

Education and Work History – Kelley Montgomery

Education and Professional Certifications

BS Mechanical Engineering – Texas A&M University 1991
Registered Professional Engineer in Texas (1998)
23 years in the Oil and Gas Industry

Work History

1991-1995: Production Engineer (5 years)
1995 – 2011: Environmental Engineer – Oil & Gas (16 years)
2011 – 2012: Production Engineer (1 year)
2012 – Present: Regulatory Consultant (1.5 years)



Tax Incentive: Legal Description of Project Area Location

TOWNSHIP 18 SOUTH, RANGE 37 EAST, NMPM

Section 13:	W/2, SE/4
Section 14:	All
Section 23:	All
Section 24:	All
Section 25:	All
Section 26:	E/2NE/4, NW/4NE/4
Section 36:	E/2, E/2NW/4

TOWNSHIP 18 SOUTH, RANGE 38 EAST, NMPM

Section 17:	S/2NW/4, SW/4
Section 18:	NE/4 and S/2
Section 19:	All
Section 20:	All
Section 21:	SW/4, W/2SE/4, SE/4SE/4
Section 28:	All
Section 29:	All
Section 30:	All
Section 31:	All
Section 32:	All
Section 33:	W/2, NE/4, W/2SE/4, and NE/4SE/4

Tax Incentive: North Hobbs Unit Project Data

Total acres in the Project Area: *10,649.53 acres, more or less*

Subject Pool and formation:

Hobbs Grayburg-San Andres Pool (31920)

Grayburg and San Andres Formations

Project:

Unit was initially approved as the North Hobbs Grayburg-San Andres Pressure Maintenance Project under Order R-6199 (issued November 1979). In October 2001, under R-6199-B, Commission approved CO2 tertiary injection project for a portion of the North Hobbs Unit called the "Phase I Area."

Current Operation: *Waterflood; CO2 Flood in current Phase I Area*

Proposed Operation:

Expansion of current tertiary recovery project involving the application of a carbon dioxide miscible fluid displacement mechanism. Fluids to be injected include produced water, carbon dioxide, and produced gases including methane, natural gas liquids and H2S.

Tax Incentive: Project Description

Capital cost of additional facilities: *\$280 million*

Total Project Capital Costs: *\$425 million*

Estimated total value of the additional production that will be recovered as a result of this tertiary recovery project:

An additional 54 mmbbls of oil at a gross revenue estimated at \$4.5 billion over the life of the project (approximately 40 years)

Anticipated date of commencement of injection: *First Quarter 2016*

The type of fluid to be injected and the anticipated volumes:

*Water injection rate of 300,000 BWPD;
CO2 injection rate of 100 MMCFD; and
Rejection of CO2 and produced gases of 150 MMCFD*

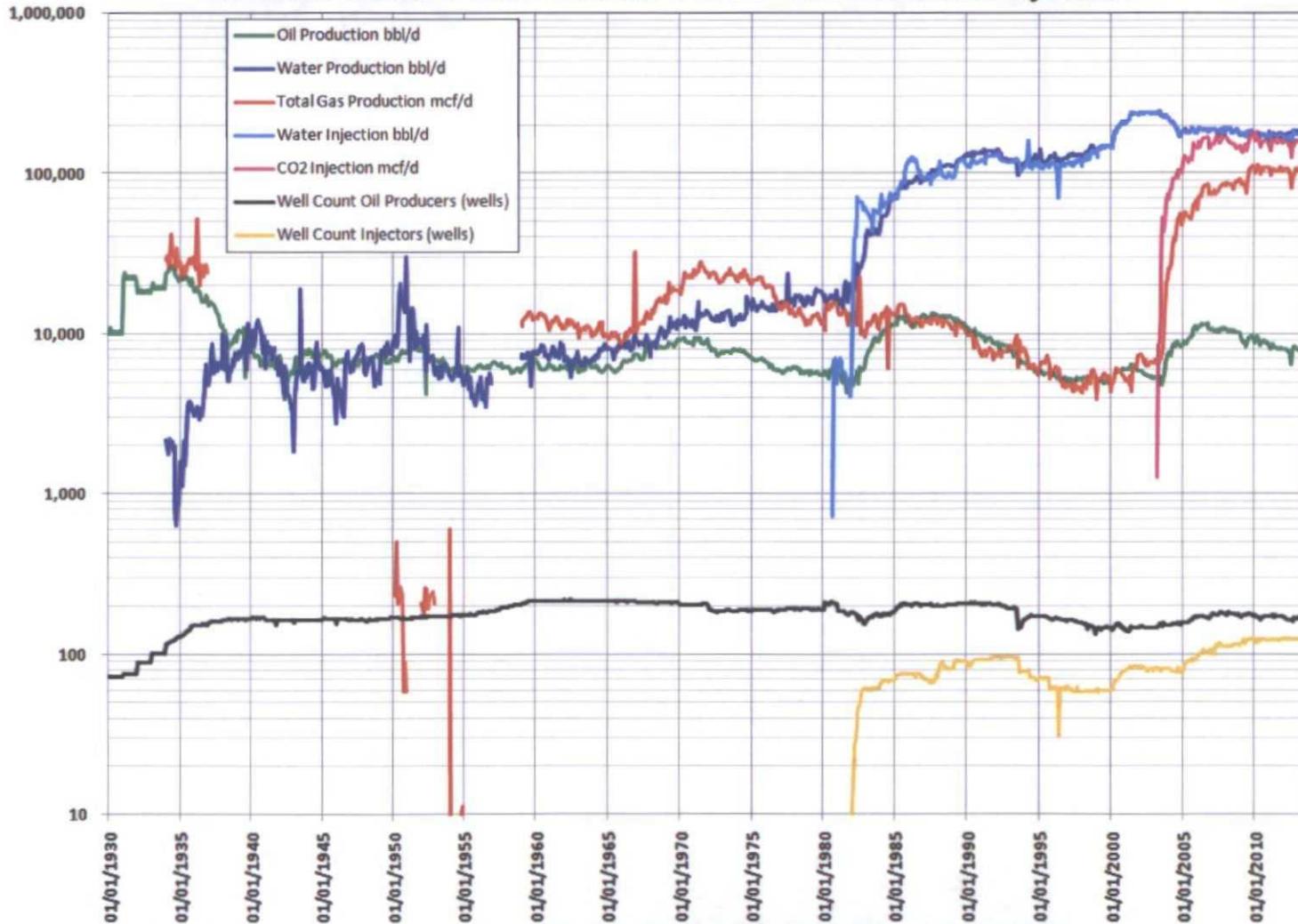
Tax Incentive: List of Current Injection and Production Wells

See Section III of Oxy's C-108 Application.



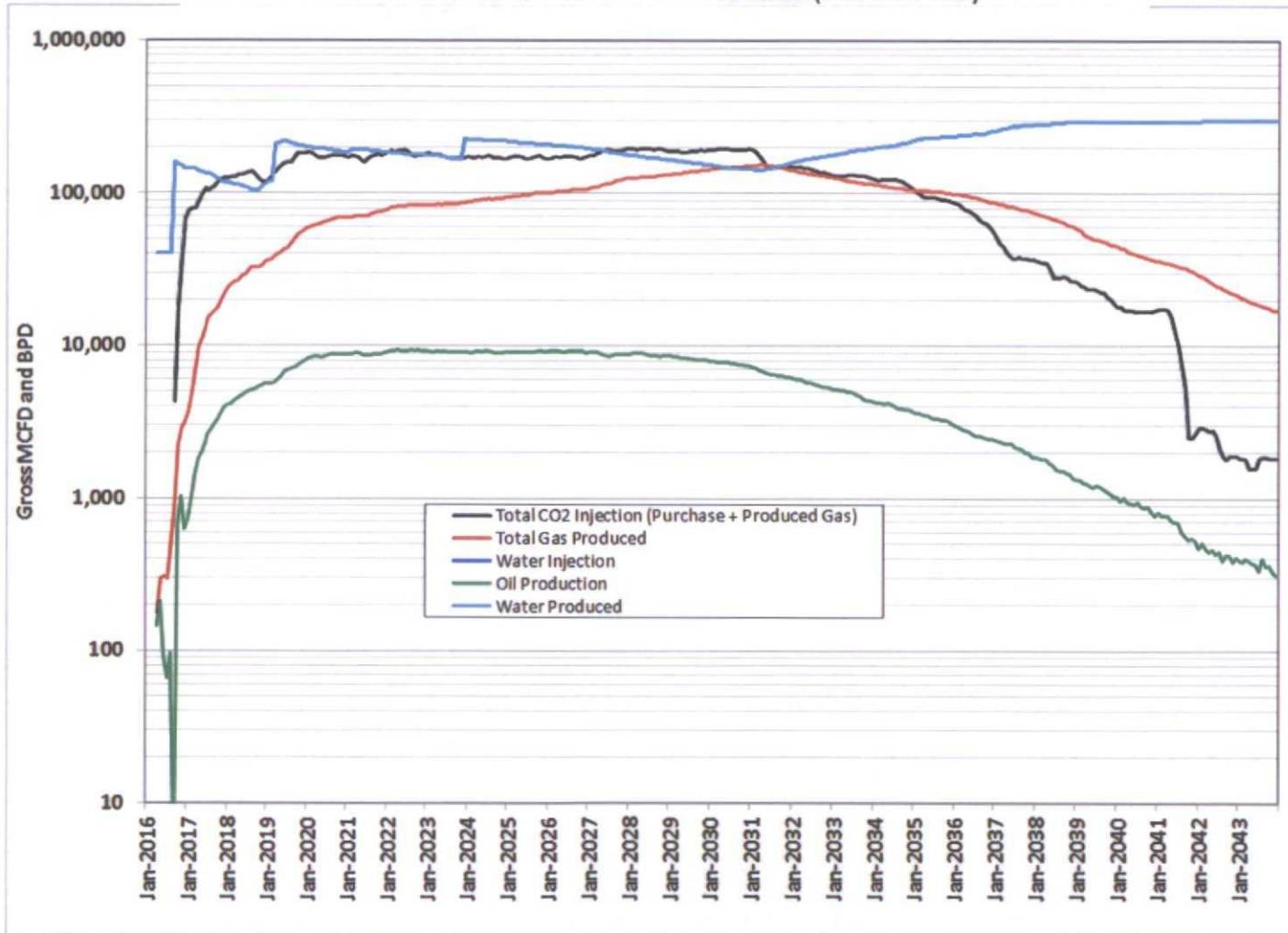
Tax Incentive: North Hobbs Unit Production –Historical

Exhibit F: North Hobbs Unit Historical Production and Injection



Tax Incentive: North Hobbs Unit Production –Forecast

Exhibit G: North Hobbs Unit Forecast (Incremental)



C-108 Proposed 163 Injectors

22 Existing Wells to Convert to CO2 Injection:

All have Surface Casing Cemented to Surface

16 Wells are constructed with Surface and Production Casing

- 6 wells have Production Casing Cemented to Surface
- 10 wells have at least 1070 ft of cement above unitized interval

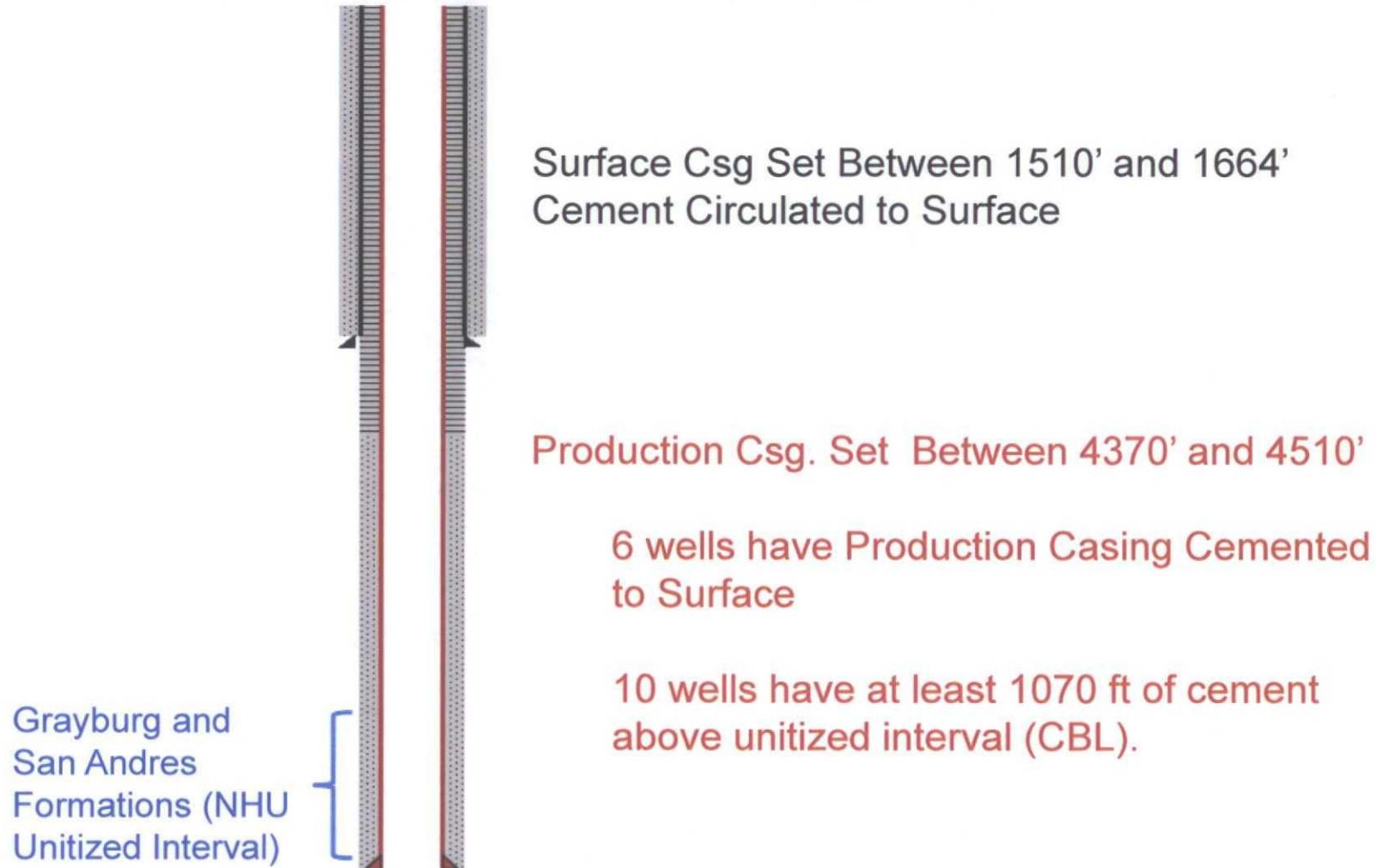
3 Wells are constructed with Surface, Intermediate, Production Casing and a Full Liner

- All wells have at least 1000 ft. of cement above unitized interval

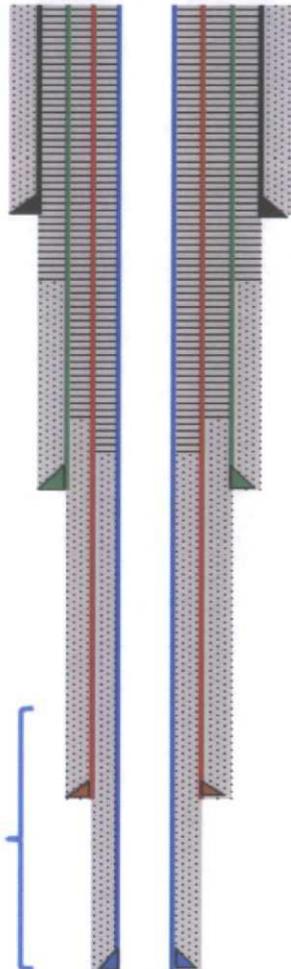
3 Wells are constructed with Surface, Intermediate, Production Casing and Partial Liner

- Wells have at least 660 ft. of cement above unitized interval

Existing Injectors with Surface and Production Casing (16 Wells)



Existing Injectors with Surface, Intermediate, Production Casing and Full Liner (3 Wells)



Surface Csg Set Between 205' and 296'
Cement Circulated to Surface

Intermediate Csg Set Between 2750' and 2760'
There is >1600' of cement above casing shoe(s)

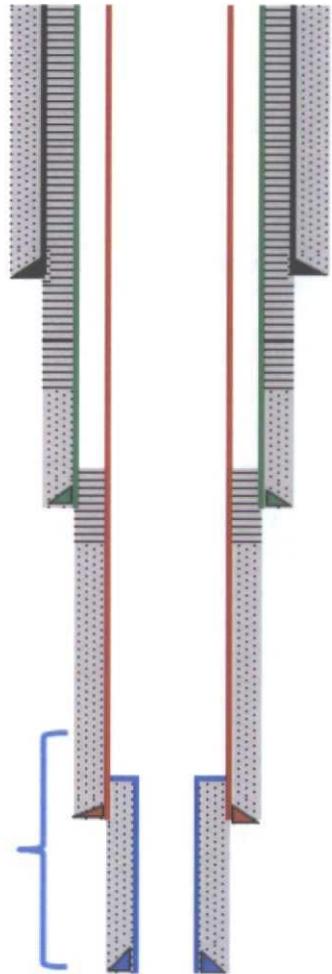
Production Csg. Set Between 3925' and 3968'
Top of Cement from 2575' to Surface

There is >1000' of cement above unitized Interval

Full Liner Set Between 4226' and 4244'
There is >1000' of cement above unitized interval

Grayburg and
San Andres
Formations
(NHU Unitized
Interval)

Existing Injector with Surface, Intermediate, Production Casing and Partial Liner (2 Wells)



Surface Csg Set Between 242' and 246'
Cement Circulated to Surface

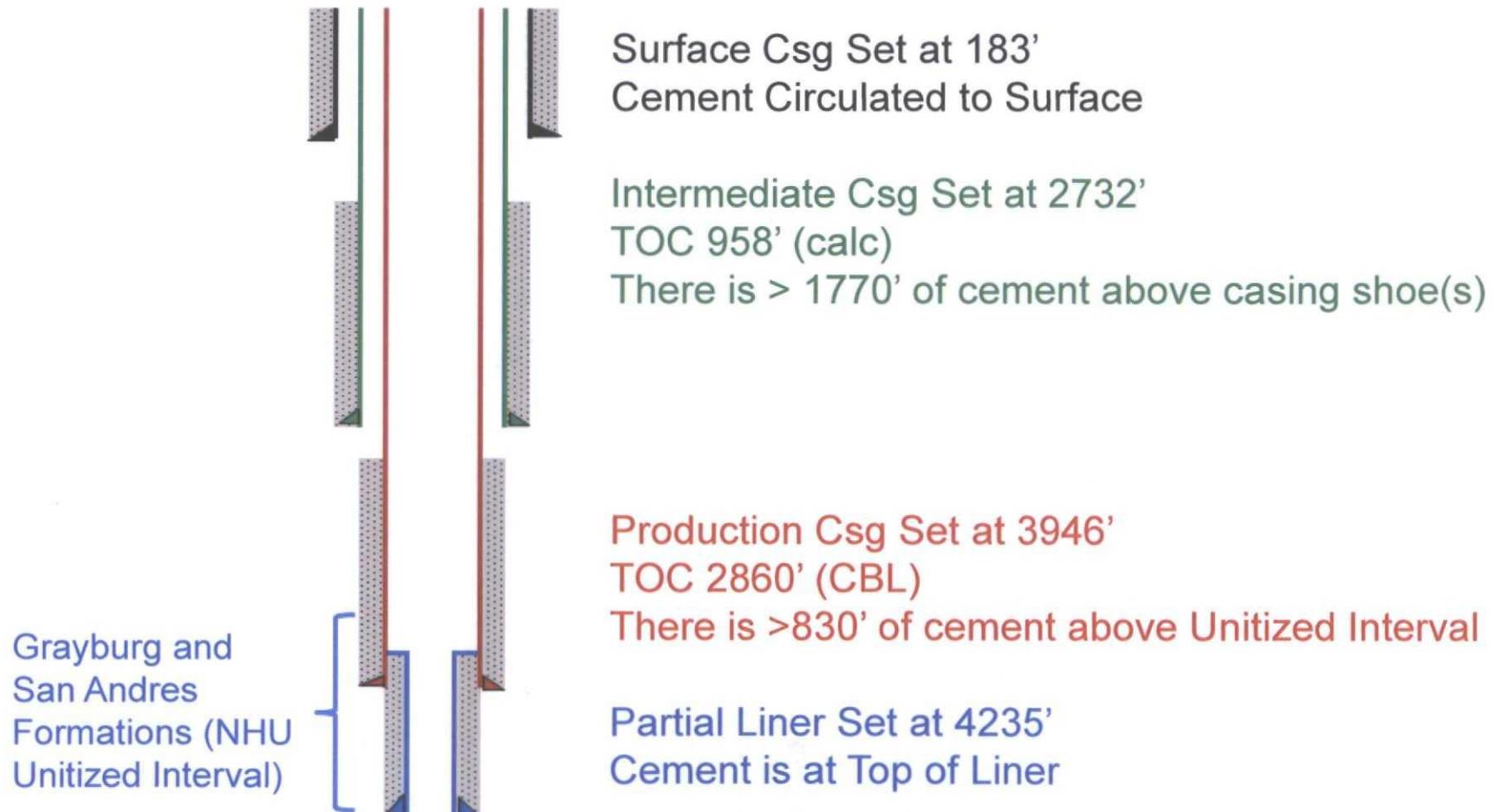
Intermediate Csg Set Between 2750' and 2800'
There is > 440' of cement above casing shoe(s)

Production Csg Set Between 3955' and 3975'
There is >660' of cement above unitized interval

Grayburg and
San Andres
Formations
(NHU Unitized
Interval)

Partial Liner Set Between 4219' and 4230'
Cement is at Top of Liner

Existing Injector with Surface, Intermediate, Production Casing and Partial Liner (API 30-025-07545)

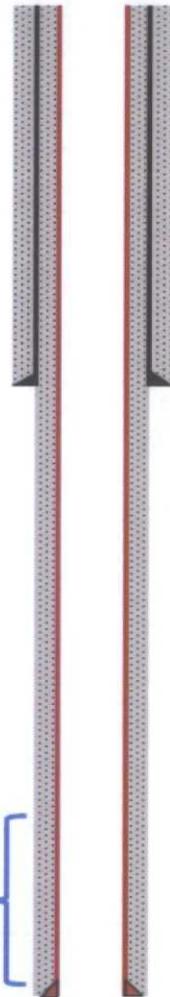


C-108 Proposed 163 Injectors

141 Wells are Proposed New Drills:

- Proposed Surface Casing Set at 1550' and Cemented to Surface
- Proposed Production Casing Set at 4500' and Cemented to Surface

Proposed New Drill Injectors (141 Wells)



Proposed 141 Wellbores

Proposed Surface Csg Set at 1550'
Cement Circulated to Surface

Proposed Production Csg. Set at 4500'
Cement Circulated to Surface

Grayburg and
San Andres
Formations (NHU
Unitized Interval)

Area of Review Analysis

See Section VI of Oxy's C-108 Application



NHU Area of Review Methodology

(C-108 Binder)

OCCIDENTAL PERMIAN LTD.
NORTH HOBBS GRAYBURG-SAN ANDRES UNIT
AREA OF REVIEW METHODOLOGY

Area of Review conducted for all wells that penetrate the Grayburg-San Andres formation or deeper within an area that encompasses the North Hobbs Grayburg San Andres Unit Project Area plus an area that encompasses 1/2 mile outside the Project Area.

~ 699 Total Wells in Area of Review

~ 67 Wells have not been previously reviewed by NMOCD and well construction data is included

~ 58 wells are P&A'd and have not been previously submitted to NMOCD for review - wellbore diagrams are included

~ 52 Wells have previously been reviewed by NMOCD, but have changed status - details of changes included

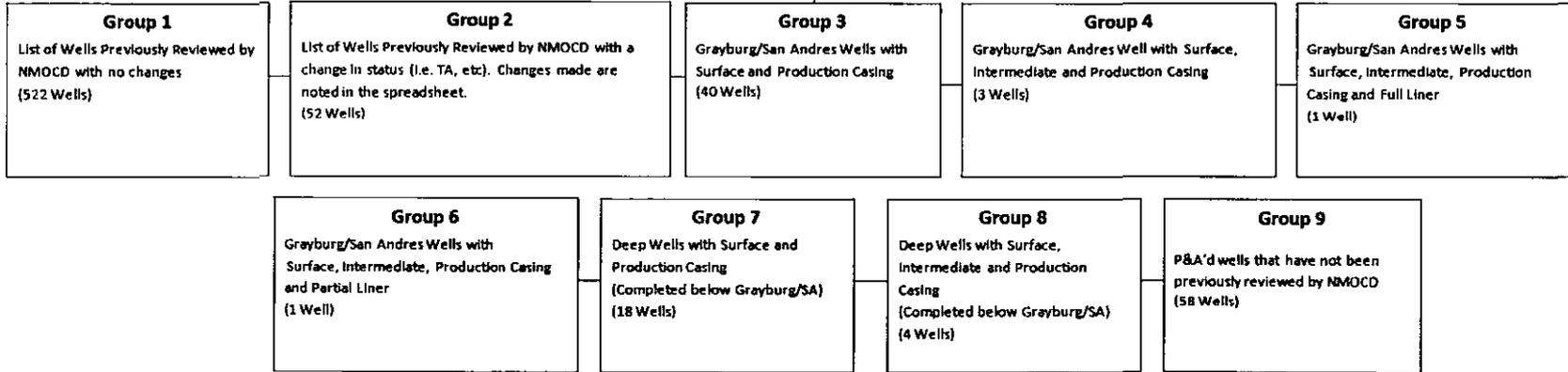
~ 522 Wells have been previously reviewed by NMOCD and have not changed status

Gathered NMOCD and Oxy Data on all wells within Area of Review

To analyze the number of wells in the Area of Review, wells were divided into 9 Groups.

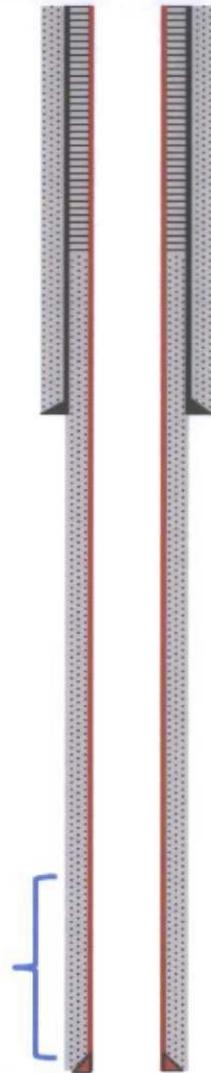
Criteria:

- Protection of Fresh water was based on depth casing was set, number of strings of casing and amount of cement. Freshwater sands (Ogallala) in Area of Review ranged from depths beginning at 40 ft. down to an approximate depth of 250ft.
- Injectant was confined if there was adequate cement above the Grayburg and San Andres Formations.



Area of Review

Example Wellbore Schematic (Group 3 – 40 Wells)



Surface Csg Set Between 1467' and 1655'
Cement Circulated to Surface

Production Csg. Set Between 4304' and 5161' (MD)
Top of Cement ranges from 1021' to Surface

There is >2600' of cement above the Unitized Interval

Grayburg and
San Andres
Formations
(NHU Unitized
Interval)

Updating Area of Review on Future Injection Wells

Current: For injection wells where injection begins > 3 years after date of approved injection order, certify no changes to AOR or submit any changes.

Proposal: For any injection well covered by this application in which tertiary injection operations commence more than 5 years after approval of this request, the operator shall submit to the Division either:

- (i) a statement certifying that there have been no substantive changes to the information furnished in support of this application concerning the status or construction of any well that penetrates the injection interval within the on half ($\frac{1}{2}$) mile area of review around the injection well; or
- (ii) A statement describing any substantive changes.

This statement shall be submitted to the Division's Santa Fe office within a period no more than twelve months and no less than sixty days before injection operations commence in the well.