BEFORE THE OIL CONSERVATION DIVISION
EXAMINER HEARING SEPTEMBER 09, 2021

CASE NO. 22150

CEDAR CANYON 21 FED COM #023H WELL
CEDAR CANYON 28 FED COM #8H WELL
CEDAR CANYON 29 FED COM #2H WELL

EDDY COUNTY, NEW MEXICO

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. 22150

TABLE OF CONTENTS FOR SEPTEMBER 9, 2021 HEARING EXHIBITS

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. 22150

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.

BEFORE THE OIL CONSERVATION DIVISION
Santa Fe, New Mexico
Exhibit No. A
Submitted by: OXY USA Inc.
Hearing Date: September 09, 2021
Case No. 22150

- 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 logs[1] 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

By:_____

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Adam G. Rankin
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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

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
• Flare gas • Shut in production	• Store gas • Continue production • No additional surface disturbances	• 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.

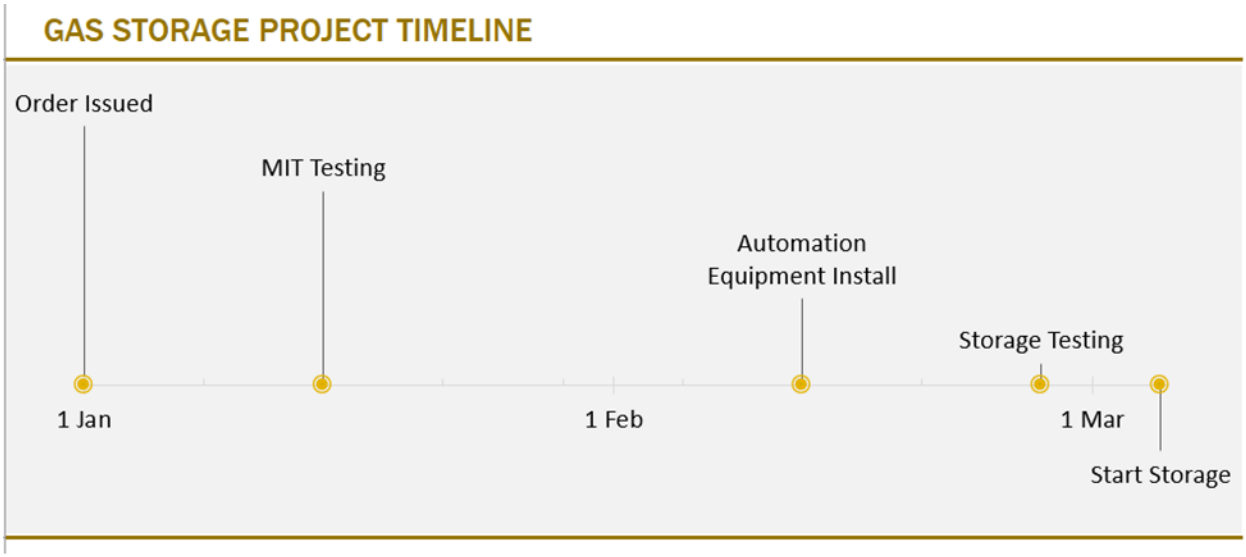
Wells

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

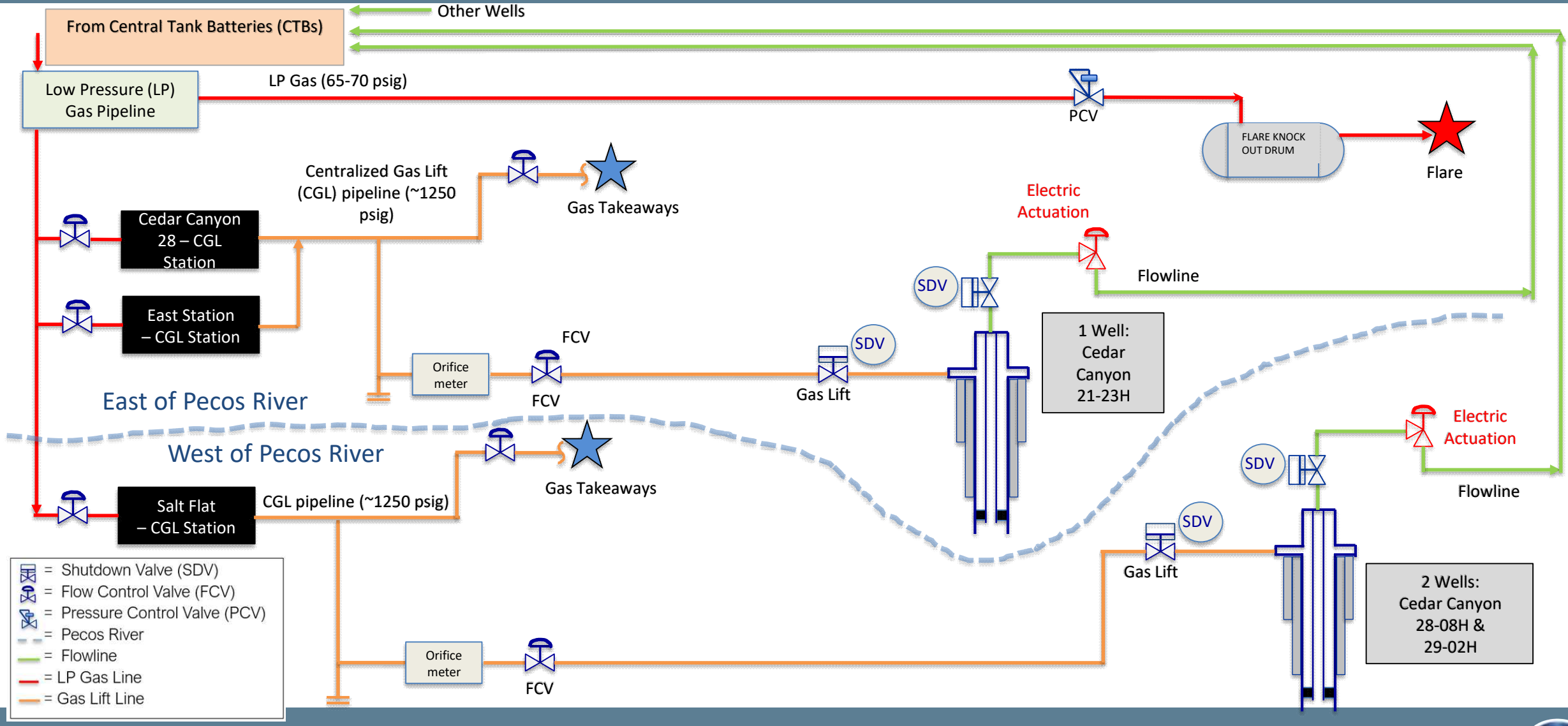
Since no new surface disturbances are required, this project can be implemented with minimal facility modifications. The timeline below assumes an order is issued on January 1 for illustration purposes.



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

SAN MATEO

ENTERPRISE

EAST CGL

CEDAR CANYON 21 FED COM 23H

FTP

LTP

T24S
R29E

SALT FLAT CGL

CC 22 SAT/CTB

CC 21 CTB

CEDAR CANYON 29 FED COM 2H

FTP

LTP

CEDAR CANYON 28 FED COM 8H

FTP

LTP

CC 28 CGL

CC 28-4 CTB

Flare

Gas Takeaway

Wellbore

Flowline

LP Gas Line

Gas Lift Line

Compressor Station

Project Area

Injection Wellbores

NM OIL CONSERVATION
ARTESIA DISTRICT
NOV 13 2018
RECEIVED

DISTRICT I
1625 N. FRENCH DR., HOBBS, NM 88240
Phone: (575) 393-6161 Fax: (575) 393-0720

DISTRICT II
811 S. FIRST ST., ARTESIA, NM 88210
Phone: (575) 748-1283 Fax: (575) 748-9720

DISTRICT III
1000 RIO BRAZOS RD., AZTEC, NM 87410
Phone: (505) 334-6178 Fax: (505) 334-6170

DISTRICT IV
1220 S. ST. FRANCIS DR., SANTA FE, NM 87505
Phone: (505) 476-3460 Fax: (505) 476-3462

State of New Mexico
Energy, Minerals & Natural Resources Department
OIL CONSERVATION DIVISION
1220 SOUTH ST. FRANCIS DR.
Santa Fe, New Mexico 87505

Form C-102
Revised August 1, 2011
Submit one copy to appropriate
District Office

☑ AMENDED REPORT
(As-Drilled)

WELL LOCATION AND ACREAGE DEDICATION PLAT

API Number	Pool Code	Pool Name
30-015-44191	96238	Corral Draw Bone Spring

Property Code	Property Name	Well Number
315207	CEDAR CANYON 21 FEDERAL COM	23H

OGRID No.	Operator Name	Elevation
16696	OXY USA INC.	2931.0

Surface Location

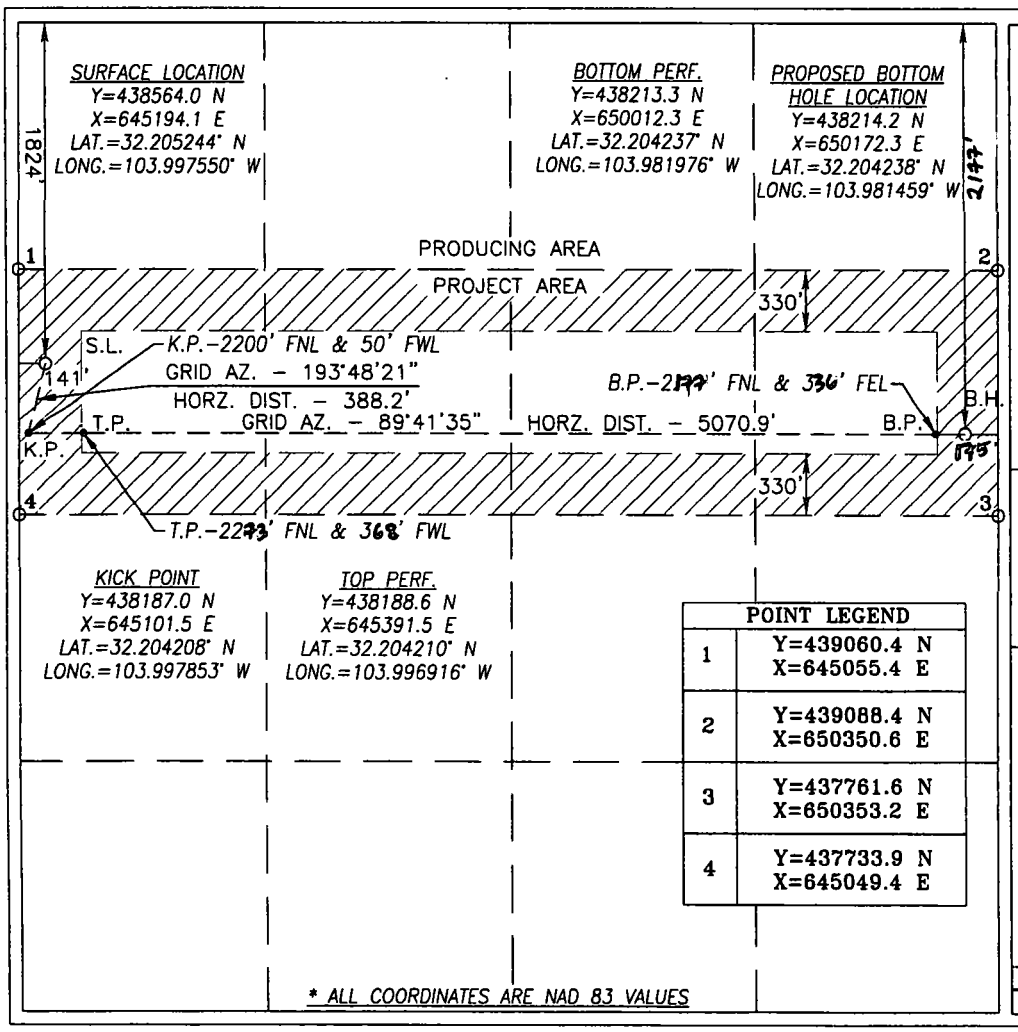
UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
E	21	24-S	29-E		1824	NORTH	141	WEST	EDDY

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	~~180~~ 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



POINT LEGEND	
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

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.

Signature — Date: 11/14/17

Jana Mendiola
Printed Name

janalyn_mendiola@oxy.com
E-mail Address

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.

JULY 27 2016
Date of Survey

Signature & Seal of Professional Surveyor

CHAD L. HARCROW
NEW MEXICO
17777
LICENSED PROFESSIONAL SURVEYOR

Chad Harcrow 9/19/16
Certificate No. CHAD HARCROW 17777
W.O. #16-726 DRAWN BY: CF

District I
1625 N. French Dr., Hobbs, NM 88240
Phone: (575) 393-6161 Fax: (575) 393-0720
District II
811 S. First St., Artesia, NM 88210
Phone: (575) 748-1283 Fax: (575) 748-9720
District III
1000 Rio Brazos Road, Aztec, NM 87410
Phone: (505) 334-6178 Fax: (505) 334-6170
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505
Phone: (505) 476-3460 Fax: (505) 476-3462

NM OIL CONSERVATION
ARTESIA DISTRICT
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State of New Mexico
Energy, Minerals & Natural Resources Department
OIL CONSERVATION DIVISION
1220 South St. Francis Dr.
Santa Fe, NM 87505

Form C-102
Revised August 1, 2011
Submit one copy to appropriate District Office

☑ AMENDED REPORT
(As-Drilled)

WELL LOCATION AND ACREAGE DEDICATION PLAT

API Number	Pool Code	Pool Name
30-015-43819	96473	Pierce Crossing Bone Spring, East

Property Code	Property Name	Well Number
39711	CEDAR CANYON "28" FEDERAL COM	8H

OGRID No.	Operator Name	Elevation
16696	OXY USA INC.	2949.3'

Surface Location

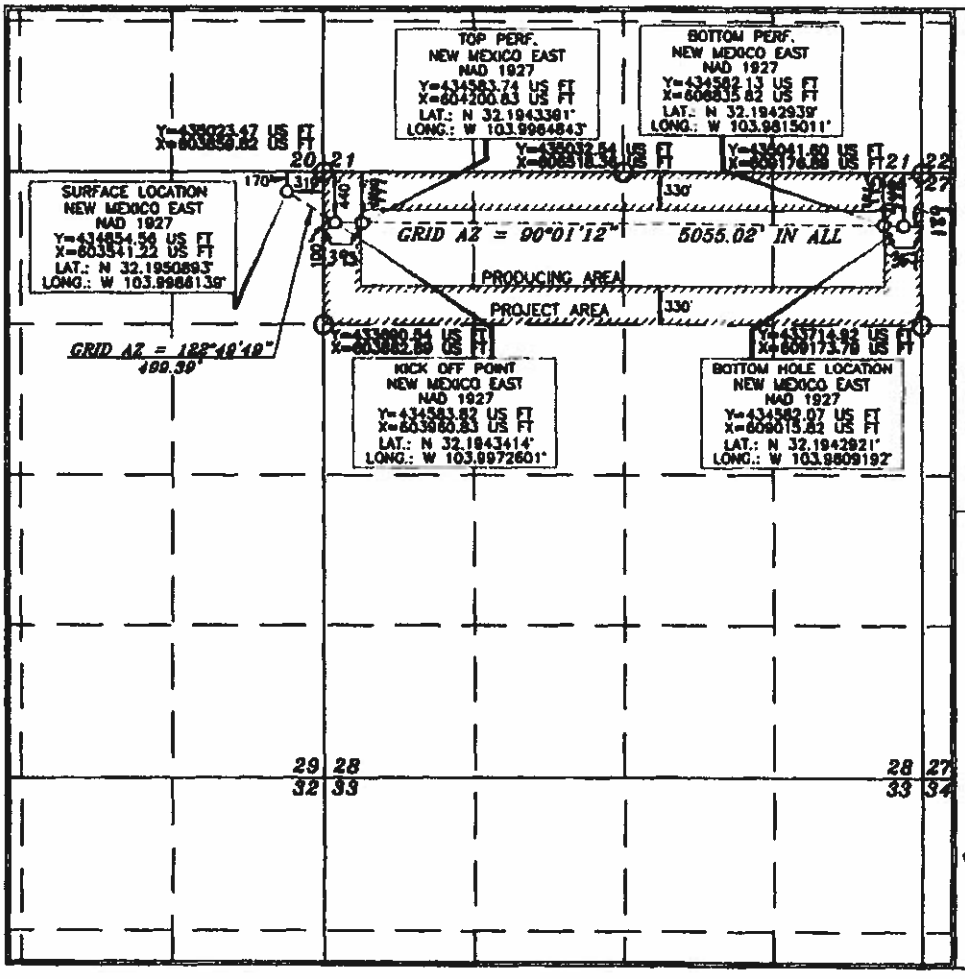
UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
A	29	24 SOUTH	29 EAST, N.M.P.M.		170'	NORTH	319'	EAST	EDDY

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.		~~458'~~ 445'	NORTH	~~199'~~ 357'	EAST	EDDY

Dedicated Acres	Joint or Infill	Consolidation Code	Order No.:
160	Y		BP- 445 FNL 357 FEL TP- 449 FNL 393 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.



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 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 a mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division.

Signature 1/9/17 Date

Jana Mendiola
Printed Name

jana_n_mendiola@oxy.com
Email Address

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.

15079

OCTOBER 27, 2015
Date of Survey

Signature and Seal of Professional Surveyor

TERRY J. ASEL
NEW MEXICO
15079
PROFESSIONAL LAND SURVEYOR

Terry J. Asel 10/29/2015
Certificate Number 15079

WO# 151027WL-e-XY (KA)

District I
1625 N. French Dr., Hobbs, NM 88240
Phone: (575) 393-6161 Fax: (575) 393-0720
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Revised August 1, 2011
Submit one copy to appropriate District Office

☑ AMENDED REPORT
(As-Drilled)

WELL LOCATION AND ACREAGE DEDICATION PLAT

API Number	Pool Code	Pool Name
30-015-42992	50371	Pierce Crossing Bone Spring

Property Code	Property Name	Well Number
314329	CEDAR CANYON "29" FEDERAL Com	2H

OGRID No.	Operator Name	Elevation
16696	OXY USA INC.	2949.3'

Surface Location

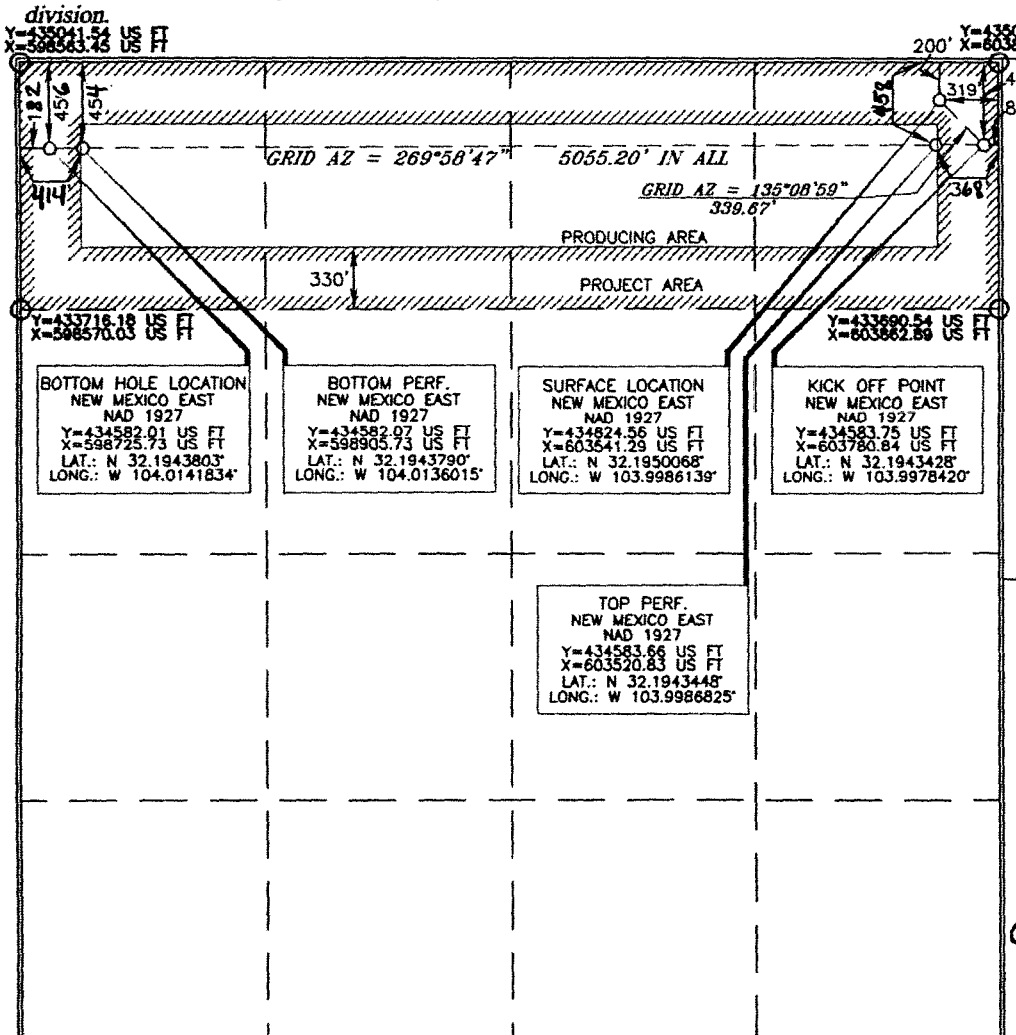
UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
A	29	24 SOUTH	29 EAST, N.M.P.M.		200'	NORTH	319'	EAST	EDDY

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.		~~450'~~ 456	NORTH	~~160'~~ 182	WEST	EDDY

Dedicated Acres	Joint or Infill	Consolidation Code	~~Order No.~~
160	N		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.



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 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 a mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division.

Signature 1/9/17 Date

Jana Merdiola
Printed Name

janalyn_merdiola@oxy.com
Email Address

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.

JERRY J. ASEL NEW MEXICO 15079 REGISTERED PROFESSIONAL LAND SURVEYOR

OCTOBER 27, 2015
Date of Survey

Signature and Seal of Professional Surveyor

12/30/2015

15079
Certificate Number

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

Side 1

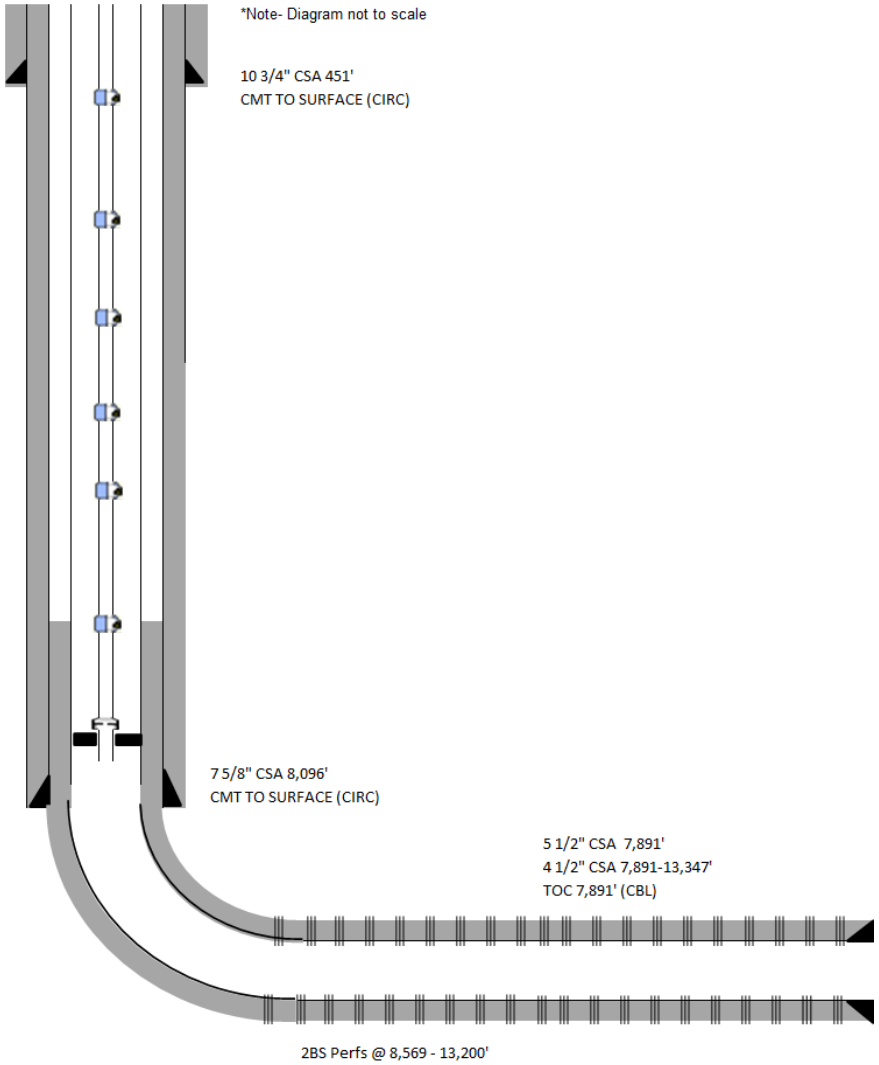
OPERATOR: OXY USA INC

WELL 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 SCHEMATIC



WELL CONSTRUCTION DATA

Surface Casing

Hole Size: 14.75" Casing Size: 10.75"

Cemented with: 350 sx. ***or*** _____ ft^3

Top of Cement: SURFACE Method Determined: CIRC

Intermediate Casing

Hole Size: 9.875" Casing Size: 7.625

Cemented with: 1,661 sx. ***or*** _____ ft^3

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*** _____ ft^3

Top of Cement: 7,891 Method Determined: CBL

Total Depth: 13,360' MD / 8,708 TVD

Injection 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: None

Type of Packer: 5.5" Watson 10K AS1X nicklel coated packer

Packer 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. _____

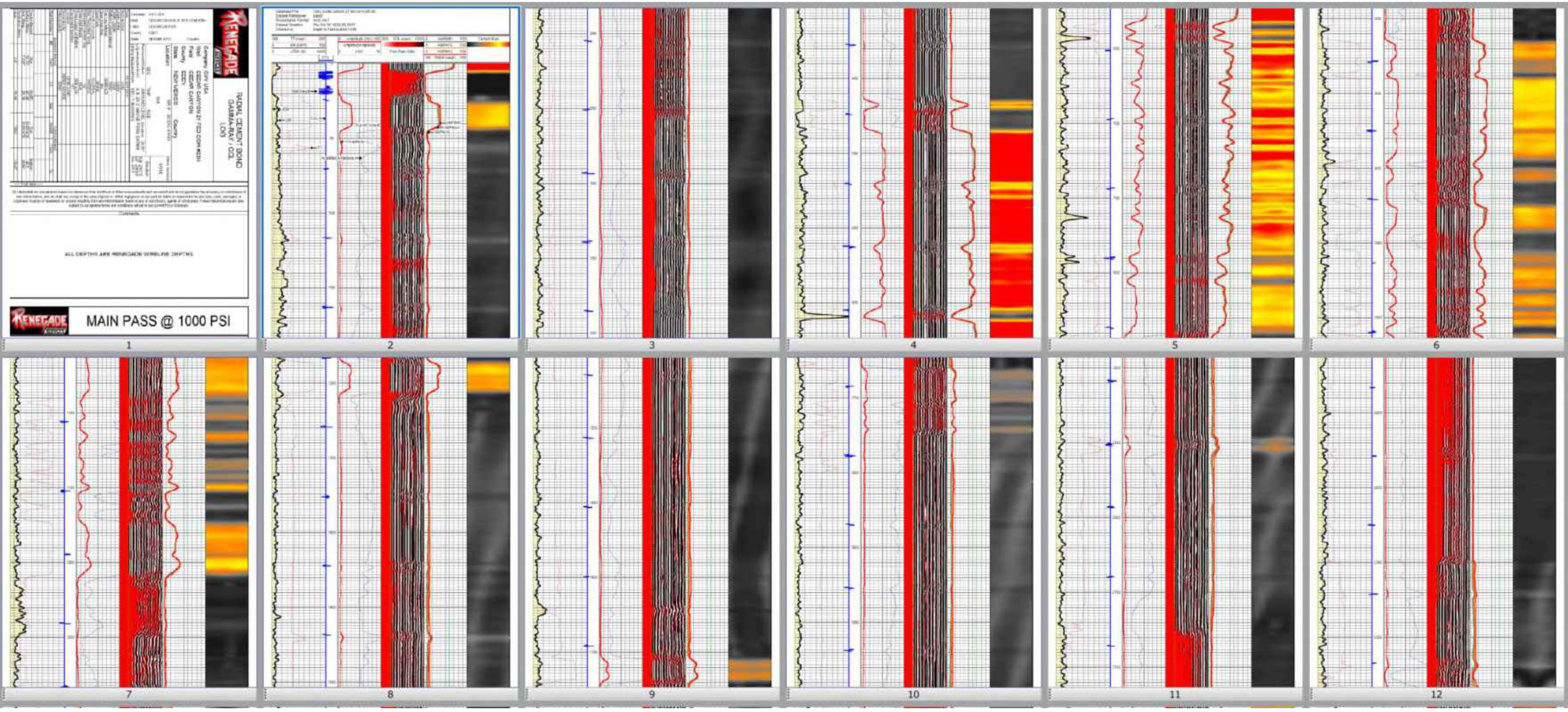
   NO

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'

CC 21 #23H


RADIAL CEMENT BOND GAMMA-RAY / CCL LOG
ALL DEPTHS ARE RENEGADE WIRELINE DEPTHS
MAIN PASS @ 1000 PSI
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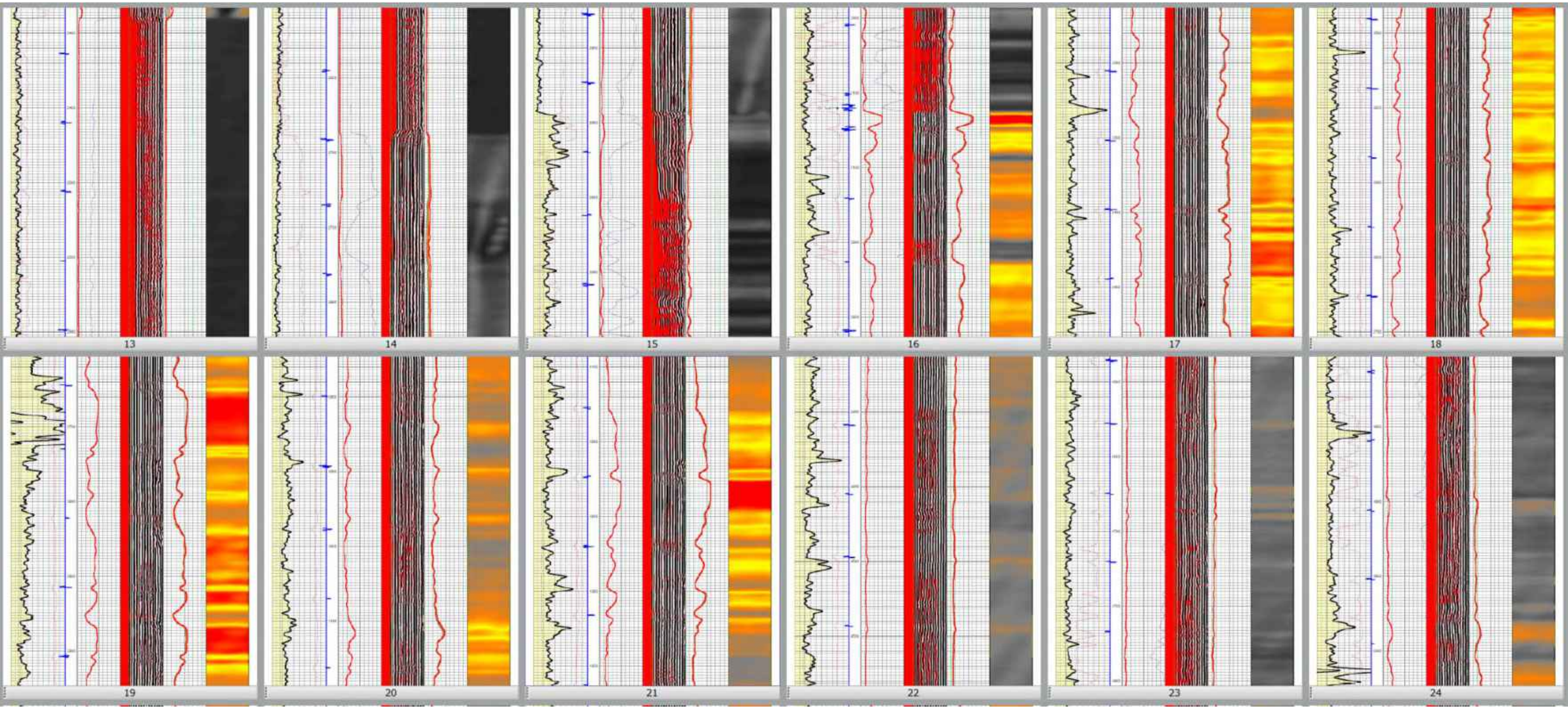
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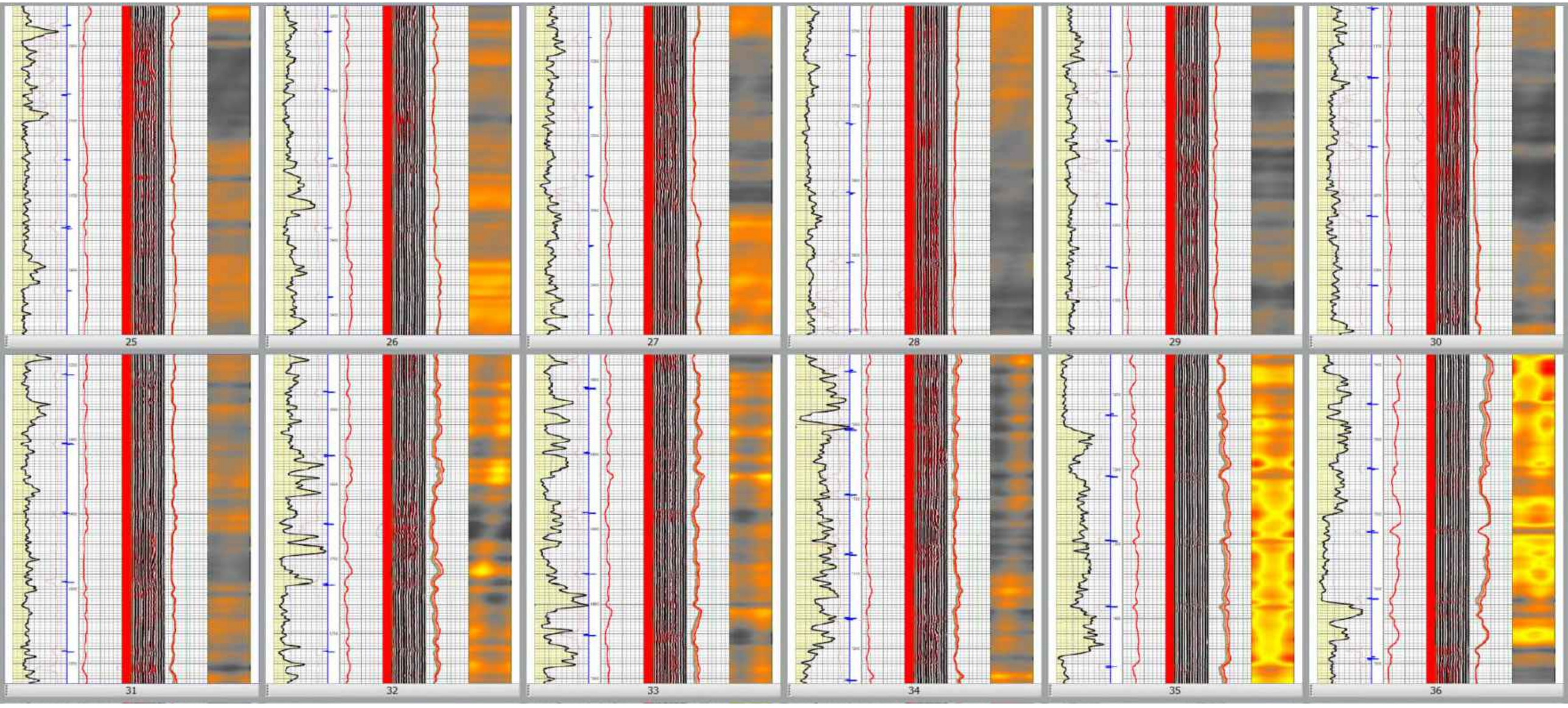
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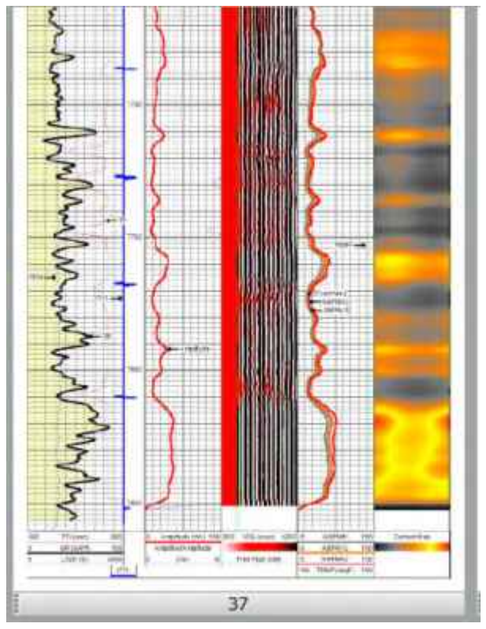

37

Side 1

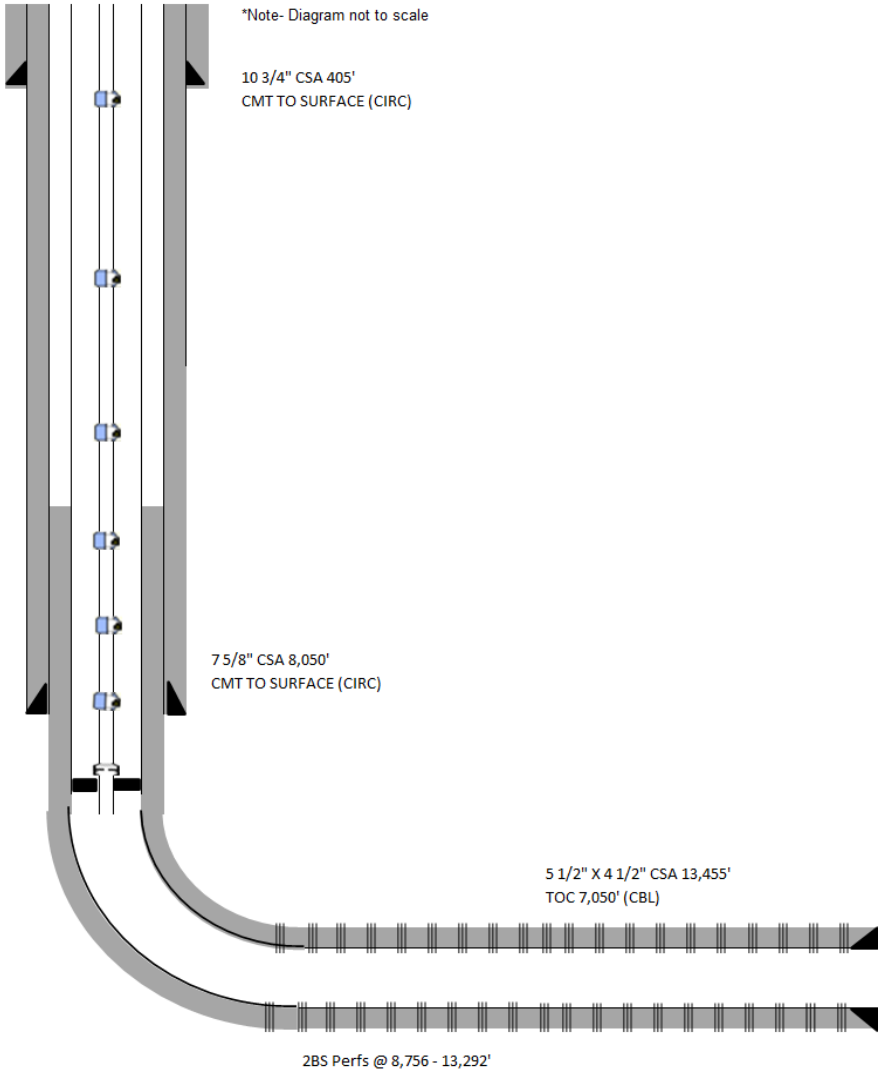
OPERATOR: OXY USA INC

WELL NAME & NUMBER: CEDAR CANYON 28 FEDERAL COM 8H API 30-015-43819

WELL LOCATION: 170' 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: 467 sx. ***or*** _____ ft^3

Top of Cement: SURFACE Method Determined: CIRC

Intermediate Casing

Hole Size: 9.875" Casing Size: 7.625

Cemented with: 1,595 sx. ***or*** _____ ft^3

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*** _____ ft^3

Top of Cement: 7,050 Method Determined: CBL

Total Depth: 13,460' MD / 8,712 TVD

Injection 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: None

Type of Packer: 5.5" Weatherford 10K AS1X nicklel coated packer

Packer 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'

CBL

NM OIL CONSERVATION
ARTESIA DISTRICT
JAN 12 2017
RECEIVED

AB 1/19/17

RELINE
SERVICES
Schlumberger Company

Company Oxy Permian
Well Cedar Canyon 28 FED COM 8H
Field Eddy County
County Eddy State New Mexico

Location: API # : 30-015-~~42992~~ 43819
Lat: 32.1950068
Long: -103.9986139
SEC TWP RGE

Other Services

Elevation
K.B. 2975
D.F. 2974
G.L. 2949

Permanent Datum Elevation
Log Measured From KB
Drilling Measured From KB

Eddy County New Mexico State

	12/17/2016
	ONE
	13445 ft
	8758 ft
d Interval	8752 ft
val	50 ft
ze	6.75"
	Brine Water
osity	8.4 #
ed Temp.	164 degF
ment Top	7050
eady	10:00
on Bottom	11:00
umber	120226
	Midland, TX
	Tyler Anselm
	Jeff Cook

Borehole Record

	Bit	From	To

Tubing Record

Size	Weight	From	To

	Size	Wgt/Ft	Top	Bottom
rd	10.75"	40.5#	Surface	405 ft
g				
String	5.5"	20#	Surface	8585 ft

<<< Fold Here >>>

All interpretations are opinions based on inferences from electrical or other measurements and we cannot and do not guarantee the accuracy or correctness of any interpretation, and we shall not, except in the case of gross or wilful negligence on our part, be liable or responsible for any loss, costs, damages, or expenses incurred or sustained by anyone resulting from any interpretation made by any of our officers, agents or employees. These interpretations are also subject to our general terms and conditions set out in our current Price Schedule.

Comments

A Schlumberger Company

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

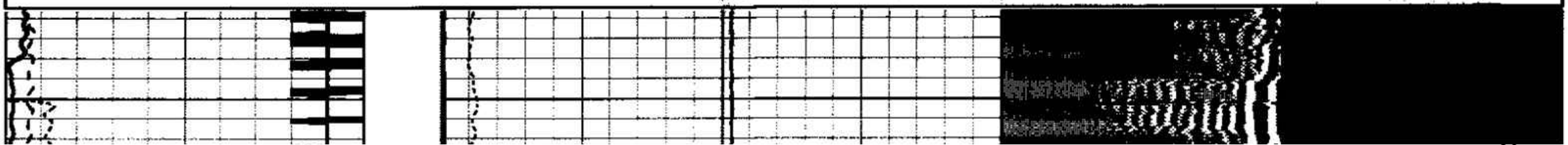
400	Travel Time (usec)	200
9	Casing Collar	-1
0	Gamma Ray (GAPI)	150
0	Line Tension (lb)	5000

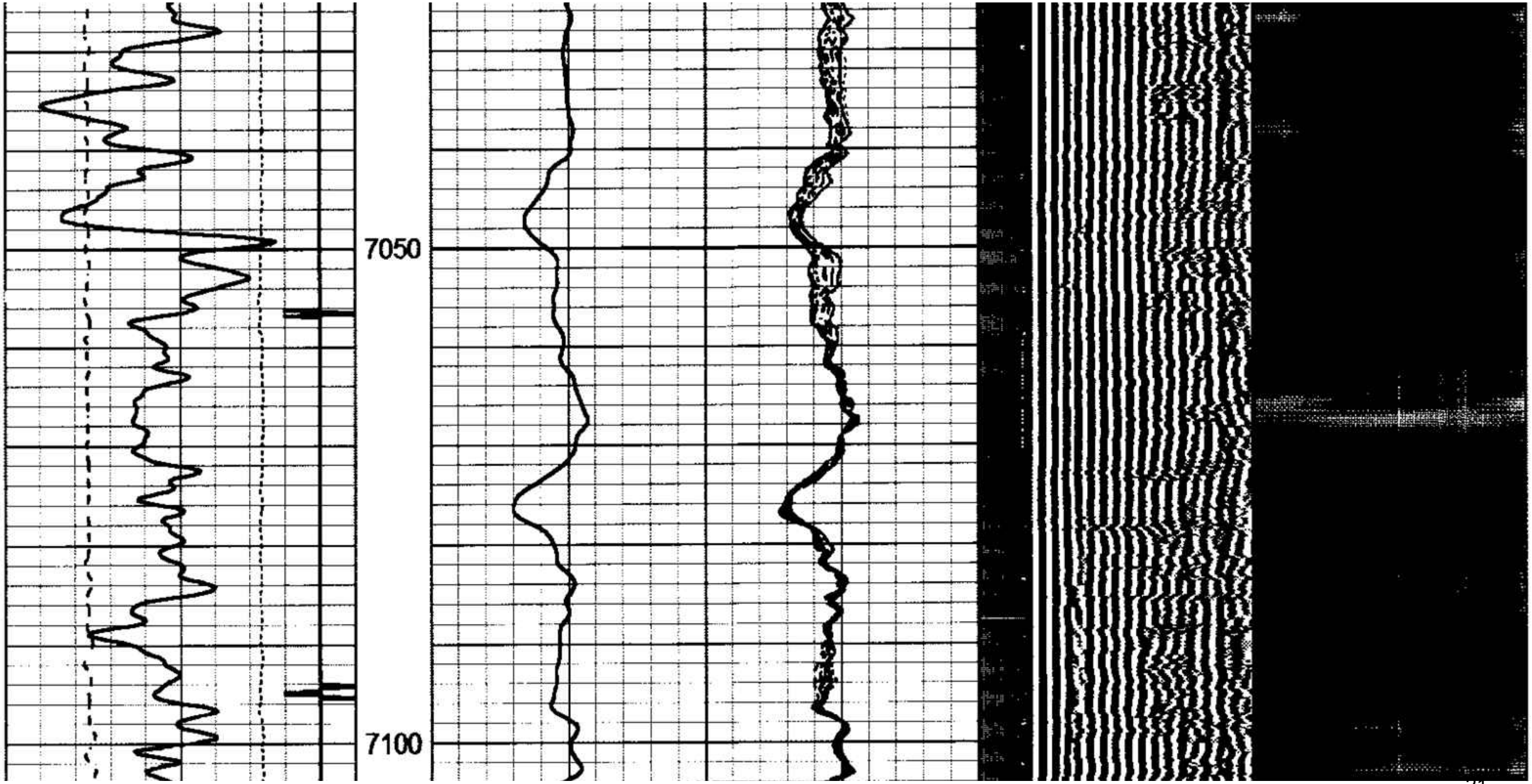
0	Amplitude (mV)	100
	Amplified Amplitude	
0	(mV)	10

-5	AMPS1	150
-5	AMPS2	150
-5	AMPS3	150
-5	AMPS4	150
-5	AMPS5	150
-5	AMPS6	150
-5	AMPS7	150
-5	AMPS8	150

	Variable Density	
200		1200

1	Cement Map	8
0		100

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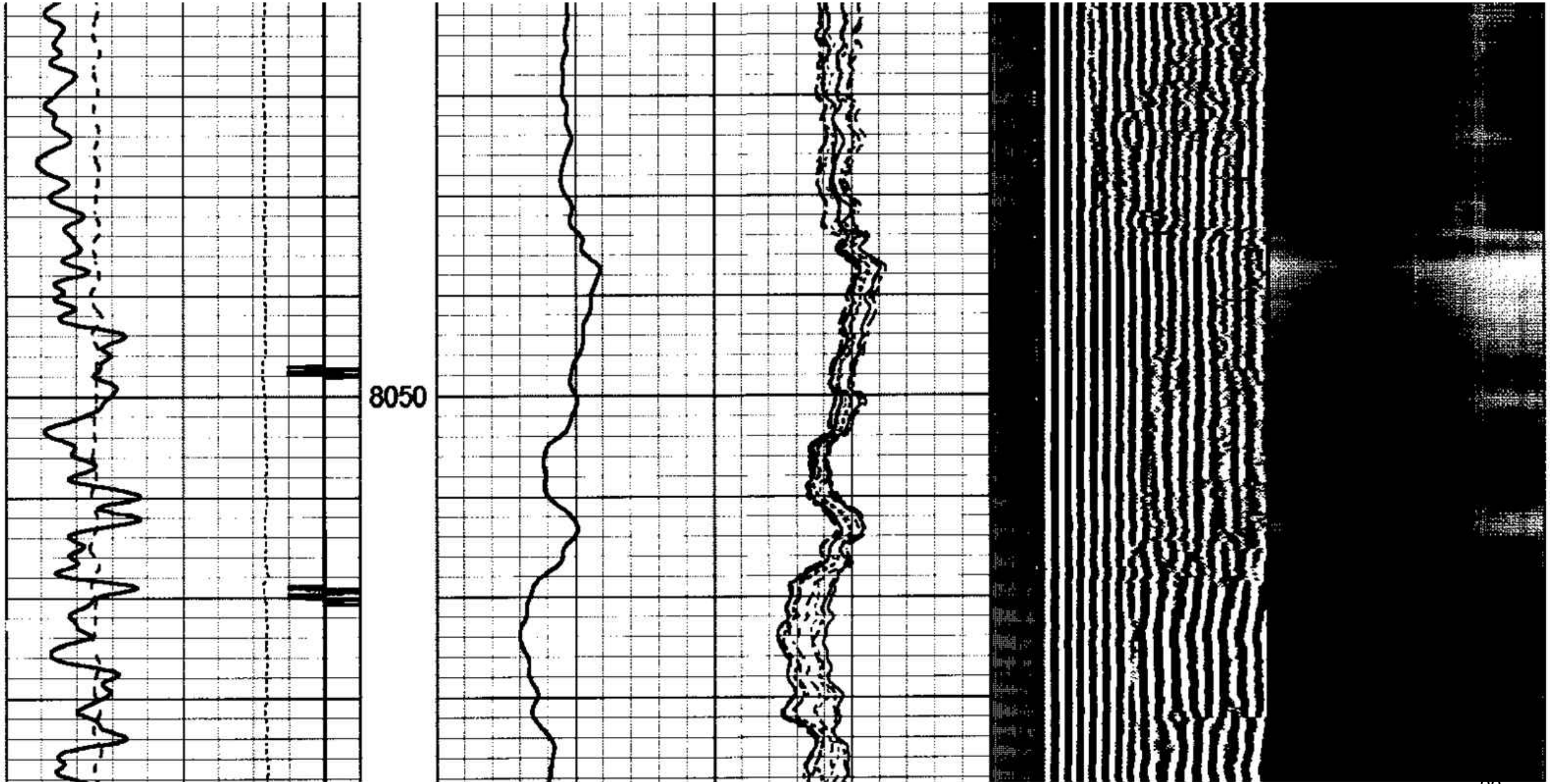
7100


8050

Side 1

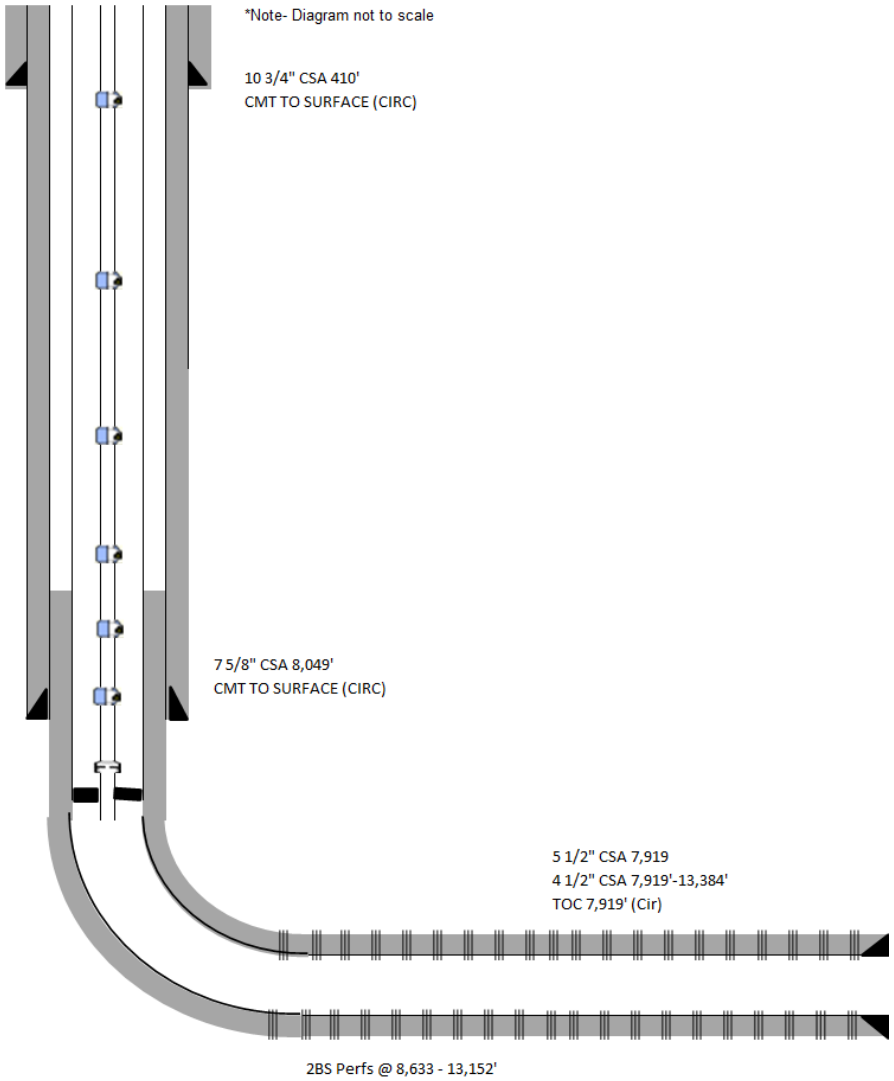
OPERATOR: OXY USA INC

WELL 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*** _____ ft^3

Top of Cement: SURFACE Method Determined: CIRC

Intermediate Casing

Hole Size: 9.875" Casing Size: 7.625

Cemented with: 2,963 sx. ***or*** _____ ft^3

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*** _____ ft^3

Top of Cement: 7,919 Method Determined: CIRC

Total Depth: 13,384' MD / 8,531 TVD

Injection Interval

8,633' 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: None

Type of Packer: 5.5" Watson 10K AS1X nicklel coated packer

Packer 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. _____

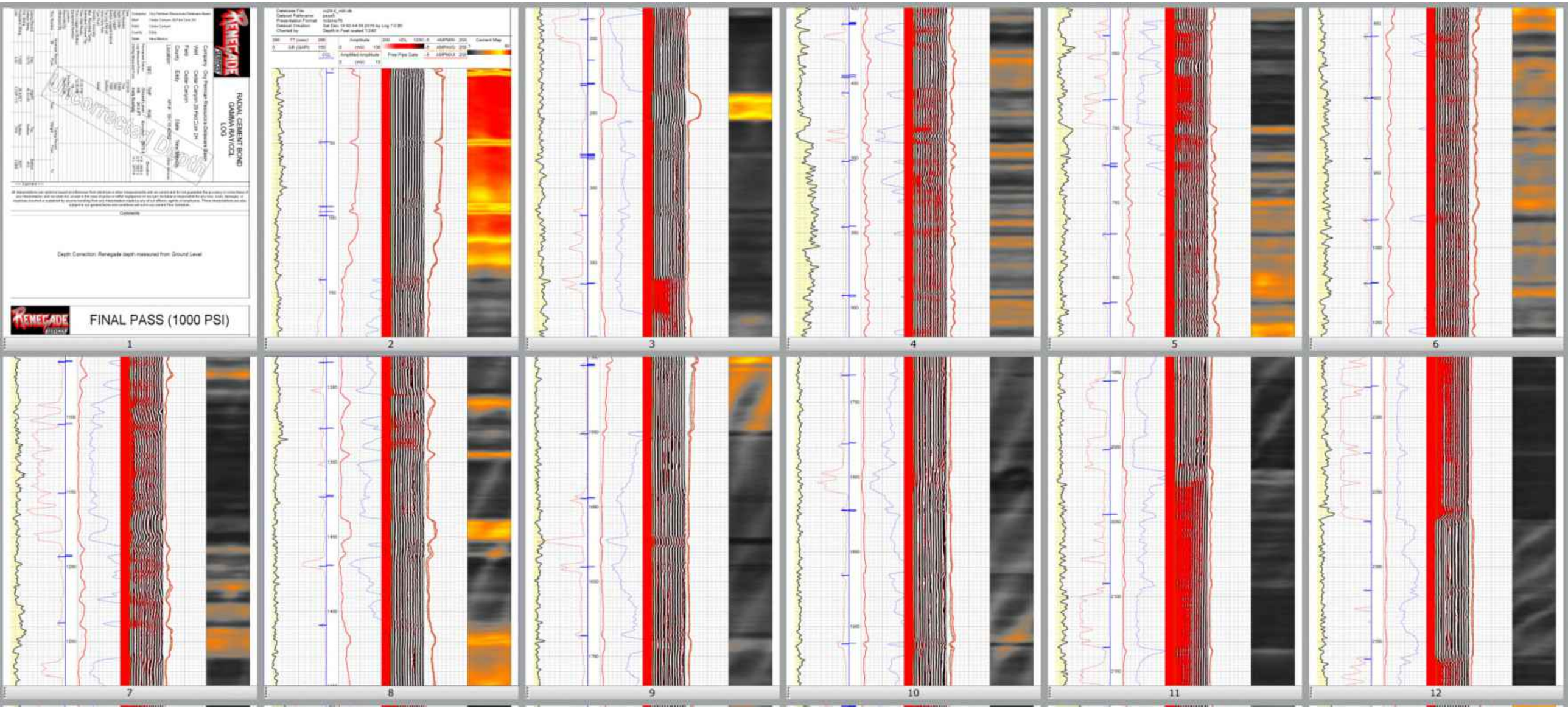
   NO

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) 5,065'

   UNDERLYING: WOLFCAMP FORMATION 10,234'

CC 29 #2H


RADIAL CEMENT BOND GAMMA RAY/CCL LOG
Uncorrected Depth
Depth Correction: Renegade depth measured from Ground Level
FINAL PASS (1000 PSI)
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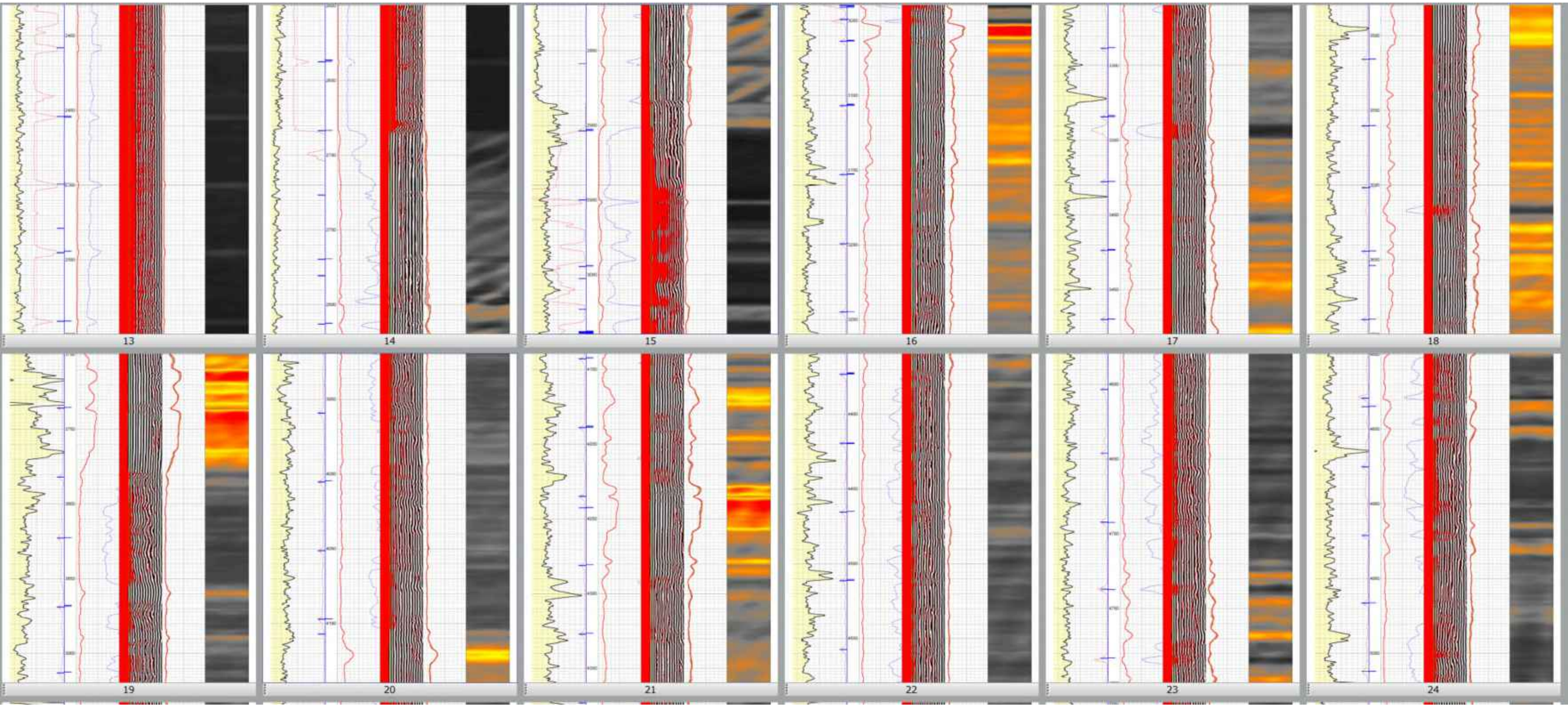
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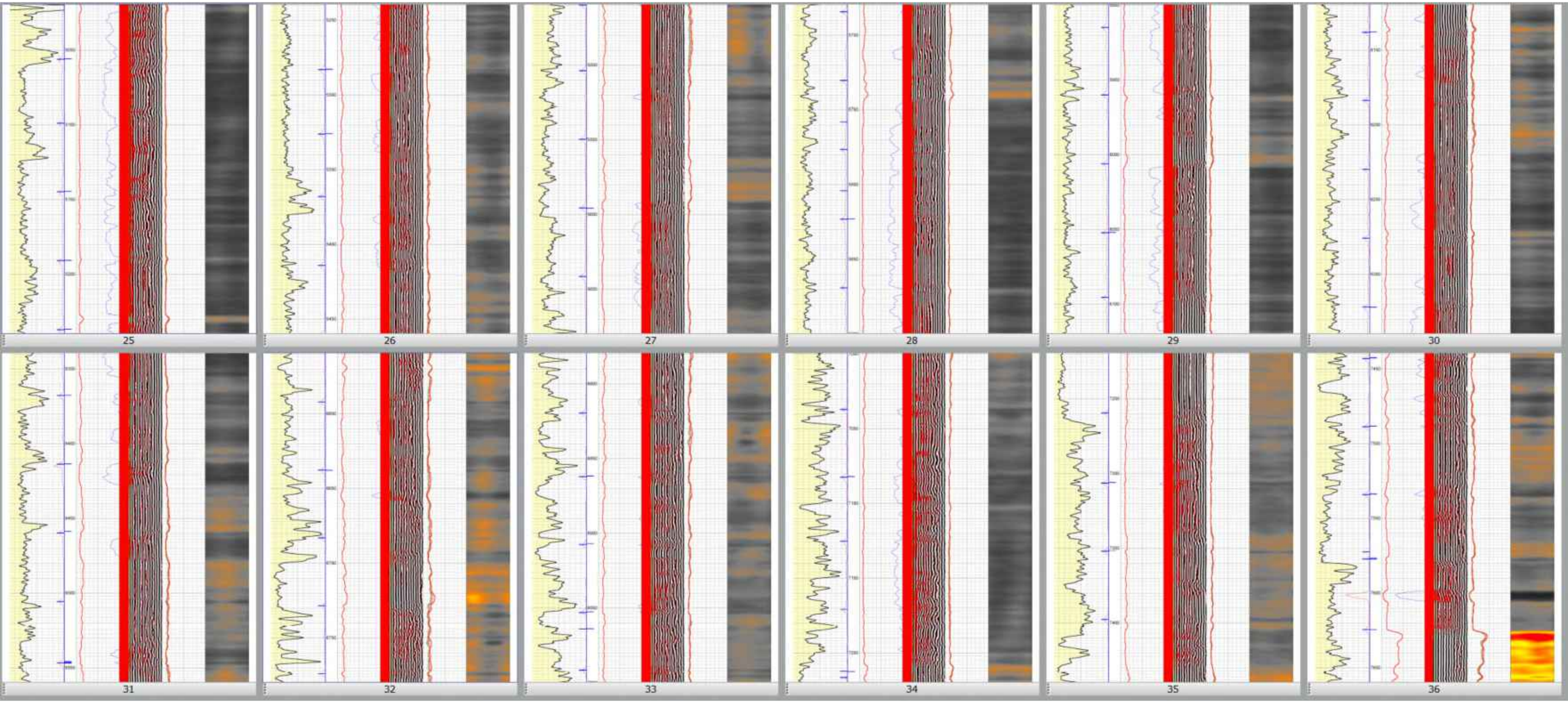
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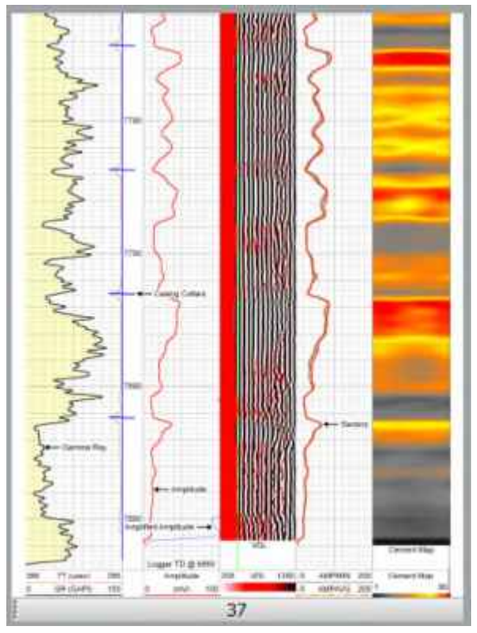
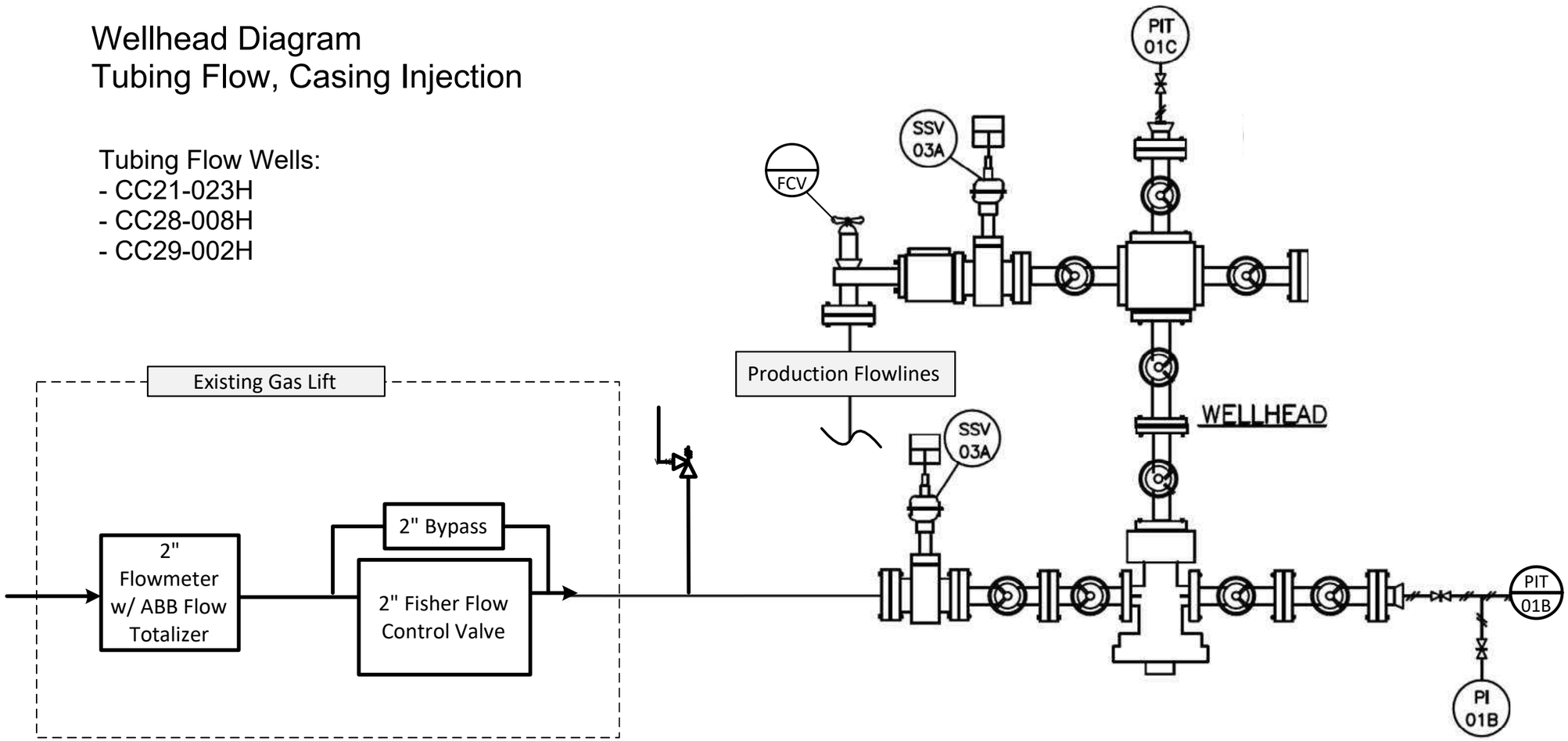


Max Allowable Surface Pressure (MASP) Table

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
CEDAR CANYON 16 STATE 009H	30-015-42061
CEDAR CANYON 16 STATE 010H	30-015-42055
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
SALT FLAT CC 20 29 FEDERAL COM 036H	30-015-45050
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
CEDAR CANYON 21 FEDERAL COM 022H	30-015-44190
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
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CEDAR CANYON 28 FEDERAL 006H	30-015-43234

CEDAR CANYON 28 FEDERAL 007H	30-015-43238
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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	Sampled By:	Michael Mirabal
Station Name:	Salt Flat Comp Outlet	Sample Of:	Gas Spot
Station Number:	18799C	Sample Date:	08/24/2020 08:35
Station Location:	OXY	Sample Conditions:	917 psia, @ 102 °F Ambient: 80 °F
Sample Point:	Downstream	Effective Date:	08/24/2020 08:35
Formation:	Monthly	Method:	GPA-2261M
County:	Eddy	Cylinder No:	5030-00647
Type of Sample: :	Spot-Cylinder	Instrument:	70104124 (Inficon GC-MicroFusion)
Heat Trace Used:	N/A	Last Inst. Cal.:	08/10/2020 0:00 AM
Sampling Method: :	Fill and Purge	Analyzed:	08/26/2020 13:28:22 by PGS
Sampling Company: :	SPL		

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	**Work Order:**	4000204555
Field/Location :	NMSW	**Sampled by:**	OXY/JE
Station Name :	CEDAR CANYON 28 TO ENTERPRISE CHECK	**Sample Type :**	SPOT-CYLINDER
Station Number :	14807C	**Sample Temperature (F):**	92
Sample Date:	11/17/20 1:05 PM	**Sample Pressure (PSIG):**	896
Analysis Date:	12/2/20 12:41 PM	**Flow rate (MCF/Day):**	23409
Instrument:	VARIAN- CP 4900 GC	**Ambient Temperature (F):**	56
Calibration/Verification Date:	12/2/2020	**Sampling method:**	FILL & EMPTY
Heat Trace used:	YES	**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
Laboratory Manager

EAST UGL

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	Sampled By:	Michael Mirabal
Station Name:	East Comp Station Enterprise Check	Sample Of:	Gas Spot
Station Number:	14808C	Sample Date:	08/27/2020 11:07
Station Location:	OXY	Sample Conditions:	837 psig, @ 112 °F Ambient: 89 °F
Sample Point:	Downstream	Effective Date:	08/27/2020 11:07
Formation:	Monthly	Method:	GPA-2261M
County:	Eddy	Cylinder No:	5030-01684
Type of Sample: :	Spot-Cylinder	Instrument:	70104251 (Inficon GC-MicroFusion)
Heat Trace Used:	N/A	Last Inst. Cal.:	08/31/2020 0:00 AM
Sampling Method: :	Fill and Purge	Analyzed:	09/01/2020 11:01:21 by PGS
Sampling Company: :	SPL		

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	Total	C6+
Relative Density Real Gas	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	Sampled By:	Chad Whitt
Station Name:	Cedar Canyon 23 3H	Sample Of:	Gas Spot
Station Number:	N/A	Sample Date:	04/26/2021
Station Location:	CTB	Sample Conditions:	125.8 psig, @ 85.0 °F Ambient: 77 °F
Sample Point:	Meter	Effective Date:	04/26/2021
Formation:	Spot	Method:	GPA-2261M
County:	Eddy	Cylinder No:	1111-001297
Type of Sample: :	Spot-Cylinder	Instrument:	70104251 (Inficon GC-MicroFusion)
Heat Trace Used:	N/A	Last Inst. Cal.:	04/26/2021 0:00 AM
Sampling Method: :	Fill and Purge	Analyzed:	04/27/2021 14:39:40 by EJR
Sampling Company: :	SPL		

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	100.00000	100.000	6.210

Calculated Physical Properties	Total	C9+
Calculated Molecular Weight	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 ACQUISTION (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.

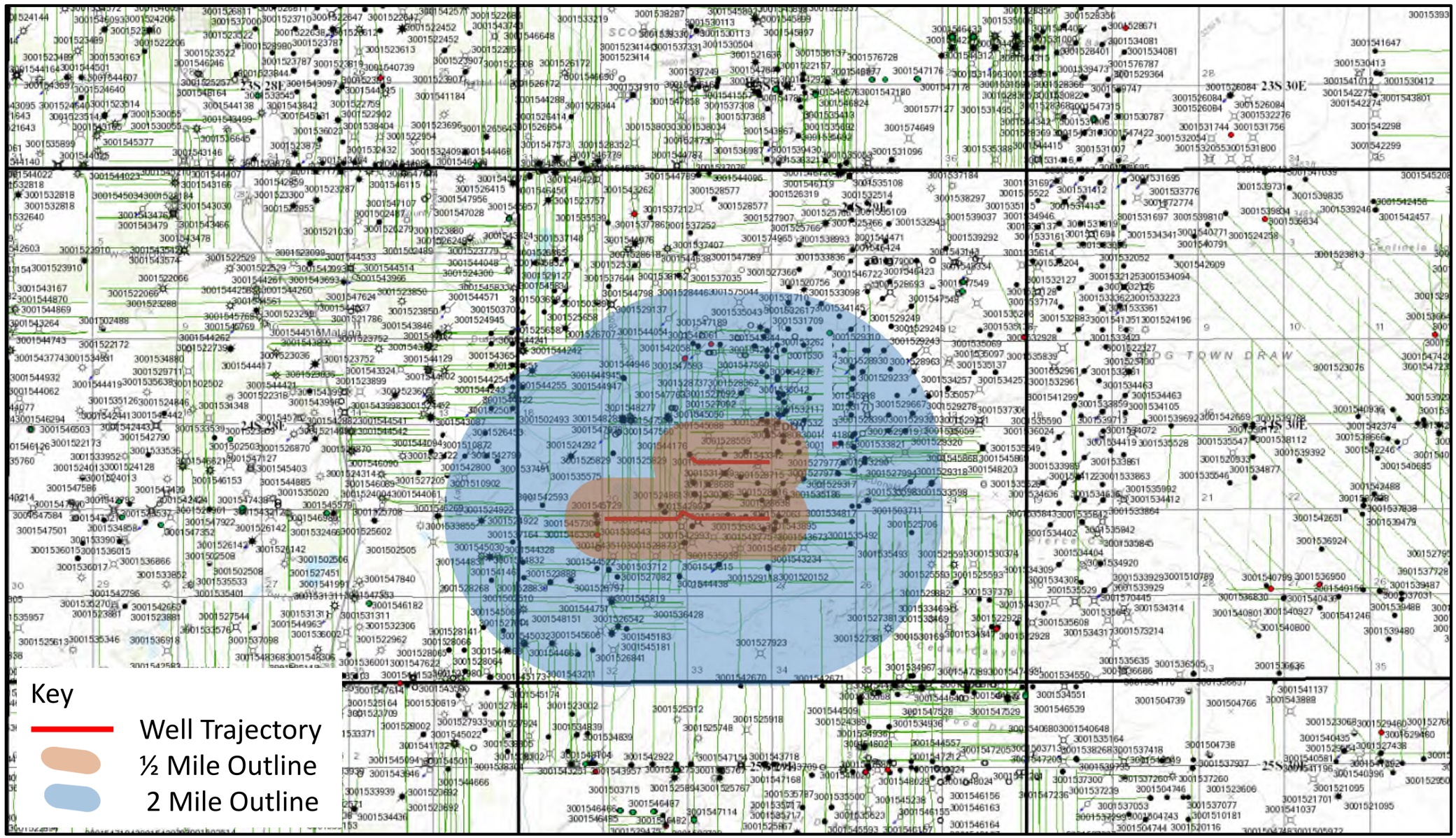
ENVIRONMENTAL/SPILL RESPONSE

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

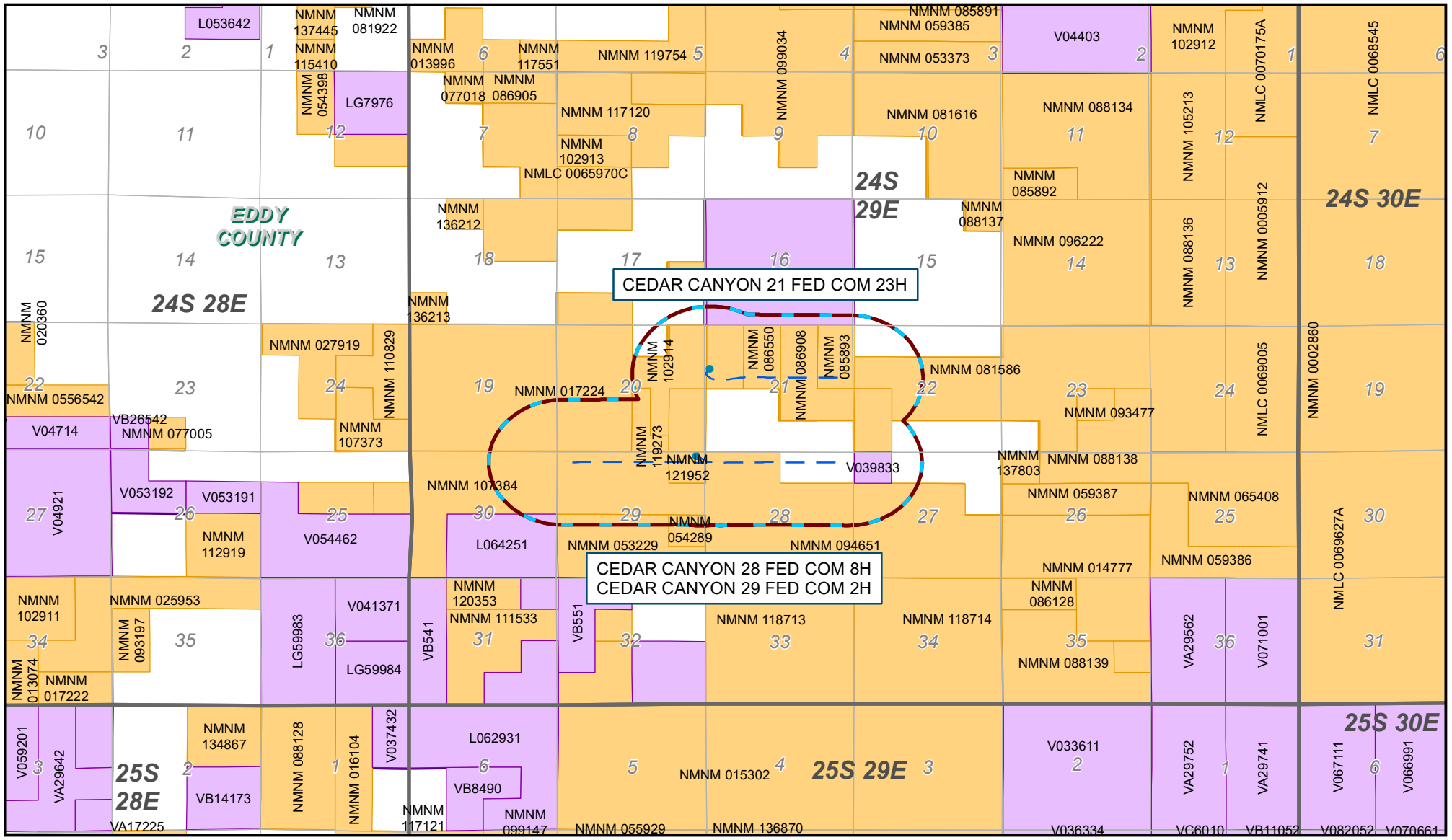
- Any spill or gas release will be reported by operations calling in to our Call Center to make the report of spill/release. The fluid type and release amount will be disclosed along with location details; and if it's a recordable or non-recordable spill.
- Liquids will be contained and isolated and 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

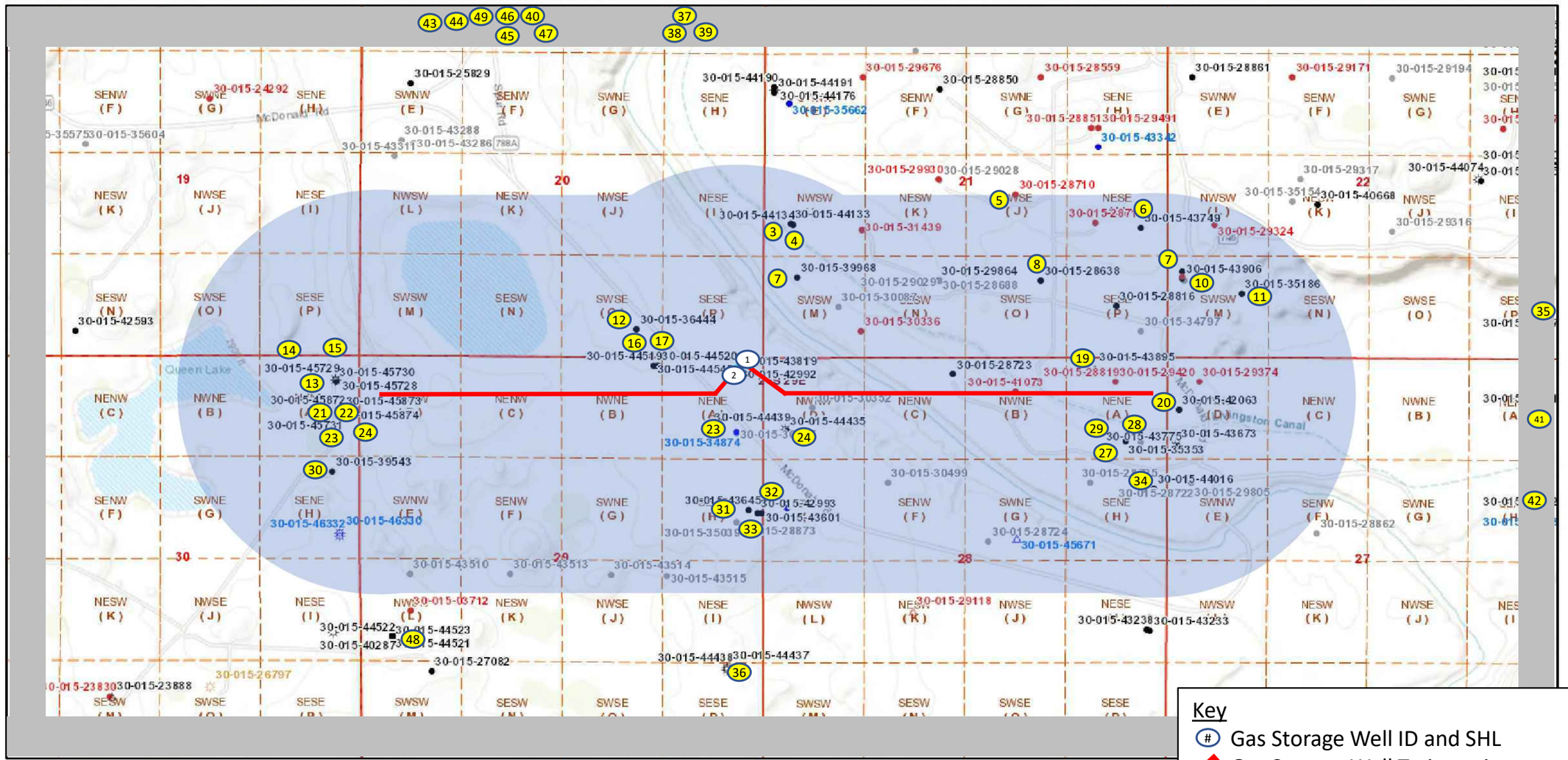
Cedar Canyon 2 Mile Well Map



CEDAR CANYON
NEW MEXICO



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



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

(#) Gas Storage Well ID and SHL

Gas Storage Well Trajectories

(#) Well ID on AOR Table, SHL

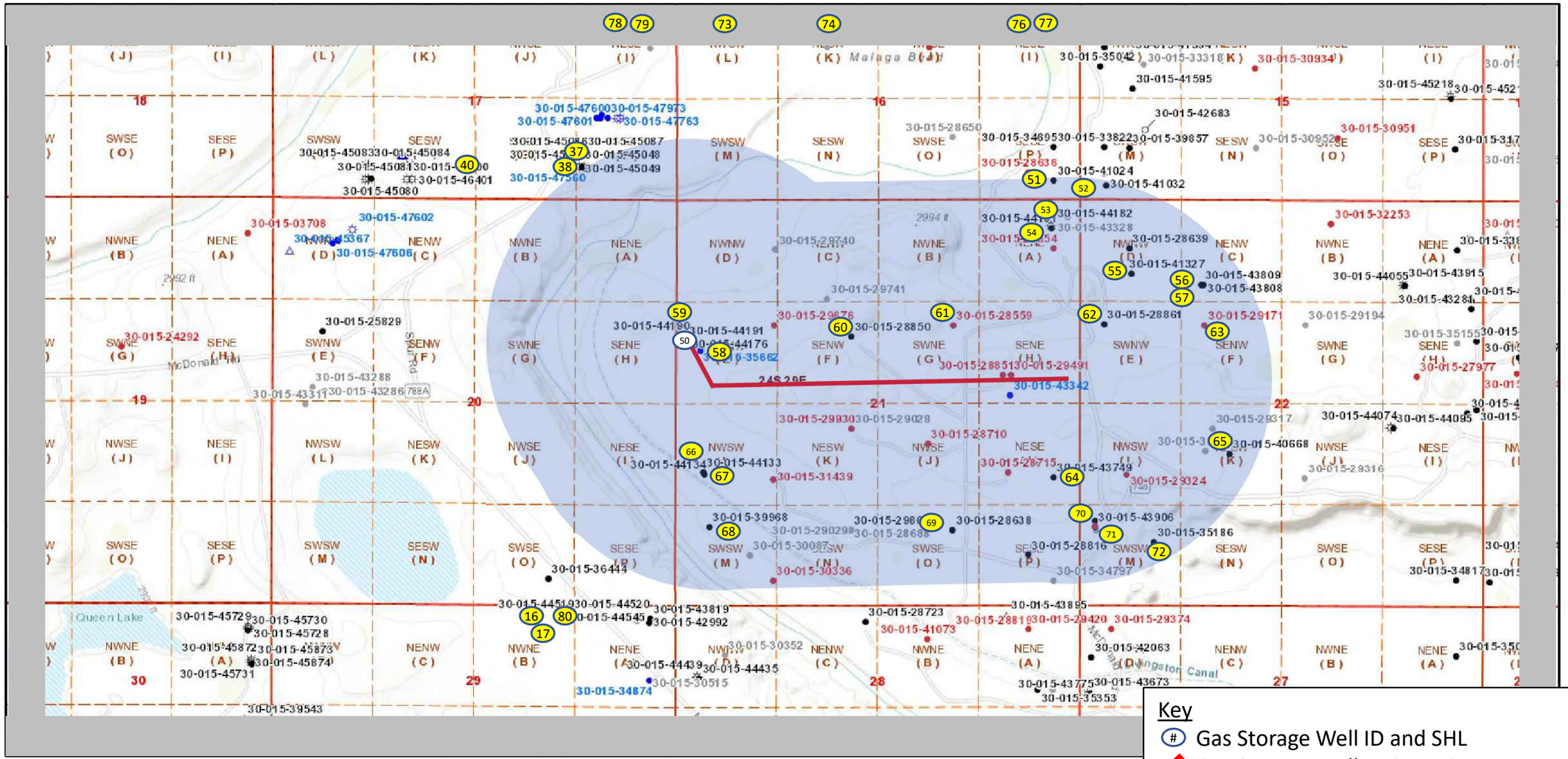
½ mile Area of Review

*Note- wells within gray border have SHL off of the map, but the BHL is within the AOR

New Mexico Oil Conservation Division

NM OCD Oil and Gas Map. http://nm-emnrd.maps.arcgis.com/apps/webappviewer/index.html?id=4d017f2306164de29fd2fb9f8f35ca75: New Mexico Oil Conservation Division

Cedar Canyon 21 Federal Com #023H AOR



3/18/2021, 10:53:26 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

- (#) Gas Storage Well ID and SHL
- Gas Storage Well Trajectories
- (#) Well ID on AOR Table, SHL
- ½ mile Area of Review

*Note- wells within gray border have SHL off of the map, but the BHL is within the AOR

New Mexico Oil Conservation Division

NM OCD Oil and Gas Map. http://nm-emnrd.maps.arcgis.com/apps/webappviewer/index.html?id=4d017f2306164de29fd2fb9f8f35ca75: New Mexico Oil Conservation Division

Well ID	API NUMBER	Current Operator	LEASE NAME	WELL NUMBER	Well Type:	Status:	Footages N/S	N/S	Footages E/W	E/W	Surface Location Unit	Surface Location Section	Surface Location 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 MEASURED	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	10.750	405	467	Surf	Circ	13292-8756	5.5" to 4.5" cross over at 8724 ft	[96473] PIERCE CROSSING; BONE SPRING, EAST
																		9.875	7.625	8050	1595	Surf	Circ			
																		6.750	5.500	8724	580	7050	CBL			
																		6.75	4.500	13445	580	7050	CBL			
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	10.750	410	462	Surf	Circ	13152-8633	5.5" frac string	[50371] PIERCE CROSSING; BONE SPRING
																		9.875	7.625	8049	2963	140	CBL			
																		6.750	5.5	7919	NA	NA	NA			
																		6.750	4.500	13384	580	7919	Circ			
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	13.375	540	617	Surf	Circ	9978-19797		[96473] PIERCE CROSSING; BONE SPRING, EAST
																		12.250	9.625	9242	2335	Surf	Circ			
																		8.500	5.500	19968	1735	Surf	Circ			
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	13.375	542	633	Surf	Circ	9908-19667		[96473] PIERCE CROSSING; BONE SPRING, EAST
																		12.250	9.625	9183	2235	Surf	Circ			
																		8.500	5.500	19842	1730	Surf	Circ			
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	10.750	533	664	Surf	Circ	NA		NA
																		9.88	7.625	2810	885	Surf	Circ			
																		6.75	4.500	7900	1165	1000	CBL			
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	10.750	430	470	Surf	Circ	8918-13313		[96238] CORRAL DRAW; BONE SPRING
																		9.875	7.625	8138	1170	Surf	Circ			
																		6.750	5.500	8840	560	Surf	Circ			
																		6.750	4.500	13531	560	Surf	Circ			
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	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	Surf	Circ			
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	10.750	523	625	Surf	Circ	7658-7683		[96238] CORRAL DRAW; BONE SPRING
																		9.875	7.625	2830	1190	Surf	Circ			
																		9.875	4.500	7850	1240	3894	CBL			
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	10.750	435	740	Surf	Circ	8610-13196		[96238] CORRAL DRAW; BONE SPRING
																		9.875	7.625	8163	1300	Surf	Circ			
																		6.750	5.500	8957	540	Surf	Circ			
																		6.750	4.500	13397	540	Surf	Circ			
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	10.750	437	470	Surf	Circ	8939-13358		[96238] CORRAL DRAW; BONE SPRING
																		9.875	7.625	7650	3500	Surf	Circ			
																		6.750	5.500	8921	580	Surf	Circ			
																		6.750	4.500	13514	580	Surf	Circ			
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	13.38	557	500	Surf	Circ	8110-10660		[96473] PIERCE CROSSING; BONE SPRING, EAST
																		12.25	9.63	2902	1175	1846	Circ			
																		8.50	5.50	10752	2300	1700	CBL			
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	13.375	655	765	Surf	Circ	7751-10603		[50371] PIERCE CROSSING; BONE SPRING
																		12.250	9.625	2800	1305	Surf	Circ			
																		8.500	5.500	10802	1850	2300				
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	13.375	352	355	Surf	Circ	10890-15355		[98220] PURPLE SAGE; WOLFCAMP (GAS)
																		12.25	9.625	9536	2525	Surf	Circ			
																		8.500	5.500	15423	1705	Surf	Circ			
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	13.375	373	355	Surf	Circ	9850-14375		[98220] PURPLE SAGE; WOLFCAMP (GAS)
																		12.250	9.625	9016	2725	Surf	Circ			
																		8.500	5.500	14413	1585	Surf	Circ			
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	13.375	376	250	Surf	Circ	8495-12999		[96671] PIERCE CROSSING; BONE SPRING, SOUTH
																		12.250	9.625	2779	960	Surf	Circ			
																		8.500	5.500	13055	1730	Surf	Circ			
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	10.750	412	1138	Surf	Circ	8605-16042	5.5" to 4.5" cross over at 8557 ft	[50371] PIERCE CROSSING; BONE SPRING
																		9.875	7.625	8034	1547	Surf	Circ			
																		6.75	5.500	8557	943	Surf	CBL			
																		6.750	4.500	16188	943	Surf	CBL			
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	10.750	572	862	Surf	Circ	8662-16213	5.5" to 4.5" cross over at 8626 ft	[50371] PIERCE CROSSING; BONE SPRING
																		9.875	7.625	8066	1582	Surf	Circ			
																		6.75	5.500	8626	958	Surf	CBL			
																		6.750	4.500	16353	958	Surf	CBL			
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	20.000	556	1100	Surf	Circ	14905-16036		[96101] SWD; DEVONIAN
																		17.500	13.375	2823	1990	Surf	Circ			
																		12.250	9.625	10204	2400	Surf	Circ			
																		8.500	7.875	14905	475	Surf	Circ			
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	11.750	464	910	Surf	Circ	9110-12449		[96473] PIERCE CROSSING; BONE SPRING, EAST
																		10.625	8.625	3115	880	Surf	Circ			
																		7.875	5.500	13585	1620	Surf	Circ			
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	13.375	359	355	Surf	Circ	9960-14485		[98220] PURPLE SAGE; WOLFCAMP (GAS)
																		12.250	9.625	9033	3015	Surf	Circ			
																		8.500	5.500	14523	1615	Surf	Circ			
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	13.375	370	355	Surf	Circ	9875-14400		[98220] PURPLE SAGE; WOLFCAMP (GAS)
																		12.250	9.625	9023	820	Surf	Circ			
																		8.500	5.500	14438	1595	Surf	Circ			
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	13.375	370	400	Surf	Circ	8560-13085		[96671] PIERCE CROSSING; BONE SPRING, SOUTH
																		12.250	9.625	2775	960	Surf	Circ			

																	8.500	5.500	13120	1790	Surf	Circ			
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	16.000	13.375	370	355	Surf	Circ	8665-13160		[98220] PURPLE SAGE; WOLFCAMP (GAS)
																		12.250	9.625	2771	965	Surf	Circ			
																		8.500	5.500	13194	1800	Surf	Circ			
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	10.750	682	1000	Surf	Circ	10582-14546	5.5" to 4.5" cross over at 10006 ft	[98220] PURPLE SAGE; WOLFCAMP (GAS)
																		9.875	7.625	9368	1814	Surf	Circ			
																		6.75	5.500	10006	667	6100	CBL			
																		6.750	4.500	14755	667	6100	CBL			
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	10.750	670	1000	Surf	Circ	9934-20031		[96473] PIERCE CROSSING; BONE SPRING, EAST
																		9.875	7.625	9382	817	Surf	Circ			
																		6.750	5.500	20122	864	Surf	Circ			
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	13.375	550	725	Surf	Circ	NA		NA
																		12.250	9.625	2873	1050	Surf	Circ			
																		8.500	5.500	10575	2100	710	CBL			
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	10.750	500	530	Surf	Circ	10136-14712	5.5" to 4.5" cross over at 10189 ft	[98220] PURPLE SAGE; WOLFCAMP (GAS)
																		9.875	7.625	9032	1640	Surf	Circ			
																		6.750	5.500	10189	590	6000	CBL			
																		6.750	4.500	14870	590	6000	CBL			
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	7.625	8886	1500	Surf	Circ	9079-13583		[96473] PIERCE CROSSING; BONE SPRING, EAST
																		6.750	5.500	13743	600	Surf	Circ			
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	13.375	515	540	Surf	Circ	6956-11300		[96671] PIERCE CROSSING; BONE SPRING, SOUTH
																		12.250	9.625	2658	980	Surf	Circ			
																		7.88	5.500	11517	1210	Surf	Circ			
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	13.38	667	735	Surf	Circ	8626-18482		[96473] PIERCE CROSSING; BONE SPRING, EAST
																		12.25	9.63	8190	2620	960	Circ			
																		8.50	5.50	18704	1790	8055	CBL			
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	10.750	670	700	Surf	Circ	8582-13135		[50371] PIERCE CROSSING; BONE SPRING
																		9.875	7.625	8098	1215	Surf	Circ			
																		6.750	4.500	13340	550	Surf	Circ			
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	10.750	665	610	Surf	Circ	8719-13274		[50371] PIERCE CROSSING; BONE SPRING
																		9.875	7.625	8096	2020	Surf	Circ			
																		6.750	4.500	13470	550	Surf	Circ			
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	10.750	672	700	Surf	Circ	9079-13637		[96473] PIERCE CROSSING; BONE SPRING, EAST
																		9.875	7.625	7980	2140	Surf	Circ			
																		6.750	4.500	13822	550	Surf	Circ			
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	13.375	555	475	Surf	Circ	8121-10730		[50371] PIERCE CROSSING; BONE SPRING
																		12.250	9.625	2915	1075	Surf	Circ			
																		7.625	5.5	10852	2100	4190	CBL			
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	13.375	765	965	Surf	Circ	10286-20110		[98220] PURPLE SAGE; WOLFCAMP (GAS)
																		12.250	9.625	9485	3387	Surf	Circ			
																		8.500	5.500	20257	2312	Surf	Circ			
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	13.375	419	550	Surf	Circ	10208-20185		[98220] PURPLE SAGE; WOLFCAMP (GAS)
																		9.875	7.625	9418	2735	Surf	Circ			
																		6.75	5.500	20447	831	9299	Circ			
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	13.375	420	650	Surf	Circ	9676-19857		[50371] PIERCE CROSSING; BONE SPRING
																		9.875	7.625	9242	2703	Surf	Circ			
																		6.75	5.500	20011	765	Surf	Circ			
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	13.375	421	650	Surf	Circ	10158-20135		[98220] PURPLE SAGE; WOLFCAMP (GAS)
																		9.875	7.625	9535	2645	Surf	Circ			
																		6.75	5.500	20332	831	9291	Circ			
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	13.375	500	650	Surf	Circ	10358-20335		[98220] PURPLE SAGE; WOLFCAMP (GAS)
																		9.875	7.625	9310	2839	Surf	Circ			
																		6.75	5.500	20478	806	9210	CBL			
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	13.375	552	600	Surf	Circ	10770-8102		[96473] PIERCE CROSSING; BONE SPRING, EAST
																		12.250	9.625	2898	1030	Surf	Circ			
																		8.500	5.500	10848	2200	Surf	Circ			
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	13.375	550	500	Surf	Circ	7981-11180		[96473] PIERCE CROSSING; BONE SPRING, EAST
																		12.250	9.625	2920	750	Surf	Circ			
																		7.625	5.5	11376	2250	2400	CBL			
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	10.750	449	440	Surf	Circ	10088-20065		[98220] PURPLE SAGE; WOLFCAMP (GAS)
																		9.875	7.625	9300	2233	Surf	Circ			
																		6.75	5.500	20197	770	Surf	Circ			
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	10.750	442	440	Surf	Circ	10648-20615		[98220] PURPLE SAGE; WOLFCAMP (GAS)
																		9.875	7.625	9212	2373	Surf	Circ			
																		6.75	5.500	20753	860	Surf	Circ			
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	10.750	449	440	Surf	Circ	9847-19828		[50371] PIERCE CROSSING; BONE SPRING
																		9.875	7.625	9163	2251	Surf	Circ			
																		6.75	5.500	19981	958	Surf	Circ			
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	10.750	525	575	Surf	Circ	8460-16091		[50371] PIERCE CROSSING; BONE SPRING
																		9.875	7.625	8019	1478	Surf	Circ			
																		6.750	5.500	8626	1033	Surf	Circ			
																		6.75	4.500	16278	1033	Surf	Circ			
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	13.375	500	650	Surf	Circ	10209-20185		[98220] PURPLE SAGE; WOLFCAMP (GAS)
																		9.875	7.625	9470	2755	Surf	Circ			
																		6.750	5.500	20353	806	9294	Circ			
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	10.750	454	526	Surf	Circ	8623-13221		[50371] PIERCE CROSSING; BONE SPRING
																		9.875	7.625	7938	1562	Surf	Circ			
																		6.75	5.500	7803	709	Surf	Circ			

																		6.750	4.500	13357	709	Surf	Circ				
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	14.750	10.750	525	548	Surf	Circ	8454-16126		[50371] PIERCE CROSSING; BONE SPRING
																		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
																		9.875	7.625	8163	1300	Surf	Circ			
																		6.750	5.500	8957	540	7100	CBL			
																		6.75	4.500	13397	540	7100	CBL			
71	30-015-43759	OXY USA INC	CEDAR CANYON 22 FEDERAL COM	006H	Oil	PA	1060	S	207	W	M	22	24S	29E	8/7/2016	7066	7066	14.750	10.750	441	470	Surf	Circ	NA	Side track @ 3036 w/fish in hole	NA
72	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	17.5	13.375	557	500	Surf	Circ	8110-10660		[96473] PIERCE CROSSING; BONE SPRING, EAST
																		12.25	9.625	2902	1175	1846	Circ			
																		7.625	5.5	10752	2300	1700	CBL			
73	30-015-42061	OXY USA INC	CEDAR CANYON 16 STATE	009H	Oil	Active	224	N	350	W	D	16	24S	29E	7/11/2015	9828	14485	11.000	8.625	459	280	Surf	Circ	10083-14262		[11540] CEDAR CANYON; DELAWARE

																	6.75	5.500	14401	1780	2650	CBL			
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	14.750	11.750	405	745	Surf	Circ	10262-14101		[96473] PIERCE CROSSING; BONE SPRING, EAST
																		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			
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	14.750	10.750	447	364	Surf	Circ	10125-14360		[50373] PIERCE CROSSING; WOLFCAMP (ABOLISH)
																		9.875	7.625	9995	2325	Surf	Circ			
																		6.75	4.500	14526	510	9862	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	17.5	13.375	429	650	Surf	Circ	10204-20452		[98220] PURPLE SAGE; WOLFCAMP (GAS)
																		9.875	7.625	9353	2579	Surf	Circ			
																		6.75	5.500	20547	797	9243	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			
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			

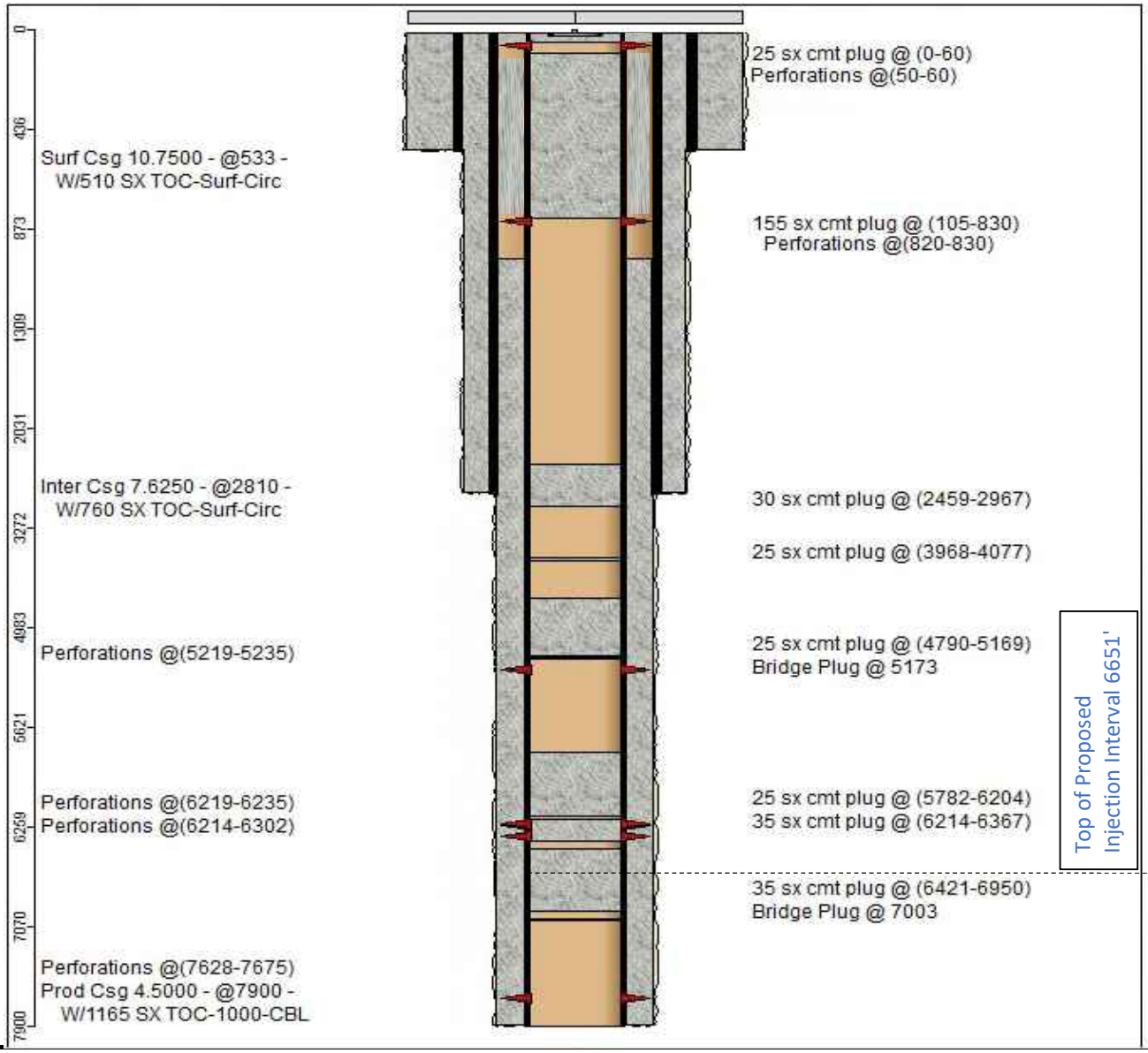
WELL ID #5, #63

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.

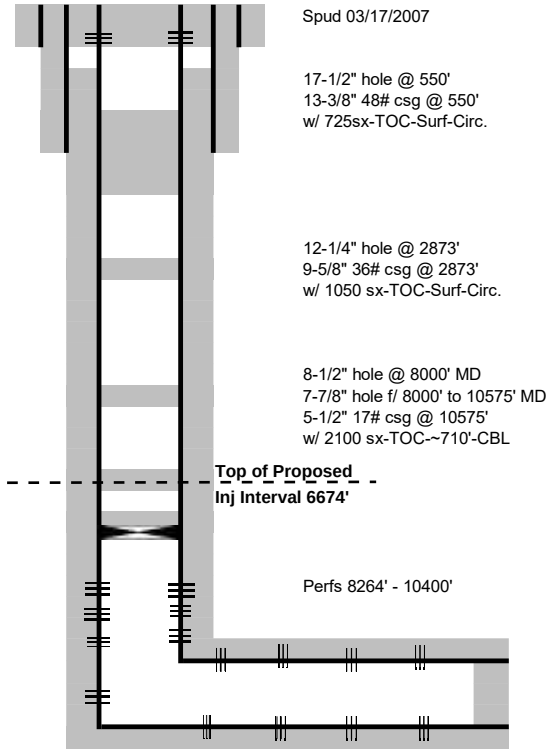
PUMPED 55SX CL C F/ 3017'. TAGGED @ 2480'.

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'.



Spud 03/17/2007

17-1/2" hole @ 550'
13-3/8" 48# csg @ 550'
w/ 725sx-TOC-Surf-Circ.

12-1/4" hole @ 2873'
9-5/8" 36# csg @ 2873'
w/ 1050 sx-TOC-Surf-Circ.

8-1/2" hole @ 8000' MD
7-7/8" hole f/ 8000' to 10575' MD
5-1/2" 17# csg @ 10575'
w/ 2100 sx-TOC-~710'-CBL

Perfs 8264' - 10400'

TD - 10575' MD/7613' TVD
PBTD - 10513' MD/ 7614' V

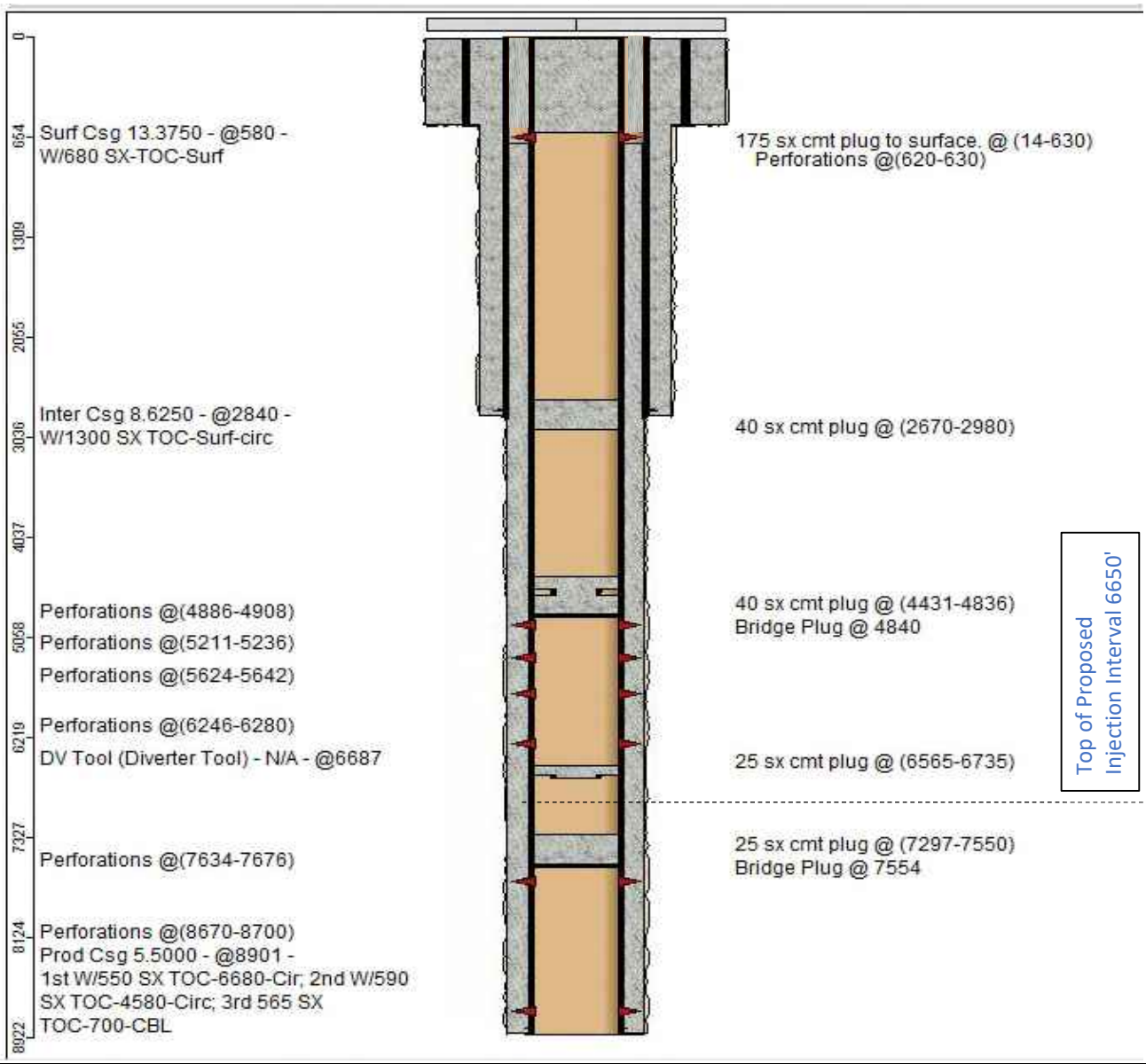
WELL ID #61

Current Wellbore

MITCHELL 21 FEDERAL #1

30-015-28559-0000

Eddy



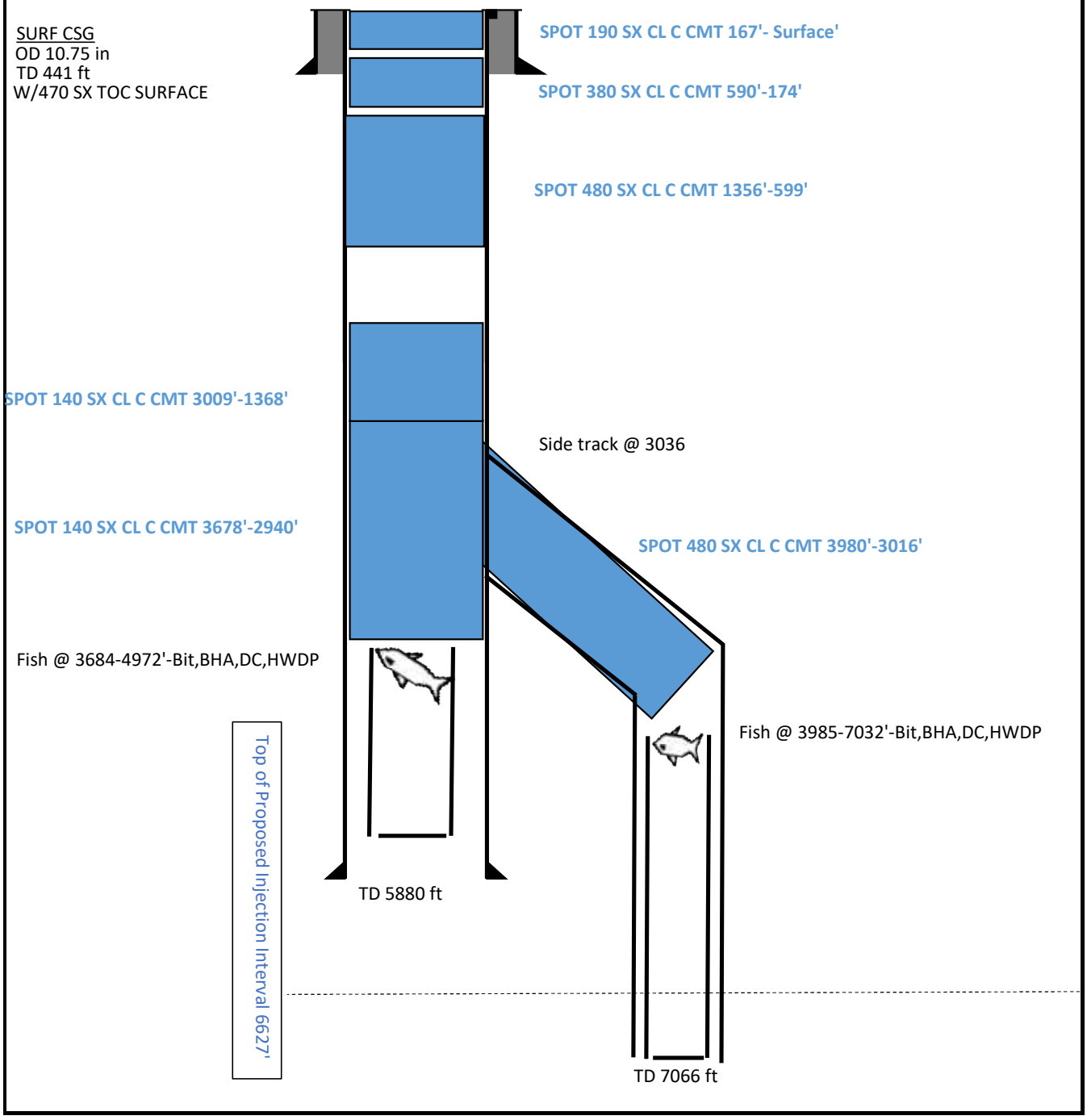
WELL ID #71

Current Wellbore

CEDAR CANYON 22 FEDERAL COM #6H

30-015-43759-0000

Eddy



Geology

Cedar Canyon 2nd Bone Spring storage zone and permeability barriers

Proposed Storage Zone

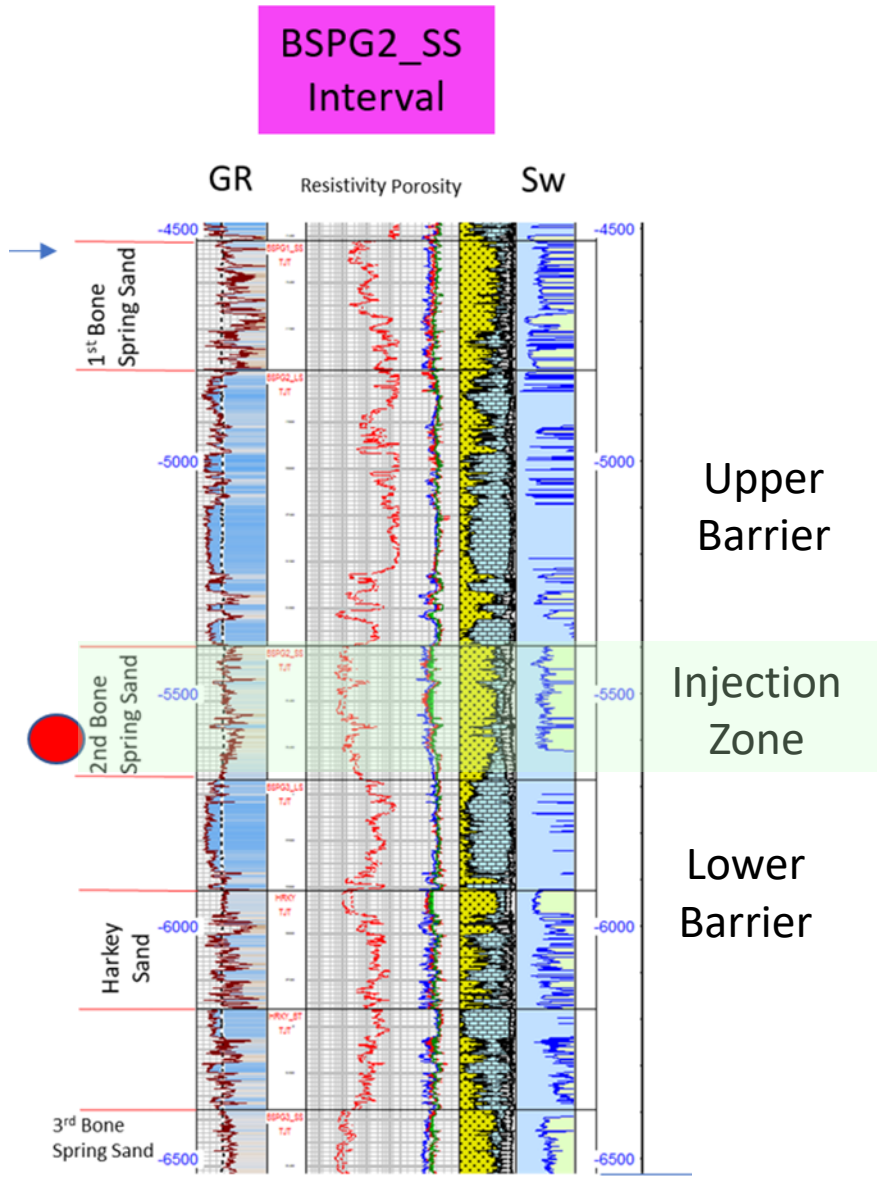
- 2nd Bone Spring Sand
  - > Reservoir composed of tight siltstone. Core data indicates that the grain sizes range from coarse siltstone to very-fine-grained subarkose (Folk, 1980) sandstone. Samples show evidence of moderate compaction. Minor amounts of illite and smectite clays are found throughout 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

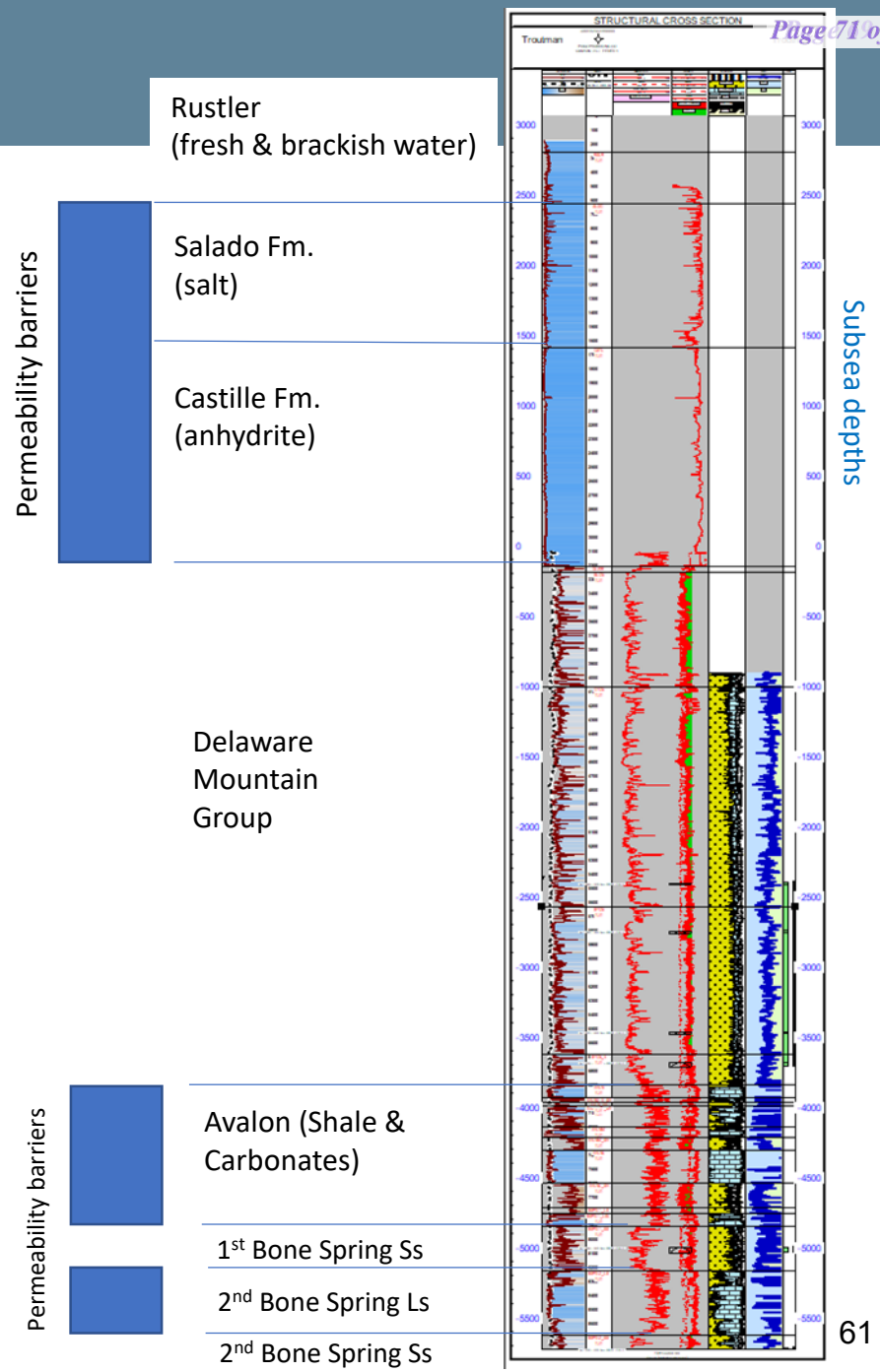
- Low-permeability barriers act as seals above and below the reservoir. These barriers consist of carbonate mudstone, dolomudstone, and shales that are ~970 ft. thick above and ~570 ft. thick below. Laterally the injection will be primarily contained by the reservoir volume that has been previously and 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



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.



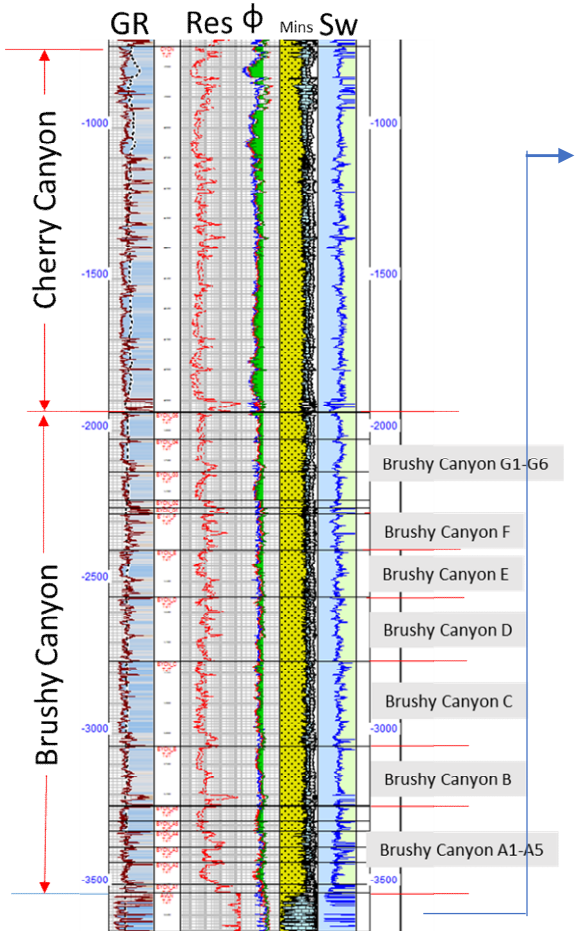
Cedar Canyon full type log:

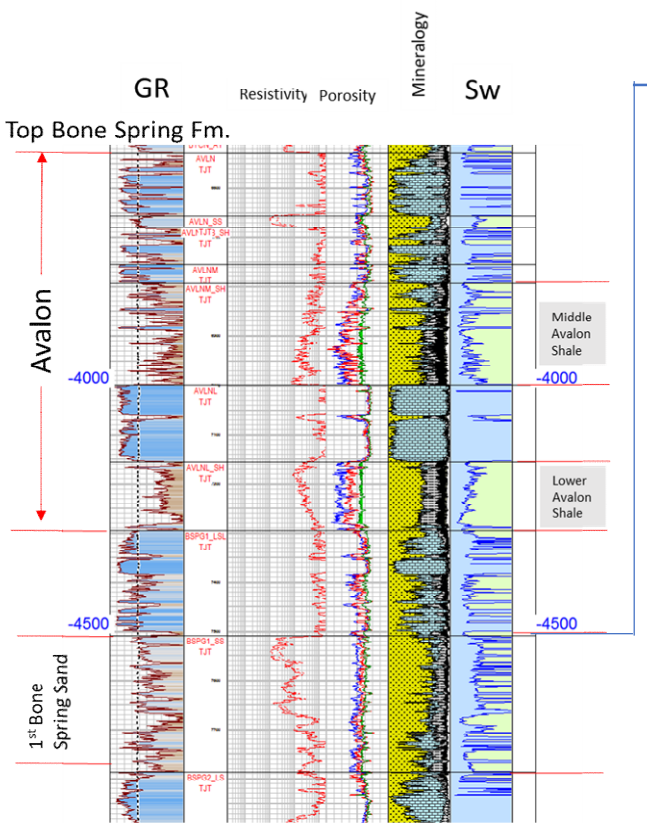
Delaware Group Interval

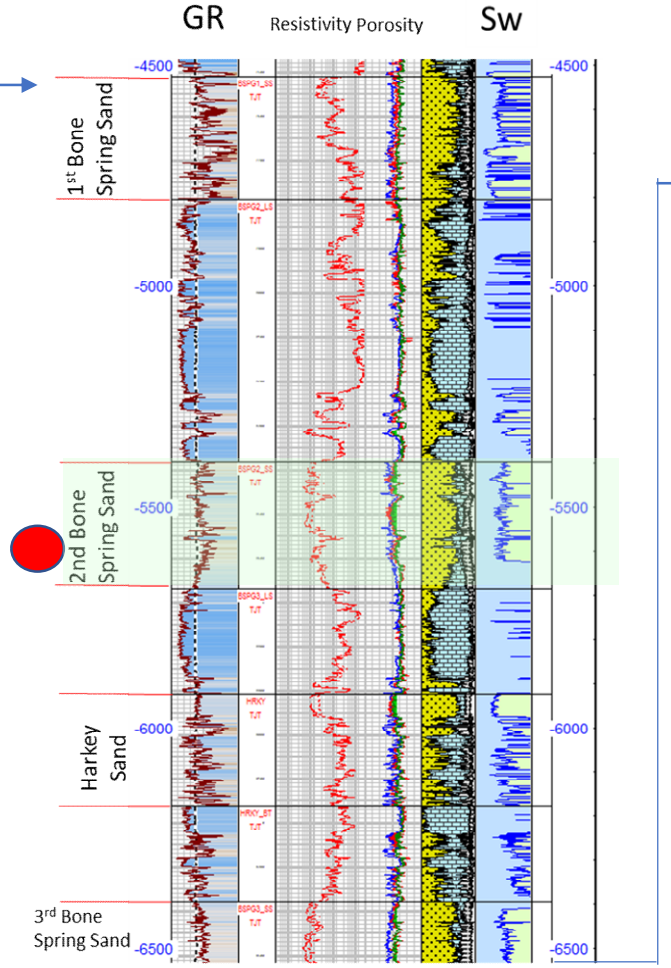
Avalon/BSPG1_SS Interval

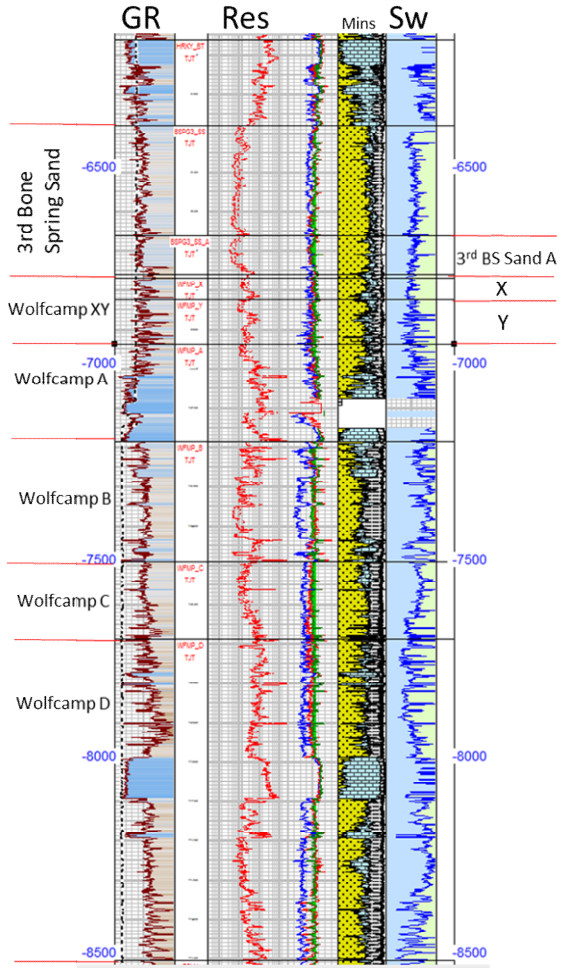
BSPG2_SS Interval

BSPG3_SS/WCMP_XY Interval



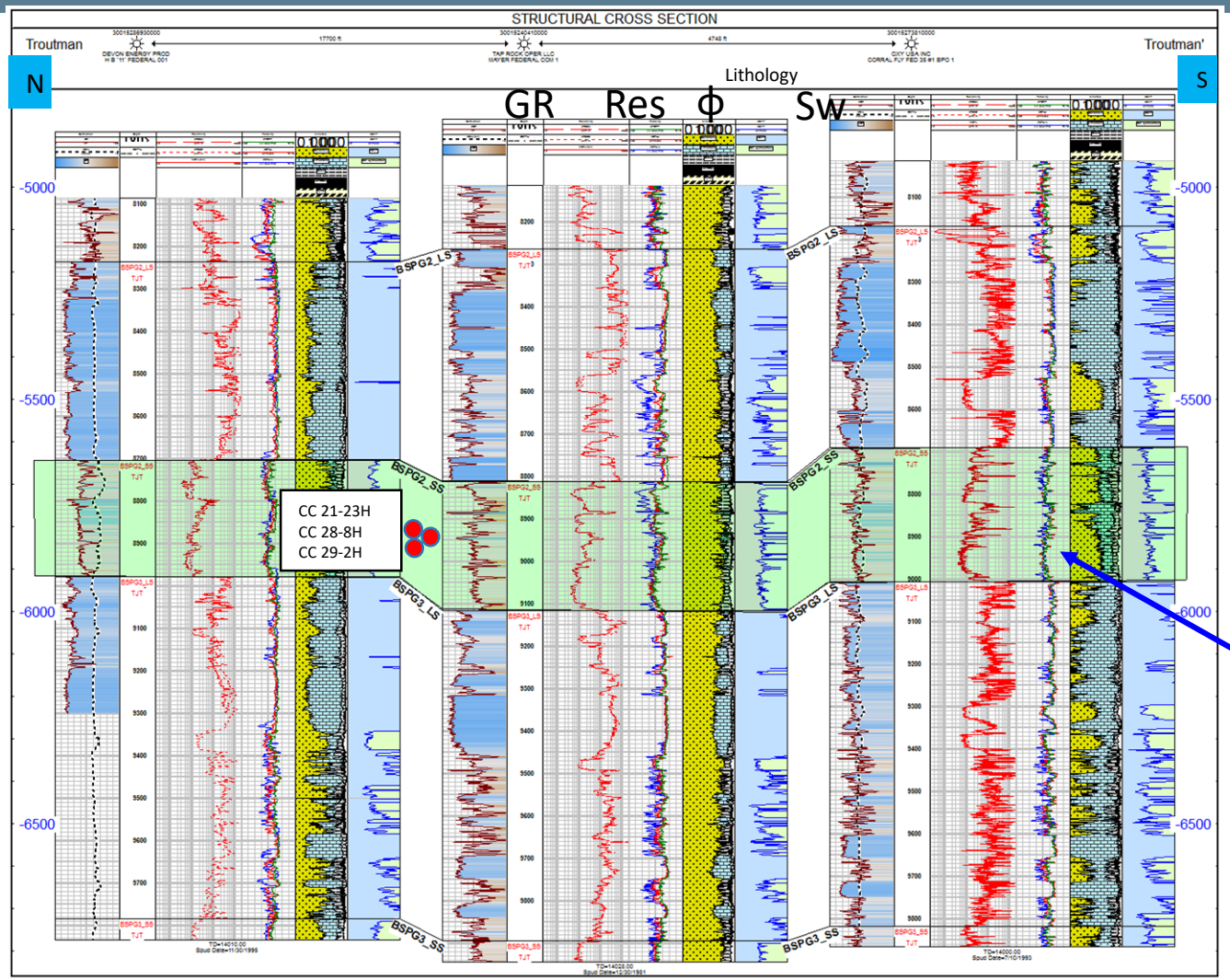


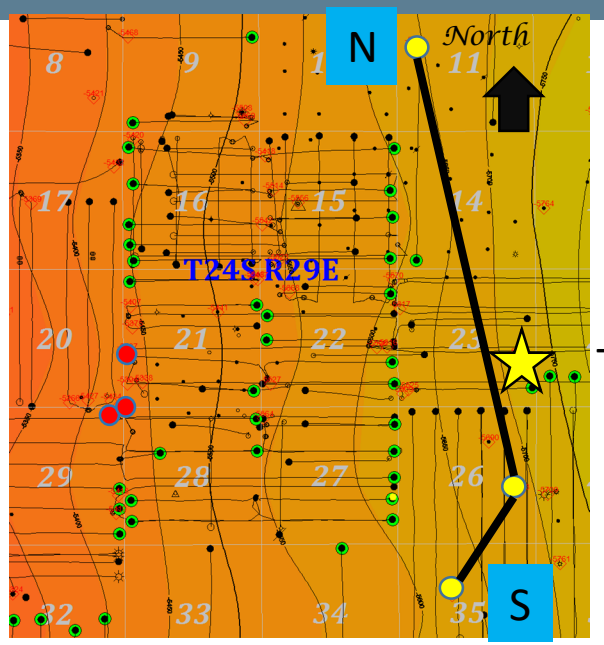




Proposed storage zone: 2nd Bone Spring Sand

Second Bone Spring Sand Cross-section





Type Log Well

Cross-section location

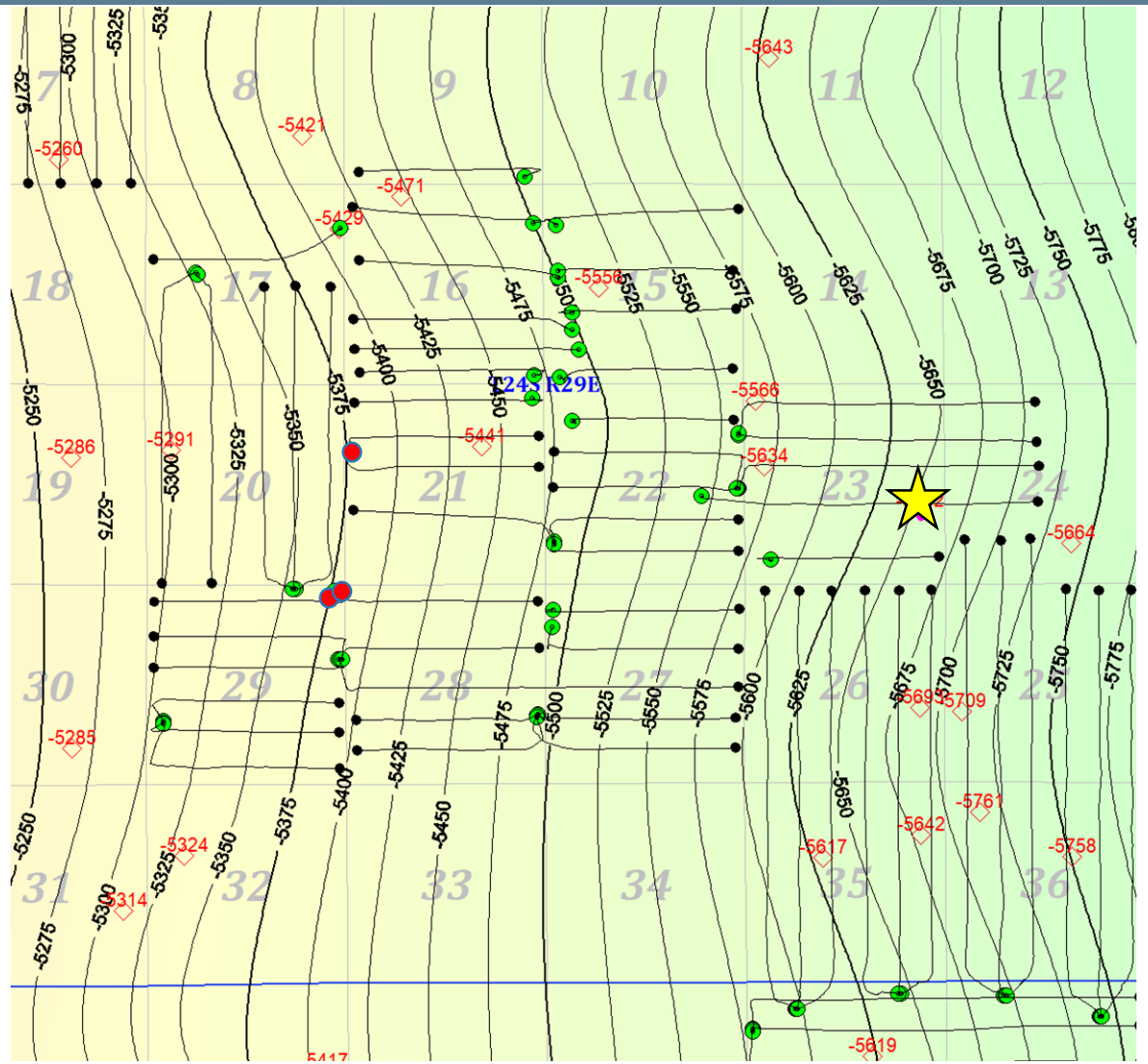
Existing 2nd BS production

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



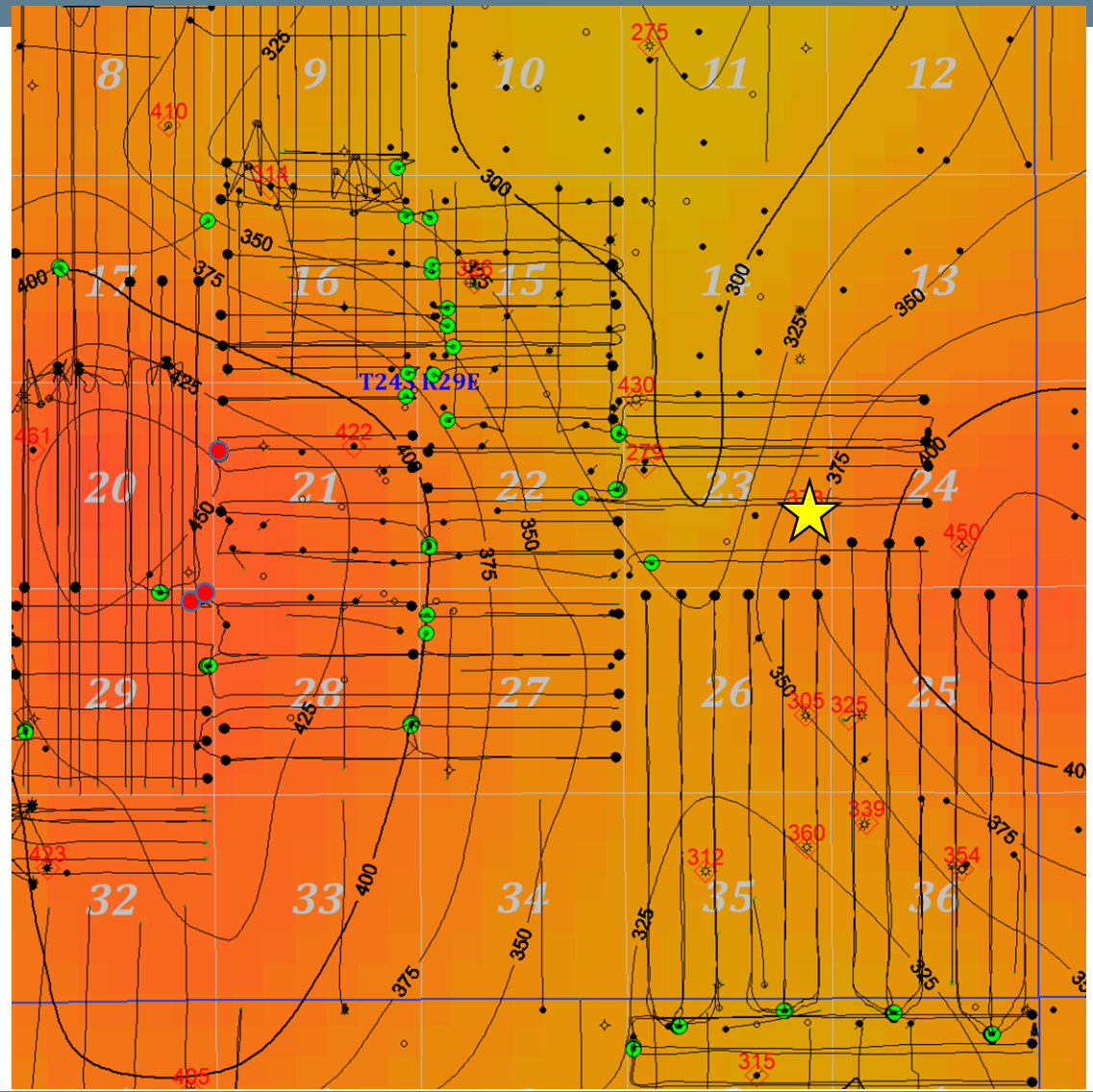
CLGC Well SHL

Type Log Well

1 mile

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 — Date 6/10/2021

Xueying Xie, Reservoir Engineer — Date 6/10/2021

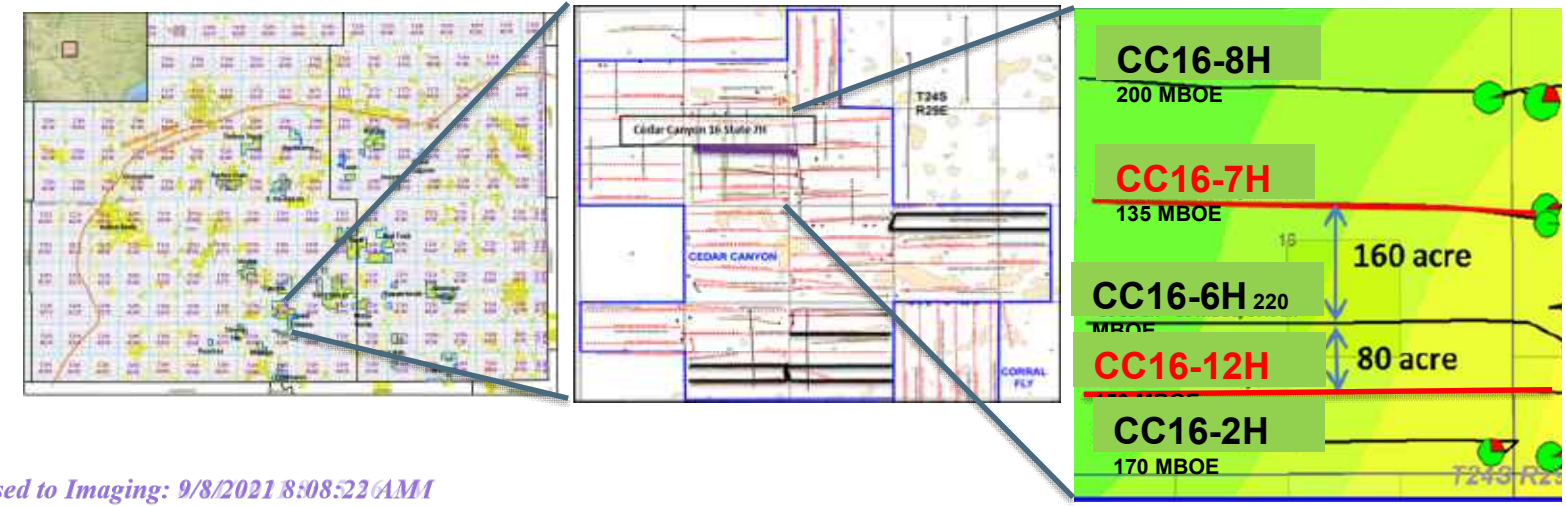
Reservoir Engineering

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

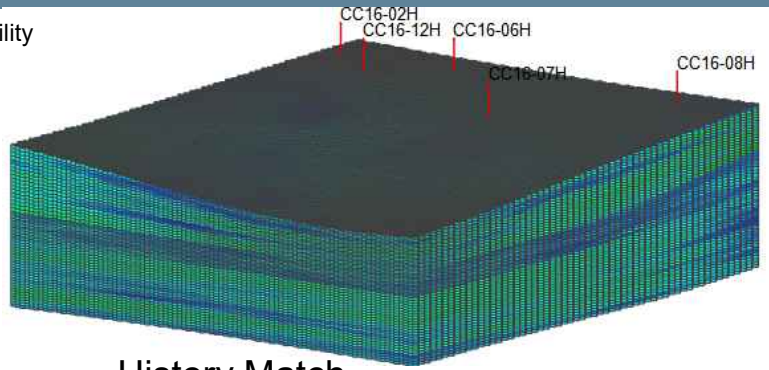
- Uses Cedar Canyon Sec 16 2nd BSS (as shown in layout below)
- Gas Injection pilot (EOR) was implemented in CC16-7H well in 2017
- Reservoir model is history matched for primary production and gas injection pilot
- Model is also tuned to capture injection gas breakthrough in offset wells that was observed 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

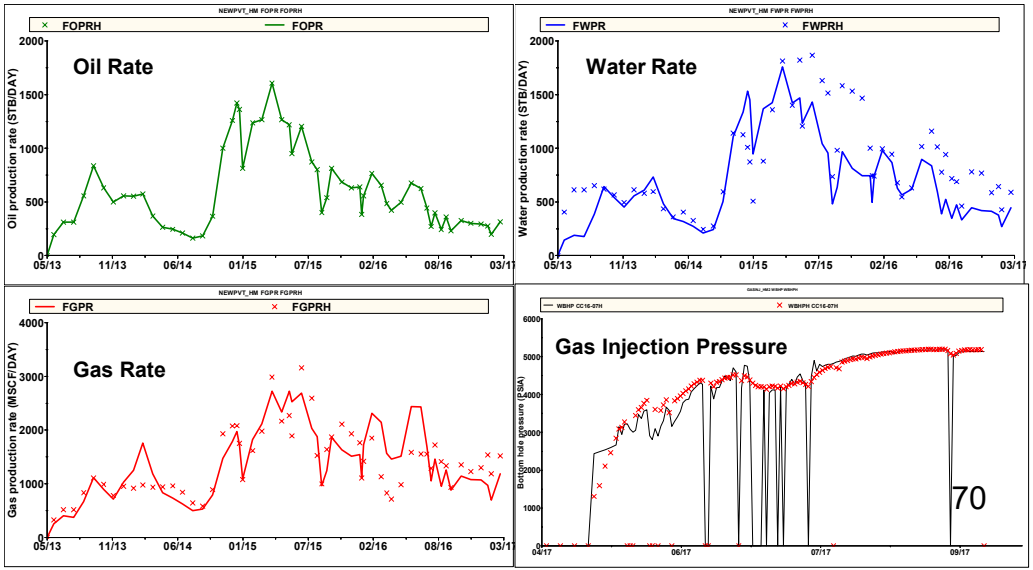
Structure & Permeability
1,177,400 Grids
56 Layers



Model Inputs

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

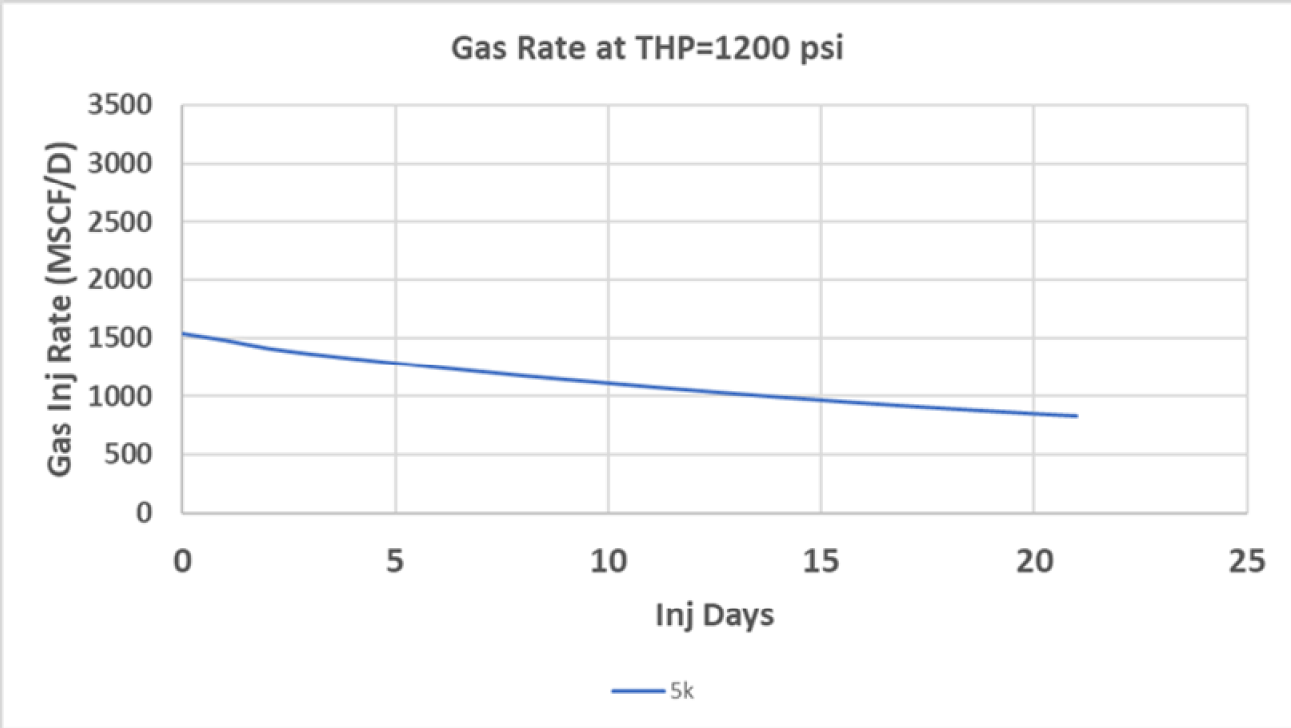
History Match



Gas Storage Simulation Process

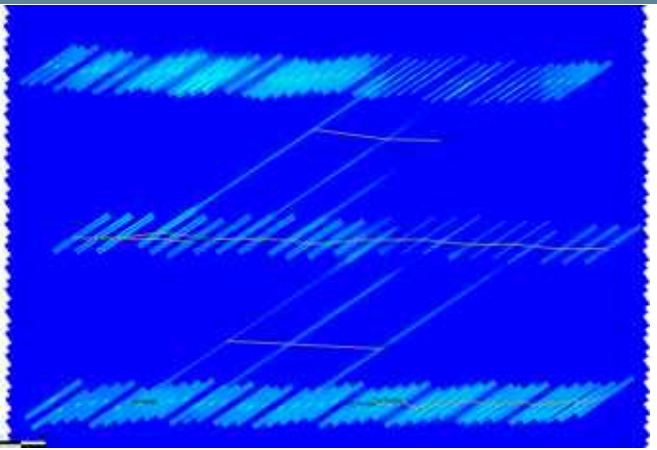
- Run primary production for all wells for additional period (post history match) – Base Case
- Inject gas in injection well at 2MMSCFPD for 7 days
- Produce the injection well post injection – Injection Case
- Observe the effect on oil, gas rate/recovery in injection well and offset wells by comparing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

Gas Injection Rate

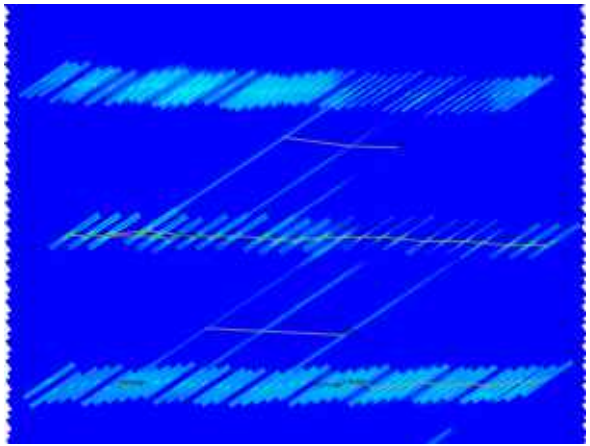


For a 5k well, 1.5 MMSCFPD is the max injection rate at THP of 1200 psi. Injection rate declines to about 50% of its initial value in 3 weeks. There is not a major increase in rate if THP is increased to 1250 psi.

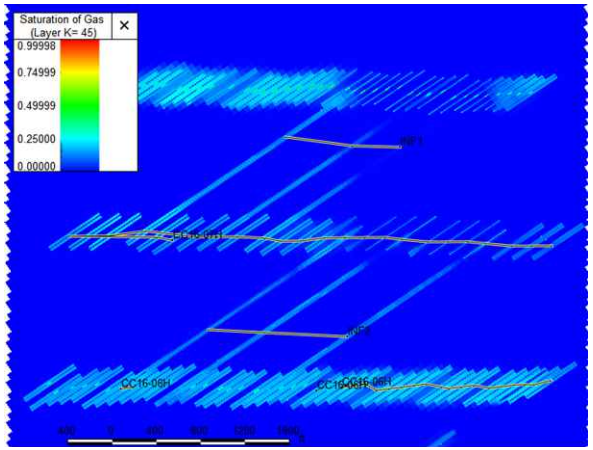
Gas Injection Profile



Before injection

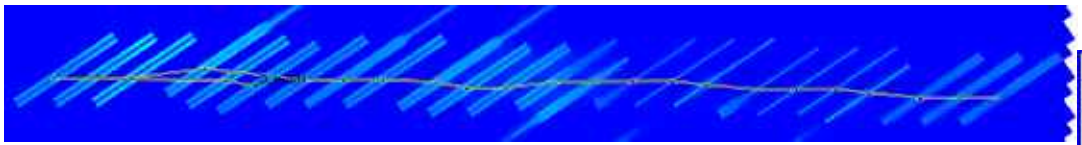


After 1 week of injection (3 MMSCFPD)

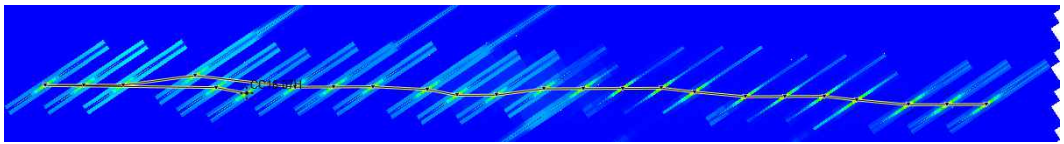


After 16 months production

Before Injection CC16-7H Blow-up

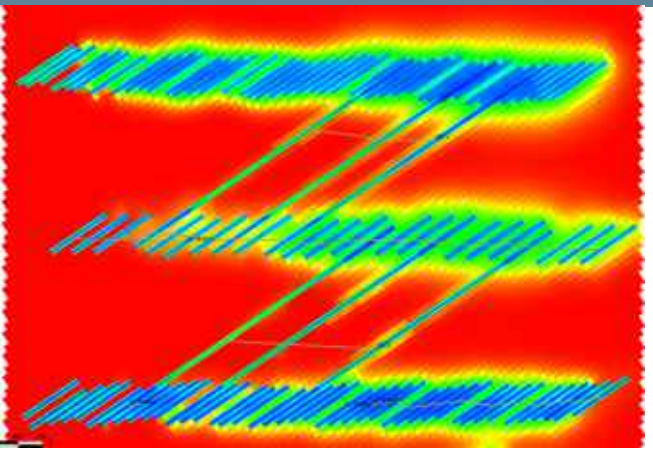


After Injection CC16-7H Blow-up

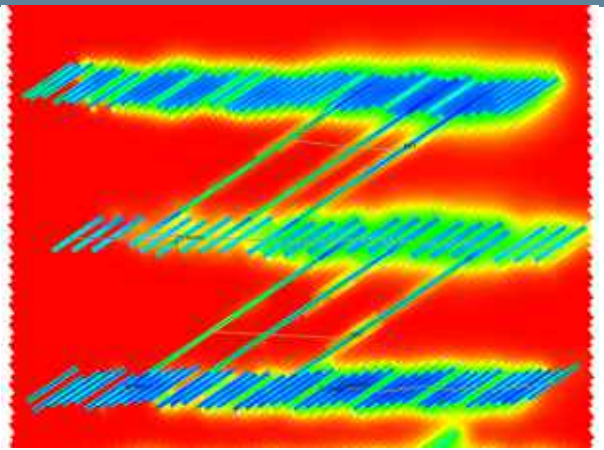


- Gas is stored within fractures.
- All injection cases indicate horizontal gas movement of 100 ft or less into the fractures.

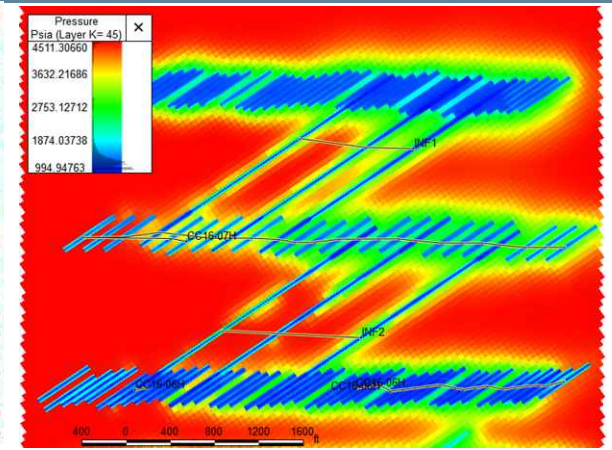
Pressure Profile



Before injection

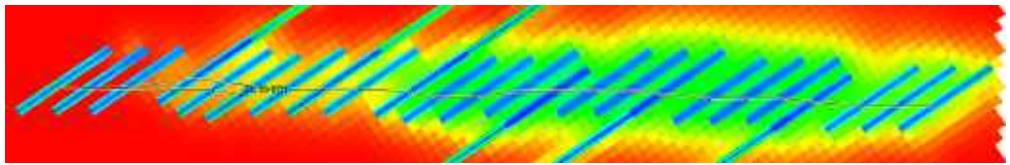


After 1 week of injection (3 MMSCFPD)

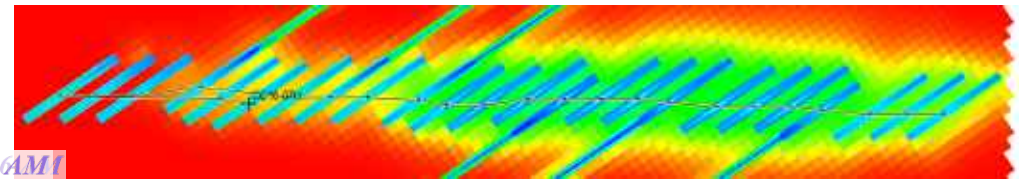


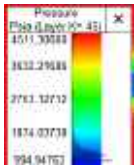
After 16 months production

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

		Gas Storage Capacity with 1200 psi WHP Injection	
API	Well Name	Fracture volume gas equavalent, 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*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

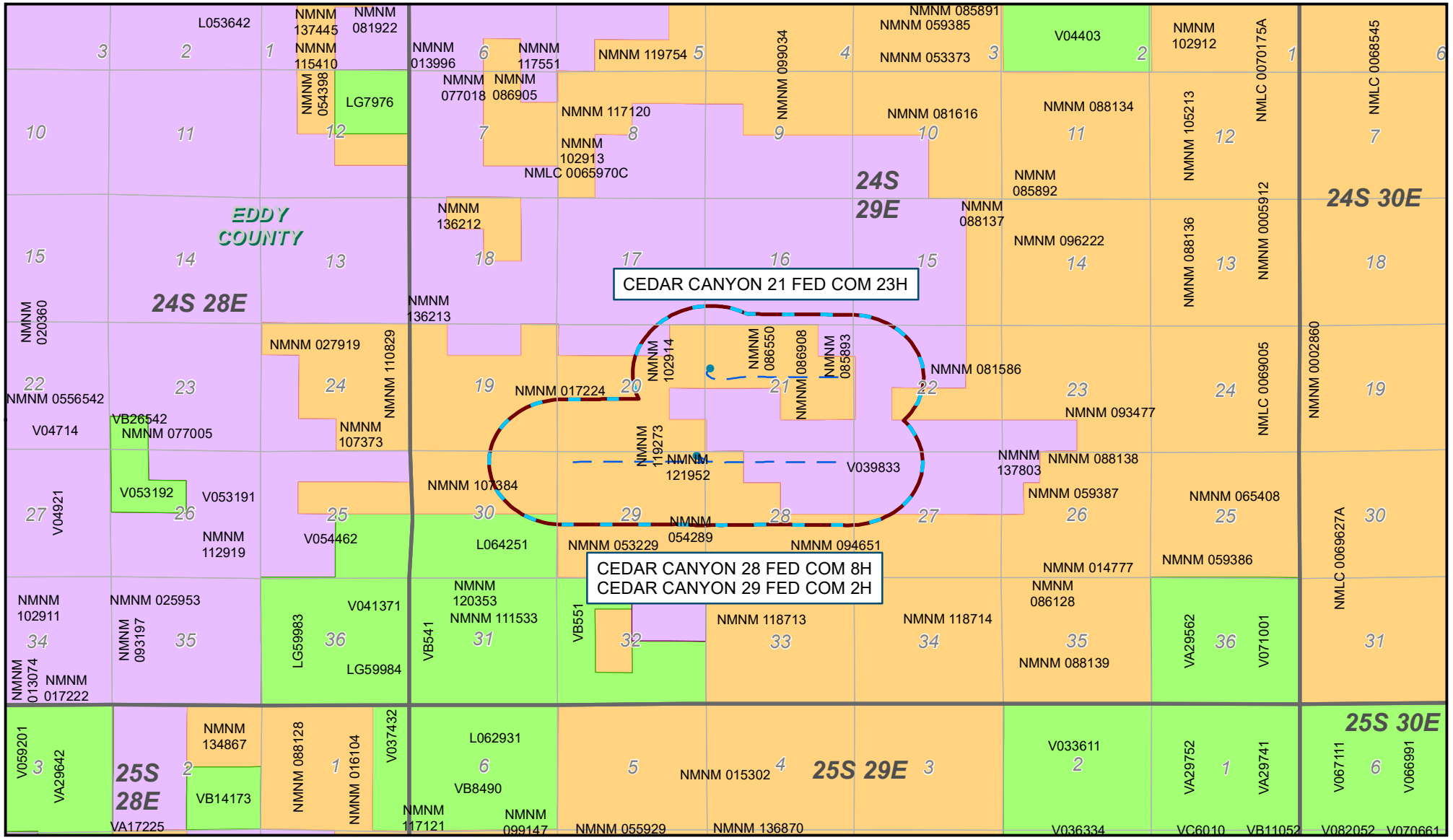
_____ _____

Xueying Xie, Reservoir Engineer Date

Notice

CEDAR CANYON
NEW MEXICO

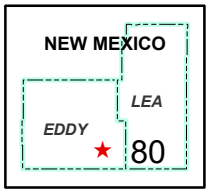
SURFACE OWNERSHIP MAP



County
1/2 mile AOR
Surface Hole Location
Wellbore Trajectory

Surface Ownership:
Federal
Private
State

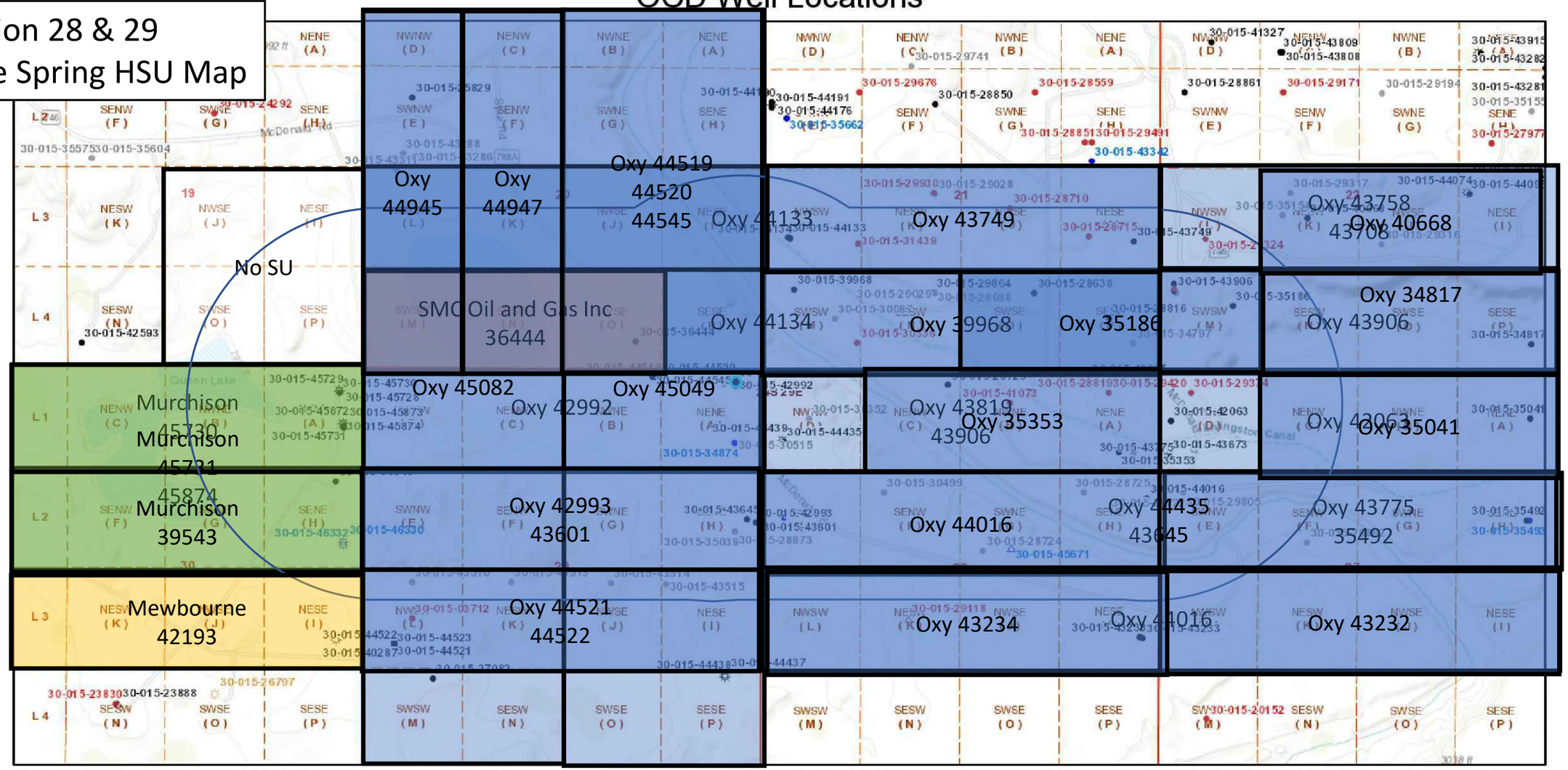
0 0.75 1.5 3 Miles



M:\Land\New_Mexico\New_Mexico_SE\Comm_Boundary_Ownership\MXD\NMGasStorage_CedarCanyon.mxd

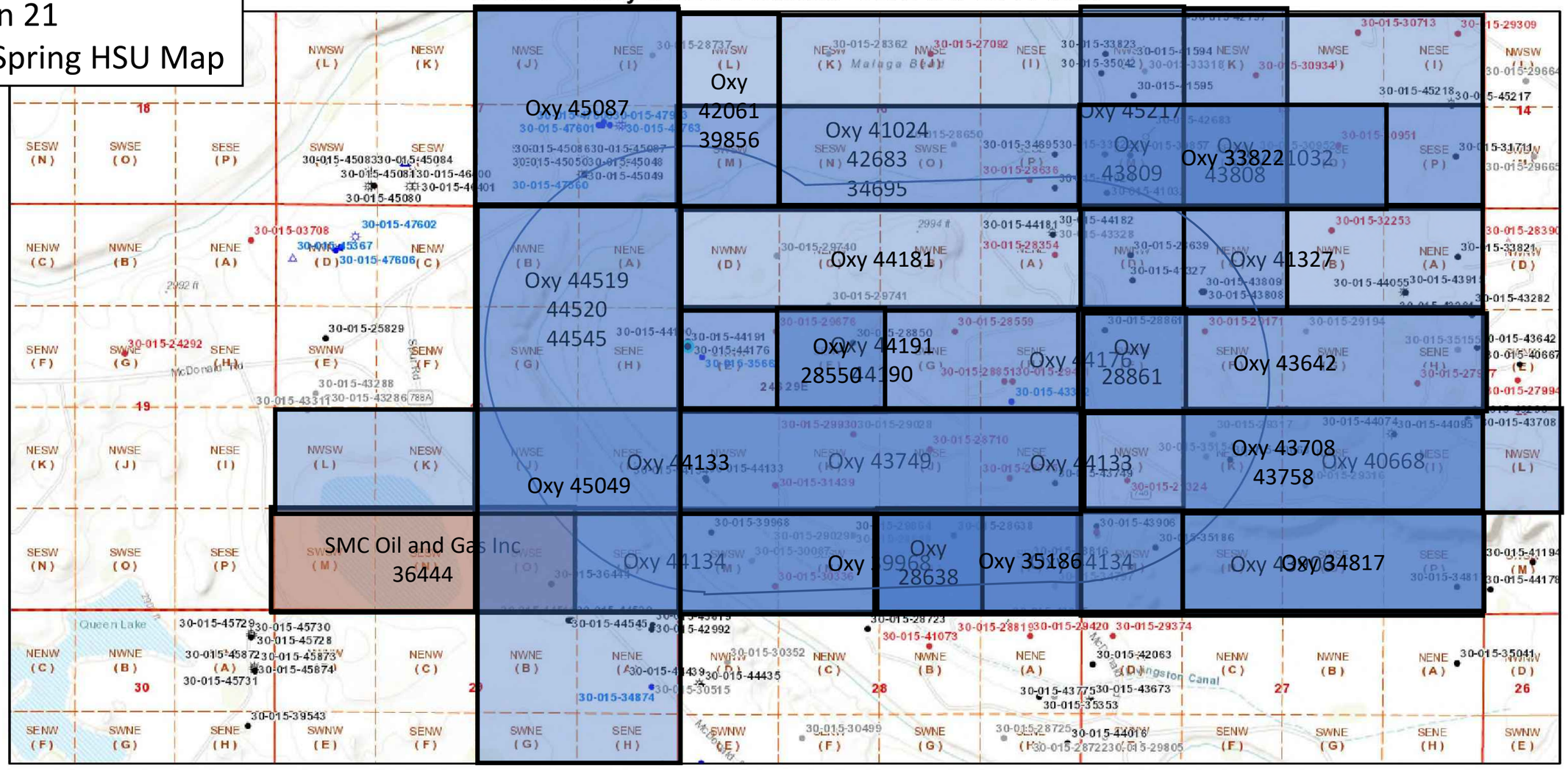
OCD Well Locations

Section 28 & 29
Bone Spring HSU Map



Section 21
Bone Spring HSU Map

Cedar Canyon 21 Federal Com #023H AOR



3/18/2021, 10:53:26 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
- ½ Mile AOR Outline
- Oxy HSU
- SMC O&G HSU

1:18,056
0 0.17 0.35 0.7 mi
0 0.28 0.55 1.1 km

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
NM OCD Oil and Gas Map. http://nm-emnrd.maps.arcgis.com/apps/webappviewer/index.html?id=4d017f2306164de29fd2fb9f8f35ca75: New Mexico Oil Conservation Division

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

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. 22150

AFFIDAVIT OF STEPHEN JANACEK

I, Stephen Janacek, of lawful age and being first duly sworn, declare as follows:

1. My name is Stephen Janacek and I am employed by OXY USA Inc. ("OXY") as a petroleum engineer.

2. I have previously testified before the New Mexico Oil Conservation Division as an expert witness in petroleum engineering.

3. I am familiar with the application filed by OXY in this case, and the Division guidance and requirements regarding closed loop gas capture injection projects (CLGC Project) such as this one. I also prepared exhibits in support of this application from pages 3 through 58 and 80 through 85 in ***Exhibit A*** to OXY's application in this case.

4. In this case, OXY seeks an order approving the 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*** to the Application, at 6. The proposed project area is part of a larger area referred to as the Cedar Canyon area. A locator map identifying the general location of OXY's proposed Cedar Canyon CLGC Project is included in ***Exhibit A*** at page 6.

5. OXY requests an initial project duration of two years. OXY also requests the ability to administratively extend the project without the need for a hearing.

BEFORE THE OIL CONSERVATION DIVISION
Santa Fe, New Mexico
Exhibit No. B
Submitted by: OXY USA Inc.
Hearing Date: September 09, 2021
Case No. 22150

6. Within the proposed project area, OXY seeks authority to utilize the following producing wells to occasionally inject produced gas into the Bone Spring formation, as identified on the project locator map, included at page 6 of Exhibit A:

- 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.

7. 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.

8. OXY seeks authority to add CLGC wells to the proposed project by administrative approval if the well is within the Area of Review previously completed.

9. A summary overview of the pilot project is located at pages 3-4 of ***Exhibit A***.

10. A process flow diagram of the closed loop gas capture system is in the Attached ***Exhibit A*** at page 5. This diagram reflects the current and proposed system to be used for gas storage. OXY will utilize the existing gas lift infrastructure so no changes are shown. During normal operations, produced fluids flow from the wells down the green flowline to the Central Tank Batteries (CTBs). The source wells, which consist of all wells connected to the CTBs, produce from the Bone Spring and Wolfcamp formations. Oil, water, and gas are separated out and leave the CTBs. Oil is sold through the Lease Automatic Custody Transfer (LACT) at each CTB, water is sent to a disposal well, and gas enters the red, Low Pressure Gas Pipeline. Gas can then be sold to the Enterprise Primary Gas Takeaway, sold to the San Mateo Secondary Takeaway, flared, or delivered to the Centralized Gas Lift (CGL) Stations for compression and re-injection as gas lift gas. After the gas goes through the CGL Stations, the pressure increases to a maximum of 1250 psig in the orange Centralized Gas Lift (CGL) Pipeline. Then it flows back to the wells with gas lift systems. The flow of fluids is similar yet different during a gas storage event. A gas storage event is initiated when gas cannot be sold to Enterprise or San Mateo and the source wells are not shut-in. The major changes are to the Gas Takeaways (which cease taking gas) and the CLGC wells (which cease producing and become CLGC wells). Since gas cannot be sold, it will begin to build up in the Low-Pressure Gas Pipeline as wells continue to produce oil, water, and gas. Once the pressure in the Low-Pressure Gas Pipeline increases to a certain point, the CLGC wells will be activated in a cascade fashion. CLGC wells are activated by closing the Shutdown Valve (SDV) at the wellhead. If the pressure in the Low-Pressure Gas Pipeline does not decrease, an additional CLGC well will be activated. Additional CLGC wells will be activated in this cascade system. When the interruption ends and gas can once again be

sold to Enterprise or San Mateo, the gas storage event ends. The Shutdown Valves open and the CLGC wells produce down the flowline to a test separator at the CTB for measurement.

11. A map depicting the pipeline that ties the CLGC wells for the pilot project into the gathering system and the affected compressor stations is included in the attached ***Exhibit A*** at page 6. The colors and components of the system are the same as the process flow diagram in the attached ***Exhibit A*** at page 5 with some additional items. The black lines represent the wellbore trajectories of the CLGC wells. The First Take Point (FTP) and Last Take Point (LTP) are labeled on the well trajectory. The project area is outlined with a dashed, dark-blue line, which is based on each CLGC well's horizontal spacing unit as shown on the attached ***Exhibit A*** at pages 8-10. Gas source wells are not on this map.

12. Data for each CLGC well, 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 11-12, 17-18, and 23-24. All wells have gas lift systems which inject down the casing and produce up the tubing with a packer in the hole.

13. OXY proposes to place packers as deep as possible but no higher than 100 feet above the top of the Bone Spring formation.

14. Cement bond logs for each of the CLGC wells demonstrate the placement of cement in the CLGC wells 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.

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

16. Assuming a full fluid column of reservoir brine water, the proposed maximum allowable 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 allowable surface pressure will not exert pressure at the topmost perforation in excess of 90% of the formation parting pressure. *See* ***Exhibit A*** at 29.

17. 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 44-45. The wellhead diagram for all CLGC wells is found in ***Exhibit A*** at30. Injection starts at the flowmeter where the injection rate is measured and moves through the following components: first, the injection flow control valve which controls the injection pressure, the casing safety shutdown valve (SSV), which can open and close automatically, the casing-tubing annulus, the tubing, the tubing SSV, which can open and close automatically and is also closed when a CLGC well is activated, and finally another flow control valve (FCV), which controls flowline pressure. Pressure Indicating Transmitters (PITs) are located on the casing valve and tubing valves. PITs capture pressure data that is stored in the SCADA system and then used to automatically control the SSVs and FCVs.

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

19. The wells proposed for the CLGC 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.

20. The source of gas for injection will be from OXY's Cedar Canyon wells producing in the 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. ***Exhibit A*** at 37 is a summary of the gas analyses included in the application and the components in the system. Source wells flow to multiple CTBs. From there gas flows to the CGL Stations. Gas analyses have been provided for the CGL Stations and the formation for gas injection. The gas analyses for the CGL Stations are similar to the gas analyses for the zones for gas injection. H2S is not found in any of the gas analyses. CO2 is found in all the analyses at various amounts.

22. Since CO2 is already present in this system, OXY intends to continue with its existing Corrosion Prevention Plan in these CLGC wells outlined at page 42 of ***Exhibit A***. In the existing Corrosion Prevention Plan, produced gas is processed through a gas dehydration unit to remove water. Then corrosion inhibitor is added to the system of each well downstream of the gas dehydration unit. Fluid samples are taken regularly and checked for iron, manganese, and residual corrosion inhibitor in the produced fluids. The process allows OXY to continuously monitor and adjust the chemical treatment over the life of the well to minimize corrosion. Additionally, fluid samples will be taken prior to gas injection to establish a baseline for analysis. After a CLGC event, fluid samples will be taken to check for iron, manganese, and

residual corrosion inhibitor in the produced fluids in the CLGC wells. OXY will continue to monitor and adjust the chemical treatment over the life of the project.

23. Using an automated supervisory control and data acquisition (SCADA) system, OXY will monitor a multitude of rates and pressures to allow for efficient and safe operation, proper allocation and reporting of volumes, and immediate response to unexpected events. *See* ***Exhibit A*** at 44-45. Each CLGC well will also include automated safety devices, including automatic shut-in valves among other operational safety measures. OXY will also monitor and track various operational parameters at the pilot project's central tank battery and central gas lift compressor. *See* ***Exhibit A*** at 44-45.

24. OXY proposes a Data Collection Plan for the Cedar Canyon CLGC Project as seen in its Data Collection Plan, attached as **Exhibit B-1**, to collect and report data pertinent to CLGC operations. The plan is similar to the data collection process outlined in the Injection Order R-21747 but proposes some changes. Consistent with Order R-21747, the Data Collection Plan will apply to the wells listed in the table in the Exhibit. The spatial relationship of these wells is illustrated in the map that I have attached to this affidavit as **Exhibit B-2**. This map shows the proposed Cedar Canyon CLGC wells (black lines) and any offset wells in the same correlative zone (red lines). There are three proposed CLGC wells in the Second Bone Spring. In the OXY Data Collection Plan for Cedar Canyon, there are some changes to the reporting requirements. First, to lessen the administrative burden of these requirements, OXY proposes status updates every 12 months instead of every 3 months. Second, the recovery analysis required for each involved CLGC well and for each well related to each involved CLGC well will be required only if the change in production casing pressure or production volume is related to the CLGC event. These wells are on gas lift most of the time, and changes in casing pressure

or production volumes are not unusual for artificially lifted wells. Third, because the CLGC wells and the involved CLGC wells are being produced pursuant to an approved commingling permit, OXY will attempt to collect the data at the requested resolution, but we need the flexibility to substitute well tests when equipment constraints prevent such high resolution. Fourth, some allowance needs to be incorporated into the requirements for interruptions that occur with less than 24 hours' notice. Lastly, OXY shall not be required to install additional facilities or measurement equipment to collect the data described. These changes create an achievable Data Collection Plan for Cedar Canyon. If a data collection plan is required as outlined in the Injection Order R-21747, additional well testing equipment will be required which will severely impact our ability to pursue this project due to the additional capital costs.

25. I also conducted an analysis of the half-mile area of review and two-mile area surrounding each of the proposed CLGC wells. A map depicting wells and their trajectories within the half-mile area of review and two-mile radius around the injection wells is located at page 47 of ***Exhibit A***. A map identifying each surface tract by ownership type within the half-mile area of review and two-mile area surrounding each of the proposed injection wells is located at page 48 of ***Exhibit A***. Finally, a map depicting all wells identified with completed laterals all or partially within the half-mile area of review is located at pages 49-50 of ***Exhibit A***. It assigns a well identification number to each well within the area of review that may be cross referenced in the following well data tabulation chart on pages 51-54 of ***Exhibit A***. The well data tabulation chart provides detailed information for identification, location, drilling, casing, cement, current completion, and current producing pool of each well. Additionally, I have prepared a map of the half-mile area of review reflecting each of the injection well trajectories, which is attached as **Exhibit B-3.**

26. Wellbore schematics for the four wells that penetrate the top of the proposed injection interval and have been plugged and abandoned are included at pages 55-58 in ***Exhibit A***. Review of the wellbore diagrams indicate adequate casing, cement, and cement plug placement to sufficiently contain gas within the injection interval.

27. To properly determine gas production from each CLGC well, OXY will apply a GOR Gas Allocation Method that is similar to the method used by EOG Resources, Inc. in Order No. R-21747. *See* Gas Allocation, attached as **Exhibit B-4**. Per existing commingling permits,[1] gas sales are allocated by well test. Following a storage event, the GOR Gas Allocation Method will be used to differentiate between native gas (owned by the owners of the CLGC well) and recovery of previously stored gas (owned by the owners of the source wells). I believe it is a fair and reasonable method for allocating gas production after a storage event.

28. The Gas Allocation Plan will utilize the Tapered Testing Methodology as outlined in **Exhibit B-5**. The Tapered Testing Methodology is designed based on the Division's current approach to well testing requirements for surface commingling permits that utilize allocation by well testing. OXY believes that such well testing requirements can be accomplished with existing equipment and connections and allow us to accurately measure and interpolate well tests for allocation and reporting purposes, as provided in OXY's **Exhibit B-5**.

29. Working with OXY's in-house land department, I also prepared a list of affected parties required to receive notice of this application. The map on page 80-82 of ***Exhibit A*** reflects that the Bureau of Land Management is the surface owner with respect to each proposed CLGC well. The map depicts the area of review and identifies the designated operator for each tract that falls within the half-mile area of review for each of the wells within the Bone Spring formation.

[1] PLC-750.

30. Pages 83-85 of ***Exhibit A*** identify all leasehold operators 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 entitled to notice in accordance with Division regulations, including the Bureau of Land Management as the surface owner where each CLGC well is located.

31. Parties entitled to notice were identified based on a determination of the title of lands and interests as recorded in the records of Eddy County or from a review of New Mexico Oil Conservation Division and Bureau of Land Management operator records as of the time the application was filed or from OXY's internal records (division orders).

32. It is my opinion that OXY undertook a good faith effort to locate and identify the correct parties and valid addresses required for notice within the half-mile area of review. To the best of my knowledge the addresses used for notice purposes are valid and correct. There were no unlocatable parties for whom we were unable to locate a valid address.

33. I provided the law firm of Holland & Hart LLP a list of names and addresses of the affected parties identified on pages 83-85 for purposes of providing notice.

34. As reflected on **Exhibit B-6**, notice of this application was provided in accordance with 19.15.26.8(B)(2) NMAC. Notice was also published in the Hobbs Daily News.

35. **OXY Exhibits B-1** through **B-6** were either prepared by me or compiled under my direction and supervision.

FURTHER AFFIANT SAYETH NOT.

Stephen Janacek

STATE OF TEXAS)
COUNTY OF Collin)

SUBSCRIBED and SWORN to before me this 7 day of September, 2021 by STEPHEN JANACEK.

NOTARY PUBLIC

My Commission Expires:

08-27-2022

MATTHEW C. OWENS
Notary Public, State of Texas
Comm. Expires 08-27-2022
Notary ID 125728578

Data Collection Plan for Cedar Canyon CLGC Project

CLGC Well Name	Completion Reservoir	Involved Well(s) (North Side)	Involved Well (South Side)
CC 21-023H	Second Bone Spring	Cedar Canyon 21 Fed Com 22H	Cedar Canyon 21 Fed Com 5H
CC 28-008H	Second Bone Spring	Morgan Fee Com 1H	Cedar Canyon 28 Fed Com 9H
CC 29-002H	Second Bone Spring	Salt Ridge CC 20-17 Fed Com 21H	Cedar Canyon 29 Fed Com 21H
		Salt Ridge CC 20-17 Fed Com 23H	
		Cedar Canyon 20 Fed Com 24H	
		Cedar Canyon 20 Fed Com 25H	
		Cedar Canyon 20 Fed Com 26H	

A map is attached showing the CLGC wells and the offsets in the Second Bone Spring Formation. The CLGC well trajectories are black and the offset well trajectories are red.

Applicant shall provide to the OCD Engineering Bureau at ocd.engineer@state.nm.us, project status updates every twelve (12) months after the approval of this Order and a summary report no later than three (3) months after the cessation of the pilot project or upon request from OCD. Status updates shall include a summary of the actions taken and problems and solutions identified and implemented. The summary report(s) shall include:

a. a summary of all project-related activity;

b. a review regarding any problems and solutions identified and implemented;

c. for each period of injection, a summary of the results, including for each CLGC Well in which injection occurred ("involved CLGC Well"):

i. average and maximum injection flow rates;

ii. injection duration; and

iii. total injected volume.

d. for each period of injection, the following data graphed and tabulated with a resolution of at least: one (1) data point per hour beginning twenty-four (24) hours before the injection (provided adequate notice is received beforehand), four (4) data points per hour during the injection, and one (1) data point per hour ending twenty-four (24) hours after the injection:

i. for each involved CLGC Well, the oil and gas production and injection flow rates and annulus pressure of all casing strings; and

ii. for each well related to each involved CLGC Well, the oil and gas production and injection flow rates and production casing pressure.

iii. for situations where equipment constraints do not allow for data collection at the resolution specified above or injection periods lasting more than twenty-four (24) hours, periodic well tests may be substituted, provided such well tests are conducted by

BEFORE THE OIL CONSERVATION DIVISION
Santa Fe, New Mexico
Exhibit No. B-1
Submitted by: OXY USA Inc.
Hearing Date: September 09, 2021
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separating and metering the oil and gas production from each well for a minimum of six (6) hours.

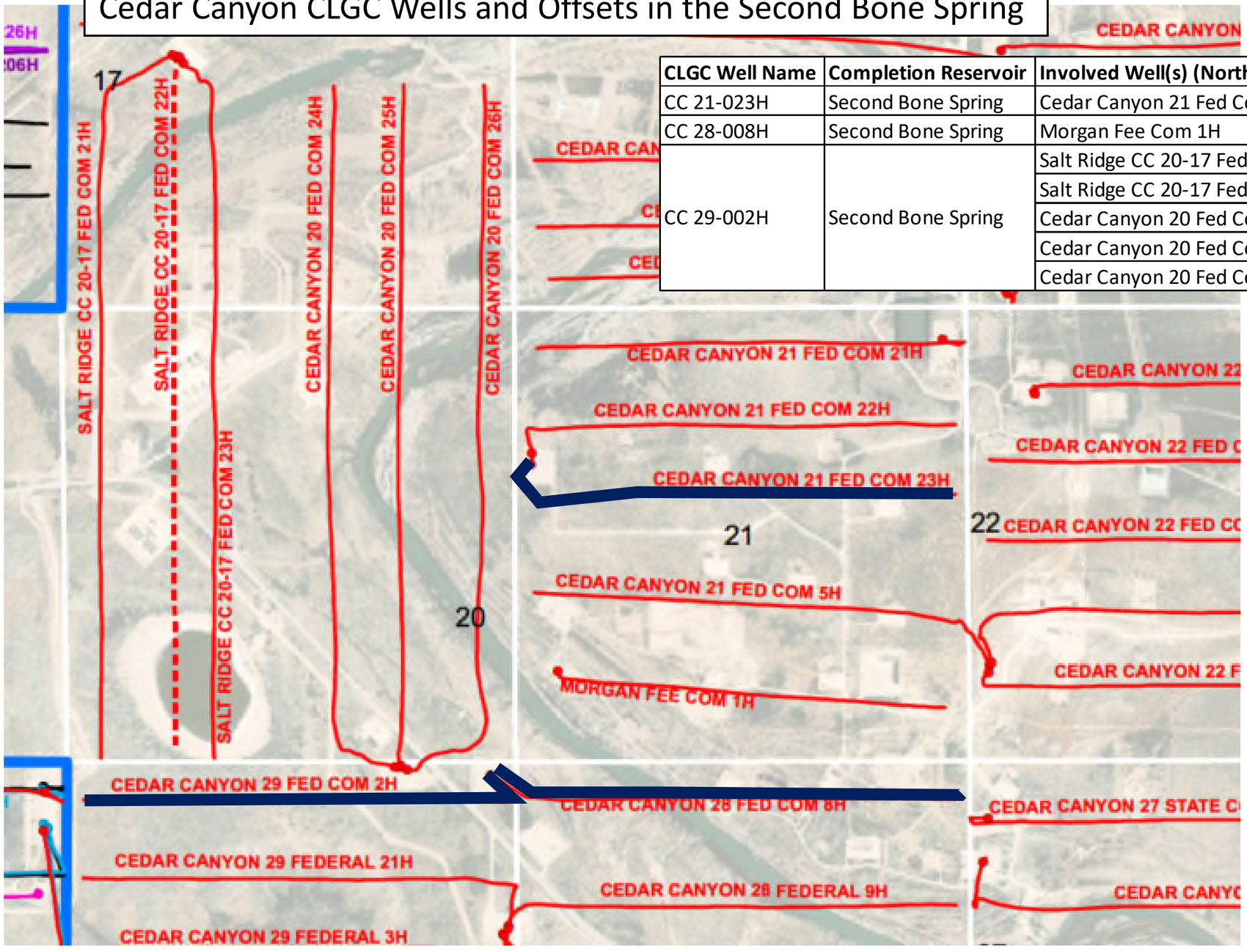
e. for each period of injection, a recovery profile for each involved CLGC Well and for each well related to each involved CLGC Well which experienced a change in production casing pressure or production volume related to the injection during or immediately following the injection. The volume of recovered gas shall be determined by taking the difference between the gas production following the injection and baseline production. The baseline production shall be determined by using well tests to create a production curve that estimates what the production would have been had injection not occurred. The production curve shall be calculated by interpolating daily production for each day using the known daily production obtained by well tests conducted prior to the start of injection and shall use a method of interpolation that is at minimum as accurate as maintaining a constant rate of change for each day's production between the known daily production. The recovery profile shall include:

i. a summary of the results, including the volume and percent of total production recovered and the duration of time required to achieve that recovery; and

ii. a tabulation of daily oil and gas production and baseline production totals; beginning a week before the injection and ending when either the gas production is near equal to its baseline production or Applicant conducts another period of injection on an involved CLGC Well.

f. If any of the CLGC wells or the involved CLGC wells are being produced pursuant to an approved commingling permit, applicant shall not be required to install additional facilities or measurement equipment to collect the data described above in subparagraphs (d) or (e) above.

Cedar Canyon CLGC Wells and Offsets in the Second Bone Spring



CLGC Well Name	Completion Reservoir	Involved Well(s) (North Side)	Involved Well (South Side)
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CC 28-008H	Second Bone Spring	Morgan Fee Com 1H	Cedar Canyon 28 Fed Com 9H
CC 29-002H	Second Bone Spring	Salt Ridge CC 20-17 Fed Com 21H	Cedar Canyon 29 Fed Com 21H
		Salt Ridge CC 20-17 Fed Com 23H	
		Cedar Canyon 20 Fed Com 24H	
		Cedar Canyon 20 Fed Com 25H	
		Cedar Canyon 20 Fed Com 26H	

A map is provided instead of a gun barrel view because there are different horizontal orientations.

Key

- CLGC Well
- Offset Well
- Offset Planned Well

BEFORE THE OIL CONSERVATION DIVISION
Santa Fe, New Mexico
Exhibit No. B-2
Submitted by: OXY USA Inc.
Hearing Date: September 09, 2021
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Cedar Canyon ½ Mile AOR with Trajectories

Key
- CLGC Well Trajectory
- ½ mile Area of Review

Wells (IHS)
- LOC
- GAS
- ABANDONED-NO SHOWS
- ABANDONED LOC
- GAS SHOWS
- OIL SHOWS
- O&G SHOWS
- OIL
- O&G
- OTHER
- INJ-NO SHOWS
- SUS
- AGW
- AOW
- AO&GW
- <Null>

BEFORE THE OIL CONSERVATION DIVISION
Santa Fe, New Mexico
Exhibit No. B-3
Submitted by: OXY USA Inc.
Hearing Date: September 09, 2021
Case No. 22150

GOR Gas Allocation Plan for CLGC Wells

Application

The following methodology will apply to CLGC wells on a well by well basis. The application will start after a CLGC storage event and will end after 100% of the Storage Gas Injection Inventory is recovered. Afterwards, Gas Allocation will revert to previous accounting procedures.

Overview

During a CLGC storage event, a portion of the combined gas streams from source wells will be stored in a CLGC well. After a storage event, the wellhead gas produced from a CLGC well will consist of three components: Gas Lift Gas, Native Gas, and Storage Gas Production. Both Native Gas and Storage Gas Production are produced from the reservoir, and the combined production is Reservoir Gas.

Wellhead Gas Produced = Gas Lift Gas + Native Gas + Storage Gas Production

Gas Lift Gas is measured continuously for each well. This methodology applies a Gas-Oil-Ratio (GOR) Calculation to determine the Native Gas (owned by the owners of the CLGC well) and Storage Gas Production (owned by the owners of the source wells).

A Well Test Allocation Method will be utilized after a storage event. In the example below, the well tests values are highlighted. The values between are interpolated.

Example

The following data is a simulated, 1-Day storage event.

- 2000 mscf is injected over 24 consecutive hours.
- The well is produced back immediately following a storage event.
- The data has been truncated at 24 days because it is included for illustration purposes.

The input and calculated values for an example well are listed below:

Values	Description
Wellhead Gas Produced, mscf/d	Wellhead gas, measured with well test
Gas Lift Gas, mscf/d	Gas Lift Gas injection, measured with flow meter
Reservoir Gas, mscf/d	Reservoir Gas, the difference between Wellhead Gas and Gas Lift Gas, calculated
Oil, bbl/d	Oil production, measured with well test
Water, bbl/d	Water production, measured with well test
GOR, scf/bbl	Gas Oil Ratio (GOR), engineer calculation based on previous oil and gas well tests before a storage event
Native Gas- GOR Calc, mscf/d	Minimum of Reservoir Gas or Native Gas Production using GOR, calculated
Storage Gas Injection, mscf/d	Storage Gas Injection, measured with flow meter

Storage Gas Injection Inventory, mscf	Storage Gas Injection Inventory, cumulative amount of storage gas injection minus storage gas production, calculated
Storage Gas Production, mscfd	Storage Gas Production, difference between Reservoir Gas and Calculated Native Gas Production, calculated

Column	1	2	3	4	5	6	7	8	9	10
Calculation or measurement	Well Test	Flow Meter	1-2	Well Test	Well Test	Engineer Analysis	MIN (3,4*6/1000)	Flow Meter	8-10 + 9_PreviousRow	IF(9>0, 3-7,0)
Day	Wellhead Gas Produced, mscf/d	Gas Lift Gas, mscf/d	Reservoir Gas, mscf/d	Oil, bbl/d	Water, bbl/d	GOR, scf/bbl	Native Gas-GOR Calc, mscf/d	Storage Gas Injection, mscf/d	Storage Gas Injection Inventory, mscf	Storage Gas Production, mscfd
-90	626	500	126	63	103	2,005	126	0	0	0
-60	625	500	125	62	101	2,032	125	0	0	0
-30	624	500	124	60	99	2,053	124	0	0	0
1	623	500	123	59	96	2,081	123	0	0	0
2	0	0	0	0	0	2,050	0	2000	2000	0
3	850	500	350	45	80	2,050	92	0	1743	257
4	741	500	241	50	86	2,050	102	0	1604	139
5	713	500	213	52	88	2,050	107	0	1498	106
6	685	500	185	54	91	2,050	111	0	1424	73
7	675	500	175	55	92	2,050	113	0	1362	62
8	665	500	165	56	93	2,050	115	0	1313	50
9	661	500	161	57	93	2,050	116	0	1267	45
10	657	500	157	57	94	2,050	117	0	1227	40
11	653	500	153	57	94	2,050	117	0	1192	35
12	649	500	149	58	95	2,050	118	0	1161	31
13	647	500	147	58	95	2,050	118	0	1133	28
14	645	500	145	58	95	2,050	119	0	1106	26
15	643	500	143	58	95	2,050	119	0	1082	24
16	641	500	141	58	95	2,050	119	0	1060	22
17	640	500	140	58	95	2,050	119	0	1038	21
18	639	500	139	58	94	2,050	119	0	1018	20
19	639	500	139	58	94	2,050	119	0	998	20
20	638	500	138	58	94	2,050	119	0	980	19
21	637	500	137	58	93	2,050	119	0	962	18
22	636	500	136	58	93	2,050	119	0	945	17
23	635	500	135	58	93	2,050	119	0	930	16
24	634	500	134	58	92	2,050	119	0	915	15

Well Test Allocation Method

Following an injection period, the allocation of oil and gas production shall be based on the production life of each CLGC well as measured for three periods: (a) the initial production period shall be measured from the end of the injection period until the peak gas production rate is reached; (b) the plateau period shall be measured from the end of the initial production period to the peak decline rate; and (c) the decline period shall be measured from the end of the plateau period until the well has recovered the previously-injected volume.

During the initial production period, the oil and gas production for each CLGC well shall be allocated using daily well tests or separated and metered individually prior to commingling.

During the plateau period, the oil and gas production for each CLGC well shall be allocated using a production curve calculated from a minimum of three (3) well tests per month. The production curve shall be calculated by interpolating daily production for each day using the known daily production obtained by well tests and shall use a method of interpolation that is at minimum as accurate as maintaining a constant rate of change for each day's production between the known daily production values.

During the decline period, the oil and gas production for each CLGC well shall be allocated using a production curve calculated from a minimum well testing frequency as follows: (a) a minimum of three (3) well tests per month when the decline rate is greater than 22% per month; (b) a minimum of two (2) well tests per month when the decline rate is between 22% and 10% per month; and (c) a minimum of one (1) well test per month when the decline rate is less than 10% per month. The production curve shall be calculated by interpolating daily production for each day using the known daily production obtained by well tests and shall use a method of interpolation that is at minimum as accurate as maintaining a constant rate of change for each day's production between the known daily production values.

Applicant shall conduct a well test by separating and metering the oil and gas production from each well for either (a) a minimum of twenty-four (24) consecutive hours; or (b) a combination of nonconsecutive periods that meet the following conditions: (i) each period shall be a minimum of six (6) hours; and (ii) the total duration of the nonconsecutive periods shall be a minimum of eighteen (18) hours.

BEFORE THE OIL CONSERVATION DIVISION
Santa Fe, New Mexico
Exhibit No. B-5
Submitted by: OXY USA Inc.
Hearing Date: September 09, 2021
Case No. 22150

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. 22150

AFFIDAVIT

STATE OF NEW MEXICO)
) ss.
COUNTY OF SANTA FE)

Adam G. Rankin, attorney in fact and authorized representative of OXY USA Inc, the Applicant herein, being first duly sworn, upon oath, states that the above-referenced Application has been provided under the notice letters and proof of receipts attached hereto.

Adam G. Rankin

SUBSCRIBED AND SWORN to before me this 7th day of September, 2021 by Adam G. Rankin.

Notary Public

My Commission Expires:

January 28, 2023

BEFORE THE OIL CONSERVATION DIVISION
Santa Fe, New Mexico
Exhibit No. B6
Submitted by: OXY USA Inc.
Hearing Date: September 09, 2021
Case No. 22150

OFFICIAL SEAL
ANNA K. STORM
NOTARY PUBLIC - STATE OF NEW MEXICO
My Commission Expires: January 28, 2023

HOLLAND&HART LLP

Adam G. Rankin
Phone (505) 988-4421
agrankin@hollandhart.com

August 20, 2021

VIA CERTIFIED MAIL
CERTIFIED RECEIPT REQUESTED

TO: ALL AFFECTED PARTIES

Re: Application of OXY USA Inc. for Closed Loop Gas Capture Injection Pilot Project, Eddy County, New Mexico.
Cedar Canyon 21 Fed Com #023H well, Cedar Canyon 28 Fed Com #8H well, Cedar Canyon 29 Fed Com #2H well

Ladies & Gentlemen:

This letter is to advise you that OXY USA Inc. has filed the enclosed application with the New Mexico Oil Conservation Division.

During the COVID-19 Public Health Emergency, state buildings are closed to the public and hearings will be conducted remotely. The hearing will be conducted on September 9, 2021 beginning at 8:15 a.m., until it is concluded. To participate in the electronic hearing, see the instructions posted on the OCD Hearings website: https://www.emnrd.nm.gov/ocd/hearing-info/.

You are not required to attend this hearing, but as an owner of an interest that may be affected by this application, you may appear and present testimony. Failure to appear at that time and become a party of record will preclude you from challenging the matter at a later date. Parties appearing in cases are required by Division Rule 19.15.4.13.B to file a Pre-hearing Statement four business days in advance of a scheduled hearing. This statement must be filed online or in person at the Division's Santa Fe office and should include: the names of the parties and their attorneys; a concise statement of the case; the names of all witnesses the party will call to testify at the hearing; the approximate time the party will need to present its case; and identification of any procedural matters that are to be resolved prior to the hearing.

If you have any questions about this matter, please contact Stephen Janacek, at (713) 497-2417, or Stephen_Janacek@OXY.com.

Sincerely,

Adam G. Rankin
ATTORNEY FOR OXY USA INC.

Oxy - Closed Loop Gas Capture Cedar Canyon
Case No. 22150 Postal Delivery Report

TrackingNo	ToName	DeliveryAddress	City	State	Zip	USPS_Status
9402811898765800082897	Chevron USA Inc.	6301 Deauville	Midland	TX	79706-2964	Your item was delivered to the front desk, reception area, or mail room at 3:23 pm on August 24, 2021 in MIDLAND, TX 79706.
9402811898765800082804	Centennial NM Partners	PO Box 1837	Roswell	NM	88202-1837	Your item was delivered at 12:25 pm on August 24, 2021 in ROSWELL, NM 88201.
9402811898765800082828	Branex Resources Inc.	PO Box 2990	Ruidoso	NM	88355-2990	Your item was delivered at 11:39 am on August 25, 2021 in RUIDOSO, NM 88345.
9402811898765800082866	Basin Operating Co.	648 Petroleum Bldg	Roswell	NM	88201	Your package is moving within the USPS network and is on track to be delivered to its final destination. It is currently in transit to the next facility.
9402811898765800082316	XTO Holdings LLC	PO Box 840780	Dallas	TX	75284-0780	Your item was delivered at 7:55 pm on August 24, 2021 in DALLAS, TX 75266.
9402811898765800082859	Balog Family Trust	PO Box 111890	Anchorage	AK	99511-1890	Your item was delivered at 9:41 am on August 30, 2021 in ANCHORAGE, AK 99515.
9402811898765800082170	XTO Energy, INC	6401 Holiday Hill Rd Bldg 5	Midland	TX	79707-2157	Your item was delivered to the front desk, reception area, or mail room at 2:17 pm on August 23, 2021 in MIDLAND, TX 79707.
9402811898765800082132	WPX Energy Permian LLC	25061 Network Pl	Chicago	IL	60673-1250	Your item was delivered at 4:29 am on August 24, 2021 in CHICAGO, IL 60680.
9402811898765800082187	Winchester Energy LLC	PO Box 13540	Oklahoma City	OK	73113-1540	Your item was delivered at 4:09 pm on August 23, 2021 in OKLAHOMA CITY, OK 73114.
9402811898765800082149	Tap Rock Resources LLC	523 Park Point Dr Ste 200	Golden	CO	80401-9387	Your item has been delivered to an agent for final delivery in GOLDEN, CO 80401 on August 23, 2021 at 12:47 pm.
9402811898765800082194	PROBITY SWD, LLC	PO Box 7307	Midland	TX	79708-7307	This is a reminder to arrange for redelivery of your item or your item will be returned to sender.
9402811898765800082101	Prime Rock Resources Asset Co LLC	203 W Wall St Ste 1000	Midland	TX	79701-4525	Your item was delivered to an individual at the address at 12:53 pm on August 23, 2021 in MIDLAND, TX 79701.
9402811898765800082163	POGO Producing CO	PO Box 10340	Midland	TX	79702-7340	Your package will arrive later than expected, but is still on its way. It is currently in transit to the next facility.
9402811898765800082156	NGL Wwater Solutions Permian, LLC	865 Albion St Ste 400	Denver	CO	80220-4809	Your package will arrive later than expected, but is still on its way. It is currently in transit to the next facility.
9402811898765800082118	MRC Permian Co.	5400 Lbj Fwy Ste 1500	Dallas	TX	75240-1017	Your item was delivered to the front desk, reception area, or mail room at 11:11 am on August 23, 2021 in DALLAS, TX 75240.
9402811898765800082675	Maduro Oil & Gas LLC	3102 Maple Ave Ste 400	Dallas	TX	75201-1261	Your item was delivered to an individual at the address at 12:00 pm on August 23, 2021 in DALLAS, TX 75201.
9402811898765800082811	SMC Oil & Gas, Inc.	PO Box 50907	Midland	TX	79710-0907	Your item was picked up at a postal facility at 10:27 am on August 23, 2021 in MIDLAND, TX 79705.
9402811898765800082637	Lonsdale Resources LLC	2626 Cole Ave Ste 300	Dallas	TX	75204-1094	Your item was delivered to the front desk, reception area, or mail room at 12:12 pm on August 23, 2021 in DALLAS, TX 75204.
9402811898765800082682	EOG Y Resources, Inc.	104 S 4th St	Artesia	NM	88210-2123	Your item was delivered to the front desk, reception area, or mail room at 8:24 am on August 23, 2021 in ARTESIA, NM 88210.
9402811898765800082644	Devon Energy Production Company LP	PO Box 843559	Dallas	TX	75284-3559	Your item was delivered at 7:55 pm on August 24, 2021 in DALLAS, TX 75266.
9402811898765800082699	COG OperatingLLC	600 W Illinois Ave	Midland	TX	79701-4882	We attempted to deliver your package at 5:54 pm on August 23, 2021 in MIDLAND, TX 79701 but could not access the delivery location. We will redeliver on the next business day.
9402811898765800082606	BLM	620 E Greene St	Carlsbad	NM	88220-6292	Your item was delivered to an individual at the address at 3:48 pm on August 23, 2021 in CARLSBAD, NM 88220.
9402811898765800082620	1 Timothy 6 LLC	PO Box 30598	Edmond	OK	73003-0010	Your item was delivered at 12:05 pm on August 23, 2021 in EDMOND, OK 73003.
9402811898765800082668	Walker Valorie Trst	PO Box 102256	Anchorage	AK	99510-2256	Your item was delivered at 10:33 am on August 30, 2021 in ANCHORAGE, AK 99501.
9402811898765800082651	The Toles Co LLC	PO Box 1300	Roswell	NM	88202-1300	Your item was delivered at 11:11 am on August 24, 2021 in ROSWELL, NM 88201.
9402811898765800082613	Strata Production Co	PO Box 1030	Roswell	NM	88202-1030	Your item was delivered at 11:34 am on August 23, 2021 in ROSWELL, NM 88201.
9402811898765800082972	Slash Four Enterprises Inc.	PO Box 1433	Roswell	NM	88202-1433	Your item was delivered at 10:23 am on August 25, 2021 in ROSWELL, NM 88201.
9402811898765800082279	Murchison Oil and Gas, LLC	7250 Dallas Pkwy Ste 1400	Plano	TX	75024-5002	Your item was delivered to the front desk, reception area, or mail room at 1:30 pm on August 23, 2021 in PLANO, TX 75024.
9402811898765800082934	Slash Exploration LP	PO Box 1973	Roswell	NM	88202-1973	Your item was delivered at 10:51 am on August 24, 2021 in ROSWELL, NM 88201.

Oxy - Closed Loop Gas Capture Cedar Canyon
Case No. 22150 Postal Delivery Report

9402811898765800082989	Siete Oil & Gas Corp	PO Box 2523	Roswell	NM	88202-2523	Your package will arrive later than expected, but is still on its way. It is currently in transit to the next facility.
9402811898765800082996	Scott Invst Corp	200 W 1st St Ste 648	Roswell	NM	88203-4677	Your package is moving within the USPS network and is on track to be delivered to its final destination. It is currently in transit to the next facility.
9402811898765800082903	Scott Exploration Inc.	200 W 1st St Ste 648	Roswell	NM	88203-4677	Your package is moving within the USPS network and is on track to be delivered to its final destination. It is currently in transit to the next facility.
9402811898765800082927	State Land Office	308 Old Santa Fe Trail	Santa Fe	NM	87501	Your item was picked up at a postal facility at 6:49 am on August 24, 2021 in SANTA FE, NM 87501.
9402811898765800082965	PXP Producing Co LLC	717 Texas St Ste 2100	Houston	TX	77002-2753	Your item departed our NORTH HOUSTON TX DISTRIBUTION CENTER destination facility on August 30, 2021 at 8:16 pm. The item is currently in transit to the destination.
9402811898765800082958	Phelps J. White III	PO Box 874	Roswell	NM	88202-0874	Your item was returned to the sender on August 23, 2021 at 12:10 pm in ROSWELL, NM 88201 because the address was vacant or the business was no longer operating at the location and no further information was available.
9402811898765800082910	Pete T. Balog	25812 S Dartford Dr	Sun Lakes	AZ	85248-6717	Your item arrived at the SANTA FE, NM 87504 post office at 8:23 am on August 27, 2021 and is ready for pickup.
9402811898765800082774	Permian Hunter Corp	215 W 100 S	Salt Lake City	UT	84101-1302	We attempted to deliver your item at 11:33 am on August 24, 2021 in SALT LAKE CITY, UT 84101 and a notice was left because an authorized recipient was not available.
9402811898765800082736	Paloma Blanca Well Service Inc.	PO Box 6251	Roswell	NM	88202-6251	This is a reminder to arrange for redelivery of your item or your item will be returned to sender.
9402811898765800082231	Mewbourne Oil Co.	PO Box 5270	Hobbs	NM	88241-5270	Your item was picked up at the post office at 4:02 pm on August 24, 2021 in HOBBS, NM 88240.
9402811898765800082781	Pabo Oil & Gas LLC	PO Box 1675	Roswell	NM	88202-1675	Your item was delivered at 12:39 pm on August 24, 2021 in ROSWELL, NM 88201.
9402811898765800082743	Murphy Petro Corp	PO Box 2545	Roswell	NM	88202-2545	Your item was delivered at 11:34 am on August 23, 2021 in ROSWELL, NM 88201.
9402811898765800082798	Mitchell Exploration Inc.	PO Box 2415	Midland	TX	79702-2415	This is a reminder to arrange for redelivery of your item or your item will be returned to sender.
9402811898765800082705	Hutchings Oil Co.	PO Box 1216	Albuquerque	NM	87103-1216	Your item was delivered at 9:55 am on August 23, 2021 in ALBUQUERQUE, NM 87103.
9402811898765800082767	Gail Balog	25812 S Dartford Dr	Sun Lakes	AZ	85248-6717	Your item arrived at the SANTA FE, NM 87504 post office at 11:56 am on August 28, 2021 and is ready for pickup.
9402811898765800082750	Energex Co	100 N Pennsylvania Ave	Roswell	NM	88203-4620	Your package is moving within the USPS network and is on track to be delivered to its final destination. It is currently in transit to the next facility.
9402811898765800082712	EMG Oil Properties	1000 W 4th St	Roswell	NM	88201-3038	Your item was delivered to an individual at the address at 11:19 am on August 23, 2021 in ROSWELL, NM 88201.
9402811898765800082873	Elk Oil Co.	PO Box 310	Roswell	NM	88202-0310	Your item was delivered at 12:21 pm on August 25, 2021 in ROSWELL, NM 88201.
9402811898765800082835	Devon Energy Production Company LP	333 W Sheridan Ave	Oklahoma City	OK	73102-5010	Your item was delivered at 9:35 am on August 23, 2021 in OKLAHOMA CITY, OK 73102.
9402811898765800082880	David J. Sorenson	PO Box 1453	Roswell	NM	88202-1453	Your item was delivered at 11:27 am on August 23, 2021 in ROSWELL, NM 88201.
9402811898765800082286	Bureau of Land Management	620 E Greene St	Carlsbad	NM	88220-6292	Your item was delivered to an individual at the address at 3:48 pm on August 23, 2021 in CARLSBAD, NM 88220.

Carlsbad Current Argus.

Affidavit of Publication

Ad # 0004880590

This is not an invoice

HOLLAND AND HART
POBOX 2208

SANTA FE, NM 87504

I, a legal clerk of the **Carlsbad Current Argus**, a newspaper published daily at the City of Carlsbad, in said county of Eddy, state of New Mexico and of general paid circulation in said county; that the same is a duly qualified newspaper under the laws of the State wherein legal notices and advertisements may be published; that the printed notice attached hereto was published in the regular and entire edition of said newspaper and not in supplement thereof on the date as follows, to wit:

08/24/2021

Legal Clerk

Subscribed and sworn before me this August 24, 2021:

State of WI, County of Brown
NOTARY PUBLIC

1-7-25

My commission expires

KATHLEEN ALLEN
Notary Public
State of Wisconsin

Ad # 0004880590
PO #:
# of Affidavits 1

This is not an invoice

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

The State of New Mexico, Energy Minerals and Natural Resources Department, Oil Conservation Division ("Division") hereby gives notice that the Division will hold public hearings before a hearing examiner on the following case. During the COVID-19 Public Health Emergency, state buildings are closed to the public and Division hearings will be conducted remotely. The public hearing for the following case will be electronic and conducted remotely. The hearing will be conducted on **Thursday, September 9, 2021, beginning at 8:15 a.m.** To participate in the electronic hearing, see the instructions posted below. The docket may be viewed at https://www.emnrd.nm.gov/ocd/hearing-info/ or obtained from Marlene Salvidrez, at Marlene.Salvidrez@state.nm.us. Documents filed in the case may be viewed at http://ocdimage.emnrd.state.nm.us/imaging/CaseFileCriteria.aspx. If you are an individual with a disability who needs a reader, amplifier, qualified sign language interpreter, or other form of auxiliary aid or service to attend or participate in a hearing, contact Marlene Salvidrez at Marlene.Salvidrez@state.nm.us, or the New Mexico Relay Network at 1-800-659-1779, no later than **August 29, 2021.**

Persons may view and participate in the hearings through the following link:

https://nmemnrd.webex.com/nmemnrd/onstage/g.php?MTID=e379adae1410a8aecfd0fe5582b1917ea
Event number: 146 427 9260
Event password: HxJBs523k3Y

Join by video: 1464279260@nmemnrd.webex.com
Numeric Password: 857180
You can also dial 173.243.2.68 and enter your meeting number

Join by audio: 1-844-992-4726 United States Toll Free
Access code: 146 427 9260

STATE OF NEW MEXICO TO:
All named parties and persons having any right, title, interest or claim in the following case and notice to the public.

(NOTE: All land descriptions herein refer to the New Mexico Principal Meridian whether or not so stated.)

To: All affected parties, including: Bureau of Land Management; Mewbourne Oil Co.; Murchison Oil and Gas, LLC; SMC OIL & Gas, Inc.; Balog Family Trust; Basin Operating Co.; Branex Resources Inc.; Centennial NM Partners; Chevron USA Inc.; David J. Sorenson; his heirs and devisees; Devon Energy Production Co., LP; Elk Oil Co.; EMG Oil Properties; Energex Co; Gail Balog, her heirs and devisees; Hutchings Oil Co.; Mitchell Exploration Inc.; Murphy Petro Corp; Pabo Oil & Gas LLC; Paloma Blanca Well Service Inc.; Permian Hunter Corp; Pete T. Balog, his heirs and devisees; Phelps J. White III, his heirs and devisees; PXP Producing Co LLC; State Land Office; Scott Exploration Inc.; Scott Invst Corp; Siete Oil & Gas Corp; Slash Exploration LP; Slash Four Enterprises Inc.; Strata Production Co; The Toles Co LLC; Walker Valorie Trst; 1 Timothy 6 LLC; BLM; COG Operating LLC; EOG Y Resources, INC.; Lonsdale Resources LLC; Maduro Oil & Gas LLC; MRC Permian Co.; NGL Water Solutions Permian, LLC; POGO Producing Co; Prime Rock Resources Asset Co LLC; Probity SWD, LLC; Tap Rock Resources LLC; Winchester Energy LLC; WPX Energy Permian LLC; XTO Energy, INC; and XTO Holdings LLC.

Case No. 22150: 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 proj-

ect ("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.

#4880590, Current Argus, August 24, 2021

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. 22150

AFFIDAVIT OF TONY TROUTMAN

I, Tony Troutman, of lawful age and being first duly sworn, declare as follows:

1. My name is Tony Troutman. I work for OXY USA, Inc. ("OXY"), as a petroleum geologist.

2. I have previously testified before the New Mexico Oil Conservation Division as an expert witness in petroleum geology.

3. I am familiar with the application filed by OXY in this case for approval of a closed loop gas capture injection pilot project in the Bone Spring formation, and I have conducted a geologic study of the lands in the subject area that is included in ***Exhibit A*** to OXY's application. My analysis and conclusions are summarized at pages 59-66 of the Exhibit.

4. 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 my analysis. *See* ***Exhibit A*** at 59-66.

5. Page 62 of ***Exhibit A*** depicts a type log for the project area, showing the proposed injection zone, adjacent oil and gas zones, and confining layers. The proposed injection zone is the 2nd Bone Spring Sand, a sub-unit of the larger Bone Spring Formation. Adjacent oil and gas zones are the overlying First Bone Spring Sand and Brushy Canyon Formation, and underlying 3rd Bone

BEFORE THE OIL CONSERVATION DIVISION
Santa Fe, New Mexico
Exhibit No. C
Submitted by: OXY USA Inc.
Hearing Date: September 09, 2021
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Spring Sand. Confining layers that will prevent migration of injected gas into adjacent oil and gas zones are the overlying 2nd Bone Spring Lime and underlying 3rd Bone Spring Lime.

6. Page 63 is a cross-section map depicting the location of three representative wells used to construct a cross-section across the pilot project area. The structure map in the upper right indicates that the 2nd Bone Spring Sand dips to the east and the cross-section illustrates that it maintains a consistent thickness across the project area. There is no evidence of faults, pinch-outs, or other potential pathways for out-of-zone migration indicated by the cross-sections or structural mapping.

7. Page 64 is a structure map on the top of the 2nd Bone Spring Sand that shows the structure gently dipping to the east. There is no evidence of faults, pinch-outs, or other potential pathways for out-of-zone migration indicated by the structure map.

8. Page 65 is a thickness map and reflects that the 2nd Bone Spring Sand maintains a consistent thickness across the pilot project area of between about 400-450 feet. There is no evidence of faults, pinch-outs, or other potential pathways for out-of-zone migration indicated by the thickness map.

9. In this proposed CLGC Project, the Cedar Canyon 21 Fed Com #023H well, the Cedar Canyon 28 Fed Com #8H well, and the Cedar Canyon 29 Fed Com #2H well will inject into the 2nd Bone Spring Sand at an average true vertical depth of approximately 8,500 feet across the length of the well's horizontal wellbore. The proposed injection interval is an unconventional reservoir composed of very fine-grained quartz-rich and brittle siltstone. *See* ***Exhibit A*** at 60. Low-permeability barriers to fluid flow exist within the Bone Spring Formation above and below the 2nd Bone Spring Sand. Below the 2nd Bone Spring Sand is the 3rd Bone Spring Lime, a low permeability, approximately 750-foot thick carbonate-rich interval which provides isolation from

the underlying productive 3rd Bone Spring Sand. Above the 2nd Bone Spring Sand, the 2nd Bone Spring Lime consists of carbonate mudstone and dolomudstone that has very low permeabilities and an average thickness of 500 feet and provides isolation from the overlying productive 1st Bone Spring Sand and Brushy Canyon Formation. Above the Bone Spring Formation is the Delaware Mountain Group and impermeable anhydrite, gypsum, and salt layers of the Castile, Salado, and Rustler Formations. Due to the thickness of multiple impermeable rock layers above the injection reservoir there is little possibility for migration upward into freshwater aquifers where they exist.

10. Laterally, the injection will be contained in the reservoir volume that has been previously and partially depleted by the CLGC wells. The low-permeability reservoir will be the primary constraint on movement of the injection gas and is expected to contain the injected gas within the pilot project area. *See* ***Exhibit A*** at 66.

11. My analysis concludes that the 2nd Bone Spring Sand in this area is suitable for the proposed CLGC Project and that there are geologic barriers that will contain the proposed injection within the 2nd Bone Spring Sand. *See* ***Exhibit A*** at 66.

12. I have 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.

13. In my opinion, the granting of OXY's application in this case is in the best interest of conservation, the prevention of waste, and protection of correlative rights.

FURTHER AFFIANT SAYETH NOT.

Tony Troutman,

STATE OF TEXAS)
)
COUNTY OF Harris)

SUBSCRIBED and SWORN to before me this 1st day of Sept, 2021 by Tony Troutman.

NOTARY PUBLIC

My Commission Expires:

02-08-2025

NUBIA SMITH
My Notary ID # 130998946
Expires February 8, 2025

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. 22150

AFFIDAVIT OF XUEYING XIE

I, Xueying Xie, of lawful age and being first duly sworn, declares as follows:

1. My name is Xueying Xie and I am employed by Oxy USA Inc. ("OXY") as a reservoir engineer.

2. I have previously testified before the New Mexico Oil Conservation Division as an expert witness.

3. I am familiar with the application filed by OXY in this case and the Division guidance regarding closed loop gas capture injection (CLGC) projects such as this one. I have conducted an engineering study of the reservoir to evaluate the potential effects of the proposed temporary injection on the reservoir and future production. The conclusions I have drawn from my analysis are summarized in pages 66-78 in ***Exhibit A*** attached to OXY's application.

4. I have 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.

5. The CLGC project will inject produced gas into horizontal wells with 5000 ft laterals and into the productive zone of the 2nd Bone Spring Sand formation. We applied simulation modeling techniques to investigate gas movement in the injection zone and any potential impacts on production performance of the CLGC wells and direct offset wells. The

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Santa Fe, New Mexico
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Submitted by: OXY USA Inc.
Hearing Date: September 09, 2021
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model utilized data from our Cedar Canyon Section 16 Gas EOR Project ("CC 16 EOR Project") for verification. The CC 16 EOR Project began in 2017. It is located only 1-2 miles away from the Cedar Canyon CLGC project area. The bottom left box of page 70 shows the reservoir properties and conditions of the Bone Spring formation at the CC 16 EOR Project. In general, the 2nd Bone Spring reservoir in the EOR project and the CLGC project in the Cedar Canyon area have very similar reservoir properties. The section, location, and well layout for the CC 16 EOR Project are shown on page 69. In this EOR project, Cedar Canyon 16-7H injected produced gas for five months in 2017 at a rate of 7 mmscf/d. After the five months of EOR gas injection, the final surface tubing head pressure was 4100 psi and bottom hole pressure was about 5000 psi. The simulation model incorporated both the primary production history of wells in the CC 16 EOR Project area and the EOR gas injection history with gas communication occurring between the EOR injection well and offset producing wells. During the first three months of EOR gas injection, there was no observed gas communication. However, after three months of EOR gas injection, there was gas communication in offset producers and the model was able to predict it. This gives us confidence in the ability of the model to predict impacts on offset wells resulting from CLGC operations.

6. The reservoir model is a full section model with five wells. The top right of page 70 shows the 3D model grid. It has 56 layers and over a million cells. The four plots in the bottom right show history match results of all five wells in the CC 16 EOR project area. The dots represent historical field data and the curves are modeling results. The first three plots show the primary production match from 2013 to 2017 for all five wells in the section. The green plot shows oil rate match, the blue plot shows water rate match, and the red plot shows gas rate

match. The bottom right plot shows gas injection bottom hole pressure match of EOR gas injection in 2017. The model shows a good match for all rates and pressure.

7. With the high EOR gas injection rates and injection pressures in the CC 16 EOR Project, the reservoir simulation model was created to capture the gas communication between injection wells and the offset producers. This modeling improved our understanding of the complexity of connected fractures based on actual field response. The model was used to simulate the effects of CLGC operations in the Cedar Canyon areas, since the reservoirs have similar properties. We believe the model should be able to predict communication caused by CLGC operations because it was "tuned" based on actual gas communication between wells. First, we created a base case for normal production without any gas injection. Then we ran numerous gas injection cases to simulate CLGC operations and compared those with the base case to determine the impact on well production rate and recovery in both CLGC wells and offset wells. To further validate our injection rate assumptions, we integrated the reservoir model with a Prosper wellbore model to predict the injection rate at a wellhead injection pressure of 1200 psi. The results are shown on the plot of page 72. For a 5000 ft lateral length well (representative of our proposed Cedar CanyonCLGC wells), 1.5 (rounded to 2) mmscf/day is the predicted max injection rate. It declines to about 50% of the initial value after three weeks. Despite the injection rate decline over time, Oxy ran all cases in the model with flat injection rates to simulate worst-case scenarios. The results of these model runs are shown on page 75 and discussed more fully below.

8. Reservoir modeling indicates the horizontal movement of injected gas is anticipated to be approximately 100 feet or less from each CLGC wellbore within the Bone Spring formation. *See* ***Exhibit A*** at 73. This is illustrated by comparing gas

saturation pre-injection and post-injection. The top left plot on page 73 shows pre-injection gas saturation. The wellbores are depicted as east-west lines, and the numerous hydraulic fractures created in each wellbore are shown as NE-SW angled lines. The blue color shows no gas while the cyan color shows gas exists in the fractures. A warmer color indicates a higher gas saturation. The middle plot shows gas saturation after one week of injection. The gas injected into the middle well and the fractures near wellbore show a warmer color. The bottom plots have a magnified view of the CLGC well gas saturation for a clearer comparison. We can clearly see that the fractures near wellbore in the injection case have a warmer color than those of the pre-injection case. Additionally, further away from the CLGC wellbore, there is no gas saturation change in the factures even though there are connected fractures between wells. This is because the injected gas volume during CLGC operations is too small to move very far away from the CLGC wellbore. And even when we have fracture communication between wells, there is not very high conductivity for immediate gas communication as was observed in our CC 16 EOR project which had a much higher injection rate and pressure. The gas storage injection in Cedar Canyon will occur at a much lower rate (< 2mmscf/d) for a shorter period of time with much lower tubing head pressure (1200psi) compared with CC 16 EOR Project in 2017, so it is not unexpected that the model shows no gas communication. Finally, after a long period of production following a gas storage event, the gas saturation in the near wellbore of CLGC wells is restored to pre-injection values as shown in the plot on the upper right of page 73. This is because the majority of injected gas has been recovered.

9. The pressure map plots of page 74 tell the same story as the gas saturation map plots. With gas injection, the pressure increases only in the fractures nearest the wellbore within 100 feet of the CLGC well.

10. We modeled all possible CLGC scenarios including different well spacing (from 4-8 Wells Per Section, or "WPS"), single well injection, multi-well injection, and a worst case with a higher injection rate and a longer injection period than historical upsets. The modeling results are summarized in the table on page 75 and in each case show no impact. Cedar Canyon wells have well spacing of 4-6 WPS, and the model scenarios even tested narrower spacing of 8 WPS which still shows no impact. For the injection parameters, all possible scenarios—including the worst-case gas storage scenario—have much lower injection volumes and injection pressures compared to CC 16 EOR Project. In conclusion, the analysis indicates that there will be no change in the oil recovery from each of its proposed injection wells or from any of the offsetting wells because of CLGC operations. *See id.* at 75.

11. As a cross-check of the model results, I prepared an analysis of the expected gas storage capacity in the fracture network of the CLGC well relative to the gas injection volumes for the worst-case injection scenario lasting twenty days. *See* ***Exhibit A*** at 76. My 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 for gas storage within the project area.

12. Fracture dimensions are predicted by a fracture model software package called Gohfer, which is based on reservoir geo-mechanical properties and actual well

hydraulic fracturing procedure history matching. The fracture dimensions for a a 2nd Bone Spring Sand well are shown at page 77. The table on the right show Stimulated Reservoir Volume (SRV) for each individual CLGC well, which is around 900 million cubic feet.

13. In my analysis, examining the available geologic and engineering data, I have determined that the total recoverable volume of hydrocarbons from the reservoir will not be adversely affected by the pilot project and that the gas composition of the injected gas will not damage the reservoir. *See* ***Exhibit A*** at 78.

14. Pages 66 through 78 of **Exhibit A** were either prepared by me or compiled under my direction and supervision.

FURTHER AFFIANT SAYETH NOT.

Xueying Xie

STATE OF TEXAS)
)
COUNTY OF Harris)

SUBSCRIBED and SWORN to before me this 7th day of September, 2021, by XUEYING XIE.

IGNACIO BONILLA NOTARY PUBLIC STATE OF TEXAS NOTARY ID 130159029 MY COMM. EXP. 04-08-2023

NOTARY PUBLIC

My Commission Expires:
04/08/2023