

**Occidental Permian Ltd.
South Hobbs CO2 Project**

Form C-108

April 2013

BEFORE THE OIL CONSERVATION
COMMISSION
Santa Fe, New Mexico
Exhibit No. 1
Submitted by: OXY
Hearing Date: May 9, 2013



APPLICATION FOR AUTHORIZATION TO INJECT

- I. PURPOSE: ☒ Secondary Recovery ☒ Pressure Maintenance ☐ Disposal ☐ Storage
Application qualifies for administrative approval? ☐ Yes ☐ No
- II. OPERATOR: OCCIDENTAL PERMIAN LTD.
ADDRESS: P.O. BOX 4294 HOUSTON, TX 77210
CONTACT PARTY: KELLEY MONTGOMERY (OXY) PHONE: 713-366-5716
- III. WELL DATA: Complete the data required on the reverse side of this form for each well proposed for injection.
Additional sheets may be attached if necessary.
- IV. Is this an expansion of an existing project? ☒ Yes ☐ No
If yes, give the Division order number authorizing the project: R-4934
- V. Attach a map that identifies all wells and leases within two miles of any proposed injection well with a one-half mile radius circle drawn around each proposed injection well. This circle identifies the well's area of review.
- VI. Attach a tabulation of data on all wells of public record within the area of review which penetrate the proposed injection zone. Such data shall include a description of each well's type, construction, date drilled, location, depth, record of completion, and a schematic of any plugged well illustrating all plugging detail.
- VII. Attach data on the proposed operation, including:
1. Proposed average and maximum daily rate and volume of fluids to be injected;
 2. Whether the system is open or closed;
 3. Proposed average and maximum injection pressure;
 4. Sources and an appropriate analysis of injection fluid and compatibility with the receiving formation if other than reinjected produced water; and,
 5. If injection is for disposal purposes into a zone not productive of oil or gas at or within one mile of the proposed well, attach a chemical analysis of the disposal zone formation water (may be measured or inferred from existing literature, studies, nearby wells, etc.).
- *VIII. Attach appropriate geologic data on the injection zone including appropriate lithologic detail, geologic name, thickness, and depth. Give the geologic name, and depth to bottom of all underground sources of drinking water (aquifers containing waters with total dissolved solids concentrations of 10,000 mg/l or less) overlying the proposed injection zone as well as any such sources known to be immediately underlying the injection interval.
- IX. Describe the proposed stimulation program, if any.
- *X. Attach appropriate logging and test data on the well. (If well logs have been filed with the Division, they need not be resubmitted).
- *XI. Attach a chemical analysis of fresh water from two or more fresh water wells (if available and producing) within one mile of any injection or disposal well showing location of wells and dates samples were taken.
- XII. Applicants for disposal wells must make an affirmative statement that they have examined available geologic and engineering data and find no evidence of open faults or any other hydrologic connection between the disposal zone and any underground sources of drinking water.
- XIII. Applicants must complete the "Proof of Notice" section on the reverse side of this form.
- XIV. Certification: I hereby certify that the information submitted with this application is true and correct to the best of my knowledge and belief.

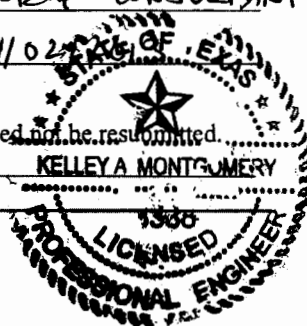
NAME: KELLEY MONTGOMERY TITLE: REGULATORY CONSULTANT

SIGNATURE: Kelley A Montgomery DATE: 04/02/04

E-MAIL ADDRESS: KELLEY_MONTGOMERY@OXY.COM

- * If the information required under Sections VI, VIII, X, and XI above has been previously submitted, it need not be resubmitted.
Please show the date and circumstances of the earlier submittal: _____

DISTRIBUTION: Original and one copy to Santa Fe with one copy to the appropriate District Office



C-108 Application
Occidental Permian Ltd.
South Hobbs G/SA Unit
Lea County, New Mexico

- I. This is a pressure maintenance project.
- II. Occidental Permian Ltd. (157984)
P.O. Box 4294
Houston, TX 77210
Contact Party: Kelley Montgomery, (Oxy) 713-366-5716
- III. Injection well data sheets/wellbore schematic diagrams have been attached for each injection well covered by this application. The well information has also been summarized in tabular form.
- IV. This project is an expansion of an existing waterflood project to include the injection of CO₂ and produced CO₂.
- V. Two maps are attached. The South Hobbs (Grayburg San Andres) unit Area of Review Map shows all wells within 2 miles of any proposed injection well. A second map identifies all leases within 2 miles of any proposed injection well.

A separate map with a ½ mile radius circle drawn around each proposed injection well has been included in the Area of Review binder.
- VI. The area of review is attached in a separate binder. If cement tops were not available, the top of cement was calculated using 1.32 cubic feet/sack of cement and 70% fill.
- VII.
 1. Attached in Application
 2. This will be a closed system.
 3. Attached in Application
 4. NA
 5. NA
- VIII. See attached signed statement on geologic data for the Grayburg and San Andres formations.
- IX. Acid treatment of injection interval may be performed during well workover (approximately 4000 gal. of 15% HCL)

- X. Logs were filed for the existing wells at the time of drilling. Logs will be filed on all newly drilled wells in the project as they are drilled.
- XI. Attached are two water analyses from fresh water wells located in Section 8, T-19S, R-38E and in Section 5, T-19S, R-38E.
- XII. NA. This is a pressure maintenance project, not a disposal well.
- XIII. Proof of notice is included.

List of Injectors in South Hobbs Unit Project

53 Total Injectors

No.	API Number	Section	Unit Letter	Township & Range	Footage Location	Proposed Injectants Purchased CO2/Water or Produced Gas/CO2/Water	Current Status
SHU 128	30-025-28332	3	D	19-S ; 38-E	335 FNL & 520 FWL	Purchased CO2/Water	Active Injector
SHU 240	30-025-35342	34	M	18-S ; 38-E	571 FSL & 1302 FWL	Purchased CO2/Water	Active Producer
SHU 36	30-025-07588	3	F	19-S ; 38-E	1980 FNL & 1980 FWL	Purchased CO2/Water	Active Injector
SHU 37	30-025-07584	3	G	19-S ; 38-E	1980' FNL & 2310' FEL	Purchased CO2/Water	P&A'd Injector
SHU 188	30-025-28982	5	K	19-S ; 38-E	1493 FSL & 1802 FWL	Produced Gas/CO2/Water	Active Producer
SHU 189	30-025-29085	5	J	19-S ; 38-E	1685 FSL & 2475 FEL	Produced Gas/CO2/Water	Active Producer
SHU 190	30-025-29082	5	I	19-S ; 38-E	1568 FSL & 1105 FEL	Produced Gas/CO2/Water	Active Producer
SHU 191	30-025-28983	4	L	19-S ; 38-E	1585 FSL & 395 FWL	Produced Gas/CO2/Water	Active Producer
SHU 140	30-025-28343	4	L	19-S ; 38-E	1485 FSL & 1245 FWL	Produced Gas/CO2/Water	Active Producer
SHU 141	30-025-28344	4	K	19-S ; 38-E	1478 FSL & 2595 FWL	Produced Gas/CO2/Water	Active Producer
SHU 142	30-025-28345	4	O	19-S ; 38-E	1310 FSL & 1370 FEL	Produced Gas/CO2/Water	Active Producer
SHU 145	30-025-28348	3	N	19-S ; 38-E	577 FSL & 1984 FWL	Purchased CO2/Water	Active Producer
SHU 71	30-025-07670	9	E	19-S ; 38-E	1650 FNL & 990 FWL	Produced Gas/CO2/Water	TA'd Injector
SHU 63	30-025-07662	9	C	19-S ; 38-E	660 FNL & 1980 FWL	Produced Gas/CO2/Water	Active Injector
SHU 154	30-025-28357	9	B	19-S ; 38-E	1163 FNL & 2600 FEL	Produced Gas/CO2/Water	Active Producer
SHU 155	30-025-28358	9	B	19-S ; 38-E	1158 FNL & 1568 FEL	Produced Gas/CO2/Water	Active Producer
SHU 156	30-025-28359	9	H	19-S ; 38-E	1370 FNL & 330 FEL	Produced Gas/CO2/Water	Active Producer
SHU 83	30-025-07668	9	J	19-S ; 38-E	1980 FSL & 1980 FEL	Produced Gas/CO2/Water	TA'd Injector
SHU 91	30-025-20047	9	P	19-S ; 38-E	990 FSL & 330 FEL	Produced Gas/CO2/Water	TA'd Producer
COOP 2	30-025-28305	4	D	19-S ; 38-E	645 FNL & 453 FWL	Purchased CO2/Water	Active Injector
COOP 3	30-025-28306	4	C	19-S ; 38-E	645 FNL & 2045 FWL	Purchased CO2/Water	Active Injector
COOP 4	30-025-28307	4	A	19-S ; 38-E	494 FNL & 1025 FEL	Purchased CO2/Water	Active Injector
COOP 5	30-025-28308	34	L	18-S ; 38-E	1980 FSL & 646 FWL	Purchased CO2/Water	Active Injector
COOP 6	30-025-28309	34	E	18-S ; 38-E	1950 FNL & 535 FWL	Purchased CO2/Water	Active Injector
COOP 9	30-025-28968	34	A	18-S ; 38-E	717 FNL & 651 FWL	Purchased CO2/Water	Active Injector
COOP 10	30-025-28969	34	L	18-S ; 38-E	2564 FSL & 1607 FWL	Purchased CO2/Water	Active Injector
11	30-025-28970	34	L	18-S ; 38-E	2500 FSL & 1660 FWL	Purchased CO2/Water	Active Injector
COOP 12	30-025-28971	34	N	18-S ; 38-E	636 FSL & 2348 FWL	Purchased CO2/Water	Active Injector
COOP 13	30-025-28972	3	B	19-S ; 38-E	505 FNL & 2560 FEL	Purchased CO2/Water	Active Injector
SHU 209	30-025-29522	8	D	19-S ; 38-E	265 FNL & 1090 FEL	Produced Gas/CO2/Water	Active Injector
SHU 92R	TBD	10	M	19-S ; 38-E	660 FSL & 600 FWL	Produced Gas/CO2/Water	Proposed New Drill - Vertical
SHU 95R	TBD	10	O	19-S ; 38-E	990 FSL & 2310 FEL	Produced Gas/CO2/Water	Proposed New Drill - Vertical
VP1	TBD	6	G	19-S ; 38-E	TBD	Purchased CO2/Water	Proposed New Drill - Vertical
VP2	TBD	6	F	19-S ; 38-E	TBD	Purchased CO2/Water	Proposed New Drill - Vertical
VSR2	TBD	15	G	19-S ; 38-E	TBD	Produced Gas/CO2/Water	Proposed New Drill - Vertical
VSR3	TBD	15	F	19-S ; 38-E	TBD	Produced Gas/CO2/Water	Proposed New Drill - Vertical
DSR1	TBD	4	J	19-S ; 38-E	TBD	Produced Gas/CO2/Water	Proposed New Drill - Directional
DSR2	TBD	4	J	19-S ; 38-E	TBD	Produced Gas/CO2/Water	Proposed New Drill - Directional
DSR3	TBD	4	J	19-S ; 38-E	TBD	Produced Gas/CO2/Water	Proposed New Drill - Directional
DSR4	TBD	4	K	19-S ; 38-E	TBD	Produced Gas/CO2/Water	Proposed New Drill - Directional
DSR5	TBD	4	K	19-S ; 38-E	TBD	Produced Gas/CO2/Water	Proposed New Drill - Directional
DSR6	TBD	4	K	19-S ; 38-E	TBD	Produced Gas/CO2/Water	Proposed New Drill - Directional
DSR7	TBD	4	K	19-S ; 38-E	TBD	Produced Gas/CO2/Water	Proposed New Drill - Directional
DSR8	TBD	5	L	19-S ; 38-E	TBD	Produced Gas/CO2/Water	Proposed New Drill - Directional
DSR9	TBD	5	L	19-S ; 38-E	TBD	Produced Gas/CO2/Water	Proposed New Drill - Directional
DSR10	TBD	5	L	19-S ; 38-E	TBD	Produced Gas/CO2/Water	Proposed New Drill - Directional
DSR11	TBD	5	L	19-S ; 38-E	TBD	Produced Gas/CO2/Water	Proposed New Drill - Directional
DSR12	TBD	10	O	19-S ; 38-E	TBD	Produced Gas/CO2/Water	Proposed New Drill - Directional
DSR13	TBD	10	O	19-S ; 38-E	TBD	Produced Gas/CO2/Water	Proposed New Drill - Directional
DSR14	TBD	10	O	19-S ; 38-E	TBD	Produced Gas/CO2/Water	Proposed New Drill - Directional
203	TBD	5	L	19-S ; 38-E	TBD	Produced Gas/CO2/Water	Proposed New Drill - Directional
143	TBD	4	J	19-S ; 38-E	TBD	Produced Gas/CO2/Water	Proposed New Drill - Directional
P144	TBD	4	J	19-S ; 38-E	TBD	Produced Gas/CO2/Water	Proposed New Drill - Directional

Injection Well Information for Existing Wells

Well No.	Conductor Casing						Surface Casing						Intermediate Casing						Production Casing						Liner					
	Hole Size	Csg Size	Setting Depth	Sacks of Cement	TOC	Meth od	Hole Size	Csg Size	Setting Depth	Sacks of Cement	TOC	Meth od	Hole Size	Csg Size	Setting Depth	Sacks of Cement	TOC	Method	Hole Size	Csg Size	Setting Depth	Sacks of Cement	TOC	Method	Hole Size	Csg Size	Setting Depth	Sacks of Cement	TOC	Method
SHU 128	18"	14"	40'	4 yds & 5 sacks	Surface	circ.	12.25"	8 5/8"	1616'	925	Surface	Circ.							7 7/8"	5 1/2"	4389'	1075	Surface	Circ.						
SHU 240	18"	14"	40'	50	Surface	circ.	12.25"	8 5/8"	1565'	850	Surface	Circ.							7 7/8"	5 1/2"	4315'	1200	Surface	Circ.						
SHU 36							17.5"	13 3/8"	214'	135	Surface	circ.	12"	9"	1653'	350	Surf.	Circ.	8-5/8"	7"	4111'	1977	Surface	Cicr	8 5/8"	5"	4202'	350	Surface	Cicr
SHU 37							16"	12 1/2"	250'	175	Surface	circ.							8 5/8"	7"	4147'	500	826'	Calc.	7"	5"	4180'	300	994'	Calc.
SHU 188	18"	14"	40'	4 yds redimix	Surface	circ.	12.25"	8 5/8"	1583'	875	Surface	Circ.							7 7/8"	5 1/2"	4325'	1000	375'	TS						
SHU 189	18"	14"	40'	5 yds Redimix	Surface	circ.	12.25"	8 5/8"	1529'	875	Surface	Circ.							7 7/8"	5 1/2"	4311'	2060	Surface	Circ.						
SHU 190	18"	14"	40'	4.5 yds Redimix	Surface	circ.	12.25"	8 5/8"	1520'	875	Surface	Circ.							7 7/8"	5 1/2"	4300'	1200	Surface	Circ.						
SHU 191	18"	14"	40'	4 yds redimix	Surface	circ.	12.25"	8 5/8"	1515'	875	Surface	Circ.							7 7/8"	5 1/2"	4326'	1000	Surface	Circ.						
SHU 140	18"	14"	40'	6 sks	Surface	circ.	12.25"	8 5/8"	1507'	875	Surface	Circ.							7 7/8"	5 1/2"	4295'	1450	Surface	Circ.						
SHU 141	18"	14"	31'	54 sks	Surface	circ.	12.25"	8 5/8"	1541'	1175	Surface	Circ.							7 7/8"	5 1/2"	4300'	1535	Surface	Circ.						
SHU 142	18"	14"	40'	2 1/2 yds redimix	Surface	circ.	12.25"	8 5/8"	1521'	875	Surface	Circ.							7 7/8"	5 1/2"	4297'	2025	Surface	Circ.						
SHU 145	18"	14"	38'	2 yds redimix	Surface	circ.	12.25"	8 5/8"	1650'	1125	Surface	Circ.							7 7/8"	5 1/2"	4498'	1400	Surface	Circ.						
SHU 71							12.25"	8 5/8"	302'	150	Surface	circ.							7 7/8"	5 1/2"	4309'	315	3095'	Calc.						
SHU 63							20"	16"	144'	125	Surface	circ.	13 3/8"	10 3/4"	2768'	350	Surf.	Circ.	12 1/4"	8-5/8"	4038'	100	2975'	Calc.	7 7/8"	5 1/2"	4159'	900	Surface	Circ.
SHU 154	18"	14"	40'	2 yds redimix	Surface	circ.	12.25"	8 5/8"	1580'	925	Surface	Circ.							7 7/8"	5 1/2"	4315'	1550	Surface	Circ.						
SHU 155	18"	14"	40'	3 yds redimix	Surface	circ.	12.25"	8 5/8"	1580'	900	Surface	Circ.							7 7/8"	5 1/2"	4342'	975	Surface	Circ.						
SHU 156	18"	14"	40'	3 yds redimix	Surface	circ.	12.25"	8 5/8"	1575'	875	Surface	Circ.							7 7/8"	5 1/2"	4324'	1550	Surface	Circ.						
SHU 83							16"	13"	198'	275	Surface	circ.	21.75"	9 5/8"	1630'	375	Surf.	Circ.	8-5/8"	7"	4057'	300	2222	Calc.	7"	4 1/2"	3791-4260'	380	3791'	TOL
SHU 91							12.25"	8 5/8"	402'	225	Surface	circ.							7"	4 1/2"	4114'	320	2765'	Calc.						
COOP 2	16"	13 3/8"	40'	4.5 yds Redimix	Surface	circ.	12.25"	8 5/8"	1500'	900	Surface	Circ.							7 7/8"	5 1/2"	4423'	1275	Surface	Circ.						
COOP 3	18"	14"	40'	2 yds redimix	Surface	circ.	12.25"	8 5/8"	1500'	1000	Surface	Circ.							7 7/8"	5 1/2"	4494'	2150	Surface	Circ.						
COOP 4	18"	14"	40'	2 yds redimix	Surface	circ.	12.25"	8 5/8"	1529'	1100	Surface	Circ.							7 7/8"	5 1/2"	4374'	1100	Surface	Circ.						
COOP 5	18"	13 3/8"	40'	4.5 yds Redimix	Surface	circ.	12.25"	8 5/8"	1628'	1000	Surface	Circ.							7 7/8"	5 1/2"	4490'	1275	Surface	Circ.						
COOP 6	18"	14"	40'	4 yds redimix	Surface	circ.	12.25"	8 5/8"	1640'	1000	Surface	Circ.							7 7/8"	5 1/2"	4374'	1700	Surface	Circ.						
COOP 9	18"	14"	40'	5 yds Redimix	Surface	circ.	12.25"	8 5/8"	1655'	875	Surface	Circ.							7 7/8"	5 1/2"	4491'	1250	Surface	Circ.						
COOP 10	18"	14"	40'	2.5 yds redimix	Surface	circ.	12.25"	8 5/8"	1650'	875	Surface	Circ.							7 7/8"	5 1/2"	4345'	1100	Surface	Circ.						
COOP 11	18"	14"	40'	4 yds 8 sks	Surface	circ.	12.25"	8 5/8"	1670'	875	Surface	Circ.							7 7/8"	5 1/2"	4410'	1150	Surface	Circ.						
COOP 12	18"	14"	40'	2.5 yds redimix	Surface	circ.	12.25"	8 5/8"	1620'	875	Surface	Circ.							7 7/8"	5 1/2"	4414'	1500	Surface	Circ.						
COOP 13	18"	14"	40'	5 yds 8 sks redimix	Surface	circ.	12.25"	8 5/8"	1625'	875	Surface	Circ.							7 7/8"	5 1/2"	4365'	1150	Surface	Circ.						
SHU 209	18"	14"	40'	.5 yds 13 sks redim	Surface	circ.	12.25"	8 5/8"	1620'	1050	Surface	Circ.							7 7/8"	5 1/2"	4145'	950	Surface	Circ.						

Injection Well Information for Existing Wells

Tubing to be Used					Packer Description	
Well No.	Size	Lining Material	Proposed Packer	Proposed Setting Depth		
					Injection Interval	
SHU 128	2 3/8", 2 7/8" or 3 1/2"	duoline	Guiberson Uni VI	Within the Unitized Interval	Grayburg and San Andres Formations	
SHU 240	2 3/8", 2 7/8" or 3 1/2"	duoline	Guiberson Uni VI	Within the Unitized Interval	Grayburg and San Andres Formations	
SHU 36	2 3/8", 2 7/8" or 3 1/2"	duoline	Guiberson Uni VI	Within the Unitized Interval	Grayburg and San Andres Formations	
SHU 37	2 3/8", 2 7/8" or 3 1/2"	duoline	Guiberson Uni VI	Within the Unitized Interval	Grayburg and San Andres Formations	
SHU 188	2 3/8", 2 7/8" or 3 1/2"	duoline	Guiberson Uni VI	Within the Unitized Interval	Grayburg and San Andres Formations	
SHU 189	2 3/8", 2 7/8" or 3 1/2"	duoline	Guiberson Uni VI	Within the Unitized Interval	Grayburg and San Andres Formations	
SHU 190	2 3/8", 2 7/8" or 3 1/2"	duoline	Guiberson Uni VI	Within the Unitized Interval	Grayburg and San Andres Formations	
SHU 191	2 3/8", 2 7/8" or 3 1/2"	duoline	Guiberson Uni VI	Within the Unitized Interval	Grayburg and San Andres Formations	
SHU 140	2 3/8", 2 7/8" or 3 1/2"	duoline	Guiberson Uni VI	Within the Unitized Interval	Grayburg and San Andres Formations	
SHU 141	2 3/8", 2 7/8" or 3 1/2"	duoline	Guiberson Uni VI	Within the Unitized Interval	Grayburg and San Andres Formations	
SHU 142	2 3/8", 2 7/8" or 3 1/2"	duoline	Guiberson Uni VI	Within the Unitized Interval	Grayburg and San Andres Formations	
SHU 145	2 3/8", 2 7/8" or 3 1/2"	duoline	Guiberson Uni VI	Within the Unitized Interval	Grayburg and San Andres Formations	
SHU 71	2 3/8", 2 7/8" or 3 1/2"	duoline	Guiberson Uni VI	Within the Unitized Interval	Grayburg and San Andres Formations	
SHU 63	2 3/8", 2 7/8" or 3 1/2"	duoline	Guiberson Uni VI	Within the Unitized Interval	Grayburg and San Andres Formations	
SHU 154	2 3/8", 2 7/8" or 3 1/2"	duoline	Guiberson Uni VI	Within the Unitized Interval	Grayburg and San Andres Formations	
SHU 155	2 3/8", 2 7/8" or 3 1/2"	duoline	Guiberson Uni VI	Within the Unitized Interval	Grayburg and San Andres Formations	
SHU 156	2 3/8", 2 7/8" or 3 1/2"	duoline	Guiberson Uni VI	Within the Unitized Interval	Grayburg and San Andres Formations	
SHU 83	2 3/8", 2 7/8" or 3 1/2"	duoline	Guiberson Uni VI	Within the Unitized Interval	Grayburg and San Andres Formations	
SHU 91	2 3/8", 2 7/8" or 3 1/2"	duoline	Guiberson Uni VI	Within the Unitized Interval	Grayburg and San Andres Formations	
COOP 2	2 3/8", 2 7/8" or 3 1/2"	duoline	Guiberson Uni VI	Within the Unitized Interval	Grayburg and San Andres Formations	
COOP 3	2 3/8", 2 7/8" or 3 1/2"	duoline	Guiberson Uni VI	Within the Unitized Interval	Grayburg and San Andres Formations	
COOP 4	2 3/8", 2 7/8" or 3 1/2"	duoline	Guiberson Uni VI	Within the Unitized Interval	Grayburg and San Andres Formations	
COOP 5	2 3/8", 2 7/8" or 3 1/2"	duoline	Guiberson Uni VI	Within the Unitized Interval	Grayburg and San Andres Formations	
COOP 6	2 3/8", 2 7/8" or 3 1/2"	duoline	Guiberson Uni VI	Within the Unitized Interval	Grayburg and San Andres Formations	
COOP 9	2 3/8", 2 7/8" or 3 1/2"	duoline	Guiberson Uni VI	Within the Unitized Interval	Grayburg and San Andres Formations	
COOP 10	2 3/8", 2 7/8" or 3 1/2"	duoline	Guiberson Uni VI	Within the Unitized Interval	Grayburg and San Andres Formations	
COOP 11	2 3/8", 2 7/8" or 3 1/2"	duoline	Guiberson Uni VI	Within the Unitized Interval	Grayburg and San Andres Formations	
COOP 12	2 3/8", 2 7/8" or 3 1/2"	duoline	Guiberson Uni VI	Within the Unitized Interval	Grayburg and San Andres Formations	
COOP 13	2 3/8", 2 7/8" or 3 1/2"	duoline	Guiberson Uni VI	Within the Unitized Interval	Grayburg and San Andres Formations	
SHU 209	2 3/8", 2 7/8" or 3 1/2"	duoline	Guiberson Uni VI	Within the Unitized Interval	Grayburg and San Andres Formations	

Occidental Permian Ltd.

South Hobbs G/SA Unit

Lea. County

Well No. 128

API: 30-025-28332

Footage Location: 335' FNL & 520' FWL

Section: 3

Township: 19-S

Range: 38-E

Unit Letter: D

Current Status: Active Injector

14" @ 40'
Cemented w/ 4 yds & 5 sxs Redimix
TOC: surf. (circulated)

8 5/8" @ 1616'
Cemented w/ 925 sx
TOC: surf. (circulated)

5 1/2" @ 4389'
Cemented w/ 1375 sxs
TOC: surf. (circulated)

Total Depth: 4389'

Current Injector Perfs: 4132 feet to: 4268

Completion type: Perforated casing

Proposed tubing size: 2 3/8, 2 7/8 or 3 1/2" lined with Duoline

Proposed packer type & setting depth : Guiberson Uni VI pkr set within the Grayburg and San Andres Formations.

Other Data:

1. Name of the injection formation: **Grayburg and San Andres Formations**
2. Name of field or pool: **Hobbs; Grayburg-San Andres**
3. Is this a new well drilled for injector? If no, for what purpose was well originally drilled? **No, Producer**
4. Has the well ever been perforated in any other zone(s)? **None.**
List all such perforated intervals and give plugging details (sacks of cmt. or bridge plug(s) used)
5. Give the depth to and name of any overlying and/or underlying oil and gas zones (pools) in this area.
Bowers (Queen), +/- 3290'; Glorieta, +/- 5405'

Occidental Permian Ltd.
South Hobbs G/SA Unit
Lea. County
Well No. 240
API: 30-025-35342
Footage Location: 571' FSL & 1302' FWL
Section: 34
Township: 18-S
Range: 38-E
Unit Letter: M
Current Status: Active Producer

14" @ 40'
Cemented w/ 50 sxs
TOC: surf. (circulated)

8 5/8" @ 1565'
Cemented w/ 850 sxs
TOC: surf. (circulated)

5 1/2" @ 4315'
Cemented w/ 1200 sxs
TOC: surf. (circulated)

Total Depth: 4315'

Injector Interval: 4110 feet to: 4248

Completion type: Perforated casing

Proposed tubing size: 2 3/8, 2 7/8 or 3 1/2" lined with Duoline

Proposed packer type & setting depth : Guiberson Uni VI pkr set within the Grayburg and San Andres Formations.

Other Data:

1. Name of the injection formation: **Grayburg and San Andres Formations**
2. Name of field or pool: **Hobbs; Grayburg-San Andres**
3. Is this a new well drilled for injector? If no, for what purpose was well originally drilled? **No, Producer**
4. Has the well ever been perforated in any other zone(s)? **None.**
List all such perforated intervals and give plugging details (sacks of cmt. or bridge plug(s) used)
5. Give the depth to and name of any overlying and/or underlying oil and gas zones (pools) in this area.
Bowers (Queen), +/- 3290'; Glorieta, +/- 5405'

Occidental Permian Ltd.

South Hobbs G/SA Unit

Lea. County

Well No. 36

API: 30-025-07588

Footage Location: 1980' FNL & 1980' FWL

Section: 3

Township: 19-S

Range: 38-E

Unit Letter: F

Current Status: Active Injector

13 3/8" @ 214'
Cemented w/ 135 sxs
TOC: surf. (circulated)

9" @ 1653'
Cemented w/ 350 sxs
TOC: surf. (circulated)

7" @ 4111'
Cemented w/ 1977 sxs
TOC: surf. (circulated)

5" casing string to 3978'
Perf'd casing at 3900' and squeezed with 300 sx
Circ. To Surface.

5 1/2" liner hung from 3978' to 4202'
Liner cemented w/ 50 sxs
TOC: 3978'

Total Depth: 4280'

Injector Interval: 4120 feet to: 4280

Completion type: Perforated casing & Acid Treated OH

Proposed tubing size: 2 3/8" lined with Duoline

Proposed packer type & setting depth : Guiberson Uni VI pkr set within the Grayburg and San Andres Formations.

Other Data:

1. Name of the injection formation: **Grayburg and San Andres Formations**
2. Name of field or pool: **Hobbs; Grayburg-San Andres**
3. Is this a new well drilled for injector? If no, for what purpose was well originally drilled? **No, Producer**
4. Has the well ever been perforated in any other zone(s)? **None.**
List all such perforated intervals and give plugging details (sacks of cmt. or bridge plug(s) used)
5. Give the depth to and name of any overlying and/or underlying oil and gas zones (pools) in this area.
Bowers (Queen), +/- 3290'; Glorieta, +/- 5405'

Occidental Permian Ltd.

South Hobbs G/SA Unit

Lea. County

Well No. 37

API: 30-025-07584

Footage Location: 1980' FNL & 2310' FEL

Section: 3

Township: 19-S

Range: 38-E

Unit Letter: G

Current Status: P & A'd Injector

12 1/2" @ 250'
Cemented w/ 175 sxs
TOC: surf. (circulated)

7" @ 4147'
Cemented w/ 500 sxs
TOC: 826' (calc.)

5" @ 4180'
Cemented w/ 300 sxs
TOC: 994' (calc.)

Total Depth: 4290'

Injector Interval: 4067 feet to: 4282

Completion type: Perforated casing & Acid Treated OH

Proposed tubing size: 2 3/8" lined with Duoline

Proposed packer type & setting depth : Guiberson Uni VI pkr set within the Grayburg and San Andres Formations.

Other Data:

1. Name of the injection formation: **Grayburg and San Andres Formations**
2. Name of field or pool: **Hobbs; Grayburg-San Andres**
3. Is this a new well drilled for injector? If no, for what purpose was well originally drilled? **No, Producer**
4. Has the well ever been perforated in any other zone(s)? **None.**
List all such perforated intervals and give plugging details (sacks of cmt. or bridge plug(s) used)
5. Give the depth to and name of any overlying and/or underlying oil and gas zones (pools) in this area.
Bowers (Queen), +/- 3290'; Glorieta, +/- 5405'

Occidental Permian Ltd.

South Hobbs G/SA Unit

Lea. County

Well No. 188

API: 30-025-28982

Footage Location: 1493' FSL & 1802' FWL

Section: 5

Township: 19-S

Range: 38-E

Unit Letter: K

Current Status: Active Producer

14" @ 40'
Cemented w/ 4 yds Redimix
TOC: surf. (circulated)

8 5/8" @ 1583'
Cemented w/ 875 sx
TOC: surf. (circulated)

5 1/2" @ 4325'
Cemented w/ 1000 sx.
TOC: 375' (Temp. Survey)

Total Depth: 4325'

Injector Interval: 4139 feet to: 4229

Completion type: Perforated casing

Proposed tubing size: 2 3/8, 2 7/8 or 3 1/2" lined with Duoline

Proposed packer type & setting depth: Guiberson Uni VI pkr set within the Grayburg and San Andres Formations.

Other Data:

1. Name of the injection formation: **Grayburg and San Andres Formations**
2. Name of field or pool: **Hobbs; Grayburg-San Andres**
3. Is this a new well drilled for injector? If no, for what purpose was well originally drilled? **No, Producer**
4. Has the well ever been perforated in any other zone(s)? **None.**
List all such perforated intervals and give plugging details (sacks of cmt. or bridge plug(s) used)
5. Give the depth to and name of any overlying and/or underlying oil and gas zones (pools) in this area.
Bowers (Queen), +/- 3290'; Glorieta, +/- 5405'

Occidental Permian Ltd.

South Hobbs G/SA Unit

Lea. County

Well No. 189

API: 30-025-29085

Footage Location: 1685' FSL & 2475' FEL

Section: 5

Township: 19-S

Range: 38-E

Unit Letter: J

Current Status: Active Producer

14" @ 40'
Cemented w/ 5 yds Redimix
TOC: surf. (circulated)

8 5/8" @ 1529'
Cemented w/ 875 sx
TOC: surf. (circulated)

5 1/2" @ 4311'
Cemented w/ 2060 sx.
TOC: surf. (circulated)

Total Depth: 4315'

Injector Interval: 4112 feet to: 4228

Completion type: Perforated casing

Proposed tubing size: 2 3/8", 2 7/8, or 3 1/2" lined with Duoline

Proposed packer type & setting depth : Guiberson Uni VI pkr set within the Grayburg and San Andres Formations.

Other Data:

1. Name of the injection formation: **Grayburg and San Andres Formations**
2. Name of field or pool: **Hobbs; Grayburg-San Andres**
3. Is this a new well drilled for injector? If no, for what purpose was well originally drilled? **No, Producer**
4. Has the well ever been perforated in any other zone(s)? **None.**
List all such perforated intervals and give plugging details (sacks of cmt. or bridge plug(s) used)
5. Give the depth to and name of any overlying and/or underlying oil and gas zones (pools) in this area.
Bowers (Queen), +/- 3290'; Glorieta, +/- 5405'

Occidental Permian Ltd.

South Hobbs G/SA Unit

Lea. County

Well No. 190

API: 30-025-29082

Footage Location: 1568' FSL & 1105' FEL

Section: 5

Township: 19-S

Range: 38-E

Unit Letter: I

Current Status: Active Producer

14" @ 40'
Cemented w/ 4 1/2 yds Redimix
TOC: surf. (circulated)

8 5/8" @ 1520'
Cemented w/ 875 sx
TOC: surf. (circulated)

5 1/2" @ 4300'
Cemented w/ 1200 sx.
TOC: surf. (circulated)

Total Depth: 4300'

Injector Interval: 4112 feet to: 4208

Completion type: Perforated casing

Proposed tubing size: 2 3/8, 2 7/8 or 3 1/2" lined with Duoline

Proposed packer type & setting depth : Guiberson Uni VI pkr set within the Grayburg and San Andres Formations

Other Data:

1. Name of the injection formation: **Grayburg and San Andres Formations**
2. Name of field or pool: **Hobbs; Grayburg-San Andres**
3. Is this a new well drilled for injector? If no, for what purpose was well originally drilled? **No, Producer**
4. Has the well ever been perforated in any other zone(s)? **None.**
List all such perforated intervals and give plugging details (sacks of cmt. or bridge plug(s) used)
5. Give the depth to and name of any overlying and/or underlying oil and gas zones (pools) in this area.
Bowers (Queen), +/- 3290'; Glorieta, +/- 5405'

Occidental Permian Ltd.

South Hobbs G/SA Unit

Lea. County

Well No. 191

API: 30-025-28983

Footage Location: 1585' FSL & 395' FWL

Section: 4

Township: 19-S

Range: 38-E

Unit Letter: L

Current Status: Active Producer

14" @ 40'
Cemented w/ 4 yds Redimix
TOC: surf. (circulated)

8 5/8" @ 1515'
Cemented w/ 875 sx
TOC: surf. (circulated)

5 1/2" @ 4326'
Cemented w/ 1000 sx.
TOC: surf. (circulated)

Total Depth: 4326'

Injector Interval: 4100 feet to: 4210

Completion type: Perforated casing

Proposed tubing size: 2 3/8, 2 7/8, or 3 1/2" lined with Duoline

Proposed packer type & setting depth : Guiberson Uni VI pkr set within the Grayburg and San Andres Formations.

Other Data:

1. Name of the injection formation: **Grayburg and San Andres Formations**
2. Name of field or pool: **Hobbs; Grayburg-San Andres**
3. Is this a new well drilled for injector? If no, for what purpose was well originally drilled? **No, Producer**
4. Has the well ever been perforated in any other zone(s)? **None.**
List all such perforated intervals and give plugging details (sacks of cmt. or bridge plug(s) used)
5. Give the depth to and name of any overlying and/or underlying oil and gas zones (pools) in this area.
Bowers (Queen), +/- 3290'; Glorieta, +/- 5405'

Occidental Permian Ltd.

South Hobbs G/SA Unit

Lea. County

Well No. 140

API: 30-025-28343

Footage Location: 1485' FSL & 1245' FWL

Section: 4

Township: 19-S

Range: 38-E

Unit Letter: L

Current Status: Active Producer

14" @ 40'
Cemented w/ 2 yds 6 sx Redimix
TOC: surf. (circulated)

8 5/8" @ 1507'
Cemented w/ 875 sx
TOC: surf. (circulated)

5 1/2" @ 4295'
Cemented w/ 1450 sx.
TOC: surf. (circulated)

Total Depth: 4300'

Injector Interval: 4089 feet to: 4228

Completion type: Perforated casing

Proposed tubing size: 2 3/8, 2 7/8 or 3 1/2" lined with Duoline

Proposed packer type & setting depth : Guiberson Uni VI pkr set within the Grayburg and San Andres Formations.

Other Data:

1. Name of the injection formation: **Grayburg and San Andres Formations**
2. Name of field or pool: **Hobbs; Grayburg-San Andres**
3. Is this a new well drilled for injector? If no, for what purpose was well originally drilled? **No, Producer**
4. Has the well ever been perforated in any other zone(s)? **None.**
List all such perforated intervals and give plugging details (sacks of cmt. or bridge plug(s) used)
5. Give the depth to and name of any overlying and/or underlying oil and gas zones (pools) in this area.
Bowers (Queen), +/- 3290'; Glorieta, +/- 5405'

Occidental Permian Ltd.

South Hobbs G/SA Unit

Lea. County

Well No. 141

API: 30-025-28344

Footage Location: 1478' FSL & 2595' FWL

Section: 4

Township: 19-S

Range: 38-E

Unit Letter: K

Current Status: Active Producer

14" @ 31'
Cemented w/ 54 sxs Redimix
TOC: surf. (circulated)

8 5/8" @ 1541'
Cemented w/ 1175 sx
TOC: surf. (circulated)

5 1/2" @ 4300'
Cemented w/ 1535 sx.
TOC: surf. (circulated)

Total Depth: 4300'

Injector Interval: 4104 feet to: 4231

Completion type: Perforated casing

Proposed tubing size: 2 3/8, 2 7/8 or 3 1/2" lined with Duoline

Proposed packer type & setting depth : Guiberson Uni VI pkr set within the Grayburg and San Andres Formations.

Other Data:

1. Name of the injection formation: **Grayburg and San Andres Formations**
2. Name of field or pool: **Hobbs; Grayburg-San Andres**
3. Is this a new well drilled for injector? If no, for what purpose was well originally drilled? **No, Producer**
4. Has the well ever been perforated in any other zone(s)? **None.**
List all such perforated intervals and give plugging details (sacks of cmt. or bridge plug(s) used)
5. Give the depth to and name of any overlying and/or underlying oil and gas zones (pools) in this area.
Bowers (Queen), +/- 3290'; Glorieta, +/- 5405'

Occidental Permian Ltd.
South Hobbs G/SA Unit
Lea. County
Well No. 142
API: 30-025-28345
Footage Location: 1310' FSL & 1370' FEL
Section: 4
Township: 19-S
Range: 38-E
Unit Letter: O
Current Status: Active Producer

14" @ 40'
Cemented w/ 2 1/2 yds Redimix
TOC: surf. (circulated)

8 5/8" @ 1521'
Cemented w/ 875 sx
TOC: surf. (circulated)

5 1/2" @ 4297'
Cemented w/ 2025 sx.
TOC: surf. (circulated)

Total Depth: 4297'

Injector Interval: 4101 feet to: 4228

Completion type: Perforated casing

Proposed tubing size: 2 3/8, 2 7/8 or 3 1/2" lined with Duoline

Proposed packer type & setting depth : Guiberson Uni VI pkr set within the Grayburg and San Andres Formations.

Other Data:

1. Name of the injection formation: **Grayburg and San Andres Formations**
2. Name of field or pool: **Hobbs; Grayburg-San Andres**
3. Is this a new well drilled for injector? If no, for what purpose was well originally drilled? **No, Producer**
4. Has the well ever been perforated in any other zone(s)? **None.**
List all such perforated intervals and give plugging details (sacks of cmt. or bridge plug(s) used)
5. Give the depth to and name of any overlying and/or underlying oil and gas zones (pools) in this area.
Bowers (Queen), +/- 3290'; Glorieta, +/- 5405'

Occidental Permian Ltd.
South Hobbs G/SA Unit
Lea. County
Well No. 145
API: 30-025-28348
Footage Location: 577' FSL & 1984' FWL
Section: 3
Township: 19-S
Range: 38-E
Unit Letter: N
Current Status: Active Producer

14" @ 38'
Cemented w/ 2 yds Redimix
TOC: surf. (circulated)

8 5/8" @ 1650'
Cemented w/ 1125 sx
TOC: surf. (circulated)

5 1/2" @ 4498'
Cemented w/ 1400 sx.
TOC: surf. (circulated)

Total Depth: 4498'

Injector Interval: 4316 feet to: 4420

Completion type: Perforated casing

Proposed tubing size: 2 3/8, 2 7/8 or 3 1/2" lined with Duoline

Proposed packer type & setting depth : Guiberson Uni VI pkr set within the Grayburg and San Andres Formations.

Other Data:

1. Name of the injection formation: **Grayburg and San Andres Formations**
2. Name of field or pool: **Hobbs; Grayburg-San Andres**
3. Is this a new well drilled for injector? If no, for what purpose was well originally drilled? **No, Producer**
4. Has the well ever been perforated in any other zone(s)? **None.**
List all such perforated intervals and give plugging details (sacks of cmt. or bridge plug(s) used)
5. Give the depth to and name of any overlying and/or underlying oil and gas zones (pools) in this area.
Bowers (Queen), +/- 3290'; Glorieta, +/- 5405'

Occidental Permian Ltd.

South Hobbs G/SA Unit

Lea. County

Well No. 71

API: 30-025-07670

Footage Location: 1650' FNL & 990' FWL

Section: 9

Township: 19-S

Range: 38-E

Unit Letter: E

Current Status: TA'd injector

8 5/8" @ 302'
Cemented w/ 150 sxs
TOC: surf. (circulated)

5 1/2" @ 4309'
Cemented w/ 315 sx.
TOC: 3095' (calc.)

Total Depth: 4309'

Injector Interval: 4141 feet to: 4243

Completion type: Perforated casing

Proposed tubing size: 2 3/8 , 2 7/8 or 3 1/2" lined with Duoline

Proposed packer type & setting depth : Guiberson Uni VI pkr set within the Grayburg and San Andres Formations.

Other Data:

1. Name of the injection formation: **Grayburg and San Andres Formations**
2. Name of field or pool: **Hobbs; Grayburg-San Andres**
3. Is this a new well drilled for injector? If no, for what purpose was well originally drilled? **No, Producer**
4. Has the well ever been perforated in any other zone(s)? **None.**
List all such perforated intervals and give plugging details (sacks of cmt. or bridge plug(s) used)
5. Give the depth to and name of any overlying and/or underlying oil and gas zones (pools) in this area.
Bowers (Queen), +/- 3290'; Glorieta, +/- 5405'

Occidental Permian Ltd.

South Hobbs G/SA Unit

Lea. County

Well No. 63

API: 30-025-07662

Footage Location: 660' FNL & 1980' FWL

Section: 9

Township: 19-S

Range: 38-E

Unit Letter: C

Current Status: Active Injector

16" @ 144'
Cemented w/ 125 sx
TOC: surf. (circulated)

10 3/4" @ 2768'
Cemented w/ 350 sx
TOC: surf. (circulated)

8 5/8" @ 4038'
Cemented w/ 100 sx.
TOC: 2975' (calc.)

5 1/2" @ 3918-4159'
Cemented w/ 150 sx
TOC @ 3918'

5 1/2" tie-back liner from surf. To 3909'
Cemented w/ 750 sx
TOC: surf. (circulated)

Total Depth: 4257'

Injector Interval: 4133 feet to: 4190

Completion type: Perforated liner & casing

Proposed tubing size: 2 3/8, 2 7/8 or 3 1/2" lined with Duoline

Proposed packer type and setting depth : Arrow Set 1-X DBL GRIP pkr set within the Grayburg and San Andres Formations.

Other Data:

1. Name of the injection formation: **Grayburg and San Andres Formations**
2. Name of field or pool: **Hobbs; Grayburg-San Andres**
3. Is this a new well drilled for injector? If no, for what purpose was well originally drilled? **No, Producer**
4. Has the well ever been perforated in any other zone(s)? **None**
List all such perforated intervals and give plugging details (sacks of cmt. or bridge plug(s) used)
5. Give the depth to and name of any overlying and/or underlying oil and gas zones (pools) in this area.
Bowers (Queen), +/- 3290'; Glorieta, +/- 5405'

Occidental Permian Ltd.

South Hobbs G/SA Unit

Lea. County

Well No. 154

API: 30-025-28357

Footage Location: 1163' FNL & 2600' FEL

Section: 9

Township: 19-S

Range: 38-E

Unit Letter: B

Current Status: Active Producer

14" @ 40'
Cemented w/ 2 yds Ready mix
TOC: surf. (circulated)

8 5/8" @ 1580'
Cemented w/ 925 sx.
TOC: surf. (circulated)

5 1/2" @ 4315'
Cemented w/ 1550' sx
TOC: surf. (circ.)

Total Depth: 4315'

Injector Interval: 4147 feet to: 4315

Completion type: Perforated casing

Proposed tubing size: 2 3/8, 2 7/8 or 3 1/2" lined with Duoline

Proposed packer type & setting depth : Guiberson Uni VI pkr set within the Grayburg and San Andres Formations.

Other Data:

1. Name of the injection formation: **Grayburg and San Andres Formations**
2. Name of field or pool: **Hobbs; Grayburg-San Andres**
3. Is this a new well drilled for injector? If no, for what purpose was well originally drilled? **No, Producer**
4. Has the well ever been perforated in any other zone(s)? **None.**
List all such perforated intervals and give plugging details (sacks of cmt. or bridge plug(s) used)
5. Give the depth to and name of any overlying and/or underlying oil and gas zones (pools) in this area.
Bowers (Queen), +/- 3290'; Glorieta, +/- 5405'

Occidental Permian Ltd.

South Hobbs G/SA Unit

Lea. County

Well No. 155

API: 30-025-28358

Footage Location: 1158' FNL & 1568' FEL

Section: 9

Township: 19-S

Range: 38-E

Unit Letter: B

Current Status: Active Producer

14" @ 40'
Cemented w/ 3 yds Redi mix
TOC: surf. (circulated)

8 5/8" @ 1580'
Cemented w/ 900 sx.
TOC: surf. (circulated)

5 1/2" @ 4342'
Cemented w/ 975' sx
TOC: surf. (circ.)

Total Depth: 4342'

Injector Interval: 4150 feet to: 4320

Completion type: Perforated casing

Proposed tubing size: 2 3/8, 2 7/8 or 3 1/2" lined with Duoline

Proposed packer type & setting depth : Guiberson Uni VI pkr set within the Grayburg and San Andres Formations..

Other Data:

1. Name of the injection formation: **Grayburg and San Andres Formations**
2. Name of field or pool: **Hobbs; Grayburg-San Andres**
3. Is this a new well drilled for injector? If no, for what purpose was well originally drilled? **No, Producer**
4. Has the well ever been perforated in any other zone(s)? **None.**
List all such perforated intervals and give plugging details (sacks of cmt. or bridge plug(s) used)
5. Give the depth to and name of any overlying and/or underlying oil and gas zones (pools) in this area.
Bowers (Queen), +/- 3290'; Glorieta, +/- 5405'

Occidental Permian Ltd.
South Hobbs G/SA Unit
Lea, County
Well No. 156
API: 30-025-28359
Footage Location: 1370' FNL & 330' FEL
Section: 9
Township: 19-S
Range: 38-E
Unit Letter: H
Current Status: Active Producer

14" @ 40'
Cemented w/ 3 yds Redi mix
TOC: surf. (circulated)

8 5/8" @ 1575'
Cemented w/ 875 sx.
TOC: surf. (circulated)

5 1/2" @ 4324'
Cemented w/ 1550' sx
TOC: surf. (circ.)

Total Depth: 4324'

Injector Interval: 4100 feet to: 4276

Completion type: Perforated casing

Proposed tubing size: 2 3/8, 2 7/8 or 3 1/2" lined with Duoline

Proposed packer type & setting depth : Guiberson Uni VI pkr set within the Grayburg and San Andres Formations.

Other Data:

1. Name of the injection formation: **Grayburg and San Andres Formations**
2. Name of field or pool: **Hobbs; Grayburg-San Andres**
3. Is this a new well drilled for injector? If no, for what purpose was well originally drilled? **No, Producer**
4. Has the well ever been perforated in any other zone(s)? **None.**
List all such perforated intervals and give plugging details (sacks of cmt. or bridge plug(s) used)
5. Give the depth to and name of any overlying and/or underlying oil and gas zones (pools) in this area.
Bowers (Queen), +/- 3290'; Glorieta, +/- 5405'

Occidental Permian Ltd.
South Hobbs G/SA Unit
Lea. County
Well No. 83
API: 30-025-07668
Footage Location: 1980' FSL & 1980' FEL
Section: 9
Township: 19-S
Range: 38-E
Unit Letter: J
Current Status: TA'd injector

13" @ 198'
Cemented w/ 275 sx
TOC: surf. (circulated)

9 5/8" @ 1630'
Cemented w/ 375 sx
TOC: surf. (circulated)

7" @ 4057' w/ 300 sx
TOC: 2222' (calc.)

4.5" @ 3791- 4260' w/ 380 sx
TOC: 3791'

Total Depth: 4265'

Injector Interval: 3959 feet to: TD

Completion type: Perforated liner

Proposed tubing size: 2 3/8" lined with Duoline

Proposed packer type & setting depth : Guiberson Uni VI pkr set within the Grayburg and San Andres Formations.

Other Data:

1. Name of the injection formation: **Grayburg and San Andres Formations**
2. Name of field or pool: **Hobbs; Grayburg-San Andres**
3. Is this a new well drilled for injector? If no, for what purpose was well originally drilled? **No, Producer**
4. Has the well ever been perforated in any other zone(s)? **None.**
List all such perforated intervals and give plugging details (sacks of cmt. or bridge plug(s) used)
5. Give the depth to and name of any overlying and/or underlying oil and gas zones (pools) in this area.
Bowers (Queen), +/- 3290'; Glorieta, +/- 5405'

Occidental Permian Ltd.

South Hobbs G/SA Unit

Lea. County

Well No. 91

API: 30-025-20047

Footage Location: 990' FSL & 330' FEL

Section: 9

Township: 19-S

Range: 38-E

Unit Letter: P

Current Status: TA'd Producer

8 5/8" @ 402'
Cemented w/ 225 sx
TOC: surf. (circulated)

4 1/2" @ 4114'
Cemented w/ 320 sx
TOC: 2765' (calc.)

Total Depth: 4203'

Injector Interval: 4056 feet to: 4203

Completion type: Perforated casing & Acid treating OH

Proposed tubing size: 2 3/8" lined with Duoline

Proposed packer type & setting depth : Guiberson Uni VI pkr set within the Grayburg and San Andres Formations.

Other Data:

1. Name of the injection formation: **Grayburg and San Andres Formations**
2. Name of field or pool: **Hobbs; Grayburg-San Andres**
3. Is this a new well drilled for injector? If no, for what purpose was well originally drilled? **No, Producer**
4. Has the well ever been perforated in any other zone(s)? **None.**
List all such perforated intervals and give plugging details (sacks of cmt. or bridge plug(s) used)
5. Give the depth to and name of any overlying and/or underlying oil and gas zones (pools) in this area.
Bowers (Queen), +/- 3290'; Glorieta, +/- 5405'

Occidental Permian Ltd.
South Hobbs G/SA Unit
Lea. County
Well No. COOP 2
API: 30-025-28305
Footage Location: 645' FNL & 453' FWL
Section: 4
Township: 19-S
Range: 38-E
Unit Letter: D
Current Status: Active Injector

13 3/8" @ 40'
Cemented w/ 4.5 yds Redi Mix
TOC: surf. (circulated)

8 5/8" @ 1500'
Cemented w/ 900 sxs
TOC: surf. (circulated)

5 1/2" @ 4423'
Cemented w/ 1275 sxs
TOC: surf. (circulated)

Total Depth: 4423'

Injector Interval: 4159 feet to: 4348

Completion type: Perforated casing

Proposed tubing size: 2 3/8, 2 7/8 or 3 1/2" lined with Duoline

Proposed packer type & setting depth : Guiberson Uni VI pkr set within the Grayburg and San Andres Formations.

Other Data:

1. Name of the injection formation: **Grayburg and San Andres Formations**
2. Name of field or pool: **Hobbs; Grayburg-San Andres**
3. Is this a new well drilled for injector? If no, for what purpose was well originally drilled? **Yes.**
4. Has the well ever been perforated in any other zone(s)? **None.**
List all such perforated intervals and give plugging details (sacks of cmt. or bridge plug(s) used)
5. Give the depth to and name of any overlying and/or underlying oil and gas zones (pools) in this area.
Bowers (Queen), +/- 3290'; Glorieta, +/- 5405'

Occidental Permian Ltd.
South Hobbs G/SA Unit
Lea. County
Well No. COOP 3
API: 30-025-28306
Footage Location: 645' FNL & 2045' FWL
Section: 4
Township: 19-S
Range: 38-E
Unit Letter: C
Current Status: Active Injector

14" @ 40'
Cemented w/ 2 yds Redi Mix
TOC: surf. (circulated)

8 5/8" @ 1500'
Cemented w/ 1000 sxs
TOC: surf. (circulated)

5 1/2" @ 4494'
Cemented w/ 2150 sxs
TOC: surf. (circulated)

Total Depth: 4494'

Injector Interval: 4248 feet to: 4447

Completion type: Perforated casing

Proposed tubing size: 2 3/8, 2 7/8 or 3 1/2" lined with Duoline

Proposed packer type & setting depth: Guiberson Uni VI pkr set within the Grayburg and San Andres Formations.

Other Data:

1. Name of the injection formation: **Grayburg and San Andres Formations**
2. Name of field or pool: **Hobbs; Grayburg-San Andres**
3. Is this a new well drilled for injector? If no, for what purpose was well originally drilled? **Yes.**
4. Has the well ever been perforated in any other zone(s)? **None.**
List all such perforated intervals and give plugging details (sacks of cmt. or bridge plug(s) used)
5. Give the depth to and name of any overlying and/or underlying oil and gas zones (pools) in this area.
Bowers (Queen), +/- 3290'; Glorieta, +/- 5405'

Occidental Permian Ltd.
South Hobbs G/SA Unit
Lea. County
Well No. COOP 4
API: 30-025-28307
Footage Location: 494' FNL & 1025' FEL
Section: 4
Township: 19-S
Range: 38-E
Unit Letter: A
Current Status: Active Injector

14" @ 40'
Cemented w/ 2 yds Redi Mix
TOC: surf. (circulated)

8 5/8" @ 1529'
Cemented w/ 1100 sxs
TOC: surf. (circulated)

5 1/2" @ 4374'
Cemented w/ 1100 sxs
TOC: surf. (circulated)

Total Depth: 4374'

Injector Interval: 4126 feet to: 4262

Completion type: Perforated casing

Proposed tubing size: 2 3/8, 2 7/8 or 3 1/2" lined with Duoline

Proposed packer type & setting depth : Guiberson Uni VI pkr set within the Grayburg and San Andres Formations.

Other Data:

1. Name of the injection formation: **Grayburg and San Andres Formations**
2. Name of field or pool: **Hobbs; Grayburg-San Andres**
3. Is this a new well drilled for injector? If no, for what purpose was well originally drilled? **Yes.**
4. Has the well ever been perforated in any other zone(s)? **None.**
List all such perforated intervals and give plugging details (sacks of cmt. or bridge plug(s) used)
5. Give the depth to and name of any overlying and/or underlying oil and gas zones (pools) in this area.
Bowers (Queen), +/- 3290'; Glorieta, +/- 5405'

Occidental Permian Ltd.
South Hobbs G/SA Unit
Lea. County
Well No. COOP 5
API: 30-025-28308
Footage Location: 1980' FSL & 646' FWL
Section: 34
Township: 18-S
Range: 38-E
Unit Letter: L
Current Status: Active Injector

13 3/8" @ 40'
Cemented w/ 4.5 yds Redi Mix
TOC: surf. (circulated)

8 5/8" @ 1628'
Cemented w/ 1000 sxs
TOC: surf. (circulated)

5 1/2" @ 4490'
Cemented w/ 1275 sxs
TOC: surf. (circulated)

Total Depth: 4490'

Injector Interval: 4173 feet to: 4440

Completion type: Perforated casing

Proposed tubing size: 2 3/8, 2 7/8 or 3 1/2" lined with Duoline

Proposed packer type & setting depth : Guiberson Uni VI pkr set within the Grayburg and San Andres Formations.

Other Data:

1. Name of the injection formation: **Grayburg and San Andres Formations**
2. Name of field or pool: **Hobbs; Grayburg-San Andres**
3. Is this a new well drilled for injector? If no, for what purpose was well originally drilled? **Yes.**
4. Has the well ever been perforated in any other zone(s)? **None.**
List all such perforated intervals and give plugging details (sacks of cmt. or bridge plug(s) used)
5. Give the depth to and name of any overlying and/or underlying oil and gas zones (pools) in this area.
Bowers (Queen), +/- 3290'; Glorieta, +/- 5405'

Occidental Permian Ltd.
South Hobbs G/SA Unit
Lea. County
Well No. COOP 6
API: 30-025-28309
Footage Location: 1950' FNL & 535' FWL
Section: 34
Township: 18-S
Range: 38-E
Unit Letter: E
Current Status: Active Injector

14" @ 40'
Cemented w/ 4 yds Redi Mix
TOC: surf. (circulated)

8 5/8" @ 1640'
Cemented w/ 1000 sxs
TOC: surf. (circulated)

5 1/2" @ 4374'
Cemented w/ 1700 sxs
TOC: surf. (circulated)

Total Depth: 4444'

Injector Interval: 4232 feet to: 4406

Completion type: Perforated casing

Proposed tubing size: 2 3/8, 2 7/8 or 3 1/2" lined with Duoline

Proposed packer type & setting depth : Guiberson Uni VI pkr set within the Grayburg and San Andres Formations.

Other Data:

1. Name of the injection formation: **Grayburg and San Andres Formations**
2. Name of field or pool: **Hobbs; Grayburg-San Andres**
3. Is this a new well drilled for injector? If no, for what purpose was well originally drilled? **Yes.**
4. Has the well ever been perforated in any other zone(s)? **None.**
List all such perforated intervals and give plugging details (sacks of cmt. or bridge plug(s) used)
5. Give the depth to and name of any overlying and/or underlying oil and gas zones (pools) in this area.
Bowers (Queen), +/- 3290'; Glorieta, +/- 5405'

Occidental Permian Ltd.
South Hobbs G/SA Unit
Lea. County
Well No. COOP 9
API: 30-025-28968
Footage Location: 717' FNL & 651' FWL
Section: 34
Township: 18-S
Range: 38-E
Unit Letter: A
Current Status: Active Injector

14" @ 40'
Cemented w/ 5 yds Redi Mix
TOC: surf. (circulated)

8 5/8" @ 1655'
Cemented w/ 875 sxs
TOC: surf. (circulated)

5 1/2" @ 4491'
Cemented w/ 1250 sxs
TOC: surf. (circulated)

Total Depth: 4494'

Injector Interval: 4290 feet to: 4472

Completion type: Perforated casing

Proposed tubing size: 2 3/8, 2 7/8 or 3 1/2" lined with Duoline

Proposed packer type & setting depth : Guiberson Uni VI pkr set within the Grayburg and San Andres Formations.

Other Data:

1. Name of the injection formation: **Grayburg and San Andres Formations**
2. Name of field or pool: **Hobbs; Grayburg-San Andres**
3. Is this a new well drilled for injector? If no, for what purpose was well originally drilled? **Yes.**
4. Has the well ever been perforated in any other zone(s)? **None.**
List all such perforated intervals and give plugging details (sacks of cmt. or bridge plug(s) used)
5. Give the depth to and name of any overlying and/or underlying oil and gas zones (pools) in this area.
Bowers (Queen), +/- 3290'; Glorieta, +/- 5405'

Occidental Permian Ltd.

South Hobbs G/SA Unit

Lea. County

Well No. COOP 10

API: 30-025-28969

Footage Location: 2564' FSL & 1607' FWL

Section: 34

Township: 18-S

Range: 38-E

Unit Letter: L

Current Status: Active Injector

14" @ 40'
Cemented w/ 2.5 yds Redi Mix
TOC: surf. (circulated)

8 5/8" @ 1650'
Cemented w/ 875 sxs
TOC: surf. (circulated)

5 1/2" @ 4345'
Cemented w/ 1100 sxs
TOC: surf. (circulated)

Total Depth: 4345'

Injector Interval: 4141 feet to: 4320

Completion type: Perforated casing

Proposed tubing size: 2 3/8", 2 7/8 or 3 1/2" lined with Duoline

Proposed packer type & setting depth: Guiberson Uni VI pkr set within the Grayburg and San Andres Formations.

Other Data:

1. Name of the injection formation: **Grayburg and San Andres Formations**
2. Name of field or pool: **Hobbs; Grayburg-San Andres**
3. Is this a new well drilled for injector? If no, for what purpose was well originally drilled? **Yes.**
4. Has the well ever been perforated in any other zone(s)? **None.**
List all such perforated intervals and give plugging details (sacks of cmt. or bridge plug(s) used)
5. Give the depth to and name of any overlying and/or underlying oil and gas zones (pools) in this area.
Bowers (Queen), +/- 3290'; Glorieta, +/- 5405'

Occidental Permian Ltd.
South Hobbs G/SA Unit
Lea, County
Well No. COOP 11
API: 30-025-28970
Footage Location: 2500' FSL & 1660' FWL
Section: 34
Township: 18-S
Range: 38-E
Unit Letter: L
Current Status: Active Injector

14" @ 40'
Cemented w/ 4 yds 8 sxs Redi Mix
TOC: surf. (circulated)

8 5/8" @ 1670'
Cemented w/ 875 sxs
TOC: surf. (circulated)

5 1/2" @ 4410'
Cemented w/ 1150 sxs
TOC: surf. (circulated)

Total Depth: 4410'

Injector Interval: 4259 feet to: 4363

Completion type: Perforated casing

Proposed tubing size: 2 3/8, 2 7/8 or 3 1/2" lined with Duoline

Proposed packer type & setting depth : Guiberson Uni VI pkr set within the Grayburg and San Andres Formations.

Other Data:

1. Name of the injection formation: **Grayburg and San Andres Formations**
2. Name of field or pool: **Hobbs; Grayburg-San Andres**
3. Is this a new well drilled for injector? If no, for what purpose was well originally drilled? **Yes.**
4. Has the well ever been perforated in any other zone(s)? **None.**
List all such perforated intervals and give plugging details (sacks of cmt. or bridge plug(s) used)
5. Give the depth to and name of any overlying and/or underlying oil and gas zones (pools) in this area.
Bowers (Queen), +/- 3290'; Glorieta, +/- 5405'

Occidental Permian Ltd.
South Hobbs G/SA Unit
Lea. County
Well No. COOP 12
API: 30-025-28971
Footage Location: 636' FSL & 2348' FWL
Section: 34
Township: 18-S
Range: 38-E
Unit Letter: N
Current Status: Active Injector

14" @ 40'
Cemented w/ 2.5 yds Redi Mix
TOC: surf. (circulated)

8 5/8" @ 1620'
Cemented w/ 875 sxs
TOC: surf. (circulated)

5 1/2" @ 4414'
Cemented w/ 1500 sxs
TOC: surf. (circulated)

Total Depth: 4441'

Injector Interval: 4244 feet to: 4410

Completion type: Perforated casing

Proposed tubing size: 2 3/8, 2 7/8 or 3 1/2" lined with Duoline

Proposed packer type & setting depth : Guiberson Uni VI pkr set within the Grayburg and San Andres Formations.

Other Data:

1. Name of the injection formation: **Grayburg and San Andres Formations**
2. Name of field or pool: **Hobbs; Grayburg-San Andres**
3. Is this a new well drilled for injector? If no, for what purpose was well originally drilled? **Yes.**
4. Has the well ever been perforated in any other zone(s)? **None.**
List all such perforated intervals and give plugging details (sacks of cmt. or bridge plug(s) used)
5. Give the depth to and name of any overlying and/or underlying oil and gas zones (pools) in this area.
Bowers (Queen), +/- 3290'; Glorieta, +/- 5405'

Occidental Permian Ltd.

South Hobbs G/SA Unit

Lea. County

Well No. COOP 13

API: 30-025-28972

Footage Location: 505' FNL & 2560' FEL

Section: 3

Township: 19-S

Range: 38-E

Unit Letter: B

Current Status: Active Injector

14" @ 40'
Cemented w/ 5 yds 8 sxs redi-mix
TOC: surf. (circulated)

8 5/8" @ 1625'
Cemented w/ 875 sxs
TOC: surf. (circulated)

5 1/2" @ 4365'
Cemented w/ 1150 sxs
TOC: surf. (circulated)

Total Depth: 4365'

Injector Interval: 4240 feet to: 4310

Completion type: Perforated casing

Proposed tubing size: 2 3/8, 2 7/8 or 3 1/2" lined with Duoline

Proposed packer type & setting depth: Guiberson Uni VI pkr set within the Grayburg and San Andres Formations.

Other Data:

1. Name of the injection formation: **Grayburg and San Andres Formations**
2. Name of field or pool: **Hobbs; Grayburg-San Andres**
3. Is this a new well drilled for injector? If no, for what purpose was well originally drilled? Yes.
4. Has the well ever been perforated in any other zone(s)? **None.**
List all such perforated intervals and give plugging details (sacks of cmt. or bridge plug(s) used)
5. Give the depth to and name of any overlying and/or underlying oil and gas zones (pools) in this area.
Bowers (Queen), +/- 3290'; Glorieta, +/- 5405'

Occidental Permian Ltd.

South Hobbs G/SA Unit

Lea. County

Well No. 209

API: 30-025-29522

Footage Location: 265' FNL & 1090' FEL

Section: 8

Township: 19-S

Range: 38-E

Unit Letter: D

Current Status: Active Injector

14" @ 40'
Cemented w/ 4 1/2 yds 13 sxs Redi mix
TOC: surf. (circulated)

8 5/8" @ 1620'
Cemented w/ 1050 sx.
TOC: surf. (circulated)

5 1/2" @ 4145'
Cemented w/ 950' sx
TOC: surf. (circ.)

Total Depth: 4208'

Injector Interval: 4060 feet to: 4208

Completion type: Perforated casing

Proposed tubing size: 2 3/8, 2 7/8 or 3 1/2" lined with Duoline

Proposed packer type & setting depth : Guiberson Uni VI pkr set within the Grayburg and San Andres Formations.

Other Data:

1. Name of the injection formation: **Grayburg and San Andres Formations**
2. Name of field or pool: **Hobbs; Grayburg-San Andres**
3. Is this a new well drilled for injector? If no, for what purpose was well originally drilled? **No, Producer**
4. Has the well ever been perforated in any other zone(s)? **None.**
List all such perforated intervals and give plugging details (sacks of cmt. or bridge plug(s) used)
5. Give the depth to and name of any overlying and/or underlying oil and gas zones (pools) in this area.
Bowers (Queen), +/- 3290'; Glorieta, +/- 5405'

Example Wellbore Diagram of
Proposed Vertical New Drill Wells
6 Total Wells

Occidental Permian Ltd.
South Hobbs G/SA Unit
Lea. County
Well Nos. SHU 92R, SHU 95R/VP1, VP2, VSR2, VSR3
Example Wellbore Diagram
for Proposed Vertical New Drills
Section: See attached
Unit Letter: See attached.

8 5/8" @ 1550'
Cemented
TOC: surf. (circulated)

7" @ 4500'
Cemented
TOC: surf. (circulated)

Total Depth: ~~4000~~ 4500'

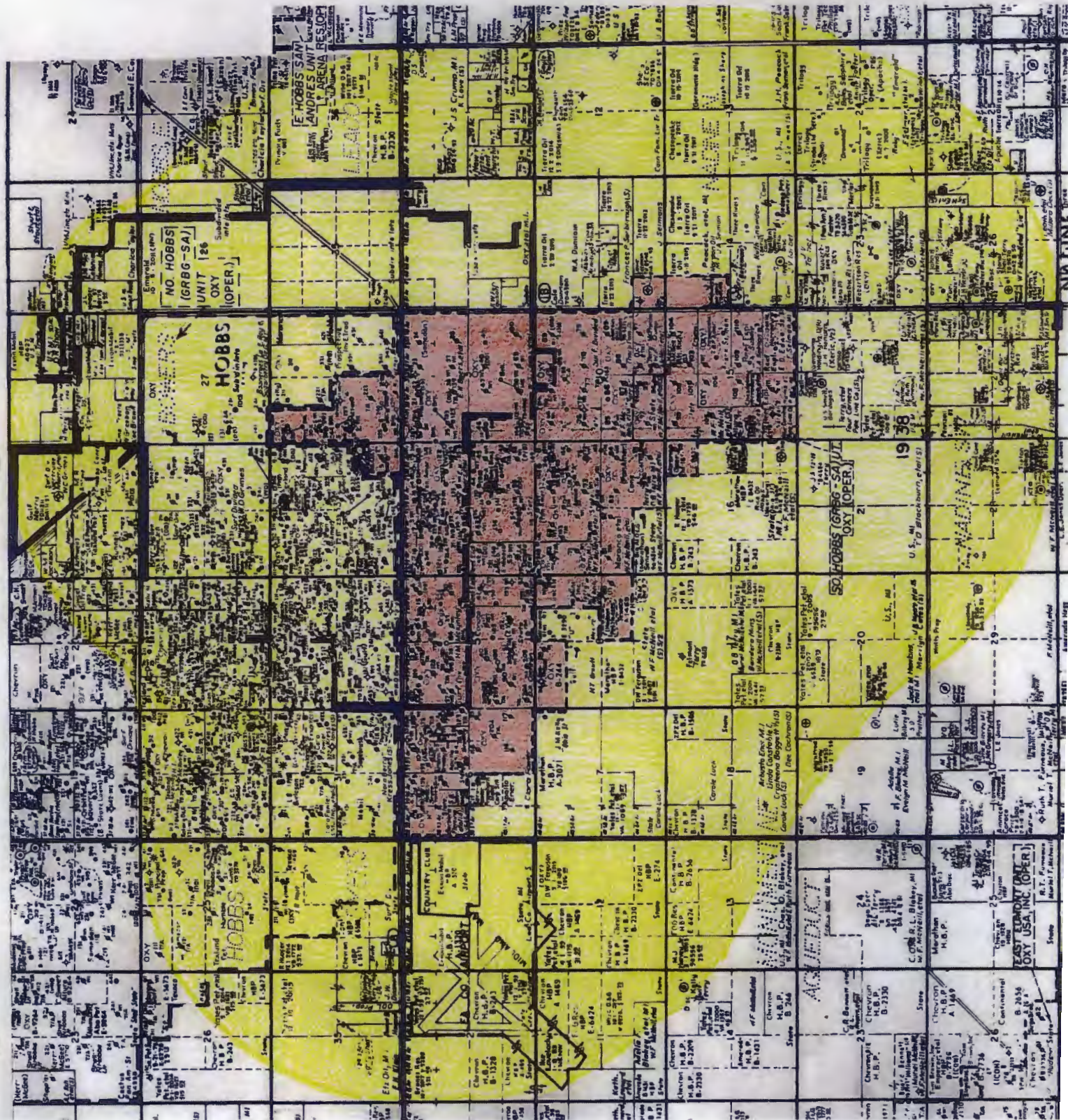
Example Wellbore Diagram of
Proposed Directional New Drill Wells
17 Total Wells

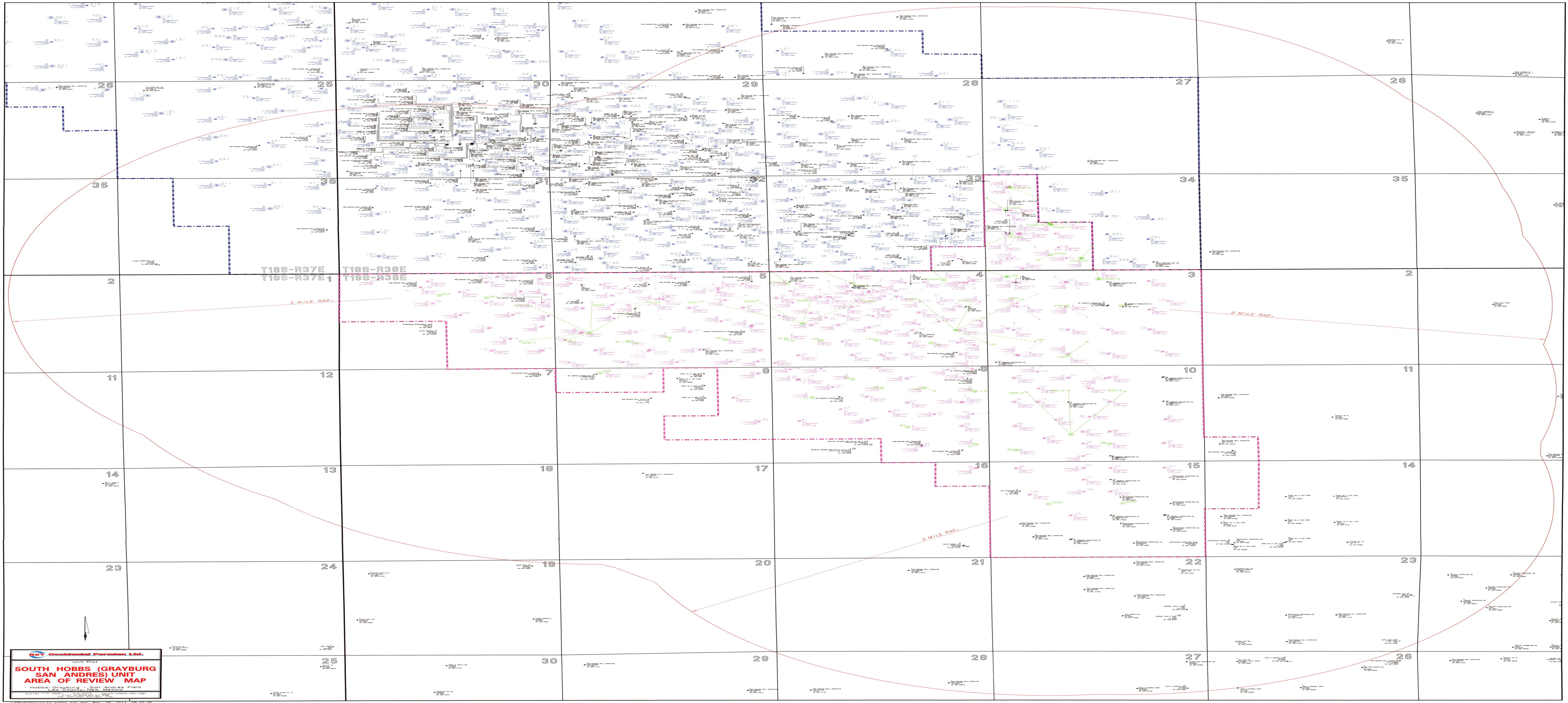
Occidental Permian Ltd.
South Hobbs G/SA Unit
Lea. County
Well Nos. 203, 143, P144
DSR1, 2,3,4,5,6,7,8,9,10,11,12,13, 14
Example Wellbore Diagram
for Directional Proposed New Drills
Section: See Attached
Unit Letter: See Attached

8 5/8" @ 1550'
Cemented
TOC: surf. (circulated)

7" @ 4500'
Cemented
TOC: surf. (circulated)

Total Depth: 4500'





South Hobbs Unit

C-108 Application

Geologic Information

Injection will occur in the upper-Permian age San Andres formation. In the Hobbs Field the top of the San Andres formation is found at depths ranging from 3950' to over 4300' below the surface. The San Andres formation in the Hobbs area can be over 1300' in thickness down to the underlying Glorieta formation; however, the hydrocarbon accumulation at the Hobbs Field is limited to the upper few hundreds of feet of the San Andres. This upper San Andres formation at Hobbs consists almost entirely of dolomite, with minor amounts of siltstone, shale and limestone. And although the Unitized interval of the Hobbs Field does extend another 100-150' above the San Andres, into the overlying lower Grayburg formation, this interval consists of poorer quality reservoir siltstones and dolomites and is not the focus of injection.

Shallow, underground sources of drinking water in the Hobbs area include the Tertiary age Ogallala and undifferentiated Cretaceous formations, commonly known together as the High Plains aquifer. The Ogallala formation, which consists of unconsolidated sands, silts, clay and gravel, can be found at depths beginning at approximately 40 feet, beneath a hard, semi-impermeable layer of caliche. The undifferentiated Cretaceous formation is found immediately underlying the Ogallala and consists of sandstones interbedded with shale and limestone. These fresh-water-bearing horizons extend down to an approximate depth of 200-250' to the top of the Triassic "Red Beds".

Contamination of these shallow drinking water sources from injection into the deeper San Andres is virtually impossible through natural vertical communication. Immediately overlying the lower Grayburg/San Andres reservoir section at Hobbs is a nearly 200' thick section of impermeable anhydrite and tight limestones of the upper Grayburg formation. Between this barrier and the fresh water zones lies another impermeable zone, a 1000'+ thick section of salt and anhydrite of the Rustler and Salado formations. The top of these formations are found at a depth of approximately 1500', immediately underlying the Triassic "Red Beds". In addition, there is no geologic evidence to suggest that there are any faults in the Hobbs area that would provide a connection between the San Andres formation and the overlying shallow drinking water sources. There are no underground sources of drinking water found below the proposed injection interval.

I hereby certify that the information presented above is true and correct to the best of my knowledge and belief.



Randy Stilwell

Senior Geologic Advisor

3-12-2013

Date

MITCHELL ANALYTICAL LABORATORY

2638 Faudree
Odessa, Texas 79765-8538
561-5579

Company: **Nalco Company**

Well Number:	DA Cochran Windmill S of House	Sample Temp:	70
Lease:	OXY	Date Sampled:	3/25/2013
Location:	55ft. close to inj. #209	Sampled by:	Bobby Hunt
Date Run:	3/27/2013	Employee #:	27-022
Lab Ref #:	13-mar-n69275	Analyzed by:	GR

Dissolved Gases

		Mg/L	Eq. Wt.	MEq/L
Hydrogen Sulfide	(H ₂ S)	.00	16.00	.00
Carbon Dioxide	(CO ₂)	NOT ANALYZED		
Dissolved Oxygen	(O ₂)	NOT ANALYZED		

Cations

Calcium	(Ca++)	72.36	20.10	3.60
Magnesium	(Mg++)	13.08	12.20	1.07
Sodium	(Na+)	40.60	23.00	1.77
Barium	(Ba++)	NOT ANALYZED		
Manganese	(Mn+)	.13	27.50	.00
Strontium	(Sr++)	NOT ANALYZED		

Anions

Hydroxyl	(OH-)	.00	17.00	.00
Carbonate	(CO ₃ =)	.00	30.00	.00
BiCarbonate	(HCO ₃ -)	195.52	61.10	3.20
Sulfate	(SO ₄ =)	46.00	48.80	.94
Chloride	(Cl-)	82.09	35.50	2.31
Total Iron	(Fe)	0.24	18.60	.01
Total Dissolved Solids		450.02		
Total Hardness as CaCO ₃		234.53		
Conductivity MICROMHOS/CM		692		

pH	7.100	Specific Gravity 60/60 F.	1.000
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CaSO₄ Solubility @ 80 F. 18.71MEq/L, CaSO₄ scale is unlikely

CaCO₃ Scale Index

70.0	-.927	100.0	-.577	130.0	-.067
80.0	-.797	110.0	-.337	140.0	-.067
90.0	-.577	120.0	-.337	150.0	.163

Nalco Company

MITCHELL ANALYTICAL LABORATORY

2638 Faudree
Odessa, Texas 79765-8538
561-5579

Company: **Nalco Company**

Well Number: Malcomb Combs Windmill
Lease: OXY
Location: Inj. #239
Date Run: 3/27/2013
Lab Ref #: 13-mar-n69274

Sample Temp: 70
Date Sampled: 3/25/2013
Sampled by: Bobby Hunt
Employee #: 27-022
Analyzed by: GR

Dissolved Gases

		Mg/L	Eq. Wt.	MEq/L
Hydrogen Sulfide	(H ₂ S)	.00	16.00	.00
Carbon Dioxide	(CO ₂)	NOT ANALYZED		
Dissolved Oxygen	(O ₂)	NOT ANALYZED		

Cations

Calcium	(Ca++)	86.11	20.10	4.28
Magnesium	(Mg++)	16.88	12.20	1.38
Sodium	(Na+)	30.32	23.00	1.32
Barium	(Ba++)	NOT ANALYZED		
Manganese	(Mn+)	.00	27.50	.00
Strontium	(Sr++)	NOT ANALYZED		

Anions

Hydroxyl	(OH-)	.00	17.00	.00
Carbonate	(CO ₃ =)	.00	30.00	.00
BiCarbonate	(HCO ₃ -)	219.96	61.10	3.60
Sulfate	(SO ₄ =)	28.00	48.80	.57
Chloride	(Cl-)	100.11	35.50	2.82
Total Iron	(Fe)	0.14	18.60	.01
Total Dissolved Solids		481.52		
Total Hardness as CaCO ₃		284.48		
Conductivity MICROMHOS/CM		875		

pH 7.070 Specific Gravity 60/60 F. 1.000

CaSO₄ Solubility @ 80 F. 18.22MEq/L, CaSO₄ scale is unlikely

CaCO₃ Scale Index

70.0	-.830	100.0	-.480	130.0	.030
80.0	-.700	110.0	-.240	140.0	.030
90.0	-.480	120.0	-.240	150.0	.260

Nalco Company