

**STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT
OIL CONSERVATION DIVISION**

**APPLICATION OF OXY USA INC. FOR A
CLOSED LOOP GAS CAPTURE INJECTION
PILOT PROJECT, EDDY COUNTY, NEW
MEXICO.**

CASE NO. _____

APPLICATION

OXY USA Inc. (“OXY” or “Applicant”) (OGRID No. 16696) through its undersigned attorneys, hereby files this application with the Oil Conservation Division for an order authorizing OXY to engage in a closed loop gas capture injection pilot project in the Bone Spring formation (“pilot project”). In support of this application, OXY states:

PROJECT OVERVIEW

1. OXY proposes to create a 480-acre, more or less, project area for this pilot project consisting of all of the S/2 N/2 of Section 21, and the N/2 N/2 of Sections 28 and 29, Township 24 South, Range 29 East, NMPM, Eddy County, New Mexico. See **Exhibit A** at 6.
2. The proposed project area is part of a larger area referred to as the Cedar Canyon area.
3. Within the proposed project area, OXY seeks authority to utilize the following producing wells to occasionally inject produced gas into the Bone Spring formation:
 - The **Cedar Canyon 21 Fed Com #023H well** (API No. 30-015-44191) [Corral Draw; Bone Spring Pool (Pool Code 96238)], with a surface location 1824 feet FNL and 141 feet FWL (Unit E) in Section 21, and a bottom hole location 2177 feet FNL and 175 feet FEL (Unit H) in Section 21.

- The **Cedar Canyon 28 Fed Com #8H well** (API No. 30-015-43819) [Pierce Crossing; Bone Spring, East Pool (Pool Code 97473)], with a surface location 170 feet FNL and 319 feet FEL (Unit A) in Section 29, and a bottom hole location 448 feet FNL and 189 feet FEL (Unit A) in Section 28.
 - The **Cedar Canyon 29 Fed Com #2H well** (API No. 30-015-42992) [Pierce Crossing; Bone Spring Pool (Pool Code 50371)], with a surface location 200 feet FNL and 319 feet FEL (Unit A) in Section 29, and a bottom hole location 456 feet FNL and 182 feet FWL (Unit D) in Section 29.
4. Injection along the horizontal portion of the wellbores will be at the following approximate true vertical depths:
- The **Cedar Canyon 21 Fed Com #023H well**: between 8,419 feet and 8,704 feet.
 - The **Cedar Canyon 28 Fed Com #8H well**: between 8,597 feet and 8,710 feet.
 - The **Cedar Canyon 29 Fed Com #2H well**: between 8,513 feet and 8,535 feet.
5. A map depicting the pipeline that ties the wells proposed for the pilot project into the gathering system and the affected compressor station is included in the attached **Exhibit A** at 5-6.

WELL DATA

6. Information on the well data, including well diagrams and well construction, casing, tubing, packers, cement, perforations, and other details for each proposed injection well are included in the attached **Exhibit A** at pages 8-10, 11-12, 17-18, and 23-24.
7. The top of the Bone Spring formation in this area is at approximately 6,620 feet total vertical depth and extends down to the top of the Wolfcamp formation at approximately 9,880 feet total vertical depth. See **Exhibit A** at 61.

8. The current average surface pressures under normal operations for the proposed injection wells range from approximately 680 psi to 775 psi. *See Exhibit A* at 29. The maximum achievable surface pressure (MASP) for the wells in the pilot project will be 1,250 psi. *Id.*

9. OXY plans to monitor injection and operational parameters for the pilot project using an automated supervisory control and data acquisition (SCADA) system with pre-set alarms and automatic shut-in safety valves that will prevent injection pressures from exceeding the MASP. *See Exhibit A* at 30 and 44-45.

10. The proposed maximum achievable surface pressure will not exert pressure at the top perforation in the wellbore of any injection well with a full fluid column of reservoir brine water in excess of 90% of the burst pressure for the production casing or production liner. *See Exhibit A* at 29. In addition, the proposed maximum achievable surface pressure will not exert pressure at the topmost perforation in excess of 90% of the formation parting pressure. *See Exhibit A* at 29.

11. Cement bond logs¹ for each of the injection wells demonstrate the placement of cement in the wells proposed for this pilot project and that there is a good and sufficient cement bond with the production casing and the tie-in of the production casing with the next prior casing in each well. *See Exhibit A* at 13-16, 19-22, 25-28, respectively.

12. The wells proposed for injection in the pilot project have previously demonstrated mechanical integrity. *See Exhibit A* at 31. OXY will undertake new tests to demonstrate mechanical integrity for each of the wells proposed for this pilot project as a condition of approval prior to commencing injection operations.

¹ Electronic version of the cement bond logs will be submitted to the Division by email.

GEOLOGY AND RESERVOIR

13. Data and a geologic analysis confirming that the Bone Spring formation is suitable for the proposed pilot project is included in ***Exhibit A*** at pages 59-66. A general characterization of the geology of the Bone Spring formation and its suitability for the proposed injection, including identification of confining layers and their ability to prevent vertical movement of the injected gas is included in the analysis. *Id.*

14. Zones that are productive of oil and gas are located above and below the targeted injection interval. *See Exhibit A* at 60-65.

15. Reservoir modeling indicates anticipated horizontal movement of injected gas will be approximately 100 feet or less from each injection wellbore within the Bone Spring formation. *See Exhibit A* at 73.

16. The proposed average injection rate for each well is 1.8 MMSCFD with a maximum injection rate of 2.0 MMSCFD during injection. *See Exhibit A* at 29.

17. OXY has prepared calculations estimating the stimulated reservoir volume based on supporting empirical data and a reservoir model to evaluate potential effects on wells adjacent to the pilot project area. *See Exhibit A* at 68-78. OXY's analysis concludes that there will be no change in the oil recovery from each of its proposed injection wells or from any of the offsetting wells. *See id.* at 75.

18. Similarly, OXY has prepared an analysis of the potential effects on the reservoir caused by the proposed injection, including consideration of commingling fluids. ***Exhibit A*** at 68-78. OXY's analysis concludes that there will be no adverse effect on the reservoir as a result of the injection. *Id.* at 78.

19. OXY has also prepared an analysis evaluating the expected gas storage capacity for the proposed injection well relative to the gas injection volumes for an injection scenario lasting twenty days. *See Exhibit A* at 76. The analysis confirms that whether the capacity is estimated based on the fracture volume gas equivalent or the total gas equivalent volumes produced from the proposed injection zone, the anticipated gas injection volumes will be considerably less than the estimated volume capacity within each well.

20. The source of gas for injection will be from OXY's Cedar Canyon wells producing from the Delaware, Bone Spring, and Wolfcamp formations that are identified in the list of wells in *Exhibit A* at page 33-36. Each of OXY's proposed injection wells are operated by OXY and OXY holds 100% of the working interest in the wells.

21. OXY has prepared an analysis of the composition of the source gas for injection and a corrosion prevention plan. *See Exhibit A* at 37-42.

22. OXY has examined the available geologic and engineering data and found no evidence of open faults or other hydrologic connections between the injection zone and any underground source of drinking water. *See Exhibit A* at 66. OXY has also examined the available geologic and engineering data and determined that the total recoverable volume of hydrocarbons from the reservoir will not be adversely affected by the pilot project. *See Exhibit A* at 78.

AREA OF REVIEW

23. OXY has prepared maps depicting the surface hole location and trajectory of the proposed injection wells, the location of every well within a two-mile radius, leases within two miles, and the half-mile area of review. *See Exhibit A* at 47-50.

24. A tabulation of data for wells that penetrate the proposed injection interval or the confining layer within the area of review is included in *Exhibit A* at pages 51-54, along with well-

bore schematics for wells that are plugged and abandoned or temporarily abandoned. *See Exhibit A* at 66-78.

OPERATIONS AND SAFETY

25. OXY will monitor each injection well's instantaneous rates and daily injection volumes, along with pressure in the well tubing, casing, and bradenheads using an automated supervisory control and data acquisition (SCADA) system. *See Exhibit A* at 44-45. Each injection well will also include automated safety devices, including automatic shut-in valves among other operational safety measures. *See Exhibit A* at 30. OXY will also monitor and track various operational parameters at the pilot project's central tank battery and central gas lift compressors. *See Exhibit A* at 44-45.

26. A copy of this application will be provided by certified mail to the surface owner on which each injection well identified herein is located, and to each leasehold operator and other affected persons within any tract wholly or partially contained within one-half mile of the completed interval of the wellbore for each of the proposed injection wells. A copy of the affected parties subject to notice is included in *Exhibit A* at 83-85, along with a map and list identifying each tract and affected persons given notice. *See Exhibit A* at 80-82.

27. Approval of this pilot project is in the best interests of conservation, the prevention of waste, and the protection of correlative rights.

WHEREFORE, OXY USA Inc. requests that this Application be set for hearing before an Examiner of the Oil Conservation Division on September 9, 2021, and that after notice and hearing this Application be approved.

Respectfully submitted,

HOLLAND & HART LLP

A handwritten signature in blue ink, appearing to read "Michael H. Feldewert", is written over a horizontal line.

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ATTORNEYS FOR OXY USA INC.

CASE _____:

Application of OXY USA Inc. for Closed Loop Gas Capture Injection Pilot Project, Eddy County, New Mexico. Applicant in the above-styled cause seeks an order authorizing it to engage in a closed loop gas capture injection pilot project ("pilot project") in the Bone Spring formation in the, within a 480-acre, more or less, project area for this pilot project consisting of all of the S/2 N/2 of Section 21, and the N/2 N/2 of Sections 28 and 29, Township 24 South, Range 29 East, NMPM, Eddy County, New Mexico, by occasionally injecting into the following wells:

- The **Cedar Canyon 21 Fed Com #023H well** (API No. 30-015-44191) [Corral Draw; Bone Spring Pool (Pool Code 96238)], with a surface location 1824 feet FNL and 141 feet FWL (Unit E) in Section 21, and a bottom hole location 2177 feet FNL and 175 feet FEL (Unit H) in Section 21.
- The **Cedar Canyon 28 Fed Com #8H well** (API No. 30-015-43819) [Pierce Crossing; Bone Spring, East Pool (Pool Code 97473)], with a surface location 170 feet FNL and 319 feet FEL (Unit A) in Section 29, and a bottom hole location 448 feet FNL and 189 feet FEL (Unit A) in Section 28.
- The **Cedar Canyon 29 Fed Com #2H well** (API No. 30-015-42992) [Pierce Crossing; Bone Spring (Pool Code 50371)], with a surface location 200 feet FNL and 319 feet FEL (Unit A) in Section 29, and a bottom hole location 456 feet FNL and 182 feet FWL (Unit D) in Section 29.

OXY seeks authority to utilize this producing well to occasionally inject produced gas into the Bone Spring formation at total vertical depths of between approximately 8,419 feet to 8,710 feet along the horizontal portion of each wellbore at surface injection pressures of no more than 1,250 psi. The source of the produced gas will be the Bone Spring and Wolfcamp formations. The subject acreage is located approximately 9 miles southeast of Loving, New Mexico.

New Mexico Closed Loop Gas Capture (CLGC) Oxy- Cedar Canyon

EXHIBIT A



Occidental

Overview

General Project Description: Closed Loop Gas Capture Project Oxy- Cedar Canyon

About Cedar Canyon

The Cedar Canyon area has two, Third-Party gas purchasers: Enterprise and San Mateo. A majority of the gas is sold to Enterprise and the remainder is sold to San Mateo. Neither takeaway point has enough capacity to purchase all the produced gas in Cedar Canyon.

Summary of Requested Relief

1. Authority to operate a Closed Loop Gas Capture Project ("CLGC") consisting of three wells to prevent waste and reduce adverse impacts from temporary interruptions of gas pipeline capacity.
2. A 2-year duration of such authority with renewal by administrative approval.
3. Authority to, when applicable, place packers in CLGC wells as deep as possible but no more than 100 feet above the top of the injection zone.
4. Authority to add CLGC storage wells to the proposed project by administrative approval if the well is within the Area of Review previously completed.

Overview

Oxy USA Inc. (Oxy) is proposing a CLGC project in the Cedar Canyon area. On occasion, third-party gas purchasers reduce takeaway capacity and cause interruptions that result in flaring or shut in production. During these interruptions, Oxy will utilize the capacity of the gas takeaway that is still operational. The remaining volume will utilize CLGC wells to capture gas and reduce flaring.

During the previous 12 months, Oxy experienced 7 interruptions where the third-party gas purchasers temporarily reduced takeaway capacity from this location, resulting in the flaring of at least 100 MMSCF of gas or the immediate shut-in of at least 17,000 BOPD. Approval of this application will significantly reduce such flaring or shut-in production in the future.

Operations During Interruption	Operations During Interruption With CLGC System	Benefits
<ul style="list-style-type: none"> • Flare gas • Shut in production 	<ul style="list-style-type: none"> • Store gas • Continue production • No additional surface disturbances 	<ul style="list-style-type: none"> • Reduce greenhouse gas emissions • Improve economic recovery of mineral resources including gas that might have been flared • Utilize existing infrastructure

Proposed Operations

Oxy has an extensive high-pressure gas system in the Cedar Canyon area. It is used for gas lift, a type of artificial lift. Oxy plans to utilize the same system for gas storage operations. Very minimal equipment on surface will need to be installed prior to starting storage operations.

Enterprise and San Mateo are the third-party gas purchasers for the Cedar Canyon area. If an interruption occurs, Oxy will divert gas from the takeaway line back into the gas lift injection system. Gas will flow from the Central Gas Lift (CGL) Compressor Station through the flow meter, control valve, safety shutdown valve, wellhead and into the wellbore for storage. Gas will be injected down the casing/tubing annulus in all CLGC wells. Simultaneously, the CLGC well will be shut in by closing the electric choke upstream of the production flowline. After the interruption has ended, the electric choke will open and the CLGC well resumes production.

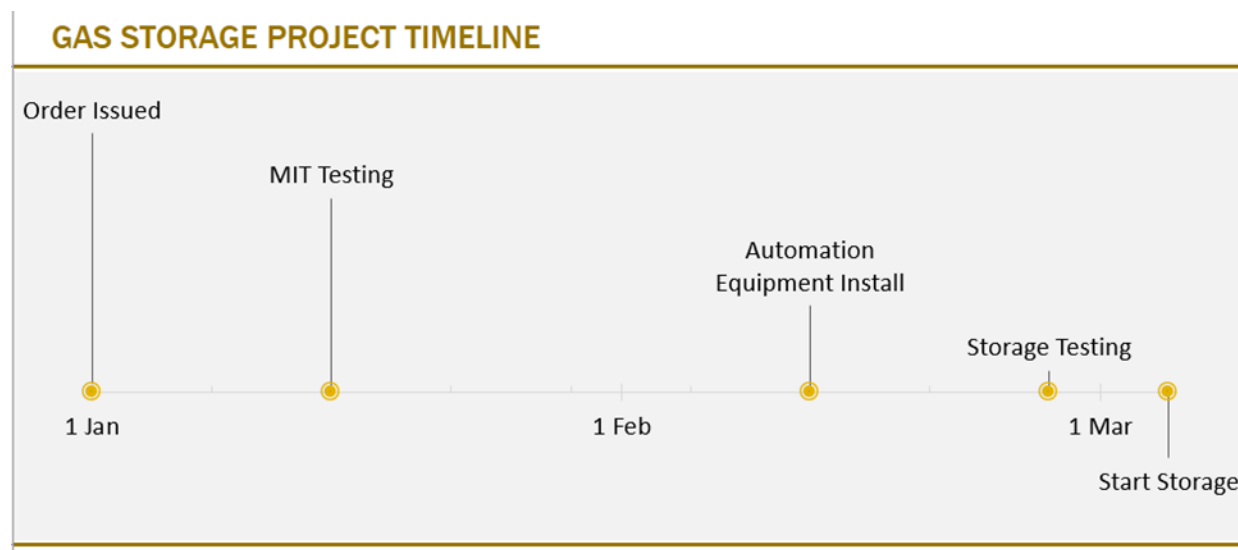
Wells

3 wells are proposed in this application.

#	API 14	Well Name	Injection Down the...
1	30015441910000	CC21-023H	Casing
2	30015438190000	CC28-008H	Casing
3	30015429920000	CC29-002H	Casing

Timeline

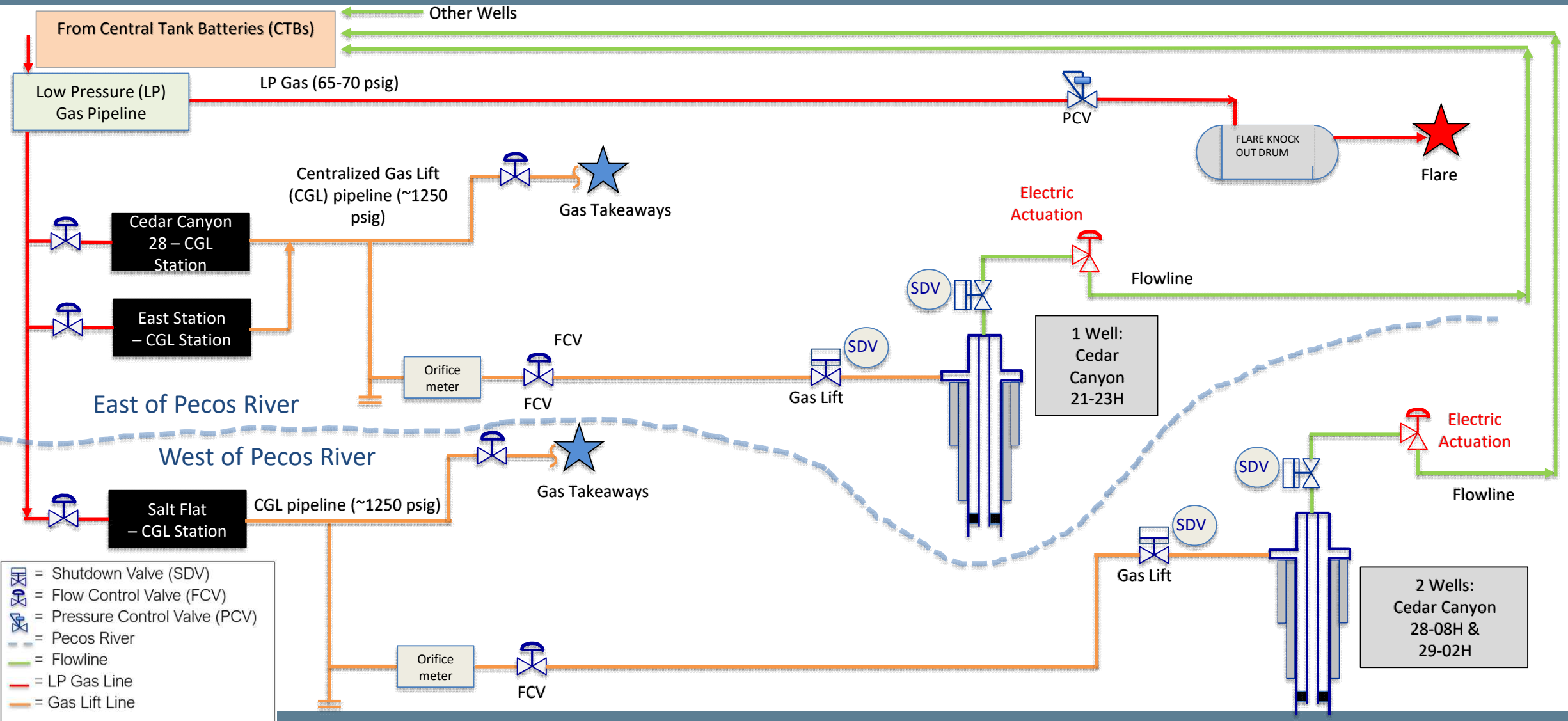
Since no new surface disturbances are required, this project can be implemented with minimal facility modifications. The timeline below assumes an order is issued on January 1 for illustration purposes.



Pertinent Details

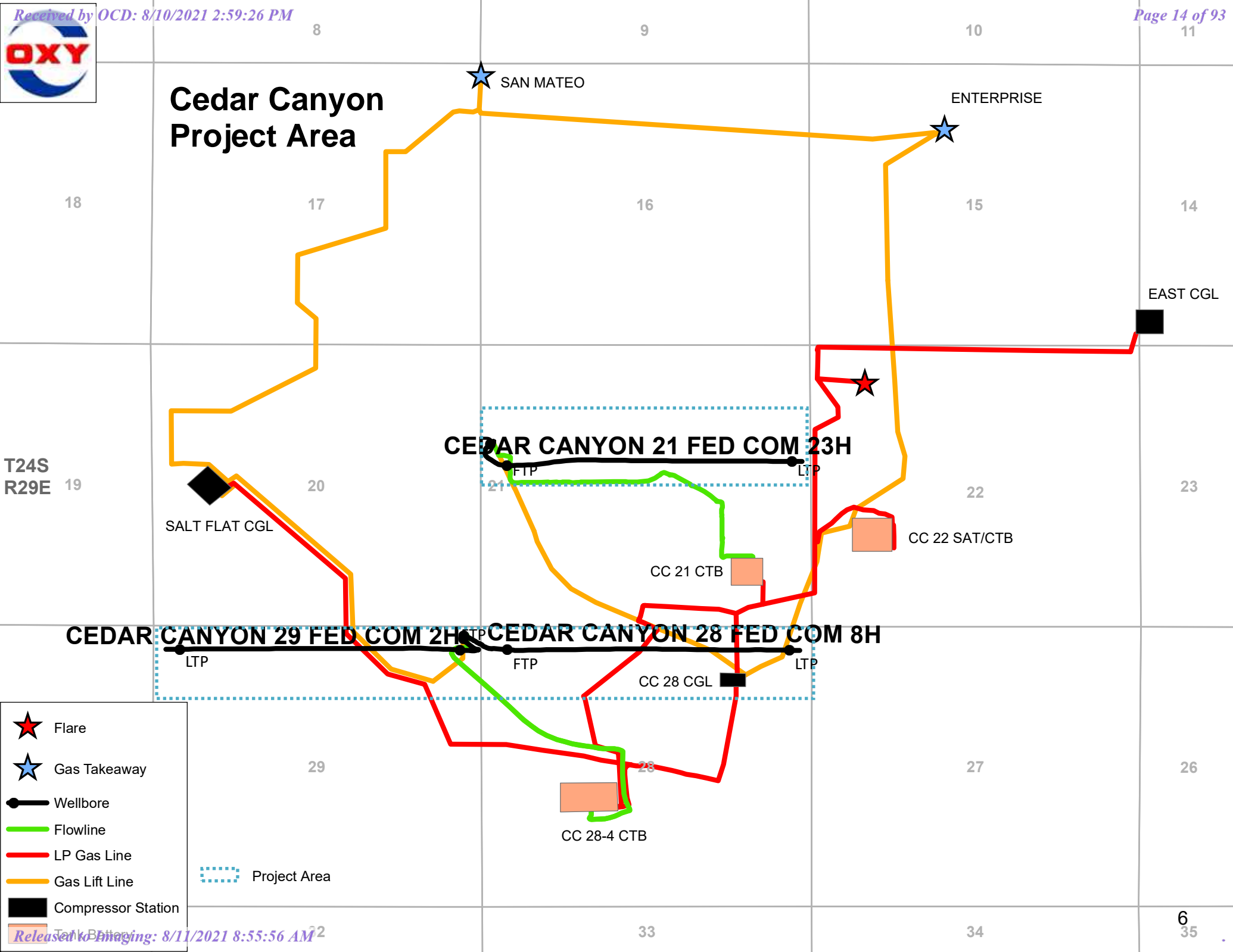
- Maximum Allowable Surface Pressure = 1250 psi
- Target Formation = Second Bone Spring
- Shallowest Perf TVD = 8419 ft TVD
- Deepest Perf TVD = 8710 ft TVD

Cedar Canyon Gas Storage Process Flow Diagram





Cedar Canyon Project Area



Flare

Gas Takeaway

Wellbore

Flowline

LP Gas Line

Gas Lift Line

Compressor Station

Project Area

Injection Wellbores

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DISTRICT II
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DISTRICT III
1000 RIO BRAZOS RD., AZTEC, NM 87410
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DISTRICT IV
1220 S. ST. FRANCIS DR., SANTA FE, NM 87505
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State of New Mexico
Energy, Minerals & Natural Resources Department
OIL CONSERVATION DIVISION
1220 SOUTH ST. FRANCIS DR.
Santa Fe, New Mexico 87505

NM OIL CONSERVATION

ARTESIA DISTRICT

2018

Form C-102

Revised August 1, 2011

Submit one copy to appropriate

District Office

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☒ AMENDED REPORT
(As-Drilled)

WELL LOCATION AND ACREAGE DEDICATION PLAT

API Number 30-015-44191	Pool Code 96238	Pool Name Corral Draw Bone Spring
Property Code 315207	Property Name CEDAR CANYON 21 FEDERAL COM	Well Number 23H
OGRID No. 16696	Operator Name OXY USA INC.	Elevation 2931.0

Surface Location

UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
E	21	24-S	29-E		1824	NORTH	141	WEST	EDDY

Bottom Hole Location If Different From Surface

UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
H	21	24-S	29-E		2200 2177	NORTH	141 175	EAST	EDDY

Dedicated Acres	Joint or Infill	Consolidation Code	Order No.
160	Y		BP-2177 FNL 336 FEL TP-2273 FNL 368 FWL

NO ALLOWABLE WILL BE ASSIGNED TO THIS COMPLETION UNTIL ALL INTERESTS HAVE BEEN CONSOLIDATED
OR A NON-STANDARD UNIT HAS BEEN APPROVED BY THE DIVISION

<p>SURFACE LOCATION Y=438564.0 N X=645194.1 E LAT.=32.205244° N LONG.=103.997550° W</p>	<p>BOTTOM PERF. Y=438213.3 N X=650012.3 E LAT.=32.204237° N LONG.=103.981976° W</p>	<p>PROPOSED BOTTOM HOLE LOCATION Y=438214.2 N X=650172.3 E LAT.=32.204238° N LONG.=103.981459° W</p>	<p>OPERATOR CERTIFICATION I hereby certify that the information herein is true and complete to the best of my knowledge and belief, and that this organization either owns a working interest or unleased mineral interest in the land including the proposed bottom hole location or has a right to drill this well at this location pursuant to a contract with an owner of such mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division.</p> <p>Signature: <i>Jana Mendioh</i> Date: 11/14/17 Printed Name: Jana Mendioh E-mail Address: jana.mendioh@oxy.com</p>								
<p>PRODUCING AREA PROJECT AREA</p> <p>S.L. - K.P. - 2200' FNL & 50' FWL GRID AZ. - 193°48'21" HORZ. DIST. - 388.2' I.P. - T.P. - 2273' FNL & 368' FWL GRID AZ. - 89°41'35" HORZ. DIST. - 5070.9'</p>			<p>SURVEYOR CERTIFICATION I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my belief.</p> <p>JULY 27 2016 Date of Survey</p> <p>Signature & Seal of Professional Surveyor</p>								
<p>KICK POINT Y=438187.0 N X=645101.5 E LAT.=32.204208° N LONG.=103.997853° W</p> <p>TOP PERF. Y=438188.6 N X=645391.5 E LAT.=32.204210° N LONG.=103.996916° W</p>			<p>POINT LEGEND</p> <table border="1"> <tr> <td>1</td> <td>Y=439060.4 N X=645055.4 E</td> </tr> <tr> <td>2</td> <td>Y=439088.4 N X=650350.6 E</td> </tr> <tr> <td>3</td> <td>Y=437761.6 N X=650353.2 E</td> </tr> <tr> <td>4</td> <td>Y=437733.9 N X=645049.4 E</td> </tr> </table>	1	Y=439060.4 N X=645055.4 E	2	Y=439088.4 N X=650350.6 E	3	Y=437761.6 N X=650353.2 E	4	Y=437733.9 N X=645049.4 E
1	Y=439060.4 N X=645055.4 E										
2	Y=439088.4 N X=650350.6 E										
3	Y=437761.6 N X=650353.2 E										
4	Y=437733.9 N X=645049.4 E										
<p>* ALL COORDINATES ARE NAD 83 VALUES</p>											



Chad Harchrow 9/19/16
Certificate No. CHAD HARCHROW 1777
W.O. #16-726 DRAWN BY: CF

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1625 N. French Dr., Hobbs, NM 88240
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District IV
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State of New Mexico
Oil, Gas, and Natural Resources Department
ARTESIA DISTRICT
OIL CONSERVATION DIVISION
1220 South St. Francis Dr.
Santa Fe, NM 87505

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Submit one copy to appropriate
District Office

MAR 03 2017

☒ AMENDED REPORT
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WELL LOCATION AND ACREAGE DEDICATION PLAT

API Number 30-015-43819	Pool Code 96473	Pool Name Pierce Crossing Bone Spring, East
Property Code 39711	Property Name CEDAR CANYON "28" FEDERAL COM	Well Number 8H
OGRID No. 16696	Operator Name OXY USA INC.	Elevation 2949.3'

Surface Location

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
A	29	24 SOUTH	29 EAST, N.M.P.M.		170'	NORTH	319'	EAST	EDDY

Bottom Hole Location If Different From Surface

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
A	28	24 SOUTH	29 EAST, N.M.P.M.		158'	NORTH	189'	EAST	EDDY
Dedicated Acres 160	Joint or Infill Y	Consolidation Code	Order No. BP- 445 FNL 357 FEL TP- 449 FNL 393 FNL						

No allowable will be assigned to this completion until all interests have been consolidated or a non-standard unit has been approved by the division.

<p>TOP PERF. NEW MEXICO EAST NAD 1927 Y=43483.75 US FT X=606835.62 US FT LAT.: N 32.1943381° LONG.: W 103.9884843°</p> <p>BOTTOM PERF. NEW MEXICO EAST NAD 1927 Y=43482.13 US FT X=606835.62 US FT LAT.: N 32.1942939° LONG.: W 103.9815011°</p> <p>SURFACE LOCATION NEW MEXICO EAST NAD 1927 Y=43484.56 US FT X=603541.22 US FT LAT.: N 32.1950893° LONG.: W 103.9886138°</p> <p>KICK OFF POINT NEW MEXICO EAST NAD 1927 Y=43483.82 US FT X=603980.83 US FT LAT.: N 32.1943414° LONG.: W 103.9972601°</p> <p>BOTTOM HOLE LOCATION NEW MEXICO EAST NAD 1927 Y=43482.07 US FT X=606015.82 US FT LAT.: N 32.1942921° LONG.: W 103.9809192°</p> <p>GRID AZ = 90°01'12" 5055.02' IN ALL</p> <p>PRODUCING AREA</p> <p>PROJECT AREA</p> <p>GRID AZ = 128°48'10" 490.39'</p>		<p>OPERATOR CERTIFICATION</p> <p>I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief, and that the organization either owns a working interest or undivided mineral interest in the land including the proposed bottom hole location or has a right to drill the well at this location pursuant to a contract with the owner of such a mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order.</p> <p>Signature: <i>[Signature]</i> 1/9/17 Name: Jana Mendiola Phone: jana-mendiola@oxy.com E-mail Address:</p> <p>SURVEYOR CERTIFICATION</p> <p>I hereby certify that the location shown on this plat was placed on the basis of actual surveys made by me or under my supervision and that the same are true and correct to the best of my belief.</p> <p>Signature: <i>[Signature]</i> 10/29/2015 Date of Survey: OCTOBER 27, 2015 Professional Seal: 15079 Certificate Number: 15079</p> <p>Wof 151027WL--S--XY (N)</p>
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District I
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Phone: (575) 393-6161 Fax: (575) 393-0720
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Santa Fe, NM 87505

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(As-Drilled)

WELL LOCATION AND ACREAGE DEDICATION PLAT

API Number 30-015-42992	Pool Code 50371	Pool Name Pierce Crossing Bone Spring
Property Code 314329	Property Name CEDAR CANYON "29" FEDERAL Com	Well Number 2H
OGRID No. 16696	Operator Name OXY USA INC.	Elevation 2949.3'

Surface Location

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
A	29	24 SOUTH	29 EAST, N.M.P.M.		200'	NORTH	319'	EAST	EDDY

Bottom Hole Location If Different From Surface

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
D	29	24 SOUTH	29 EAST, N.M.P.M.		150' 156'	NORTH	182' 192'	WEST	EDDY
Dedicated Acres 160	Joint or Infill N	Consolidation Code	Order No.	BP- 454 FNL 414 FWL TP- 458 FNL 368 FEL					

No allowable will be assigned to this completion until all interests have been consolidated or a non-standard unit has been approved by the division.

Y=43583.43 US FT

GRID AZ = 269°58'47"
5055.20' IN ALL
GRID AZ = 135°08'59"
339.67'

PRODUCING AREA
PROJECT AREA

BOTTOM HOLE LOCATION
NEW MEXICO EAST
NAD 1927
Y=434582.01 US FT
X=598725.73 US FT
LAT.: N 32.1943803
LONG.: W 104.0141834

BOTTOM PERF.
NEW MEXICO EAST
NAD 1927
Y=434582.07 US FT
X=598903.73 US FT
LAT.: N 32.1943790
LONG.: W 104.0136015

SURFACE LOCATION
NEW MEXICO EAST
NAD 1927
Y=434824.56 US FT
X=603541.29 US FT
LAT.: N 32.1950068
LONG.: W 103.9986139

KICK OFF POINT
NEW MEXICO EAST
NAD 1927
Y=434583.75 US FT
X=603780.84 US FT
LAT.: N 32.1943428
LONG.: W 103.9978420

TOP PERF.
NEW MEXICO EAST
NAD 1927
Y=434583.66 US FT
X=603520.83 US FT
LAT.: N 32.1943448
LONG.: W 103.9986825

OPERATOR CERTIFICATION
I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief, and that this organization either owns a working interest or undivided mineral interest in the land including the proposed bottom hole location or has a right to drill this well at this location pursuant to a contract with an owner of such a mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division.
Signature: *[Signature]* Date: **1/9/17**
Printed Name: **Jana Merdiola**
Email Address: **janalyn_mendiola@oxy.com**

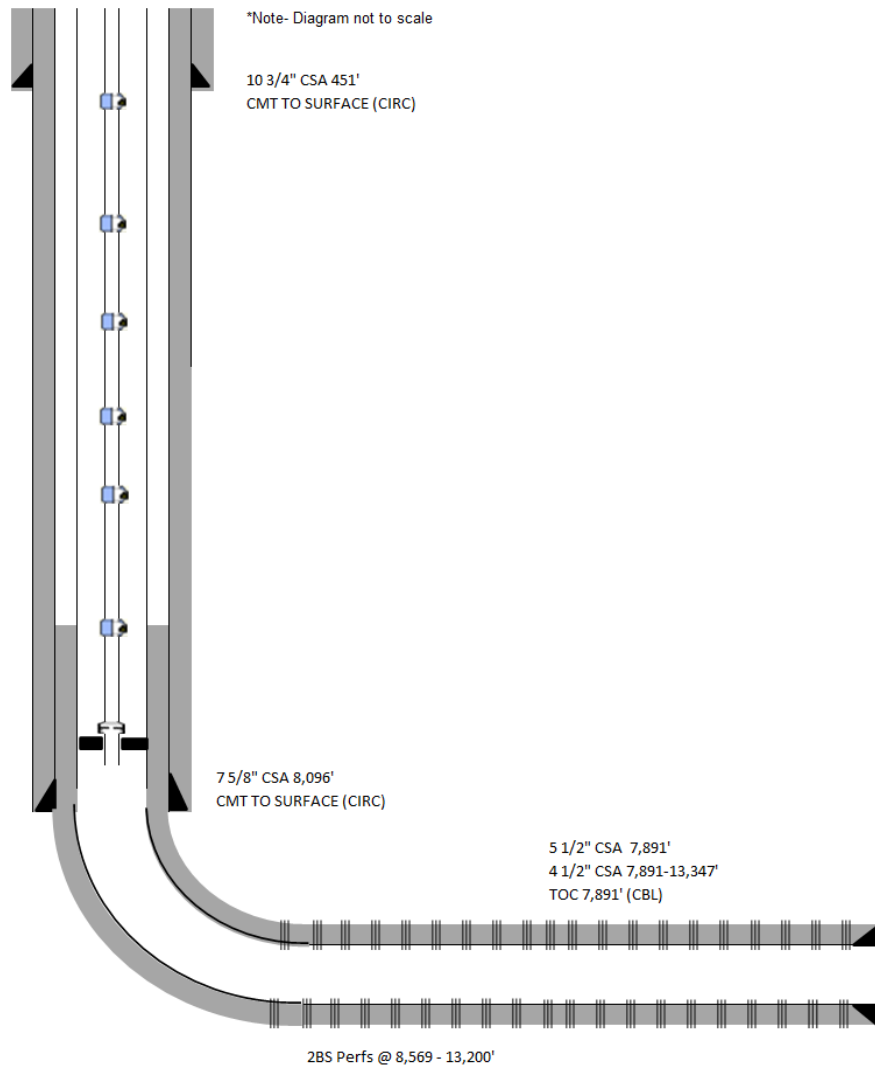
SURVEYOR CERTIFICATION
I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my belief.
Date of Survey: **OCTOBER 27, 2015**
Signature and Seal of Professional Surveyor: *[Signature]*
Certificate Number: **15079**

WO# 151027WL-d-XY (Rev. A) (440)

Side 1

OPERATOR: OXY USA INCWELL NAME & NUMBER: CEDAR CANYON 21 FEDERAL 23H API 30-015-44191

WELL LOCATION:	1824' FNL, 141'FWL	E	21	24S	29E
	FOOTAGE LOCATION	UNIT LETTER	SECTION	TOWNSHIP	RANGE

WELLBORE SCHEMATICWELL CONSTRUCTION DATASurface Casing

Hole Size: 14.75" Casing Size: 10.75"

Cemented with: 350 sx. *or* ft³

Top of Cement: SURFACE Method Determined: CIRC

Intermediate Casing

Hole Size: 9.875" Casing Size: 7.625

Cemented with: 1,661 sx. *or* ft³

Top of Cement: SURFACE Method Determined: CIRC

Production Casing

Hole Size: 6.75" Casing Size: 5.5" AND 4.5"

Cemented with: 660 sx. *or* ft³

Top of Cement: 7,891 Method Determined: CBL

Total Depth: 13,360' MD / 8,708 TVDInjection Interval
8,569' MD / 8,419' TVD feet to 13,200' MD / 8,704' TVD

(Perforated or Open Hole; indicate which)

Side 2

Tubing Size: 2.875' 6.5# L80 EUE Lining Material: NoneType of Packer: 5.5" Watson 10K AS1X nicklel coated packerPacker Setting Depth: 7,859' MD / 7,819' TVD

Other Type of Tubing/Casing Seal (if applicable): _____

Additional Data

1. Is this a new well drilled for injection? _____ Yes X _____ No

If no, for what purpose was the well originally drilled? _____

PRODUCER - OIL

2. Name of the Injection Formation: _____

3. Name of Field or Pool (if applicable): CORRAL DRAW; BONE SPRING

4. Has the well ever been perforated in any other zone(s)? List all such perforated intervals and give plugging detail, i.e. sacks of cement or plug(s) used. _____

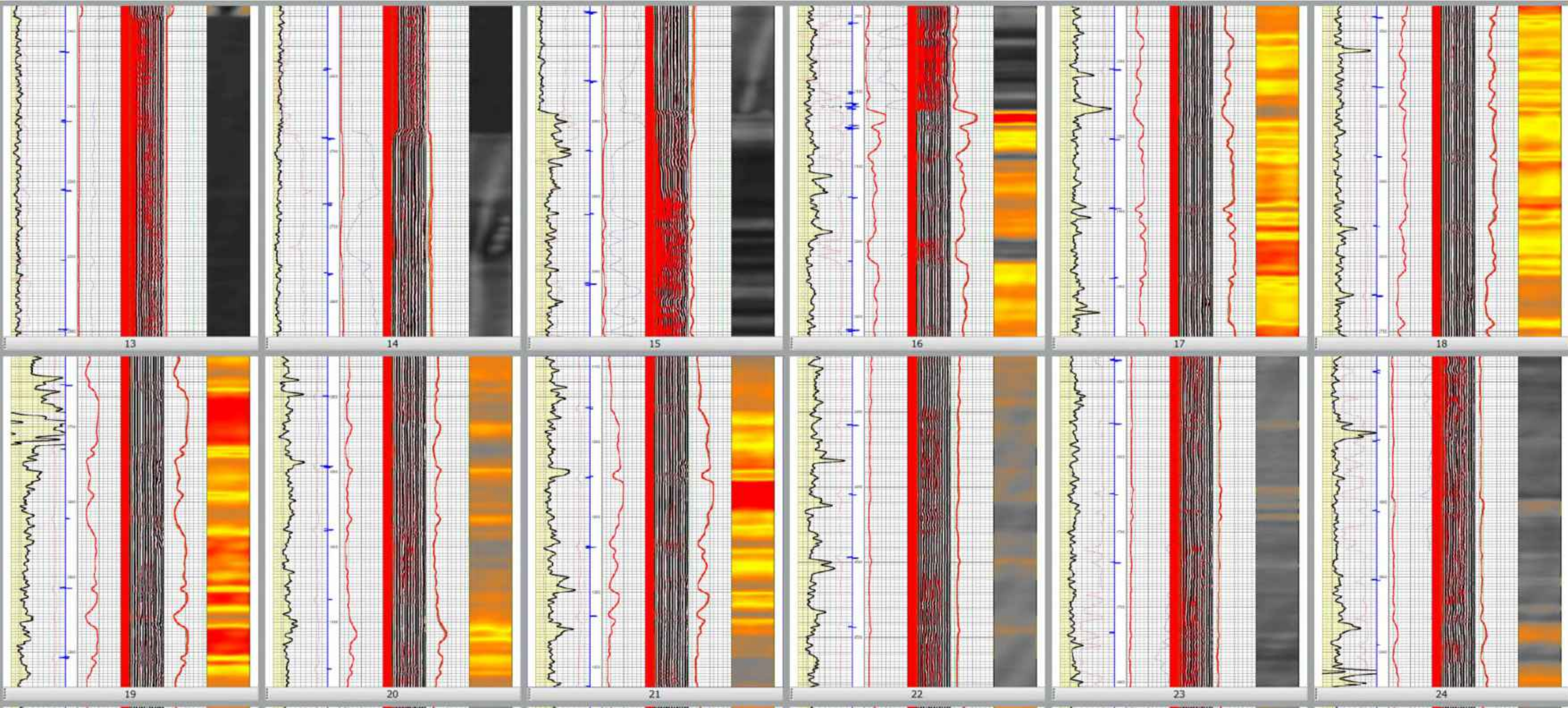
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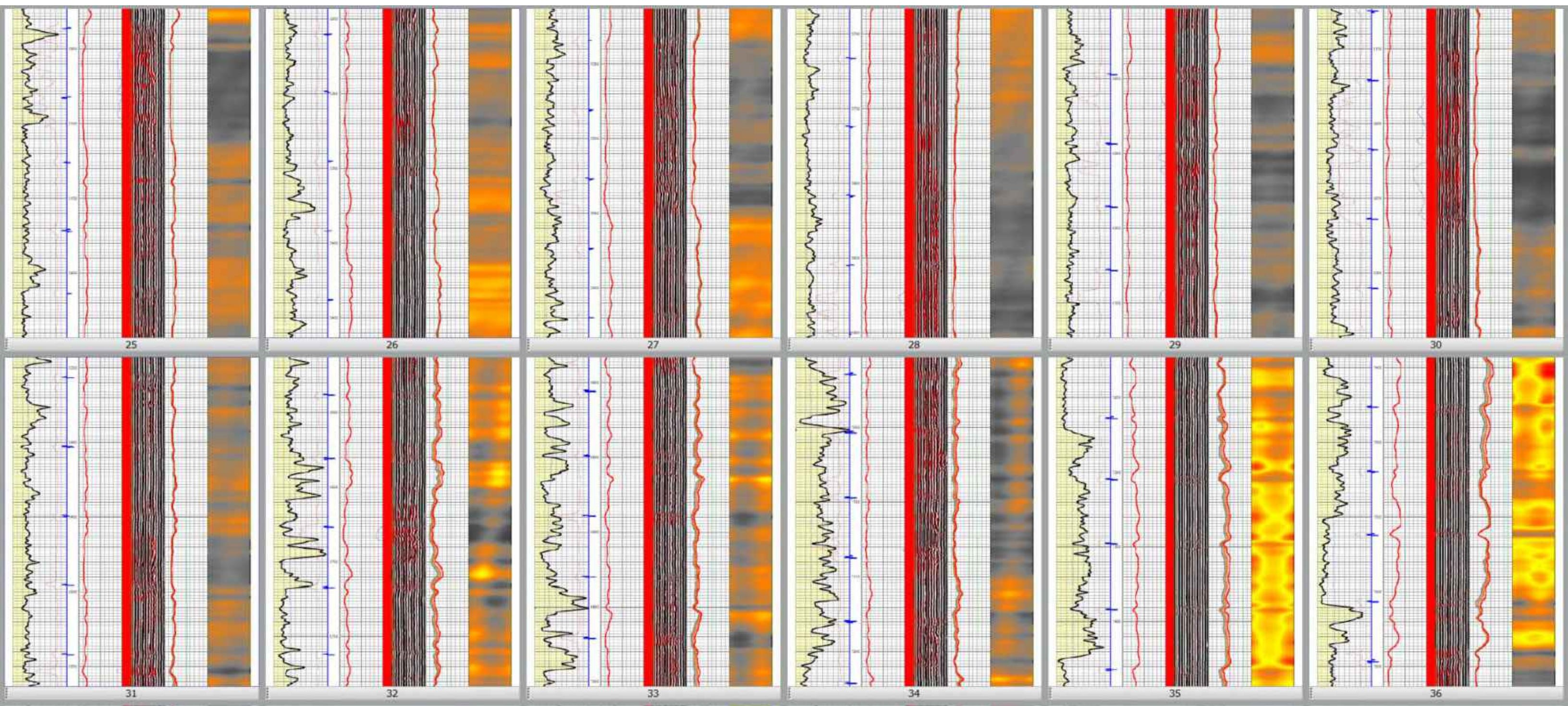
5. Give the name and depths of any oil or gas zones underlying or overlying the proposed injection zone in this area: _____

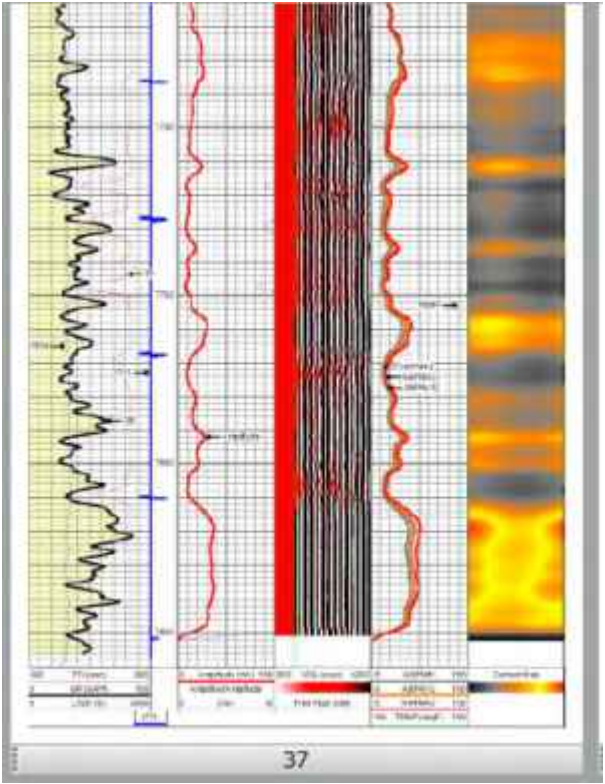
OVERLYING : BRUSHY CANYON FORMATION (DELAWARE) 5,096'UNDERLYING: WOLFCAMP FORMATION 10,234'

Released to Imaging: 8/11/2021 8:55:56 AM





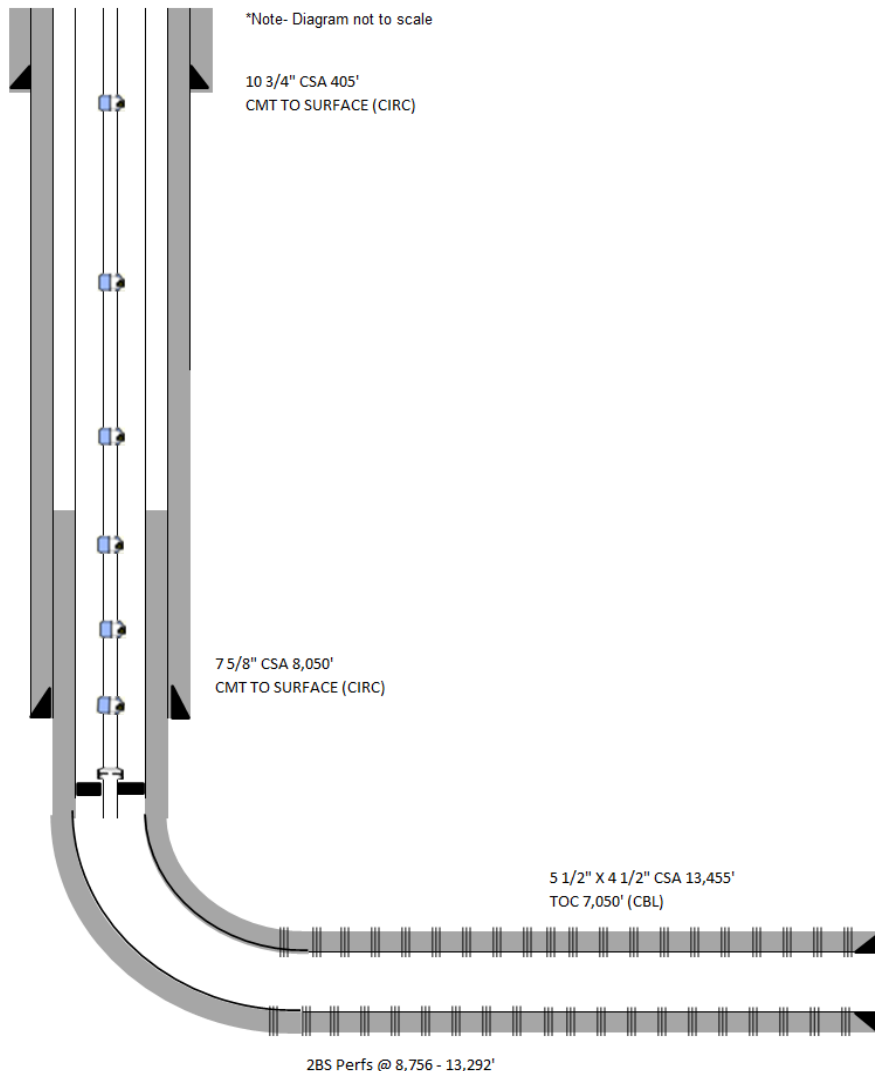




Side 1

OPERATOR: OXY USA INCWELL NAME & NUMBER: CEDAR CANYON 28 FEDERAL COM 8H API 30-015-43819

WELL LOCATION: <u>170' FNL, 319' FEL</u>	<u>A</u>	<u>29</u>	<u>24S</u>	<u>29E</u>
FOOTAGE LOCATION	UNIT LETTER	SECTION	TOWNSHIP	RANGE

WELLBORE SCHEMATICWELL CONSTRUCTION DATASurface Casing

Hole Size: 14.75" Casing Size: 10.75"

Cemented with: 467 sx. *or* _____ ft³

Top of Cement: SURFACE Method Determined: CIRC

Intermediate Casing

Hole Size: 9.875" Casing Size: 7.625

Cemented with: 1,595 sx. *or* _____ ft³

Top of Cement: SURFACE Method Determined: CIRC

Production Casing

Hole Size: 6.75" Casing Size: 5.5" AND 4.5"

Cemented with: 580 sx. *or* _____ ft³

Top of Cement: 7,050 Method Determined: CBL

Total Depth: 13,460' MD / 8,712 TVDInjection Interval
8,756' MD / 8,597' TVD feet to 13,292' MD / 8,710' TVD

(Perforated or Open Hole; indicate which)

Side 2

Tubing Size: 2.875' 6.5# L80 EUE Lining Material: NoneType of Packer: 5.5" Weatherford 10K AS1X nicklel coated packerPacker Setting Depth: 8,477' MD / 8,428' TVD

Other Type of Tubing/Casing Seal (if applicable): _____

Additional Data

1. Is this a new well drilled for injection? _____ Yes X _____ No

If no, for what purpose was the well originally drilled? _____

PRODUCER - OIL

2. Name of the Injection Formation: _____

3. Name of Field or Pool (if applicable): PIERCE CROSSING BONE SPRING, EAST

4. Has the well ever been perforated in any other zone(s)? List all such perforated intervals and give plugging detail, i.e. sacks of cement or plug(s) used. _____

NO

5. Give the name and depths of any oil or gas zones underlying or overlying the proposed injection zone in this area: _____

OVERLYING : BRUSHY CANYON FORMATION (DELAWARE) 5,096'UNDERLYING: WOLFCAMP FORMATION 10,234'

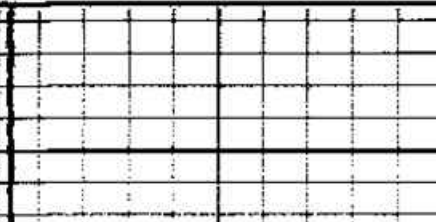
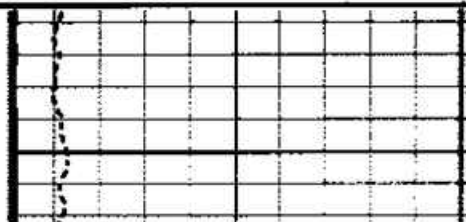
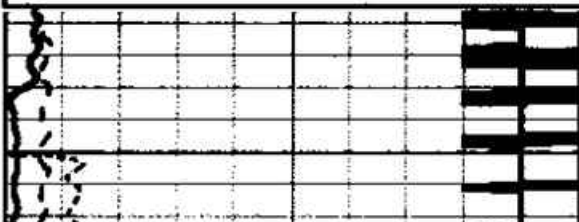
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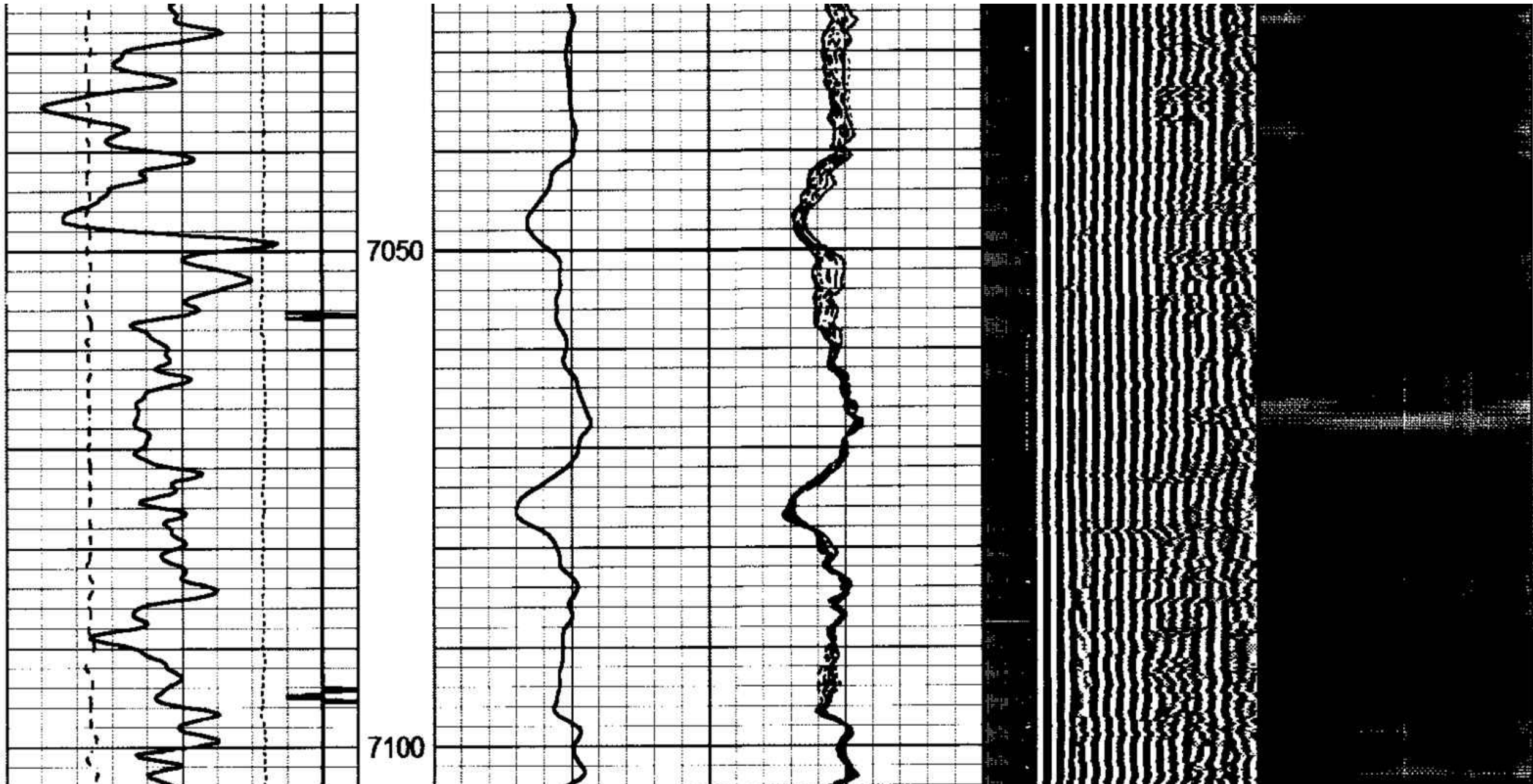
SERVICES

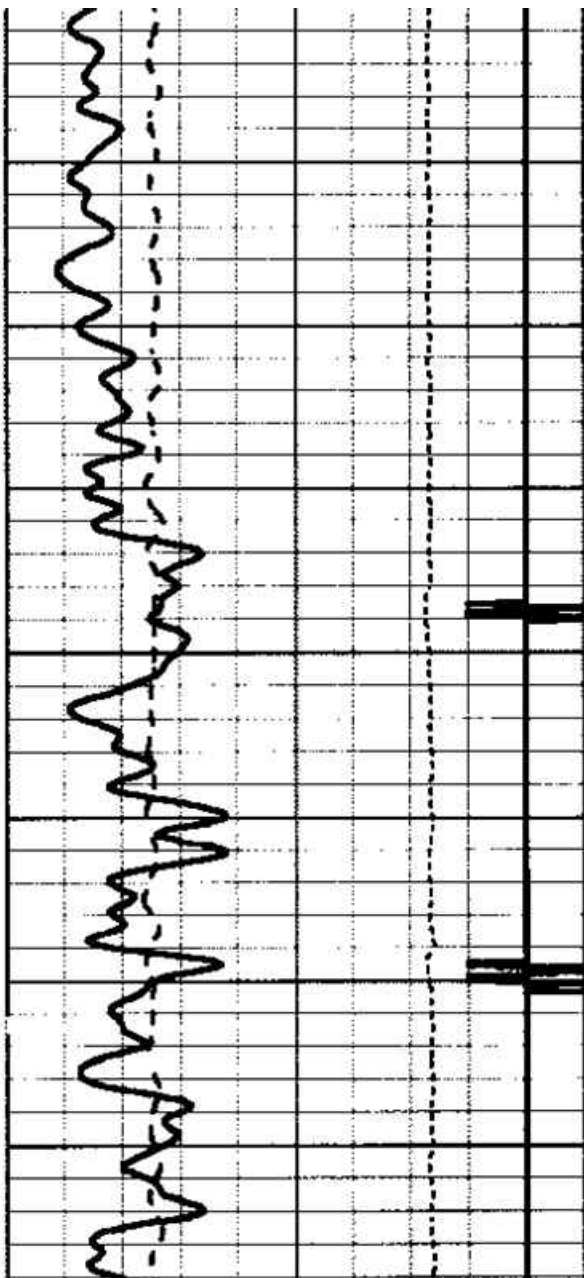
A Schlumberger Company

Database File cedar canyon 28-8h.db
 Dataset Pathname pass12
 Presentation Format sclpnr
 Dataset Creation Sat Dec 17 11:26:01 2016
 Charted by Depth in Feet scaled 1:240

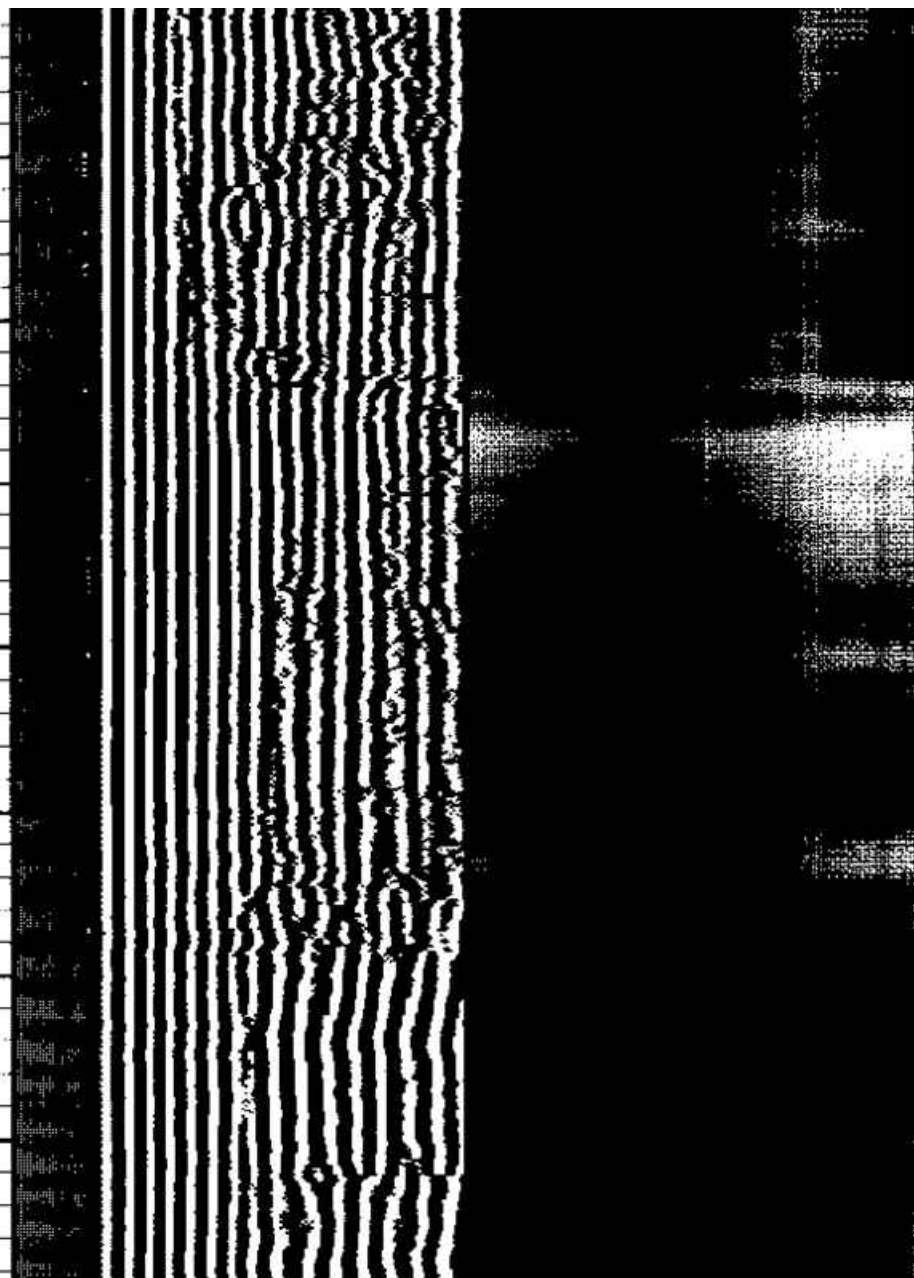
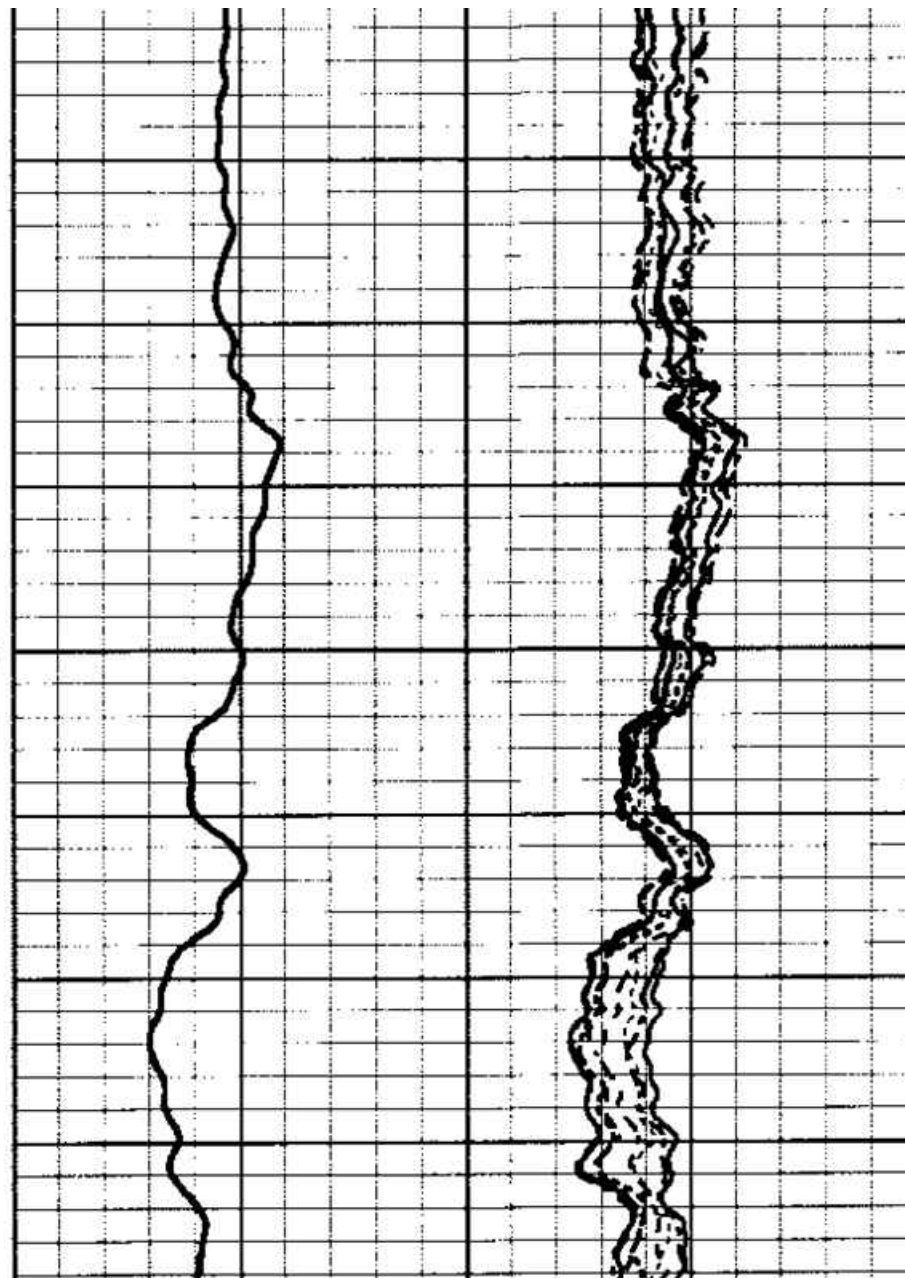
400	Travel Time (usec)	200	0	Amplitude (mV)	100	-5	AMPS1	150	Variable Density 2001200	1	Cement Map	8
9	Casing Collar	-1	Amplified Amplitude		-5	AMPS2	150	0		100		
0	Gamma Ray (GAPI)	150	0	(mV)	10	-5	AMPS3	150				
0	Line Tension (lb)	5000			-5	AMPS4	150					
					-5	AMPS5	150					
					-5	AMPS6	150					
					-5	AMPS7	150					
					-5	AMPS8	150					







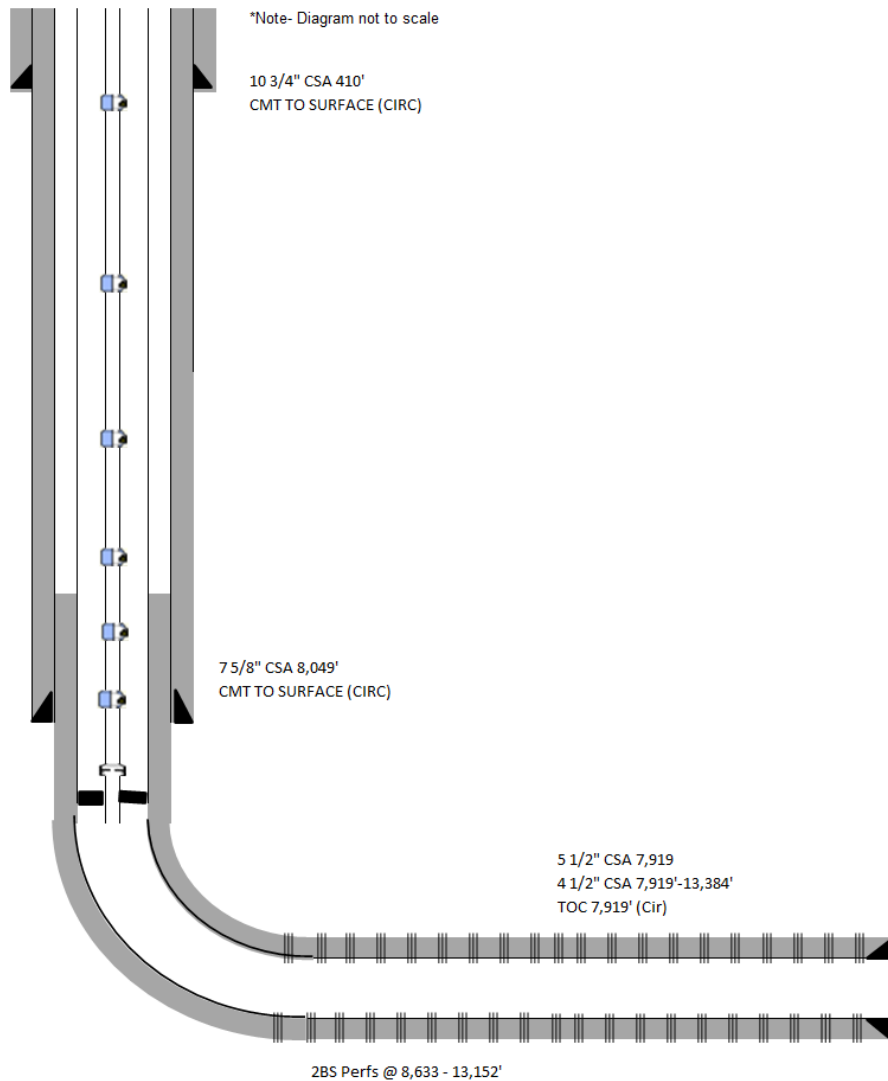
8050



Side 1

OPERATOR: OXY USA INCWELL NAME & NUMBER: CEDAR CANYON 29 FEDERAL COM 2H API 30-015-42992

WELL LOCATION:	200' FNL, 319' FEL	A	29	24S	29E
	FOOTAGE LOCATION	UNIT LETTER	SECTION	TOWNSHIP	RANGE

WELLBORE SCHEMATIC**WELL CONSTRUCTION DATA**Surface Casing

Hole Size: 14.75" Casing Size: 10.75"

Cemented with: 462 sx. *or* ft³

Top of Cement: SURFACE Method Determined: CIRC

Intermediate Casing

Hole Size: 9.875" Casing Size: 7.625

Cemented with: 2,963 sx. *or* ft³

Top of Cement: SURFACE Method Determined: CIRC

Production Casing

Hole Size: 6.75" Casing Size: 5.5" AND 4.5"

Cemented with: 580 sx. *or* ft³

Top of Cement: 7,919 Method Determined: CIRC

Total Depth: 13,384' MD / 8,531' TVDInjection Interval8,633' MD / 8,513' TVD feet to 13,152' MD / 8,535' TVD

(Perforated or Open Hole; indicate which)

Side 2

Tubing Size: 2.875' 6.5# L80 EUE Lining Material: NoneType of Packer: 5.5" Watson 10K AS1X nicklel coated packerPacker Setting Depth: 7,903' MD / 7,877' TVD

Other Type of Tubing/Casing Seal (if applicable): _____

Additional Data

1. Is this a new well drilled for injection? _____ Yes X _____ No

If no, for what purpose was the well originally drilled? _____

PRODUCER - OIL

2. Name of the Injection Formation: _____

3. Name of Field or Pool (if applicable): PIERCE CROSSING BONE SPRING

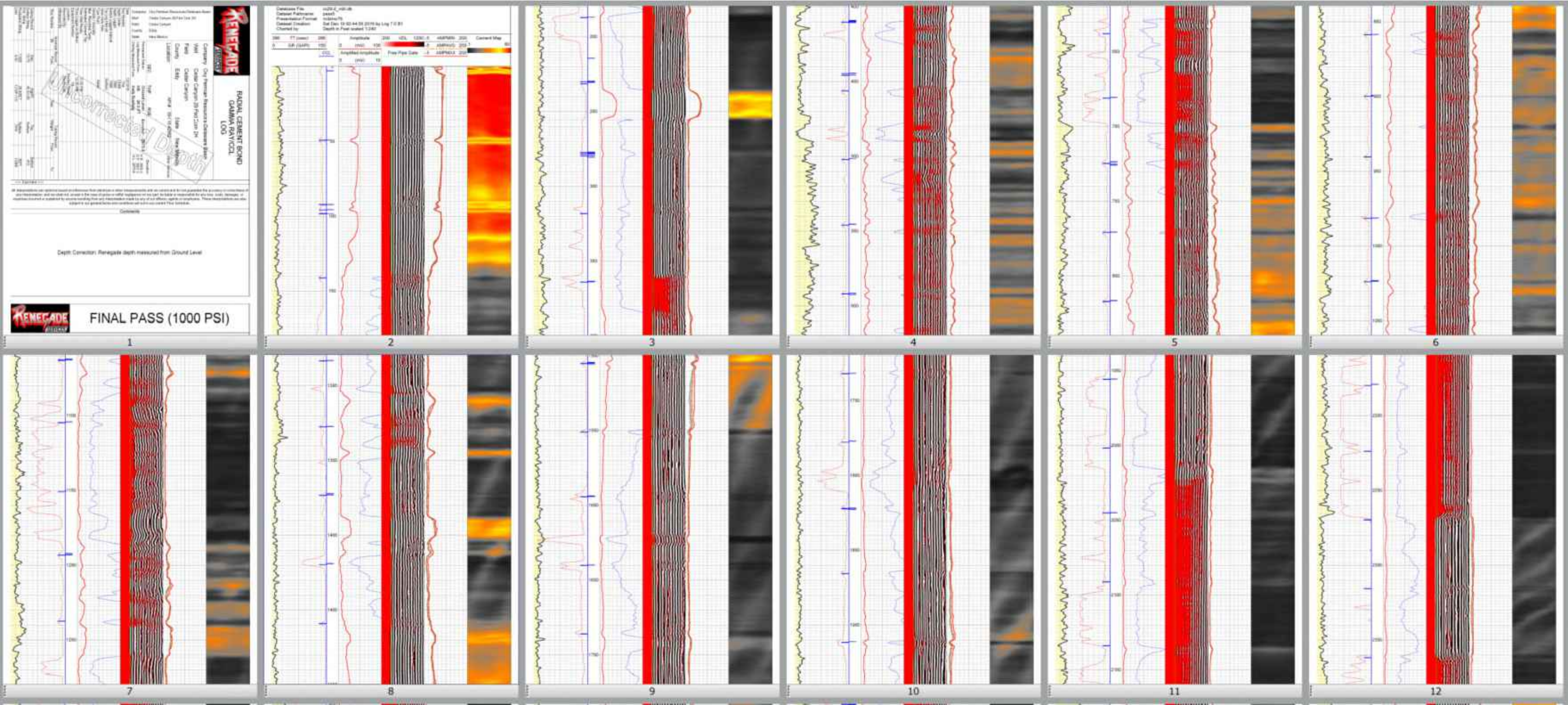
4. Has the well ever been perforated in any other zone(s)? List all such perforated intervals and give plugging detail, i.e. sacks of cement or plug(s) used. _____

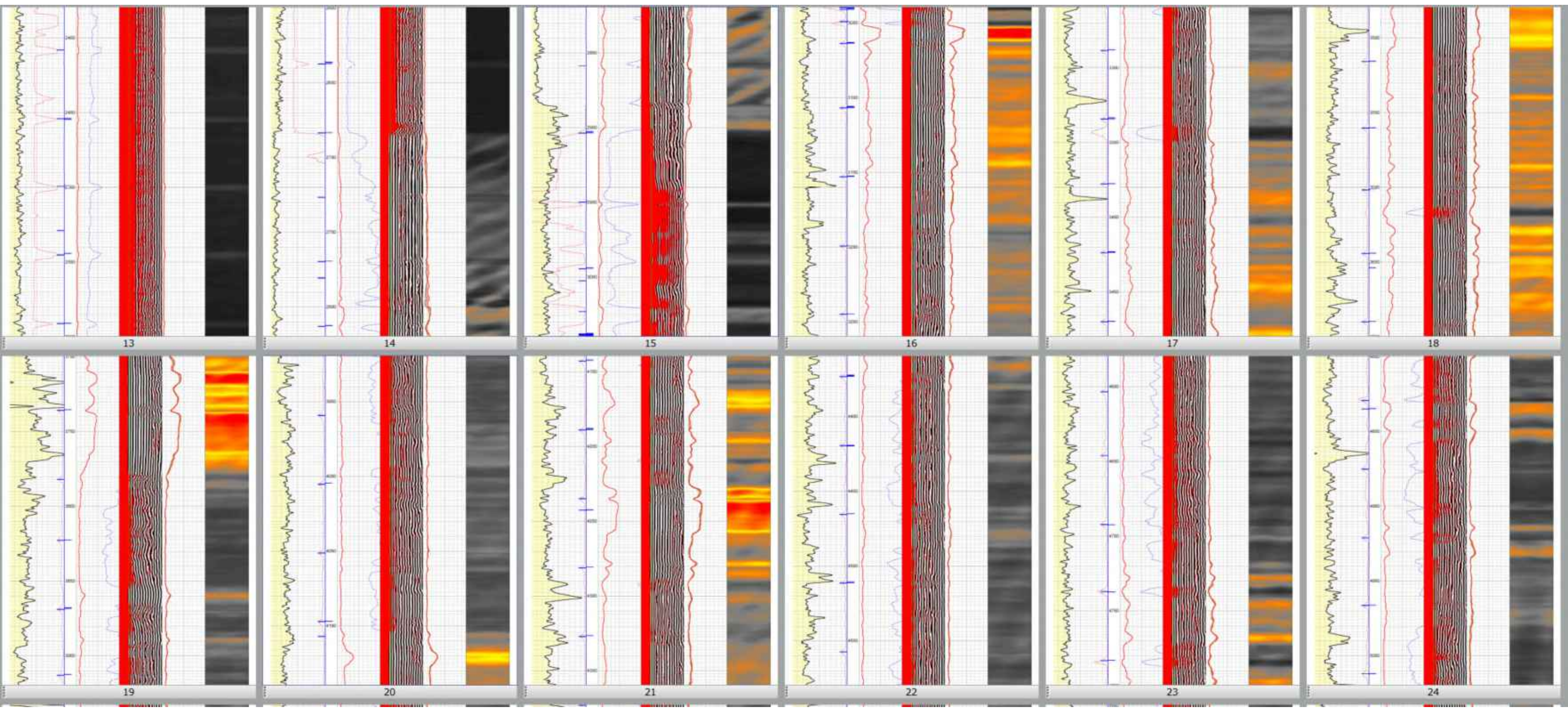
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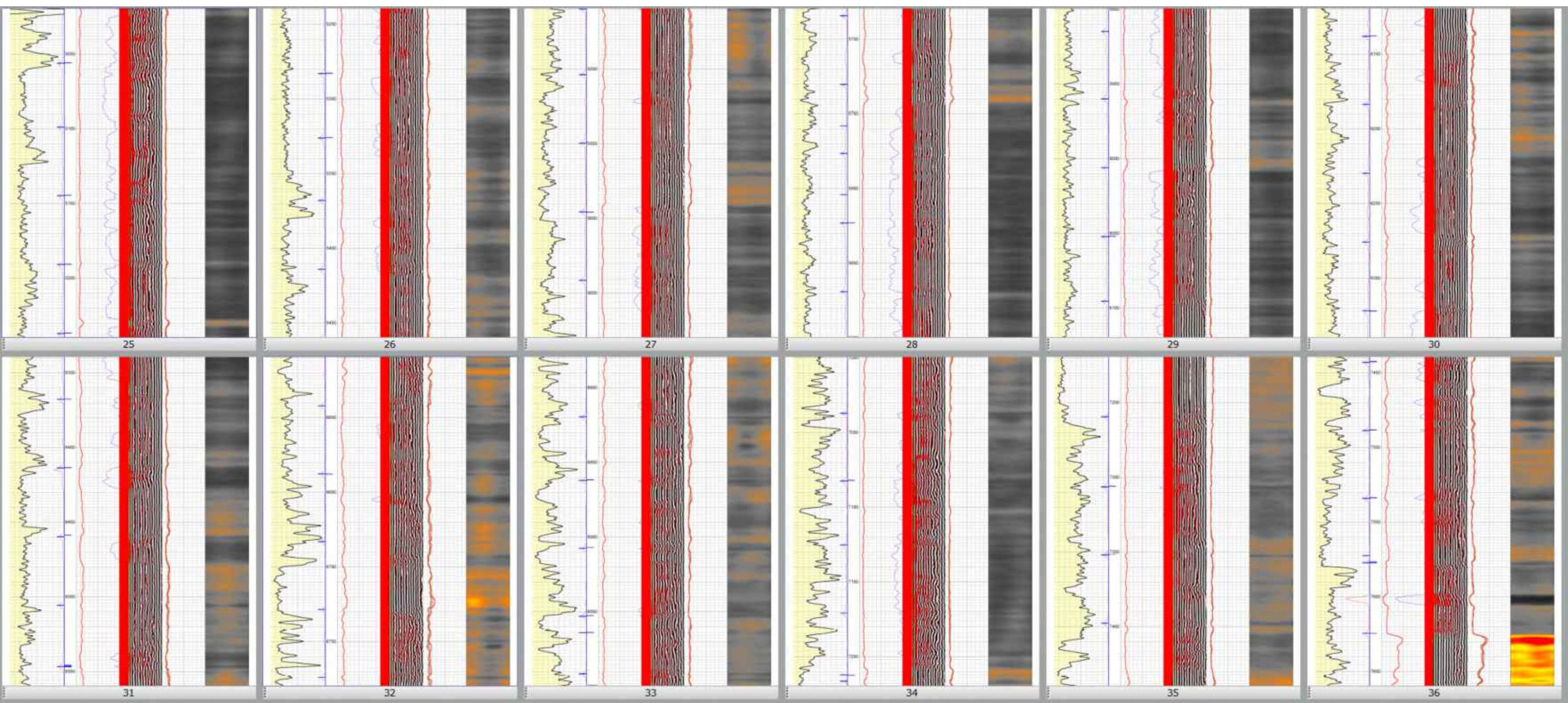
5. Give the name and depths of any oil or gas zones underlying or overlying the proposed injection zone in this area: _____

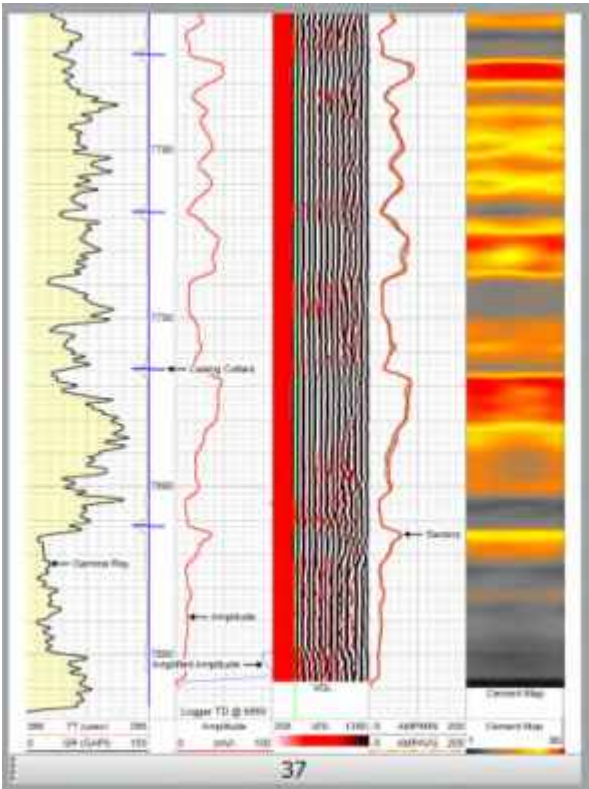
OVERLYING : BRUSHY CANYON FORMATION (DELAWARE) 5,065'UNDERLYING: WOLFCAMP FORMATION 10,234'

CC 29 #2H







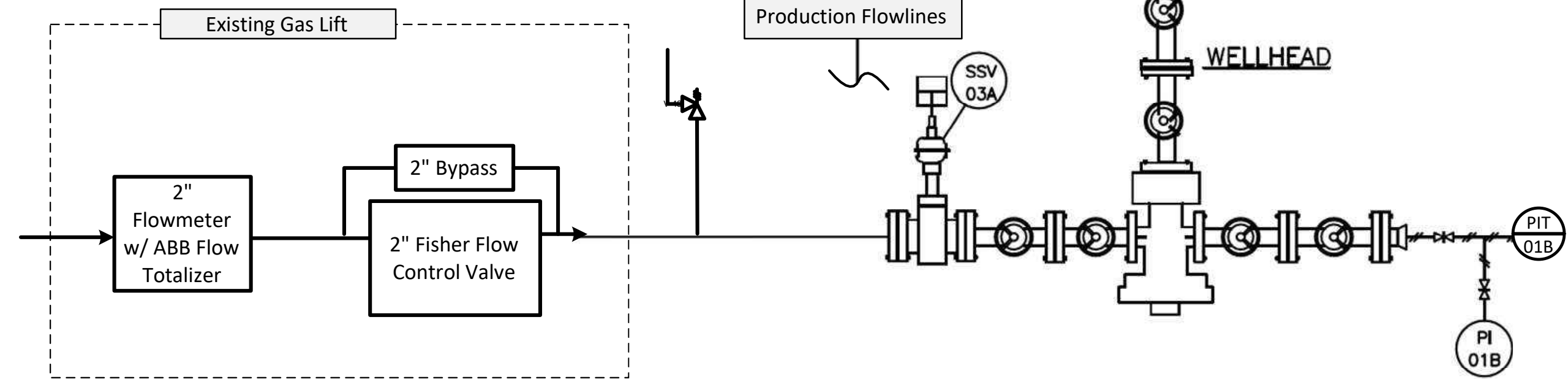


Max Allowable Surface Pressure (MASP) Table

API10	Well Name	Proposed Max Allowable Surface Pressure (MASP) (PSI)	Current Average Surface Pressure (PSI)	Max Achievable Surface Pressure, Current Infrastructure (PSI)	Proposed Average Injection Rate (MMSCFPD)	Proposed Max Injection Rate (MMSCFPD)	Burst Calculation Depth (FT TVD)	Brine Pressure Gradient (PSI/FT)	Casing or Liner Burst (PSI)	MASP + Reservoir Brine Hydrostatic as a percentage of Casing or Liner Burst Pressure (%)	Top Perforation Depth (FT TVD)	MASP Gradient (PSI/FT)	Top Perforation Depth (FT TVD)	Gas Pressure Gradient (PSI/FT)	Formation Parting Pressure Gradient (PSI/FT)	MASP + Gas Hydrostatic as a percentage of Formation Parting Pressure (%)
3001544191	CC21-023H	1250	775	1250	1.8	2	8,419	0.520	12,410	45%	8,419	0.148	8,419	0.200	0.650	54%
3001543819	CC28-008H	1250	740	1250	1.8	2	8,597	0.520	12,410	46%	8,597	0.145	8,597	0.200	0.650	53%
3001542992	CC29-002H	1250	680	1250	1.8	2	8,513	0.520	12,410	46%	8,513	0.147	8,513	0.200	0.650	53%

Wellhead Diagram
Tubing Flow, Casing Injection

- Tubing Flow Wells:
- CC21-023H
 - CC28-008H
 - CC29-002H



KEY
SSV – Safety Shutdown Valve
PI – Pressure Indicator
PIT – Pressure Indicating Transmitter
FCV- Flow Control Valve

Mechanical Integrity Test (MIT) Summary Table

API10	Well Name	Pressure Test	
		Date	Details
3001544191	CC21-023H	10/23/2017	1000 psi for 10 minutes
3001543819	CC28-008H	12/12/2016	9500 psi for 30 minutes
3001542992	CC29-002H	12/11/2016	1000 psi for 30 minutes

Gas Analysis and Operations

CC Gas Source Well List

WELL	API
CEDAR CANYON 15 FEDERAL COM 005H	30-015-42421
RIVER BEND 10 FEDERAL 001	30-015-33208
RIVER BEND 10 FEDERAL 002	30-015-20756
WIDTH CC 6 7 FEDERAL COM 017H	30-015-45629
WIDTH CC 6 7 FEDERAL COM 016H	30-015-45575
HEIGHT CC 6 7 FEDERAL COM 031Y	30-015-45770
HEIGHT CC 6 7 FEDERAL COM 032H	30-015-45554
HEIGHT CC 6 7 FEDERAL COM 033H	30-015-45561
HEIGHT CC 6 7 FEDERAL COM 311H	30-015-45630
LENGTH CC 6 7 FEDERAL COM 021H	30-015-45553
LENGTH CC 6 7 FEDERAL COM 022H	30-015-45565
LENGTH CC 6 7 FEDERAL COM 023H	30-015-45551
WIDTH CC 6 7 FEDERAL COM 015H	30-015-45576
WIDTH CC 6 7 FEDERAL COM 014H	30-015-45573
HEIGHT CC 6 7 FEDERAL COM 034H	30-015-45562
HEIGHT CC 6 7 FEDERAL COM 035H	30-015-45563
HEIGHT CC 6 7 FEDERAL COM 036H	30-015-45564
HEIGHT CC 6 7 FEDERAL COM 312H	30-015-45572
LENGTH CC 6 7 FEDERAL COM 024H	30-015-45552
LENGTH CC 6 7 FEDERAL COM 025H	30-015-45566
LENGTH CC 6 7 FEDERAL COM 026H	30-015-45567
SALT RIDGE CC 20 17 FEDERAL COM 021H	30-015-44945
SALT RIDGE CC 20 17 FEDERAL COM 023H	30-015-44947
MORNING FEDERAL 001H	30-015-37644
H BUCK STATE 005	30-015-35042
H BUCK STATE 010	30-015-34695
HARROUN 15 002	30-015-29763
CEDAR CANYON 15 001H	30-015-39857
HARROUN 15 008	30-015-30253
HARROUN 22 001	30-015-28639
HARROUN 10 001	30-015-30375
HARROUN 10 002	30-015-31709
HARROUN 10 003	30-015-32617
HARROUN 10 004	30-015-32618
HARROUN 15 007	30-015-29987
HARROUN 15 008	30-015-30253
HARROUN 15 014	30-015-32620
HARROUN 15 005	30-015-29310
HARROUN 15 015	30-015-33317
HARROUN 15 016A	30-015-33823
HARROUN 15 017	30-015-33822
HARROUN 22 003	30-015-33821
HARROUN 9 001	30-015-34997

HARROUN 9 003H	30-015-41488
CEDAR CANYON 15 002H	30-015-41032
CEDAR CANYON 15 003H	30-015-41594
CEDAR CANYON 15 004H	30-015-41291
CEDAR CANYON 22 002H	30-015-41327
REFRIED BEANS CC 15 16 STATE COM 012H	30-015-45215
REFRIED BEANS CC 15 16 STATE COM 013H	30-015-45216
REFRIED BEANS CC 15 16 STATE COM 014H	30-015-45217
WHOMPING WILLOW CC 15 16 STATE COM 044H	30-015-45218
H BUCK STATE 003	30-015-33820
H BUCK STATE 004H	30-015-34444
CEDAR CANYON 16 STATE 002H	30-015-41024
CEDAR CANYON 16 STATE 006H	30-015-41595
CEDAR CANYON 16 STATE 012H	30-015-42683
CEDAR CANYON 17 001H	30-015-42058
CEDAR CANYON 16 STATE 011H	30-015-42062
CEDAR CANYON 16 001H	30-015-39856
CEDAR CANYON 16 STATE 007H	30-015-41251
CEDAR CANYON 16 STATE 008H	30-015-41596
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CEDAR CANYON 16 STATE 033H	30-015-43844
CEDAR CANYON 16 STATE 034H	30-015-43843
TAILS CC 10 3 FEDERAL COM 022H	30-015-47957
TAILS CC 10 3 FEDERAL COM 026H	30-015-47959
TAILS CC 10 3 FEDERAL COM 025H	30-015-47960
TAILS CC 10 3 FEDERAL COM 021H	30-015-47958
TAILS CC 10 3 FEDERAL COM 024H	30-015-47961
SALT FLAT CC 20 29 FEDERAL COM 031H	30-015-45080
SALT FLAT CC 20 29 FEDERAL COM 032H	30-015-45081
SALT FLAT CC 20 29 FEDERAL COM 033H	30-015-45082
SALT FLAT CC 20 29 FEDERAL COM 037H	30-015-46369
SALT FLAT CC 20 29 FEDERAL COM 034H	30-015-45048
SALT FLAT CC 20 29 FEDERAL COM 035H	30-015-45049
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SALT FLAT CC 20 29 FEDERAL COM 038H	30-015-46399
OXBOW CC 17 8 FEDERAL COM 031H	30-015-45083
OXBOW CC 17 8 FEDERAL COM 032H	30-015-45084
OXBOW CC 17 8 FEDERAL COM 033H	30-015-45085
OXBOW CC 17 8 FEDERAL COM 037H	30-015-46400
OXBOW CC 17 8 FEDERAL COM 034H	30-015-45086
OXBOW CC 17 8 FEDERAL COM 038H	30-015-46401
OXBOW CC 17 8 FEDERAL COM 036H	30-015-45088
OXBOW CC 17 8 FEDERAL COM 035H	30-015-45087
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CEDAR CANYON 21 FEDERAL COM 023H	30-015-44191
CEDAR CANYON 21 FEDERAL COM 021H	30-015-44181

CEDAR CANYON 21 FEDERAL COM 031H	30-015-44182
CEDAR CANYON 22 FEDERAL COM 005H	30-015-43758
CEDAR CANYON 21 22 FEDERAL COM 032H	30-015-44176
YVONNE 21 FEDERAL 001	30-015-28850
RIVERBEND FEDERAL 009	30-015-28861
CEDAR CANYON 22 001H	30-015-40668
CEDAR CANYON 21 22 FEDERAL COM 034H	30-015-44134
CEDAR CANYON 22 15 FEDERAL COM 034H	30-015-44055
GAINES 22 FEDERAL 001	30-015-35186
CEDAR CANYON 22 FEDERAL COM 006Y	30-015-43906
CEDAR CANYON 21 FEDERAL COM 005H	30-015-43749
CEDAR CANYON 27 FEDERAL COM 005H	30-015-43775
CEDAR CANYON 21 22 FEDERAL COM 033H	30-015-44133
CEDAR CANYON 23 002H	30-015-41194
CEDAR CANYON 23 24 FEDERAL COM 034H	30-015-44178
COYOTE 21 002	30-015-29864
GAINES 21 001	30-015-28638
GAINES 21 004	30-015-28816
CEDAR CANYON 22 15 FEE 031H	30-015-43809
CEDAR CANYON 22 15 FEE 032H	30-015-43808
VORTEC 27 001	30-015-35041
CEDAR CANYON 27 STATE COM 004H	30-015-42063
CEDAR CANYON 22 15 FEE 033H	30-015-43915
CEDAR CANYON 27 STATE COM 010H	30-015-43673
MORGAN FEE COM 001H	30-015-39968
CEDAR CANYON 22 FEDERAL 021H	30-015-43642
CEDAR CANYON 23 24 FEDERAL 031H	30-015-44179
CEDAR CANYON 23 24 FEDERAL 032H	30-015-44180
CEDAR CANYON 22 FEDERAL COM 004H	30-015-43708
CEDAR CANYON 23 FEDERAL 003H	30-015-43290
CEDAR CANYON 23 FEDERAL 004H	30-015-43281
CEDAR CANYON 23 FEDERAL 005H	30-015-43282
CEDAR CANYON 23 FEDERAL COM 006H	30-015-44095
CEDAR CANYON 22 FEDERAL COM 005H	30-015-43758
GUACAMOLE CC 24 23 FEDERAL 011H	30-015-45870
GUACAMOLE CC 24 23 FEDERAL 012H	30-015-45871
CEDAR CANYON 23 001H	30-015-40667
CEDAR CANYON 20 FEDERAL COM 024H	30-015-44545
CEDAR CANYON 20 FEDERAL COM 025H	30-015-44519
CEDAR CANYON 20 FEDERAL COM 026H	30-015-44520
CEDAR CANYON 28 FEDERAL COM 008H	30-015-43819
CEDAR CANYON 28 27 FEDERAL COM 005H	30-015-43645
CEDAR CANYON 27 28 FEDERAL 042H	30-015-44435
CEDAR CANYON 28 FEDERAL COM 041H	30-015-44439
CEDAR CANYON 27 FEDERAL 006H	30-015-43232
CEDAR CANYON 27 FEDERAL 007H	30-015-43233
CEDAR CANYON 28 FEDERAL 006H	30-015-43234

CEDAR CANYON 28 FEDERAL 007H	30-015-43238
CEDAR CANYON 28 FEDERAL 009H	30-015-44016
CEDAR CANYON 29 FEDERAL 021H	30-015-43601
CEDAR CANYON 29 FEDERAL COM 002H	30-015-42992
CEDAR CANYON 29 FEDERAL COM 003H	30-015-42993
CEDAR CANYON 27 28 FEDERAL 043H	30-015-44437
CEDAR CANYON 27 28 FEDERAL 044H	30-015-44438
CEDAR CANYON 29 FEDERAL COM 024H	30-015-44521
CEDAR CANYON 29 FEDERAL COM 025H	30-015-44522
CEDAR CANYON 29 FEDERAL 026H	30-015-44523

Cedar Canyon Gas Analysis Summary

- Producing wells go to 3 Central Tank Batteries (CTBs).
 - Cedar Canyon 28-4 CTB
 - Cedar Canyon 21 CTB
 - Cedar Canyon 22 SAT/CTB
- There are 3 Compressor Gas Lift Stations (CGLs).
 - Salt Flat CGL
 - Cedar Canyon 28 CGL
 - East CGL
- The high-pressure gas lift networks are split by the Pecos River. There is the East of Pecos network and the West of Pecos network.
 - East of Pecos- The Cedar Canyon 28 and East CGL's combine downstream in the same high-pressure gas lift network to feed wells collectively.
 - West of Pecos- The Salt Flat CGL is a separate high-pressure gas lift network.
- Gas analysis is provided for:
 - Salt Flat CGL
 - Cedar Canyon 28 CGL
 - East CGL
 - 2nd Bone Spring production



Certificate of Analysis

Number: 6030-20080207-002A

Artesia Laboratory

200 E Main St.

Artesia, NM 88210

Phone 575-746-3481

Chandler Montgomery
Occidental Petroleum
1502 W Commerce Dr.
Carlsbad, NM 88220

Aug. 26, 2020

Field: Salt Flat
Station Name: Salt Flat Comp Outlet
Station Number: 18799C
Station Location: OXY
Sample Point: Downstream
Formation: Monthly
County: Eddy
Type of Sample: : Spot-Cylinder
Heat Trace Used: N/A
Sampling Method: : Fill and Purge
Sampling Company: : SPL

Sampled By: Michael Mirabal
Sample Of: Gas Spot
Sample Date: 08/24/2020 08:35
Sample Conditions: 917 psia, @ 102 °F Ambient: 80 °F
Effective Date: 08/24/2020 08:35
Method: GPA-2261M
Cylinder No: 5030-00647
Instrument: 70104124 (Inficon GC-MicroFusion)
Last Inst. Cal.: 08/10/2020 0:00 AM
Analyzed: 08/26/2020 13:28:22 by PGS

Analytical Data

Components	Un-normalized Mol %	Mol. %	Wt. %	GPM at 14.65 psia
Nitrogen	1.124	1.12836	1.452	
Carbon Dioxide	0.090	0.08992	0.182	
Methane	74.914	75.18483	55.422	
Ethane	12.999	13.04609	18.025	3.483
Propane	6.585	6.60901	13.391	1.817
Iso-Butane	0.824	0.82658	2.208	0.270
n-Butane	2.009	2.01586	5.384	0.634
Iso-Pentane	0.382	0.38368	1.272	0.140
n-Pentane	0.414	0.41540	1.377	0.150
Hexanes	0.184	0.18446	0.730	0.076
Heptanes	0.084	0.08390	0.386	0.039
Octanes	0.027	0.02740	0.144	0.014
Nonanes Plus	0.005	0.00451	0.027	0.003
	99.641	100.00000	100.000	6.626

Calculated Physical Properties

	Total	C9+
Calculated Molecular Weight	21.76	128.26
Compressibility Factor	0.9961	
Relative Density Real Gas	0.7541	4.4283

GPA 2172 Calculation:

Calculated Gross BTU per ft³ @ 14.65 psia & 60°F

Real Gas Dry BTU	1297.5	6974.4
Water Sat. Gas Base BTU	1275.4	6852.4
Ideal, Gross HV - Dry at 14.65 psia	1292.5	6974.4
Ideal, Gross HV - Wet	1269.9	6852.4

Comments: H2S Field Content 0 ppm
Mcf/day 30262.8203

Hydrocarbon Laboratory Manager

Quality Assurance: The above analyses are performed in accordance with ASTM, UOP, GPA guidelines for quality assurance, unless otherwise stated.

CEDAR CANYON 28 CGL



Volumetrics US Inc.
3001 N Cameron St, Victoria, TX-77901
Phone: 361-827-4024

Company: OXY USA INC
Field/Location : NMSW
Station Name : CEDAR CANYON 28 TO ENTERPRISE CHECK
Station Number : 14807C
Sample Date: 11/17/20 1:05 PM
Analysis Date: 12/2/20 12:41 PM
Instrument: VARIAN- CP 4900 GC
Calibration/Verification Date: 12/2/2020
Heat Trace used: YES

Work Order: 4000204555
Sampled by: OXY/JE
Sample Type : SPOT-CYLINDER
Sample Temperature (F): 92
Sample Pressure (PSIG): 896
Flow rate (MCF/Day): 23409
Ambient Temperature (F): 56
Sampling method: FILL & EMPTY
Cylinder Number: 277

NATURAL GAS ANALYSIS: GPA 2261

Components	Un-Normalized Mol%	Normalized Mol%	GPM 14.650	GPM 14.730	GPM 15.025
Hydrogen Sulfide	0.0000	0.0000			
Nitrogen	1.7289	1.7564			
Methane	74.5016	75.6862			
Carbon Dioxide	1.8606	1.8902			
Ethane	11.3167	11.4967	3.068	3.085	3.147
Propane	5.4427	5.5292	1.520	1.529	1.559
Isobutane	0.6853	0.6962	0.227	0.229	0.233
N-butane	1.6639	1.6904	0.532	0.535	0.545
Isopentane	0.3632	0.3690	0.135	0.135	0.138
N-Pentane	0.4015	0.4079	0.148	0.148	0.151
Hexanes Plus	0.4703	0.4778	0.208	0.209	0.213
Total	98.4347	100.0000			

Hexanes plus split (60%-30%-10%)

Physical Properties (Calculated)	14.650 psia	14.730 psia	15.025 psia
Total GPM Ethane+	5.838	5.870	5.988
Total GPM Iso-Pentane+	0.490	0.493	0.503
Compressibility (Z)	0.9963	0.9963	0.9962
Specific Gravity (Air=1) @ 60 °F	0.7536	0.7536	0.7536
Molecular Weight	21.754	21.754	21.754
Gross Heating Value	14.650 psia	14.730 psia	15.025 psia
Dry, Real (BTU/Ft ³)	1241.1	1247.9	1273.0
Wet, Real (BTU/Ft ³)	1219.5	1226.2	1250.8
Dry, Ideal (BTU/Ft ³)	1236.5	1243.3	1268.2
Wet, Ideal (BTU/Ft ³)	1215.0	1221.7	1246.1

Temperature base 60 °F

Comment: FIELD H2S = 0 PPM

Verified by

Mostaq Ahammad
Petroleum Chemist

Approved by

Deann Friend

Deann Friend
Laboratory Manager

EAST CGL



Certificate of Analysis

Number: 6030-20080252-002A

Artesia Laboratory

200 E Main St.

Artesia, NM 88210

Phone 575-746-3481

Chandler Montgomery
Occidental Petroleum
1502 W Commerce Dr.
Carlsbad, NM 88220

Sep. 01, 2020

Field: Cedar Canyon
Station Name: East Comp Station Enterprise Check
Station Number: 14808C
Station Location: OXY
Sample Point: Downstream
Formation: Monthly
County: Eddy
Type of Sample: : Spot-Cylinder
Heat Trace Used: N/A
Sampling Method: : Fill and Purge
Sampling Company: : SPL

Sampled By: Michael Mirabal
Sample Of: Gas Spot
Sample Date: 08/27/2020 11:07
Sample Conditions: 837 psig, @ 112 °F Ambient: 89 °F
Effective Date: 08/27/2020 11:07
Method: GPA-2261M
Cylinder No: 5030-01684
Instrument: 70104251 (Inficon GC-MicroFusion)
Last Inst. Cal.: 08/31/2020 0:00 AM
Analyzed: 09/01/2020 11:01:21 by PGS

Analytical Data

Components	Un-normalized Mol %	Mol. %	Wt. %	GPM at 14.65 psia		
Nitrogen	2.046	2.061	2.511		GPM TOTAL C2+	6.175
Methane	73.024	73.556	51.329		GPM TOTAL C3+	3.278
Carbon Dioxide	3.203	3.226	6.175		GPM TOTAL iC5+	1.043
Ethane	10.773	10.851	14.192	2.897		
Propane	5.318	5.357	10.275	1.474		
Iso-butane	0.671	0.676	1.709	0.221		
n-Butane	1.702	1.714	4.333	0.540		
Iso-pentane	0.447	0.450	1.412	0.164		
n-Pentane	0.525	0.529	1.660	0.191		
Hexanes Plus	1.569	1.580	6.404	0.688		
	99.278	100.000	100.000	6.175		

Calculated Physical Properties

Relative Density Real Gas	Total	C6+
	0.7968	3.2176
Calculated Molecular Weight	22.99	93.19
Compressibility Factor	0.9959	

GPA 2172 Calculation:

Calculated Gross BTU per ft³ @ 14.65 psia & 60°F

Real Gas Dry BTU	1269	5113
Water Sat. Gas Base BTU	1247	5024
Ideal, Gross HV - Dry at 14.65 psia	1263.9	5113.2
Ideal, Gross HV - Wet	1241.8	5023.7
Net BTU Dry Gas - real gas	1153	
Net BTU Wet Gas - real gas	1133	

Comments: H₂S Field Content 0 ppm
8237.1455 Mcf/day

Hydrocarbon Laboratory Manager

Quality Assurance: The above analyses are performed in accordance with ASTM, UOP, GPA guidelines for quality assurance, unless otherwise stated.



Certificate of Analysis

Number: 6030-21040299-002A

Artesia Laboratory

200 E Main St.

Artesia, NM 88210

Phone 575-746-3481

Chandler Montgomery
Occidental Petroleum
1502 W Commerce Dr.
Carlsbad, NM 88220

Apr. 27, 2021

Field: Cedar-Canyon
Station Name: Cedar Canyon 23 3H
Station Number: N/A
Station Location: CTB
Sample Point: Meter
Formation: Spot
County: Eddy
Type of Sample: : Spot-Cylinder
Heat Trace Used: N/A
Sampling Method: : Fill and Purge
Sampling Company: : SPL

Sampled By: Chad Whitt
Sample Of: Gas Spot
Sample Date: 04/26/2021
Sample Conditions: 125.8 psig, @ 85.0 °F Ambient: 77 °F
Effective Date: 04/26/2021
Method: GPA-2261M
Cylinder No: 1111-001297
Instrument: 70104251 (Inficon GC-MicroFusion)
Last Inst. Cal.: 04/26/2021 0:00 AM
Analyzed: 04/27/2021 14:39:40 by EJ R

Analytical Data

Components	Un-normalized Mol %	Mol. %	Wt. %	GPM at 14.65 psia
Hydrogen Sulfide	NIL	NIL	NIL	
Nitrogen	1.689	1.71354	2.173	
Carbon Dioxide	1.008	1.02210	2.036	
Methane	74.585	75.65133	54.943	
Ethane	11.500	11.66445	15.878	3.114
Propane	5.549	5.62790	11.235	1.548
Iso-Butane	0.701	0.71132	1.872	0.232
n-Butane	1.718	1.74286	4.586	0.548
Iso-Pentane	0.401	0.40693	1.329	0.149
n-Pentane	0.447	0.45329	1.481	0.164
Hexanes	0.304	0.30804	1.202	0.126
Heptanes	0.575	0.58271	2.643	0.268
Octanes	0.075	0.07638	0.395	0.039
Nonanes Plus	0.039	0.03915	0.227	0.022
	98.591	100.0000	100.000	6.210

Calculated Physical Properties

Calculated Molecular Weight	Total	C9+
	22.09	128.26
Compressibility Factor	0.9961	
Relative Density Real Gas	0.7654	4.4283

GPA 2172 Calculation:

Calculated Gross BTU per ft³ @ 14.65 psia & 60°F

Real Gas Dry BTU	1281.8	6974.4
Water Sat. Gas Base BTU	1259.9	6852.4
Ideal, Gross HV - Dry at 14.65 psia	1276.8	6974.4
Ideal, Gross HV - Wet	1254.4	6852.4

Comments: H₂S Field Content 0 ppm
Mcf/day 1553.5

Report generated by: Eric Ramirez

Quality Assurance: The above analyses are performed in accordance with ASTM, UOP, GPA guidelines for quality assurance, unless otherwise stated.

Corrosion Prevention Plan

Existing Corrosion Prevention Plan

- Produced gas is processed through a gas dehydration unit to remove water.
- Corrosion inhibitor is added to the system downstream of the gas dehydration unit.
- Fluid samples are taken regularly and checked for Fe, Mn, and residual corrosion inhibitor in produced fluids.
- Continuously monitor and adjust the chemical treatment over the life of the well.

Oxy will continue the existing corrosion prevention plan in place for the gas lift system due to the similar nature of gas storage operations.

- Fluid samples will be taken prior to injection to establish a baseline for analysis.
- After a storage event, fluid samples will be taken to check for Fe, Mn, and residual corrosion inhibitor in the produced fluids.
- Continuously monitor and adjust the chemical treatment over the life of the project.



NM GAS STORAGE OPERATIONAL PLAN

Operational Plan

WELLSITE CLGC

Oxy USA Inc. (Oxy) will monitor the following items on each Closed Loop Gas Capture (CLGC) well via SCADA system:

- Injection flow rate and volume
 - Instantaneous Rate
 - Total Injected by Day (volume)
- Tubing Pressure
- Casing Pressure
- Bradenhead Pressures
- Safety devices
 - Pressure kills have an automated kill sequence that is initiated by SCADA system readings.
 - Injection pressure kills on production stream for injection
 - Relief Valves for both production and gas storage/injection streams to prevent overpressure (not monitored via SCADA other than pressure trend)
 - Control of injection rate and pressures via control valve at each well injection stream
 - Control of production stream via automated choke valves to ensure controlled production and prevent over pressurization of flowline

CENTRAL TANK BATTERY (CTB)

Oxy will monitor the following items at each CTB via SCADA system:

- Production Rates
 - Oil
 - Gas
 - Water
- Safety devices
 - Flares at CTBs
 - Injection pressure kills on production/gas storage stream for injection
 - Emergency Shutdown (ESD) of wells that are local and remote for automatic shut downs to safe the system
 - Control of injection rate and pressures via control valve at each well injection stream

CENTRAL GAS LIFT (CGL) COMPRESSOR(S)

Oxy will monitor the following items on each Central Gas Lift (CGL) Compressor Station via SCADA system:

- Safety devices
 - Discharge/injection pressure kills of each compressor and for the station
 - Relief Valves on 3rd stage of compressors, to prevent over pressurization (not monitored via SCADA other than pressure trend)
 - Station recycle valves (that recycle discharge pressure back to suction) if the pressure is getting too high for the compressor or station. (not all control valves are capable of

remote monitoring of valve position; but still monitored in some sense of the pressure trend for the station)

SUPERVISORY CONTROL AND DATA ACQUISITION (SCADA)

Oxy SCADA system consists of PLCs at each CTB, Wellsite, and Central Gas Lift compressor or station.

- The Programmable Logic Controller (PLCs) will take action immediately (within seconds or minutes) as programmed to automatically safe the system as required; for the system and certain device shut down(s).
- The High Alarms and High-High Alarms will be logged and registered in the SCADA system. Also the call center will take the High Alarm and make the physical phone call notification to the production techs to acknowledge the alarm & take action.

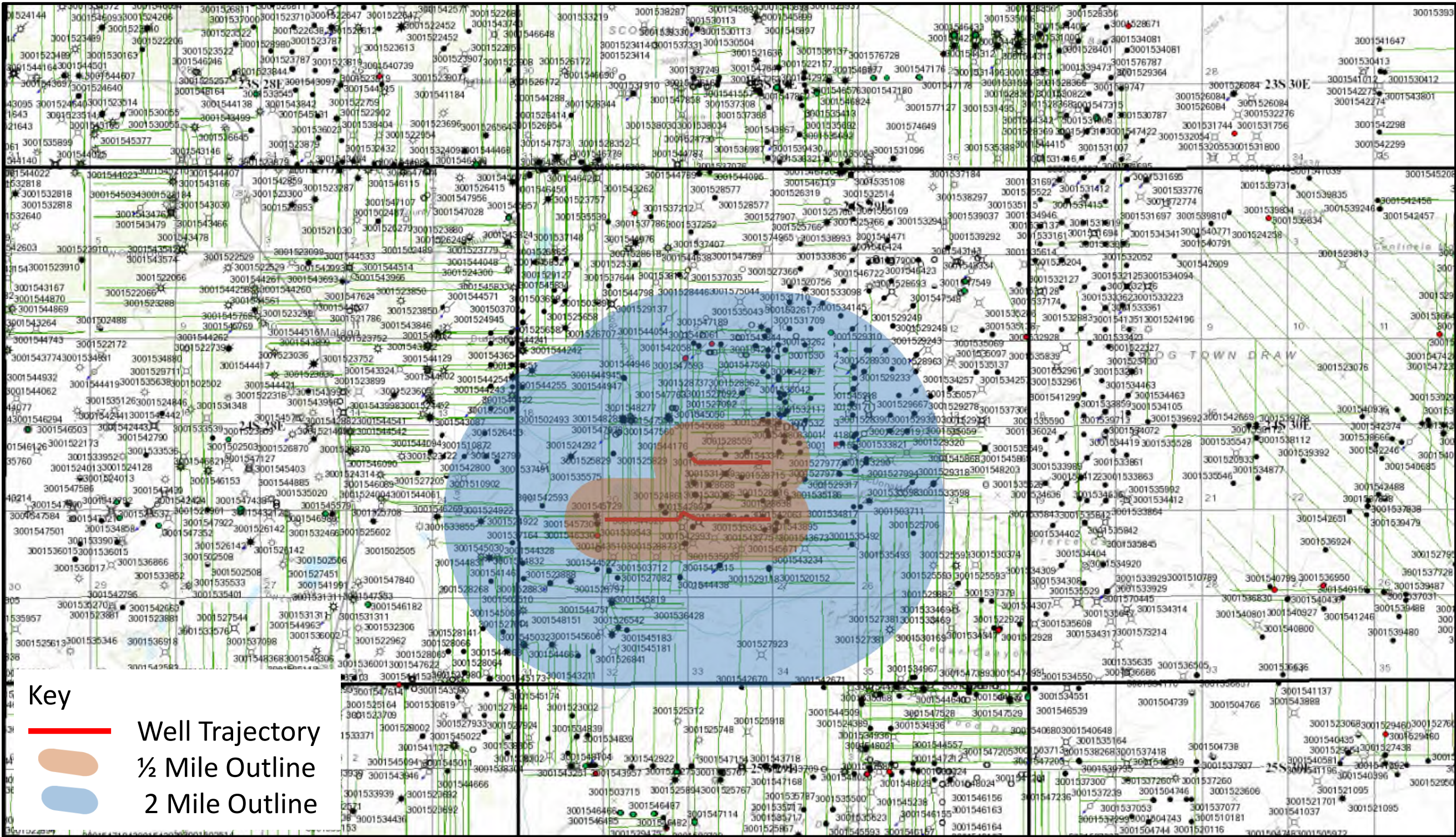
ENVIRONMENTAL/SPILL RESPONSE

Oxy will report and track any spill recordable or non-recordable via our CDR system

- Any spill or gas release will be reported by operations calling in to our Call Center to make the report of spill/release. The fluid type and release amount will be disclosed along with location details; and if it's a recordable or non-recordable spill.
- Liquids will be contained and isolated and vacuum trucks will be called in to recover the liquid and will also report the amount of liquid recovered on the same CDR spill form.
 - Additional reclamation will be coordinated to ensure proper recovery of contaminated soil and liquid.

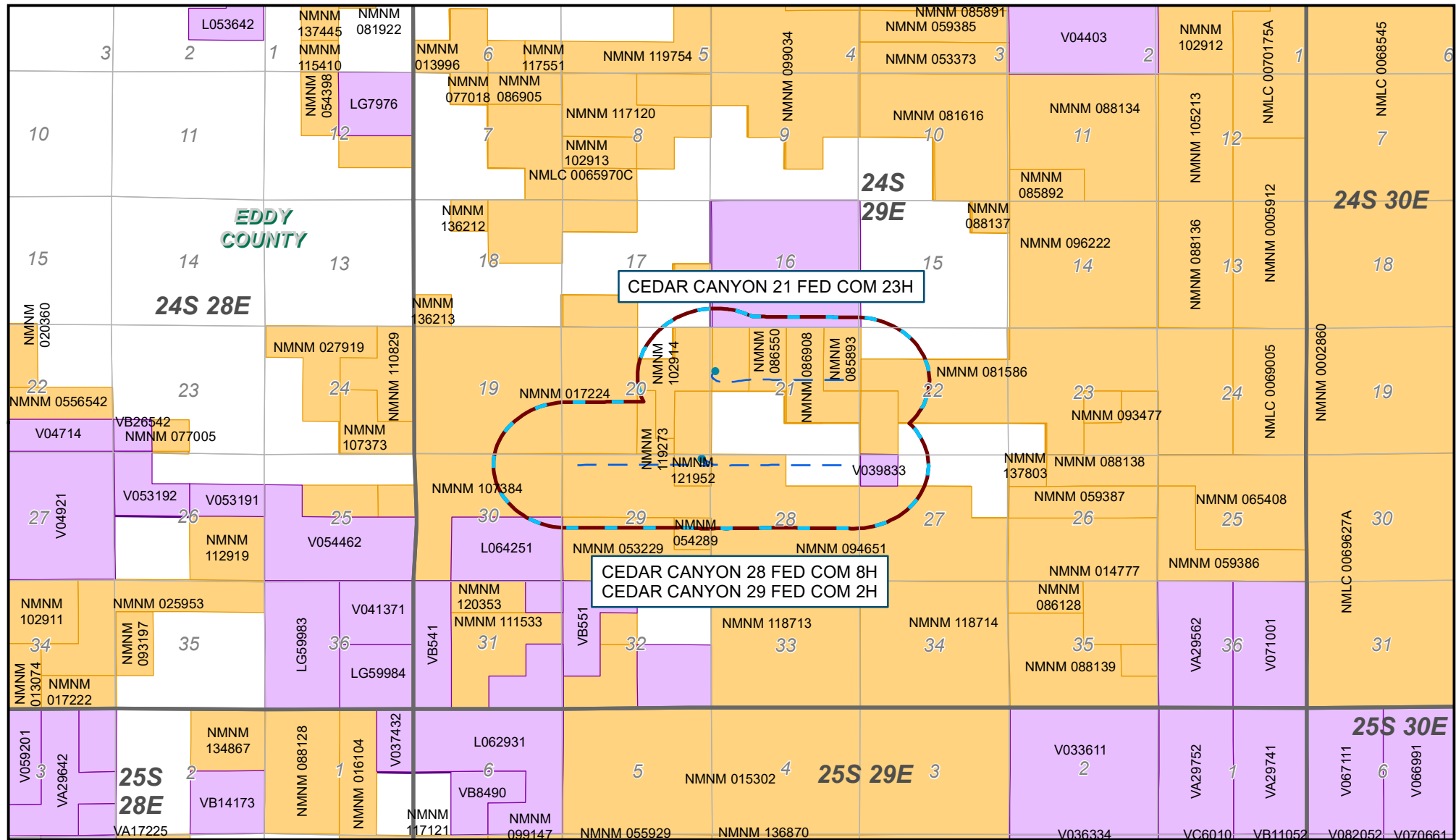
Area of Review

Cedar Canyon 2 Mile Well Map





CEDAR CANYON NEW MEXICO



County



1/2 mile AOR



Surface Hole Location



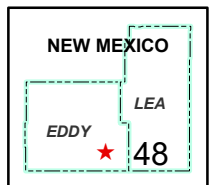
Wellbore Trajectory

Lease Owner Type:

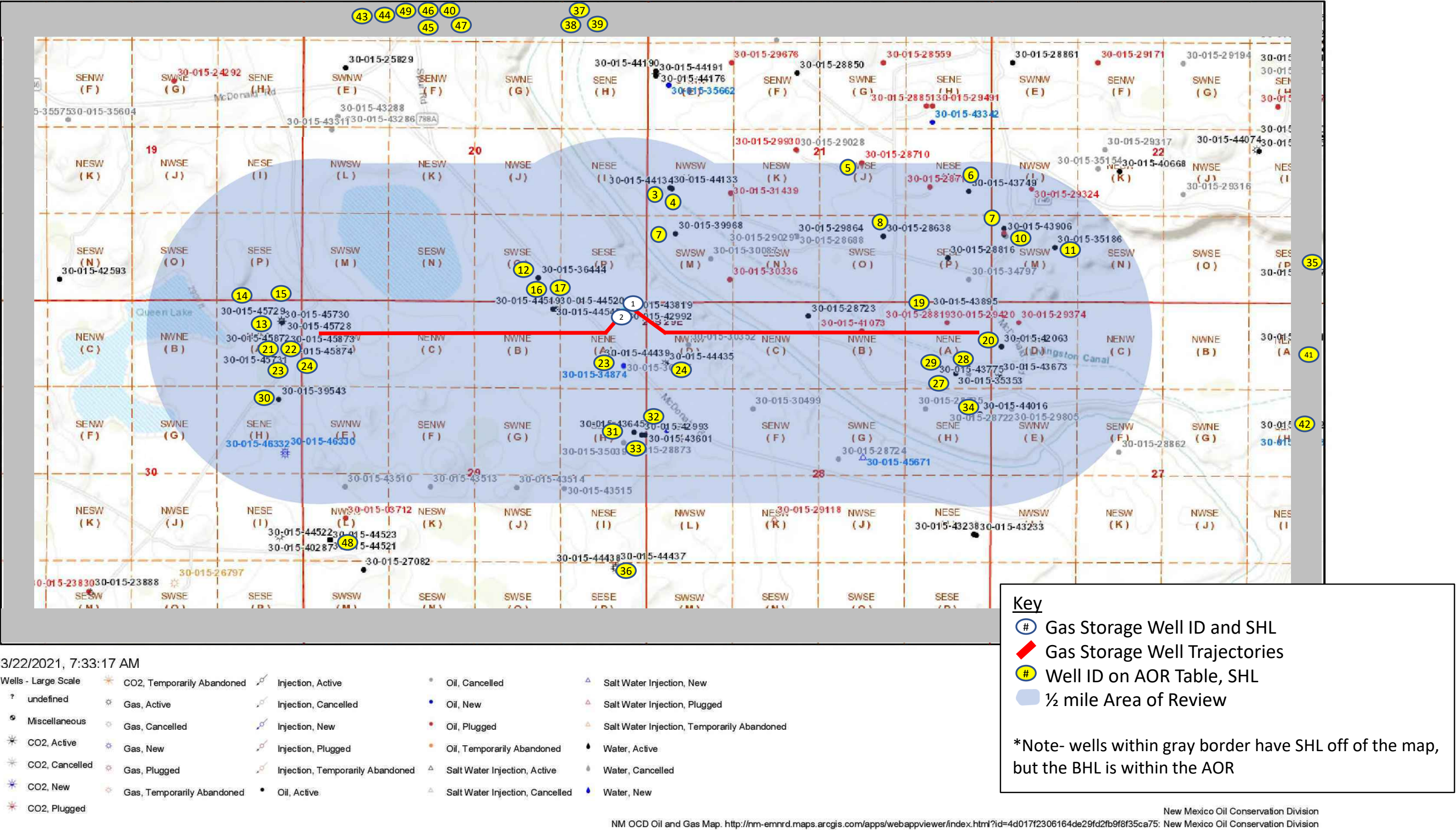
Federal

State

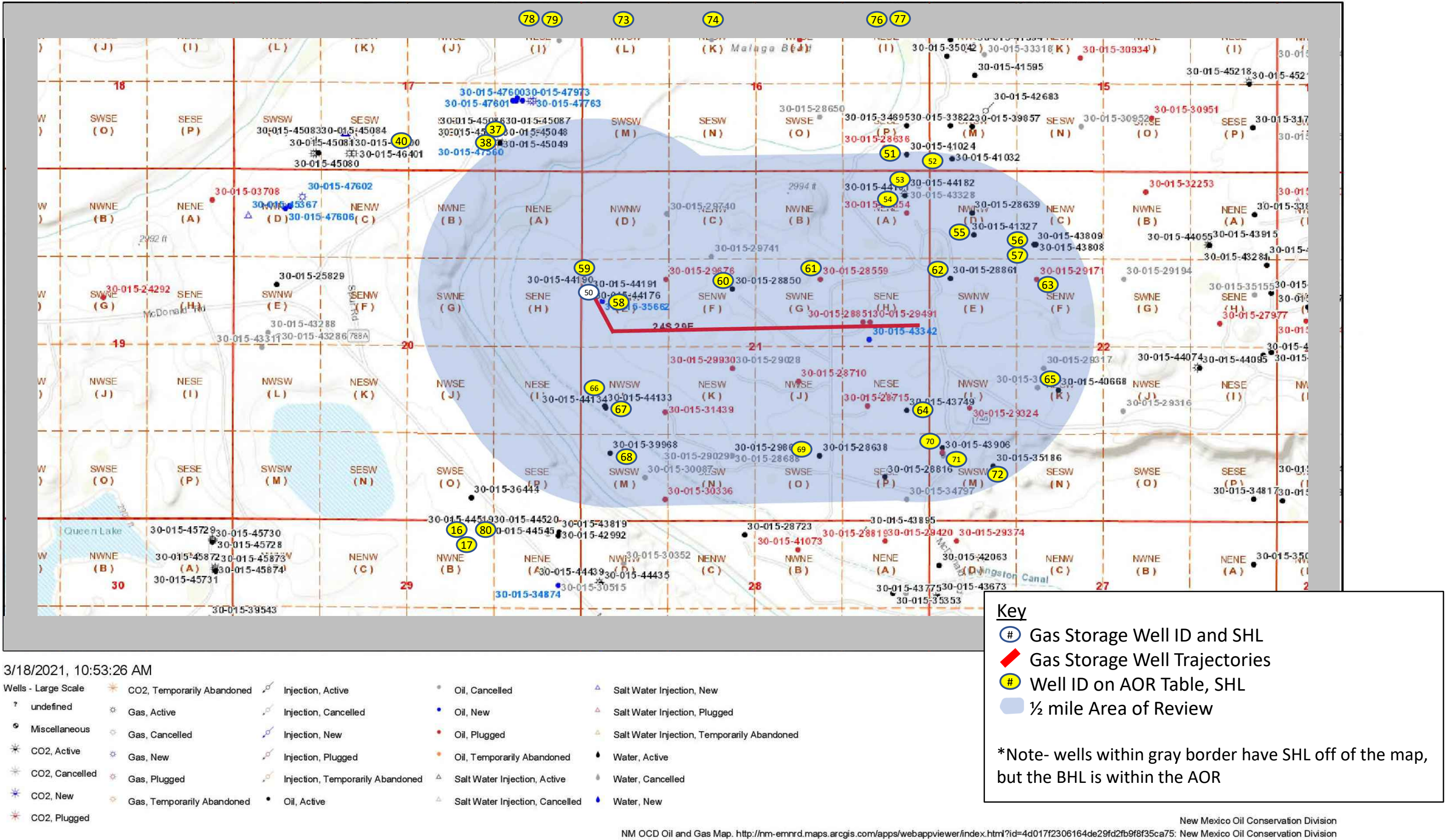
0 0.75 1.5 3 Miles



Cedar Canyon 28 Federal Com #8H and Cedar Canyon 29 Federal Com #2H AOR Map



Cedar Canyon 21 Federal Com #023H AOR



Well ID	API NUMBER	Current Operator	LEASE NAME	WELL NUMBER	Well Type:	Status:	Footages N/S	Footages N/S	Footages E/W	Footages E/W	Surface Location Unit	Surface Location Section	Surface Location n TShip	Surface Location Range	Spud:	True Vertical Depth [ft]	Measured Depth [ft]	HOLE SIZE [in]	CSG SIZE [in]	SET AT [ft]	SX CMT	CMT TO [ft]	HOW MEASURE D	Current Completion [ft]	Comment	Current Producing Pool
1	30-015-43819	OXY USA INC	CEDAR CANYON 28 FEDERAL COM	008H	Oil	Active	170	N	319	E	A	29	24S	29E	10/20/2016	8712	13460	14.750 9.875 6.750 6.75	10.750 7.625 5.500 4.500	405 8050 8724 13445	467 1595 580 580	Surf Circ CBL CBL	467 7050 7050 7050	13292-8756	5.5" to 4.5" cross over at 8724 ft	[96473] PIERCE CROSSING; BONE SPRING, EAST
2	30-015-42992	OXY USA INC	CEDAR CANYON 29 FEDERAL COM	002H	Oil	Active	230	N	320	E	A	29	24S	29E	10/21/2016	8531	13384	14.750 9.875 6.750 6.750	10.750 7.625 5.5 4.500	410 8049 7919 13384	462 2963 NA 580	Surf CBL NA Circ	462 140 NA 7919	13152-8633	5.5" frac string	[50371] PIERCE CROSSING; BONE SPRING
3	30-015-44134	OXY USA INC	CEDAR CANYON 21 22 FEDERAL COM	034H	Oil	Active	1737	S	399	W	L	21	24S	29E	5/9/2017	9997	19980	17.500 12.250 8.500	13.375 9.625 5.500	540 9242 19968	617 2335 1735	Surf Circ Circ	617 2335 1735	9978-19797		[96473] PIERCE CROSSING; BONE SPRING, EAST
4	30-015-44133	OXY USA INC	CEDAR CANYON 21 22 FEDERAL COM	033H	Oil	Active	1754	S	374	W	L	21	24S	29E	5/10/2017	10002	19951	17.500 12.250 8.500	13.375 9.625 5.500	542 9183 19842	633 2235 1730	Surf Circ Circ	633 2235 1730	9908-19667		[96473] PIERCE CROSSING; BONE SPRING, EAST
5	30-015-28710	OXY USA INC	MITCHELL 21 FEDERAL	002	Oil	PA	2110	S	1980	E	J	21	24S	29E	1/12/1996	7900	7900	14.75 9.88 6.75	10.750 7.625 4.500	533 2810 7900	664 885 1165	Surf Circ CBL	664 885 1000	NA		NA
6	30-015-43749	OXY USA INC	CEDAR CANYON 21 FEDERAL COM	005H	Oil	Active	1090	S	207	W	M	22	24S	29E	8/6/2016	8626	13545	14.750 9.875 6.750 6.750	10.750 7.625 5.500 4.500	430 8138 8840 13531	470 1170 560 560	Surf Circ Circ Circ	470 1170 560 560	8918-13313		[96238] CORRAL DRAW; BONE SPRING
7	30-015-39968	OCCIDENTAL PERMIAN LTD	MORGAN FEE COM	001H	Oil	Active	1035	S	455	W	M	21	24S	29E	4/10/2012	8687	12741	17.500 12.250 8.750	13.375 9.625 5.500	400 3037 12741	480 1040 2430	Surf Circ Circ	480 1040 2430	9150-12600		[96238] CORRAL DRAW; BONE SPRING
8	30-015-28638	OXY USA INC	GAINES 21	001	Oil	Active	990	S	1650	E	O	21	24S	29E	11/1/1995	7850	7850	14.750 9.875 9.875	10.750 7.625 4.500	523 2830 7850	625 1190 1240	Surf Circ CBL	625 1190 3894	7658-7683		[96238] CORRAL DRAW; BONE SPRING
9	30-015-43906	OXY USA INC	CEDAR CANYON 22 FEDERAL COM	006Y	Oil	Active	1040	S	207	W	M	22	24S	29E	9/27/2016	8850	13405	14.750 9.875 6.750 6.750	10.750 7.625 5.500 4.500	435 8163 8957 13397	740 1300 540 540	Surf Circ Circ Circ	740 1300 540 540	8610-13196		[96238] CORRAL DRAW; BONE SPRING
10	30-015-43758	OXY USA INC	CEDAR CANYON 22 FEDERAL COM	005H	Oil	Active	1120	S	207	W	M	22	24S	29E	8/6/2016	8819	13525	14.750 9.875 6.750 6.750	10.750 7.625 5.500 4.500	437 7650 8921 13514	470 3500 580 580	Surf Circ Circ Circ	470 3500 580 580	8939-13358		[96238] CORRAL DRAW; BONE SPRING
11	30-015-35186	OXY USA INC	GAINES 22 FEDERAL	001	Oil	Active	820	S	990	W	M	22	24S	29E	11/15/2006	10752	10752	17.50 12.25 8.50	13.38 9.63 5.50	557 2902 10752	500 1175 2300	Surf Circ CBL	500 1846 1700	8110-10660		[96473] PIERCE CROSSING; BONE SPRING, EAST
12	30-015-36444	SMC OIL & GAS, INC.	QUEEN LAKE 20 FEDERAL	002H	Oil	Active	350	S	1650	E	O	20	24S	29E	8/20/2008	10802	10719	17.500 12.250 8.500	13.375 9.625 5.500	655 2800 10802	765 1305 1850	Surf Circ Circ	765 1305 2300	7751-10603		[50371] PIERCE CROSSING; BONE SPRING
13	30-015-45728	Murchison Oil and Gas, LLC	ROCK RIDGE FEDERAL WCB	001H	Gas	Active	310	N	300	E	A	30	24S	29E	4/24/2019	10784	15450	16.000 12.25 8.500	13.375 9.625 5.500	352 9536 15423	355 2525 1705	Surf Circ Circ	355 2525 1705	10890-15355		[98220] PURPLE SAGE; WOLFCAMP (GAS)
14	30-015-45729	Murchison Oil and Gas, LLC	ROCK RIDGE FEDERAL WCXY	002H	Gas	Active	330	N	300	E	A	30	24S	29E	4/10/2019	9714	14433	16.000 12.250 8.500	13.375 9.625 5.500	373 9016 14413	355 2725 1585	Surf Circ Circ	355 2725 1585	9850-14375		[98220] PURPLE SAGE; WOLFCAMP (GAS)
15	30-015-45730	Murchison Oil and Gas, LLC	ROCK RIDGE FEDERAL BSS	004H	Oil	Active	350	N	300	E	A	30	24S	29E	3/25/2019	8406	13060	16.000 12.250 8.500	13.375 9.625 5.500	376 2779 13055	250 960 1730	Surf Circ Circ	250 960 1730	8495-12999		[96671] PIERCE CROSSING; BONE SPRING, SOUTH
16	30-015-44519	OXY USA INC	CEDAR CANYON 20 FEDERAL COM	025H	Oil	Active	110	N	1390	E	B	29	24S	29E	5/17/2018	8671	16200	14.750 9.875 6.75 6.750	10.750 7.625 5.500 4.500	412 8034 8557 16188	1138 1547 943 943	Surf Circ CBL CBL	412 1547 943 943	8605-16042	5.5" to 4.5" cross over at 8557 ft	[50371] PIERCE CROSSING; BONE SPRING
17	30-015-44520	OXY USA INC	CEDAR CANYON 20 FEDERAL COM	026H	Oil	Active	110	N	1360	E	B	29	24S	29E	5/20/2018	8662	16365	14.750 9.875 6.75 6.750	10.750 7.625 5.500 4.500	572 8066 8626 16353	862 1582 958 958	Surf Circ CBL CBL	862 1582 958 958	8662-16213	5.5" to 4.5" cross over at 8626 ft	[50371] PIERCE CROSSING; BONE SPRING
19	30-015-43895	NGL WATER SOLUTIONS PERMIAN MOUTRAY SWD		001	SWD	Active	140	N	945	E	A	28	24S	29E	10/3/2016	16036	16036	26.000 17.500 12.250 8.500	20.000 13.375 9.625 7.875	556 2823 10204 14905	1100 1990 2400 475	Surf Circ Circ Circ	1100 1990 2400 475	14905-16036		[96101] SWD; DEVONIAN
20	30-015-42063	OXY USA INC	CEDAR CANYON 27 STATE COM	004H	Oil	Active	700	N	173	W	D	27	24S	29E	7/17/2014	8826	13589	14.750 10.625 7.875	11.750 8.625 5.500	464 3115 13585	910 880 1620	Surf Circ Circ	910 880 1620	9110-12449		[96473] PIERCE CROSSING; BONE SPRING, EAST
21	30-015-45872	Murchison Oil and Gas, LLC	ROCK RIDGE FEDERAL WCXY	005H	Gas	Active	745	N	250	E	A	30	24S	29E	7/12/2019	9732	14538	16.000 12.250 8.500	13.375 9.625 5.500	359 9033 14523	355 3015 1615	Surf Circ Circ	355 3015 1615	9960-14485		[98220] PURPLE SAGE; WOLFCAMP (GAS)
22	30-015-45873	Murchison Oil and Gas, LLC	ROCK RIDGE FEDERAL WCXY	006H	Gas	Active	765	N	250	E	A	30	24S	29E	6/28/2019	9726	14438	16.000 12.250 8.500	13.375 9.625 5.500	370 9023 14438	355 820 1595	Surf Circ Circ	355 820 1595	9875-14400		[98220] PURPLE SAGE; WOLFCAMP (GAS)
23	30-015-45731	Murchison Oil and Gas, LLC	ROCK RIDGE FEDERAL BSS	007H	Oil	Active	785	N	250	E	A	30	24S	29E	6/10/2019	8398	13140	16.000 12.250	13.375 9.625	370 2775	400 960	Surf Circ	400 960	8560-13085		[96671] PIERCE CROSSING; BONE SPRING, SOUTH

24	30-015-45874	Murchison Oil and Gas, LLC	ROCK RIDGE FEDERAL BSS	008H	Oil	Active	805	N	250	E	A	30	24S	29E	6/8/2019	8409	13216	8.500 16.000 12.250 8.500	5.500 13.375 9.625 5.500	13120 370 2771 13194	1790 355 965 1800	Surf Surf Surf Surf	Circ Circ Circ Circ	8665-13160		[98220] PURPLE SAGE; WOLFCAMP (GAS)
25	30-015-44439	OXY USA INC	CEDAR CANYON 28 FEDERAL COM	041H	Gas	Active	934	N	305	E	D	28	24S	29E	8/6/2018	10051	14778	14.750 9.875 6.75 6.750	10.750 7.625 5.500 4.500	682 9368 10006 14755	1000 1814 667 667	Surf Surf CBL CBL	Circ Circ Circ Circ	10582-14546	5.5" to 4.5" cross over at 10006 ft	[98220] PURPLE SAGE; WOLFCAMP (GAS)
26	30-015-44435	OXY USA INC	CEDAR CANYON 27 28 FEDERAL	042H	Oil	Active	956	N	325	W	D	28	24S	29E	8/5/2018	9982	20134	14.750 9.875 6.750	10.750 7.625 5.500	670 9382 20122	1000 817 864	Surf Surf Surf	Circ Circ Circ	9934-20031		[96473] PIERCE CROSSING; BONE SPRING, EAST
27	30-015-35353	OXY USA INC	GAINES 28 COM	001	Oil	PA	1120	N	530	E	A	28	24S	29E	3/17/2007	10575	10575	17.500 12.250 8.500	13.375 9.625 5.500	550 2873 10575	725 1050 2100	Surf Surf CBL	Circ Circ Circ	NA		NA
28	30-015-43673	OXY USA INC	CEDAR CANYON 27 STATE COM	010H	Gas	Active	1154	N	121	W	D	27	24S	29E	5/28/2016	10125	14880	14.750 9.875 6.750 6.750	10.750 7.625 5.500 4.500	500 9032 10189 14870	530 1640 590 590	Surf Surf CBL CBL	Circ Circ Circ Circ	10136-14712	5.5" to 4.5" cross over at 10189 ft	[98220] PURPLE SAGE; WOLFCAMP (GAS)
29	30-015-43775	OXY USA INC	CEDAR CANYON 27 FEDERAL COM	005H	Oil	Active	1154	N	151	W	D	27	24S	29E	5/28/2016	8819	13743	9.875 6.750	7.625 5.500	8886 13743	1500 600	Surf Surf	Circ Circ	9079-13583		[96473] PIERCE CROSSING; BONE SPRING, EAST
30	30-015-39543	Murchison Oil and Gas, LLC	ROCK RIDGE FEDERAL	003H	Oil	Active	1520	N	350	E	H	30	24S	29E	1/5/2012	7065	11522	17.500 12.250 7.88	13.375 9.625 5.500	515 2658 11517	540 980 1210	Surf Surf Surf	Circ Circ Circ	6956-11300		[96671] PIERCE CROSSING; BONE SPRING, SOUTH
31	30-015-43645	OXY USA INC	CEDAR CANYON 28 27 FEDERAL COM	005H	Oil	Active	1990	N	180	E	H	29	24S	29E	12/21/2016	8733	18714	17.50 12.25 8.50	13.38 9.63 5.50	667 8190 18704	735 2620 1790	Surf Surf CBL	Circ Circ Circ	8626-18482		[96473] PIERCE CROSSING; BONE SPRING, EAST
32	30-015-42993	OXY USA INC	CEDAR CANYON 29 FEDERAL COM	003H	Oil	Active	1990	N	210	E	H	29	24S	29E	12/23/2016	8563	13345	14.750 9.875 6.750	10.750 7.625 4.500	670 8098 13340	700 1215 550	Surf Surf Surf	Circ Circ Circ	8582-13135		[50371] PIERCE CROSSING; BONE SPRING
33	30-015-43601	OXY USA INC	CEDAR CANYON 29 FEDERAL	021H	Oil	Active	1989	N	150	E	H	29	24S	29E	12/24/2016	8526	13480	14.750 9.875 6.750	10.750 7.625 4.500	665 8096 13470	610 2020 550	Surf Surf Surf	Circ Circ Circ	8719-13274		[50371] PIERCE CROSSING; BONE SPRING
34	30-015-44016	OXY USA INC	CEDAR CANYON 28 FEDERAL	009H	Oil	Active	1990	N	120	E	H	29	24S	29E	1/15/2017	8708	13835	14.750 9.875 6.750	10.750 7.625 4.500	672 7980 13822	700 2140 550	Surf Surf Surf	Circ Circ Circ	9079-13637		[96473] PIERCE CROSSING; BONE SPRING, EAST
35	30-015-34817	OXY USA INC	VORTEC 22	001	Oil	Active	330	S	330	E	P	22	24S	29E	4/28/2006	10852	10852	17.500 12.250 7.625	13.375 9.625 5.5	555 2915 10852	475 1075 2100	Surf Surf CBL	Circ Circ Circ	8121-10730		[50371] PIERCE CROSSING; BONE SPRING
36	30-015-44437	OXY USA INC	CEDAR CANYON 27 28 FEDERAL	043H	Gas	Active	1275	S	465	E	P	29	24S	29E	9/28/2017	10097	20270	17.500 12.250 8.500	13.375 9.625 5.500	765 9485 20257	965 3387 2312	Surf Surf Surf	Circ Circ Circ	10286-20110		[98220] PURPLE SAGE; WOLFCAMP (GAS)
37	30-015-45048	OXY USA INC	SALT FLAT CC 20 29 FEDERAL COM	034H	Gas	Active	421	S	1271	E	P	17	24S	29E	9/26/2019	9981	20456	17.500 9.875 6.75	13.375 7.625 5.500	419 9418 20447	550 2735 831	Surf Surf Circ	Circ Circ Circ	10208-20185		[98220] PURPLE SAGE; WOLFCAMP (GAS)
38	30-015-45049	OXY USA INC	SALT FLAT CC 20 29 FEDERAL COM	035H	Oil	Active	421	S	1236	E	P	17	24S	29E	9/27/2019	9772	20220	17.500 9.875 6.75	13.375 7.625 5.500	420 9242 20011	650 2703 765	Surf Surf Surf	Circ Circ Circ	9676-19857		[50371] PIERCE CROSSING; BONE SPRING
39	30-015-45050	OXY USA INC	SALT FLAT CC 20 29 FEDERAL COM	036H	Gas	Active	421	S	1201	E	P	17	24S	29E	9/29/2019	10010	20342	17.500 9.875 6.75	13.375 7.625 5.500	421 9535 20332	650 2645 831	Surf Surf Circ	Circ Circ Circ	10158-20135		[98220] PURPLE SAGE; WOLFCAMP (GAS)
40	30-015-46399	OXY USA INC	SALT FLAT CC 20 29 FEDERAL COM	038H	Gas	Active	435	S	1835	W	N	17	24S	29E	10/21/2019	9879	20489	17.500 9.875 6.75	13.375 7.625 5.500	500 9310 20478	650 2839 806	Surf Surf CBL	Circ Circ Circ	10358-20335		[98220] PURPLE SAGE; WOLFCAMP (GAS)
41	30-015-35041	OXY USA INC	VORTEC 27	001	Oil	Active	660	N	330	E	A	27	24S	29E	10/1/2006	10848	10848	17.500 12.250 8.500	13.375 9.625 5.500	552 2898 10848	600 1030 2200	Surf Surf Surf	Circ Circ Circ	10770-8102		[96473] PIERCE CROSSING; BONE SPRING, EAST
42	30-015-35492	OXY USA INC	VORTEC 27	002	Oil	Active	2010	N	380	E	H	27	24S	29E	8/31/2007	11376	11376	17.500 12.250 7.625	13.375 9.625 5.5	550 2920 11376	500 750 2250	Surf Surf CBL	Circ Circ Circ	7981-11180		[96473] PIERCE CROSSING; BONE SPRING, EAST
43	30-015-45080	OXY USA INC	SALT FLAT CC 20 29 FEDERAL COM	031H	Gas	Active	252	S	1222	W	M	17	24S	29E	10/31/2019	9796	20207	14.750 9.875 6.75	10.750 7.625 5.500	449 9300 20197	440 2233 770	Surf Surf Surf	Circ Circ Circ	10088-20065		[98220] PURPLE SAGE; WOLFCAMP (GAS)
44	30-015-45081	OXY USA INC	SALT FLAT CC 20 29 FEDERAL COM	032H	Gas	Active	252	S	1257	W	M	17	24S	29E	11/1/2019	9973	20763	14.750 9.875 6.75	10.750 7.625 5.500	442 9212 20753	440 2373 860	Surf Surf Surf	Circ Circ Circ	10648-20615		[98220] PURPLE SAGE; WOLFCAMP (GAS)
45	30-015-45082	OXY USA INC	SALT FLAT CC 20 29 FEDERAL COM	033H	Oil	Active	252	S	1292	W	M	17	24S	29E	11/2/2019	9763	19991	14.750 9.875 6.75	10.750 7.625 5.500	449 9163 19981	440 2251 958	Surf Surf Surf	Circ Circ Circ	9847-19828		[50371] PIERCE CROSSING; BONE SPRING
46	30-015-44947	OXY USA INC	SALT RIDGE CC 20 17 FEDERAL COM	023H	Oil	Active	2409	N	1352	W	F	17	24S	29E	6/3/2018	8538	16290	14.750 9.875 6.750 6.75	10.750 7.625 5.500 4.500	525 8019 8626 16278	575 1478 1033 1033	Surf Surf Surf Surf	Circ Circ Circ Circ	8460-16091		[50371] PIERCE CROSSING; BONE SPRING
47	30-015-46369	OXY USA INC	SALT FLAT CC 20 29 FEDERAL COM	037H	Gas	Active	435	S	1765	W	N	17	24S	29E	43758	9990	20363	14.750 9.875 6.750	13.375 7.625 5.500	500 9470 20353	650 2755 806	Surf Surf Circ	Circ Circ Circ	10209-20185		[98220] PURPLE SAGE; WOLFCAMP (GAS)
48	30-015-44521	OXY USA INC	CEDAR CANYON 29 FEDERAL COM	024H	Oil	Active	1670	N	420	W	L	29	24S	29E	11/11/2017	8600	13370	14.750 9.875 6.75	10.750 7.625 5.500	454 7938 7803	526 1562 709	Surf Surf Surf	Circ Circ Circ	8623-13221		[50371] PIERCE CROSSING; BONE SPRING

49	30-015-44945	OXY USA INC	SALT RIDGE CC 20 17 FEDERAL COM	021H	Oil	Active	2359	N	1302	W	E		17	24S	29E	6/2/2018	8534	16277	6.750	4.500	13357	709	Surf	Circ	8454-16126	[50371] PIERCE CROSSING; BONE SPRING	
																			14.750	10.750	525	548	Surf	Circ			
																			9.875	7.625	8074	1513	Surf	Circ			
																			6.750	5.500	8621	1024	Surf	Circ			
																			6.75	4.500	16265	1024	Surf	Circ			
50	30-015-44191	OXY USA INC	CEDAR CANYON 21 FEDERAL COM	023H	Oil	Active	1824	N	141	W	E		21	24S	29E	8/11/2017	8708	13360	14.750	10.750	451	350	Surf	Circ	8569-13200	5.5" frac string	[96238] CORRAL DRAW; BONE SPRING
																			9.875	7.625	8096	1661	41	CBL			
																			6.750	5.5	7891	NA	NA	NA			
																			6.750	4.500	13347	660	7891	Circ			
51	30-015-41024	OXY USA INC	CEDAR CANYON 16 STATE	002H	Oil	Active	230	S	330	E	P		16	24S	29E	2/12/2013	8575	13240	16.000	13.375	356	625	Surf	Circ	8860-13000	[96473] PIERCE CROSSING; BONE SPRING, EAST	
																			12.250	9.625	2977	1260	Surf	Circ			
																			8.750	5.500	13240	2210	5030	CBL			
52	30-015-41032	OXY USA INC	CEDAR CANYON 15	002H	Oil	Active	170	S	360	W	M		15	24S	29E	2/23/2013	8795	12960	14.750	11.750	334	280	Surf	Circ	8900-12800	[96473] PIERCE CROSSING; BONE SPRING, EAST	
																			10.625	8.625	3101	840	Surf	Circ			
																			7.875	5.500	12960	1450	2960	CBL			
53	30-015-44182	OXY USA INC	CEDAR CANYON 21 FEDERAL COM	031H	Gas	Active	339	N	368	E	A		21	24S	29E	7/31/2017	9950	14734	14.750	10.750	456	674	Surf	Circ	9966-14562	[98220] PURPLE SAGE; WOLFCAMP (GAS)	
																			9.875	7.625	9295	1773	Surf	Circ			
																			6.750	4.500	14724	713	9183	Circ			
54	30-015-44181	OXY USA INC	CEDAR CANYON 21 FEDERAL COM	021H	Oil	Active	369	N	368	E	A		21	24S	29E	7/30/2017	8550	13503	14.750	10.750	463	329	Surf	Circ	8751-13302	[96238] CORRAL DRAW; BONE SPRING	
																			9.875	7.625	7885	1951	Surf	Circ			
																			6.750	4.500	13496	700	7713	Circ			
55	30-015-41327	OXY USA INC	CEDAR CANYON 22	002H	Oil	Active	990	N	690	W	D		22	24S	29E	6/8/2013	8813	12685	14.750	11.750	389	415	Surf	Circ	8920-12520	[96473] PIERCE CROSSING; BONE SPRING, EAST	
																			10.625	8.625	3105	960	Surf	Circ			
																			7.875	5.500	12678	1400	2995	CBL			
56	30-015-43809	OXY USA INC	CEDAR CANYON 22 15 FEE	031H	Oil	Active	1108	N	1603	W	C		22	24S	29E	7/16/2016	9906	16050	14.375	10.750	443	470	Surf	Circ	10004-15872	[96473] PIERCE CROSSING; BONE SPRING, EAST	
																			9.875	7.625	9188	1915	Surf	Circ			
																			6.750	5.500	16031	470	8690	CBL			
57	30-015-43808	OXY USA INC	CEDAR CANYON 22 15 FEE	032H	Oil	Active	1108	N	1633	W	C		22	24S	29E	7/16/2016	9926	16075	14.750	10.750	442	470	Surf	Circ	9994-15862	5.5" to 4.5" cross over at 15898 ft	[96473] PIERCE CROSSING; BONE SPRING, EAST
																			9.875	7.625	9277	3130	Surf	Circ			
																			6.750	5.500	15898	470	5970	CBL			
																			6.750	4.500	16053	470	5970	CBL			
58	30-015-44176	OXY USA INC	CEDAR CANYON 21 22 FEDERAL COM	032H	Gas	Active	1794	N	141	W	E		21	24S	29E	8/9/2017	9979	19940	17.500	13.375	451	580	Surf	Circ	9920-19771	5.5" to 5" cross over at 9878 ft	[98220] PURPLE SAGE; WOLFCAMP (GAS)
																			12.250	9.625	9260	2707	Surf	Circ			
																			7.875	5.500	9878	2619	8270	Calc			
																			7.875	5	19936	2619	8270	Calc			
59	30-015-44190	OXY USA INC	CEDAR CANYON 21 FEDERAL COM	022H	Oil	Active	1764	N	141	W	E		21	24S	29E	8/10/2017	8713	13366	14.750	10.750	448	350	Surf	Circ	8602-13198	4.5" top liner at 7922 ft	[96238] CORRAL DRAW; BONE SPRING
																			9.875	7.625	8108	1634	Surf	Circ			
																			6.750	4.500	13353	659	7922	Circ			
60	30-015-28850	OXY USA INC	YVONNE 21 FEDERAL	001	Oil	Active	1800	N	2310	W	F		21	24S	29E	5/31/1996	7820	7820	14.750	10.750	500	520	Surf	Circ	6480-6538	[96238] CORRAL DRAW; BONE SPRING	
																			9.875	7.625	2823	996	Surf	Circ			
																			6.750	4.500	7820	1050	Surf	Circ			
61	30-015-28559	OXY USA INC	MITCHELL 21 FEDERAL	001	Oil	PA	1650	N	1650	E	G		21	24S	29E	8/15/1995	8900	8900	17.500	13.375	580	650	Surf	Circ	NA	NA	
																			11	8.625	2840	1520	Surf	Circ			
																			7.625	5.500	8900	2405	Surf	Circ			
62	30-015-28861	OXY USA INC	RIVERBEND FEDERAL	009	Oil	Active	1650	N	330	W	E		22	24S	29E	3/25/1996	7900	7900	14.750	10.750	530	595	Surf	Circ	5225-5262	[96238] CORRAL DRAW; BONE SPRING	
																			9.875	7.625	2850	827	Surf	Circ			
																			6.750	4.500	7900	1095	1800	CBL			
63	30-015-28710	OXY USA INC	MITCHELL 21 FEDERAL	002	Oil	PA	2110	S	1980	E	J		21	24S	29E	1/12/1996	7900	7900	14.750	10.750	533	664	Surf	Circ	NA	NA	
																			9.875	7.625	2810	885	Surf	Circ			
																			6.75	4.500	7900	1165	1000	CBL			
64	30-015-43749	OXY USA INC	CEDAR CANYON 21 FEDERAL COM	005H	Oil	Active	1090	S	207	W	M		22	24S	29E	8/6/2016	8626	13545	14.750	10.750	430	470	Surf	Circ	8918-13313	5.5" to 4.5" cross over at 8840 ft	[96238] CORRAL DRAW; BONE SPRING
																			9.875	7.625	8138	1170	Surf	Circ			
																			6.750	5.500	8840	560	7450	CBL			
																			6.75	4.500	13531	560	7450	CBL			
65	30-015-40668	OXY USA INC	CEDAR CANYON 22	001H	Oil	Active	1980	S	1980	W	K		22	24S	29E	10/27/2012	7905	11885	17.500	13.375	465	540	Surf	Circ	8240-11692	[96238] CORRAL DRAW; BONE SPRING	
																			12.250	9.625	3260	1910	Surf	Circ			
																			6.75	5.500	11870	1760	2440	CBL			
66	30-015-44134	OXY USA INC	CEDAR CANYON 21 22 FEDERAL COM	034H	Oil	Active	1737	S	399	W	L		21	24S	29E	5/9/2017	9997	19980	17.500	13.375	540	617	Surf	Circ	9978-19797	5.5" top liner at 9,115 ft	[96473] PIERCE CROSSING; BONE SPRING, EAST
																			12.250	9.625	9242	2335	Surf	Circ			
																			8.500	5.500	19968	1735	9115	Circ			
67	30-015-44133	OXY USA INC	CEDAR CANYON 21 22 FEDERAL COM	033H	Oil	Active	1754	S	374	W	L		21	24S	29E	5/10/2017	10002	19951	17.500	13.375	542	633	Surf	Circ	9908-19667	5.5" top liner at 8,918 ft	[96473] PIERCE CROSSING; BONE SPRING, EAST
																			12.250	9.625	9183	2235	Surf	Circ			
																			8.500	5.500	19842	1730	8918	Circ			
68	30-015-39968	OCCIDENTAL PERMIAN LTD	MORGAN FEE COM	001H	Oil	Active	1035	S	455	W	M		21	24S	29E	4/10/2012	8687	12741	17.500	13.375	400	480	Surf	Circ	9150-12600	[96238] CORRAL DRAW; BONE SPRING	
																			12.250	9.625	3037	1040	Surf	Circ			
																			8.750	5.500	12741	2430	2474	Calc			
69	30-015-28638	OXY USA INC	GAINES 21	001	Oil	Active	990	S	1650	E	O		21	24S	29E	11/1/1995	7850	7850	14.75	10.750	523	625	Surf	Circ	7658-7683	[96238] CORRAL DRAW; BONE SPRING	
																			9.875	7.625	2830	1190	Surf	Circ			
																			6.75	4.500	7850	1240	3894	CBL			
70	30-015-43906	OXY USA INC	CEDAR CANYON 22 FEDERAL COM	006Y	Oil	Active	1040	S	207	W	M		22	24S	29E	9/27/2016	8850	13405	14.750	10.750	435	740	Surf	Circ	8610-13196	5.5" to 4.5" cross over at 8957 ft	[96238] CORRAL DRAW; BONE SPRING

74	30-015-42055	OXY USA INC	CEDAR CANYON 16 STATE	010H	Oil	Active	260	N	1470	W	C	16	24S	29E	5/10/2014	9856	14477	6.75	5.500	14401	1780	2650	CBL	10262-14101	[96473] PIERCE CROSSING; BONE SPRING, EAST	
																		14.750	11.750	405	745	Surf	Circ			
																		10.625	8.625	3110	830	Surf	Circ			
																		7.875	5.500	14477	1520	Surf	Circ			
76	30-015-43844	OXY USA INC	CEDAR CANYON 16 STATE	033H	Gas	Active	402	N	1123	E	A	16	24S	29E	42644	10034	14695	14.750	10.75	447	252	Surf	Circ	10100-14518	Liner top at 9841	[50373] PIERCE CROSSING; WOLFCAMP (ABOLISH)
																		9.875	7.625	9962	2514	45	TS			
																		6.75	4.5	14678	542	9841	Circ			
																		14.750	10.750	447	364	Surf	Circ			
77	30-015-43843	OXY USA INC	CEDAR CANYON 16 STATE	034H	Gas	Active	402	N	1083	E	A	16	24S	29E	10/2/2016	10038	14545	9.875	7.625	9995	2325	Surf	Circ	10125-14360	[50373] PIERCE CROSSING; WOLFCAMP (ABOLISH)	
																		6.75	4.500	14526	510	9862	Circ			
																		17.5	13.375	429	650	Surf	Circ			
																		9.875	7.625	9353	2579	Surf	Circ			
78	30-015-45086	OXY USA INC	OXBOW CC 17 8 FEDERAL COM	034H	Gas	Active	601	S	1271	E	P	17	24S	29E	9/30/2019	10064	20560	6.75	5.500	20547	797	9243	CBL	10204-20452	[98220] PURPLE SAGE; WOLFCAMP (GAS)	
																		17.5	13.375	429	650	Surf	Circ			
																		9.875	7.625	9347	2470	Surf	Circ			
																		6.75	5.500	20546	831	9151	CBL			
79	30-015-45088	OXY USA INC	OXBOW CC 17 8 FEDERAL COM	036H	Gas	Active	601	S	1201	E	P	17	24S	29E	10/2/2019	10138	20560	17.5	13.375	420	650	Surf	Circ	10199-20415	[98220] PURPLE SAGE; WOLFCAMP (GAS)	
																		9.875	7.625	9347	2470	Surf	Circ			
																		6.75	5.500	20546	831	9151	CBL			
																		14.750	10.750	419	600	Surf	Circ			
80	30-015-44545	OXY USA INC	CEDAR CANYON 20 FEDERAL COM	024H	Oil	Active	110	N	1420	E	B	29	24S	29E	5/14/2018	8631	16222	14.750	10.750	419	600	Surf	Circ	8365-16116	[50371] PIERCE CROSSING; BONE SPRING	
																		9.875	7.625	8026	1566	Surf	Circ			
																		6.75	5.500	8685	980	4874	CBL			
																		6.75	4.500	16222	980	4874	CBL			

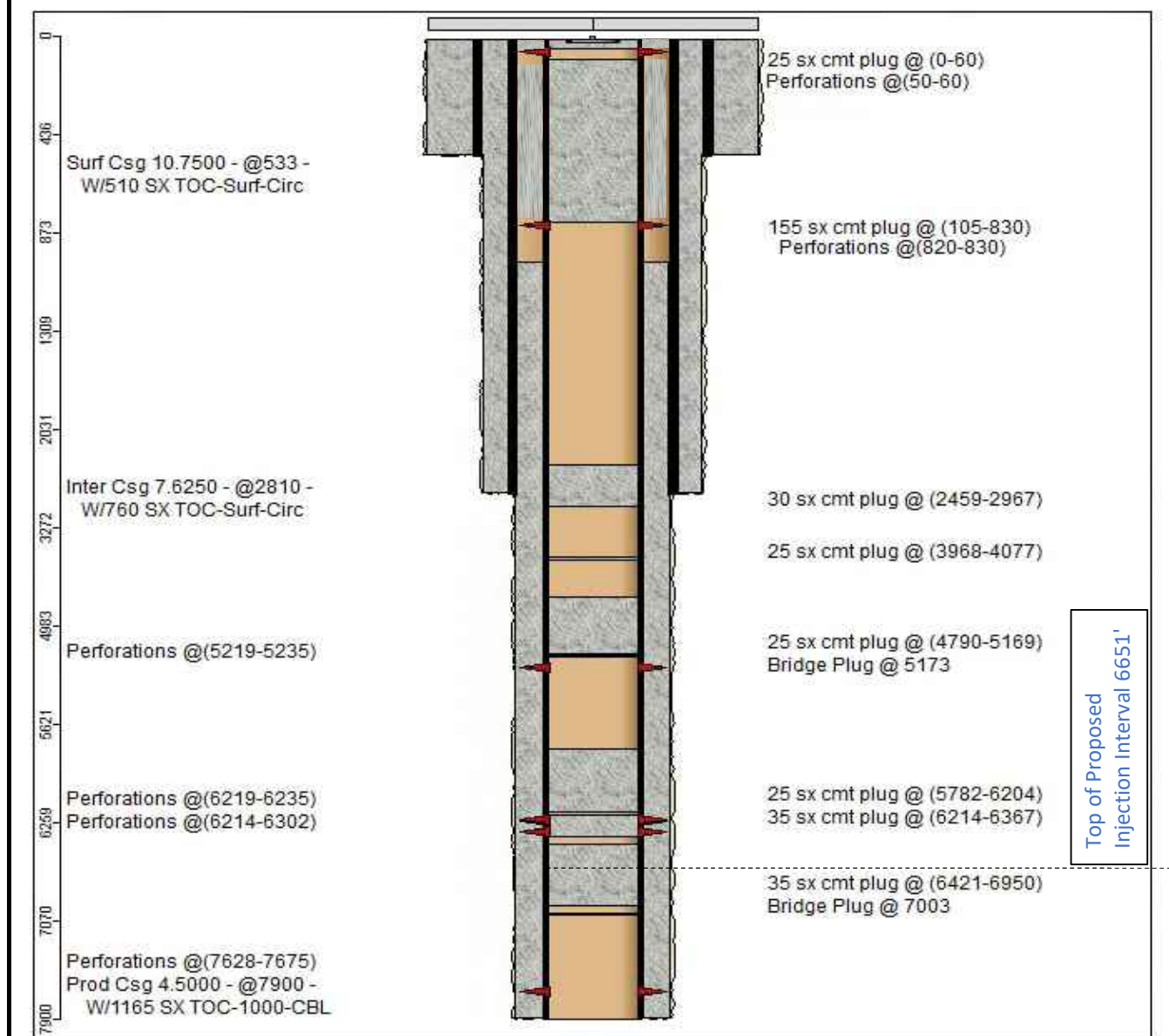
WELL ID #5, #63

Current Wellbore

MITCHELL 21 FEDERAL #2

30-015-28710-0000

Eddy



OXY USA Inc. - ActualPA
Gaines 28 Com #001
API No. 30-015-35353

WELL ID #27

PA JOB Complete 6/16/2021

PERF'D @ 600'. SQZD 220SX CL C TO SURFACE. VERIFIED.

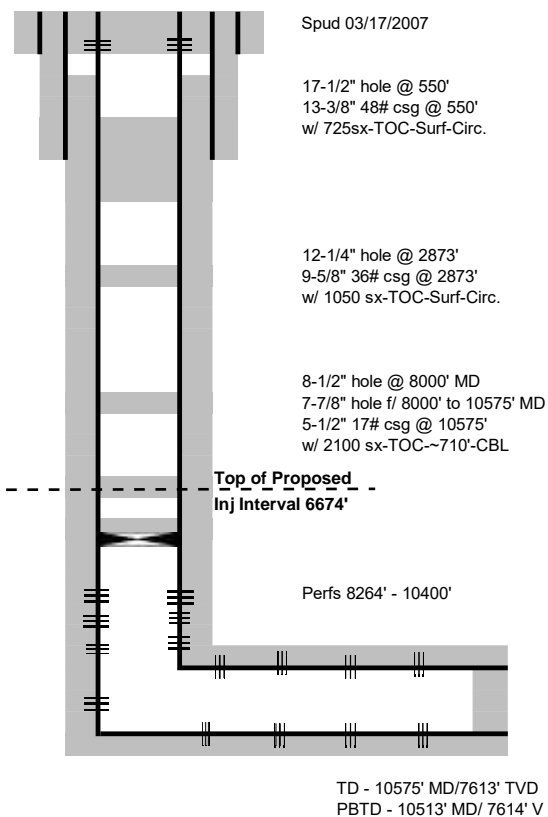
PUMPED 55SX CL C F/ 3017'. TAGGED @ 2480'.

PUMPED 35SX CL C F/ 3862'. TAGGED @ 3522'.

PUMPED 35SX CL C F/ 5087'. TAGGED @ 4731'.

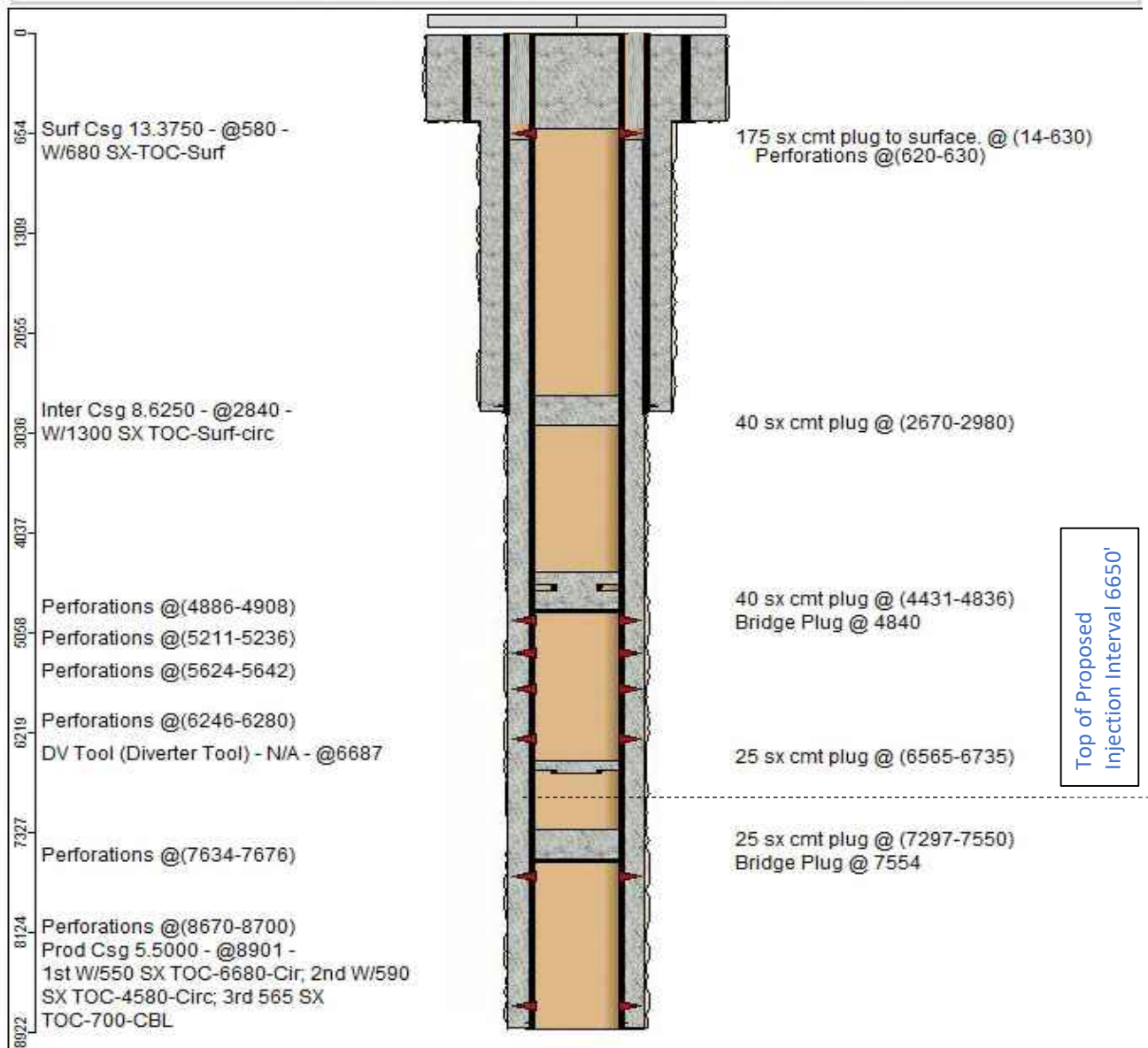
PUMPED 35SX CL C F/ 6734'. TAGGED @ 6383'.

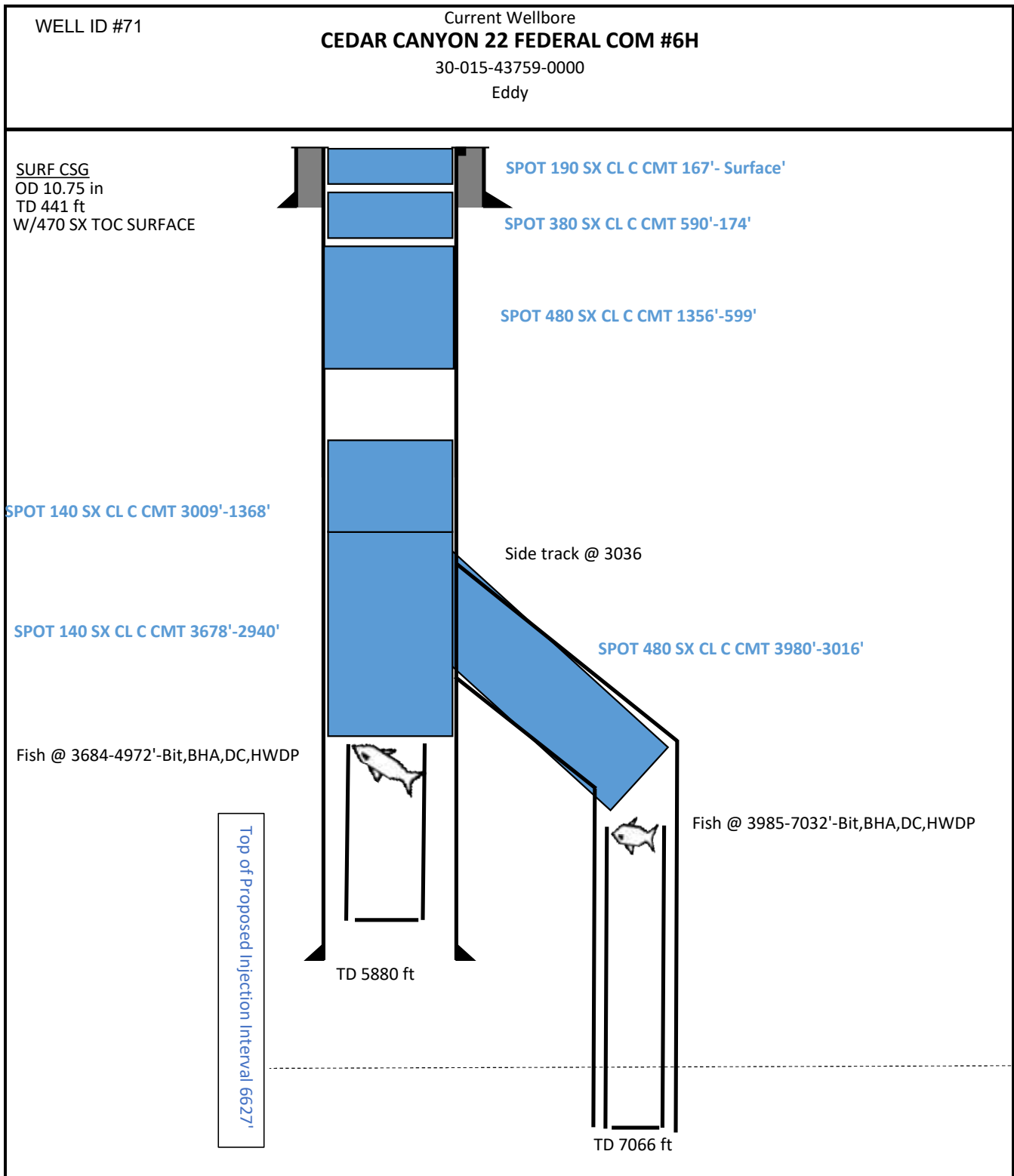
Per BLM, approved to set CIBP @ 7225'. Pumped 25sx cl c. WOC.
Tagged @ 7000'.



WELL ID #61

Current Wellbore
MITCHELL 21 FEDERAL #1
 30-015-28559-0000
 Eddy





Geology

Cedar Canyon 2nd Bone Spring storage zone and permeability barriers

Proposed Storage Zone

- 2nd Bone Spring Sand
 - Reservoir composed of tight siltstone. Core data indicates that the grain sizes range from coarse siltstone to very-fine-grained subarkose (Folk, 1980) sandstone. Samples show evidence of moderate compaction. Minor amounts of illite and smectite clays are found throughout the samples ranging from 5% to 15%. Cements are Fe-calcite, Fe-dolomite, pore-bridging illite and some quartz overgrowths. Minor amounts of pyrite (<1%) are present. The resulting reservoir rock has porosity of 8-18% with an average porosity of 9.7%. Permeability measured by injection fall-off tests conducted within the reservoir ranges from 10 millidarcies to 0.003 millidarcies. Siliceous mudstone with natural permeability in the nano-darcy range

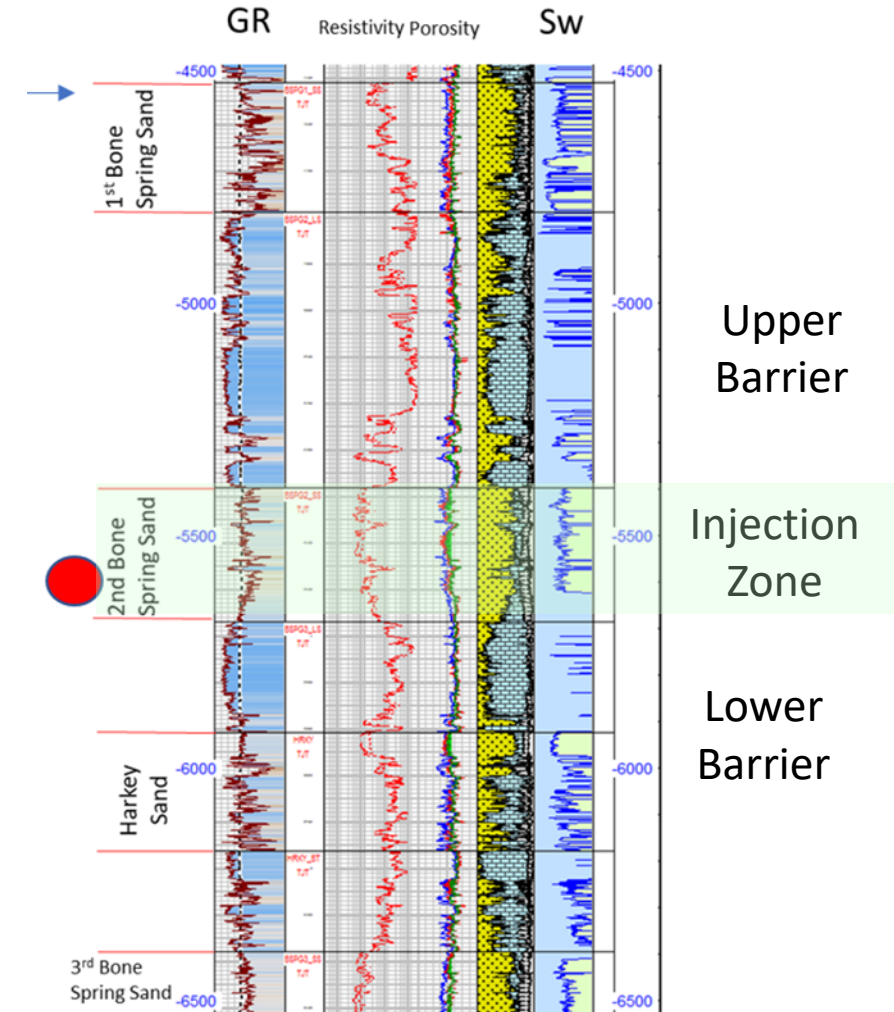
Adjacent Oil & Gas Production Zones

- Delaware Mountain Group Brushy Canyon
 - Very fine-grained sandstone with permeability in the 100-10 millidarcy range
- 1st Bone Spring Sand
 - Reservoir composed of tight siltstone. Core data indicates that the grain sizes range from coarse siltstone to very-fine-grained subarkose (Folk, 1980) sandstone. Samples show evidence of moderate compaction. Minor amounts of illite and smectite clays are found throughout the samples ranging from 5% to 15%. Cements are Fe-calcite, Fe-dolomite, with some quartz overgrowths. Minor amounts of pyrite (<1%) are present. The resulting reservoir rock has porosity of 8-18% with an average porosity of 11.7%. Permeability measured by injection fall-off tests conducted within the reservoir ranges from 0.02 millidarcies to 0.001 millidarcies.
- 3rd Bone Spring Sand
 - Reservoir composed of tight siltstone. Core data indicates that the grain sizes range from coarse siltstone to very-fine-grained subarkose (Folk, 1980) sandstone. Samples show evidence of moderate compaction. Minor amounts of illite and smectite clays are found throughout the samples ranging from 5% to 15%. Cements are Fe-calcite, Fe-dolomite, with some quartz overgrowths. Minor amounts of pyrite (<1%) are present. The resulting reservoir rock has porosity of 8-18% with an average porosity of 11.7%. Permeability measured by injection fall-off tests conducted within the reservoir ranges from 0.02 millidarcies to 0.001 millidarcies.

Confining Layers

- Low-permeability barriers act as seals above and below the reservoir. These barriers consist of carbonate mudstone, dolomudstone, and shales that are ~970 ft. thick above and ~570 ft. thick below. Laterally the injection will be primarily contained by the reservoir volume that has been previously and partially depleted by the adjacent producing wells. The tight low-permeability reservoir and the production from the adjacent wells will be the primary constraints on the conformance of the injection to the project area and are expected to contain the injected gas.
- 2nd Bone Spring Limestone is upper permeability barrier between 2nd BS Sand and 1st BS Sand. Tight dolomudstones and shale.
- 3rd Bone Spring Limestone lower permeability barrier between 2nd BS Sand and 3rd BS Sand. Tight dolomudstones and shale.
- Upper and Lower Avalon upper permeability barrier between 1st BS Sand and Delaware Mountain Group Brushy Canyon

BSPG2_SS
Interval

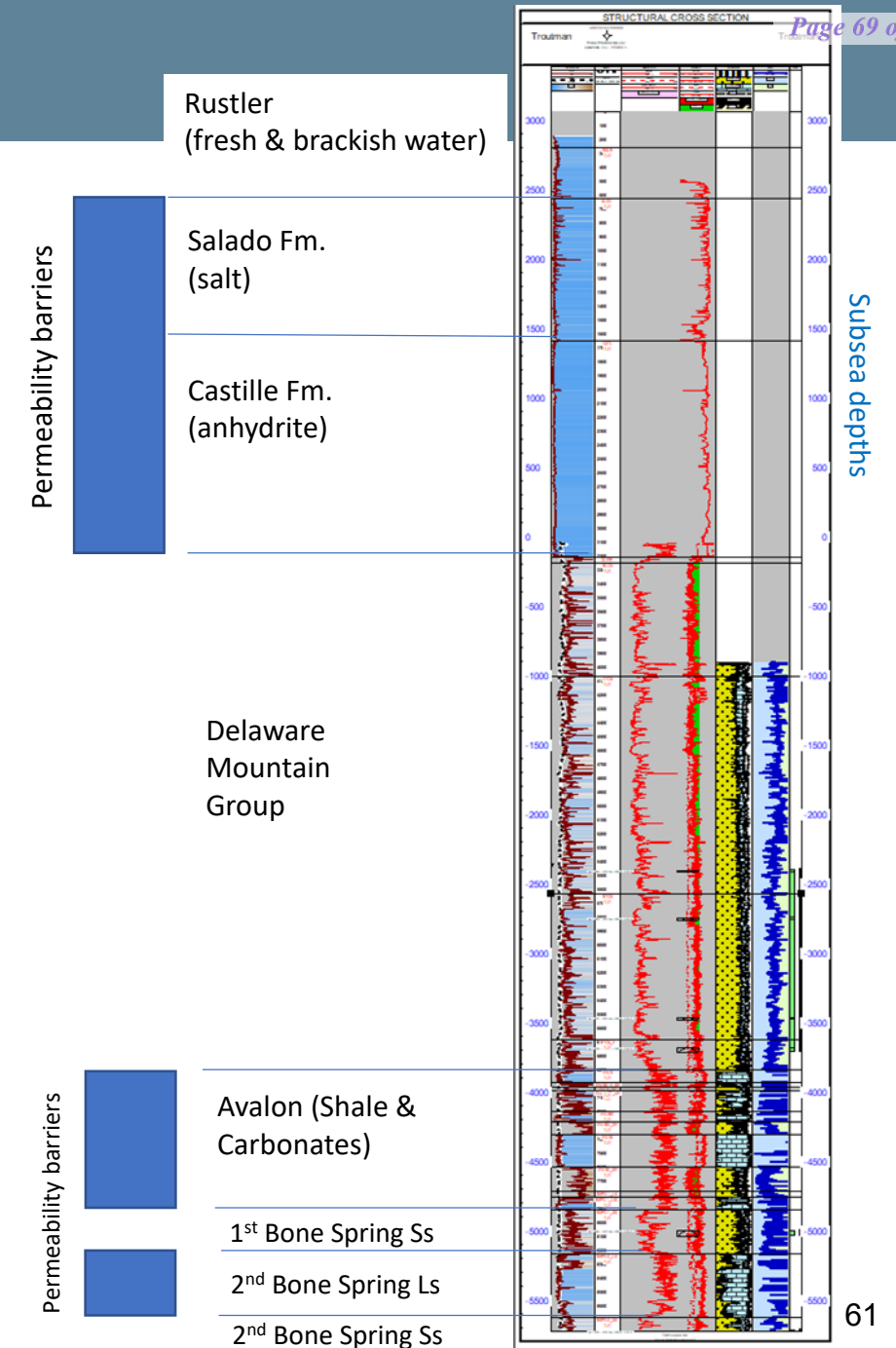


CANYON 23 FED COM #1

3001529318

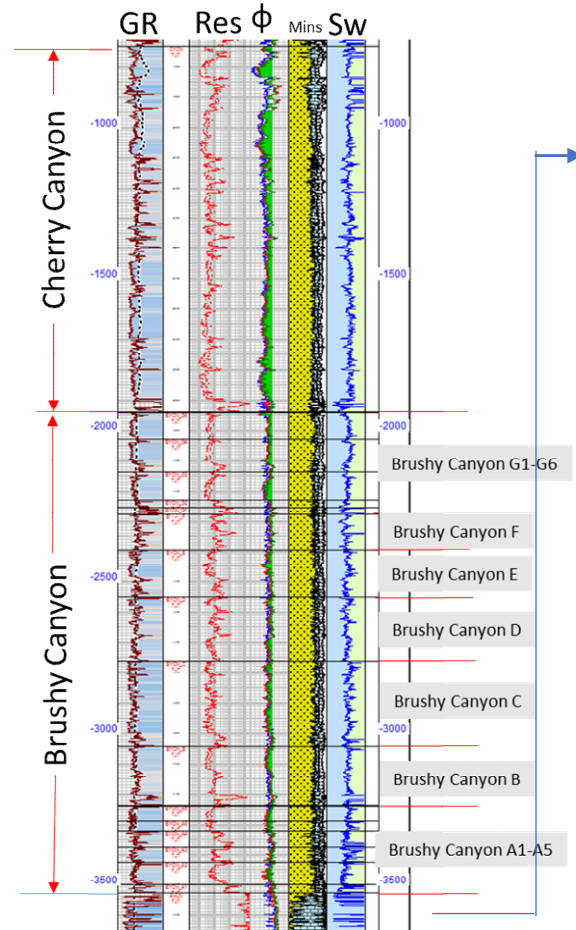
Cedar Canyon freshwater aquifers

- The top of the Bone Spring Formation is at ~6,620 ft. (log depth) with over 1,200 ft. of carbonate mudstones and shales acting as additional permeability barriers to upward migration of injected gas.
- Above that the Delaware Mountain Group consists of connate-water bearing and hydrocarbon-bearing sands, with minor limestone and shale intervals and is over 3,700 ft. thick.
- Above that is the Castile Formation consisting of very low permeability anhydrite, gypsum, and calcite that acts as another 1,500 ft. thick barrier to upward movement of fluids.
- The Salado overlies the Castile and forms a 1,000 ft. thick barrier of salt. The top of the Salado is at 877 ft. and the deep aquifers found just above the Salado at the base of the Rustler are saline water.
- The top of Rustler Formation is at about 210 ft. The Rustler top is a continuous anhydrite layer that acts as another permeability barrier creating a perched aquifer above it that is the lowest level where fresh water is known in the area. Because of the thickness of multiple impermeable rock layers above the injection reservoir there is no possible path for migration upward into freshwater aquifers where they exist.
- An investigation of existing shallow water wells has not found any freshwater wells within a two mile radius of these injectors.

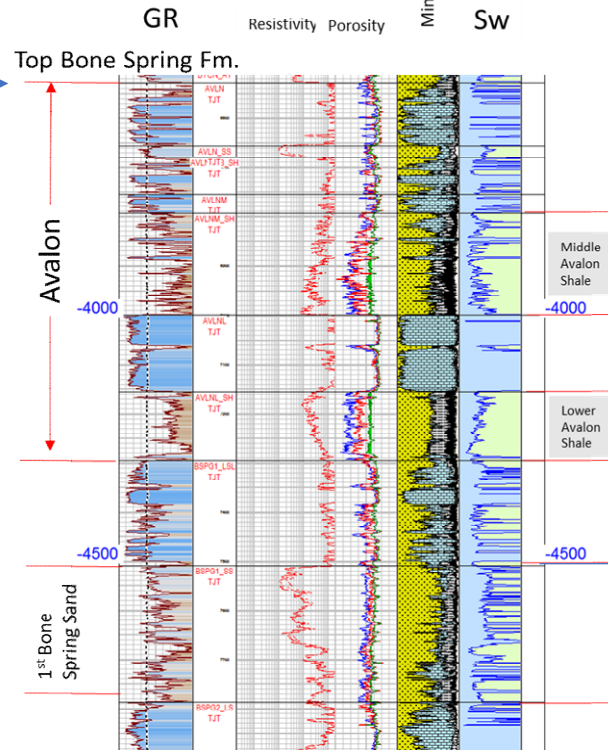


Cedar Canyon full type log:

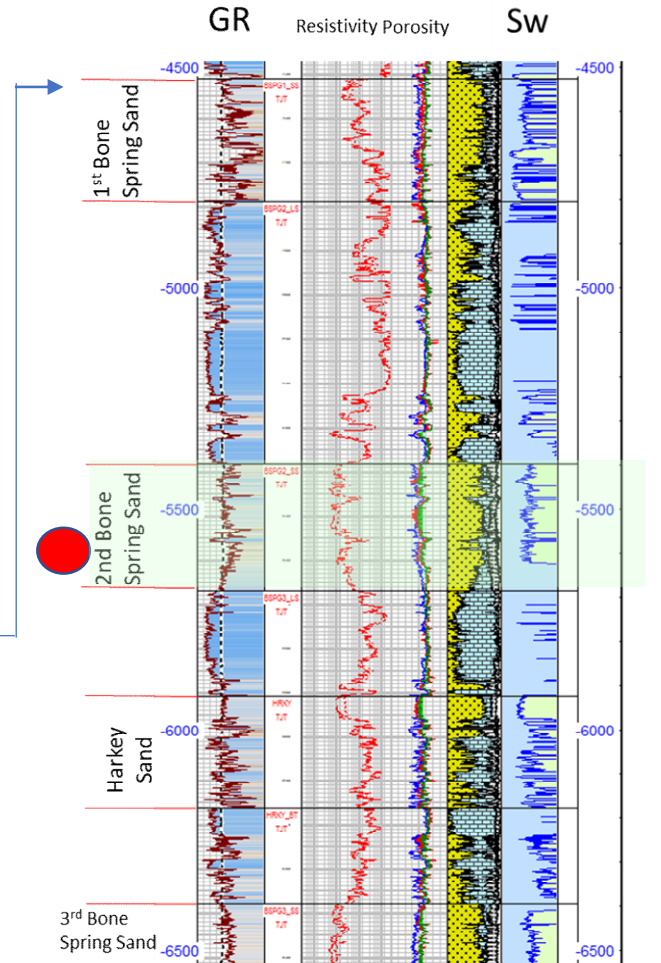
Delaware Group Interval



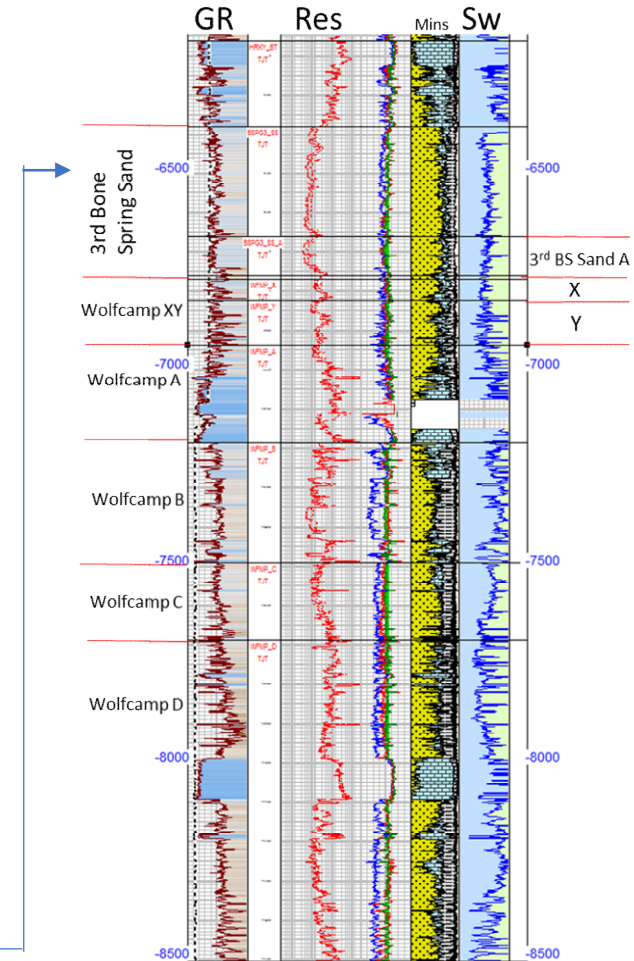
Avalon/BSPG1_SS Interval



BSPG2_SS Interval

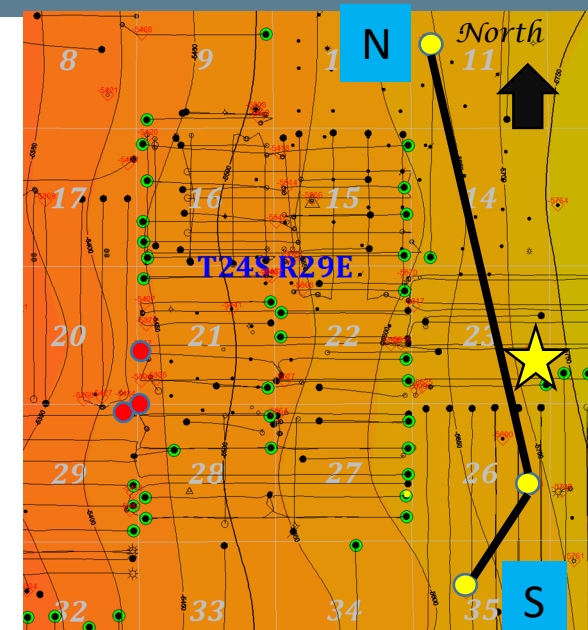
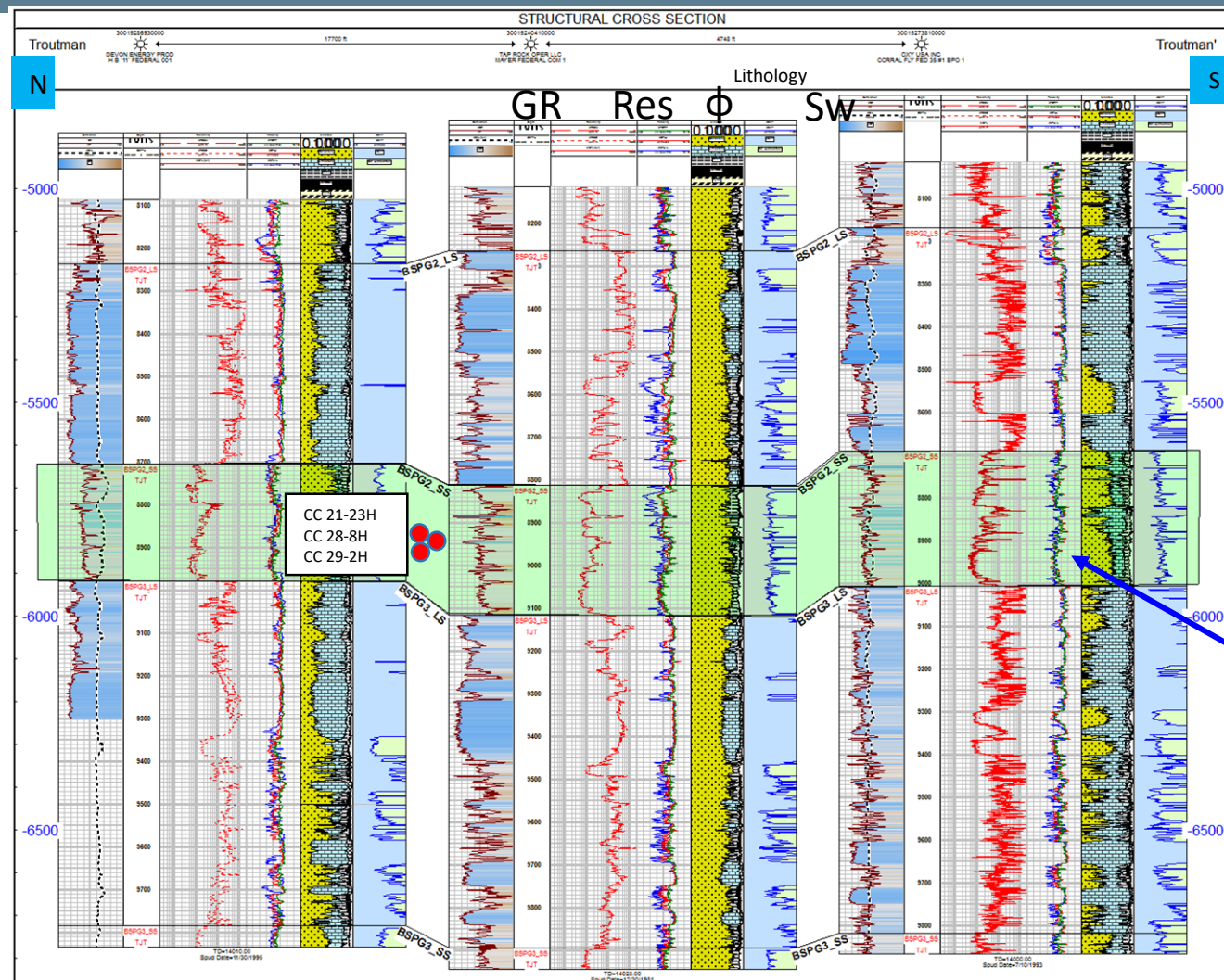


BSPG3_SS/WCMP_XY Interval



● Proposed storage zone: 2nd Bone Spring Sand

Second Bone Spring Sand Cross-section



Cross-section location

Existing 2nd BS production

2nd Bone Spring Sand

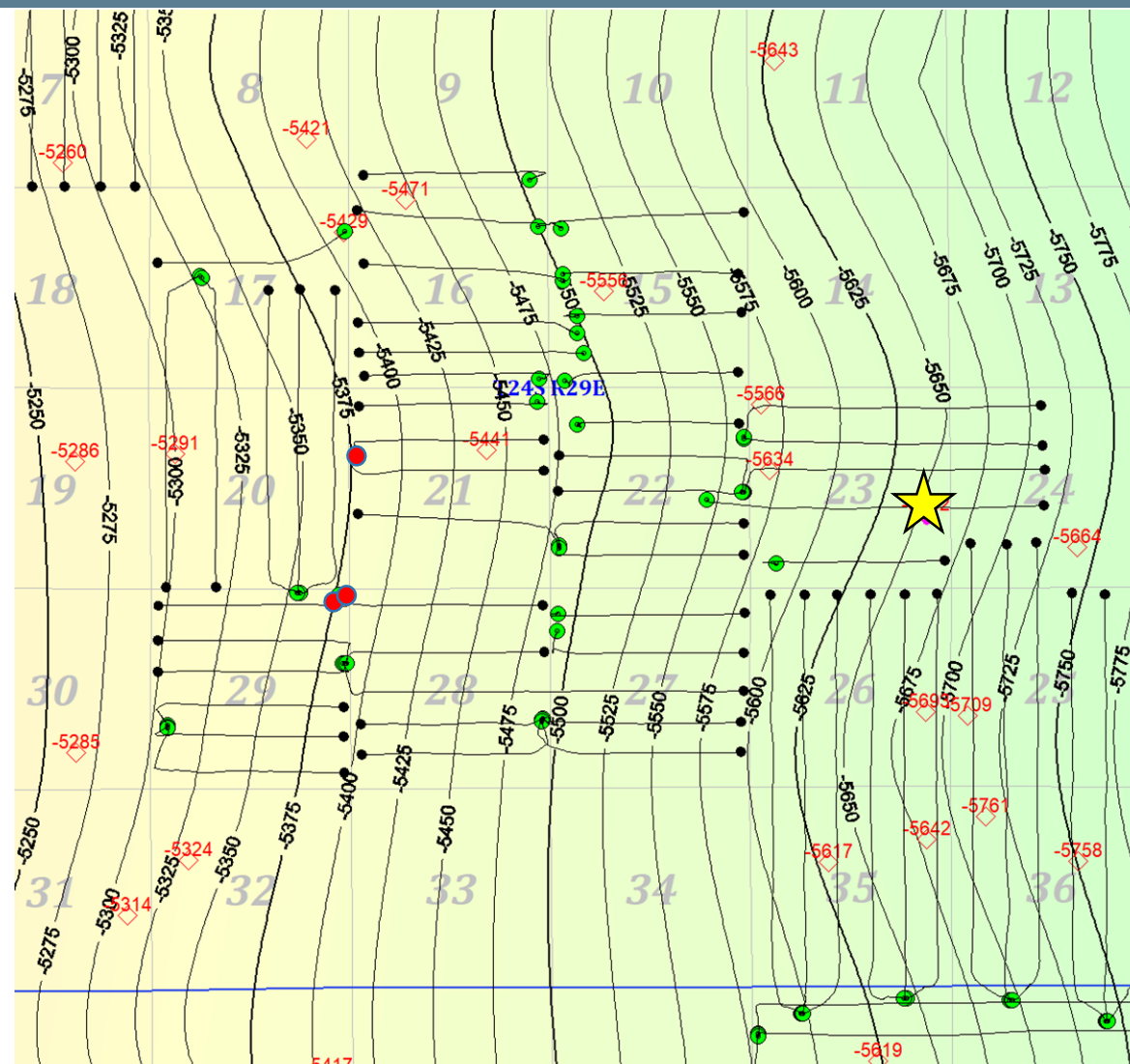
API	Well Name	Bench	Highest perf TVD	Lowest perf TVD
30015441910000	Cedar Canyon 21 23H	BS2	8419	8704
30015438190000	Cedar Canyon 28 8H	BS2	8597	8710
30015429920000	Cedar Canyon 29 2H	BS2	8513	8535

Cedar Canyon 2nd Bone Spring Sand Top Structure

- Posted depths show well control
- Depths are TVD subsea, contour interval 50 ft
- 2nd Bone Spring wells marked by green highlights
- Sections 8,9,10, 17, 16, 15, 20, 21, 22, 23, 29, 28, 27, 26, 25, 35, 36 are Oxy operated

● CLGC Well SHL
 ★ Type Log Well

1 mile



North

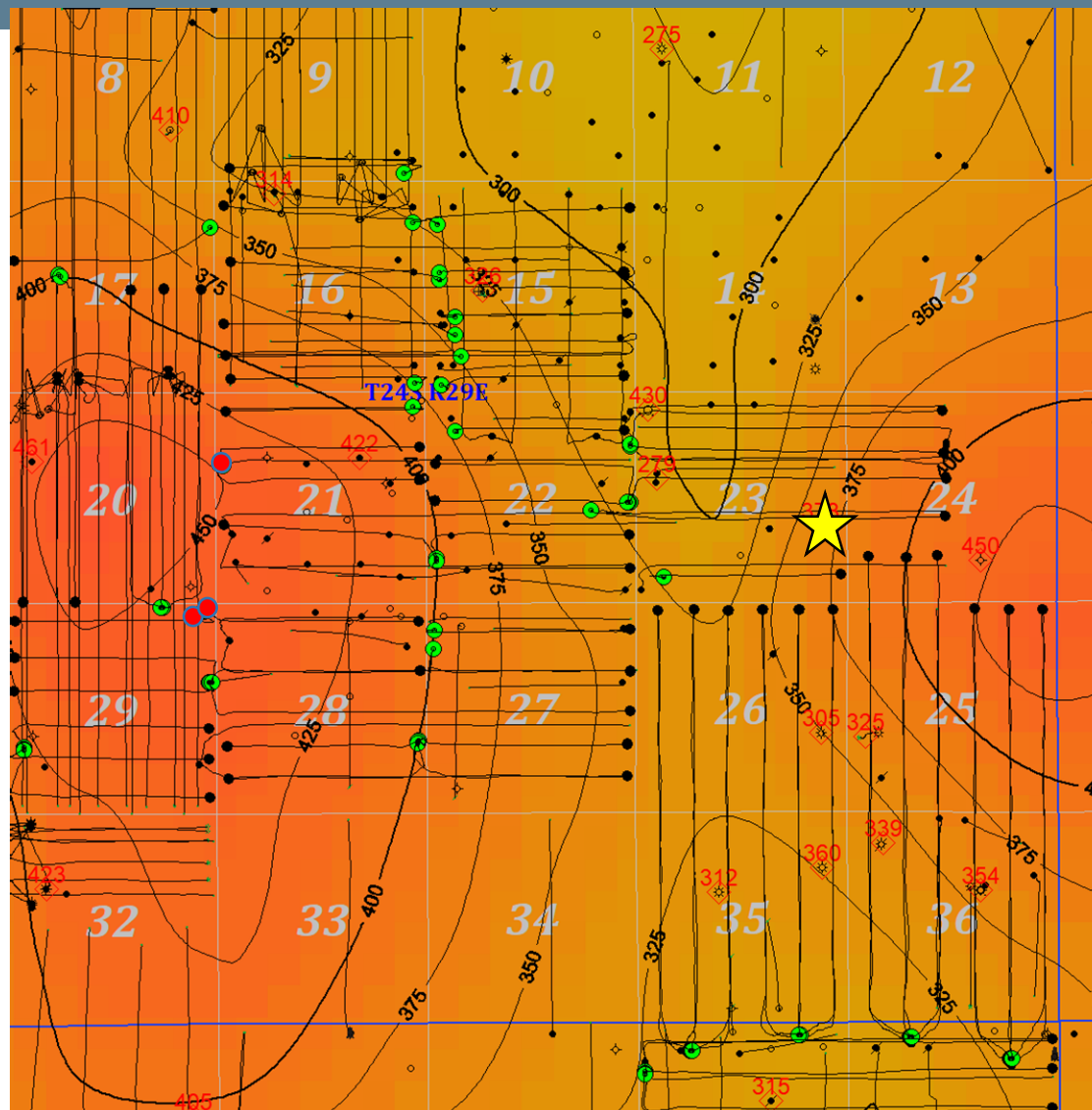


Second Bone Spring Sand Isochore Map

- Posted depths show well control
- Depths are TVD subsea, contour interval 50 ft
- 2nd Bone Spring wells marked by green highlights
- Sections 8,9,10, 17, 16, 15, 20, 21, 22, 23, 29, 28, 27, 26, 25, 35, 36 are Oxy operated

● CLGC Well SHL
 ★ Type Log Well

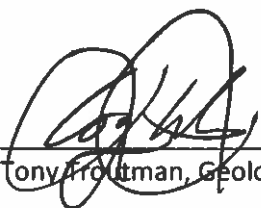
1 mile




Closed Loop Gas Capture (CLGC) Project

Affirmative Statement 1

The operator examined the available geologic and engineering data and found no evidence of open faults or other hydrologic connections between the disposal zone and any underground source of drinking water.


Tony Troutman, Geologist


Xueying Xie, Reservoir Engineer


Date

6/10/2021
Date

Reservoir Engineering

Project Overview- CC

- Closed loop gas capture project (CLGC) IN Oxy's NM assets
- Produced gas injection into 2nd Bone Springs in NM
- Gas injection into horizontal wells of 5,000' lateral length
- Purpose of Modeling
 - > Review potential effects on wells adjacent to the CLGC area
 - > Quantify movement of the injected gas
 - > Utilize data from Cedar Canyon Huff and Puff Projects- project located a few miles away

Model Set-up

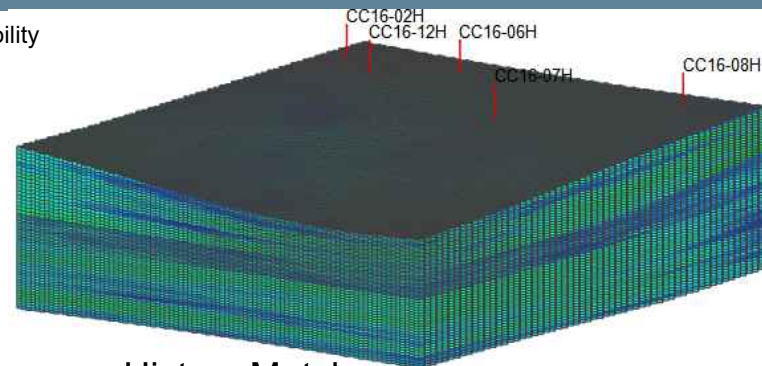
- Uses Cedar Canyon Sec 16 2nd BSS (as shown in layout below)
- Gas Injection pilot (EOR) was implemented in CC16-7H well in 2017
- Reservoir model is history matched for primary production and gas injection pilot
- Model is also tuned to capture injection gas breakthrough in offset wells that was observed during pilot period
- Gas injection pilot wells are 4 wells per section; model is adjusted to simulate the effect of closer wells (6 wps)



Cedar Canyon Section-16 Reservoir Model

Location: Lea County, NM
 Model Acreage: 640
 Pay Horizon: 2nd Bone Springs Sand
 Lithology: Sandstone interbedded with Limestone
 Trap Type: Stratigraphic
 Nominal Depth: 8400 ft
 Gas Cap (at discovery): No
 Primary Drive Mechanism: Solution Gas Drive

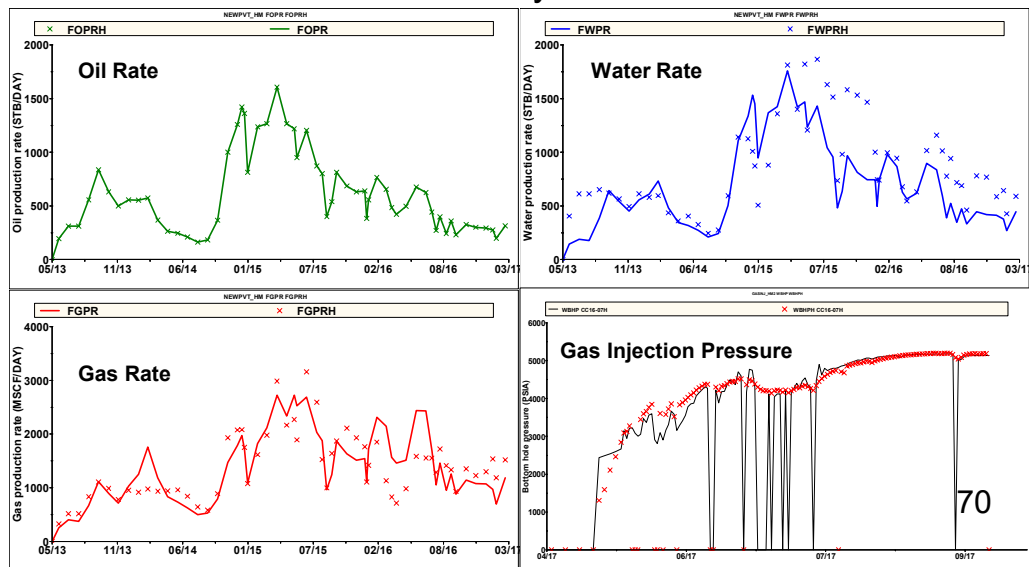
Structure & Permeability
 1,177,400 Grids
 56 Layers



History Match

Gross Pay:	320 ft
Net Pay:	320 ft
Avg Porosity:	6.8%
Initial Sw:	50%
Permeability:	0.001md (matrix)
Initial Reservoir Pressure:	4500 psi
Reservoir Temperature:	150 F
Oil Gravity:	42 API
Boi:	1.63 RB/STB
Rsi:	1480 SCF/STB
Original Oil in Place:	28 MMSTB

Model Inputs

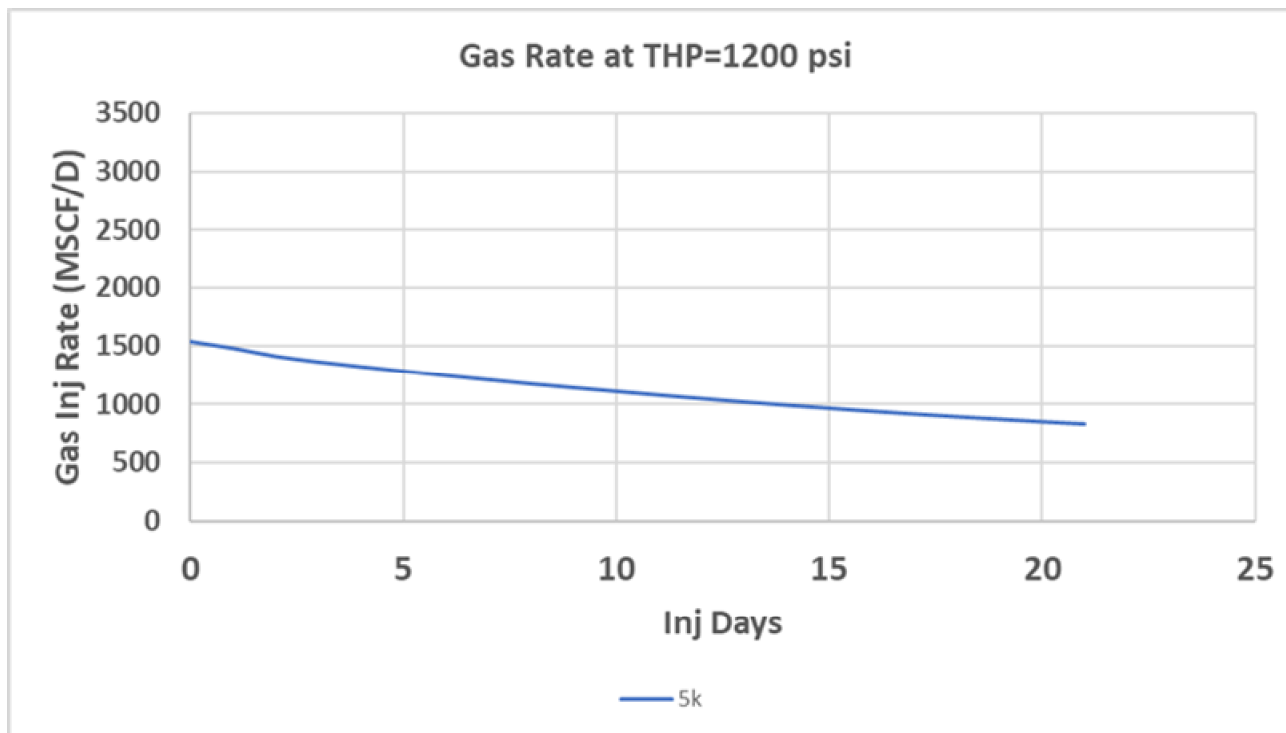


Gas Storage Simulation Process

- Run primary production for all wells for additional period (post history match) – Base Case
- Inject gas in injection well at 2MMSCFPD for 7 days
- Produce the injection well post injection – Injection Case
- Observe the effect on oil, gas rate/recovery in injection well and offset wells by comparing Base and Injection cases

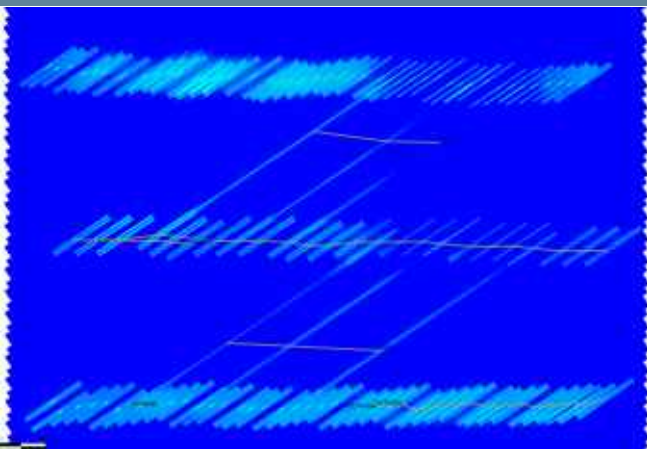


Gas Injection Rate

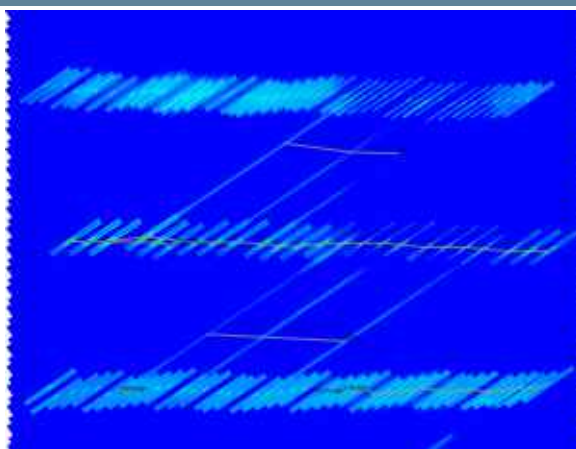


For a 5k well, 1.5 MMSCFPD is the max injection rate at THP of 1200 psi. Injection rate declines to about 50% of its initial value in 3 weeks. There is not a major increase in rate if THP is increased to 1250 psi.

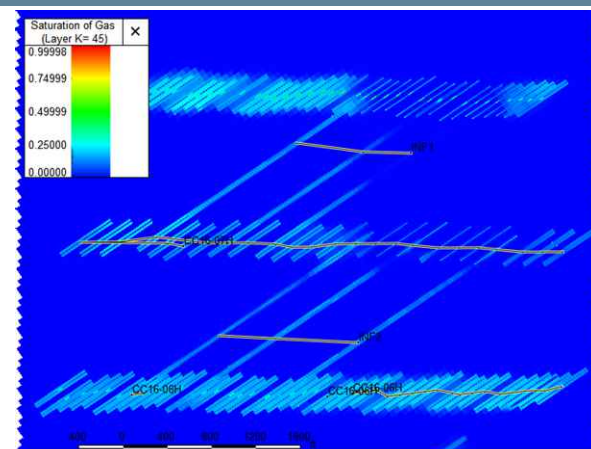
Gas Injection Profile



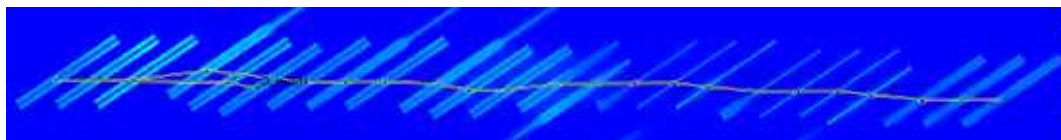
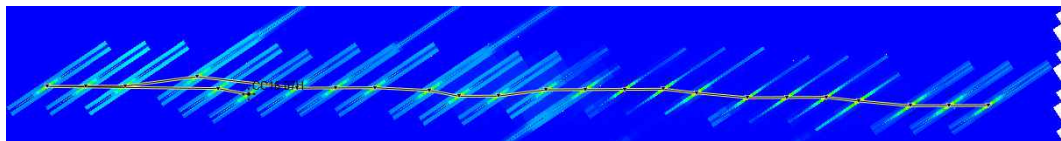
Before injection



After 1 week of injection (3 MMSCFPD)

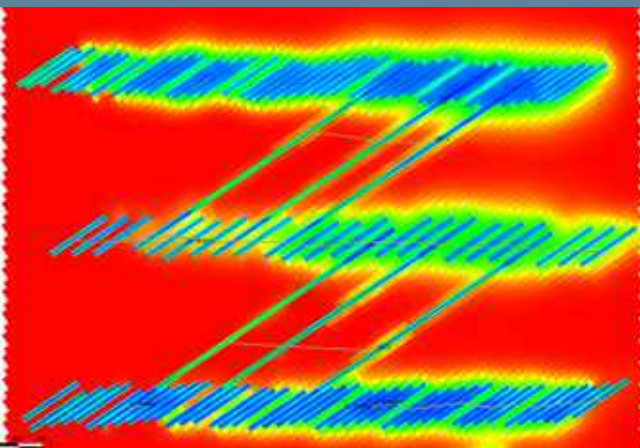


After 16 months production

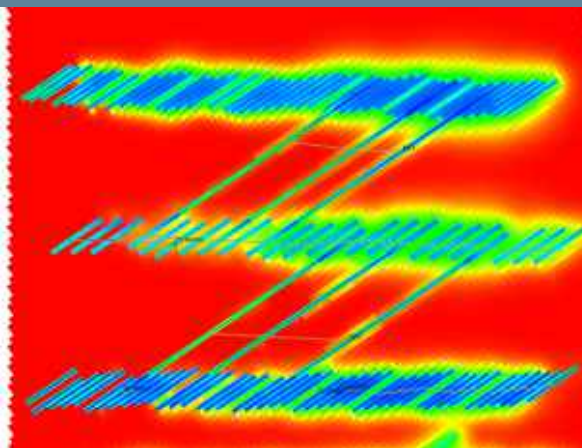
Before Injection CC16-7H
Blow-upAfter Injection CC16-7H
Blow-up

- Gas is stored within fractures.
- All injection cases indicate horizontal gas movement of 100 ft or less into the fractures.

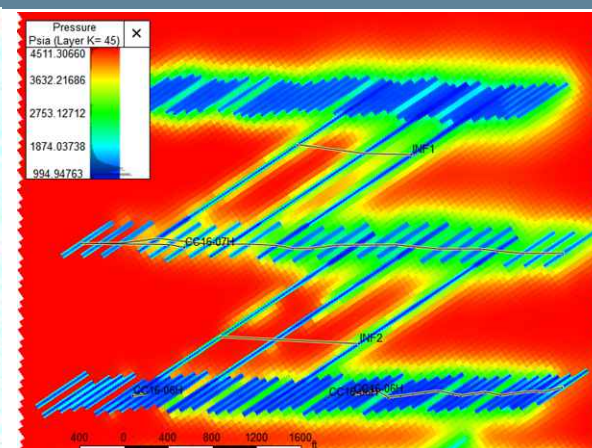
Pressure Profile



Before injection

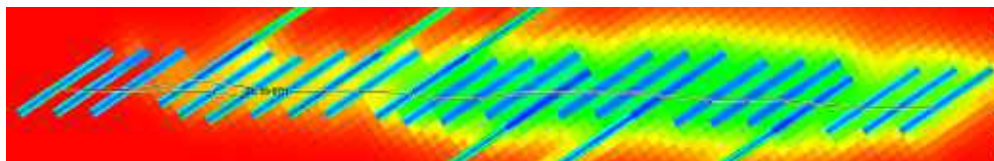


After 1 week of injection (3 MMSCFPD)

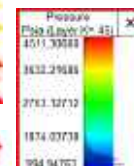
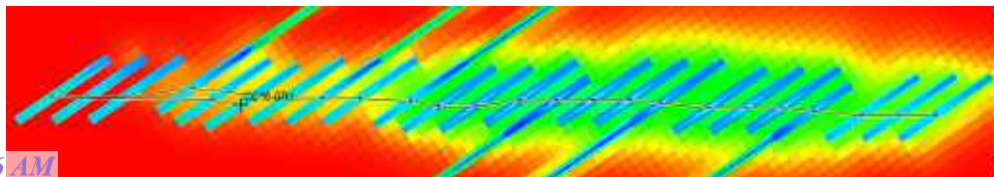


After 16 months production

Before Injection CC16-7H
Blow-up



After Injection CC16-7H
Blow-up



Summary of Cases

Case	Injection Description*	WPS	Oil recovery effect in injected well (MBO)	Oil recovery effect in offset wells (MBO)	Gas breakthrough in Offset well
1	Single Well	4	No change	No change	No
2	Single Well**	6	No change	No change	No
3	Single Well	8	No change	No change	No
4	Single Well (Multiple injection and production cycles)	6	No change	No change	No
5	Single well***	6	No change	No change	No
6	Multiple Adjacent Wells	4	No change	No change	No
7	Multiple Adjacent Wells	6	No change	No change	No
8	Multiple Adjacent Wells	8	No change	No change	No

*All injection at 2MMSCF/DAY for 7 days except cases 2 and 5

**Injection at 3MMSCF/DAY for 7 days

***Injection at 3MMSCF/DAY for 21 days

Gas Storage Capacities - CC

API	Well Name	Gas Storage Capacity with 1200 psi WHP Injection	
		Fracture volume gas equivalent, mmscf	Total prod gas equivalent, mmscf
30015438190000	CEDAR CANYON 28 FEDERAL 008H	165	1224
30015429920000	CEDAR CANYON 29 FEDERAL 002H	144	1221
30015441910000	CEDAR CANYON 21 FEDERAL 023H	102	885

- Gas storage capacity is high for each well
 - Even just stored gas in fractures, the capacity is over 100 mmscf
- The expected gas injection volume for each well during each event could be up to 60 mmscf, this is way below the storage capacity

Frac Height and SRV - CC

- **Frac height:**
 - **2BSS: Based on Nimitz**
 - $XH = 285'$,
 - $Xf = 300-400'$
- **SRV**
 - $SRV = 2 * Xf * Xh * \text{Well length}$

API_NO14	Well_NAME	SRV, ft ³
30015441910000	CC21-023H	923,884,500
30015438190000	CC28-008H	904,932,000
30015429920000	CC29-002H	901,540,500



Closed Loop Gas Capture (CLGC) Project

Affirmative Statement 2

The operator examined the available geologic and engineering data and determined 1) the total recoverable volume of hydrocarbons from the reservoir will not be adversely affected by the project and 2) the gas composition will not damage the reservoir.

Xueying Xie

6/9/2021

Xueying Xie, Reservoir Engineer

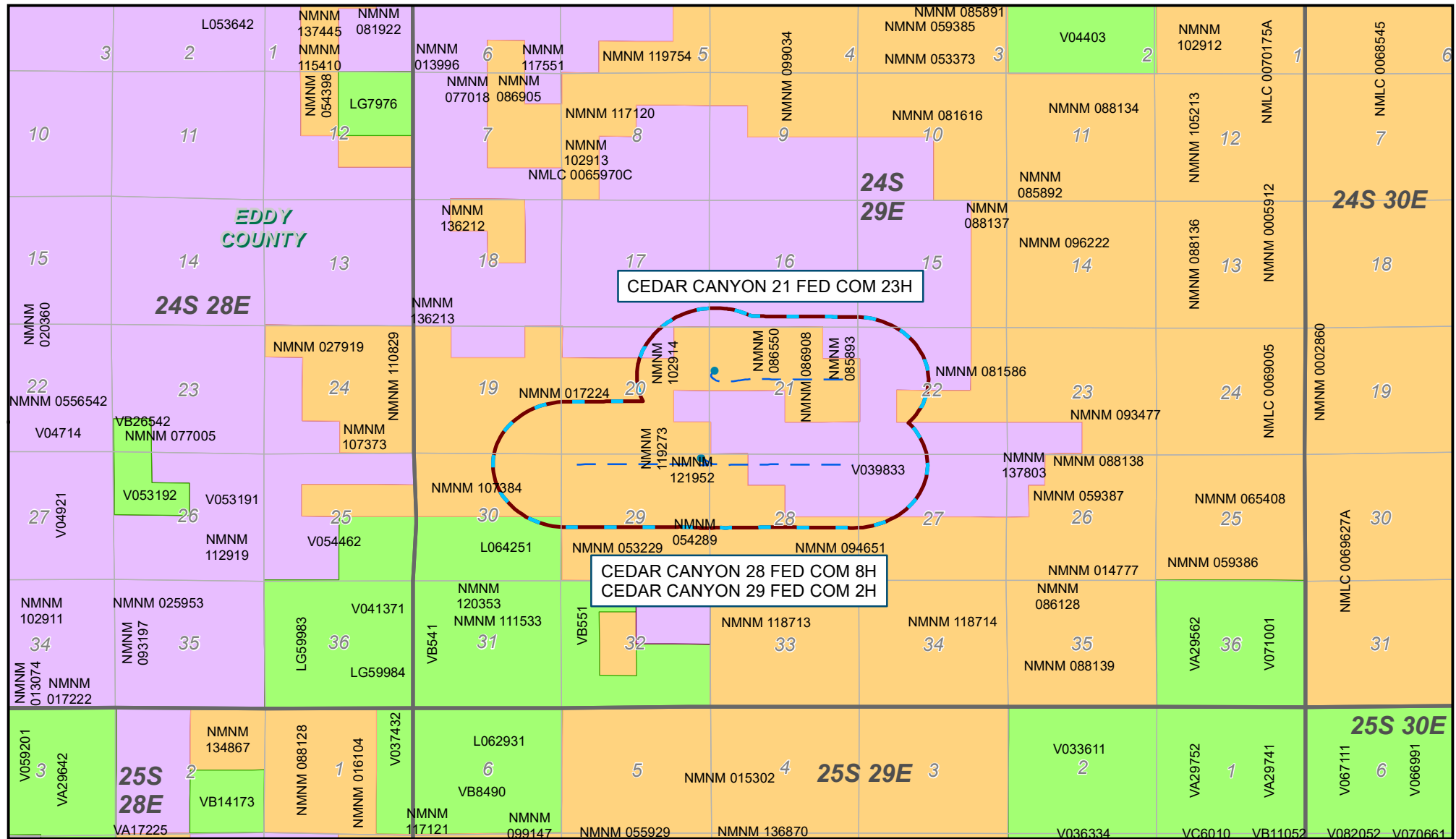
Date

Notice



CEDAR CANYON NEW MEXICO

SURFACE OWNERSHIP MAP



County



1/2 mile AOR



Surface Hole Location



Wellbore Trajectory

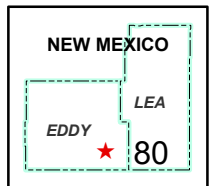
Surface Ownership:

Federal

Private

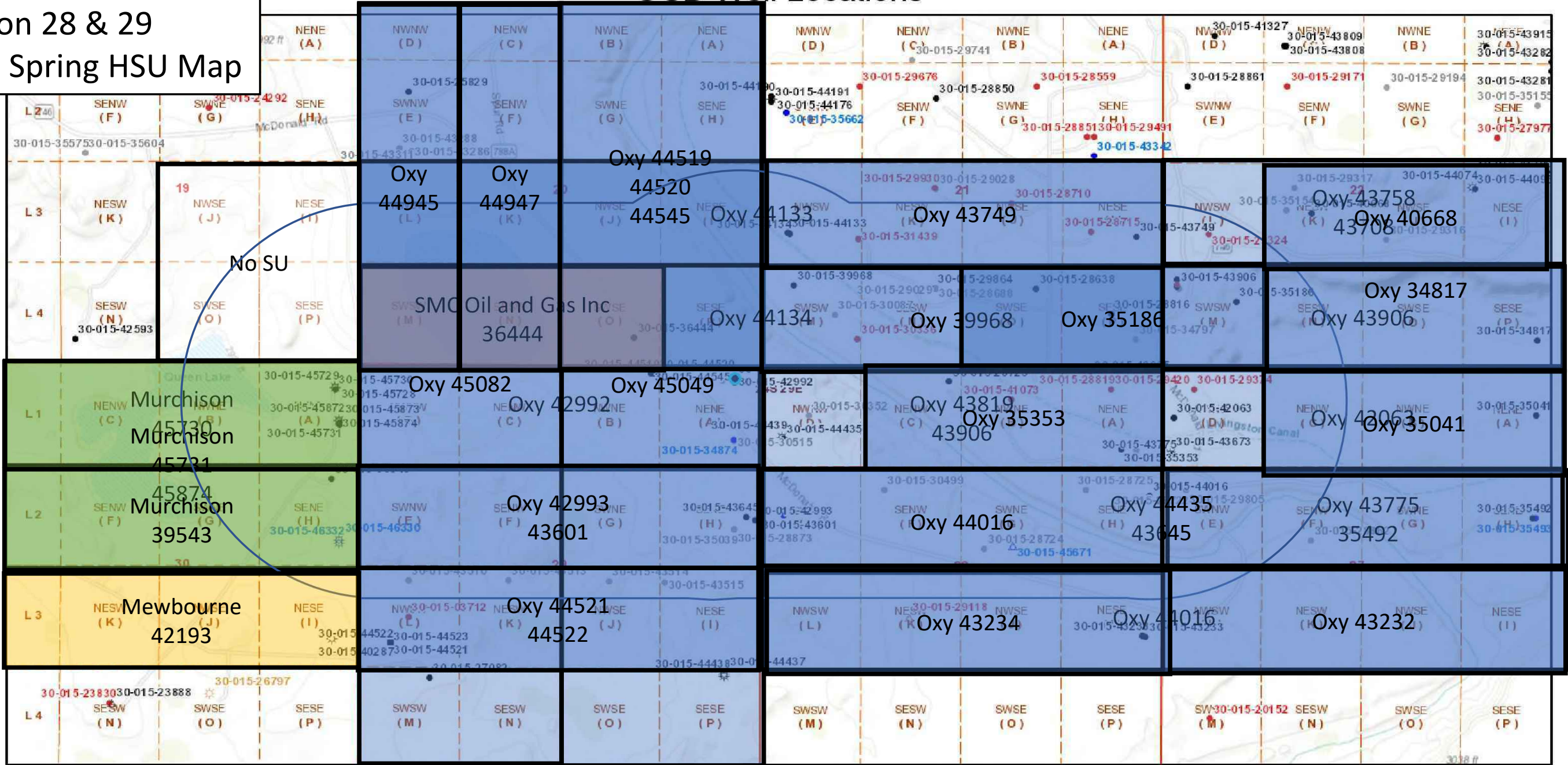
State

0 0.75 1.5 3 Miles



Section 28 & 29
Bone Spring HSU Map

OCD Well Locations



3/22/2021, 7:33:17 AM

Wells - Large Scale

- undefined
- Miscellaneous
- CO2, Active
- CO2, Cancelled
- CO2, New
- CO2, Plugged

- CO2, Temporarily Abandoned
- Gas, Active
- Gas, Cancelled
- Gas, New
- Gas, Plugged
- Gas, Temporarily Abandoned

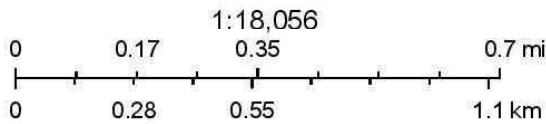
- Injection, Active
- Injection, Cancelled
- Injection, New
- Injection, Plugged
- Injection, Temporarily Abandoned
- Oil, Active

- Oil, Cancelled
- Oil, New
- Oil, Plugged
- Oil, Temporarily Abandoned
- Salt Water Injection, Active
- Salt Water Injection, Cancelled

- Salt Water Injection, New
- Salt Water Injection, Plugged
- Salt Water Injection, Temporarily Abandoned
- Water, Active
- Water, Cancelled
- Water, New

Key

- 1/2 Mile AOR Outline
- Oxy HSU
- SMC O&G HSU
- Murchison HSU
- Mewbourne
- No HSU



Oil Conservation Division of the New Mexico Energy, Minerals and Natural Resources Department, Bureau of Land Management, Texas Parks & Wildlife, Esri, HERE, Garmin, INCREMENT P, USGS, METI/NASA, EPA, USDA, OCD, BLM

New Mexico Oil Conservation Division
7f2306164de29fd2fb9f8f35ca75: New Mexico Oil Conservation Division

NM OCD Oil and Gas Map. <http://nm-ernrd.map>

Cedar Canyon Notice List

Name	Street	City	State	Zip Code	Merged
Surface Owner					
Bureau of Land Management	620 E. Greene St.	Carlsbad	NM	88220	Bureau of Land Management 620 E. Greene St. Carlsbad, NM 88220
Leasehold Operators					
Mewbourne Oil Co.	P.O. Box 5270	Hobbs	NM	88241	Mewbourne Oil Co. P.O. Box 5270 Hobbs, NM 88241
Murchison Oil and Gas, LLC	7250 Dallas Parkway Suite 1400	Plano	TX	75024	Murchison Oil and Gas, LLC 7250 Dallas Parkway Suite 1400 Plano, TX 75024
SMC OIL & GAS, INC.	PO BOX 50907	Midland	TX	79710	SMC OIL & GAS, INC. PO BOX 50907 Midland, TX 79710
Affected Persons					
Balog Family Trust	P.O. Box 111890	Anchorage	AK	99504	Balog Family Trust P.O. Box 111890 Anchorage, AK 99504
Basin Operating Co.	#648 Petroleum Bldg	Roswell	NM	88201	Basin Operating Co. #648 Petroleum Bldg Roswell, NM 88201
Branex Resources Inc.	P.O. Box 2990	Ruidoso	NM	88355	Branex Resources Inc. P.O. Box 2990 Ruidoso, NM 88355
Centennial NM Partners	P.O. Box 1837	Roswell	NM	88201	Centennial NM Partners P.O. Box 1837 Roswell, NM 88201
Chevron USA Inc.	6301 Deauville	Midland	TX	79706	Chevron USA Inc. 6301 Deauville Midland, TX 79706
David J. Sorenson	P.O. Box 1453	Roswell	NM	88202	David J. Sorenson P.O. Box 1453 Roswell, NM 88202
DEVON ENERGY PRODUCTION CO.	333 West Sheridan Avenue	Oklahoma City	OK	73102	DEVON ENERGY PRODUCTION CO. 333 West Sheridan Avenue Oklahoma City, OK 73102
Elk Oil Co.	P.O. Box 310	Roswell	NM	88202	Elk Oil Co. P.O. Box 310 Roswell, NM 88202
EMG Oil Properties	1000 W. 4th St.	Roswell	NM	88201	EMG Oil Properties 1000 W. 4th St. Roswell, NM 88201
Energex Co	100 N. Pennsylvania	Roswell	NM	88201	Energex Co 100 N. Pennsylvania Roswell, NM 88201
Gail Balog	25812 S. Darford Dr.	Sun Lakes	AZ	85248	Gail Balog 25812 S. Darford Dr. Sun Lakes, AZ 85248
Hutchings Oil Co.	P.O. Box 1216	Albuquerque	NM	87102	Hutchings Oil Co. P.O. Box 1216 Albuquerque, NM 87102
Mitchell Exploration Inc.	P.O. Box 2415	Midland	TX	79702	Mitchell Exploration Inc. P.O. Box 2415 Midland, TX 79702
Murphy Petro Corp	P.O. Box 2545	Roswell	NM	88202	Murphy Petro Corp P.O. Box 2545 Roswell, NM 88202
Pabo Oil & Gas LLC	P.O. Box 1675	Roswell	NM	88202	Pabo Oil & Gas LLC P.O. Box 1675 Roswell, NM 88202

Paloma Blanca Well Service Inc.	P.O. Box 6251	Roswell	NM	88202	Paloma Blanca Well Service Inc. P.O. Box 6251 Roswell, NM 88202
Permian Hunter Corp	215 W. 100 S	Salt Lake	UT	84101	Permian Hunter Corp 215 W. 100 S Salt Lake, UT 84101
Pete T. Balog	25812 S. Darford Dr.	Sun Lakes	AZ	85248	Pete T. Balog 25812 S. Darford Dr. Sun Lakes, AZ 85248
Phelps J. White III	P.O. Box 874	Roswell	NM	88202	Phelps J. White III P.O. Box 874 Roswell, NM 88202
PXP Producing Co LLC	717 Texas St. Ste 2100	Houston	TX	77002	PXP Producing Co LLC 717 Texas St. Ste 2100 Houston, TX 77002
State Land Office	308 Old Santa Fe Trail	Santa Fe	NM	87501	State Land Office 308 Old Santa Fe Trail Santa Fe, NM 87501
Scott Exploration Inc.	200 W. 1st St. #648	Roswell	NM	88201	Scott Exploration Inc. 200 W. 1st St. #648 Roswell, NM 88201
Scott Invst Corp	200 W. 1st St. #648	Roswell	NM	88201	Scott Invst Corp 200 W. 1st St. #648 Roswell, NM 88201
Siete Oil & Gas Corp	P.O. Box 2523	Roswell	NM	88202	Siete Oil & Gas Corp P.O. Box 2523 Roswell, NM 88202
Slash Exploration LP	P.O. Box 1973	Roswell	NM	88202	Slash Exploration LP P.O. Box 1973 Roswell, NM 88202
Slash Four Enterprises Inc.	P.O. Box 1433	Roswell	NM	88202	Slash Four Enterprises Inc. P.O. Box 1433 Roswell, NM 88202
Strata Production Co	P.O. Box 1030	Roswell	NM	88202	Strata Production Co P.O. Box 1030 Roswell, NM 88202
The Toles Co LLC	P.O. Box 1300	Roswell	NM	88202	The Toles Co LLC P.O. Box 1300 Roswell, NM 88202
Walker Valorie Trst	P.O. Box 102256	Anchorage	AK	99510	Walker Valorie Trst P.O. Box 102256 Anchorage, AK 99510
1 Timothy 6 LLC	P.O. Box 30598	Edmond	OK	73003	1 Timothy 6 LLC P.O. Box 30598 Edmond, OK 73003
BLM	620 E. Greene St.	Carlsbad	NM	88220	BLM 620 E. Greene St. Carlsbad, NM 88220
COG OPERATING LLC	600 W. Illinois Ave	Midland	TX	79701	COG OPERATING LLC 600 W. Illinois Ave Midland, TX 79701
Devon Energy Production Company LP	PO BOX 843559	DALLAS	TX	75284	Devon Energy Production Company LP PO BOX 843559 DALLAS, TX 75284
EOG Y RESOURCES, INC.	104 S 4TH ST	ARTESIA	NM	88210	EOG Y RESOURCES, INC. 104 S 4TH ST ARTESIA, NM 88210
Lonsdale Resources LLC	2626 Cole Ave Ste 300	Dallas	TX	75204	Lonsdale Resources LLC 2626 Cole Ave Ste 300 Dallas, TX 75204

Maduro Oil & Gas LLC	3102 Maple Avenue Suite 400	Dallas	TX	75201	Maduro Oil & Gas LLC 3102 Maple Avenue Suite 400 Dallas, TX 75201
MRC Permian Co.	5400 LBJ Fwy Ste 1500	Dallas	TX	75240	MRC Permian Co. 5400 LBJ Fwy Ste 1500 Dallas, TX 75240
NGL WATER SOLUTIONS PERMIAN, LLC	865 NORTH ALBION STREET SUITE 400	DENVER	CO	80220	NGL WATER SOLUTIONS PERMIAN, LLC 865 NORTH ALBION STREET SUITE 400 DENVER, CO 80220
POGO PRODUCING CO	P.O. Box 10340	Midland	TX	79702	POGO PRODUCING CO P.O. Box 10340 Midland, TX 79702
Prime Rock Resources Asset Co LLC	203 W. Wall St. Suite 1000	Midland	TX	79701	Prime Rock Resources Asset Co LLC 203 W. Wall St. Suite 1000 Midland, TX 79701
PROBITY SWD, LLC	PO BOX 7307	Midland	TX	79708	PROBITY SWD, LLC PO BOX 7307 Midland, TX 79708
Tap Rock Resources LLC	523 Park Point Dr. Ste 200	Golden	CO	80401	Tap Rock Resources LLC 523 Park Point Dr. Ste 200 Golden, CO 80401
Winchester Energy LLC	PO BOX 13540	Oklahoma City	OK	73113	Winchester Energy LLC PO BOX 13540 Oklahoma City, OK 73113
WPX Energy Permian LLC	25061 Network PL	Chicago	IL	60673	WPX Energy Permian LLC 25061 Network PL Chicago, IL 60673
XTO ENERGY, INC	6401 Holiday Hill Rd. Building #5	Midland	TX	79707	XTO ENERGY, INC 6401 Holiday Hill Rd. Building #5 Midland, TX 79707
XTO Holdings LLC	P.O. Box 840780	Dallas	TX	75284	XTO Holdings LLC P.O. Box 840780 Dallas, TX 75284