00 |
| ___ 12. | Application to Change Point of Diversion and Place and/or Purpose of Use from Ground Water to Ground Water | \$ 50.00 |
| ___ 13. | Application to Change Point of Diversion of Non 72-12-1 Well | \$ 25.00 |
| ___ 14. | Application to Repair or Deepen Non 72-12-1 Well | \$ 5.00 |
| <hr/> | | |
| <u>4</u> ___ 15. | Application for Test, Expl. Observ. Well | \$ 5.00 |
| ___ 16. | Application for Extension of Time | \$ 25.00 |
| ___ 17. | Proof of Application to Beneficial Use | \$ 25.00 |
| ___ 18. | Notice of Intent to Appropriate | \$ 25.00 |

B. Surface Water Filing Fees

- | | | |
|---------|--|-----------|
| ___ 1. | Change of Ownership of a Water Right | \$ 5.00 |
| ___ 2. | Declaration of Water Right | \$ 10.00 |
| ___ 3. | Amended Declaration | \$ 25.00 |
| ___ 4. | Application to Change Point of Diversion and Place and/or Purpose of Use from Surface Water to Surface Water | \$ 200.00 |
| ___ 5. | Application to Change Point of Diversion and Place and/or Purpose of Use from Ground Water to Surface Water | \$ 200.00 |
| ___ 6. | Application to Change Point of Diversion | \$ 100.00 |
| ___ 7. | Application to Change Place and/or Purpose of Use | \$ 100.00 |
| ___ 8. | Application to Appropriate | \$ 25.00 |
| ___ 9. | Notice of Intent to Appropriate | \$ 25.00 |
| ___ 10. | Application for Extension of Time | \$ 50.00 |
| ___ 11. | Supplemental Well to a Surface Right | \$ 100.00 |
| ___ 12. | Return Flow Credit | \$ 100.00 |
| ___ 13. | Proof of Completion of Works | \$ 25.00 |
| ___ 14. | Proof of Application of Water to Beneficial Use | \$ 25.00 |
| ___ 15. | Water Development Plan | \$ 100.00 |
| ___ 16. | Declaration of Livestock Water Impoundment | \$ 10.00 |
| ___ 17. | Application for Livestock Water Impoundment | \$ 10.00 |

C. Well Driller Fees

- | | | |
|--------|---|----------|
| ___ 1. | Application for Well Driller's License | \$ 50.00 |
| ___ 2. | Application for Renewal of Well Driller's License | \$ 50.00 |
| ___ 3. | Application to Amend Well Driller's License | \$ 50.00 |

D. Reproduction of Documents

- | | |
|-------------|----------|
| ___ @ 0.25¢ | \$ _____ |
| ___ Map(s) | \$ _____ |

E. Certification**F. Other****G. Comments:**

Fed-ex
Re: GHD / EDG Resources

All fees are non-refundable.



STATE OF NEW MEXICO
OFFICE OF THE STATE ENGINEER
District 2 Office, Roswell, NM

Tom Blaine, P.E.
State Engineer

DISTRICT II
1900 West Second St.
Roswell, New Mexico 88201
Phone: (575) 622-6521
Fax: (575) 623-8559

Trn Nbr : 612679
File Nbr: C-4144

August 28, 2017

Christine Mathews
GHD Services Inc.
6121 Indian School RD NE
Albuquerque NM 87110

Zane Kurts
EOG Resources
5509 Champion Drive
Midland TX 79706

GREETINGS:

Enclosed is your copy of the above numbered permit that has been approved subject to the conditions set forth on the approval page. In accordance with the conditions of approval, the well can only be tested for 10 cumulative days, and the well is to be plugged on or before 08/28/2018, unless a permit to use the water is acquired from this office.

A well Record & Log (OSE Form wr-20) shall be filed in this office within thirty (30) days after completion of drilling, but no later than 08/28/2018.

Appropriate forms can be downloaded from the OSE website www.ose.state.nm.us or will be mailed upon request.

Sincerely,

A handwritten signature in black ink, appearing to read "Alvaro Alvarado".

Alvaro Alvarado
Water Resources Professional

ENCLOSURE
cc Santa Fe

File No.

NEW MEXICO OFFICE OF THE STATE ENGINEER



WR-07 APPLICATION FOR PERMIT TO DRILL

A WELL WITH NO WATER RIGHT

(check applicable box):

For fees, see State Engineer website: <http://www.ose.state.nm.us/>

Purpose:	<input type="checkbox"/> Pollution Control And/Or Recovery	<input type="checkbox"/> Ground Source Heat Pump
<input type="checkbox"/> Exploratory Well (Pump test)	<input type="checkbox"/> Construction Site/Public Works Dewatering	<input type="checkbox"/> Other(Describe):
<input checked="" type="checkbox"/> Monitoring Well	<input type="checkbox"/> Mine Dewatering	

A separate permit will be required to apply water to beneficial use regardless if use is consumptive or nonconsumptive.

☒ Temporary Request - Requested Start Date: 8/28/2017 Requested End Date: TBD

Plugging Plan of Operations Submitted? ☐ Yes ☒ No

1. APPLICANT(S)

Name: GHD Services Inc. on behalf of EOG Resources	Name: EOG Resources
Contact or Agent: <input checked="" type="checkbox"/> check here if Agent Christine Mathews	Contact or Agent: <input type="checkbox"/> check here if Agent Zane Kurtz
Mailing Address: 6121 Indian School Rd NE	Mailing Address: 5509 Champion Drive
City: Albuquerque	City: Midland
State: New Mexico	State: Texas
Zip Code: 87110	Zip Code: 79706
Phone: 505-269-0088 <input type="checkbox"/> Home <input checked="" type="checkbox"/> Cell	Phone: (432) 425-2023 <input checked="" type="checkbox"/> Home <input checked="" type="checkbox"/> Cell
Phone (Work):	Phone (Work):
E-mail (optional): chrstine.mathews@ghd.com	E-mail (optional): Zane_Kurtz@eogresources.com

FOR OSE INTERNAL USE

Application for Permit, Form WR-07, Rev 11/17/16

File No.: C-4144	Trn. No.: 612677	Receipt No.: 2-38532
Trans Description (optional): C-4144-P001 thru C-4144-P009		
Sub-Basin: C	PCW/LOG Due Date: 8-28-2018	

Page 1 of 3

2. WELL(S) Describe the well(s) applicable to this application.

Location Required: Coordinate location must be reported in NM State Plane (NAD 83), UTM (NAD 83), or Latitude/Longitude (Lat/Long - WGS84).
District II (Roswell) and District VII (Cimarron) customers, provide a PLSS location in addition to above.

☐ NM State Plane (NAD83) (Feet)
 ☐ UTM (NAD83) (Meters)
 ☒ Lat/Long (WGS84) (to the nearest 1/10th of second)

☐ NM West Zone
 ☐ Zone 12N

☐ NM East Zone
 ☐ Zone 13N

Well Number (if known):	X or Easting or Longitude:	Y or Northing or Latitude:	Provide if known: -Public Land Survey System (PLSS) (Quarters or Halves, Section, Township, Range) OR - Hydrographic Survey Map & Tract; OR - Lot, Block & Subdivision; OR - Land Grant Name
MW-1	-103 43' 21.51"W	32 24' 09.12"N	
MW-2	-103 43' 21.21"	32 24' 07.85"	
MW-3	-103 43' 17.16"	32 24' 11.34"	
MW-4	-103 43' 18.74"	32 24' 10.25"	

NOTE: If more well locations need to be described, complete form WR-08 (Attachment 1 – POD Descriptions)
 Additional well descriptions are attached: ☐ Yes ☒ No If yes, how many _____

Other description relating well to common landmarks, streets, or other:
 Just east of Campbell Rd. General site coordinates are 32.402374, -103.722648

Well is on land owned by: Bureau of Land Management - *Sundry included*

Well Information: NOTE: If more than one (1) well needs to be described, provide attachment. Attached? ☐ Yes ☒ No
 If yes, how many _____

Approximate depth of well (feet): 35	Outside diameter of well casing (inches): 2
Driller Name: EnviroDrill Inc	Driller License Number: WD 1186

3. ADDITIONAL STATEMENTS OR EXPLANATIONS

Well construction is 2-in. dia. PVC casing with 15-20 ft. length 0.010-in. slotted screen. A 10/20 grade silica sand pack will be placed in annulus around screen to 2 ft. above top of screen. A 2 ft. thick hydrated bentonite plug will be placed on top of the sand pack, and followed by cement/bentonite grout to surface.

Monitoring wells are being installed at the request of NMOCD to assess groundwater quality.

The duration of planned monitoring will continue until NMOCD grants remedial Site closure.

FOR OSE INTERNAL USE

Application for Permit, Form WR-07

File No.: C-4144

Trn No.: 612679

Page 2 of 3

4. SPECIFIC REQUIREMENTS: The applicant must include the following, as applicable to each well type. Please check the appropriate boxes, to indicate the information has been included and/or attached to this application:

Exploratory: <input type="checkbox"/> Include a description of any proposed pump test, if applicable.	Pollution Control and/or Recovery: <input type="checkbox"/> Include a plan for pollution control/recovery, that includes the following: <input type="checkbox"/> A description of the need for the pollution control or recovery operation. <input type="checkbox"/> The estimated maximum period of time for completion of the operation. <input type="checkbox"/> The annual diversion amount. <input type="checkbox"/> The annual consumptive use amount. <input type="checkbox"/> The maximum amount of water to be diverted and injected for the duration of the operation. <input type="checkbox"/> The method and place of discharge. <input type="checkbox"/> The method of measurement of water produced and discharged. <input type="checkbox"/> The source of water to be injected. <input type="checkbox"/> The method of measurement of water injected. <input type="checkbox"/> The characteristics of the aquifer. <input type="checkbox"/> The method of determining the resulting annual consumptive use of water and depletion from any related stream system. <input type="checkbox"/> Proof of any permit required from the New Mexico Environment Department. <input type="checkbox"/> An access agreement if the applicant is not the owner of the land on which the pollution plume control or recovery well is to be located.	Construction De-Watering: <input type="checkbox"/> Include a description of the proposed dewatering operation, <input type="checkbox"/> The estimated duration of the operation, <input type="checkbox"/> The maximum amount of water to be diverted, <input type="checkbox"/> A description of the need for the dewatering operation, and, <input type="checkbox"/> A description of how the diverted water will be disposed of.	Mine De-Watering: <input type="checkbox"/> Include a plan for pollution control/recovery, that includes the following: <input type="checkbox"/> A description of the need for mine dewatering. <input type="checkbox"/> The estimated maximum period of time for completion of the operation. <input type="checkbox"/> The source(s) of the water to be diverted. <input type="checkbox"/> The geohydrologic characteristics of the aquifer(s). <input type="checkbox"/> The maximum amount of water to be diverted per annum. <input type="checkbox"/> The maximum amount of water to be diverted for the duration of the operation. <input type="checkbox"/> The quality of the water. <input type="checkbox"/> The method of measurement of water diverted. <input type="checkbox"/> The recharge of water to the aquifer. <input type="checkbox"/> Description of the estimated area of hydrologic effect of the project. <input type="checkbox"/> The method and place of discharge. <input type="checkbox"/> An estimation of the effects on surface water rights and underground water rights from the mine dewatering project. <input type="checkbox"/> A description of the methods employed to estimate effects on surface water rights and underground water rights. <input type="checkbox"/> Information on existing wells, rivers, springs, and wetlands within the area of hydrologic effect.
Monitoring: <input checked="" type="checkbox"/> Include the reason for the monitoring well, and, <input checked="" type="checkbox"/> The duration of the planned monitoring.		Ground Source Heat Pump: <input type="checkbox"/> Include a description of the geothermal heat exchange project, <input type="checkbox"/> The number of boreholes for the completed project and required depths. <input type="checkbox"/> The time frame for constructing the geothermal heat exchange project, and, <input type="checkbox"/> The duration of the project. <input type="checkbox"/> Preliminary surveys, design data, and additional information shall be included to provide all essential facts relating to the request.	

ACKNOWLEDGEMENT

I, We (name of applicant(s)), Christine Mathews of GHD Services, Inc. on behalf of EOG Resources

Print Name(s)

affirm that the foregoing statements are true to the best of (my, our) knowledge and belief.

Applicant Signature

Applicant Signature

ACTION OF THE STATE ENGINEER

This application is:

☒ approved

☐ partially approved

☐ denied

provided it is not exercised to the detriment of any others having existing rights, and is not contrary to the conservation of water in New Mexico nor detrimental to the public welfare and further subject to the attached conditions of approval.

Witness my hand and seal this 28 day of August 20 17, for the State Engineer,

Tom Blane, P.E.

State Engineer

By: DR. OHL
Signature

Print

Title: Water Resources Professional
Print



FOR OSE INTERNAL USE

File No.:

C-4144

Application for Permit, Form WR-07

Trn No.:

612679

Page 3 of 3

**NEW MEXICO STATE ENGINEER OFFICE
PERMIT TO EXPLORE**

SPECIFIC CONDITIONS OF APPROVAL

- 17-1A Depth of the well shall not exceed the thickness of the valley fill.
- 17-4 No water shall be appropriated and beneficially used under this permit.
- 17-7 The Permittee shall utilize the highest and best technology available to ensure conservation of water to the maximum extent practical.
- 17-B The well shall be drilled by a driller licensed in the State of New Mexico in accordance with 72-12-12 NMSA 1978. A licensed driller shall not be required for the construction of a well driven without the use of a drill rig, provided that the casing shall not exceed two and three-eighths (2 3/8) inches outside diameter.
- 17-C The well driller must file the well record with the State Engineer and the applicant within 30 days after the well is drilled or driven. It is the well owner's responsibility to ensure that the well driller files the well record.
The well driller may obtain the well record form from any District Office or the Office of the State Engineer website.
- 17-C2 No water shall be diverted from this well except for testing purposes which shall not exceed ten (10) cumulative days, and well shall be plugged or capped on or before , unless a permit to use water from this well is acquired from the Office of the State Engineer.

NEW MEXICO STATE ENGINEER OFFICE
PERMIT TO EXPLORE

SPECIFIC CONDITIONS OF APPROVAL (Continued)

- 17-P The well shall be constructed, maintained, and operated to prevent inter-aquifer exchange of water and to prevent loss of hydraulic head between hydrogeologic zones.
- 17-Q The State Engineer retains jurisdiction over this permit.
- LOG The Point of Diversion C 04144 POD1 must be completed and the Well Log filed on or before 08/28/2018.
- LOG The Point of Diversion C 04144 POD2 must be completed and the Well Log filed on or before 08/28/2018.
- LOG The Point of Diversion C 04144 POD3 must be completed and the Well Log filed on or before 08/28/2018.
- LOG The Point of Diversion C 04144 POD4 must be completed and the Well Log filed on or before 08/28/2018.

ACTION OF STATE ENGINEER

Notice of Intention Rcvd:	Date Rcvd. Corrected:
Formal Application Rcvd: 08/18/2017	Pub. of Notice Ordered:
Date Returned - Correction:	Affidavit of Pub. Filed:

This application is approved provided it is not exercised to the detriment of any others having existing rights, and is not contrary to the conservation of water in New Mexico nor detrimental to the public welfare of the state; and further subject to the specific conditions listed previously.

Witness my hand and seal this 28 day of Aug A.D., 2017

Tom Blaine, P.E., State Engineer

By: 
Alvaro Alvarado

Trn Desc: C 04144-POD1 THRU POD4

File Number: C 04144

Trn Number: 612679

OFFICE OF THE STATE ENGINEER/INTERSTATE STREAM COMMISSION – ROSWELL OFFICE

OFFICIAL RECEIPT NUMBER: 2 - 38532 DATE: 8-18-17 FILE NO.: _____
 TOTAL: \$20.00 RECEIVED: Twenty \$00 DOLLARS CHECK NO.: 1131 CASH: _____
 PAYOR: CHRISTINE MATTHEWS ADDRESS: 3810 Cottonwood Rd NE CITY: Albq STATE: NM
 ZIP: 87111 RECEIVED BY: DD

INSTRUCTIONS: Indicate the number of actions to the left of the appropriate type of filing. Complete the receipt information. **Original** to payor; **pink** copy to Program Support/ASD; and **yellow** copy for Water Rights. If a mistake is made, void the original and all copies and submit to Program Support/ASD as part of your daily deposit.

A. Ground Water Filing Fees

- | | | |
|------------------|---|-----------|
| ___ 1. | Change of Ownership of Water Right | \$ 2.00 |
| ___ 2. | Application to Appropriate or Supplement Domestic 72-12-1 Well | \$ 125.00 |
| ___ 3. | Application to Repair or Deepen 72-12-1 Well | \$ 75.00 |
| ___ 4. | Application for Replacement 72-12-1 Well | \$ 75.00 |
| ___ 5. | Application to Change Purpose of Use 72-12-1 Well | \$ 75.00 |
| ___ 6. | Application for Stock Well/Temp. Use | \$ 5.00 |
| <hr/> | | |
| ___ 7. | Application to Appropriate Irrigation, Municipal, or Commercial Use | \$ 25.00 |
| ___ 8. | Declaration of Water Right | \$ 1.00 |
| ___ 9. | Application for Supplemental Non 72-12-1 Well | \$ 25.00 |
| ___ 10. | Application to Change Place or Purpose of Use Non 72-12-1 Well | \$ 25.00 |
| ___ 11. | Application to Change Point of Diversion and Place and/or Purpose of Use from Surface Water to Ground Water | \$ 50.00 |
| ___ 12. | Application to Change Point of Diversion and Place and/or Purpose of Use from Ground Water to Ground Water | \$ 50.00 |
| ___ 13. | Application to Change Point of Diversion of Non 72-12-1 Well | \$ 25.00 |
| ___ 14. | Application to Repair or Deepen Non 72-12-1 Well | \$ 5.00 |
| <hr/> | | |
| <u>4</u> ___ 15. | Application for Test, Expl. Observ. Well | \$ 5.00 |
| ___ 16. | Application for Extension of Time | \$ 25.00 |
| ___ 17. | Proof of Application to Beneficial Use | \$ 25.00 |
| ___ 18. | Notice of Intent to Appropriate | \$ 25.00 |

B. Surface Water Filing Fees

- | | | |
|---------|--|-----------|
| ___ 1. | Change of Ownership of a Water Right | \$ 5.00 |
| ___ 2. | Declaration of Water Right | \$ 10.00 |
| ___ 3. | Amended Declaration | \$ 25.00 |
| ___ 4. | Application to Change Point of Diversion and Place and/or Purpose of Use from Surface Water to Surface Water | \$ 200.00 |
| ___ 5. | Application to Change Point of Diversion and Place and/or Purpose of Use from Ground Water to Surface Water | \$ 200.00 |
| ___ 6. | Application to Change Point of Diversion | \$ 100.00 |
| ___ 7. | Application to Change Place and/or Purpose of Use | \$ 100.00 |
| ___ 8. | Application to Appropriate | \$ 25.00 |
| ___ 9. | Notice of Intent to Appropriate | \$ 25.00 |
| ___ 10. | Application for Extension of Time | \$ 50.00 |
| ___ 11. | Supplemental Well to a Surface Right | \$ 100.00 |
| ___ 12. | Return Flow Credit | \$ 100.00 |
| ___ 13. | Proof of Completion of Works | \$ 25.00 |
| ___ 14. | Proof of Application of Water to Beneficial Use | \$ 25.00 |
| ___ 15. | Water Development Plan | \$ 100.00 |
| ___ 16. | Declaration of Livestock Water Impoundment | \$ 10.00 |
| ___ 17. | Application for Livestock Water Impoundment | \$ 10.00 |

C. Well Driller Fees

- | | | |
|--------|---|----------|
| ___ 1. | Application for Well Driller's License | \$ 50.00 |
| ___ 2. | Application for Renewal of Well Driller's License | \$ 50.00 |
| ___ 3. | Application to Amend Well Driller's License | \$ 50.00 |

D. Reproduction of Documents

- | | |
|-------------|----------|
| ___ @ 0.25¢ | \$ _____ |
| ___ Map(s) | \$ _____ |

E. Certification**F. Other****G. Comments:**

Fed-ex
Re: GHD / EDG Resources

All fees are non-refundable.

Tom Blaine, P.E.
State Engineer



Roswell Office
1900 WEST SECOND STREET
ROSWELL, NM 88201

STATE OF NEW MEXICO

Trn Nbr: 629437
File Nbr: C 04144 POD5-11

OFFICE OF THE STATE ENGINEER

Jul. 30, 2018

CHRISTINE MATHEWS
GHD SERVICES INC.
6121 INDIAN SCHOOL RD NE
ALBUQUERQUE, NM 87110

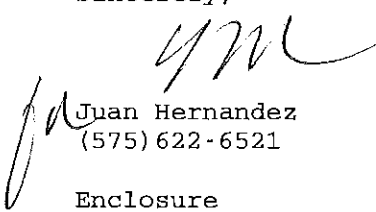
Greetings:

Enclosed is your copy of the above numbered permit that has been approved subject to the conditions set forth on the approval page. In accordance with the conditions of approval, the well can only be tested for 10 cumulative days, and the well is to be plugged on or before 07/31/2019, unless a permit to use the water is acquired from this office.

A Well Record & Log (OSE Form wr-20) shall be filed in this office within twenty (20) days after completion of drilling, but no later than 07/31/2019.

Appropriate forms can be downloaded from the OSE website www.ose.state.nm.us or will be mailed upon request.

Sincerely,


Juan Hernandez
(575) 622-6521

Enclosure

explore

File No. C-4144



NEW MEXICO OFFICE OF THE STATE ENGINEER

WR-07 APPLICATION FOR PERMIT TO DRILL

A WELL WITH NO WATER RIGHT

(check applicable box):



For fees, see State Engineer website: <http://www.ose.state.nm.us/>

Purpose:	<input type="checkbox"/> Pollution Control And/Or Recovery	<input type="checkbox"/> Ground Source Heat Pump
<input type="checkbox"/> Exploratory Well (Pump test)	<input type="checkbox"/> Construction Site/Public Works Dewatering	<input type="checkbox"/> Other(Describe):
<input checked="" type="checkbox"/> Monitoring Well	<input type="checkbox"/> Mine Dewatering	

A separate permit will be required to apply water to beneficial use regardless if use is consumptive or nonconsumptive.

<input checked="" type="checkbox"/> Temporary Request - Requested Start Date: 08/06/2018	Requested End Date: TBD
Plugging Plan of Operations Submitted? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	

1. APPLICANT(S)

Name: GHD Services, Inc. on behalf of EOG Resources	Name: EOG Resources
Contact or Agent: <input checked="" type="checkbox"/> check here if Agent Alan Brandon	Contact or Agent: <input type="checkbox"/> check here if Agent James Kennedy
Mailing Address: 6121 Indian School Road, NE	Mailing Address: 5509 Champion Drive
City: Albuquerque	City: Midland
State: NM Zip Code: 87110	State: TX Zip Code: 79706
Phone: 505-697-2025 <input type="checkbox"/> Home <input checked="" type="checkbox"/> Cell Phone (Work):	Phone: 432-258-4346 <input type="checkbox"/> Home <input checked="" type="checkbox"/> Cell Phone (Work):
E-mail (optional): alan.brandon@ghd.com	E-mail (optional): james_kennedy@eogresources.com

FOR OSE INTERNAL USE Application for Permit, Form WR-07, Rev 11/17/16

File No.: <u>C-4144</u>	Trn. No.: <u>629437</u>	Receipt No.: <u>2-39719</u>
Trans Description (optional): <u>PODS - PODII</u>		
Sub-Basin: <u>CVB</u>	PCW/LOG Due Date: <u>7-31-19</u>	

2. WELL(S) Describe the well(s) applicable to this application.

Location Required: Coordinate location must be reported in NM State Plane (NAD 83), UTM (NAD 83), or Latitude/Longitude (Lat/Long - WGS84). District II (Roswell) and District VII (Cimarron) customers, provide a PLSS location in addition to above.			
<input type="checkbox"/> NM State Plane (NAD83) (Feet) <input type="checkbox"/> NM West Zone <input type="checkbox"/> NM East Zone <input type="checkbox"/> NM Central Zone		<input type="checkbox"/> UTM (NAD83) (Meters) <input type="checkbox"/> Zone 12N <input type="checkbox"/> Zone 13N	
<input checked="" type="checkbox"/> Lat/Long (WGS84) (to the nearest 1/10 th of second)			
Well Number (if known):	X or Easting or Longitude:	Y or Northing or Latitude:	Provide if known: -Public Land Survey System (PLSS) (Quarters or Halves, Section, Township, Range) OR - Hydrographic Survey Map & Tract; OR - Lot, Block & Subdivision; OR - Land Grant Name
C-4144 POD 5 MW-4	-103 43' 17.18"W	32 24' 15.21"N	
MW-5 POD 6	-103 43' 10.96"W	32 24' 11.35"N	
MW-6 POD 7	-103 43' 12.34"W	32 24' 08.25"N	
MW-7 POD 8	-103 43' 17.14"W	32 24' 07.55"N	
X MW-8 POD 9	-103 43' 21.60"W	32 24' 05.71"N	
NOTE: If more well locations need to be described, complete form WR-08 (Attachment 1 – POD Descriptions) Additional well descriptions are attached: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No If yes, how many <u>2</u>			
Other description relating well to common landmarks, streets, or other: Just east of Campbell Road. General site coordinates are 32.402374, -103.722648			
Well is on land owned by: Bureau of Land Management - Sundry enclosed			
Well Information: NOTE: If more than one (1) well needs to be described, provide attachment. Attached? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If yes, how many _____			
Approximate depth of well (feet): 60		Outside diameter of well casing (inches): 2	
Driller Name: Authentic Drilling, Inc.		Driller License Number: WD 1767	

3. ADDITIONAL STATEMENTS OR EXPLANATIONS

Well construction is 2-inch diameter PVC casing with 15-20 feet length 0.010 inch slotted screen. A 10/20 grade silica sand pack will be placed in the annulus around the screen to 2 feet above the screen. A 2 foot hydrated bentonite plug will be placed on top of the sand pack and followed by a cement/bentonite grout to surface.

Monitoring wells are being installed at the request of NMOCD to assess groundwater quality.

The duration of planned monitoring will continue until NMOCD grants remedial site closure.

FOR OSE INTERNAL USE

Application for Permit, Form WR-07

File No.: C-4144	Trn No.: 629437
------------------	-----------------

Page 2 of 3



NEW MEXICO OFFICE OF THE STATE ENGINEER



ATTACHMENT 1 POINT OF DIVERSION DESCRIPTIONS

This Attachment is to be completed if more than one (1) point of diversion is described on an Application or Declaration.

a. Is this a: <input type="checkbox"/> Move-From Point of Diversion(s) <input checked="" type="checkbox"/> Move-To Point of Diversion(s)		b. Information on Attachment(s): Number of points of diversion involved in the application: <u>7</u> Total number of pages attached to the application: <u>1</u>	
<input type="checkbox"/> Surface Point of Diversion OR <input checked="" type="checkbox"/> Well			
Name of ditch, acequia, or spring:			
Stream or water course:			
Tributary of:			
c. Location (Required): Required: Move to POD location coordinate must be either New Mexico State Plane (NAD 83), UTM (NAD 83), or Lat/Long (WGS84)			
NM State Plane (NAD83) (feet) NM West Zone <input type="checkbox"/> NM Central Zone <input type="checkbox"/> NM East Zone <input type="checkbox"/>	UTM (NAD83) (meters) Zone 13N <input type="checkbox"/> Zone 12N <input type="checkbox"/>	<input checked="" type="checkbox"/> Lat/Long- (WGS84) 1/10 th of second	OTHER (allowable only for move-from descriptions - see application form for format) <input type="checkbox"/> PLSS (quarters, section, township, range) <input type="checkbox"/> Hydrographic Survey, Map & Tract <input type="checkbox"/> Lot, Block & Subdivision <input type="checkbox"/> Grant
POD Number: <u>10</u> <u>C-4144</u> MW-9	X or Longitude -103.43° 23.01"W	Y or Latitude 32 24' 08.13"N	Other Location Description:
POD Number: <u>11</u> <u>C-4144</u> MW-10	X or Longitude -103 43' 23.11"W	Y or Latitude 32 24' 13.29"N	Other Location Description:
POD Number:	X or Longitude	Y or Latitude	Other Location Description:
POD Number:	X or Longitude	Y or Latitude	Other Location Description:
POD Number:	X or Longitude	Y or Latitude	Other Location Description:
POD Number:	X or Longitude	Y or Latitude	Other Location Description:
POD Number:	X or Longitude	Y or Latitude	Other Location Description:
POD Number:	X or Longitude	Y or Latitude	Other Location Description:
POD Number:	X or Longitude	Y or Latitude	Other Location Description:

FOR OSE INTERNAL USE

Form wr-08

POD DESCRIPTIONS - ATTACHMENT 1

File Number: C-4144Trn Number: 429437

Trans Description (optional):

PODS-11

4. SPECIFIC REQUIREMENTS: The applicant must include the following, as applicable to each well type. Please check the appropriate boxes, to indicate the information has been included and/or attached to this application:

Exploratory: <input type="checkbox"/> Include a description of any proposed pump test, if applicable.	Pollution Control and/or Recovery: <input type="checkbox"/> Include a plan for pollution control/recovery, that includes the following: <input type="checkbox"/> A description of the need for the pollution control or recovery operation. <input type="checkbox"/> The estimated maximum period of time for completion of the operation. <input type="checkbox"/> The annual diversion amount. <input type="checkbox"/> The annual consumptive use amount. <input type="checkbox"/> The maximum amount of water to be diverted and injected for the duration of the operation. <input type="checkbox"/> The method and place of discharge.	Construction De-Watering: <input type="checkbox"/> Include a description of the proposed dewatering operation, <input type="checkbox"/> The estimated duration of the operation, <input type="checkbox"/> The maximum amount of water to be diverted, <input type="checkbox"/> A description of the need for the dewatering operation, and, <input type="checkbox"/> A description of how the diverted water will be disposed of.	Mine De-Watering: <input type="checkbox"/> Include a plan for pollution control/recovery, that includes the following: <input type="checkbox"/> A description of the need for mine dewatering. <input type="checkbox"/> The estimated maximum period of time for completion of the operation, <input type="checkbox"/> The source(s) of the water to be diverted. <input type="checkbox"/> The geohydrologic characteristics of the aquifer(s). <input type="checkbox"/> The maximum amount of water to be diverted per annum. <input type="checkbox"/> The maximum amount of water to be diverted for the duration of the operation. <input type="checkbox"/> The quality of the water.
Monitoring: <input checked="" type="checkbox"/> Include the reason for the monitoring well, and, <input checked="" type="checkbox"/> The duration of the planned monitoring.	<input type="checkbox"/> The method of measurement of water produced and discharged. <input type="checkbox"/> The source of water to be injected. <input type="checkbox"/> The method of measurement of water injected. <input type="checkbox"/> The characteristics of the aquifer. <input type="checkbox"/> The method of determining the resulting annual consumptive use of water and depletion from any related stream system. <input type="checkbox"/> Proof of any permit required from the New Mexico Environment Department. <input type="checkbox"/> An access agreement if the applicant is not the owner of the land on which the pollution plume control or recovery well is to be located.	Ground Source Heat Pump: <input type="checkbox"/> Include a description of the geothermal heat exchange project, <input type="checkbox"/> The number of boreholes for the completed project and required depths, <input type="checkbox"/> The time frame for constructing the geothermal heat exchange project, and, <input type="checkbox"/> The duration of the project. <input type="checkbox"/> Preliminary surveys, design data, and additional information shall be included to provide all essential facts relating to the request.	<input type="checkbox"/> The method of measurement of water diverted. <input type="checkbox"/> The recharge of water to the aquifer. <input type="checkbox"/> Description of the estimated area of hydrologic effect of the project. <input type="checkbox"/> The method and place of discharge. <input type="checkbox"/> An estimation of the effects on surface water rights and underground water rights from the mine dewatering project. <input type="checkbox"/> A description of the methods employed to estimate effects on surface water rights and underground water rights. <input type="checkbox"/> Information on existing wells, rivers, springs, and wetlands within the area of hydrologic effect.

ACKNOWLEDGEMENT

I, We (name of applicant(s)), Alan Brandon of GHD Services, Inc. on behalf of EOG Resources

Print Name(s)

affirm that the foregoing statements are true to the best of (my, our) knowledge and belief.

Alan Brandon
Applicant Signature

Applicant Signature

ACTION OF THE STATE ENGINEER

This application is:

☒ approved

☐ partially approved

☐ denied

provided it is not exercised to the detriment of any others having existing rights, and is not contrary to the conservation of water in New Mexico nor detrimental to the public welfare and further subject to the attached conditions of approval.

Witness my hand and seal this 30th day of July 20 18, for the State Engineer,

Tom Blaine, P.E., State Engineer

By:
Signature

Print

Title:
Print

Juan Hernandez, Water Resources Manager 1

FOR OSE INTERNAL USE

Application for Permit, Form WR-07

File No.:

C-4144

Trm No.:

629437

Page 3 of 3

**NEW MEXICO STATE ENGINEER OFFICE
PERMIT TO EXPLORE**

SPECIFIC CONDITIONS OF APPROVAL

- 17-1A Depth of the well shall not exceed the thickness of the valley fill.
- 17-4 No water shall be appropriated and beneficially used under this permit.
- 17-6 The well authorized by this permit shall be plugged completely using the following method per Rules and Regulations Governing Well Driller Licensing, Construction, Repair and Plugging of Wells; Subsection C of 19.27.4.30 NMAC unless an alternative plugging method is proposed by the well owner and approved by the State Engineer upon completion of the permitted use. All pumping appurtenance shall be removed from the well prior to plugging. To plug a well, the entire well shall be filled from the bottom upwards to ground surface using a tremie pipe. The bottom of the tremie shall remain submerged in the sealant throughout the entire sealing process; other placement methods may be acceptable and approved by the state engineer. The well shall be plugged with an office of the state engineer approved sealant for use in the plugging of non-artesian wells. The well driller shall cut the casing off at least four (4) feet below ground surface and fill the open hole with at least two vertical feet of approved sealant. The driller must fill or cover any open annulus with sealant. Once the sealant has cured, the well driller or well owner may cover the seal with soil. A Plugging Report for said well shall be filed with the Office of the State Engineer in a District Office within 30 days of completion of the plugging.
- 17-7 The Permittee shall utilize the highest and best technology available to ensure conservation of water to the maximum extent practical.

Trn Desc: C 04144 POD5-11

File Number: C 04144

Trn Number: 629437

**NEW MEXICO STATE ENGINEER OFFICE
PERMIT TO EXPLORE**

SPECIFIC CONDITIONS OF APPROVAL (Continued)

LOG The Point of Diversion C 04144 POD5 must be completed and the Well Log filed on or before 07/31/2019.

LOG The Point of Diversion C 04144 POD6 must be completed and the Well Log filed on or before 07/31/2019.

LOG The Point of Diversion C 04144 POD7 must be completed and the Well Log filed on or before 07/31/2019.

LOG The Point of Diversion C 04144 POD8 must be completed and the Well Log filed on or before 07/31/2019.

LOG The Point of Diversion C 04144 POD9 must be completed and the Well Log filed on or before 07/31/2019.

IT IS THE PERMITTEES RESPONSIBILITY TO OBTAIN ALL AUTHORIZATIONS AND PERMISSIONS TO DRILL ON PROPERTY OF OTHER OWNERSHIP BEFORE COMMENCING ACTIVITIES UNDER THIS PERMIT.

SHOULD THE PERMITTEE CHANGE THE PURPOSE OF USE TO OTHER THAN MONITORING PURPOSES, AN APPLICATION SHALL BE ACQUIRED FROM THE OFFICE OF THE STATE ENGINEER.

ACTION OF STATE ENGINEER

Notice of Intention Rcvd:	Date Rcvd. Corrected:
Formal Application Rcvd: 07/18/2018	Pub. of Notice Ordered:
Date Returned - Correction:	Affidavit of Pub. Filed:

This application is approved provided it is not exercised to the detriment of any others having existing rights, and is not contrary to the conservation of water in New Mexico nor detrimental to the public welfare of the state; and further subject to the specific conditions listed previously.

Witness my hand and seal this 30th day of Jul A.D., 2018

Tom Blaine, P.E., State Engineer

By:

Juan Hernandez

Trn Desc: C 04144 POD5-11

File Number: C 04144

Trn Number: 629437

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

FORM APPROVED
OMB No. 1004-0137
Expires: January 31, 2018

SUNDRY NOTICES AND REPORTS ON WELLS
Do not use this form for proposals to drill or to re-enter an abandoned well. Use Form 3160-3 (APD) for such proposals.

SUBMIT IN TRIPLICATE - Other Instructions on page 2

1. Type of Well <input type="checkbox"/> Oil Well <input type="checkbox"/> Gas Well <input checked="" type="checkbox"/> Other		5. Lease Serial No. NM-84890
2. Name of Operator EOG Services, Inc.		6. If Indian, Allottee or Tribe Name
3a. Address 6509 Champions Drive	3b. Phone No. (include area code) (432) 686-3667	7. If Unit of CA/Agreement, Name and/or No.
4. Location of Well (Footage, Sec., T., R., M., or Survey Description) 32.402502N, -103.722655		8. Well Name and No. Flamenco Federal #1
		9. API Well No. 30-025-31076
		10. Field and Pool or Exploratory Area
		11. Country or Parish, State Lea County, NM

12. CHECK THE APPROPRIATE BOX(ES) TO INDICATE NATURE OF NOTICE, REPORT OR OTHER DATA

TYPE OF SUBMISSION	TYPE OF ACTION			
<input checked="" type="checkbox"/> Notice of Intent	<input type="checkbox"/> Acidize	<input type="checkbox"/> Deepen	<input type="checkbox"/> Production (Start/Resume)	<input type="checkbox"/> Water Shut-Off
<input type="checkbox"/> Subsequent Report	<input type="checkbox"/> Alter Casing	<input type="checkbox"/> Hydraulic Fracturing	<input type="checkbox"/> Reclamation	<input type="checkbox"/> Well Integrity
<input type="checkbox"/> Final Abandonment Notice	<input type="checkbox"/> Casing Repair	<input checked="" type="checkbox"/> New Construction	<input type="checkbox"/> Recomplete	<input type="checkbox"/> Other
	<input type="checkbox"/> Change Plans	<input type="checkbox"/> Plug and Abandon	<input type="checkbox"/> Temporarily Abandon	
	<input type="checkbox"/> Convert to Injection	<input type="checkbox"/> Plug Back	<input type="checkbox"/> Water Disposal	

13. Describe Proposed or Completed Operation: Clearly state all pertinent details, including estimated starting date of any proposed work and approximate duration thereof. If the proposal is to deepen directionally or recompleat horizontally, give subsurface locations and measured and true vertical depths of all pertinent markers and zones. Attach the Bond under which the work will be performed or provide the Bond No. on file with BLM/BIA. Required subsequent reports must be filed within 30 days following completion of the involved operations. If the operation results in a multiple completion or recompletion in a new interval, a Form 3160-4 must be filed once testing has been completed. Final Abandonment Notices must be filed only after all requirements, including reclamation, have been completed and the operator has determined that the site is ready for final inspection.)

Proposing to install 7 additional groundwater monitoring wells for the collection and analysis of water samples to assess the horizontal extent of chloride impacted groundwater due to a release. The wells are anticipated to be installed to a depth of approximately 50 feet below ground surface. Anticipated start date is August 6, 2018 and the end date is August 10, 2018.

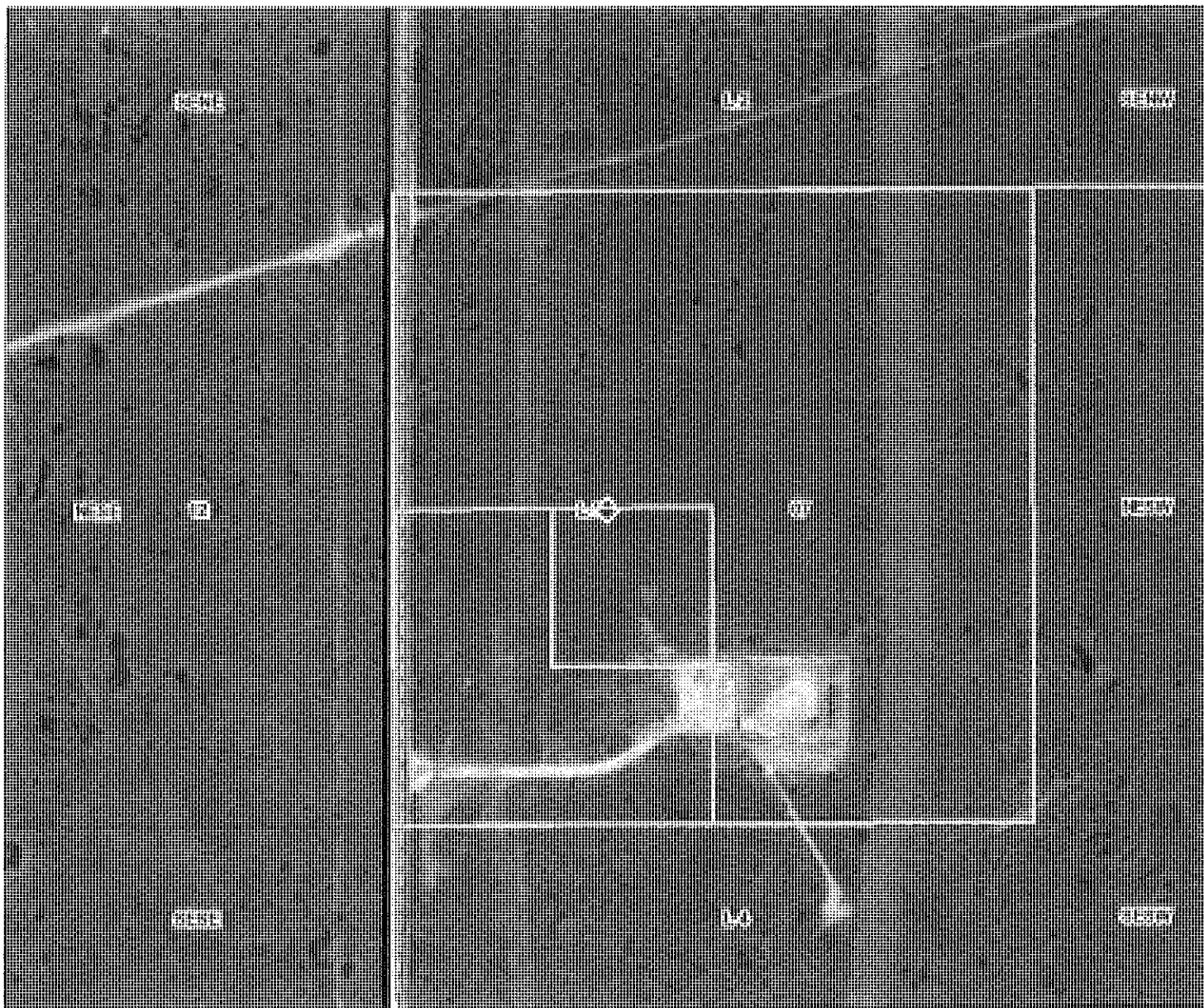
14. I hereby certify that the foregoing is true and correct. Name (Printed/Typed) Jamon Hohensee		Title Environmental Rep
Signature		Date 6-19-18

THE SPACE FOR FEDERAL OR STATE OFFICE USE

Approved by		Title E.P.S.	Date 7/12/2018
Conditions of approval, if any, are attached. Approval of this notice does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease which would entitle the applicant to conduct operations thereon.		Office Carlsbad Field Office, NM	

Title 18 U.S.C Section 1001 and Title 43 U.S.C Section 1212, make it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

(Instructions on page 2)



Coordinates

UTM - NAD 83 (m) - Zone 13

Easting 620239.246

Northing 3585960.836

State Plane - NAD 83 (f) - Zone E

Easting 730184.972

Northing 511326.842

Degrees Minutes Seconds

Latitude 32 : 24 : 15.210000

Longitude -103 : 43 : 17.180000

Location pulled from Coordinate Search

NEW MEXICO OFFICE OF THE STATE ENGINEER

1:4,514

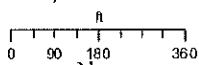


Image Info

Source: DigitalGlobe

Date: 5/4/2016

Resolution (m): 0.5

Accuracy (m): 10.2

Spatial Information

County: Lea

Groundwater Basin: Carlsbad

Sub-Basin: Upper Pecos-Black

Land Grant: Not in Land Grant Restrictions:

NA

PLSS Description

NE SW NW SW Qtr of Sec 7 of 22S 32E

Derived from Projected PLSS- Qtr Sec. locations are calculated and are only approximations

POD Information

Owner: BLM/GHD SERV/EOG

File Number: C-4144POD5

POD Status: NoData

Permit Status: NoData

Permit Use: NoData

Purpose: MONITOR

YMENDIOLA

This document is a preliminary map and should not be used for legal purposes. It is for informational purposes only. The State Engineer's Office is not responsible for any errors or omissions in this document. The State Engineer's Office is not responsible for any damages or losses resulting from the use of this document. The State Engineer's Office is not responsible for any claims or liabilities resulting from the use of this document. The State Engineer's Office is not responsible for any claims or liabilities resulting from the use of this document.



- | | | | | | |
|---------------------------------------|-----------------------------------|--------------------------------|----------------------------------|----------------------------------|--------------------------------|
| Calculated PLSS | ★ Gray County Parcels 2018 | □ Curry County Parcels 2018 | □ Hidalgo County Parcels 2017 | □ Otero County Parcels 2018 | □ Sandoval County Parcels 2018 |
| Coord Search Location | ★ Union County Parcel Points 2017 | □ Doña Ana County Parcels 2018 | □ Lea County Parcels 2018 | □ Roosevelt County Parcels 2018 | □ Santa Fe County Parcels 2018 |
| Federal Lands | □ Bernalillo County Parcels 2018 | □ Doña Ana County Parcels 2017 | □ Lincoln County Parcels 2018 | □ Rio Arriba County Parcels 2018 | □ Sierra County Parcels 2017 |
| ★ Catron County Parcel Points 2017 | □ Chaves County Parcels 2018 | □ Eddy County Parcels 2018 | □ Los Alamos County Parcels 2017 | □ San Juan County Parcels 2018 | □ Socorro County Parcels 2017 |
| ★ Guadalupe County Parcel Points 2016 | □ Cibola County Parcels 2018 | □ Grant County Parcels 2017 | □ Luna County Parcels 2017 | □ San Miguel County Parcels 2017 | □ Taos County Parcels 2018 |
| ★ Mora County Parcel Points 2014 | □ Colfax County Parcels 2018 | □ Harding County Parcels 2017 | □ McKinley County Parcels 2017 | □ Torrance County Parcels 2018 | |



Coordinates
UTM - NAD 83 (m) - Zone 13

Easting 620403.165

Northing 3585843.913

State Plane - NAD 83 (ft) - Zone E

Easting 730720.451

Northing 510939.824

Degrees Minutes Seconds

Latitude 32 : 24 : 11.350000

Longitude -103 : 43 : 10.960000

Location pulled from Coordinate Search

**NEW MEXICO OFFICE
 OF THE
 STATE ENGINEER**
 1:4,514

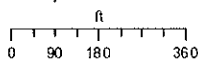


Image Info

Source: DigitalGlobe

Date: 5/4/2016

Resolution (m): 0.5

Accuracy (m): 10.2

Spatial Information

County: Lea

Groundwater Basin: Carlsbad

Sub-Basin: Upper Pecos-Black

Land Grant: Not in Land Grant
 Restrictions:

NA

PLSS Description

SW SE NW SW Qtr of Sec 7 of 22S 32E

Derived from Projected PLSS- Qtr Sec.
 locations are calculated and are only
 approximations

POD Information

Owner: BLM/GHD SERV/EOG

File Number: C-4144POD6

POD Status: NoData

Permit Status: NoData

Permit Use: NoData

Purpose: MONITOR

YMENDIOLA

Blurred information is provided for public use only. It is not to be used for official purposes. The information is provided for public use only. It is not to be used for official purposes. The information is provided for public use only. It is not to be used for official purposes.



Calculated PLSS	★	Guadalupe County Parcel Points 2016	<input type="checkbox"/>	Gibola County Parcels 2018	<input type="checkbox"/>	Harding County Parcels 2017	<input type="checkbox"/>	Otero County Parcels 2018	<input type="checkbox"/>	Santa Fe County Parcels 2018	<input type="checkbox"/>
Coord Search Location	★	Mora County Parcel Points 2016	<input type="checkbox"/>	Colfax County Parcels 2018	<input type="checkbox"/>	Hidalgo County Parcels 2017	<input type="checkbox"/>	Roosevelt County Parcels 2018	<input type="checkbox"/>	Sierra County Parcels 2017	<input type="checkbox"/>
GIS WATERS POOs	★	Quay County Parcel Points 2018	<input type="checkbox"/>	Curry County Parcels 2018	<input type="checkbox"/>	Lea County Parcels 2018	<input type="checkbox"/>	Rio Arriba County Parcels 2018	<input type="checkbox"/>	Socorro County Parcels 2017	<input type="checkbox"/>
ACT	★	Union County Parcel Points 2017	<input type="checkbox"/>	Doña Ana County Parcels 2018	<input type="checkbox"/>	Lincoln County Parcels 2018	<input type="checkbox"/>	San Juan County Parcels 2018	<input type="checkbox"/>	Taos County Parcels 2018	<input type="checkbox"/>
PEN	★	Bernalillo County Parcels 2018	<input type="checkbox"/>	De Baca County Parcels 2017	<input type="checkbox"/>	Los Alamos County Parcels 2017	<input type="checkbox"/>	San Miguel County Parcels 2017	<input type="checkbox"/>	Torrance County Parcels 2018	<input type="checkbox"/>
OSE District Boundary	★	Chaves County Parcels 2018	<input type="checkbox"/>	Eddy County Parcels 2018	<input type="checkbox"/>	Luna County Parcels 2017	<input type="checkbox"/>	Sandoval County Parcels 2018	<input type="checkbox"/>	Valencia County Parcels 2018	<input type="checkbox"/>
Federal Lands	★		<input type="checkbox"/>	Grant County Parcels 2017	<input type="checkbox"/>	McKinley County Parcels 2017	<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>
Catron County Parcel Points 2017	★		<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>

BLM Land Grant



Coordinates
UTM - NAD 83 (m) - Zone 13

Easting 620368.255

Northing 3585748.017

State Plane - NAD 83 (f) - Zone E

Easting 730603.939

Northing 510625.873

Degrees Minutes Seconds

Latitude 32 : 24 : 8.250000

Longitude -103 : 43 : 12.340000

Location pulled from Coordinate Search

**NEW MEXICO OFFICE
 OF THE
 STATE ENGINEER**
 1:4,514

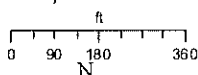


Image Info

Source: DigitalGlobe

Date: 5/4/2016

Resolution (m): 0.5

Accuracy (m): 10.2

Spatial Information

County: Lea

Groundwater Basin: Carlsbad

Sub-Basin: Upper Pecos-Black

Land Grant: Not in Land Grant
 Restrictions:

NA

PLSS Description

NW NE SW SW Qtr of Sec 7 of 22S 32E

Derived from Projected PLSS - Qtr Sec.
 locations are calculated and are only
 approximations

POD Information

Owner: BLM/GHD SERV/EOG

File Number: C-4144POD7

POD Status: NoData

Permit Status: NoData

Permit Use: NoData

Purpose: MONITOR

YMENDIOLA

Recreation Planning and Design Services, Inc. is a registered professional engineering firm. The information contained herein is the property of Recreation Planning and Design Services, Inc. and is not to be used for any other purpose without the written consent of Recreation Planning and Design Services, Inc. The information contained herein is not to be used for any other purpose without the written consent of Recreation Planning and Design Services, Inc.



Calculated PLSS	★	Guadalupe County Parcels 2018	□	Cibola County Parcels 2018	□	Harding County Parcels 2017	□	Otero County Parcels 2018	□	Santa Fe County Parcels 2018
Coord Search Location	★	Mora County Parcels 2015	□	Colfax County Parcels 2018	□	Hidalgo County Parcels 2017	□	Roosevelt County Parcels 2018	□	Sierra County Parcels 2017
GIS WATERS	★	Quay County Parcels 2014	□	Curry County Parcels 2018	□	Lea County Parcels 2018	□	Rio Arriba County Parcels 2018	□	Socorro County Parcels 2017
PODs	★	Quay County Parcels 2018	□	Doña Ana County Parcels 2018	□	Lincoln County Parcels 2018	□	San Juan County Parcels 2018	□	Taos County Parcels 2018
ACT	★	Union County Parcels 2017	□	De Baca County Parcels 2017	□	Los Alamos County Parcels 2017	□	San Miguel County Parcels 2017	□	Torrance County Parcels 2018
PEN	★		□		□	Luna County Parcels 2017	□	Sandoval County Parcels 2018	□	Valencia County Parcels 2018
OSE District Boundary	★		□		□	McKinley County Parcels 2017	□		□	
Federal Lands	★		□		□		□		□	
Catron County Parcels 2017	★	□	Bernalillo County Parcels 2018	□	Eddy County Parcels 2018	□			□	
	★	□	Chaves County Parcels 2018	□	Grant County Parcels 2017	□			□	

BLM Land Grant



Coordinates

UTM - NAD 83 (m) - Zone 13

Easting 620243.112

Northing 3585724.960

State Plane - NAD 83 (f) - Zone E

Easting 730192.831

Northing 510552.776

Degrees Minutes Seconds

Latitude 32 : 24 : 7.550000

Longitude -103 : 43 : 17.140000

Location pulled from Coordinate Search

NEW MEXICO OFFICE OF THE STATE ENGINEER

1:4,514

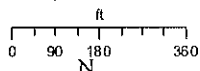


Image Info

Source: DigitalGlobe

Date: 5/4/2016

Resolution (m): 0.5

Accuracy (m): 10.2

Spatial Information

County: Lea

Groundwater Basin: Carlsbad

Sub-Basin: Upper Pecos-Black

Land Grant: Not in Land Grant Restrictions:

NA

PLSS Description

NE NW SW SW Qtr of Sec 7 of 22S 32E

Derived from Projected PLSS- Qtr Sec. locations are calculated and are only approximations

POD Information

Owner: BLM/GHD SERV/EOG

File Number: C-4144POD8

POD Status: NoData

Permit Status: NoData

Permit Use: NoData

Purpose: MONITOR

YMENDIOLA

Reproduction of this map is prohibited without the written permission of the State Engineer. The State Engineer is not responsible for any errors or omissions in this map. The State Engineer is not responsible for any damages or injuries resulting from the use of this map. The State Engineer is not responsible for any claims or liabilities resulting from the use of this map. The State Engineer is not responsible for any claims or liabilities resulting from the use of this map.



Calculated
PLSS

Coord Search
Location

GIS WATERS
PODs

ACT

PEN

OSE District
Boundary

Federal Lands

Catron County
Parcel Points
2017

Guadalupe
County Parcel
Points 2016

Mora County
Parcel Points
2014

Quay County
Parcel Points
2018

Union County
Parcel Points
2017

Bernalillo
County Parcel
Points 2016

Chaves County
Parcel Points
2018

Qibola County
Parcel Points
2018

Gallup County
Parcel Points
2018

Curry County
Parcel Points
2018

Dona Ana
County Parcel
Points 2018

De Baca County
Parcel Points
2017

Eddy County
Parcel Points
2018

Grant County
Parcel Points
2017

Harding County
Parcel Points
2017

Hidalgo County
Parcel Points
2017

Lea County
Parcel Points
2018

Lincoln County
Parcel Points
2018

Los Alamos
County Parcel
Points 2017

Luna County
Parcel Points
2017

McKinley
County Parcel
Points 2017

Otero County
Parcel Points
2018

Roosevelt
County Parcel
Points 2018

Rio Arriba
County Parcel
Points 2018

San Juan
County Parcel
Points 2018

San Miguel
County Parcel
Points 2017

Sandoval
County Parcel
Points 2018

Santa Fe
County Parcel
Points 2018

Sierra County
Parcel Points
2017

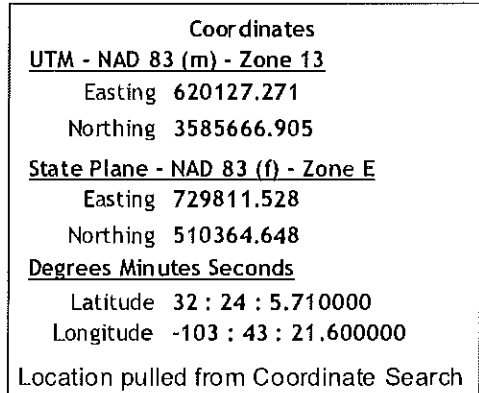
Socorro County
Parcel Points
2017











































Taos County
Parcel Points
2018

Torrance County
Parcel Points
2018

Valencia County
Parcel Points
2018

BLM Land Grant



Legend		GIS Waters PDDs									
	Calculated PLSS		Gustafuga County Parcel Points 2016		Osborne County Parcels 2018		Harding County Parcels 2017		Olson County Parcels 2018		Santa Fe County Parcels 2018
	Coord Search Location		Mora County Parcel Points 2014		Colfax County Parcels 2018		Hidalgo County Parcels 2017		Roosevelt County Parcels 2018		Sierra County Parcels 2017
	ACT		Quay County Parcel Points 2018		Curry County Parcels 2018		Lea County Parcels 2018		Rio Arriba County Parcels 2018		Socorro County Parcels 2017
	PEN		Union County Parcel Points 2017		Doña Ana County Parcels 2018		Lincoln County Parcels 2018		San Juan County Parcels 2018		Taos County Parcels 2018
	OSE District Boundary		Bernillo County Parcels 2018		De Baca County Parcels 2017		Los Alamos County Parcels 2017		San Miguel County Parcels 2017		Torrance County Parcels 2018
	Federal Lands		Eddy County Parcels 2018		Luna County Parcels 2017		McKinley County Parcels 2017		Sandoval County Parcels 2018		Valencia County Parcels 2018
	Catron County Parcel Points 2017		Chaves County Parcels 2018		Grant County Parcels 2017						BLM Land Grants

YMENDIOLA

[illegible]



Coordinates

UTM - NAD 83 (m) - Zone 13
Easting 620089.544
Northing 3585740.988

State Plane - NAD 83 (f) - Zone E

Easting 729689.250
Northing 510608.512

Degrees Minutes Seconds

Latitude 32 : 24 : 8.130000
Longitude -103 : 43 : 23.010000

Location pulled from Coordinate Search

NEW MEXICO OFFICE OF THE STATE ENGINEER

1:4,514

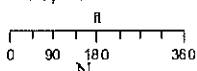


Image Info

Source: DigitalGlobe
Date: 5/4/2016
Resolution (m): 0.5
Accuracy (m): 10.2

Spatial Information

County: Eddy
Groundwater Basin: Carlsbad
Sub-Basin: Upper Pecos-Black
Land Grant: Not in Land Grant
Restrictions:
NA

PLSS Description

NEENESE Qtr of Sec 12 of 022S 031E

Derived from CADNDSI- Qtr Sec. locations are calculated and are only approximations

POD Information

Owner: BLM/GHD SERV/EOG
File Number: C-4144POD10
POD Status: NoData
Permit Status: NoData
Permit Use: NoData
Purpose: MONITOR

YMENDIOLA

BLM Land Grant



Calculated PLSS	★	Guadalupe County Parcels 2016	□	Cibola County Parcels 2018	□	Harding County Parcels 2017	□	Otero County Parcels 2018	□	Santa Fe County Parcels 2018
Coord Search Location	★	Mora County Parcels 2016	□	Colfax County Parcels 2018	□	Hidalgo County Parcels 2017	□	Roosevelt County Parcels 2018	□	Sierra County Parcels 2017
GIS WATERS PODs	★	Quay County Parcels 2014	□	Curry County Parcels 2018	□	Lea County Parcels 2018	□	Rio Arriba County Parcels 2018	□	Socorro County Parcels 2017
ACT	★	Quay County Parcels 2018	□	Doña Ana County Parcels 2018	□	Union County Parcels 2018	□	San Juan County Parcels 2018	□	Taos County Parcels 2018
PEN	★	Union County Parcels 2017	□	De Baca County Parcels 2017	□	Los Alamos County Parcels 2017	□	San Miguel County Parcels 2017	□	Torrance County Parcels 2018
OSE District Boundary	★	Bernalillo County Parcels 2018	□	Eddy County Parcels 2018	□	Luna County Parcels 2017	□	San Miguel County Parcels 2017	□	Valencia County Parcels 2018
Federal Lands	★	Chaves County Parcels 2018	□	Grant County Parcels 2017	□	McKinley County Parcels 2017	□	Sandoval County Parcels 2018	□	
Catron County Parcels 2017	★									



Coordinates
UTM - NAD 83 (m) - Zone 13

Easting 620085.033

Northing 3585899.858

State Plane - NAD 83 (f) - Zone E

Easting 729677.700

Northing 511129.910

Degrees Minutes Seconds

Latitude 32 : 24 : 13.290000

Longitude -103 : 43 : 23.110000

Location pulled from Coordinate Search

**NEW MEXICO OFFICE
 OF THE
 STATE ENGINEER**
 1:4,514

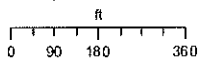


Image Info

Source: DigitalGlobe

Date: 5/4/2016

Resolution (m): 0.5

Accuracy (m): 10.2

Spatial Information

County: Eddy

Groundwater Basin: Carlsbad

Sub-Basin: Upper Pecos-Black

Land Grant: Not in Land Grant
Restrictions:

NA

PLSS Description

NESENESE Qtr of Sec 12 of 022S 031E

Derived from CADNSDI- Qtr Sec. locations are
 calculated and are only approximations

POD Information

Owner: BLM/GHD SERV/EOG

File Number: C-4144POD11

POD Status: NoData

Permit Status: NoData

Permit Use: NoData

Purpose: MONITOR

YMENDIOLA

Office of the State Engineer
 Bureau of Water Conservation
 2016-2017 Water Year
 This map is a representation of the data provided and is not a legal document. It is intended for informational purposes only. The data is subject to change without notice. The map is not to be used for any other purpose without the written consent of the Office of the State Engineer.



Calculated PLSS	★	Guadalupe County Parcel Points 2016	□	Gibbs County Parcels 2018	□	Harding County Parcels 2017	□	Otero County Parcels 2018	□	Santa Fe County Parcels 2018
Coord Search Location	★	Mora County Parcel Points 2014	□	Colfax County Parcels 2018	□	Hidalgo County Parcels 2017	□	Roosevelt County Parcels 2018	□	Sierra County Parcels 2017
GIS WATERS	★	Quay County Parcel Points 2018	□	Curry County Parcels 2018	□	Lea County Parcels 2018	□	Rio Arriba County Parcels 2018	□	Socorro County Parcels 2017
PDDs	★	Union County Parcel Points 2017	□	Dona Ana County Parcels 2018	□	Lincoln County Parcels 2018	□	San Juan County Parcels 2018	□	Taos County Parcels 2018
ACT	★	Bernalillo County Parcels 2018	□	Doña Ana County Parcels 2018	□	Los Alamos County Parcels 2017	□	San Miguel County Parcels 2017	□	Torrance County Parcels 2018
PEN	★	Chaves County Parcels 2018	□	Eddy County Parcels 2018	□	Luna County Parcels 2017	□	Sandoval County Parcels 2018	□	Valencia County Parcels 2018
OSE District Boundary	★		□	Grant County Parcels 2017	□	McKinley County Parcels 2017	□		□	
Federal Lands	★		□		□		□		□	
Catron County Parcel Points 2017	★		□		□		□		□	

OFFICE OF THE STATE ENGINEER/INTERSTATE STREAM COMMISSION – ROSWELL OFFICE

OFFICIAL RECEIPT NUMBER: 2 - 39719 DATE: 7-18-18 FILE NO.: _____
 TOTAL: \$35.00 RECEIVED: thirty five DOLLARS CHECK NO.: 4215 CASH: _____
 PAYOR: Alan Brandon ADDRESS: 4801 Overland NE CITY: Albq STATE: NM
 ZIP: 87109 RECEIVED BY: DJ

INSTRUCTIONS: Indicate the number of actions to the left of the appropriate type of filing. Complete the receipt information. **Original** to payor; **pink** copy to Program Support/ASD; and **yellow** copy for Water Rights. If a mistake is made, void the original and all copies and submit to Program Support/ASD as part of your daily deposit.

A. Ground Water Filing Fees

- | | | |
|--------------|---|-----------|
| ___ 1. | Change of Ownership of Water Right | \$ 2.00 |
| ___ 2. | Application to Appropriate or Supplement Domestic 72-12-1 Well | \$ 125.00 |
| ___ 3. | Application to Repair or Deepen 72-12-1 Well | \$ 75.00 |
| ___ 4. | Application for Replacement 72-12-1 Well | \$ 75.00 |
| ___ 5. | Application to Change Purpose of Use 72-12-1 Well | \$ 75.00 |
| ___ 6. | Application for Stock Well/Temp. Use | \$ 5.00 |
| <hr/> | | |
| ___ 7. | Application to Appropriate Irrigation, Municipal, or Commercial Use | \$ 25.00 |
| ___ 8. | Declaration of Water Right | \$ 1.00 |
| ___ 9. | Application for Supplemental Non 72-12-1 Well | \$ 25.00 |
| ___ 10. | Application to Change Place or Purpose of Use Non 72-12-1 Well | \$ 25.00 |
| ___ 11. | Application to Change Point of Diversion and Place and/or Purpose of Use from Surface Water to Ground Water | \$ 50.00 |
| ___ 12. | Application to Change Point of Diversion and Place and/or Purpose of Use from Ground Water to Ground Water | \$ 50.00 |
| ___ 13. | Application to Change Point of Diversion of Non 72-12-1 Well | \$ 25.00 |
| ___ 14. | Application to Repair or Deepen Non 72-12-1 Well | \$ 5.00 |
| <hr/> | | |
| <u>1</u> 15. | Application for Test, Expl. Observ. Well | \$ 5.00 |
| ___ 16. | Application for Extension of Time | \$ 25.00 |
| ___ 17. | Proof of Application to Beneficial Use | \$ 25.00 |
| ___ 18. | Notice of Intent to Appropriate | \$ 25.00 |

B. Surface Water Filing Fees

- | | | |
|---------|--|-----------|
| ___ 1. | Change of Ownership of a Water Right | \$ 5.00 |
| ___ 2. | Declaration of Water Right | \$ 10.00 |
| ___ 3. | Amended Declaration | \$ 25.00 |
| ___ 4. | Application to Change Point of Diversion and Place and/or Purpose of Use from Surface Water to Surface Water | \$ 200.00 |
| ___ 5. | Application to Change Point of Diversion and Place and/or Purpose of Use from Ground Water to Surface Water | \$ 200.00 |
| ___ 6. | Application to Change Point of Diversion | \$ 100.00 |
| ___ 7. | Application to Change Place and/or Purpose of Use | \$ 100.00 |
| ___ 8. | Application to Appropriate | \$ 25.00 |
| ___ 9. | Notice of Intent to Appropriate | \$ 25.00 |
| ___ 10. | Application for Extension of Time | \$ 50.00 |
| ___ 11. | Supplemental Well to a Surface Right | \$ 100.00 |
| ___ 12. | Return Flow Credit | \$ 100.00 |
| ___ 13. | Proof of Completion of Works | \$ 25.00 |
| ___ 14. | Proof of Application of Water to Beneficial Use | \$ 25.00 |
| ___ 15. | Water Development Plan | \$ 100.00 |
| ___ 16. | Declaration of Livestock Water Impoundment | \$ 10.00 |
| ___ 17. | Application for Livestock Water Impoundment | \$ 10.00 |

C. Well Driller Fees

- | | | |
|--------|---|----------|
| ___ 1. | Application for Well Driller's License | \$ 50.00 |
| ___ 2. | Application for Renewal of Well Driller's License | \$ 50.00 |
| ___ 3. | Application to Amend Well Driller's License | \$ 50.00 |

D. Reproduction of Documents

- | | |
|-------------|----------|
| ___ @ 0.25¢ | \$ _____ |
| ___ Map(s) | \$ _____ |

E. Certification

\$ _____

F. Other

\$ _____

G. Comments:

mail

All fees are non-refundable.

Form 3160-5
(June 2015)UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENTFORM APPROVED
OMB No. 1004-0137
Expires: January 31, 2018**SUNDRY NOTICES AND REPORTS ON WELLS**
Do not use this form for proposals to drill or to re-enter an abandoned well. Use Form 3160-3 (APD) for such proposals.

5. Lease Serial No. NM-84890

6. If Indian, Allottee or Tribe Name

SUBMIT IN TRIPLICATE - Other Instructions on page 2

1. Type of Well

☐ Oil Well ☐ Gas Well ☒ Other

2. Name of Operator EOG Services, Inc.

3a. Address 5509 Champions Drive

3b. Phone No. (include area code)
(432) 686-36674. Location of Well (Footage, Sec., T., R., M., or Survey Description)
32.402502N, -103.722655

7. If Unit of CA/Agreement, Name and/or No.

8. Well Name and No. Flamerico Federal #1

9. API Well No. 30-025-31076

10. Field and Pool or Exploratory Area

11. Country or Parish, State
Lea County, NM

12. CHECK THE APPROPRIATE BOX(ES) TO INDICATE NATURE OF NOTICE, REPORT OR OTHER DATA

TYPE OF SUBMISSION	TYPE OF ACTION			
<input checked="" type="checkbox"/> Notice of Intent	<input type="checkbox"/> Acidize	<input type="checkbox"/> Deepen	<input type="checkbox"/> Production (Start/Resume)	<input type="checkbox"/> Water Shut-Off
<input type="checkbox"/> Subsequent Report	<input type="checkbox"/> Alter Casing	<input type="checkbox"/> Hydraulic Fracturing	<input type="checkbox"/> Reclamation	<input type="checkbox"/> Well Integrity
<input type="checkbox"/> Final Abandonment Notice	<input type="checkbox"/> Casing Repair	<input checked="" type="checkbox"/> New Construction	<input type="checkbox"/> Recomplete	<input type="checkbox"/> Other
	<input type="checkbox"/> Change Plans	<input type="checkbox"/> Plug and Abandon	<input type="checkbox"/> Temporarily Abandon	
	<input type="checkbox"/> Convert to Injection	<input type="checkbox"/> Plug Back	<input type="checkbox"/> Water Disposal	

13. Describe Proposed or Completed Operation: Clearly state all pertinent details, including estimated starting date of any proposed work and approximate duration thereof. If the proposal is to deepen directionally or recomple horizontally, give subsurface locations and measured and true vertical depths of all pertinent markers and zones. Attach the Bond under which the work will be performed or provide the Bond No. on file with BLM/BIA. Required subsequent reports must be filed within 30 days following completion of the involved operations. If the operation results in a multiple completion or recompletion in a new interval, a Form 3160-4 must be filed once testing has been completed. Final Abandonment Notices must be filed only after all requirements, including reclamation, have been completed and the operator has determined that the site is ready for final inspection.)

Proposing to install four groundwater monitoring wells for the collection and analysis of water samples to assess the potential for contamination due to a release. Anticipated depths of the wells will be approximately 50 feet below ground surface. Anticipated start date is August 7, 2017 and the end date is August 11, 2017.

14. I hereby certify that the foregoing is true and correct. Name (Printed/Typed)

Zane Kurtz

Title EOG Rep

Signature

[Signature]

Date 8-2-2017

THE SPACE FOR FEDERAL OR STATE OFFICE USE

Approved by

[Signature]

Title EPS

Date

08/14/2017

Conditions of approval, if any, are attached. Approval of this notice does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease which would entitle the applicant to conduct operations thereon.

Office

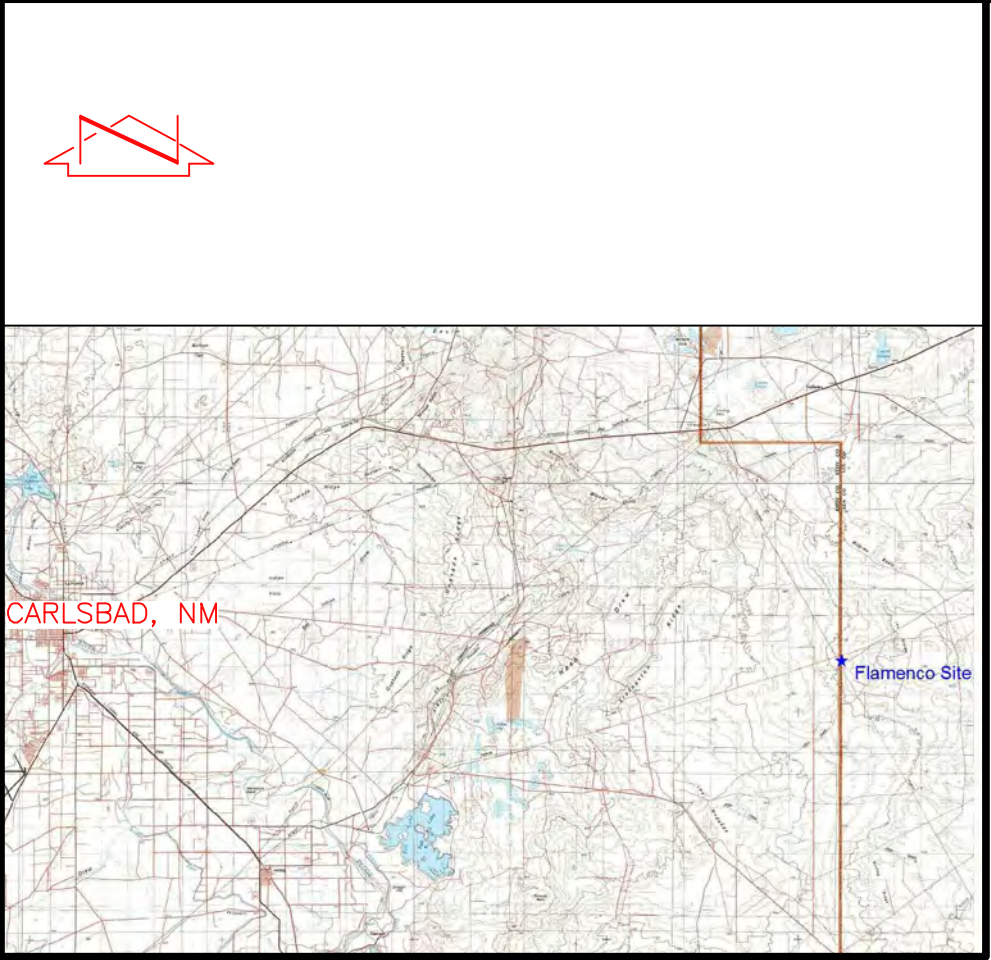
Carlsbad PD

Title 18 U.S.C Section 1001 and Title 43 U.S.C Section 1212, make it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

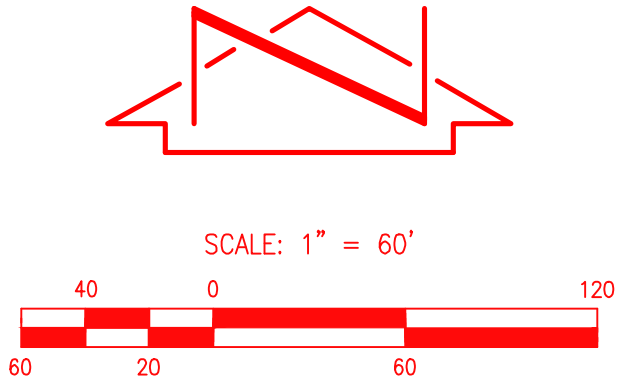
(Instructions on page 2)

Appendix D

Monitoring Well Surveys



VICINITY MAP
NOT TO SCALE



CONTROL COORDINATE TABLE

POINT NO.	NORTHING—GRID	EASTING—GRID	ELEVATION	DESCRIPTION	LATITUDE—NORTH	LONGITUDE—WEST
FLM—201	510846.624	730302.040	3641.96	PBM (OBSERVED—OPUS)	32°24'10.43219"	103°43'15.81355"
FLM—202	510802.663	729827.534	3634.13	TBM #1 (HMCg)	32°24'10.02404"	103°43'21.35111"

WELLS COORDINATE TABLE

POINT NO.	NORTHING—GRID	EASTING—GRID	ELEVATION	DESCRIPTION	LATITUDE—NORTH	LONGITUDE—WEST
1008	510695.323	729881.015	3633.500	FLM—MW1 (Ground)	32°24'08.95887"	103°43'20.73447"
1007	510693.364	729881.126	3633.809	FLM—MW1 (Concrete)	32°24'08.93947"	103°43'20.73329"
1006	510693.264	729881.168	3636.306	FLM—MW1 (Lid)	32°24'08.93848"	103°43'20.73281"
1005	510693.344	729881.224	3636.223	FLM—MW1 (Casing)	32°24'08.93927"	103°43'20.73216"
1009	510569.224	729910.691	3633.215	FLM—MW2 (Ground)	32°24'07.70941"	103°43'20.39673"
1010	510567.338	729910.661	3633.647	FLM—MW2 (Concrete)	32°24'07.69075"	103°43'20.39720"
1011	510567.307	729910.559	3636.167	FLM—MW2 (Lid)	32°24'07.69045"	103°43'20.39839"
1012	510567.247	729910.563	3636.078	FLM—MW2 (Casing)	32°24'07.68986"	103°43'20.39835"
1001	510940.945	730190.465	3639.206	FLM—MW3 (Ground)	32°24'11.37184"	103°43'17.10866"
1002	510939.540	730189.952	3639.744	FLM—MW3 (Concrete)	32°24'11.35797"	103°43'17.11475"
1003	510939.478	730189.936	3642.312	FLM—MW3 (Lid)	32°24'11.35736"	103°43'17.11493"
1004	510939.453	730189.904	3642.270	FLM—MW3 (Casing)	32°24'11.35710"	103°43'17.11531"



GENERAL NOTES

1. AN UNCLASSIFIED SURVEY FOR WELL LOCATIONS WAS PERFORMED ON MARCH 22, 2018. THIS IS NOT A BOUNDARY SURVEY.
2. WELL LOCATIONS ARE NAD 83 GRID COORDINATES (NEW MEXICO EASTERN ZONE 3001). ELEVATIONS ARE NAVD 88 VERTICAL DATUM.
3. SITE LOCATED WITHIN SECTION 7, TOWNSHIP 22 SOUTH, RANGE 32 EAST, N.M.P.M., LEA COUNTY, NEW MEXICO.
4. THE PHOTOBASED IMAGE, DEPICTED ON THIS SURVEY, WAS IMPORTED FROM THE GOOGLE EARTH WEB SITE. THIS PHOTOBASE IMAGE IS SHOWN TO PROVIDE A GENERAL SITE ORIENTATION AND MAY NOT REFLECT THE CURRENT SITE CONDITIONS.
5. THE PURPOSE OF THIS SURVEY IS TO ESTABLISH NEW MEXICO STATE PLANE GRID COORDINATES AND ELEVATIONS FOR THE LOCATIONS OF THE NEWLY INSTALLED AND EXISTING EOG MONITORING WELLS.

CONTROL SURVEY NOTE

A CONTROL SURVEY WAS CONDUCTED AT THE SITE ON MARCH 22, 2018 AND QUALITY CONTROLLED. BEARINGS ARE STATE PLANE GRID (NM EASTERN ZONE). CONTROL WAS PROJECTED ONTO THE SUBJECT SITE UTILIZING STATIC GPS COMBINED WITH RTK OBSERVATIONS TO ESTABLISH HORIZONTAL AND VERTICAL POSITIONS BASED UPON NAD 83/NAVD 88. THE STATIC OBSERVATIONS WERE PROCESSED USING NGS/NOAA ONLINE POSITIONING USER SERVICE COMBINED WITH GEOID12B, TO OBTAIN COORDINATES FOR THE PROJECT BENCHMARK.

A PERMANENT BENCHMARK WAS OCCUPIED ON SITE AS SHOWN ON THE DRAWING AND IS DESCRIBED AS FOLLOWS: PROJECT BM: A #5 REBAR W/CAP STAMPED "HMCg CONTROL NMPS 15075", LOCATED NEAR A FENCE POST AT THE MAIN ENTRANCE TO THE FACILITY, AS SHOWN ON THIS SHEET. ELEVATION = 3641.96 FEET (NAVD 88)

PROJECT BENCHMARK (P.B.M.)

A #5 REBAR W/CAP STAMPED "HMCg CONTROL NMPS 15075" IN DIRT, NEAR A FENCE POST AT THE MAIN ENTRANCE TO THE FACILITY, AS SHOWN ON THIS SHEET. ELEVATION = 3641.96 FEET (NAVD 1988)

TEMPORARY BENCHMARK #1 (T.B.M. #1)

A #5 REBAR W/CAP STAMPED "HMCg CONTROL NMPS 15075" IN DIRT, NEAR A FENCE POST BY THE CATTLE GUARD AT THE ENTRANCE FROM CAMPBELL ROAD, AS SHOWN ON THIS SHEET. ELEVATION = 3634.13 FEET (NAVD 1988)

SURVEYORS CERTIFICATION

I, JOSEPH M. SOLOMON, JR., NEW MEXICO PROFESSIONAL SURVEYOR NO. 15075, DO HEREBY CERTIFY; THAT THIS PARTIAL TOPOGRAPHIC SURVEY AND THE ACTUAL SURVEY ON THE GROUND UPON WHICH IT IS BASED WERE PERFORMED BY ME OR UNDER MY DIRECT SUPERVISION; THAT THIS SURVEY MEETS THE MINIMUM STANDARDS FOR SURVEYING IN NEW MEXICO, AND THAT IT IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF.

JOSEPH M. SOLOMON, JR., NMPS 15075



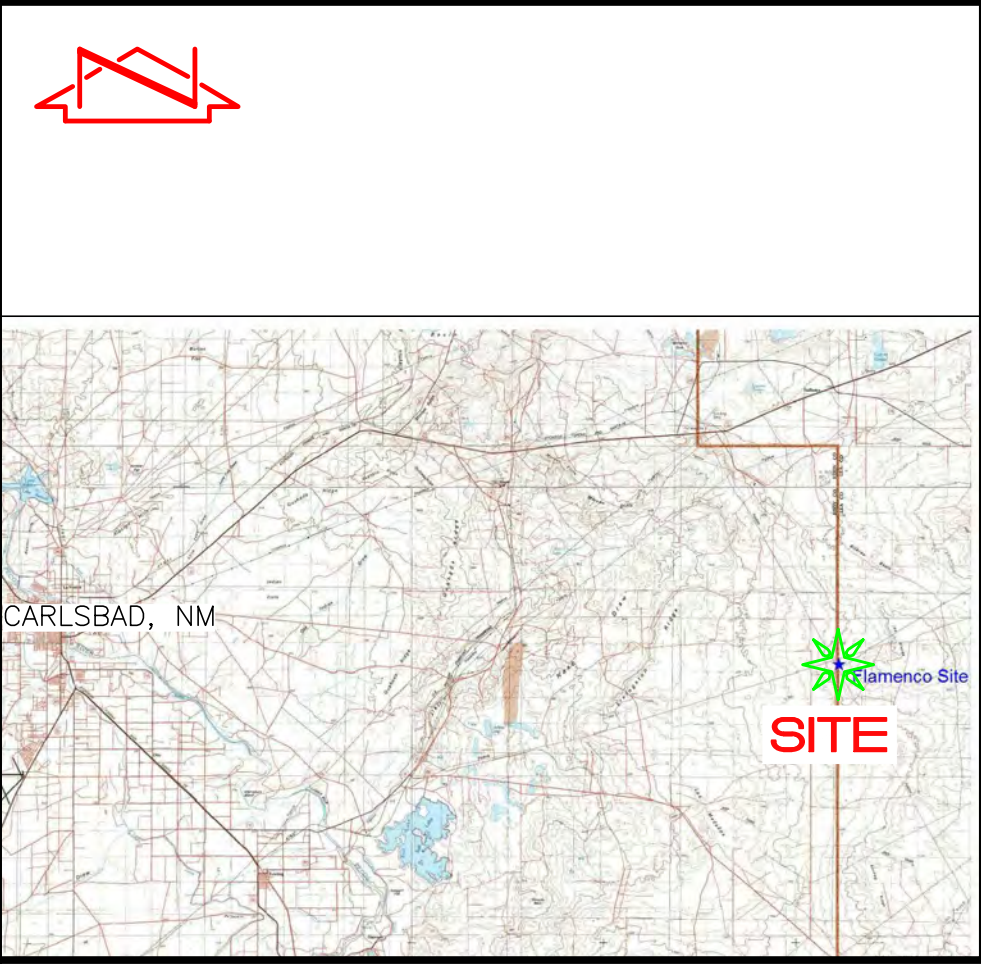
April 23, 2018
DATE



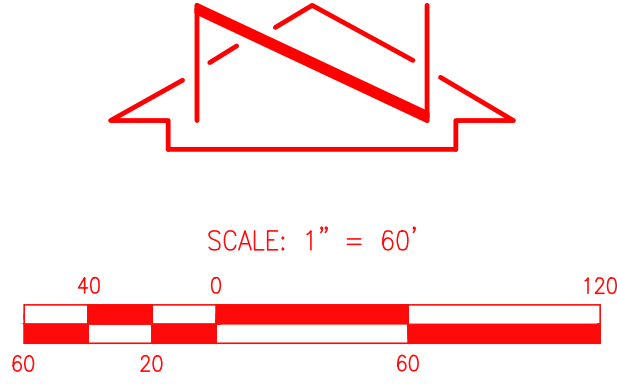
6010-B Midway Park Blvd. NE • Albuquerque, New Mexico 87109
Phone: 505.345.4250 • Fax: 505.345.4254 • www.highmesacg.com

UNCLASSIFIED SURVEY - GROUNDWATER MONITOR WELLS
EOG RESOURCES FLAMENCO FEDERAL No. 1 WELL - LEA COUNTY, NM

SURVEYED BY	DATE	BY	REVISIONS	JOB NO.
J.M.S.				2018.013.1
T.N.T.				04-2018
J.M.S.				1 of 1



VICINITY MAP
NOT TO SCALE



CONTROL COORDINATE TABLE

POINT NO.	NORTHING-GRID	EASTING-GRID	ELEVATION	DESCRIPTION	LATITUDE-NORTH	LONGITUDE-WEST
FLM-201	510846.624	730302.040	3641.96	PBM (OBSERVED-OPUS)	32°24'10.43219"	103°43'15.81355"
FLM-202	510802.663	729827.534	3634.13	TBM #1 (HMCg)	32°24'10.02404"	103°43'21.35111"

WELLS COORDINATE TABLE

POINT NO.	NORTHING-GRID	EASTING-GRID	ELEVATION	DESCRIPTION	LATITUDE-NORTH	LONGITUDE-WEST
1006	510693.364	729881.126	3633.809	FLM-MW1 (Ground)	32°24'08.93947"	103°43'20.73329"
1007	510693.364	729881.126	3633.809	FLM-MW1 (Concrete)	32°24'08.93947"	103°43'20.73329"
1006	510693.264	729881.168	3636.306	FLM-MW1 (Lid)	32°24'08.93848"	103°43'20.73281"
1005	510693.344	729881.224	3636.223	FLM-MW1 (Casing)	32°24'08.93927"	103°43'20.73218"
1009	510569.224	729910.691	3633.215	FLM-MW2 (Ground)	32°24'07.70941"	103°43'20.39673"
1010	510567.338	729910.661	3633.647	FLM-MW2 (Concrete)	32°24'07.69075"	103°43'20.39720"
1011	510567.307	729910.559	3636.167	FLM-MW2 (Lid)	32°24'07.69045"	103°43'20.39839"
1012	510567.247	729910.563	3636.078	FLM-MW2 (Casing)	32°24'07.68966"	103°43'20.39835"
1001	510940.945	730190.465	3639.206	FLM-MW3 (Ground)	32°24'11.37184"	103°43'17.10866"
1002	510939.540	730189.952	3639.744	FLM-MW3 (Concrete)	32°24'11.35797"	103°43'17.11475"
1003	510939.478	730189.936	3642.512	FLM-MW3 (Lid)	32°24'11.35736"	103°43'17.11493"
1004	510939.453	730189.904	3642.270	FLM-MW3 (Casing)	32°24'11.35710"	103°43'17.11631"
1014	510407.592	729807.205	3631.985	FLM-MW8 (Ground)	32°24'06.11588"	103°43'21.61454"
1015	510405.139	729806.482	3631.747	FLM-MW8 (Concrete)	32°24'06.09164"	103°43'21.62314"
1016	510404.937	729806.414	3634.908	FLM-MW8 (Lid)	32°24'06.08965"	103°43'21.62395"
1017	510404.789	729806.418	3634.889	FLM-MW8 (Casing)	32°24'06.08818"	103°43'21.62392"
1018	510585.972	730150.327	3637.999	FLM-MW9 (Ground)	32°24'07.86157"	103°43'17.60053"
1019	510584.350	730150.427	3638.048	FLM-MW9 (Concrete)	32°24'07.84552"	103°43'17.59946"
1020	510584.129	730150.440	3641.099	FLM-MW9 (Lid)	32°24'07.84333"	103°43'17.59933"
1021	510583.957	730150.496	3641.131	FLM-MW9 (Casing)	32°24'07.84163"	103°43'17.59869"

GENERAL NOTES

1. AN UNCLASSIFIED SURVEY FOR WELL LOCATIONS WAS PERFORMED ON MARCH 22, 2018 AND UPDATED ON AUGUST 22, 2018. THIS IS NOT A BOUNDARY SURVEY.
2. WELL LOCATIONS ARE NAD 83 GRID COORDINATES (NEW MEXICO EASTERN ZONE 3001). ELEVATIONS ARE NAVD 88 VERTICAL DATUM.
3. SITE LOCATED WITHIN SECTION 7, TOWNSHIP 22 SOUTH, RANGE 32 EAST, N.M.P.M., LEA COUNTY, NEW MEXICO.
4. THE PHOTOBASED IMAGE, DEPICTED ON THIS SURVEY, WAS IMPORTED FROM THE GOOGLE EARTH WEB SITE. THIS PHOTOBASE IMAGE IS SHOWN TO PROVIDE A GENERAL SITE ORIENTATION AND MAY NOT REFLECT THE CURRENT SITE CONDITIONS.
5. THE PURPOSE OF THIS SURVEY IS TO ESTABLISH NEW MEXICO STATE PLANE GRID COORDINATES AND ELEVATIONS FOR THE LOCATIONS OF THE NEWLY INSTALLED AND EXISTING EOG MONITORING WELLS.
6. SCREENED WELL INFORMATION IS BASED UPON THE UNCLASSIFIED SURVEY OF FLAMENCO FEDERAL WELL NO. 1 PREPARED BY THIS FIRM DATED APRIL 23, 2018.

CONTROL SURVEY NOTE

A CONTROL SURVEY WAS CONDUCTED AT THE SITE ON MARCH 22, 2018 AND VERIFIED ON AUGUST 22, 2018. BEARINGS ARE STATE PLANE GRID (NM EASTERN ZONE). CONTROL WAS PROJECTED ONTO THE SUBJECT SITE UTILIZING STATIC GPS COMBINED WITH RTK OBSERVATIONS TO ESTABLISH HORIZONTAL AND VERTICAL POSITIONS BASED UPON NAD 83/NAVD 88. THE STATIC OBSERVATIONS WERE PROCESSED USING NGS/NOAA ONLINE POSITIONING USER SERVICE COMBINED WITH GEOID12B, TO OBTAIN COORDINATES FOR THE PROJECT BENCHMARK.

A PERMANENT BENCHMARK WAS OCCUPIED ON SITE AS SHOWN ON THE DRAWING AND IS DESCRIBED AS FOLLOWS: PROJECT BM: A #5 REBAR W/CAP STAMPED "HMCg CONTROL NMPS 15075", LOCATED NEAR A FENCE POST AT THE MAIN ENTRANCE TO THE FACILITY, AS SHOWN ON THIS SHEET. ELEVATION = 3641.96 FEET (NAVD 88)

PROJECT BENCHMARK (P.B.M.)

A #5 REBAR W/CAP STAMPED "HMCg CONTROL NMPS 15075" IN DIRT, NEAR A FENCE POST AT THE MAIN ENTRANCE TO THE FACILITY, AS SHOWN ON THIS SHEET. ELEVATION = 3641.96 FEET (NAVD 1988)

TEMPORARY BENCHMARK #1 (T.B.M. #1)

A #5 REBAR W/CAP STAMPED "HMCg CONTROL NMPS 15075" IN DIRT, NEAR A FENCE POST BY THE CATTLE GUARD AT THE ENTRANCE FROM CAMPBELL ROAD, AS SHOWN ON THIS SHEET. ELEVATION = 3634.13 FEET (NAVD 1988)

SURVEYORS CERTIFICATION

I, JOSEPH M. SOLOMON, JR., NEW MEXICO PROFESSIONAL SURVEYOR NO. 15075, DO HEREBY CERTIFY; THAT THIS UNCLASSIFIED SURVEY AND THE ACTUAL SURVEY ON THE GROUND UPON WHICH IT IS BASED WERE PERFORMED BY ME OR UNDER MY DIRECT SUPERVISION; THAT THIS SURVEY MEETS THE MINIMUM STANDARDS FOR SURVEYING IN NEW MEXICO, AND THAT IT IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF.

JOSEPH M. SOLOMON, JR., NMPS 15075



September 11, 2018
DATE



6010-B Midway Park Blvd. NE • Albuquerque, New Mexico 87109
Phone: 505.345.4250 • Fax: 505.345.4254 • www.highmesacg.com

UNCLASSIFIED SURVEY - GROUNDWATER MONITOR WELLS
EOG RESOURCES FLAMENCO FEDERAL No. 1 WELL - LEA COUNTY, NM

SURVEYED BY	DATE	BY	REVISIONS	JOB NO.
M.V.Z.				2018.050.1
DRAWN BY	DATE	BY	REVISIONS	JOB NO.
E.J.S.				09-2018
APPROVED BY	DATE	BY	REVISIONS	JOB NO.
J.M.S.				1 OF 1

Appendix E

Groundwater Analytical Laboratory Results



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

March 07, 2018

Bernie Bockisch

GHD

6121 Indian School Road, NE #200

Albuquerque, NM 87110

TEL: (505) 884-0672

FAX

RE: Flamenco Fed 1

OrderNo.: 1802D75

Dear Bernie Bockisch:

Hall Environmental Analysis Laboratory received 4 sample(s) on 2/27/2018 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 #NM0190

Sincerely,

A handwritten signature in black ink, appearing to read 'Andy Freeman', is written over a horizontal line.

Andy Freeman

Laboratory Manager

4901 Hawkins NE

Albuquerque, NM 87109

Analytical Report

Lab Order: 1802D75

Date Reported: 3/7/2018

Hall Environmental Analysis Laboratory, Inc.

CLIENT: GHD
Project: Flamenco Fed 1

Lab Order: 1802D75

Lab ID: 1802D75-001 **Collection Date:** 2/23/2018 1:40:00 PM

Client Sample ID: W-088210-34-022318-JP-MW-1 **Matrix:** AQUEOUS

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 300.0: ANIONS Analyst: MRA							
Chloride	36000	2500	*	mg/L	5E	3/5/2018 6:37:33 PM	R49564

Lab ID: 1802D75-002 **Collection Date:** 2/23/2018 2:00:00 PM

Client Sample ID: W-088210-34-022318-JP-MW-2 **Matrix:** AQUEOUS

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 300.0: ANIONS Analyst: MRA							
Chloride	7200	250	*	mg/L	500	3/5/2018 6:49:58 PM	R49564

Lab ID: 1802D75-003 **Collection Date:** 2/23/2018 2:15:00 AM

Client Sample ID: W-088210-34-022318-JP-MW-3 **Matrix:** AQUEOUS

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 300.0: ANIONS Analyst: MRA							
Chloride	38000	2500	*	mg/L	5E	3/5/2018 7:02:22 PM	R49564

Lab ID: 1802D75-004 **Collection Date:** 2/23/2018

Client Sample ID: W-088210-34-022318-JP-MW-Dup **Matrix:** AQUEOUS

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 300.0: ANIONS Analyst: MRA							
Chloride	7300	250	*	mg/L	500	3/5/2018 7:14:47 PM	R49564

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	Page 1 of 2
	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 Quantitative Limit	RL	Reporting Detection Limit	
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified	

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1802D75
07-Mar-18

Client: GHD
Project: Flamenco Fed 1

Sample ID	MB	SampType:	mblk	TestCode:	EPA Method 300.0: Anions					
Client ID:	PBW	Batch ID:	R49564	RunNo:	49564					
Prep Date:		Analysis Date:	3/5/2018	SeqNo:	1602334	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	0.50								

Sample ID	LCS	SampType:	lcs	TestCode:	EPA Method 300.0: Anions					
Client ID:	LCSW	Batch ID:	R49564	RunNo:	49564					
Prep Date:		Analysis Date:	3/5/2018	SeqNo:	1602335	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	4.7	0.50	5.000	0	94.0	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 Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

Page 2 of 2



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: GHD

Work Order Number: 1802D75

RcptNo: 1

Received By: Dennis Suazo

2/27/2018 9:15:00 AM

Dennis Suazo

Completed By: Isaiah Ortiz

2/27/2018 9:22:39 AM

Isaiah Ortiz

Reviewed By: PDS

2/27/18

LB: MW 2/27/18

Chain of Custody

1. Is Chain of Custody 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 $>0^{\circ}\text{C}$ 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. VOA vials have zero headspace? Yes ☐ No ☐ No VOA Vials ☒
10. Were any sample containers received broken? Yes ☐ No ☒
11. Does paperwork match bottle labels?
(Note discrepancies on chain of custody) Yes ☒ No ☐ # of preserved bottles checked for pH: _____
(<2 or >12 unless noted)
12. Are matrices correctly identified on Chain of Custody? Yes ☒ No ☐ Adjusted? _____
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 ☐ Checked by: _____

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 $^{\circ}\text{C}$	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	3.6	Good	Yes			



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

July 11, 2018

Alan Brandon

GHD

6121 Indian School Road, NE #200

Albuquerque, NM 87110

TEL: (505) 884-0672

FAX

RE: Flamenco Fed 1

OrderNo.: 1806E54

Dear Alan Brandon:

Hall Environmental Analysis Laboratory received 8 sample(s) on 6/23/2018 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,

A handwritten signature in black ink, appearing to read 'Andy Freeman', is written over a horizontal line.

Andy Freeman

Laboratory Manager

4901 Hawkins NE

Albuquerque, NM 87109

Analytical Report

Lab Order: 1806E54

Date Reported: 7/11/2018

Hall Environmental Analysis Laboratory, Inc.

CLIENT: GHD

Lab Order: 1806E54

Project: Flamenco Fed 1

Lab ID: 1806E54-001

Collection Date: 6/21/2018 1:47:00 PM

Client Sample ID: GW-088210-34-062118-PL-MW-1-A

Matrix: GROUNDWATER

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 300.0: ANIONS							Analyst: MRA
Chloride	38000	2500	*	mg/L	5E	7/10/2018 12:40:46 AM	R52563
SM2540C MOD: TOTAL DISSOLVED SOLIDS							Analyst: KS
Total Dissolved Solids	73200	200	*D	mg/L	1	6/29/2018 6:37:00 PM	38956

Lab ID: 1806E54-002

Collection Date: 6/21/2018 1:47:00 PM

Client Sample ID: GW-088210-34-062118-PL-MW-1-B

Matrix: GROUNDWATER

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 300.0: ANIONS							Analyst: MRA
Chloride	38000	2500	*	mg/L	5E	7/10/2018 1:18:00 AM	R52563
SM2540C MOD: TOTAL DISSOLVED SOLIDS							Analyst: KS
Total Dissolved Solids	67400	200	*D	mg/L	1	6/29/2018 6:37:00 PM	38956

Lab ID: 1806E54-003

Collection Date: 6/21/2018 3:29:00 PM

Client Sample ID: GW-088210-34-062118-PL-MW-2-A

Matrix: GROUNDWATER

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 300.0: ANIONS							Analyst: MRA
Chloride	6900	500	*	mg/L	1E	7/10/2018 1:30:24 AM	R52563
SM2540C MOD: TOTAL DISSOLVED SOLIDS							Analyst: KS
Total Dissolved Solids	15300	100	*D	mg/L	1	6/29/2018 6:37:00 PM	38956

Lab ID: 1806E54-004

Collection Date: 6/21/2018 3:29:00 PM

Client Sample ID: GW-088210-34-062118-PL-MW-2-B

Matrix: GROUNDWATER

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 300.0: ANIONS							Analyst: MRA
Chloride	6100	500	*	mg/L	1E	7/10/2018 1:42:49 AM	R52563
SM2540C MOD: TOTAL DISSOLVED SOLIDS							Analyst: KS
Total Dissolved Solids	12800	100	*D	mg/L	1	6/29/2018 6:37:00 PM	38956

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 Quantitative Limit	RL	Reporting Detection Limit

Analytical Report

Lab Order: 1806E54

Date Reported: 7/11/2018

Hall Environmental Analysis Laboratory, Inc.

CLIENT: GHD

Lab Order: 1806E54

Project: Flamenco Fed 1

Lab ID: 1806E54-005

Collection Date: 6/21/2018 4:38:00 PM

Client Sample ID: GW-088210-34-062118-PL-MW-3-A

Matrix: GROUNDWATER

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 300.0: ANIONS							Analyst: MRA
Chloride	43000	2500	*	mg/L	5E	7/10/2018 1:55:13 AM	R52563
SM2540C MOD: TOTAL DISSOLVED SOLIDS							Analyst: KS
Total Dissolved Solids	82700	200	*D	mg/L	1	6/29/2018 6:37:00 PM	38956

Lab ID: 1806E54-006

Collection Date: 6/21/2018 4:38:00 PM

Client Sample ID: GW-088210-34-062118-PL-MW-3-B

Matrix: GROUNDWATER

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 300.0: ANIONS							Analyst: MRA
Chloride	44000	2500	*	mg/L	5E	7/10/2018 2:07:37 AM	R52563
SM2540C MOD: TOTAL DISSOLVED SOLIDS							Analyst: KS
Total Dissolved Solids	80000	200	*D	mg/L	1	6/29/2018 6:37:00 PM	38956

Lab ID: 1806E54-007

Collection Date: 6/21/2018

Client Sample ID: GW-088210-34-062118-PL-DUP-A

Matrix: GROUNDWATER

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 300.0: ANIONS							Analyst: MRA
Chloride	6100	500	*	mg/L	1E	7/10/2018 2:20:01 AM	R52563
SM2540C MOD: TOTAL DISSOLVED SOLIDS							Analyst: KS
Total Dissolved Solids	13700	100	*D	mg/L	1	6/29/2018 6:37:00 PM	38956

Lab ID: 1806E54-008

Collection Date: 6/21/2018

Client Sample ID: GW-088210-34-062118-PL-DUP-B

Matrix: GROUNDWATER

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 300.0: ANIONS							Analyst: MRA
Chloride	6100	500	*	mg/L	1E	7/10/2018 2:32:26 AM	R52563
SM2540C MOD: TOTAL DISSOLVED SOLIDS							Analyst: KS
Total Dissolved Solids	13400	100	*D	mg/L	1	6/29/2018 6:37:00 PM	38956

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 Quantitative Limit	RL	Reporting Detection Limit

QC SUMMARY REPORT**Hall Environmental Analysis Laboratory, Inc.**WO#: **1806E54****11-Jul-18****Client:** GHD**Project:** Flamenco Fed 1

Sample ID MB	SampType: mblk		TestCode: EPA Method 300.0: Anions							
Client ID: PBW	Batch ID: R52563		RunNo: 52563							
Prep Date:	Analysis Date: 7/10/2018		SeqNo: 1724282		Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	0.50								

Sample ID LCS	SampType: lcs		TestCode: EPA Method 300.0: Anions							
Client ID: LCSW	Batch ID: R52563		RunNo: 52563							
Prep Date:	Analysis Date: 7/10/2018		SeqNo: 1724283		Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	4.8	0.50	5.000	0	95.5	90	110			

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
PQL Practical Quantitative 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 Detection Limit
W Sample container temperature is out of limit as specified

QC SUMMARY REPORT**Hall Environmental Analysis Laboratory, Inc.**WO#: **1806E54****11-Jul-18**

Client: GHD
Project: Flamenco Fed 1

Sample ID MB-38956	SampType: MBLK		TestCode: SM2540C MOD: Total Dissolved Solids							
Client ID: PBW	Batch ID: 38956		RunNo: 52384							
Prep Date: 6/28/2018	Analysis Date: 6/29/2018		SeqNo: 1716593		Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids	ND	20.0								

Sample ID LCS-38956	SampType: LCS		TestCode: SM2540C MOD: Total Dissolved Solids							
Client ID: LCSW	Batch ID: 38956		RunNo: 52384							
Prep Date: 6/28/2018	Analysis Date: 6/29/2018		SeqNo: 1716594		Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids	1060	20.0	1000	0	106	80	120			

Sample ID 1806E54-003AMS	SampType: MS		TestCode: SM2540C MOD: Total Dissolved Solids							
Client ID: GW-088210-34-0621	Batch ID: 38956		RunNo: 52384							
Prep Date: 6/28/2018	Analysis Date: 6/29/2018		SeqNo: 1716598		Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids	19800	100	5000	15320	88.8	80	120			D

Sample ID 1806E54-003AMSD	SampType: MSD		TestCode: SM2540C MOD: Total Dissolved Solids							
Client ID: GW-088210-34-0621	Batch ID: 38956		RunNo: 52384							
Prep Date: 6/28/2018	Analysis Date: 6/29/2018		SeqNo: 1716599		Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids	20100	100	5000	15320	95.4	80	120	1.66	5	D

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 Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified



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: GHD

Work Order Number: 1806E54

RcptNo: 1

Received By: Andy Freeman

6/23/2018 10:40:00 AM

Andy Freeman

Completed By: Anne Thorne

6/25/2018 9:55:28 AM

Anne Thorne

Reviewed By: ENM

6/25/18

6/25/18 mmw

Chain of Custody

1. Is Chain of Custody 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. VOA vials have zero headspace? Yes ☐ No ☐ No VOA Vials ☒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: *mmw 6/25/18*

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	4.2	Good	Yes			

Chain-of-Custody Record

Client: GHD Services Inc

Mailing Address: 6121 Indian School Rd NE 56200

Phone #: 505-884-0672

Email or Fax#: alan.branden@ghd.com

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

Accreditation
☐ NELAP ☐ Other _____

☐ EDD (Type) _____

Turn-Around Time:
☒ Standard ☐ Rush

Project Name:
Flamenco Fed #1

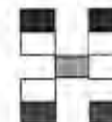
Project #:
088210-34

Project Manager:
Alan Brandon

Sampler: Phil Loring

On Ice: ☒ Yes ☐ No

Sample Temperature: 4.2°C



HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

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

Analysis Request

BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH 8015B (GRO / DRO / MRO)	TPH (Method 418.1)	EDB (Method 504.1)	PAH's (8310 or 8270 SIMS)	RCRA 8 Metals	Anions (F, Cl, NO ₃ , NO ₂ , PO ₄ , SO ₄)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	TD5	CI-	Air Bubbles (Y or N)
											X	X	
											X	X	
											X	X	
											X	X	
											X	X	
											X	X	
											X	X	
											X	X	
											X	X	

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No.
21-18	13:47	GW	GW-088210-34-062118-PL-MW-1-A	HDPE-500mL	Ice	201
21-18	13:47	GW	GW-088210-34-062118-PL-MW-1-B	HDPE-100mL	Ice	202
21-18	15:29	GW	GW-088210-34-062118-PL-MW-2-A	HDPE-500mL	Ice	203
21-18	15:29	GW	GW-088210-34-062118-PL-MW-2-B	HDPE-100mL	Ice	204
21-18	16:38	GW	GW-088210-34-062118-PL-MW-3-A	HDPE-500mL	Ice	205
21-18	16:38	GW	GW-088210-34-062118-PL-MW-3-B	HDPE-100mL	Ice	206
21-18	-	GW	GW-088210-34-062118-PL-DP-A	HDPE-500mL	Ice	207
21-18	-	GW	GW-088210-34-062118-PL-DP-B	HDPE-100mL	Ice	208

Date: 22-18 Time: 09:57 Relinquished by: [Signature]

Date: 6/23/18 Time: 10:00 Received by: [Signature]

Date: 12/8/19 Time: 19:00 Relinquished by: [Signature]

Date: 6/23/18 Time: 10:40 Received by: [Signature]

Remarks:

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



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

November 02, 2018

Alan Brandon

GHD

6121 Indian School Road, NE #200

Albuquerque, NM 87110

TEL: (505) 884-0672

FAX

RE: Flamenco Fed 1

OrderNo.: 1810B73

Dear Alan Brandon:

Hall Environmental Analysis Laboratory received 3 sample(s) on 10/23/2018 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,

A handwritten signature in black ink, appearing to read 'Andy Freeman', is written over a horizontal line.

Andy Freeman

Laboratory Manager

4901 Hawkins NE

Albuquerque, NM 87109

Analytical Report

Lab Order: 1810B73

Date Reported: 11/2/2018

Hall Environmental Analysis Laboratory, Inc.

CLIENT: GHD

Lab Order: 1810B73

Project: Flamenco Fed 1

Lab ID: 1810B73-001

Collection Date: 10/19/2018 2:38:00 PM

Client Sample ID: GW-088210-34-101918-PL-MW-1

Matrix: AQUEOUS

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 300.0: ANIONS							Analyst: MRA
Chloride	47000	2500	*	mg/L	5E	10/26/2018 5:33:56 PM	R55207
SM2540C MOD: TOTAL DISSOLVED SOLIDS							Analyst: KS
Total Dissolved Solids	82000	2000	*D	mg/L	1	10/28/2018 4:55:00 PM	41224

Lab ID: 1810B73-002

Collection Date: 10/19/2018 1:20:00 PM

Client Sample ID: GW-088210-34-101918-PL-MW-2

Matrix: AQUEOUS

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 300.0: ANIONS							Analyst: MRA
Chloride	8000	500	*	mg/L	1E	10/26/2018 5:46:47 PM	R55207
SM2540C MOD: TOTAL DISSOLVED SOLIDS							Analyst: KS
Total Dissolved Solids	15800	100	*D	mg/L	1	10/26/2018 5:10:00 PM	41193

Lab ID: 1810B73-003

Collection Date: 10/19/2018 3:26:00 PM

Client Sample ID: GW-088210-34-101918-PL-MW-3

Matrix: AQUEOUS

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 300.0: ANIONS							Analyst: MRA
Chloride	49000	2500	*	mg/L	5E	10/26/2018 5:59:39 PM	R55207
SM2540C MOD: TOTAL DISSOLVED SOLIDS							Analyst: KS
Total Dissolved Solids	97600	2000	*D	mg/L	1	10/28/2018 4:55:00 PM	41224

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 Quantitative Limit	RL	Reporting Detection Limit

Page 1 of 3

QC SUMMARY REPORT**Hall Environmental Analysis Laboratory, Inc.**WO#: **1810B73**

02-Nov-18

Client: GHD**Project:** Flamenco Fed 1

Sample ID MB	SampType: mblk			TestCode: EPA Method 300.0: Anions						
Client ID: PBW	Batch ID: R55207			RunNo: 55207						
Prep Date:	Analysis Date: 10/26/2018			SeqNo: 1835753		Units: mg/L				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	0.50								

Sample ID LCS	SampType: lcs			TestCode: EPA Method 300.0: Anions						
Client ID: LCSW	Batch ID: R55207			RunNo: 55207						
Prep Date:	Analysis Date: 10/26/2018			SeqNo: 1835754		Units: mg/L				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	4.7	0.50	5.000	0	93.5	90	110			

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
PQL Practical Quantitative 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 Detection Limit
W Sample container temperature is out of limit as specified

Page 2 of 3

QC SUMMARY REPORT**Hall Environmental Analysis Laboratory, Inc.**WO#: **1810B73**

02-Nov-18

Client: GHD
Project: Flamenco Fed 1

Sample ID MB-41193	SampType: MBLK		TestCode: SM2540C MOD: Total Dissolved Solids							
Client ID: PBW	Batch ID: 41193		RunNo: 55204							
Prep Date: 10/25/2018	Analysis Date: 10/26/2018		SeqNo: 1835649		Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids	ND	20.0								

Sample ID LCS-41193	SampType: LCS		TestCode: SM2540C MOD: Total Dissolved Solids							
Client ID: LCSW	Batch ID: 41193		RunNo: 55204							
Prep Date: 10/25/2018	Analysis Date: 10/26/2018		SeqNo: 1835650		Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids	1020	20.0	1000	0	102	80	120			

Sample ID MB-41224	SampType: MBLK		TestCode: SM2540C MOD: Total Dissolved Solids							
Client ID: PBW	Batch ID: 41224		RunNo: 55214							
Prep Date: 10/26/2018	Analysis Date: 10/28/2018		SeqNo: 1835995		Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids	ND	20.0								

Sample ID LCS-41224	SampType: LCS		TestCode: SM2540C MOD: Total Dissolved Solids							
Client ID: LCSW	Batch ID: 41224		RunNo: 55214							
Prep Date: 10/26/2018	Analysis Date: 10/28/2018		SeqNo: 1835996		Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids	1020	20.0	1000	0	102	80	120			

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 Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified



Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87105
TEL: 505-343-3975 FAX: 505-343-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: GHD

Work Order Number: 1810B73

Recpt No: 1

Received By: Erin Melendrez 10/23/2018 9:10:00 AM

Completed By: Ashley Gallegos 10/23/2018 9:43:28 AM

Reviewed By: *[Signature]* 10/23/18

[Signature]
Labeled by: DAD 10/23/18

Chain of Custody

1. Is Chain of Custody 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 $>0^{\circ}\text{C}$ 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. VOA vials have zero headspace? Yes ☐ No ☐ No VOA Vials ☒
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: *[Handwritten: 12]*
(<2 or >12 unless noted)
Adjusted? *[Handwritten: No]*
Checked by: DAD 10/23/18

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	2.5	Good	Yes			



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

January 25, 2019

Alan Brandon

GHD

6121 Indian School Road, NE #200

Albuquerque, NM 87110

TEL: (505) 884-0672

FAX

RE: Flamenco Federal #1

OrderNo.: 1901556

Dear Alan Brandon:

Hall Environmental Analysis Laboratory received 3 sample(s) on 1/15/2019 for the analyses presented in the following report.

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

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

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

Sincerely,

A handwritten signature in black ink, appearing to read 'Andy Freeman', is written over a horizontal line.

Andy Freeman

Laboratory Manager

4901 Hawkins NE

Albuquerque, NM 87109

Analytical Report

Lab Order: 1901556

Date Reported: 1/25/2019

Hall Environmental Analysis Laboratory, Inc.

CLIENT: GHD

Lab Order: 1901556

Project: Flamenco Federal #1

Lab ID: 1901556-001

Collection Date: 1/11/2019 1:45:00 PM

Client Sample ID: GW-088210-34-011119-MM-MW-1

Matrix: AQUEOUS

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 300.0: ANIONS							Analyst: smb
Chloride	44000	2500	*	mg/L	5E	1/21/2019 2:17:48 PM	R57164
SM2540C MOD: TOTAL DISSOLVED SOLIDS							Analyst: KS
Total Dissolved Solids	85300	200	*D	mg/L	1	1/16/2019 5:43:00 PM	42623

Lab ID: 1901556-002

Collection Date: 1/11/2019 2:24:00 PM

Client Sample ID: GW-088210-34-011119-MM-MW-2

Matrix: AQUEOUS

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 300.0: ANIONS							Analyst: smb
Chloride	8000	500	*	mg/L	1E	1/21/2019 2:30:39 PM	R57164
SM2540C MOD: TOTAL DISSOLVED SOLIDS							Analyst: KS
Total Dissolved Solids	18400	200	*D	mg/L	1	1/16/2019 5:43:00 PM	42623

Lab ID: 1901556-003

Collection Date: 1/11/2019 12:33:00 PM

Client Sample ID: GW-088210-34-011119-MM-MW-3

Matrix: AQUEOUS

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 300.0: ANIONS							Analyst: smb
Chloride	47000	2500	*	mg/L	5E	1/21/2019 2:43:31 PM	R57164
SM2540C MOD: TOTAL DISSOLVED SOLIDS							Analyst: KS
Total Dissolved Solids	100000	2000	*D	mg/L	1	1/16/2019 5:43:00 PM	42623

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 Quantitative Limit	RL	Reporting Detection Limit

Page 1 of 3

QC SUMMARY REPORT**Hall Environmental Analysis Laboratory, Inc.**WO#: **1901556****25-Jan-19****Client:** GHD**Project:** Flamenco Federal #1

Sample ID MB	SampType: MBLK		TestCode: EPA Method 300.0: Anions							
Client ID: PBW	Batch ID: R57164		RunNo: 57164							
Prep Date:	Analysis Date: 1/21/2019		SeqNo: 1912082		Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	0.50								

Sample ID LCS	SampType: LCS		TestCode: EPA Method 300.0: Anions							
Client ID: LCSW	Batch ID: R57164		RunNo: 57164							
Prep Date:	Analysis Date: 1/21/2019		SeqNo: 1912083		Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	4.8	0.50	5.000	0	95.2	90	110			

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
PQL Practical Quantitative 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 Detection Limit
W Sample container temperature is out of limit as specified

Page 2 of 3

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1901556
25-Jan-19

Client: GHD
Project: Flamenco Federal #1

Sample ID	MB-42623	SampType:	MBLK	TestCode:	SM2540C MOD: Total Dissolved Solids					
Client ID:	PBW	Batch ID:	42623	RunNo:	57045					
Prep Date:	1/15/2019	Analysis Date:	1/16/2019	SeqNo:	1908245	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids	ND	20.0								

Sample ID	LCS-42623	SampType:	LCS	TestCode:	SM2540C MOD: Total Dissolved Solids					
Client ID:	LCSW	Batch ID:	42623	RunNo:	57045					
Prep Date:	1/15/2019	Analysis Date:	1/16/2019	SeqNo:	1908246	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids	1020	20.0	1000	0	102	80	120			

Qualifiers:

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank	Page 3 of 3
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 Quantitative Limit	RL Reporting Detection Limit	
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified	



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: **GHD**

Work Order Number: **1901556**

RcptNo: 1

Received By: **Erin Melendrez** 1/15/2019 8:55:00 AM

Completed By: **Victoria Zellar** 1/15/2019 9:24:17 AM

Reviewed By: **vz 1/15/19**

Victoria Zellar

labeled by

ENM 1/15/19

Chain of Custody

1. Is Chain of Custody 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 $>0^{\circ}\text{C}$ 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. VOA vials have zero headspace? Yes ☐ No ☐ No VOA Vials ☒
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:

(< 8 or > 12 unless noted)

Adjusted?

Checked by:

Special Handling (if applicable)

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

Person Notified:	<input type="text"/>	Date:	<input type="text"/>
By Whom:	<input type="text"/>	Via:	<input type="checkbox"/> eMail <input type="checkbox"/> Phone <input type="checkbox"/> Fax <input type="checkbox"/> In Person
Regarding:	<input type="text"/>		
Client Instructions:	<input type="text"/>		

16. Additional remarks:

17. Cooler Information

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	2.1	Good	Yes			

Client: GHD Services

Mailing Address: 6721 Indian School Rd Ste 200
NE Albuquerque, NM 87110

Phone #: 505 884 0672

email or Fax#: Alan.Brandon@GHD.com

QA/QC Package:

☐ Standard ☐ Level 4 (Full Validation)

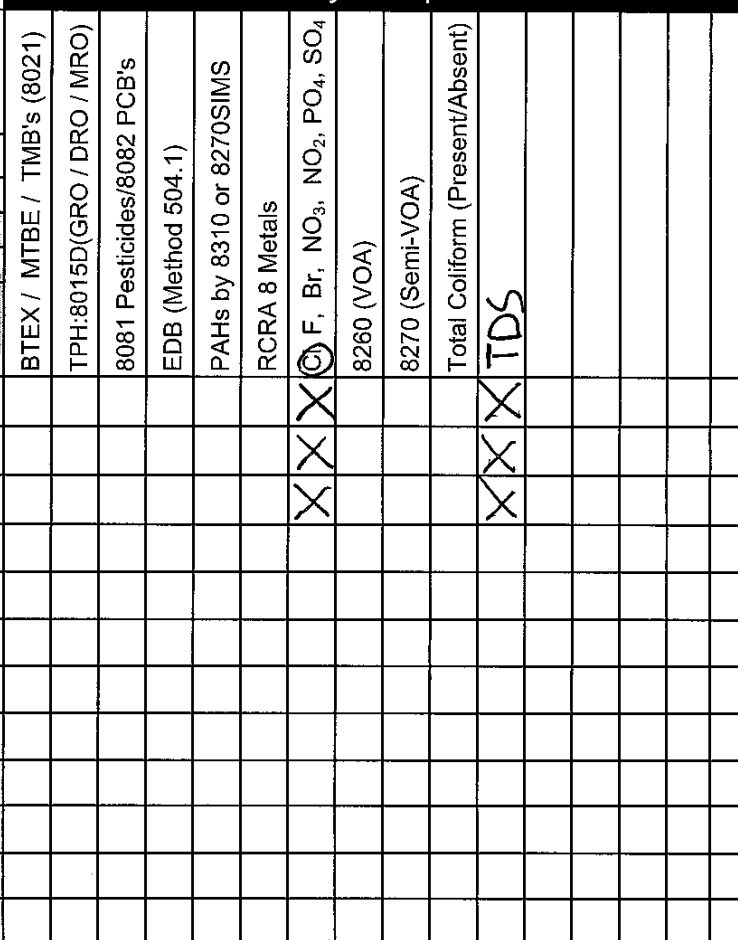
Accreditation: ☐ Az Compliance

☐ NELAC ☐ Other _____

☐ EDD (Type) _____

015510

Received by: 6. #5 Via: Courier Date: 1/15/19 Time: 0855



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.



about GHD

GHD is one of the world's leading professional services companies operating in the global markets of water, energy and resources, environment, property and buildings, and transportation. We provide engineering, environmental, and construction services to private and public sector clients.

Jeff Walker

Jeff.Walker@ghd.com
505.884.0672

Christine Mathews

Christine.Mathews@ghd.com
505.884.0672

www.ghd.com

Attachment F

Excerpts from Referenced WIPP Hydrogeological Studies

Page 440 of 500

GEOLOGICAL CHARACTERIZATION REPORT
WASTE ISOLATION PILOT PLANT (WIPP) SITE,
SOUTHEASTERN NEW MEXICO

SAND78-1596

VOLUME I

Dennis W. Powers, Steven J. Lambert, Sue-Ellen Shaffer,
Leslie R. Hill, Wendell D. Weart, Editors

Department 4510
Waste Management Technology
Sandia Laboratories
Albuquerque, New Mexico 87185

NOTICE
This report was prepared as an account of work sponsored by the United States Government. Neither the United States nor the United States Department of Energy, nor any of their employees, nor any of their contractors, subcontractors, or their employees, makes any warranty, express or implied, or assumes any legal liability or responsibility for the accuracy, completeness or usefulness of any information, apparatus, product or process disclosed, or represents that its use would not infringe privately owned rights.

AUGUST, 1978
PRINTED DECEMBER, 1978

DISTRIBUTION OF THIS DOCUMENT IS UNLIMITED

fy

DISCLAIMER

This report was prepared as an account of work sponsored by an agency of the United States Government. Neither the United States Government nor any agency Thereof, nor any of their employees, makes any warranty, express or implied, or assumes any legal liability or responsibility for the accuracy, completeness, or usefulness of any information, apparatus, product, or process disclosed, or represents that its use would not infringe privately owned rights. Reference herein to any specific commercial product, process, or service by trade name, trademark, manufacturer, or otherwise does not necessarily constitute or imply its endorsement, recommendation, or favoring by the United States Government or any agency thereof. The views and opinions of authors expressed herein do not necessarily state or reflect those of the United States Government or any agency thereof.

DISCLAIMER

Portions of this document may be illegible in electronic image products. Images are produced from the best available original document.

PREFACE

The Geological Characterization Report (GCR) for the WIPP site presents, in one document, a compilation of geologic information available to August, 1978, which is judged to be relevant to studies for the WIPP. As such, commonly available documents are summarized as appropriate while other documents may be presented more fully. In some instances, the information presented may be preliminary or may reflect continuing studies not yet complete. The Geological Characterization Report certainly should not be construed as the final word on the WIPP geology. Furthermore, specific judgements of how the geologic information affects the WIPP are restricted since the document is intended as a source of information. However, recommendations may be made on the basis of the document. The Geological Characterization Report for the WIPP site is neither a Preliminary Safety Analysis Report nor an Environmental Impact Statement; these documents, when prepared, should be consulted for appropriate discussion of safety analysis and environmental impact. The Geological Characterization Report of the WIPP site is a unique document and at this time is not required by regulatory process.

The Geological Characterization Report (GCR) for the WIPP has been created through the efforts of many individuals who are to be acknowledged for their contributions; little of the material presented, however, is original material created solely for the Geological Characterization Report. At Sandia Laboratories, principal contributors to the writing of the GCR are, in alphabetical order: G.E. Barr, B.M. Butcher, R.G. Dosch, L.R. Hill, S.J. Lambert, D.W. Powers, S.E. Shaffer, W. Wawersik, and W.D. Weart. Bechtel Corporation provided basic summaries for many chapters; the principal participants were: D. Dale, C. Farrell, V. Howes, J. Litehiser, D. Roberts, R. Sayer. In particular, J. Litehiser provided the analysis of seismic risk in Chapter 5. G.B. Griswold of Tecolote Corporation summarized resources in Chapter 8. F.H. Dove of NUS summarized hydrology in Chapter 6.

Editorial and review comments were solicited on a working copy and received from independent agencies with personnel familiar with the geology of southeastern New Mexico, particularly the New Mexico Bureau of Mines and Mineral Resources. An internal review at Sandia Laboratories of a working copy of the entire document also resulted in detailed comments. Those review comments were incorporated as appropriate into this draft copy. As usual, some of the suggestions were not followed for various reasons. The draft copy received review and comment by the WIPP Panel (Committee on Radioactive Waste Management, National Research Council) of the National Academy of Science, the Office of Nuclear Waste Isolation (ONWI) and various subcontractors, and by Westinghouse as a contractor to DOE. Major parts of the draft were reviewed by members of the Special Projects Branch, USGS. These comments have resulted in some revision of the final copy, as seemed appropriate. The editors assume responsibility for the contents of this report.

The editors and writers acknowledge the enormous volume of accumulated data and interpretations which provide the background for the Geological Characterization Report; referencing of authors is intended to reflect this background and to properly attribute material.

The Report is primarily intended for use by those with a technical background in earth sciences. However, the text should also be generally readable without all of this background by referral to the American Geological Institute Glossary of Geology (1974).

GEOLOGICAL CHARACTERIZATION REPORT
TABLE OF CONTENTS

	PAGE
1.0 EXECUTIVE SUMMARY	1- 1
2.0 INTRODUCTION	2- 1
2.1 THE PURPOSE OF WIPP	2- 1
2.2 PURPOSE OF GEOLOGICAL CHARACTERIZATION REPORT (GCR) ...	2- 2
2.3 SITE SELECTION	2- 2
2.3.1 <u>History of WIPP Site Selection Effort</u>	2- 3
2.3.2 <u>General Location and Land Requirements</u> <u>of WIPP Facility</u>	2- 7
2.3.3 <u>General Considerations and Requirements</u> <u>of Underground Storage Facilities for</u> <u>Radioactive Waste</u>	2- 8
2.3.4 <u>Initial Screening Criteria and Selection</u> <u>of the Original (ORNL) Site in the</u> <u>Delaware Basin</u>	2- 10
2.3.5 <u>Site Selection and Evaluation Criteria for</u> <u>the Los Medanos Site</u>	2- 11
2.3.6 <u>Site Selection: Criteria and Factors</u>	2- 14
2.3.7 <u>Preferred Preliminary Site Selection</u>	2- 22
2.4 STATUS OF STUDIES	2- 23
2.5 EXPLORATION TECHNIQUES	2- 24
2.6 SUMMARY	2- 26
2.7 REFERENCES	2- 28
3.0 REGIONAL GEOLOGY	3- 1
3.1 INTRODUCTION	3- 1
3.2 REGIONAL PHYSIOGRAPHY AND GEOMORPHOLOGY	3- 2
3.2.1 <u>Physiographic Setting</u>	3- 3
<u>Pecos Valley Physiographic Section.</u>	3- 3
<u>High Plains Physiographic Section.</u>	3- 4
<u>Edwards Plateau Physiographic Section.</u>	3- 5

	<u>PAGE</u>
<u>Sacramento Physiographic Section..</u>	3- 6
<u>Mexican Highland Physiographic Section.</u>	3- 8
3.2.2 <u>Major Geomorphic Features in the Site Vicinity .</u>	3- 9
<u>Pecos River Drainage System.</u>	3- 9
<u>Mescalero Plain.</u>	3- 11
<u>Karst Topography</u>	3- 13
<u>Blowouts</u>	3- 22
3.2.3 <u>Erosion Rate - Significance of Geomorphic</u>	
<u>Developments to Site</u>	3- 23
3.3 <u>REGIONAL STRATIGRAPHY AND LITHOLOGY</u>	3- 24
3.3.1 <u>Precambrian Rocks</u>	3- 24
3.3.2 <u>Paleozoic Rocks</u>	3- 27
<u>Cambrian Rocks.</u>	3- 27
<u>Ordovician Rocks</u>	3- 29
<u>Silurian Rocks</u>	3- 31
<u>Devonian Rocks</u>	3- 32
<u>Mississippian Rocks</u>	3- 34
<u>Pennsylvanian Rocks</u>	3- 36
<u>Permian Rocks</u>	3- 40
<u>Wolfcampian Series</u>	3- 41
<u>Leonardian Series</u>	3- 42
<u>Guadalupian Series</u>	3- 44
<u>Ochoan Series</u>	3- 50
3.3.3 <u>Mesozoic Rocks</u>	3- 53
<u>Triassic Rocks</u>	3- 53
<u>Jurassic Rocks</u>	3- 54
<u>Cretaceous Rocks</u>	3- 54
3.3.4 <u>Cenozoic Rocks</u>	3- 56
<u>Tertiary Rocks</u>	3- 56
<u>Quaternary Rocks</u>	3- 57
3.4 <u>REGIONAL STRUCTURE AND TECTONICS</u>	3- 58
3.4.1 <u>Delaware Basin</u>	3- 60
3.4.2 <u>Central Basin Platform</u>	3- 62
3.4.3 <u>Midland Basin</u>	3- 64

	<u>PAGE</u>
3.4.4 <u>Matador Arch</u>	3- 65
3.4.5 <u>Pedernal Uplift</u>	3- 66
3.4.6 <u>Diablo Platform</u>	3- 67
3.4.7 <u>Val Verde Basin</u>	3- 68
3.4.8 <u>Huapache Flexure</u>	3- 69
3.4.9 <u>The Northwestern Shelf</u>	3- 70
<u>Folds</u>	3- 71
<u>Faults</u>	3- 72
<u>Artesia-Vacuum Trend</u>	3- 73
3.4.10 <u>Sacramento Mountains</u>	3- 73
3.4.11 <u>Guadalupe-Delaware Mountains Uplift</u>	3- 74
3.5 REGIONAL IGNEOUS ACTIVITY	3- 77
3.5.1 <u>Near-Site Activity</u>	3- 77
3.5.2 <u>Guadalupe-Delaware Mountains Area Activity</u>	3- 81
3.5.3 <u>Trans-Pecos Magmatic Province</u>	3- 83
3.5.4 <u>El Camino del Diable and Railroad</u>	
<u>Mountain Dikes</u>	3- 84
3.5.5 <u>Capitan and Sierra Blanca Mountains Region</u>	3- 86
3.5.6 <u>Conclusions</u>	3- 87
3.6 REGIONAL GEOLOGIC HISTORY	3- 88
3.6.1 <u>Precambrian</u>	3- 88
3.6.2 <u>Early and Middle Paleozoic</u>	3- 89
<u>Cambrian - Ordovician</u>	3- 89
<u>Silurian - Devonian</u>	3- 91
<u>Mississippian</u>	3- 92
3.6.3 <u>Late Paleozoic</u>	3- 93
<u>Pennsylvanian</u>	3- 93
<u>Permian</u>	3- 95
3.6.4 <u>Mesozoic Rocks</u>	3- 98
<u>Triassic</u>	3- 98
<u>Jurassic</u>	3- 99
<u>Cretaceous</u>	3- 99

	<u>PAGE</u>
3.6.5 <u>Cenozoic</u>	3-100
<u>Early Tertiary</u>	3-100
<u>Late Tertiary (Miocene-Pliocene)</u>	3-101
<u>Pleistocene- Holocene</u>	3-102
3.7 SUMMARY	3-103
3.8 REFERENCES	3-105
 4.0 SITE GEOLOGY	 4- 1
4.1 INTRODUCTION	4- 1
4.1.1 <u>Area of Study</u>	4- 1
4.1.2 <u>Sources of Data</u>	4- 2
4.2 SITE PHYSIOGRAPHY AND SURFICIAL GEOLOGY	4- 5
4.2.1 <u>Site Physiography</u>	4- 5
4.2.2 <u>Site Surficial Geology</u>	4- 7
4.3 SITE STRATIGRAPHY AND LITHOLOGY	4- 9
4.3.1 <u>Precambrian Eonothem</u>	4- 12
4.3.2 <u>Paleozoic Erathem</u>	4- 13
<u>Cambrian System</u>	4- 13
<u>Ordovician System</u>	4- 13
<u>Silurian System</u>	4- 14
<u>Devonian System</u>	4- 15
<u>Mississippian System</u>	4- 15
<u>Pennsylvanian System</u>	4- 16
<u>Permian Rocks</u>	4- 19
Wolfcampian Series	4- 20
Leonardian Series	4- 21
Guadalupian Series	4- 22
Ochoan Series	4- 23
Castile Formation	4- 25
Salado Formation	4- 29
Rustler Formation	4- 39
Dewey Lake Redbeds	4- 42

	<u>PAGE</u>
4.3.3 <u>Mesozoic Erathem</u>	4- 44
<u>Triassic System</u>	4- 44
<u>Post-Triassic Rocks of Mesozoic Age</u>	4- 47
4.3.4 <u>Cenozoic Erathem</u>	4- 47
<u>Tertiary System</u>	4- 47
<u>Quaternary System</u>	4- 49
4.4 <u>SITE STRUCTURE AND TECTONICS</u>	4- 53
4.4.1 <u>Tectonic and Structural Setting of</u>	
<u>Los Medanos Site</u>	4- 53
<u>Relation of Site Structure to</u>	
<u>Regional Tectonics</u>	4- 53
<u>Tectonic and Nontectonic Mechanisms</u>	
<u>at the Site</u>	4- 54
4.4.2 <u>Deep Structures</u>	4- 56
<u>Subregional Structure of Pre-Evaporite</u>	
<u>Rocks</u>	4- 56
<u>Site-Specific Interpretations</u>	4- 57
4.4.3 <u>Salt Deformation</u>	4- 60
<u>Subregional Structure of Evaporite Beds</u>	4- 60
<u>Geologic Structure of Salt at the Site</u>	4- 66
4.4.4 <u>Shallow Structure</u>	4- 73
<u>Shallow Subsurface Structure</u>	4- 74
<u>Surficial Structures</u>	4- 76
4.4.5 <u>Summary and Conclusions</u>	4- 78
4.5 <u>SITE GEOLOGIC HISTORY</u>	4- 79
4.6 <u>SUMMARY</u>	4- 88
4.7 <u>REFERENCES</u>	4- 90
5.0 <u>SEISMOLOGY</u>	5- 1
5.1 <u>INTRODUCTION</u>	5- 1
5.2 <u>SEISMICITY</u>	5- 2
5.2.1 <u>Preinstrumental Data - Regional</u>	5- 3
5.2.2 <u>Instrumental Data - Regional</u>	5- 8

	<u>PAGE</u>
5.2.3 <u>Specialized Instrumental Studies -</u> <u>Station CLN</u>	5- 13
5.2.4 <u>Specialized Instrumental Studies -</u> <u>Central Basin Platform</u>	5- 16
5.2.5 <u>The Events of July 26, 1972, and</u> <u>November 18, 1974</u>	5- 25
5.3 SEISMIC RISK ANALYSIS	5- 28
5.3.1 <u>The Method of Cornell</u>	5- 31
5.3.2 <u>Input Parameters</u>	5- 36
5.3.3 <u>Results</u>	5- 53
5.4 SEISMOLOGICAL DATA AND SITE REGION TECTONISM	5- 56
5.4.1 <u>Regional Stress Orientation</u>	5- 58
5.4.2 <u>Tectonism and Earthquake Recurrence Relations</u> ..	5- 60
5.5 SUMMARY	5- 68
5.6 REFERENCES	5- 71
6.0 HYDROLOGY	6- 1
6.1 INTRODUCTION	6- 1
6.2 SURFACE HYDROLOGY	6- 2
6.2.1 <u>Surface Water Features</u>	6- 2
6.2.2 <u>Precipitation Patterns</u>	6- 4
6.2.3 <u>Drainage</u>	6- 5
6.2.4 <u>Floods</u>	6- 5
6.2.5 <u>Evaporation and Transpiration</u>	6- 6
6.2.6 <u>Infiltration</u>	6- 7
6.2.7 <u>Surface Water Quality</u>	6- 7
6.3 GROUND WATER HYDROLOGY	6- 8
6.3.1 <u>Regional Ground Water Conditions</u>	6- 8
6.3.2 <u>Hydrology of Rocks Underlying the Salado</u> <u>Formation</u>	6- 10
<u>Deep Hydrologic Units</u>	6- 11
Ellenburger Group	6- 11
Devonian Zone	6- 12

PAGE

Mississippian-Pennsylvanian Zone	6- 12
Bone Springs Formation	6- 13
Guadalupean Age Rocks Hydrologic System.	6- 13
Castile Formation	6- 19
Salado Formation	6- 20
6.3.3 <u>Hydrology of Rocks Overlying the Salado</u>	
<u>Formation</u>	6- 21
<u>Rustler Formation</u>	6- 22
<u>The Dewey Lake Red Beds</u>	6- 23
<u>Dockum Group</u>	6- 23
<u>Ogallala Formation</u>	6- 24
<u>Quaternary Deposits</u>	6- 25
6.3.4 <u>Regional Ground Water Use</u>	6- 26
<u>Oil Field Secondary Recovery</u>	6- 27
<u>Ground Water Utilization East of the</u>	
<u>Pecos River, Southeast New Mexico</u>	6- 28
6.3.5 <u>Ground Water Occurrence at the Proposed Site</u> ...	6- 28
<u>Fluid-Bearing Zones</u>	6- 29
<u>Hydrologic Testing</u>	6- 30
<u>Bell Canyon Formation</u>	6- 34
<u>Rustler-Salado Contact</u>	6- 35
<u>Culebra Dolomite</u>	6- 35
<u>Magenta Dolomite</u>	6- 36
<u>Salt-Residue Zone</u>	6- 36
6.3.6 <u>Dissolution of Salt in the Permian Evaporites</u> ..	6- 37
<u>Shallow Dissolution</u>	6- 38
<u>Deep Dissolution</u>	6- 40
<u>Rates of Dissolution</u>	6- 42
6.4 <u>HYDROLOGY DRILLING AND TESTING SUMMARY</u>	6- 46
6.4.1 <u>Hole No. H-1</u>	6- 46
6.4.2 <u>Hole No. H-2a</u>	6- 48
6.4.3 <u>Hole No. H-2b</u>	6- 49
6.4.4 <u>Hole No. H-2c</u>	6- 50

	<u>PAGE</u>
6.4.5 <u>Hole No. H-3</u>	6- 51
6.4.6 <u>Hole No. P-14</u>	6- 53
6.4.7 <u>Hole No. P-15</u>	6- 54
6.4.8 <u>Hole No. P-17</u>	6- 56
6.4.9 <u>Hole No. P-18</u>	6- 57
6.4.10 <u>Hole No. AEC-8</u>	6- 58
6.5 SUMMARY	6- 60
6.6 REFERENCES	6- 62
 7.0 GEOCHEMISTRY	 7- 1
7.1 INTRODUCTION	7- 1
7.2 THE MINERALOGY OF DELAWARE BASIN EVAPORITES AND RELATED ROCKS OF THE LOS MEDANOS AREA	 7- 2
7.2.1 <u>Introduction</u>	7- 2
7.2.2 <u>Previous Work</u>	7- 3
7.2.3 <u>Overview of Evaporite Mineralogy</u>	7- 3
7.2.4 <u>Mineralogy of Fluid-Bearing Zones in the</u> <u>Rustler Formation and Delaware Mountain Group</u> ..	 7- 4
<u>Magenta Member, Rustler Formation (AEC No. 8)</u>	7- 4
<u>Culebra Member, Rustler Formation (AEC No. 8)</u>	7- 4
<u>Bell Canyon Sandstone (AEC No. 8)</u>	7- 5
<u>Cherry Canyon Sandstone (Pine Springs Outcrop)</u>	7- 5
7.3 DETAILED CHEMISTRY AND MINERALOGY OF SOLUBLE AND INSOLUBLE COMPONENTS OF THE SALADO FORMATION	 7- 5
7.3.1 <u>Introduction</u>	7- 5
7.3.2 <u>Material and Methods</u>	7- 6
<u>Sample Preparation and Handling</u>	7- 6
<u>Analysis of Soluble Portion</u>	7- 6
<u>Analysis of Insoluble Portion</u>	7- 6
<u>Thermal Analysis</u>	7- 7
<u>Results of Analyses</u>	7- 7
7.3.3 <u>Results and Discussion</u>	7- 8
<u>Distribution of Mineral Phases</u>	7- 8
<u>Effects of Heating Samples</u>	7- 12

	<u>PAGE</u>
7.3.4 <u>Conclusion</u>	7- 14
7.4 DETAILED PETROLOGY AND SILICATE MINERALOGY OF SOME	
PERMIAN BASIN ROCKS	7- 15
7.4.1 <u>Introduction</u>	7- 15
7.4.2 <u>Procedure</u>	7- 15
7.4.3 <u>Silicate Mineralogy and Geochemistry</u>	7- 16
<u>Sample Preparation and Analysis</u>	7- 17
<u>Silicate Mineralogy</u>	7- 18
<u>Distribution of Clay Materials</u>	7- 21
7.4.4 <u>Mineralogy of Duval Mine Samples</u>	7- 21
7.4.5 <u>Chemical Composition</u>	7- 22
7.4.6 <u>Petrography</u>	7- 23
<u>Macroscopic Petrography</u>	7- 23
<u>Microscopic Petrography</u>	7- 25
7.4.7 <u>Interpretations and Tentative Conclusions</u>	7- 27
7.5 VOLATILES AND FLUID INCLUSIONS IN MINERALS OF THE	
SALADO FORMATION	7- 31
7.5.1 <u>Introduction</u>	7- 31
7.5.2 <u>Overview of Volatile Contents of Evaporites</u>	7- 32
7.5.3 <u>Mineral Sources of Water in the Salado</u>	
<u>Evaporite Sequence</u>	7- 35
<u>Introduction</u>	7- 35
<u>Sampling and Sample Preparation</u>	7- 36
<u>Analytical Methods Used in This Study</u>	7- 37
<u>Weight Losses for Cores, AEC No. 7 and 8</u>	7- 38
<u>Mineralogy and Petrology of Cores No. 7 and 8</u>	7- 40
<u>Summary and Conclusions</u>	7- 45
7.6 FLUID INCLUSIONS IN CORE SAMPLES FROM ERDA NO. 9	7- 47
7.6.1 <u>Introduction</u>	7- 47
7.6.2 <u>Samples Studied</u>	7- 48
7.6.3 <u>Sample Preparation</u>	7- 49
<u>Sections</u>	7- 49
<u>Coarse water-soluble residues</u>	7- 50

	<u>PAGE</u>
7.6.4 <u>Methods of Study</u>	7- 50
<u>Petrographic Examination</u>	7- 50
<u>Heating Stage</u>	7- 51
<u>Freezing stage</u>	7- 51
<u>Crushing stage</u>	7- 52
<u>Coarse water-soluble residues</u>	7- 52
<u>Decrepitation</u>	7- 52
7.6.5 <u>Results of Petrographic Examination</u>	7- 53
<u>Inclusion type A</u>	7- 53
<u>Inclusion type B</u>	7- 54
<u>Inclusion type C</u>	7- 55
<u>Inclusion type D</u>	7- 55
7.6.6 <u>Weight Percent of Fluid</u>	7- 55
7.6.7 <u>Results of Heating Stage Studies</u>	7- 56
7.6.8 <u>Results of Freezing Stage Studies</u>	7- 57
7.6.9 <u>Results of Crushing Stage Studies</u>	7- 57
7.6.10 <u>Results of Study of coarse Water-Insoluble</u>	
<u>Residues</u>	7- 58
7.6.11 <u>Decrepitation Tests</u>	7- 58
7.6.12 <u>Study of Suite of Samples from Kerr-McGee</u>	7- 59
7.6.13 <u>Discussion</u>	7- 61
<u>Geological Significance</u>	7- 61
<u>Nuclear Waste Disposal Significance</u>	7- 63
7.7 THE GEOCHEMISTRY OF DELAWARE BASIN GROUNDWATERS IN	
RELATION TO THEIR HOST ROCKS	7- 70
7.7.1 <u>Introduction</u>	7- 70
7.7.2 <u>Data</u>	7- 72
<u>Solutes</u>	7- 72
<u>Thermodynamics</u>	7- 75
<u>Stable Isotopes</u>	7- 76
7.7.3 <u>Summary</u>	7- 79

PAGE

7.8 RUBIDIUM- STRONTIUM SYSTEMATICS OF THE SALADO FORMATION, SOUTHEASTERN NEW MEXICO	7- 79
7.8.1 <u>Introduction</u>	7- 79
7.8.2 <u>Previous Work</u>	7- 81
7.8.3 <u>Analytical Procedure</u>	7- 82
<u>Sample Preparation</u>	7- 82
<u>Rb- Sr Isotopic Analysis</u>	7- 84
7.8.4 <u>Results</u>	7- 85
7.8.5 <u>Discussion</u>	7- 87
7.8.6 <u>Concluding Statements</u>	7- 88
7.9 URANIUM ISOTOPE DISEQUILIBRIUM IN GROUNDWATERS OF SOUTHEASTERN NEW MEXICO AND IMPLICATIONS REGARDING AGE-DATING OF WATERS	7- 89
7.9.1 <u>Introduction</u>	7- 89
<u>History</u>	7- 89
<u>Implications</u>	7- 90
7.9.2 <u>Analytical Approach</u>	7- 91
<u>General Geochemistry of Groundwaters</u>	7- 91
<u>Experimental Procedures</u>	7- 91
7.9.3 <u>Results and Discussion</u>	7- 93
7.9.4 <u>Application of the Uranium Isotope Disequilibrium Model</u>	7- 93
7.9.5 <u>Model Ages Based on No Leaching</u>	7- 97
7.9.6 <u>Implications and Conclusions</u>	7- 99
7.10 SUMMARY	7-101
7.11 REFERENCES	7-103
7.12 ACKNOWLEDGEMENTS	7-109
8.0 RESOURCES	8- 1
8.1 INTRODUCTION	8- 1
8.2 ORGANIZATIONS INVOLVED IN RESOURCE EVALUATION AND THEIR REPORTS	8- 1

	<u>PAGE</u>
8.3 POTENTIAL RESOURCES IN RELATIONSHIP TO STRATIGRAPHY	
AT THE WIPP SITE	8- 2
8.4 RESOURCE DESCRIPTION BY SPECIFIC COMMODITIES	8- 2
8.4.1 <u>Caliche</u>	8- 2
8.4.2 <u>Uranium</u>	8- 3
8.4.3 <u>Gypsum</u>	8- 3
8.4.4 <u>Halite (Salt)</u>	8- 4
8.4.5 <u>Sulfur</u>	8- 4
8.4.6 <u>Lithium</u>	8- 5
8.4.7 <u>Potash</u>	8- 5
<u>Method of Evaluation</u>	8- 5
<u>Description of the Potash Exploration</u>	
<u>Drilling Phase</u>	8- 6
<u>Calculation of Potash Resource Distribution</u>	
<u>Volume and Grade</u>	8- 7
<u>Results of the USGS Resource Estimate</u>	8- 9
<u>Results of the USBM Valuation of Potash</u>	
<u>Resources</u>	8- 10
<u>Summary of Conclusions Concerning Potash</u>	
<u>Resources in the WIPP Site</u>	8- 11
8.4.8 <u>Hydrocarbons</u>	8- 12
<u>Method of Evaluation</u>	8- 12
<u>Total Hydrocarbon Resources at the WIPP Site</u>	8- 14
<u>Estimate of the Economically Recoverable</u>	
<u>Hydrocarbon Resources</u>	8- 16
<u>Summary of Conclusions Concerning Hydrocarbon</u>	
<u>Resources</u>	8- 19
8.4.9 <u>Metalliferous Deposits in the Precambrian</u>	8- 19
8.5 SUMMARY	8- 20
8.6 REFERENCES	8- 22

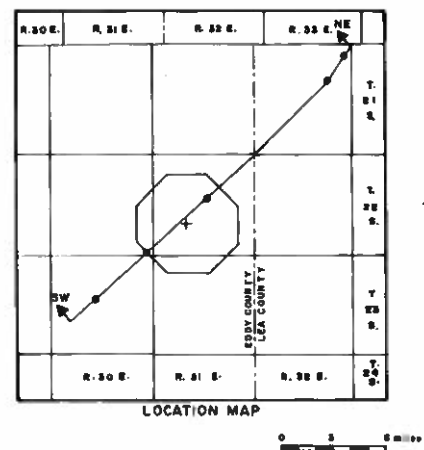
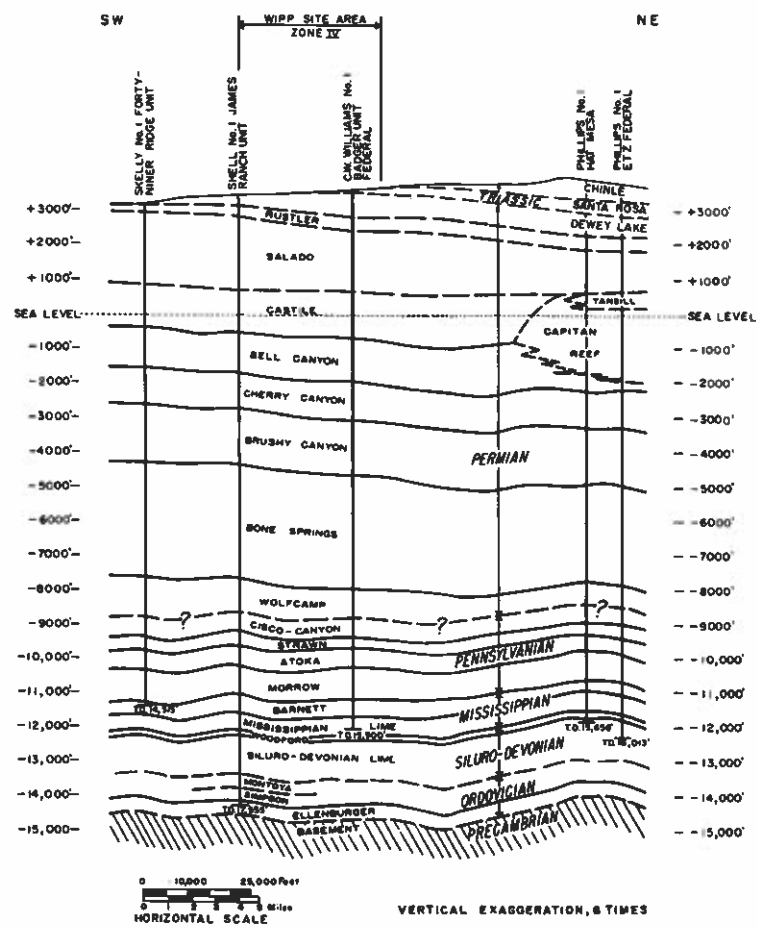
	<u>PAGE</u>
9.0 SPECIAL STUDIES OF WIPP REPOSITORY ROCKS	
9.1 INTRODUCTION	9- 1
9.2 THERMOPHYSICAL PROPERTIES	9- 2
9.2.1 <u>Introduction</u>	9- 2
9.2.2 <u>Petrography</u>	9- 3
<u>Fabric</u>	9- 4
<u>Fracture</u>	9- 5
9.2.3 <u>Physical Properties</u>	9- 6
<u>Density and Resistivity</u>	9- 6
<u>Volatile Mass Loss</u>	9- 6
<u>Permeability</u>	9- 7
<u>Thermal Conductivity</u>	9- 7
<u>Sonic Pulse Velocity</u>	9- 8
<u>Summary of Data</u>	9- 8
9.2.4 <u>Thermomechanical Properties</u>	9- 8
<u>Introduction</u>	9- 8
<u>Apparatus, Experiments, Capabilities and</u>	
<u>Data Handling Material and Test Specimens</u> ...	9- 10
<u>Quasistatic Rock Salt Properties</u>	9- 11
Quasistatic Unconfined Properties	9- 12
Quasistatic Triaxial Properties	9- 12
Quasistatic Stress-Strain Relationships.	9- 14
Deviatoric Loading at Constant Confining	
Pressure	9- 14
Nonelastic Behavior and Pressure Effects	
at Ambient Temperature	9- 15
Elevated Temperature Data	9- 15
Influence of Load Path	9- 15
Interpretation of Quasistatic Data	9- 18
<u>Creep of Rock Salt</u>	9- 18
Creep Strain Limits of Rock Salt at	
Failure	9- 19
<u>Applicability of Laboratory Measurements</u>	9- 20

	<u>PAGE</u>
9.2.5 <u>Summary and Conclusions</u>	9- 20
9.3 <u>RADIONUCLIDE SORPTION ON WIPP ROCKS</u>	9- 21
9.3.1 <u>Introduction</u>	9- 21
9.3.2 <u>Geological Media</u>	9- 23
<u>Sample Selection</u>	9- 23
<u>Sample Preparation</u>	9- 24
9.3.3 <u>Brine and Groundwater Simulants</u>	9- 24
9.3.4 <u>Solution Chemistry</u>	9- 24
<u>Solutes</u>	9- 24
<u>Oxidation Potential</u>	9- 25
<u>Hydrogen Ion Activity</u>	9- 25
<u>Radionuclide Concentration</u>	9- 26
9.3.5 <u>Experimental Procedures</u>	9- 26
<u>Apparatus, Sample Size and Sampling</u>	9- 26
<u>Analyses</u>	9- 27
<u>Equilibration Time</u>	9- 27
9.3.6 <u>Kd Data</u>	9- 28
9.3.7 <u>Discussion of Kd Data</u>	9- 28
<u>Cesium</u>	9- 28
<u>Strontium</u>	9- 29
<u>Europium, Gadolinium and Cerium</u>	9- 29
<u>Technetium and Iodine</u>	9- 30
<u>Ruthenium and Antimony</u>	9- 30
<u>Actinides</u>	9- 31
9.3.8 <u>Parametric Effects</u>	9- 31
<u>pH and Nuclide Concentration Effects on Kd</u> ..	9- 31
<u>The Effect of Trace Organic Contaminants on</u>	
<u>Kd's of ¹⁵²Eu, ¹⁵³Gd, and ¹⁴⁴Ce</u>	9- 32
<u>The Effect of Oxidation State on Radionuclide</u>	
<u>Sorption</u>	9- 34
9.3.9 <u>Summary</u>	9- 38
9.4 <u>REFERENCES</u>	9- 40

	<u>PAGE</u>
10.0 CONTINUING STUDIES	10- 1
10.1 INTRODUCTION	10- 1
10.2 SITE SELECTION	10- 1
10.3 REGIONAL GEOLOGY	10- 1
10.3.1 <u>Paleoclimatology</u>	10- 1
10.3.2 <u>Regional Tectonic Studies</u>	10- 2
<u>Landsat</u>	10- 2
<u>Leveling Surveys</u>	10- 2
<u>West Texas Salt Flats Graben</u>	10- 3
10.4 SITE GEOLOGY	10- 3
10.4.1 <u>Geologic Mapping</u>	10- 3
10.4.2 <u>Aeromagnetic Survey</u>	10- 3
10.5 SEISMOLOGY	10- 4
10.5.1 <u>Near-Site Activity</u>	10- 4
10.5.2 <u>Central Basin Platform</u>	10- 4
10.6 HYDROLOGY	10- 5
10.6.1 <u>Introduction</u>	10- 5
10.6.2 <u>Purpose of Hydrologic Testing</u>	10- 5
10.6.3 <u>Direction and Rate of Fluid Migration</u>	10- 6
10.6.4 <u>Dewey Lake Redbeds</u>	10- 7
10.6.5 <u>Long-Term Monitoring</u>	10- 7
10.6.6 <u>Surface Hydrology</u>	10- 8
10.6.7 <u>Overview of Deep Hydrologic Testing</u>	10- 9
10.6.8 <u>Long-Term Monitoring of Deep Wells</u>	10- 9
10.6.9 <u>Continuing Studies in Salt Dissolution and</u> <u>Overburden Subsidence Program Objectives</u>	10- 10
<u>Nash Draw Investigations</u>	10- 10
<u>Cemented Rubble Chimney Investigations</u> ..	10- 12
<u>Mine Subsidence Investigations</u>	10- 13
10.6.10 <u>Modeling of Regional Hydrology</u>	10- 13
10.7 GEOCHEMISTRY	10- 14
10.7.1 <u>Introduction</u>	10- 14
10.7.2 <u>Mineralogy and Petrology</u>	10- 15

	<u>PAGE</u>
10.7.3 <u>Volatiles Characterization</u>	10- 15
10.7.4 <u>Origins of Evaporite Assemblages</u>	10- 16
10.7.5 <u>Igneous Dike</u>	10- 17
10.7.6 <u>Trace Elements and Age-Dating</u>	10- 17
10.7.7 <u>Reef and Back-Reef Waters</u>	10- 19
10.7.8 <u>Future Work on Fluid Inclusions</u>	10- 19
10.8 <u>RESOURCES</u>	10- 20
10.9 <u>SPECIAL STUDIES</u>	10- 20
10.9.1 <u>Purpose</u>	10- 20
10.9.2 <u>Thermophysical Properties</u>	10- 20
<u>Scope</u>	10- 20
<u>Continuing Studies</u>	10- 21
10.9.3 <u>Radionuclide Sorption Properties</u>	10- 22
<u>Scope</u>	10- 22
<u>Continuing Studies</u>	10- 22

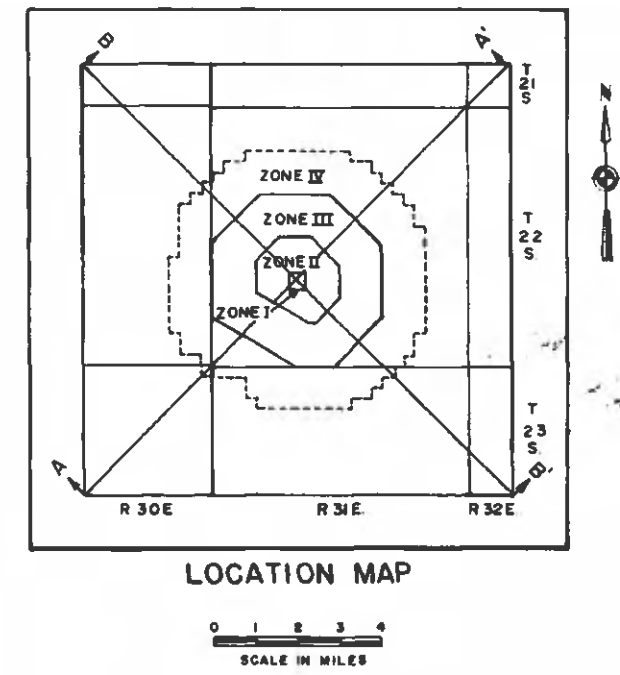
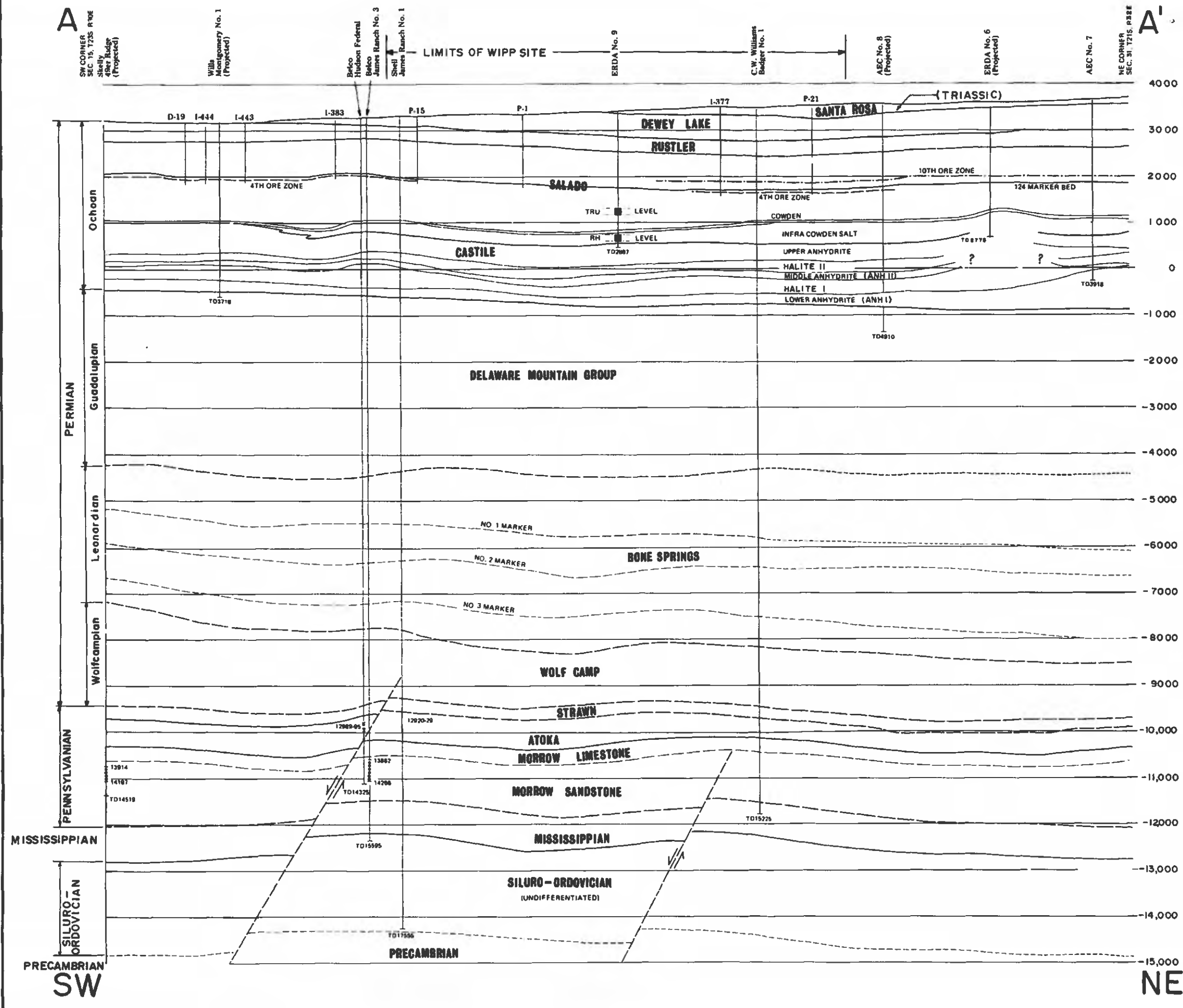
APPENDICES



REFERENCE:
Netherland, Sewell & Associates, 1974, Exbt G-18

GENERALIZED SITE STRATIGRAPHIC SECTION

FIGURE 4.3-1



REFERENCE:
Griswold, 1977, figure 6

0 1 2 3
HORIZONTAL SCALE IN MILES
VERTICAL EXAGGERATION, APPROX. 3 1/2 TIMES
DATUM IS MEAN SEA LEVEL

SITE GEOLOGIC SECTION A-A'

FIGURE 4.4-4

***GEOHYDROLOGY OF THE PROPOSED WASTE ISOLATION
PILOT PLANT SITE, LOS MEDAÑOS AREA,
SOUTHEASTERN NEW MEXICO***

By Jerry W. Mercer

U.S. GEOLOGICAL SURVEY

Water-Resources Investigations Report 83-4016

Prepared in cooperation with the

U.S. DEPARTMENT OF ENERGY

Albuquerque, New Mexico

1983



UNITED STATES DEPARTMENT OF THE INTERIOR

JAMES G. WATT, Secretary

GEOLOGICAL SURVEY

Dallas L. Peck, Director

For additional information
write to:

District Chief
U.S. Geological Survey
Water Resources Division
505 Marquette NW, Room 720
Albuquerque, New Mexico 87102

For sale by:

Open-File Services Section
Branch of Distribution
U.S. Geological Survey, MS 306
Box 25425, Denver Federal Center
Denver, Colorado 80225
(303) 234-5888

CONTENTS

Abstract -----	Page 1
Introduction -----	3
Purpose and scope -----	3
Location and areal extent -----	5
Previous investigations -----	6
Methods of investigation -----	7
Acknowledgments -----	9
Geologic setting -----	10
Stratigraphy -----	10
Delaware Mountain Group -----	10
Bell Canyon Formation -----	11
Guadalupian reef complex -----	14
Ochoan Series -----	15
Castile Formation -----	15
Salado Formation -----	16
Rustler Formation -----	16
Dewey Lake Red Beds -----	17
Upper Triassic rocks -----	19
Santa Rosa Sandstone -----	19
Chinle Formation -----	19
Tertiary and Quaternary rocks -----	21
Ogallala Formation -----	21
Gatuña Formation -----	21
Mescalero caliche -----	21
Alluvium and other surficial deposits -----	21
Ground-water hydrology -----	24
Hydrology of the Delaware Mountain Group -----	26
Geohydrologic characteristics -----	26
Ground-water movement -----	31
Hydrochemistry -----	32

CONTENTS - CONCLUDED

	Page
Ground-water hydrology -- concluded	
Hydrology of the Guadalupian reef complex -----	34
Geohydrologic characteristics -----	34
Ground-water movement -----	38
Hydrochemistry -----	38
Hydrology of the Castile Formation -----	39
Geohydrologic characteristics -----	39
Ground-water movement -----	41
Hydrology of the Salado Formation-----	41
Hydrology of the Rustler Formation-----	43
Hydrology of the Rustler-Salado contact residuum -----	48
Hydrology of the Culebra Dolomite Member of the Rustler Formation -----	56
Hydrology of the Magenta Dolomite Member of the Rustler Formation -----	63
Hydrology of the Dewey Lake Red Beds -----	68
Geohydrologic characteristics -----	68
Ground-water movement -----	70
Hydrology of the Upper Triassic Santa Rosa Sandstone -----	71
Geohydrologic characteristics -----	71
Ground-water movement -----	71
Hydrology of Tertiary and Quaternary rocks -----	72
Gatuña Formation -----	72
Surficial deposits and alluvium -----	73
Surface-water hydrology -----	75
Summary and conclusions -----	76
References -----	80

ILLUSTRATIONS

	Page
Figure 1. Map showing location of Los Medaños area and the proposed Waste Isolation Pilot Plant (WIPP) site -----	4
1a. Map showing location of test holes at and near the proposed Waste Isolation Pilot Plant (WIPP) site -----	8
2. Generalized stratigraphic section showing the relationships of the Guadalupian reef complex to those of the Delaware Mountain Group, southeastern New Mexico -----	12
3. Diagram showing stratigraphic relationships of the Delaware Mountain Group, Texas and New Mexico -----	13
4. Diagram showing the five subdivisions of the Rustler Formation in Nash Draw, Eddy County, New Mexico -----	18
5. Geologic section across the proposed Waste Isolation Pilot Plant (WIPP) site -----	20
6. Map showing generalized subsurface extent of Cenozoic fill in southeastern Eddy County, New Mexico -----	23
7. Map showing generalized structure contours on top of the Lamar shale (informal unit) of the Bell Canyon Formation (Delaware Mountain Group) in the Delaware Basin, New Mexico and Texas -----	28
8. Generalized geologic section across the El Mar Field, Loving County, Texas -----	30
9. Map showing potentiometric surface of the hydrologic unit in the upper part of the Bell Canyon Formation (Delaware Mountain Group) at and near the proposed Waste Isolation Pilot Plant (WIPP) site -----	33
10. Stratigraphic section showing steepness of the basinal edge of Capitan aquifer, Lea County, New Mexico -----	35
11. Map showing potentiometric surface of the Capitan aquifer in the vicinity of the proposed Waste Isolation Pilot Plant (WIPP) site -----	36
12. Photographs of core sections from hydrologic units of the Rustler and Salado Formations -----	44

ILLUSTRATIONS - CONCLUDED

	Page
Figure 13. Map showing presence of halite beds and thickness of the Rustler Formation at and near the proposed Waste Isolation Pilot Plant (WIPP) site -----	46
14. Map showing approximate areal extent of the "brine aquifer" near the proposed Waste Isolation Pilot Plant (WIPP) site -----	49
15. Map showing adjusted potentiometric surface of the Rustler-Salado contact residuum (1982) at and near the proposed Waste Isolation Pilot Plant (WIPP) site --	52
16. Map showing concentrations of major chemical constituents in water from the Rustler-Salado contact residuum at and near the proposed Waste Isolation Pilot Plant (WIPP) site -----	55
17. Map showing adjusted potentiometric surface of the Culebra Dolomite Member of the Rustler Formation (1982) at and near the proposed Waste Isolation Pilot Plant (WIPP) site -----	57
18. Photograph showing outcrop of Culebra Dolomite Member of Rustler Formation where removal of underlying halite has caused fracturing -----	59
19. Map showing concentrations of major chemical constituents in water from the Culebra Dolomite Member of the Rustler Formation at and near the proposed Waste Isolation Pilot Plant (WIPP) site -----	64
20. Map showing adjusted potentiometric surface of the Magenta Dolomite Member of the Rustler Formation (1982) at and near the proposed Waste Isolation Pilot Plant (WIPP) site -----	66
21. Map showing concentrations of major chemical constituents in water from the Magenta Dolomite Member of the Rustler Formation at and near the proposed Waste Isolation Pilot Plant (WIPP) site -----	69

TABLES

	Page
Table 1. Geologic and hydrologic data from test holes drilled at and near the proposed Waste Isolation Pilot Plant site -----	88
2. Selected chemical and radiochemical analyses of water from test holes at and near the proposed Waste Isolation Pilot Plant site -----	94
3. Stratigraphic summary of rock units of Permian (Guadalupian and Ochoan) and younger age underlying the proposed Waste Isolation Pilot Plant site and adjacent areas -----	101
4. Summary of drill-stem tests at test holes AEC-7, AEC-8, and ERDA-10, upper part of the Bell Canyon Formation in the vicinity of the proposed Waste Isolation Pilot Plant site -----	102
5. Major cations and anions in water from test holes AEC-7, AEC-8, and ERDA-10 completed in the upper part of the Bell Canyon Formation in the vicinity of the proposed Waste Isolation Pilot Plant site -----	103
6. Measured and density-corrected water levels in selected test holes completed in the Rustler-Salado contact residuum at and near the proposed Waste Isolation Pilot Plant site -----	104
7. Values of transmissivity and storage coefficient for water-bearing zones in the Rustler Formation penetrated by selected test holes at and near the proposed Waste Isolation Pilot Plant site -----	105
8. Major cations and anions in water from the Rustler Formation (Magenta Dolomite Member, Culebra Dolomite Member, Rustler-Salado contact residuum) at and near the proposed Waste Isolation Pilot Plant site -----	106
9. Measured and density-corrected water levels in selected test holes completed in the Culebra Dolomite Member of the Rustler Formation at and near the proposed Waste Isolation Pilot Plant site -----	112
10. Measured and density-corrected water levels in selected test holes completed in the Magenta Dolomite Member of the Rustler Formation at and near the proposed Waste Isolation Pilot Plant site -----	113

CONVERSION FACTORS

In this report figures for measurements are given in inch-pound units only. The following table contains factors for converting to International System (S.I.) units.

<u>Multiply inch-pound units</u>	<u>By</u>	<u>To obtain S.I.units</u>
foot	0.3048	meter
foot per mile	0.1894	meter per kilometer
foot per day	0.3048	meter per day
foot squared per day	0.0929	meter squared per day
gallon per minute	0.06309	liter per second
ton (short)	0.9072	megagram
pound per square inch	0.07031	kilogram per square centimeter
mile	1.609	kilometer
square mile	2.590	square kilometer
inch	25.40	millimeter

Chemical concentrations are given only in metric units--milligrams per liter, micrograms per liter, picocuries per liter, or milliequivalents per liter. Liquid densities are given only in metric units--grams per cubic centimeter.

National Geodetic Vertical Datum of 1929 (NGVD of 1929): A geodetic datum derived from a general adjustment of the first-order level nets of both the United States and Canada, formerly called "Mean Sea Level." NGVD of 1929 is referred to as sea level in this report.

**GEOHYDROLOGY OF THE PROPOSED WASTE
ISOLATION PILOT PLANT SITE, LOS MEDAÑOS
AREA, SOUTHEASTERN NEW MEXICO**

by Jerry W. Mercer

ABSTRACT

Geohydrologic data have been collected in the Los Medaños area at the U.S. Department of Energy's proposed Waste Isolation Pilot Plant (WIPP) site in southeastern New Mexico since 1975 as part of a study evaluating the feasibility of storing defense-associated nuclear wastes within the bedded salt of the Salado Formation of Permian age. Drilling and hydrologic testing have identified three principal water-bearing zones above the Salado Formation and one below that could potentially transport wastes to the biosphere if the proposed facility were breached. The zones above the Salado are the contact between the Rustler and Salado Formations and the Culebra and Magenta Dolomite Members of the Rustler Formation of Permian age. The zone below the Salado Formation consists of channel sandstones in the Bell Canyon Formation of the Permian Delaware Mountain Group.

Determinations of hydraulic gradients, directions of flow, and hydraulic properties were hindered because of the negligible permeability of the water-bearing zones. Special techniques in drilling, well completion, and hydraulic testing have been developed to determine the hydrologic characteristics of these water-bearing zones.

The Rustler Formation contains the principal water-bearing zones identified at the WIPP site, and thus was the most extensively studied. Calculations from pumping, slug, and pressure-pulse tests indicate that the transmissivities of the units vary laterally within, as well as between, the individual beds. The Culebra Dolomite Member is the most persistent and productive hydrologic unit in the WIPP site area and also has the greatest variability of hydraulic properties. This variability results from the size and number of fractures, which in turn are related to the degree of evaporite dissolution within the Rustler Formation. Transmissivities calculated for the Culebra in Nash Draw immediately west of the WIPP site range from 18 to 1,250 feet squared per day, whereas they range from 1×10^{-3} to 140 feet squared per day at the WIPP site. Potentiometric-surface maps (as equivalent

freshwater heads) indicate flow in the Culebra Dolomite Member of the Rustler Formation at the WIPP site to be southerly, eventually flowing southwestward to Nash Draw. Determination of flow directions, however, may be significantly affected by directional differences in permeability along fractures. The dominant dissolved ions are sodium and chloride, with calcium, magnesium, potassium, and sulfate being other major ions present. Hydrochemistry studies indicate an increase of mineralization of water from west to east along with a decrease in circulation of the flow system. The dissolved-solids concentrations across the WIPP site range from 3,200 to 420,000 milligrams per liter.

The Magenta Dolomite Member is the uppermost hydrologic unit. Water in this unit occurs either in thin silt beds and silty dolomite or in fractures where extensive evaporite dissolution has occurred in the Rustler Formation. Transmissivities calculated for the Magenta in Nash Draw range from 53 to 375 feet squared per day, whereas they range from 4×10^{-3} to 1×10^{-1} foot squared per day at the WIPP site. Potentiometric-surface maps (as equivalent freshwater heads) indicate flow in the Magenta to be westward toward Nash Draw where the flow direction is then controlled by the evaporite dissolution in the Rustler. The water is brackish to briny. The dominant dissolved ions are sodium and chloride with calcium, magnesium, potassium, and sulfate being other major ions. Dissolved-solids concentrations across the WIPP site range from 5,460 to 270,000 milligrams per liter.

The least productive water-producing zone is at the contact between the Rustler and Salado Formations where brine occurs either in an evaporite residuum or in clays along bedding planes. The residuum is concentrated along Nash Draw and is most extensive between Malaga Bend on the Pecos River, 10 miles southwest of the proposed WIPP site, and Laguna Grande de la Sal, where transmissivities are as large as 8,000 feet squared per day. North of Laguna Grande de la Sal in Nash Draw, the transmissivities range from 2×10^{-4} to 8 feet squared per day; transmissivities at the WIPP site range from 3×10^{-5} to 5×10^{-2} foot squared per day. Potentiometric surface maps (as equivalent freshwater heads) indicate flow in the contact zone to the southwest across the WIPP site toward Nash Draw. The dissolved solids in the brines at the Rustler-Salado contact are predominantly sodium chloride with dissolved-solids concentrations ranging from 79,800 to 480,000 milligrams per liter. Large potassium and magnesium ion concentrations in the eastern part of the site may indicate restricted circulation of the brines.

The relative static heads or formation pressures of the hydrologic units in the Rustler decrease with depth; that is, static heads are the highest in the Magenta and the lowest at the contact zone between the Rustler and Salado. In the WIPP site area, the presence of relatively impermeable interbeds of halite and anhydrite probably restricts vertical movement between units. The Rustler Formation probably is recharged in Bear Grass Draw about 20 miles northwest of the WIPP site and in Clayton Basin, which is about 12 miles northwest of the WIPP site. The major discharge occurs at Malaga Bend on the Pecos River.

Data collected from drill-stem tests in test wells penetrating the Bell Canyon Formation indicate that the brines associated with the unit usually occur in relatively isolated channel sandstones that are permeable (hydraulic conductivities ranging from 7×10^{-3} to 5×10^{-2} foot per day) but grade vertically and laterally into siltstones and shales with little permeability. Potentiometric-surface maps (as equivalent freshwater heads) show flow in the Bell Canyon Formation to be laterally across the basin to the northeast, but the movement probably is extremely slow. The dissolved ions in the brines of the Bell Canyon are predominantly sodium and chloride with dissolved-solids concentrations ranging from 180,000 to 270,000 milligrams per liter.

INTRODUCTION

Purpose and Scope

The U.S. Geological Survey, at the request of the U.S. Department of Energy, is investigating the geohydrology of the proposed Waste Isolation Pilot Plant (WIPP) site in an area known as Los Medanos, 30 miles east of Carlsbad, New Mexico (fig. 1). Geohydrologic data have been collected from this area by the U.S. Geological Survey intermittently since 1972 and on a continuous basis since 1975.

The WIPP is a project of the Department of Energy and is proposed as a radioactive-waste storage facility to be placed at a depth of approximately 2,150 feet in the bedded salts of the Permian Salado Formation. The WIPP is planned to demonstrate disposal technology for transuranic wastes. After a period of "pilot" operation in a waste-retrievable mode, it is expected WIPP will be converted into a facility for permanent storage of transuranic wastes (Powers, 1981, p. 119).

The characteristics of the regional geohydrologic systems associated with the WIPP site need to be defined because of the potential for transport of radionuclides to the biosphere by ground water in the event the storage facility is breached. Another equally important aspect of the WIPP study is the determination of the geologic stability of the formation in which the wastes will be placed. Because the formation of concern is easily dissolved halite, the inherent stability of the formation is directly related to the hydrologic regime within and around the formation and needs to be studied in detail.

At the WIPP site, water-bearing zones above and below the salt section could affect stability as well as potentially transport radionuclides. Because some of these water-bearing zones are more likely to be involved than others, the degree of certainty required in the definition of flow paths, velocity of ground water, quality of water, and other characteristics is different for some zones than others.

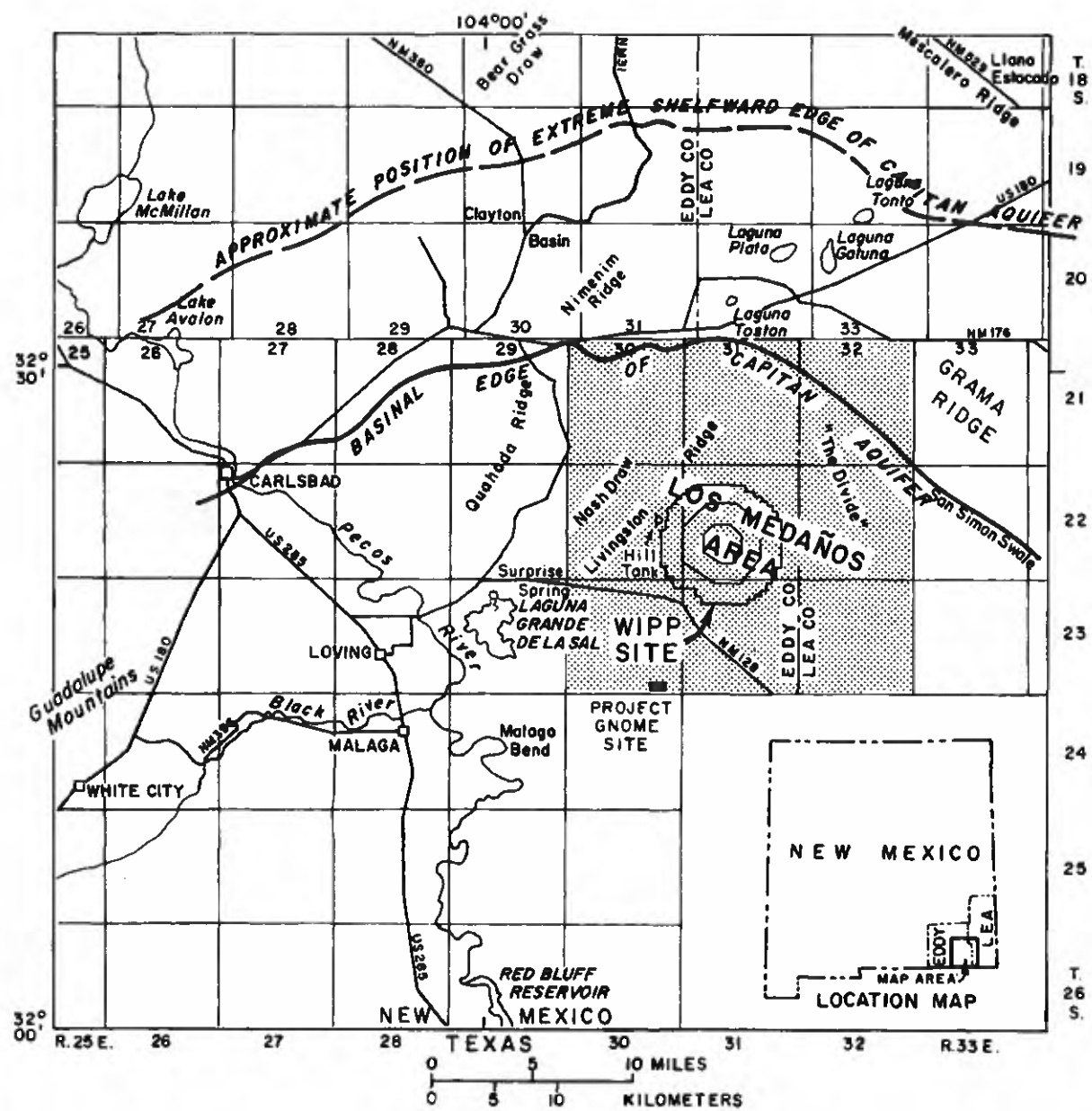


Figure 1.--Location of Los Medaños area and the proposed Waste Isolation Pilot Plant (WIPP) site

This report discusses the ground-water systems and the interpretation of test results in the water-bearing zones above and below the proposed facility. Hydrologic data used in these analyses were collected during 7 years beginning in 1975 and were from 39 test holes drilled for, or converted to, hydrologic test holes. The study included: the determination of potential ground-water flow boundaries; potentiometric heads; ground-water chemistry; and hydraulic properties obtained through pumping, slug, pressure-pulse, and tracer tests.

The hydrologic investigation is part of a comprehensive study related to site characterization and validation conducted on behalf of the U.S. Department of Energy by Sandia National Laboratories. The hydrologic studies were conducted by the U.S. Geological Survey and were designed to supplement the technical site-characterization program performed by Sandia.

Location and Areal Extent

The study area of approximately 800 square miles is located within the northern part of the Delaware Basin in eastern Eddy and western Lea Counties, New Mexico and includes all or part of Tps. 21-23 S., Rs. 30-32 E. (fig. 1). The WIPP site is approximately in the center of the study area and covers about 54 square miles, encompassing almost all of T. 22 S., R. 31 E. (fig. 1). It is outlined in figure 1 by a proposed exclusion boundary, or buffer zone, surrounding the area of the proposed facility.

The WIPP site is in an area referred to as Los Medaños. Los Medaños is part of a gently sloping terrain that rises eastward from the Pecos River to the "caprock" of the Llano Estacado. The topographic relief generally is less than 50 feet; the surface area is covered with sand dunes. Vegetation consists of mesquite, scrub oak, and other plants typical of the northern Chihuahuan desert. The average annual precipitation is 11 to 13 inches, while evaporation from surface water exceeds 98 inches per year. The primary land use is cattle grazing. Potash is being mined in the area to the north and west; petroleum exploration and development recently has become quite intensive.

The major topographic features in the area include two depressions called Nash Draw and Clayton Basin. Nash Draw is the larger, being 4 to 6 miles wide and 15 to 18 miles long, extending southward through the western part of the area (fig. 1). These features are believed to have been formed by solution-subsidence and collapse and then extensively modified by erosion. Neither Nash Draw nor Clayton Basin has external surface drainage.

Los Medaños area is drained by the Pecos River, the only perennial stream in the region. The Pecos drainage system trends southeastward through the western margin of the study area and is at its closest point 10 miles from the WIPP site.

Laguna Grande de la Sal (Great Salt Lake), a large salt lake in the southern end of Nash Draw, contains water most of the time. Numerous small lakes and playas contain water only after intense rains, whereas small permanent tailings ponds, resulting from potash mining, occupy several of the smaller closed depressions.

Previous Investigations

The Delaware Basin geology in southeastern New Mexico has been studied extensively during the past 40 years, especially since the increase in oil and gas exploration. Prior to the establishment of the WIPP project, however, relatively little study was devoted to the Permian formations (above the Bell Canyon Formation), which include the evaporites of concern. Lang (1937) was one of the first to discuss these rock units and topographic features in the area; however, the most intensive geologic work prior to the WIPP project was done by C. L. Jones and others in connection with the U.S. Geological Survey's study of the potash deposits of the Carlsbad area. Reports were prepared by Jones (1954, 1959, 1972), Jones and Madsen (1959), and Jones, Bowles, and Bell (1960). The other significant geologic studies concentrating on this sequence of rocks were related to the Gnome experiment (an underground nuclear test) and include work by Vine (1963), Cooper (1960, 1961, 1962a, and 1962b), and Gard (1968). Numerous recent geologic papers concerned with the WIPP site investigations have been published and are included as references in this report and in a report published by Sandia National Laboratories (Powers and others, 1978).

The first detailed hydrologic work in the area was conducted by Robinson and Lang (1938) during studies of the occurrence of brine springs in the Malaga area during 1937-38. Additional work was performed in the Malaga Bend area from 1938 to 1941; the results of this work, particularly that of Theis and Sayre (1942), was published in "Reports of the participating agencies, the Pecos River Joint Investigation." Further detail on the Malaga Bend salinity problem was added by Hale (1945a, 1945b, 1961), Hale and Clebsch (1958), Hale, Hughes, and Cox (1954), Cox and Kunkler (1962), Cox and Havens (1965), and more recently, Havens and Wilkins (1980) and Kunkler (1980). The regional occurrence of ground water in the area was discussed by Hendrickson and Jones (1952) and Nicholson and Clebsch (1961). Hiss (1976) made an extensive contribution to the hydrology of the Capitan Reef in a dissertation prepared while working with the U.S. Geological Survey. Others that made contributions to an understanding of the Capitan Reef include Bjorklund and Motts (1959), Halpenny and Greene (1966), and Motts (1968). Associated with

the Project Gnome investigations, contributions by Cooper (1961, 1962a, 1962b), Cooper and others (1962), and Cooper and Glanzman (1971) have greatly added to an understanding of the geohydrology of the Rustler Formation.

Recent investigations related to hydrologic characteristics of the WIPP site began with a review of the geology and hydrology of the Carlsbad potash area (Brokaw, Jones, Cooley, and Hays, 1972) and a review of the Los Medanos area (Jones, Cooley, and Bachman, 1973). A review of the regional hydrology of the WIPP site area was presented by Mercer and Orr (1977), while detailed hydrologic studies are included in an interim data report by Mercer and Orr (1979) and in a paper by Mercer and Gonzalez (1981).

The dissolution in the WIPP area is complex and has been considered in studies of the Cenozoic history of the area by Bachman (1973, 1974, 1976, 1980, and 1981). These studies added greatly to an understanding of the hydrologic systems in the area. Additional interpretations of dissolution have been prepared by Lambert (1982) and Anderson (1978, 1981).

Methods of Investigation

The objective of the hydrologic program was to define the hydrologic characteristics of the flow path of the ground-water system that could potentially transport wastes to the biosphere. Hydrologic information required to define the flow-path characteristics included static heads or reservoir pressures, the magnitude and direction of ground-water flow, and the chemical characteristics of the water that may have an effect on dissolution or on chemical interactions with rocks along the flow path.

The lack of very permeable rocks and the consequent lack of existing wells within the WIPP study area necessitated the development of a comprehensive drilling and testing program. This program included test holes for both site-specific geohydrologic studies and regional studies. Seventy-one test holes were drilled during WIPP studies; of these, 26 were specifically for hydrologic testing (H series) and 13 of the 45 geologic test holes were later used or converted for hydrologic testing (table 1, fig. 1a). These holes range in depth from 154 to 4,910 feet. Because the water-producing zones had little permeability and consequently would require months of recovery time and testing, special techniques in drilling, well completion, and hydraulic testing were developed to determine the hydrologic characteristics of the water-producing zones (Basler, 1983).

The air-rotary method was used to drill two types of holes specifically designed for hydrologic testing: (1) Holes were drilled, cased, cemented, and then perforated at the selected test zone; and (2) three closely spaced holes were drilled in a complex, each cased down to a specific test interval.

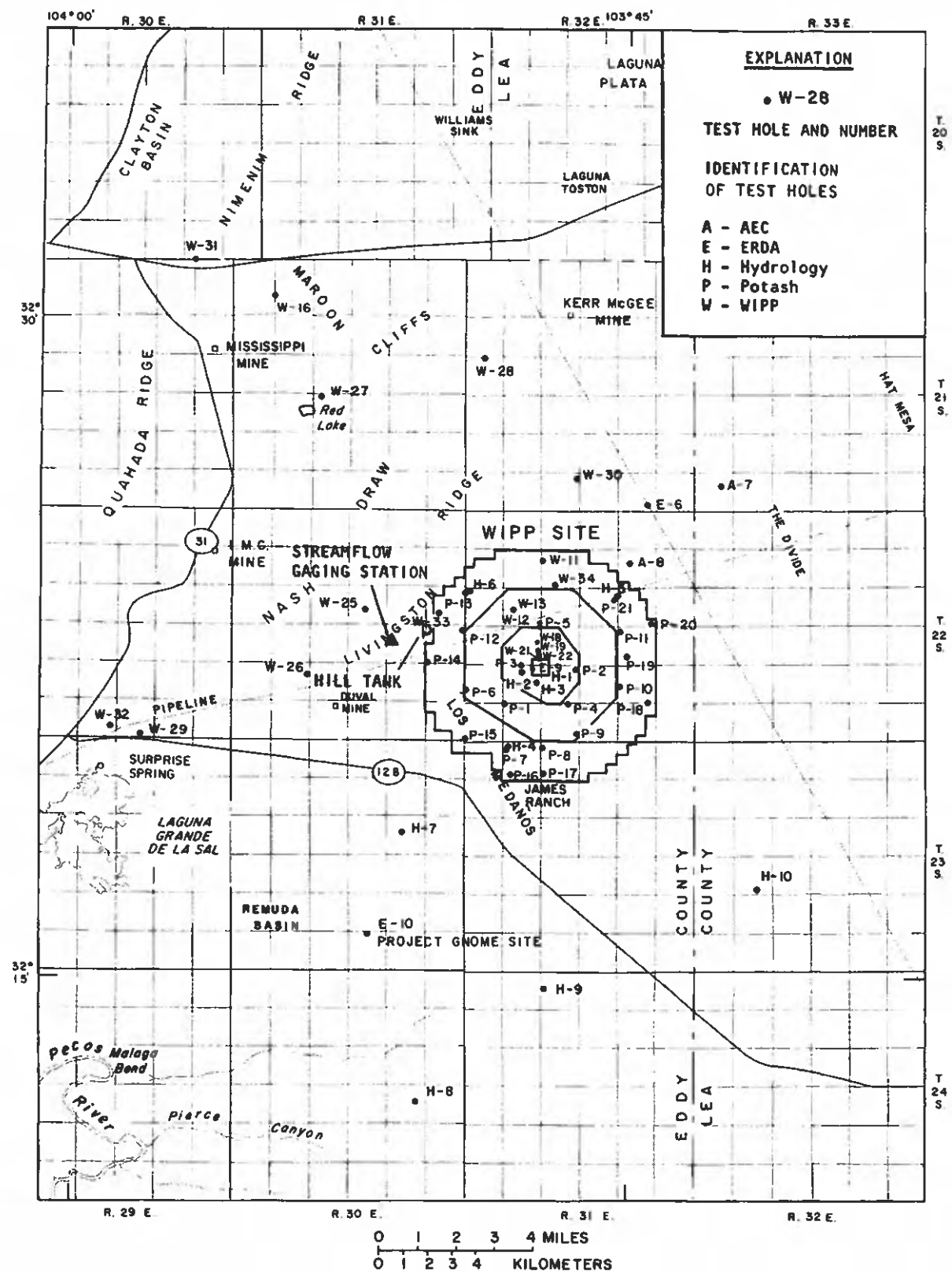


Figure 1a.--Location of test holes at and near the proposed Waste Isolation Pilot Plant (WIPP) site

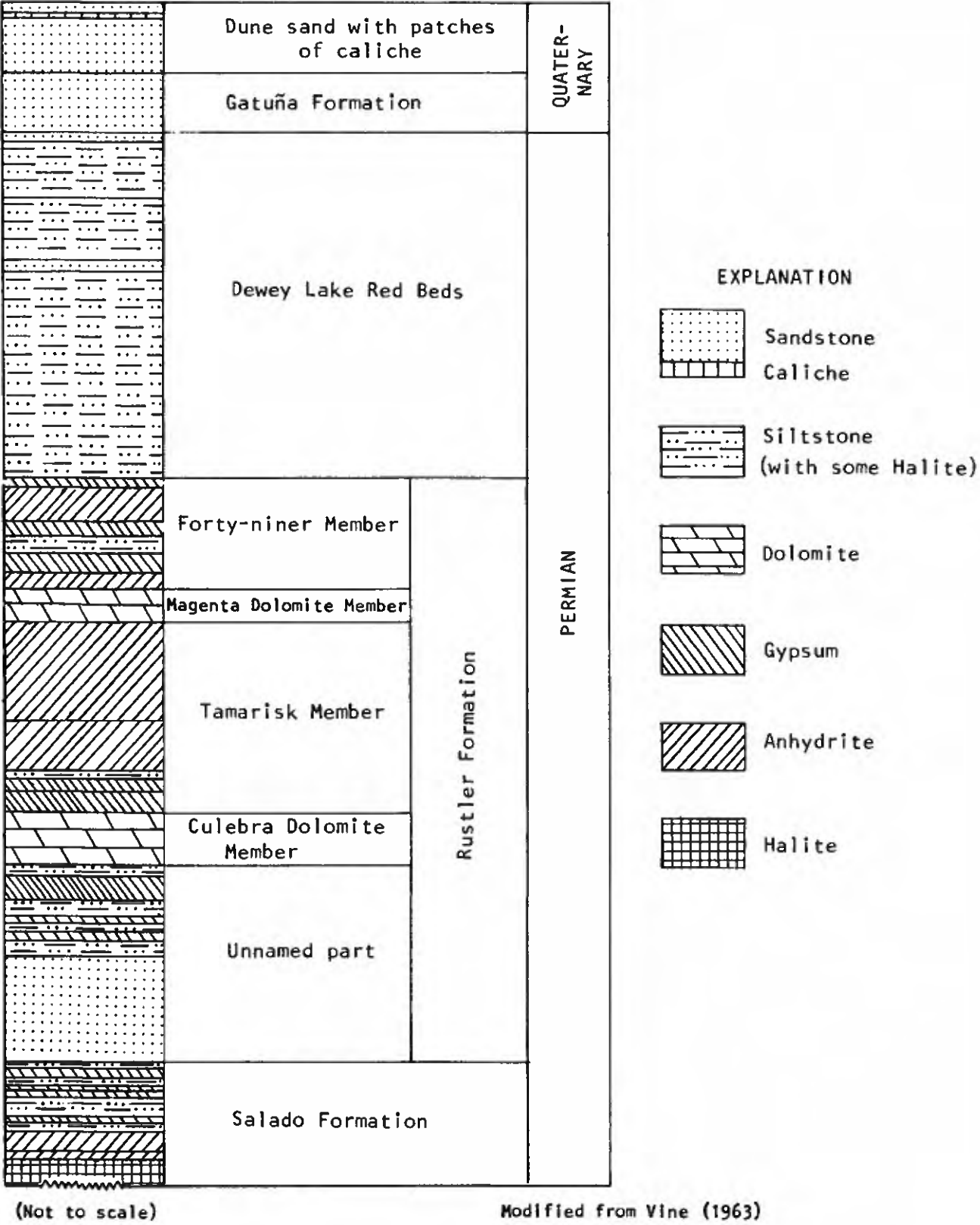


Figure 4.--The five subdivisions of the Rustler Formation in Nash Draw, Eddy County, New Mexico

18

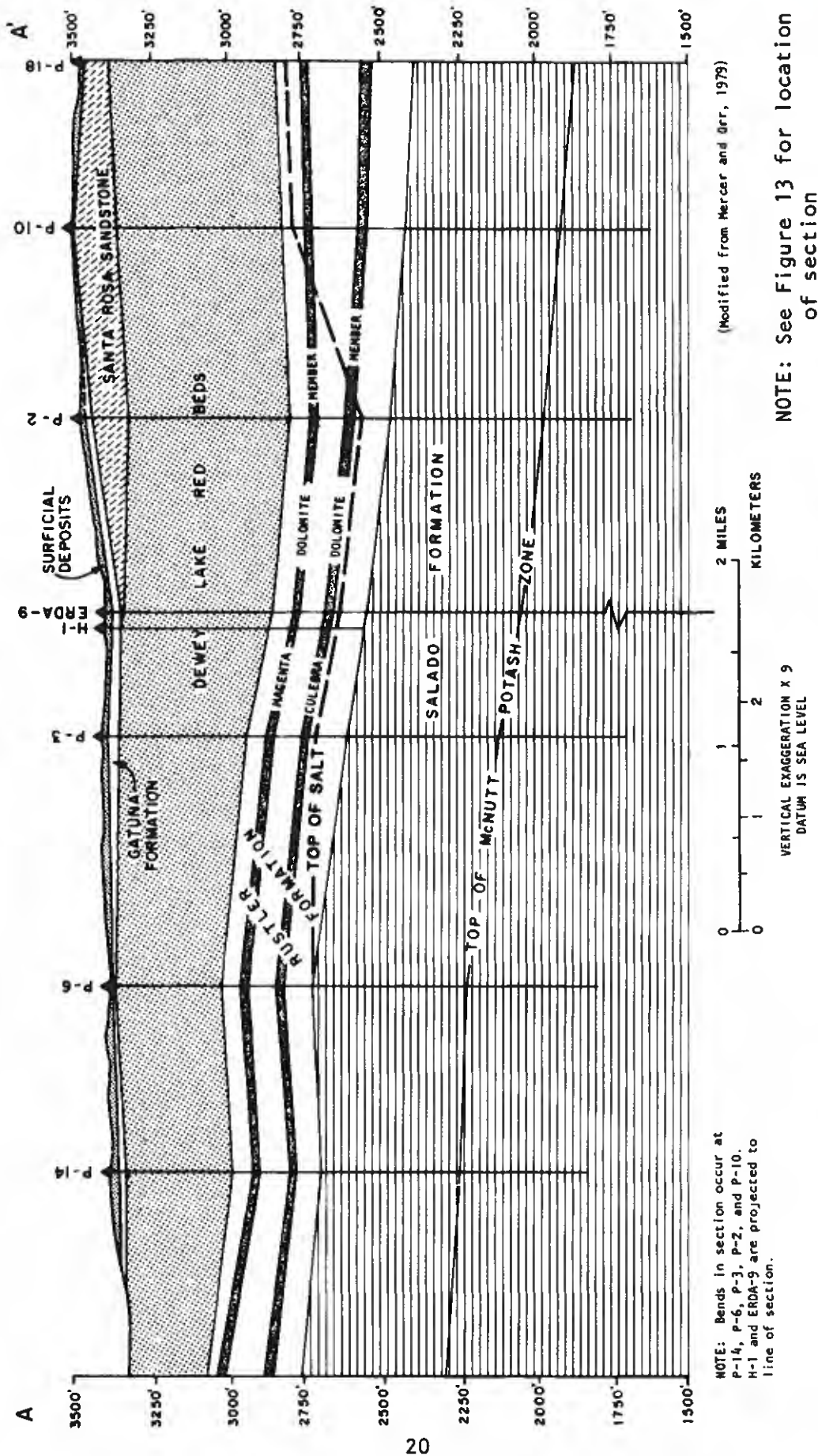


Figure 5.--Geologic section across the proposed Waste Isolation Pilot Plant (WIPP) site.

Table 1. Geologic and hydrologic data from test holes drilled at and near the proposed Waste Isolation Pilot Plant site

[FNL, from north line; FEL, from east line, FSL, from south line; FWL, from west line; Sec., Section; T, Township; R. Range; units, in feet below land surface R; Rustler Formation; S, Salado Formation]

Test hole	Altitude, in feet above sea level	Location		Depth of rock			
		Sec. T. R.	Distance, in feet, from section lines	Surficial deposits	Gatuna Formation	Santa Rosa Formation	Dewey Lake Red Beds
H-1	3397.71	29 22S 31E	623.31FNL 1082.75FEL	0-15	15-35	M.P., (Not Present)	35-502
H-2A	3377.85	29 22S 31E	726.17FNL 1698.43FNL	0-14	14-38	N.P.	38-457
H-2B	3377.68	do	695.57FNL 1660.57FNL	do	do	N.P.	do
H-2C	3377.75	do	637.15FNL 1708.62FNL	do	do	N.P.	do
H-3	3389.48	29 22S 31E	2085.30FSL 138.1FEL	0-4	4-22	N.P.	22-502
H-4A	3332.91	5 23S 31E	545.89FNL 720.00FNL	0-13	13-29	N.P.	29-315
H-4B	3332.76	do	498.47FNL 632.54FNL	do	do	N.P.	do
H-4C	3333.54	do	446.36FNL 717.89FNL	do	do	N.P.	do
H-5A	3506.15	15 22S 31E	1093.12FNL 184.33FEL	0-8	N.P. (Not Present)	8-225	225-732
H-5B	3505.97	do	1006.80FNL 234.21FEL	do	N.P.	do	do
H-5C	3506.37	do	1006.47FNL 134.20FEL	do	N.P.	do	do
H-6A	3347.26	18 22S 31E	283.80FNL 274.93FNL	0-12	12-38	N.P.	38-427
H-6B	3347.57	do	195.61FNL 322.15FNL	do	do	N.P.	do
H-6C	3347.93	do	280.61FNL 374.81FNL	do	do	N.P.	do
H-7A	3163.55	14 23S 30E	2495.04FNL 2492.35FNL	0-5		N.P.	57-87
H-7B	3163.63	do	2565.8FNL 2563.45FNL	do	do	N.P.	do
H-7C	3163.48	do	2591.93FNL 2467.51FNL	do	do		do
H-8A	3433.0	23 24S 30E	1962.61FNL 1486.59FEL	0-4 4-10 Mescalero Caliche	10-153	N.P.	153-399
H-8B	3433.8	do	1994.76FNL 1405.39FEL	do	do	N.P.	do
H-8C	3433.0	do	2059.39FNL 1470.14FEL	do	do	N.P.	do
H-9A	3405.4	4 24S 31E	2392.14FNL 138.92FNL	0-5	5-25	N.P.	24-455
H-9B	3405.6	do	2391.04FNL 283.63FNL	do	do	N.P.	do
H-9C	3405.9	do	2479.06FNL 188.02FNL	do	do	N.P.	do
H-10A	3686.52	20 23S 32E	433.04FSL 2068.91FEL	0-9	9-90	90-482 Chinle 482-658	658-1204
H-10B	3687.01	do	484.54FSL 1984.84FEL	do	do	do	do
H-10C	3686.88	do	384.54FSL 1981.84FEL	do	do	do	do

Rustler Formation	Magenta Dolomite Member of Rustler Formation		Culebra Dolomite Member of Rustler Formation		Top of Salado Formation	Top of salt in Salado Formation	Top of McNitt potash zone	Top of Castle Formation	Test hole depth in feet
502-824	563-589		676-699		824	731(R)			856
457-	515-543								563
457	515-543		623-645		N.P.				661
457-764	515-543		623-645		764	676(R)			795
502-821	559-584		672-694		821	823(S)			894
315-	375-400								415
315-	377-402		498-522						529
315-626	377-403		490-516		626	7			661
732-	783-810		897-920						824
732-	785-805		897-920						925
732-1041	788-812		899-924		1041				1076
427-	492-511								525
427-	492-511		604-627						640
427-721	490-514		604-627		721	723.4(S)			741
87-283	117-140								154
87-283	117-140		237-283						286
87-283	117-140		237-273.5		283	405(S)			420
399-	466-488								505
399-	466-488		588-614						624
399-733	466-488		588-614		733	798(S)			808
455-	523-554								559
455-	523-554		647-677						708
455-791	523-554		647-677		791	791(S)			816
1204-	1256-1280								1318
1204-	1256-1280		1360-1391						1398
1204-1501	1256-1280		1360-1391		1501	1501(S)			1536

Table 1. Geologic and hydrologic data from test holes drilled at and near the proposed Waste Isolation Pilot Plant site - Continued

Test hole	Altitude, in feet above sea level	Location		Depth of rock			
		Sec. T. R.	Distance, in feet, from section lines	Surficial deposits	Gatuna Formation	Santa Rosa Formation	Dewey Lake Red Beds
P-1	3345.1	29 22S 31E	328FSL 552FWL	0-10	10-40	N.P.	40-358
P-2	3479.4	28 22S 31E	121FNL 171FEL	0-18	18-38	38-164	164-690
P-3	3382.7	20 22S 31E	104FSL 2154FWL	0-10	10-41	N.P.	41-468
P-4	3443.8	28 22S 31E	149FSL 1485FEL	0-8	N.P.	8-99	99-609
P-5	3470.9	17 22S 31E	186FSL 160FEL	0-13	N.P.	13-146	146-623
P-6	3354.1	30 22S 31E	2509FNL 195FWL	0-8	8-18	N.P.	18-357
P-7	3332.0	5 23S 31E	514FNL 393FWL	0-11	11-45	N.P.	45-312
P-8	3338.6	4 23S 31E	640FNL 92FWL	0-11	9-39	N.P.	39-391
P-9	3411.5	33 22S 31E	1493FSL 126FEL	0-11	N.P.	11-66	66-562
P-10	3509.3	26 22S 31E	2341FNL 323FWL	0-8	N.P.	8-151	151-686
P-11	3503.9	23 22S 31E	156FNL 183FWL	0-9	N.P.	9-224	224-745
P-12	3373.6	24 22S 30E	165FNL 198FEL	0-8	N.P.	N.P.	8-461
P-13	3345.2	18 22S 31E	110FNL 147FWL	0-12	12-38	N.P.	38-427
P-14	3359.6	24 22S 30E	309FSL 613FWL	0-10	10-42	N.P.	42-387
P-15	3309.5	31-22S 31E	411FSL 190FWL	0-11	11-32	N.P.	32-231
P-16	3317.9	5 23S 31E	939FSL 1647FWL	0-14	14-32	N.P.	32-316
P-17	3335.9	4 23S 31E	1356FSL 398FWL	0-14	14-46	N.P.	46-382
P-18	3477.2	26 22S 31E	139FSL 733FEL	0-9	N.P.	9-87	87-628
P-19	3545.1	23 22S 31E	1652FSL 2335FWL	0-8	N.P.	8-232	232-758
P-20	3552.7	14 22S 31E	801FSL 79FEL	0-6	N.P.	6-261	261-780
P-21	3509	15 22S 31E	859FNL 130FEL	0-8	N.P.	8-225	225-734
ERDA-6	3540.2	35 21S 31E	2152FSL 910FEL	0-17	17-42	42-71	71-536
ERDA-9	3418.86	20 22S 31E	267.23FSL 176.74FEL	0-15	15-42	42-51	51-538
ERDA-10	3371.2	34 23S 30E	200FNL 2327FEL	0-5	5-151	N.P.	151-366
AEC-7	3654.00	31 21S 32E	2040FNL 2040FEL	0-12	N.P.	12-112	112-662
AEC-8	3531.5	11 22S 31E	935FNL 1979FWL		?	31-165	165-660

Rustler Formation	Magenta Dolomite Member of Rustler Formation	Culebra Dolomite Member of Rustler Formation	Top of Salado Formation	Top of salt in Salado Formation	Top of McNutt potash zone	Top of Castile Formation	Test hole depth in feet
358-677	423-448	538-565	677	597 (R)	1191-1583		1591.0
690-1008	748-773	857-883	1008	906 (R)	1506-1883		1895.0
468-786	529-553	642-665	786	688 (R)	1287-1668		1676.0
609-930	662-686	775-802	930	826 (R)	1446-1853		1857.0
623-947	686-711	804-827	947	350 (R)	1428-1785		1830.6
357-659	417-443	537-560	659	661 (S)	1162-1560		1573.0
312-630	373-398	496-522	630	562 (R)	1155-1566		1575.0
391-715	450-474	563-588	715	606 (R)	1237-1652		1660.0
562-881	617-644	734-757	881	778 (R)	1401-1796		1796.0
686-1086	757-781	931-957	1086	712 (R)	1594-1983		2010.8
745-1058	798-823	912-938	1058	958 (R)	1550-1917		1943.1
461-749	519-543	633-656	749	752 (S)	1226-1597		1598.4
427-721	490-514	604-627	721	725 (S)	1201-1547		1577.3
387-687	453-477	573-595	687	695 (S)	1158-1510		1545.0
231-542	294-321	413-435	542	460 (R)	1057-1453		1465.0
316-646	376-401	500-523	646	552 (R)	1174-1585		1585.0
382-715	438-463	558-583	715	602 (R)	1234-1648		1660.7
628-1088	704-730	909-938	1088	654 (R)	1604-2087		2000.5
758-1117	814-839	967-997	1117	890 (R)	1621-2011 projected		2000.0
780-1103	839-866	953-979	1103	1002 (R)	1604-1977		1994.5
734-1043	788-812	893-924	1043	944 (R)	1526-1887		1916.5
536-815	595-621	710-735	815	815 (S)		2401	2775
538-848	596-620	704-727	848	750 (S)	1350-1730	2824	2876.6
366-628	366-385	476-504	628	678 (S)		2337 3829 (D)	4418
662-991	733-759	870-896	991	930 (R) 1000 (S)		3004 4522 (D)	4721
660-985	715-738	833-859	985	985 (S)		2966 4343 (D)	4910

Table 1. Geologic and hydrologic data from test holes drilled at and near the proposed Waste Isolation Pilot Plant site - Concluded

Test hole	Altitude, in feet above sea level	Location		Depth of rock			
		Sec. T. R.	Distance, in feet, from section lines	Surficial deposits	Gatuna Formation	Santa Rosa Formation	Dewey Lake Red Beds
WIPP-11	3426.07	9 22S 31E	711.70FNL 394.08FWL	0-13	13-29	29-161	161-663
WIPP-12	3471.53	17 22S 31E	147.9FSL 83.91FEL	0-9	N.P.	9-155	155-628
WIPP-13	3405.43	17 22S 31E	2565.68FSL 1730.59FWL	0-13	N.P.	13-66	66-517
WIPP-15	3269.34	18 23S 35E	2426FNL 1793FWL			543-2726 (Chinle)	
WIPP-16	3383	5 21S 30E	2355FSL 140FWL	(0-1148)Rubble?			
WIPP-18	3456.47	20 22S 31E	983.58FNL 11.45FEL	0-9	N.P.	9-138	138-613
WIPP-19	3433.13	20 22S 31E	2987.34FSL 12.68FEL	0-14	N.P.	14-96	96-589
WIPP-21	3417.00	20 22S 31E	1551.08FSL 11.74FEL	0-12	12-39	39-73	73-560
WIPP-22	3425.83	20 22S 31E	2544.45FSL 11.94FEL	0-20	20-25	25-80	80-573
WIPP-25	3212.51	15 22S 30E	1852.72FSL 2838.1FEL	0-10	N.P.	N.P.	10-232
WIPP-26	3151.91	29 22S 30E	2232.27FNL 12.2FEL	0-10	N.P.	N.P.	N.P.
WIPP-27	3177.17	21 21S 30E	89.79FNL 1485.03FWL	0-79		N.P.	79-153
WIPP-28	3346.76	18 21S 31E	98.72FNL 2400.99FEL	0-12	N.P.	N.P.	12-215
WIPP-29	2976.99	34 22S 29E	406.62FSL 1827.54FEL	0-12	N.P.	N.P.	N.P.
WIPP-30	3427.54	33 21S 31E	667.5FNL 177.41FWL		N.P.	N.P.	0-449
WIPP-31	3401.43	35 20S 30E	422.54FSL 1762.24FWL		N.P.	0(Breccia)	38(Breccia)
WIPP-32	3023.00	33 22S 29E	1673FSL 29FEL				
WIPP-33	3323.00	13 22S 30E	1762FSL 2427FWL	0-40			40-398
WIPP-34	3433.00	9 22S 31E	202FSL 2000FWL	0-11		11-154	154-657
B-25	3408.74	20 22S 31E	N 9414.91 E 6693.11* *N.M. State Coordinates	0-10 10-14 Mescalero Caliche	14-34.7	34.7-44.8	44.8-533

Rustler Formation	Magenta Dolomite Member of Rustler Formation	Culebra Dolomite Member of Rustler Formation	Top of Salado Formation	Top of salt in Salado Formation	Top of McNutt potash zone	Top of Castile Formation	Test hole depth in feet
663-951	727-750	844-867	951	951(S)		2330	3580.6
628-955	690-715	810-835	955	857(R) 955(S)		2727	2777.8
517-844	564-583	701-724	844	774(R) 918(S)			1025
							810.5
1148-1300+	1189-1199	1153-1176					1300
613-928	672-696	786-808	928	829(R) 928(S)			1060
589-894	647-672	756-777	894	894(S)			1038
560-868	618-641	729-753	868	770(R) 868(S)			1045
573-883	630-654	742-764	883	785(R) 884(S)			1450
232-565	302-328	447-472	565	600(S)			655
10-309	70-99	186-209	309	320(S)			503
153-416	176-194	292-318	416	508(S)			592
215-531.0	285-310	420-446	531	589 (S)			801
N.P.	N.P.	12-42	143	251(S)			376
449-749	513-537	631-654	749	749(S)			913
750(Breccia)	1981(Breccia)		N.P.				1981
0-166	19-36	61-90	166-390				390
398-675	449-468	550-578	657-840				840
657-973	718-741	834-860	973-1820+				1820
533-842.9	592.7-617	704.1-728	842.9				901

Table 2.--Selected chemical and radiochemical analyses of water from test holes at and near the proposed Waste Isolation Pilot Plant site

[GEOLOGIC UNIT: 231SNRS, Santa Rosa Sandstone; 313BLCN, Bell Canyon Formation; 312RSLRL, Rustler-Salado residuum; 312CLBR, Culebra Dolomite Member; 310MGNT, Magenta Dolomite Member. GM/ML AT 20 C: Grams per milliliter at 20 degrees Celsius; MG/L: milligrams per liter; UG/L: micrograms per liter; PCI/L: picocuries per liter.]

WELL	DATE OF SAMPLE	GEO-LOGIC UNIT	DENSITY (GM/ML AT 20 C)	PH (UNITS)	ALKA-LIMITY		BICARBONATE		NITRO-GEN		HARD-NESS	
					FIELD (MG/L AS CAC03)	FIELD (MG/L AS CAC03)	FET-FLD (MG/L AS HC03)	FET-FLD (MG/L AS C03)	NO2+NO3 DIS-SOLVED (MG/L AS N)	SULFIDE TOTAL (MG/L AS S)	MESS (MG/L AS CAC03)	MESS (MG/L AS CAC03)
H-5C	78-05-24	231SNRS	--	--	200	240	--	--	.36	--	--	150
AEC-7	79-04-28	313BLCN	1.130	--	43	--	--	--	--	--	--	35000
AEC-8	77-09-27	313BLCN	1.060	6.3	--	--	--	--	--	--	--	--
ERDA-10	77-09-29	313BLCN	1.165	7.7	90	110	0	3.1	--	.2	--	19000

WELL	HARD-NESS (MG/L AS CAC03)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM DIS-SOLVED (MG/L AS MG)	SODIUM DIS-SOLVED (MG/L AS NA)	POTAS-SIUM DIS-SOLVED (MG/L AS K)	CHLO-RIDE DIS-SOLVED (MG/L AS CL)	SULFATE DIS-SOLVED (MG/L AS SO4)	FLUO-RIDE DIS-SOLVED (MG/L AS F)	SILICA DIS-SOLVED (MG/L AS SiO2)	BORON DIS-SOLVED (UG/L AS B)	SOLIDS, RESIDUE AT 105 DEG. C, DIS-SOLVED (MG/L)
H-5C	150	56	51	280	25	120	530	1.2	11.0	890	1200
AEC-7	35000	9700	2600	55000	970	110000	1800	1.4	14.0	76000	180000
AEC-8	--	--	--	--	--	--	--	--	--	--	230000
ERDA-10	19000	5300	1300	89000	720	150000	2400	0.3	3.4	20000	270000

Table 2.—Selected chemical and radiochemical analyses of water from test holes at and near the proposed Waste Isolation Pilot Plant site - Continued

WELL	DATE OF SAMPLE	GEO-LOGIC UNIT	DENSITY (GM/ML AT 20 C)	PH (UNITS)	ALKALI-LINITY FIELD		BICARBONATE FET-FLD		NITRO-GEN, NO2+NO3		SULFIDE TOTAL (MG/L AS S)	HARD-NESS (MG/L AS CAC03)
					(MG/L AS CAC03)	(MG/L AS)	(MG/L AS C03)	(MG/L AS N)	(MG/L AS S)			
H-1	77-02-23	312RSRL	--	7.9	554	675	0	0	.29	--	140000	
H-2C	77-02-23	312RSRL	--	5.9	163	199	0	0	1.1	--	130000	
H-3	77-02-23	312RSRL	--	7.6	383	467	0	0	.77	--	150000	
H-4C	79-03-16	312RSRL	--	--	1	1	0	0	.27	--	130000	
H-5C	79-05-16	312RSRL	--	--	180	300	--	--	--	--	340000	
H-6C	79-04-09	312RSRL	--	--	1	--	--	--	--	--	97000	
H-7C	80-03-20	312RSRL	1.048	6.8	35	--	--	--	.03	--	10000	
H-8C	80-09-06	312RSRL	--	7.6	21	--	--	--	.00	.6	4800	
H-9C	80-05-20	312RSRL	1.202	7.0	24	--	--	--	1.1	--	6800	
H-10C	80-05-19	312RSRL	1.198	6.3	53	--	--	--	.84	--	49000	
P-14	77-02-24	312RSRL	--	7.2	182	222	0	0	.34	--	6400	
P-15	79-04-03	312RSRL	--	--	45	--	--	--	--	--	3400	
P-17	79-05-11	312RSRL	--	--	650	--	--	--	.04	--	200000	
P-18	79-05-11	312RSRL	1.266	5.35	400	--	--	--	.06	.0	--	
WIPP-25	80-03-19	312RSRL	1.173	7.2	80	--	--	--	.04	--	15000	
WIPP-26	80-03-18	312RSRL	1.078	8.5	160	--	--	--	.05	--	12000	
WIPP-27	80-05-21	312RSRL	1.205	7.8	--	--	--	--	--	--	--	
WIPP-28	80-03-20	312RSRL	1.140	7.0	--	--	--	--	--	--	--	
WIPP-29	80-03-18	312RSRL	1.068	7.3	130	--	--	--	.23	--	10000	
WIPP-30	80-03-19	312RSRL	1.201	7.0	320	--	--	--	.04	--	12000	

WELL	HARD-NESS, NONCARBONATE (MG/L CAC03)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)		SULFATE DIS-SOLVED (MG/L AS S04)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SI02)		BORON, DIS-SOLVED (UG/L AS B)	SOLIDS, RESIDUE AT 105 DEG. C, DIS-SOLVED (MG/L)
						(MG/L AS CL)	(MG/L AS CL)			(MG/L AS R)	(MG/L)		
H-1	160000	13000	30000	56000	17000	210000	520	--	--	<.1	110000	480000	
H-2C	130000	9200	25000	64000	9100	200000	1300	--	--	2.0	150000	450000	
H-3	150000	18000	25000	59000	14000	210000	370	--	--	1.0	1900	327000	
H-4C	130000	8300	27000	66000	8600	210000	1400	1.7	1.3	1.3	360000	322000	
H-5C	340000	2100	82000	14000	21000	290000	2000	<.1	1.6	1.6	67000	412000	
H-6C	97000	4200	21000	80000	8000	200000	2000	1.0	1.4	1.4	200000	314000	
H-7C	10000	2600	910	22000	210	41000	2900	.8	.8	7.2	3100	79800	
H-8C	4700	1200	430	46000	660	70000	5300	.4	.4	.8	1300	130000	
H-9C	6800	1300	870	130000	1200	190000	2600	.1	.1	3.8	19000	326000	
H-10C	49000	1500	11000	100000	4000	190000	3300	.7	.7	3.2	120000	323000	
P-14	6200	570	1200	120000	1300	180000	10000	--	--	2.0	1700	350000	
P-15	3300	770	350	24000	1400	38000	2800	1.3	1.3	1.3	3700	--	
P-17	200000	15000	40000	23000	8800	180000	1200	3.8	3.8	15	880	--	
P-18	--	10000	37000	48000	12000	220000	480	2.3	2.3	.4	160000	--	
WIPP-25	15000	650	3200	90000	2400	130000	12000	.0	.0	2.6	35000	252000	
WIPP-26	12000	2700	1300	52000	1000	88000	7600	.0	.0	2.5	30000	153000	
WIPP-27	4700	1160	1040	102000	2570	154000	5190	.2	.2	.1	1300	363000	
WIPP-28	13000	615	2070	65000	2070	102000	11000	.2	.2	6.0	54000	129000	
WIPP-29	10000	850	2000	32000	1000	49000	12000	.9	.9	3.5	21000	129000	
WIPP-30	11000	850	2300	120000	1500	170000	7000	.0	.0	3.5	77000	302000	

Table 2.—Selected chemical and radiochemical analyses of water from test holes at and near the proposed Waste Isolation Pilot Plant site - Continued

WELL	DATE OF SAMPLE	SEO-LOGIC UNIT	SELEMIUM, TOTAL (UG/L AS SE)	GROSS ALPHA, DIS-SOLVED (PCI/L AS U-NAT)	GROSS ALPHA, SUSP. TOTAL (PCI/L AS U-NAT)	GROSS BETA, DIS-SOLVED (PCI/L AS CS-137)	GROSS BETA, SUSP. TOTAL (PCI/L AS CS-137)	RADIUM 226, DIS-SOLVED, RADON METHOD (PCI/L)	URANIUM DIS-SOLVED, EXTRAC-TION (UG/L U-NAT)	GROSS ALPHA, DIS-SOLVED (UG/L U-NAT)
H-1	77-02-23	312RSLRL	<1	--	--	16000	160	44	.02	<6300
H-2C	77-02-23	312RSLRL	<1	--	--	8400	91	4.8	2.4	<5000
H-3	77-02-23	312RSLRL	1	--	--	12000	26	51	.06	<6000
H-4C	79-03-16	312RSLRL	<1	<7500	3.3	8900	<.4	340	1.2	<11000
H-5C	79-03-16	312RSLRL	1	<13000	.7	15000	.6	310	<.04	<19000
H-6C	79-04-09	312RSLRL	1	<7500	.9	4800	<.7	280	<.04	<11000
H-7C	80-03-20	312RSLRL	--	<950	--	<580	--	45	1.9	<1400
H-8C	80-09-06	312RSLRL	--	<1800	--	<1100	--	18	.04	<2600
H-9C	80-05-20	312RSLRL	--	<5400	--	7600	--	.31	.45	<8000
H-10C	80-05-19	312RSLRL	--	<5600	--	7200	--	10	.37	<8200
P-14	77-02-24	312RSLRL	1	--	--	<2000	2.3	15	1.3	<3700
P-15	79-04-03	312RSLRL	<1	<1000	<.3	1300	<.4	.59	.08	<1500
P-17	79-05-11	312RSLRL	<1	<7500	4.8	13000	2.8	340	<.05	<11000
WIPP-25	80-03-19	312RSLRL	--	<5200	--	<3600	--	11	.29	<7700
WIPP-26	80-03-18	312RSLRL	--	<3200	--	<1700	--	12	5.2	<4700
WIPP-27	80-05-21	312RSLRL	--	<1200	--	<7100	--	2.4	.07	<1800
WIPP-28	80-03-20	312RSLRL	--	<4100	--	<2700	--	3.6	2.7	<6000
WIPP-29	80-03-18	312RSLRL	--	<1100	--	740	--	1.2	2.0	<1400
WIPP-30	80-03-19	312RSLRL	--	<7500	--	<4500	--	98	<.01	<11000

WELL	GROSS ALPHA, SUSP. TOTAL (UG/L AS U-NAT)	GROSS BETA, DIS-SOLVED (PCI/L AS SR/ YT-90)	GROSS BETA, SUSP. TOTAL (PCI/L AS SR/ YT-90)
H-1	290	12000	120
H-2C	190	6700	76
H-3	68	9600	21
H-4C	4.9	8100	<.4
H-5C	1.1	14000	.6
H-6C	1.3	6200	<.7
H-7C	--	<590	--
H-8C	--	<1100	--
H-9C	--	<7200	--
H-10C	--	<6900	--
P-14	6.3	<1600	1.9
P-15	<.4	1200	<.4
P-17	10	12000	2.5
P-18	<.4	8800	<.4
WIPP-25	--	<3800	--
WIPP-26	--	<1800	--
WIPP-27	--	<15000	--
WIPP-28	--	<2800	--
WIPP-29	--	730	--
WIPP-30	--	<4500	--

Table 2.--Selected chemical and radiochemical analyses of water from test holes at and near the proposed Waste Isolation Pilot Plant site - Continued

WELL	DATE OF SAMPLE	GEO-LOGIC UNIT	DENSITY (GM/ML AT 20 C)	PH	ALKA-LINITY		BICARBONATE		CARBONATE		NITROGEN		SULFIDE		HARDNESS	
					(MG/L AS CAC03)	(MG/L AS)	(MG/L AS)	(MG/L AS)	(MG/L AS)	(MG/L AS)	(MG/L AS N)	(MG/L AS N)	(MG/L AS S)	(MG/L AS S)	(MG/L AS)	(MG/L AS CAC03)
H-1	76-06-02	312CLBR	--	7.6	86	105	0	0	0	0	--	--	.0	.0	3100	
H-28	77-02-22	312CLBR	--	8.4	57	59	5	5	5	5	.01	.01	--	--	2400	
H-3	77-03-17	312CLBR	--	7.4	94	115	0	0	0	0	.07	.07	--	--	4500	
H-48	78-12-14	312CLBR	--	7.6	48	59	--	--	--	--	.02	.02	--	--	2200	
H-58	78-12-19	312CLBR	--	6.8	34	41	--	--	--	--	.01	.01	--	--	8700	
H-68	78-12-20	312CLBR	--	7.3	85	--	--	--	--	--	.02	.02	--	--	7000	
H-78	80-03-20	312CLBR	1.001	7.0	100	--	--	--	--	--	.40	.40	--	--	2000	
H-88	80-02-11	312CLBR	1.000	7.3	61	--	--	--	--	--	.95	.95	--	--	2100	
H-98	80-02-05	312CLBR	--	7.3	90	--	--	--	--	--	.13	.13	--	--	2100	
H-108	80-03-21	312CLBR	1.045	8.3	37	--	--	--	--	--	.01	.01	--	--	8100	
P-14	77-03-14	312CLBR	--	6.0	290	357	0	0	0	0	.01	.01	--	--	11000	
P-15	77-05-10	312CLBR	--	--	92	63	24	24	24	24	.04	.04	--	--	2200	
P-17	77-05-10	312CLBR	--	7.4	63	77	0	0	0	0	.06	.06	--	--	11000	
P-18	77-05-10	312CLBR	--	7.2	254	310	0	0	0	0	.81	.81	--	--	80000	
WIPP-25	80-08-14	312CLBR	1.014	7.3	370	--	--	--	--	--	.67	.67	--	--	3300	
WIPP-26	80-08-18	312CLBR	1.013	6.9	130	--	--	--	--	--	3.5	3.5	--	--	.0	4400
WIPP-27	80-08-22	312CLBR	1.094	6.4	150	--	--	--	--	--	4.0	4.0	--	--	.0	14000
WIPP-28	80-08-21	312CLBR	1.044	6.4	670	--	--	--	--	--	.09	.09	--	--	10	4900
WIPP-29	80-08-20	312CLBR	1.178	6.1	210	--	--	--	--	--	.02	.02	--	--	.0	24000
WIPP-30	80-08-13	312CLBR	1.072	6.8	74	--	--	--	--	--	1.2	1.2	--	--	.0	6300

WELL	HARDNESS, NONCARBONATE (MG/L CAC03)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNESIUM DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	POTASSIUM, DIS-SOLVED (MG/L AS K)	CHLORIDE		SULFATE		FLUORIDE		SILICA		BORON		SOLIDS, RESIDUE AT 105 DEG. C, DIS-SOLVED (MG/L)
						(MG/L AS CL)	(MG/L AS CL)	(MG/L AS SO4)	(MG/L AS SO4)	(MG/L AS F)	(MG/L AS F)	(MG/L AS SI02)	(MG/L AS SI02)	(MG/L AS B)	(MG/L AS B)	(MG/L)
H-1	3000	780	280	9400	190	12000	12000	7400	7400	5.1	5.1	2.7	2.7	2400	2400	30100
H-28	2300	690	160	2100	91	2800	2800	3000	3000	2.0	2.0	1.7	1.7	9500	9500	9700
H-3	6400	1500	670	19000	630	29600	29600	5700	5700	.5	.5	1.2	1.2	20000	20000	62000
H-48	2200	180	430	5800	180	7500	7500	4000	4000	1.9	1.9	5.2	5.2	19000	19000	18100
H-58	8700	340	1900	53000	1400	84000	84000	810	810	1.4	1.4	2.1	2.1	36000	36000	144000
H-68	6900	1200	970	18000	500	28000	28000	3800	3800	1.5	1.5	8.5	8.5	9500	9500	52800
H-78	1900	590	130	210	1.4	350	350	1900	1900	1.4	1.4	39	39	780	780	3610
H-88	2100	570	170	82	4.7	57	57	2000	2000	2.4	2.4	19	19	580	580	3200
H-98	2000	580	150	210	1400	320	320	2000	2000	3.0	3.0	26	26	780	780	3590
H-108	8100	1600	1000	21000	520	36000	36000	5600	5600	1.3	1.3	1.5	1.5	13000	13000	69200
P-14	11000	3100	740	7600	600	20000	20000	1400	1400	.9	.9	33	33	700	700	38000
P-15	2100	770	63	6900	1700	11000	11000	3200	3200	1.2	1.2	1.6	1.6	4700	4700	24000
P-17	11000	1700	1600	30000	120	54000	54000	5000	5000	1.5	1.5	1.0	1.0	100000	100000	97000
P-18	80000	5600	16000	9200	6200	80000	80000	980	980	1.2	1.2	1.4	1.4	1900	1900	420000
WIPP-25	3000	920	250	5100	.9	8300	8300	2400	2400	1.5	1.5	29	29	1800	1800	22100
WIPP-26	4300	1200	340	3400	2.0	8200	8200	2300	2300	1.5	1.5	20	20	1800	1800	23800
WIPP-27	16000	3100	2000	39000	714	77000	77000	3900	3900	.5	.5	13	13	1900	1900	186000
WIPP-28	4300	1200	470	21000	4.0	30000	30000	3200	3200	1.1	1.1	28	28	5400	5400	74000
WIPP-29	25000	810	5700	79000	150	140000	140000	13000	13000	.7	.7	11	11	45000	45000	239000
WIPP-30	6300	1100	870	37000	888	64000	64000	5050	5050	.5	.5	2.9	2.9	64000	64000	110000

Table 2.--Selected chemical and radiochemical analyses of water from test holes at and near the proposed Waste Isolation Pilot Plant site - Continued

WELL	DATE OF SAMPLE	GEO-LOGIC UNIT	SELENIUM, TOTAL (UG/L AS SE)	GROSS ALPHA, DIS-SOLVED (PCI/L AS U-NAT)		GROSS BETA, DIS-SOLVED (PCI/L AS CS-137)		GROSS RADIUM 226, DIS-SOLVED, RADON, METHOD (PCI/L)		GROSS ALPHA, DIS-SOLVED (UG/L AS U-NAT)	
				U-NAT	AS	U-NAT	AS	PCI/L	AS	U-NAT	AS
H-1	79-03-13	312CLBR	<1	<200	<.3	<.4	410	1.7	<.4	<290	<290
H-28	77-02-22	312CLBR	2	--	--	120	110	4.6	--	330	330
H-3	77-03-17	312CLBR	2	--	--	850	--	57	<.4	<880	<880
H-48	78-12-14	312CLBR	<1	--	--	310	--	67	--	720	720
H-5A	78-12-19	312CLBR	<1	2700	--	1100	--	290	--	4000	4000
H-68	78-12-20	312CLBR	5	--	--	<420	--	6.6	--	<1200	<1200
H-78	80-03-20	312CLBR	--	<38	--	19	--	.98	--	<56	<56
H-88	80-02-11	312CLBR	--	62	<.3	<19	--	3.4	--	9.7	9.7
H-98	80-02-05	312CLBR	--	--	--	<25	--	7.3	--	7.4	91
H-108	80-03-21	312CLBR	--	<1100	--	<590	--	29	--	34	<100
P-14	77-03-14	312CLBR	1	--	--	790	--	68	--	.08	<1600
P-15	79-04-11	312CLBR	4	<1300	<.3	4700	<.4	11	<.4	<.01	<390
P-17	77-05-10	312CLBR	1	--	--	1300	<.4	84	--	2.2	<1900
WIPP-25	80-08-14	312CLBR	--	<200	--	<170	.5	190	--	.10	2900
WIPP-26	80-08-18	312CLBR	--	<260	--	<220	--	17	--	.33	<4800
WIPP-27	80-08-22	312CLBR	--	<1800	--	6300	--	18	--	6.1	<290
WIPP-28	80-08-21	312CLBR	--	<1100	--	<1100	--	79	--	12	<380
WIPP-29	80-08-20	312CLBR	--	<7500	--	18000	--	40	--	4.9	<2600
WIPP-30	80-08-13	312CLBR	--	<880	--	<660	--	17	--	1.3	<1600
								64	--	18	<11000
										.29	<1300

WELL	GROSS ALPHA, SUSP. (UG/L AS U-NAT)		GROSS BETA, DIS-SOLVED (PCI/L AS SR/ Y1-90)		GROSS BETA, DIS-SOLVED (PCI/L AS SR/ Y1-90)	
	U-NAT	AS	U-NAT	AS	U-NAT	AS
H-1	<.4	390	<.4	97	<.4	88
H-28	380	--	<.4	710	<.4	--
H-3	<.4	--	--	290	--	--
H-48	--	--	--	1000	--	--
H-58	--	--	--	<390	--	--
H-68	--	--	--	19	--	--
H-78	<.4	<18	<.4	<18	<.4	<.4
H-88	--	<23	--	<610	--	--
H-98	--	<610	--	620	<.4	<.4
P-14	<.4	4300	<.4	4300	<.4	<.4
P-15	<.4	1000	<.4	1000	<.4	<.4
P-17	<.4	6100	<.4	6100	.5	--
P-18	--	<160	--	<160	--	--
WIPP-25	--	<210	--	<210	--	--
WIPP-26	--	6100	--	6100	--	--
WIPP-27	--	<1000	--	<1000	--	--
WIPP-28	--	17000	--	17000	--	--
WIPP-29	--	<600	--	<600	--	--
WIPP-30	--	--	--	--	--	--

Table 2.--Selected chemical and radiochemical analyses of water from test holes at and near the proposed Waste Isolation Pilot Plant site - Continued

WELL	DATE OF SAMPLE	GEO-LOGIC UNIT	DENSITY (GR/ML AT 20 C)	PH (UNITS)	ALKALI		BICARBONATE		NITROGEN		HARDNESS (MG/L AS CAC03)
					LINITY FIELD (MG/L AS CAC03)	FET-FLD (MG/L AS CAC03)	BONATE FET-FLD (MG/L AS C03)	CARBONATE FET-FLD (MG/L AS C03)	NO2+NO3 DIS-SOLVED (MG/L AS N)	SULFIDE TOTAL (MG/L AS S)	
H-1	76-06-04	310MGNT	--	7.4	75	92	0	0	--	.0	3300
H-2A	77-02-22	310MGNT	--	8.6	61	74	0	0	.04	--	2700
H-3	77-05-10	310MGNT	--	8.0	42	51	0	0	.08	--	5000
H-4A	78-12-14	310MGNT	--	8.0	52	63	--	--	.01	--	2200
H-5A	78-12-14	310MGNT	--	7.8	41	50	--	--	.01	--	1300
H-6A	78-12-20	310MGNT	--	7.3	42	51	--	--	.03	--	2000
H-8A	80-02-12	310MGNT	1.006	9.3	26	--	--	--	.06	--	2200
H-9A	80-02-05	310MGNT	1.003	8.5	35	--	--	--	.02	--	2100
H-10A	80-03-21	310MGNT	1.175	7.1	0	--	--	--	.03	--	17000
WIPP-25	80-09-04	310MGNT	1.010	7.5	150	--	--	--	.64	1.2	3300
WIPP-27	80-07-24	310MGNT	1.080	6.8	57	--	--	--	.32	--	11000
WIPP-30	80-09-20	310MGNT	--	6.5	180	--	--	--	.40	1.8	17000
	80-09-24	310MGNT	--	8.8	62	--	--	--	.00	.0	2400

WELL	HARDNESS, NONCARBONATE (MG/L AS CAC03)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNESIUM DIS-SOLVED (MG/L AS MG)	SODIUM DIS-SOLVED (MG/L AS NA)	POTASSIUM DIS-SOLVED (MG/L AS K)	CHLORIDE DIS-SOLVED (MG/L AS CL)	SULFATE DIS-SOLVED (MG/L AS S04)	FLUORIDE DIS-SOLVED (MG/L AS F)	SILICA DIS-SOLVED (MG/L AS SI02)	BORON DIS-SOLVED (UD/L AS B)	SOLIDS, RESIDUE AT 105 DEG. C, DIS-SOLVED (MG/L)
H-1	3300	890	270	5700	70	8000	3900	2.8	1.3	2200	18900
H-2A	2700	820	170	2700	81	4100	2400	--	6.0	220	12000
H-3	4900	1200	480	9300	250	15000	3400	1.8	6.4	13000	32000
H-4A	2100	210	410	7000	130	7500	7000	2.5	6.4	13000	22300
H-5A	1300	240	170	1500	53	880	3200	2.8	9.0	11000	--
H-6A	2000	520	160	1100	46	1200	2700	1.4	7.7	2500	--
H-8A	2200	870	17	2400	84	3500	2100	.7	.9	3100	9410
H-9A	2000	550	170	800	28	750	2700	1.8	3.3	2600	5460
H-10A	17000	2500	2600	93000	510	160000	2700	1.3	1.9	3900	270000
WIPP-25	3100	910	240	3100	.8	5600	1900	1.5	25	1900	18700
WIPP-27	11000	1100	1900	34000	1800	61000	9400	.0	1.7	26000	106000
WIPP-30	17000	3600	2000	43000	10000	85000	2900	.4	13	230	173000
	2400	690	170	5500	190	8700	3200	1.9	.7	12000	19000

Table 2.--Selected chemical and radiochemical analyses of water from test holes at and near the proposed Waste Isolation Pilot Plant site - Concluded

WELL	DATE OF SAMPLE	GEO-LOGIC UNIT	SELE- NIUM, TOTAL (UG/L AS SE)	GROSS ALPHA, DIS- SOLVED (PCI/L AS U-NAT)		GROSS ALPHA, DIS- SUSP. (PCI/L AS U-NAT)		GROSS BETA, DIS- SOLVED (PCI/L AS CS-137)		GROSS BETA, DIS- SUSP. (PCI/L AS CS-137)		RADIUM 226, DIS- SOLVED, RADON METHOD (PCI/L) (U-NAT)		URANIUM DIS- SOLVED, EXTRAC- TION (UG/L) (U-NAT)		GROSS ALPHA, DIS- SOLVED (UG/L AS U-NAT)	
				U-NAT	AS	U-NAT	AS	U-NAT	AS	U-NAT	AS	U-NAT	AS	U-NAT	AS	U-NAT	AS
H-1	77-05-10	310MGNT	1	--	--	--	--	940	--	940	--	170	--	.60	--	<400	--
H-2A	77-02-22	310MGNT	1	--	--	--	--	69	--	69	--	6.1	--	.80	--	<160	--
H-3	77-05-10	310MGNT	7	--	--	--	--	330	--	330	--	44	--	--	--	550	--
	79-05-10	310MGNT	1	<420	--	.3	1300	--	--	--	--	10	--	.24	--	<420	--
H-4A	78-12-14	310MGNT	<1	--	--	--	--	<100	--	--	--	9.3	--	.08	--	<420	--
H-5A	78-12-14	310MGNT	<1	--	--	--	--	53	--	--	--	17	--	1.0	--	160	--
H-6A	78-12-20	310MGNT	1	--	--	--	--	43	--	--	--	11	--	6.7	--	110	--
H-8A	80-02-12	310MGNT	--	<140	--	<.3	130	--	--	<.4	--	1.9	--	.08	--	<200	--
H-9A	80-02-05	310MGNT	--	--	--	--	--	<38	--	--	--	9.4	--	.15	--	<150	--
H-10A	80-03-21	310MGNT	--	<5300	--	--	--	<3500	--	--	--	480	--	<.10	--	<7800	--
WIPP-25	80-09-04	310MGNT	--	<160	--	--	--	<140	--	--	--	12	--	8.4	--	<230	--
WIPP-27	80-07-24	310MGNT	--	--	--	--	--	1900	--	--	--	12	--	--	--	--	--
	80-09-20	310MGNT	--	<2000	--	--	--	6000	--	--	--	24	--	5.8	--	<2900	--
WIPP-30	80-09-24	310MGNT	--	<300	--	--	--	<200	--	--	--	26	--	.02	--	<440	--

WELL	GROSS ALPHA, DIS- SUSP. (UG/L AS U-NAT)		GROSS BETA, DIS- SOLVED (PCI/L AS U-NAT)		GROSS BETA, DIS- SUSP. (PCI/L AS U-NAT)		GROSS ALPHA, DIS- SUSP. (PCI/L AS U-NAT)		GROSS BETA, DIS- SOLVED (PCI/L AS U-NAT)		GROSS BETA, DIS- SUSP. (PCI/L AS U-NAT)		GROSS ALPHA, DIS- SOLVED (PCI/L AS U-NAT)	
	U-NAT	AS	U-NAT	AS	U-NAT	AS	U-NAT	AS	U-NAT	AS	U-NAT	AS	U-NAT	AS
H-1	<.4	790	<.4	790	<.4	790	<.4	790	<.4	790	<.4	790	<.4	790
H-2A	12	55	<.4	55	<.4	55	<.4	55	<.4	55	<.4	55	<.4	55
H-3	<.4	260	<.4	260	<.4	260	<.4	260	<.4	260	<.4	260	<.4	260
	--	1200	--	1200	--	1200	--	1200	--	1200	--	1200	--	1200
H-4A	--	<92	--	<92	--	<92	--	<92	--	<92	--	<92	--	<92
H-5A	--	48	--	48	--	48	--	48	--	48	--	48	--	48
H-6A	--	39	--	39	--	39	--	39	--	39	--	39	--	39
H-8A	<.4	130	<.4	130	<.4	130	<.4	130	<.4	130	<.4	130	<.4	130
H-9A	--	<35	--	<35	--	<35	--	<35	--	<35	--	<35	--	<35
H-10A	--	<3600	--	<3600	--	<3600	--	<3600	--	<3600	--	<3600	--	<3600
WIPP-25	--	<130	--	<130	--	<130	--	<130	--	<130	--	<130	--	<130
WIPP-27	--	1800	--	1800	--	1800	--	1800	--	1800	--	1800	--	1800
	--	5800	--	5800	--	5800	--	5800	--	5800	--	5800	--	5800
WIPP-30	--	<190	--	<190	--	<190	--	<190	--	<190	--	<190	--	<190

Table 3.--Stratigraphic summary of rock units of Permian (Guadalupean and Ochoan) and younger age underlying the proposed Waste Isolation Pilot Plant site and adjacent areas

Age	Rock unit	Thickness (feet)	Description
Quaternary	Alluvium and sand	0-19	Dune sand, uniformly fine grained, light-brown to reddish-brown
	Mescalero caliche	0-5	Limestone, chalky, includes fragments of underlying rock
	Catuna Formation	0-32	Sandstone and siltstone, poorly indurated, dominantly reddish-orange, contains some conglomerate
Triassic	Late Triassic		UNCONFORMITY
		0-800	Mudstone, shaly with lenses of sandstone and conglomerate
Permian	Ochoan		UNCONFORMITY
		0-255	Sandstone, medium- to coarse-grained, commonly cross-stratified, gray and yellowish-brown; contains conglomerate and reddish brown mudstone and siltstone
	Dewey Lake Red Beds	250-541	Siltstone, shale and sandstone, very fine to fine-grained, reddish-orange to reddish-brown, contains interbedded reddish brown claystone; small-scale lamination and cross-stratification common
			UNCONFORMITY
	Rustler Formation	298-462	Anhydrite and halite with subordinate dolomite, sandstone, siltstone, claystone, and polyhalite; includes Magenta Dolomite and Culebra Dolomite Members
Guadalupean	Salado Formation	2,000+	Halite with subordinate anhydrite, polyhalite, potash ores, sandstone, and magnesite
	Castile Formation	1,300+	Anhydrite and halite with subordinate limestone
	Delaware Mountain Group		
		Bell Canyon Formation	Sandstone, brown and gray, with minor limestone and shale
		Cherry Canyon Formation	Sandstone, gray and brown, with limestone and minor shale
		Brushy Canyon Formation	Sandstone, gray, with brown and black shale and brown limestone

Modified from Bachman, 1980



New Mexico Office of the State Engineer

Point of Diversion Summary

Well Tag POD Number (quarters are 1=NW 2=NE 3=SW 4=SE)
C 02821 Q64Q16Q4 Sec Tws Rng (quarters are smallest to largest) (NAD83 UTM in meters)
2 2 3 14 22S 32E 627303 3584563* X Y

Driller License: 1348 Driller Company: TAYLOR WATER WELL SERVICE
Driller Name:

Drill Start Date: 06/12/2001 Drill Finish Date: 06/23/2001 Plug Date:
Log File Date: 10/04/2001 PCW Rcv Date: Source: Shallow
Pump Type: Pipe Discharge Size: Estimated Yield: 2 GPM
Casing Size: 5.00 Depth Well: 540 feet Depth Water: 340 feet

Water Bearing Stratifications:			Top	Bottom	Description
			410	540	Sandstone/Gravel/Conglomerate
Casing Perforations:			Top	Bottom	
			410	430	
			440	540	

*UTM location was derived from PLSS - see Help

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

1/14/22 10:37 AM

POINT OF DIVERSION SUMMARY

Kenneth J. Lickliter

Summary Evaluation of the Waste Isolation Pilot Plant (WIPP) Site Suitability

Wendell D. Weart

Prepared by
Sandia National Laboratories
Albuquerque, New Mexico 87185 and Livermore, California 94550
for the United States Department of Energy
under Contract DE-AC04-76DP00789



SF 2900-Q(6-82)

Issued by Sandia National Laboratories, operated for the United States Department of Energy by Sandia Corporation.

NOTICE: This report was prepared as an account of work sponsored by an agency of the United States Government. Neither the United States Government nor any agency thereof, nor any of their employees, nor any of their contractors, subcontractors, or their employees, makes any warranty, express or implied, or assumes any legal liability or responsibility for the accuracy, completeness, or usefulness of any information, apparatus, product, or process disclosed, or represents that its use would not infringe privately owned rights. Reference herein to any specific commercial product, process, or service by trade name, trademark, manufacturer, or otherwise, does not necessarily constitute or imply its endorsement, recommendation, or favoring by the United States Government, any agency thereof or any of their contractors or subcontractors. The views and opinions expressed herein do not necessarily state or reflect those of the United States Government, any agency thereof or any of their contractors or subcontractors.

Printed in the United States of America
Available from
National Technical Information Service
U.S. Department of Commerce
5285 Port Royal Road
Springfield, VA 22161

NTIS price codes
Printed copy: A03
Microfiche copy: A01

SAND83-0450
Unlimited Release
Printed March 1983

Distribution
Category UC-70

Summary Evaluation of the Waste Isolation Pilot Plant (WIPP) Site Suitability

Wendell D. Weart
Waste Management Technology Department 9730
Sandia National Laboratories
Albuquerque, NM 87185

Abstract

Geotechnical studies oriented toward selecting a radioactive waste disposal site began in southeast New Mexico in 1972. These geological studies have focused on the present WIPP site since November 1975 and have been accompanied by investigations of the ecologic and socioeconomic environment. Surface-based geotechnical investigations have relied heavily on geologic mapping, on geophysical exploration techniques, and on drillholes for confirmation of interpretation, core examination, and acquisition of hydrologic parameters. These studies have now been supplemented by direct examination and measurement of the subsurface geology in two shafts and in several thousand feet of mined drift at the depth selected for the WIPP. Additional studies are not likely to change significantly the level of confidence that now exists with regard to the suitability of the WIPP site. Consequently, Sandia has now evaluated the information available on the WIPP site and, in this report, summarizes the information and judgments reached for each of the 21 site qualification criteria. The site satisfies the intent of all the site criteria. Sandia recommends, without reservation, the use of the Los Medanos site for the WIPP.

Contents

Introduction 7

Background 7

Qualification Criteria and Factors for Evaluating the WIPP Site 9

Examination of the WIPP Site Qualification Factors 13

 1.0 Topography 13

 2.0 Depth 13

 3.0 Thickness of Host Rock 13

 4.0 Lateral Extent 14

 5.0 Lithology 14

 6.0 Stratigraphy 14

 7.0 Structure 15

 8.0 Dissolution 15

 Shallow Dissolution 16

 Deep Dissolution 17

 Localized Dissolution 17

 9.0 Subsidence 18

 10.0 Surface Water 18

 11.0 Groundwater 18

 12.0 Tectonic Stability 21

 Brine Reservoirs 23

 13.0 Physical-Chemical Compatibility 23

 14.0 Natural Resources 24

 15.0 Man-Made Penetrations 25

 16.0 Transportation 25

 17.0 Accessibility 25

 18.0 Land Acquisition 26

 19.0 Population Density 26

 20.0 Ecological Effects 26

 21.0 Sociological Impacts 27

Conclusions Regarding Site Suitability 27

References 27

District I

1625 N. French Dr., Hobbs, NM 88240
Phone:(575) 393-6161 Fax:(575) 393-0720

District II

811 S. First St., Artesia, NM 88210
Phone:(575) 748-1283 Fax:(575) 748-9720

District III

1000 Rio Brazos Rd., Aztec, NM 87410
Phone:(505) 334-6178 Fax:(505) 334-6170

District IV

1220 S. St Francis Dr., Santa Fe, NM 87505
Phone:(505) 476-3470 Fax:(505) 476-3462

State of New Mexico
Energy, Minerals and Natural Resources
Oil Conservation Division
1220 S. St Francis Dr.
Santa Fe, NM 87505

CONDITIONS

Action 83273

CONDITIONS

Operator: EOG RESOURCES INC P.O. Box 2267 Midland, TX 79702	OGRID: 7377
	Action Number: 83273
	Action Type: [C-141] Release Corrective Action (C-141)

CONDITIONS

Created By	Condition	Condition Date
jnobui	Groundwater Closure Report Approved. Remediation Plan Approved. Incident # nGRL0927142306 will be closed when Closure Report has been received and Approved.	5/2/2022