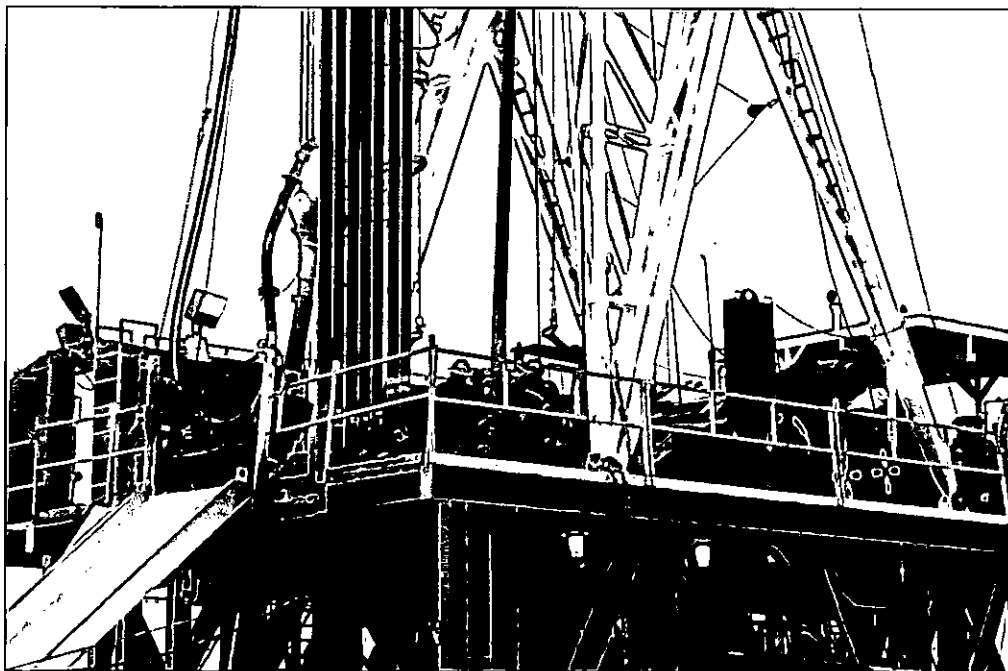


DCP Midstream LP

Application for Authorization to Inject

Zia Gas Processing Plant AGI System

C-108 Application for Zia AGI#1 and Zia AGI#2



**Presented in a Hearing Before the
New Mexico Oil Conservation Commission
Case 15073**

EXHIBITS FOR DCP MIDSTREAM

**February 13, 2014
Santa Fe, New Mexico**

2014 FEB -6 P 4:12

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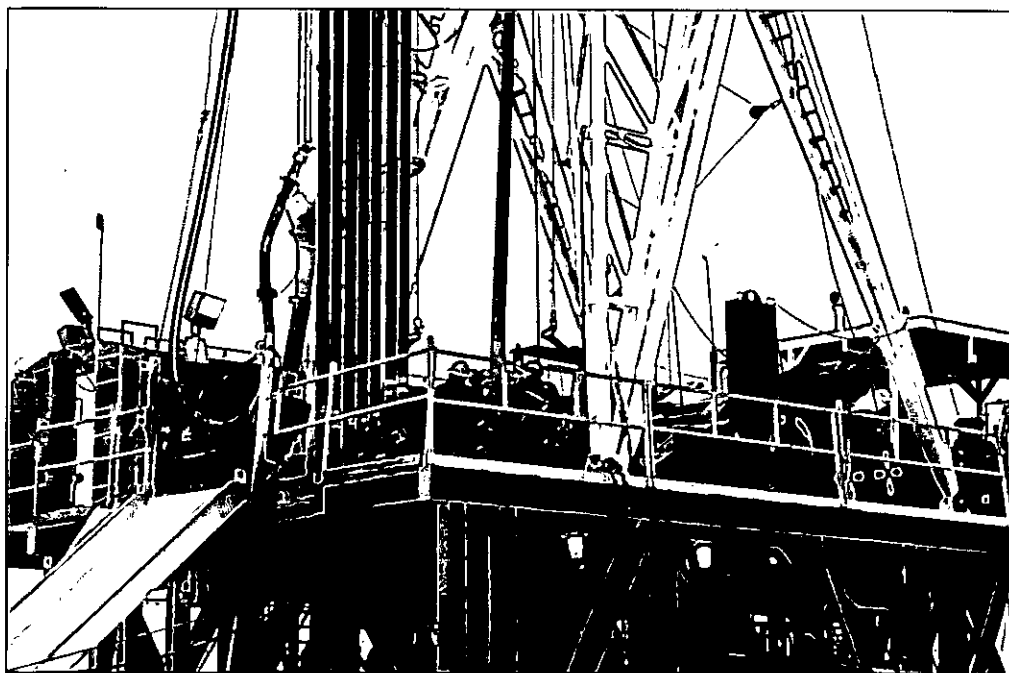
DCP
Midstream.

DCP Midstream LP

Application for Authorization to Inject

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New Mexico Oil Conservation Commission
Case 15073**

**February 13, 2014
Santa Fe, New Mexico**

**BEFORE THE OIL CONSERVATION
COMMISSION**

Santa Fe, New Mexico

Exhibit No. 2

Submitted by: DCP MISTREAM, L.P.

Hearing Date: February 13, 2014

**GEOLEX
INCORPORATED**

***DCP*
Midstream.**

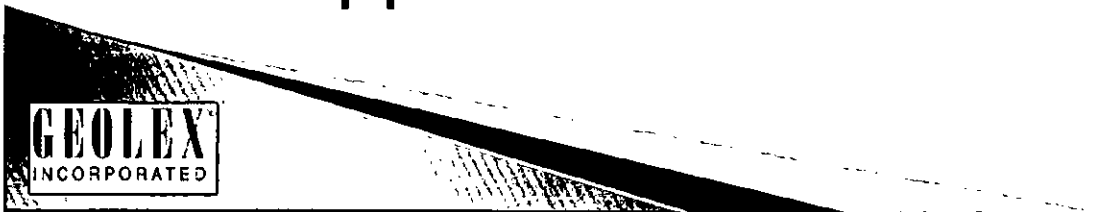
DCP Midstream's Witnesses

- Mr. David Stone – DCP Midstream, LP
- Alberto A. Gutierrez, RG – Geolex, Inc.



Presentation Topics for Each Witness

- Describe overall history, financial and environmental benefits of DCP's Proposed Zia Gas Processing Plant and role of AGI project in gas plant operations. --- **David Stone**
- Describe relevant site geology and hydrogeology, system design, operation, analyses of anticipated effect on injection zone and all components of C-108 application. --- **Alberto A. Gutiérrez, RG**



Zia II Gas Plant and AGI wells

- Plant Capacity and Associated Infrastructure
 - 200 mmscf/day sour gas
 - AGI system integral to capacity
- Necessary to service production of sour gas
 - strain on current gas processing plant capacity
 - sour gas production increase occurring and anticipated
 - provide producers with processing capacity
 - reduction in field flaring

AGI Wells Integral to Zia II

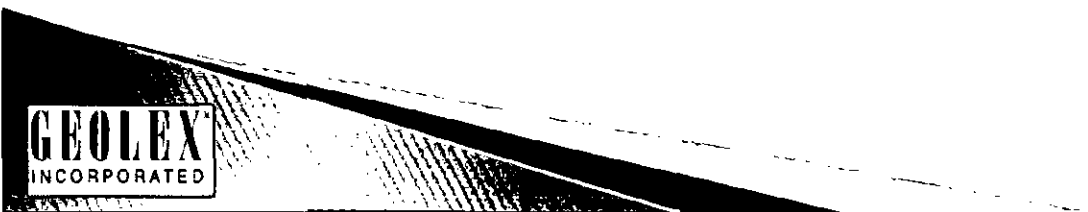
- AGI system integral to the facility
 - air construction and operating permit
 - in lieu of a complex Sulfur Recovery Unit / Tail Gas Incinerator air emissions system
- Expected net emissions reduction from various DCP assets when facility, and AGI system, brought on-line

DCP's Commitment and Investment

- Zia II Project
 - sour gas processing plant
 - associated infrastructure
 - AGI system
- Creates capacity for growth of natural gas production in region
- Zia II Project will not proceed without AGI system
- Construction and operation timeline
 - intended operation Summer 2015
 - inherent contingencies and variables due to complexity of project
 - Need for 3-year grace period to begin injection

Benefits of Redundant AGI System

- Provides additional layer of system protection, and added reliability
 - increased reliability of plant operation and ability to process producer gas when well off-line
 - environmental benefits
- Redundant AGI system reflects prudent investment



Requested Approval of C-108

- Zia II and AGI system is important to DCP, and
 - producers
 - process existing and expected sour gas
 - reduction in field flaring
 - capacity for future production
 - State of New Mexico
 - support responsible development
- Request approval of C-108 as submitted, and as presented by Geolex on behalf of DCP

C-108 Application Executive Summary

1. DCP is requesting authority to inject acid gas from two identical, deviated wells:
 - Into the Brushy Canyon and Cherry Canyon Formations at depths of approximately 5,500 to 6,100 feet
 - At a maximum rate of 15.0 MMSCFD (combined for both wells) and maximum operating surface pressure of 2,233 psig.
2. Using a safety factor of 100 % (15.0 MMSCFD per well), the radius of influence for each well after injecting for 30-year radius of 0.37 miles. Actual radius of influence for each well after 30 years is about .26 miles.
3. There is no current or anticipated production in the Brushy Canyon and Cherry Canyon Formations within one mile of in the proposed injection site
4. Twenty nine wells penetrate the injection zones within the one-mile radius area of review (17 active wells and 12 plugged wells). Within one half mile of the injection points there are only 9 wells penetrating the injection zone; 7 are active and 2 are plugged and abandoned.
5. *All wells penetrating the proposed injection zones are either properly plugged or, in the case of active wells, completed such that the proposed injection zones are well isolated from producing and fresh water zones.*
6. *The proposed injection zone is capable of permanently containing the injected fluid due to low porosity and permeability of cap rock above and below*

Key Elements of DCP's C-108

- Nearby oil and gas wells, nearby water wells and surface water are protected by well design and geologic factors
- Detailed log interpretation has permitted the accurate delineation of the reservoir assuring that nearby SWD and producing wells will be protected
- AGI project reduces waste and air emissions by eliminating flaring of acid gas or operation of a sulfur recovery unit as sulfur control measures
- AGI project has substantial environmental benefits of greenhouse gas reduction due to sequestration of CO₂ which otherwise would be released to atmosphere

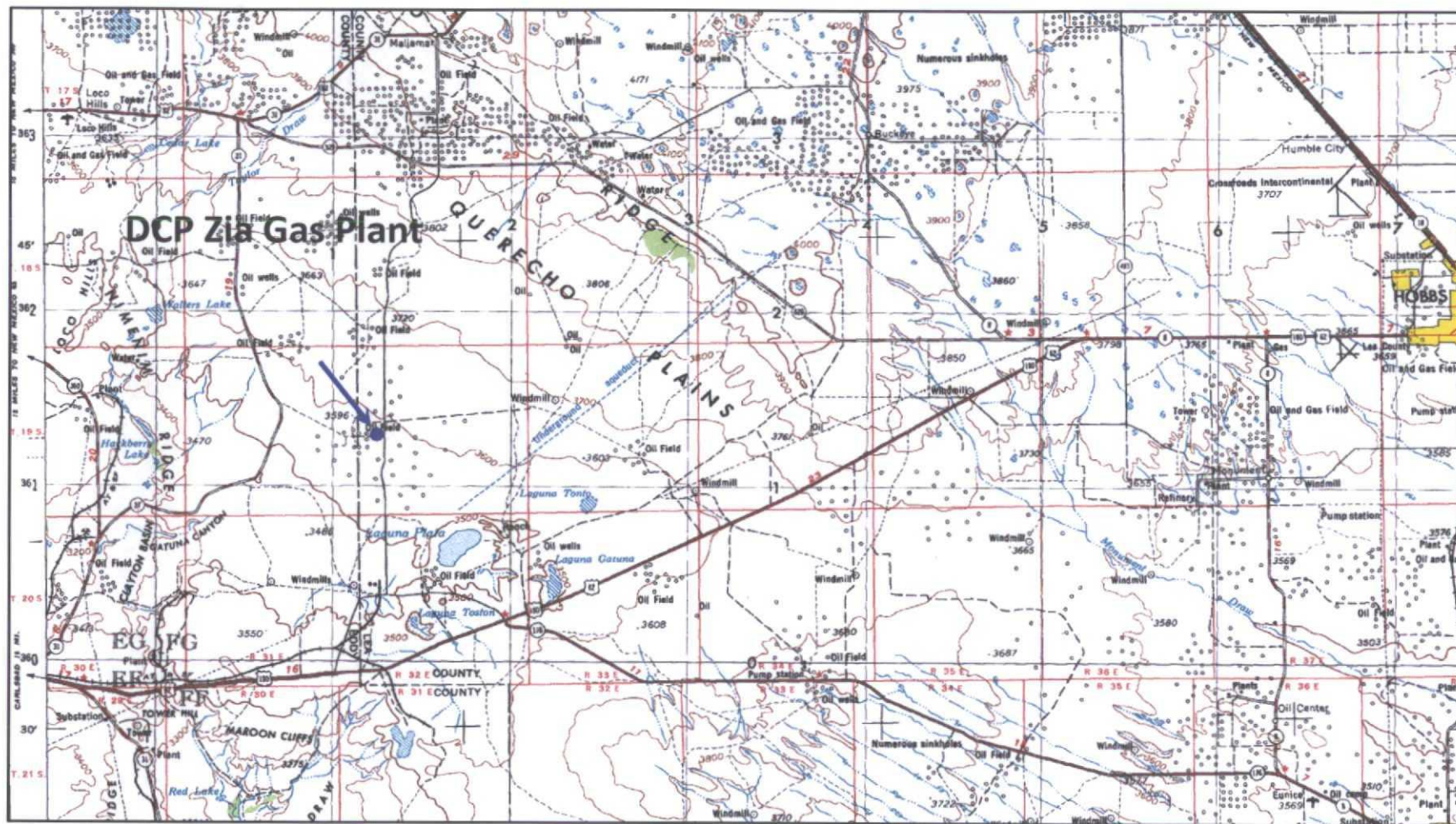
Key Elements of DCP's C-108 (cont.)

- DCP's C-108 application details the full information needed to approve the installation of AGI wells
- H₂S Contingency Plan for the Zia plant will be submitted to NMOCD for approval prior to commencing injection
- Adjacent operators and the BLM support the project
- Operators and surface owners have received proper notice and there are no objections to the AGI project

Location and Background

- The proposed AGI wells are designed to support the operations of DCP's new Zia Gas Plant.
- The new plant will be constructed in Section 19, Township 19 South, Range 32 East in Eddy County, New Mexico (see location map on next slide).
- When operational, the plant will process approximately 200 million cubic feet of natural gas per day.
- The production will provide additional new revenue to State of NM.

Location of the Proposed DCP Zia Gas Plant and AGI Wells



USGS 1:250,000 scale base map

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Midstream.

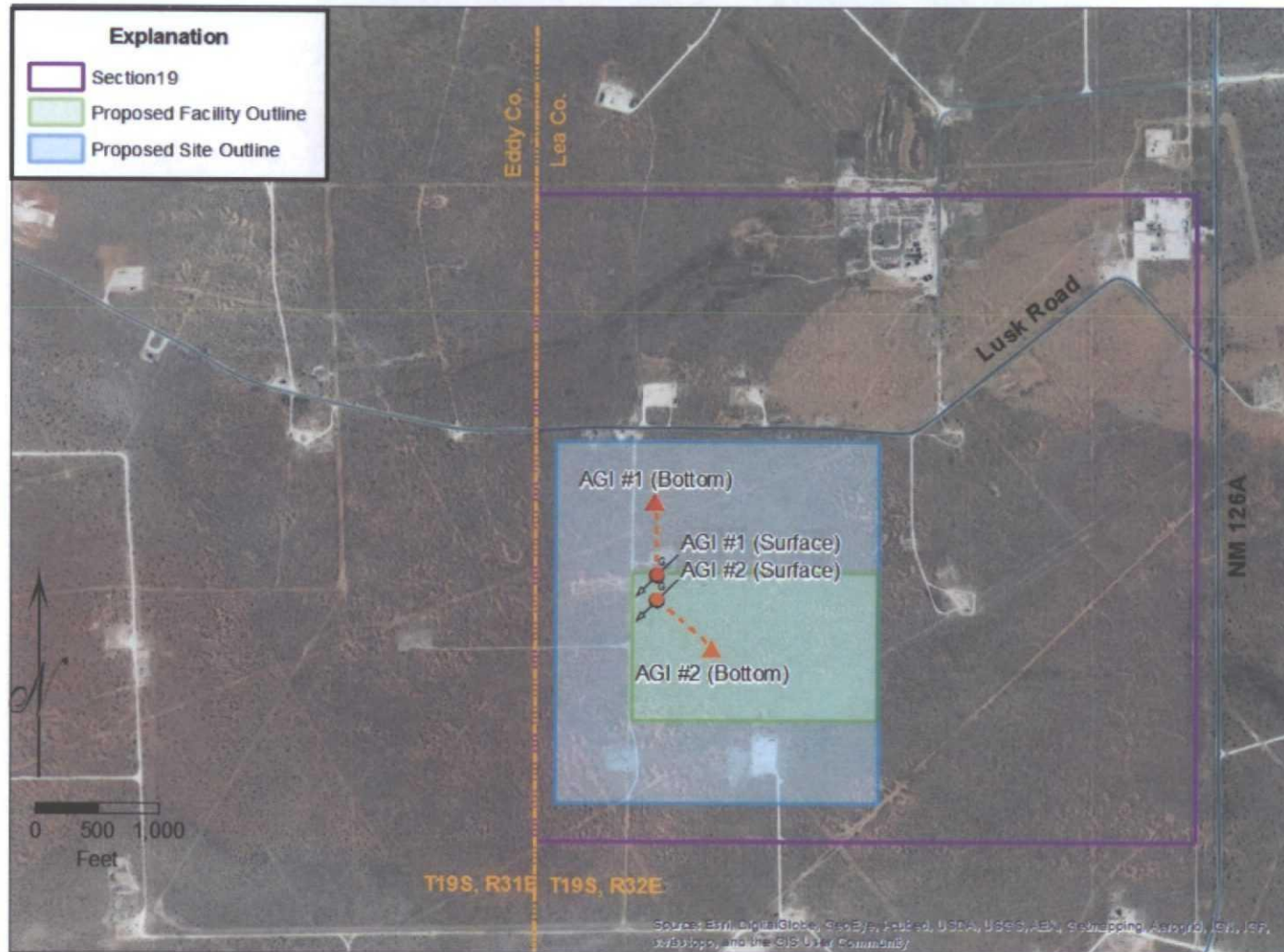
Proposed Plant Site Details

- The overall site will encompass approximately 180 acres, and the plant operations area will encompass approximately 50 acres.
- All lands are owned by the United States Government, and will be leased from the BLM.
- Field gas will be “sweetened” by two amine units, and the TAG will then be compressed and piped to the two AGI wells.
- The proposed wells and all surface equipment will be contained within the plant area.
- The bottom hole locations of the proposed wells will lie approximately 1200 feet from each other due to the deviation of the wells while the surface locations are close to each other to minimize above ground piping.

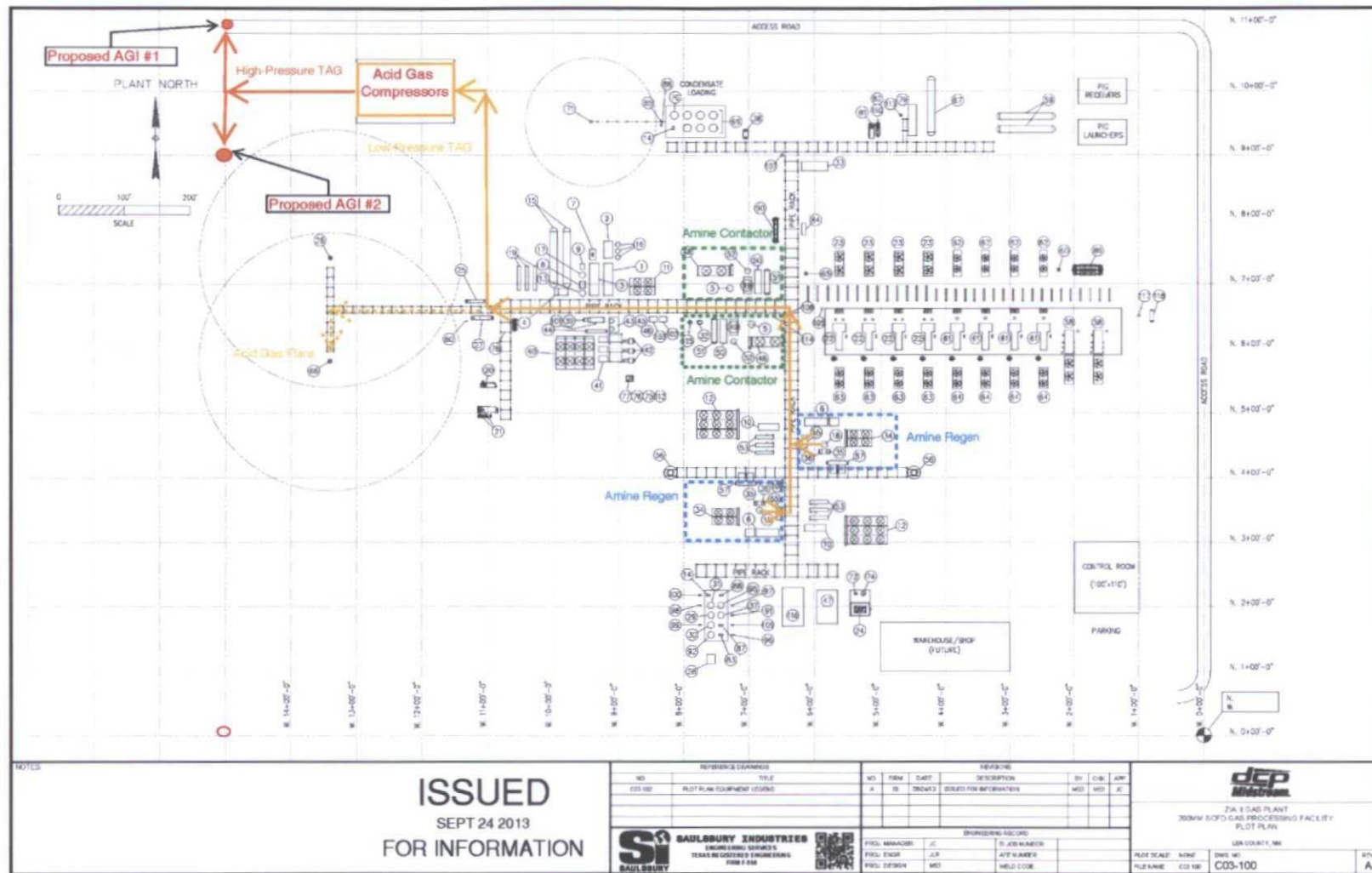
Legal Descriptions of Proposed Wells

- The Zia AGI #1 well will be drilled at 2100' from the south line (FSL) and 950' from the west line (FWL) of Section 19.
- The Zia AGI #2 well will be drilled at 1,900 FSL and 950 FWL of Section 19.
- Well AGI #1 will be deviated approximately 27° to the north of the surface location to reach the bottom hole approximately 600' north of the surface location, placing the injection zone location at 2,580 FNL and 950 FWL in Section 19.
- Well AGI #2 will be deviated approximately 27° southeast from the surface location to reach the injection zone approximately 600' southeast of the surface location, placing the bottom hole at approximately 1400 FWL and 1,590 FSL in Section 19.

Detail Map, Proposed Zia Plant and AGI Wells



Schematic of Injection Well and Surface Equipment System



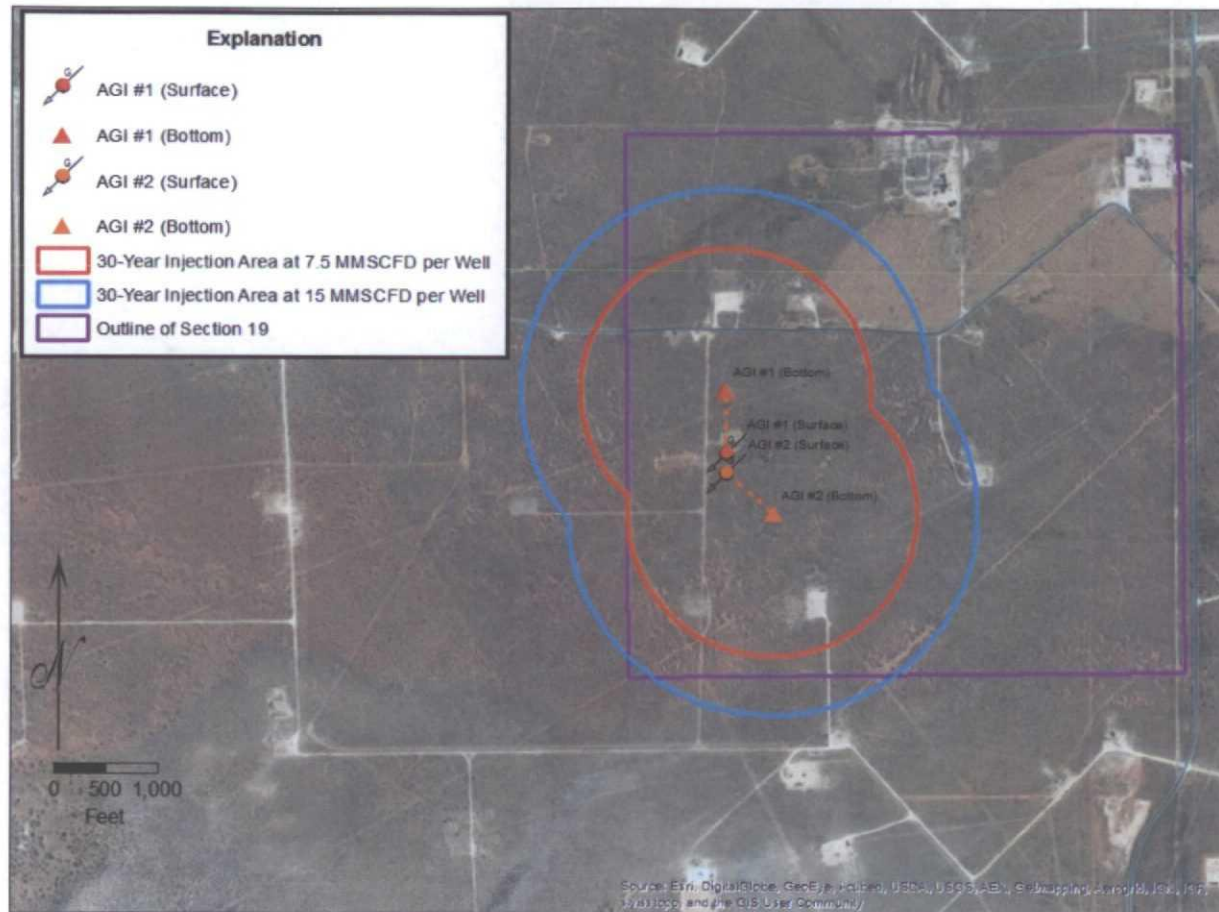
Injection Fluid Volume, Composition and Pressure Calculations

- Maximum combined injection rate for system is approximately 15 MMSCFD (each well will be about 7.5 MMSCFD).
- Injected fluid composition is 11% H₂S, 89% CO₂, and traces of light hydrocarbons (C1 – C8).
- Injected fluid compatibility is determined through nearby injection experience and formation fluid analysis.
- The Maximum Allowable Operating Pressure (MAOP) requested was calculated per NMOCD guidelines to be 2,233 psig at the surface.

Reservoir Volume and Area Calculations

- At the anticipated reservoir conditions of 120° F and 2,400 psig, each MMSCF of TAG will occupy a volume of 2,636 cubic feet (470 barrels). At the anticipated maximum operational capacity of 15 MMSCFD, the compressed TAG will occupy 7,050 barrels per day.
- After 30 years of operation, the TAG will occupy an area of approximately 280 acres, or a radius of 1,966' (<0.37 miles) from a single well.
- Partitioned between two wells at 7.5 MMSCFD, the injected TAG would occupy 140 acres per well, at radii of 1,390' (0.27 miles).
- See Map on next slide

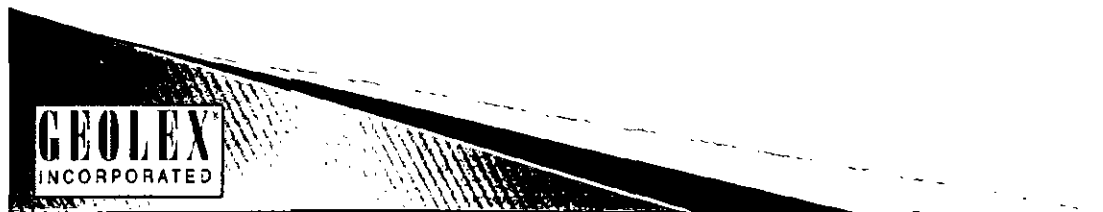
Calculated 30-Year Radii of Injection from DCP Zia AGI Wells #1 and #2



Circles Show Anticipated Footprint of Planned Injection Rate of 7.5 MMSCFD (red) and 100% Safety Factor Injection Rate 15 MMSCFD (blue)

Adjacent Operators and Surface Owner Notification and Notices

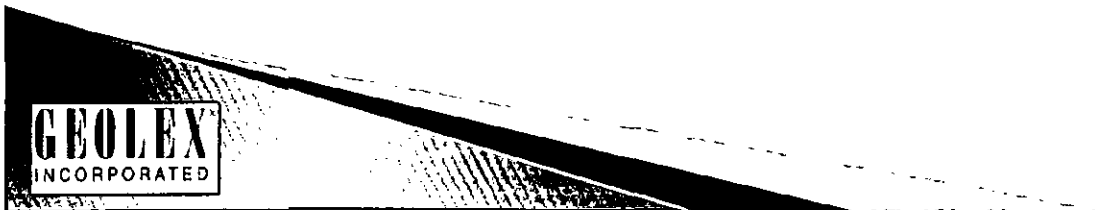
- DCP's complete C-108 application was sent to adjacent operators and surface owners within the 1/2 mile radius of the proposed wells via Certified Mail, Return Receipt Requested.
- Notice of the application and the Commission hearing was published in the local paper by NMOCC.
- No objections to DCP's application have been submitted.
- Adjacent operators and the BLM support the AGI project which will allow increased throughput and increase royalties paid to State of New Mexico while protecting fresh water resources and correlative rights.



What Are We Looking For in a Reservoir For CO₂ and Acid Gas Sequestration?

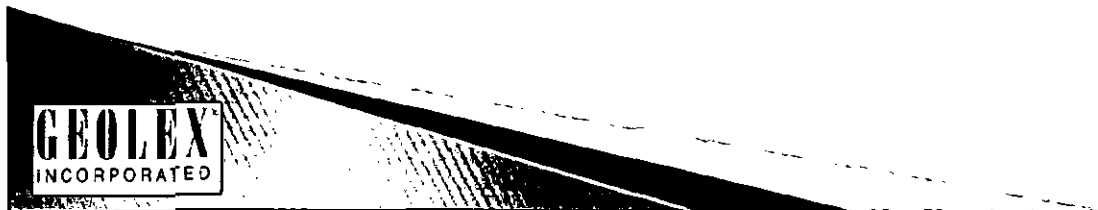
- Geologic seal to permanently contain injected fluid
- Isolated from any fresh groundwater
- No effect on existing or potential production
- Laterally extensive, permeable, good porosity
- Excess capacity for anticipated injection volumes
- Compatible fluid chemistry

✓ **DCP's Proposed Zia AGI #1 and AGI #2 Meet all of these Criteria**

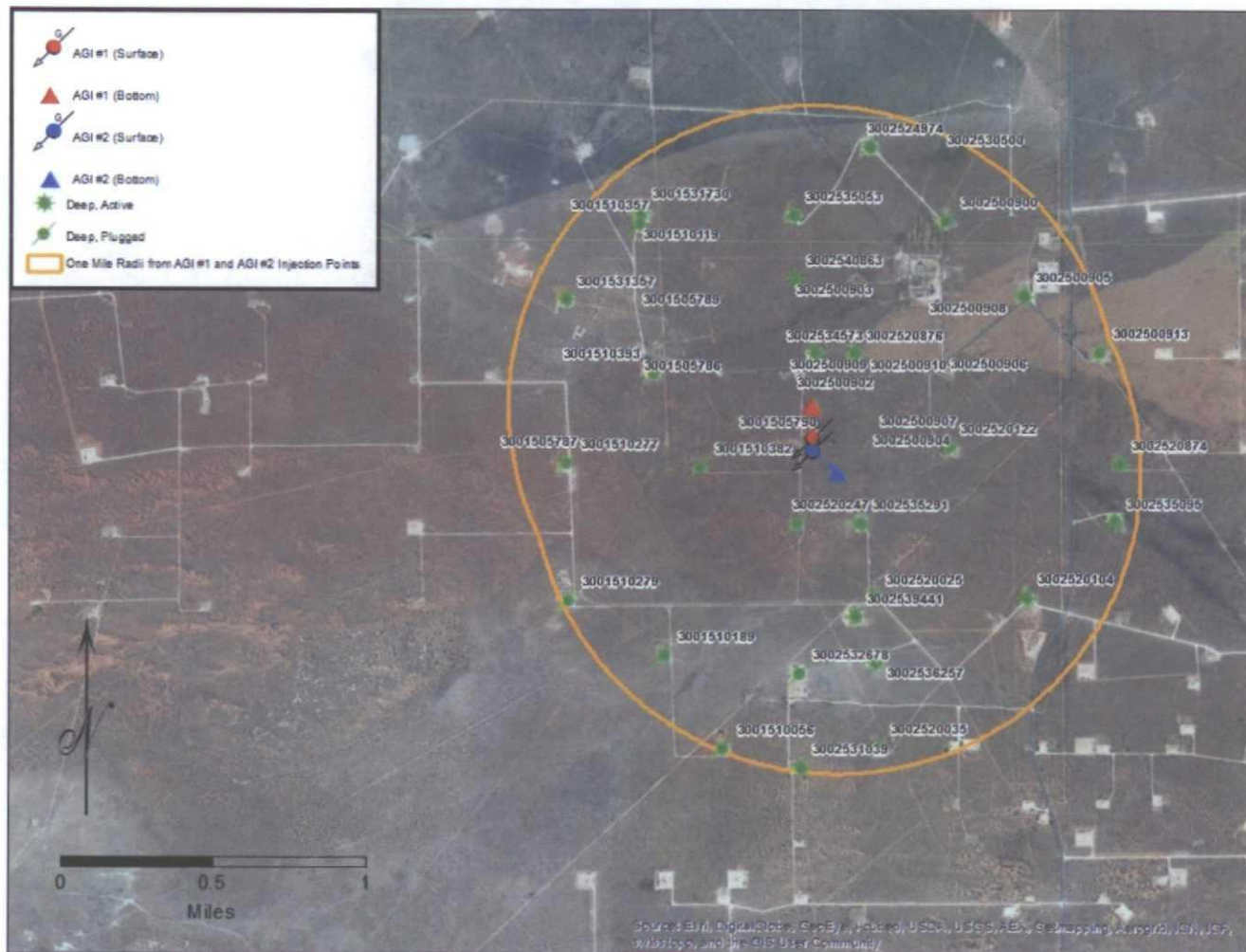


Identification & Characterization of Wells, Stratigraphy & Geologic Structure in the Project Area

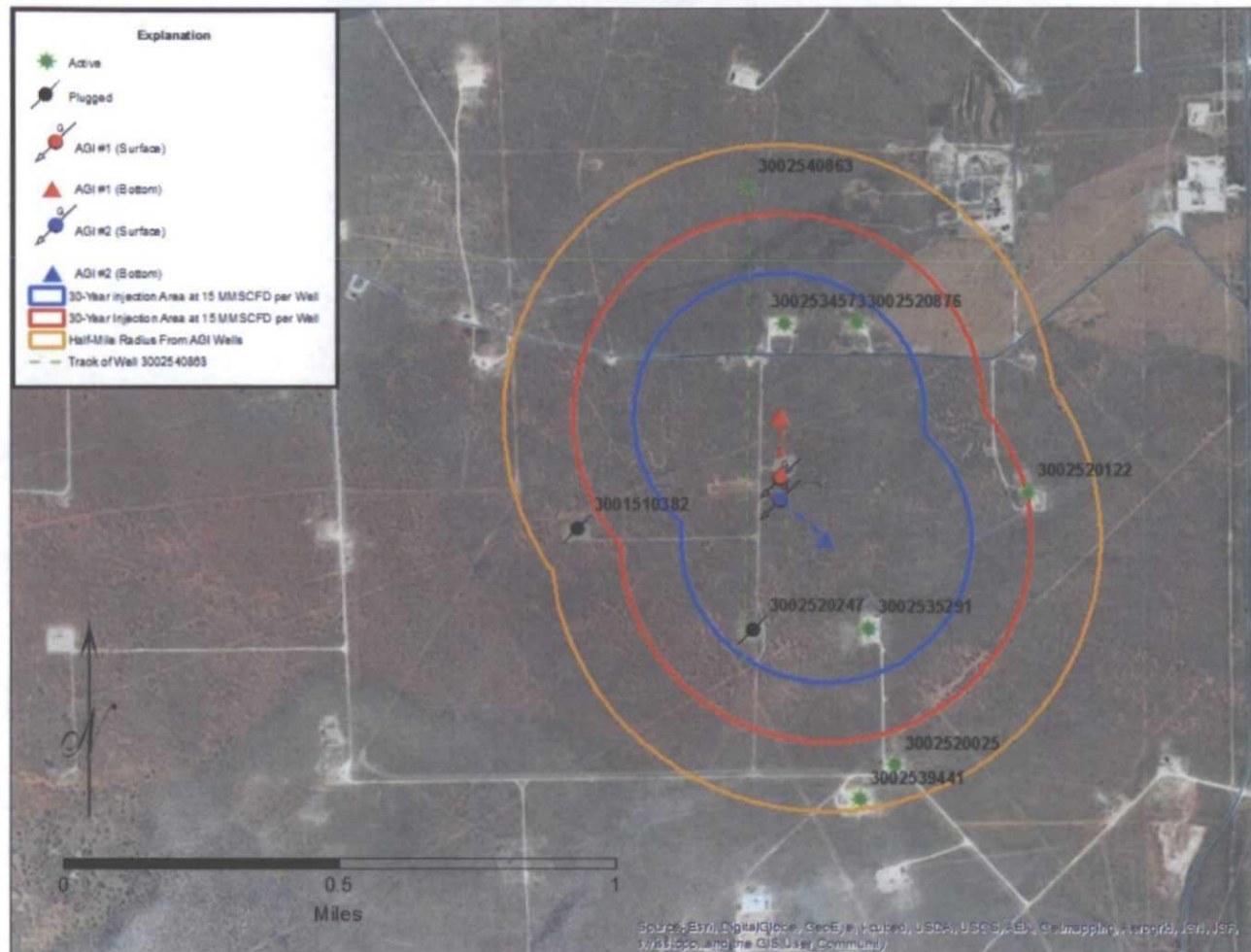
- Forty six wells were identified in the one-mile radius of the proposed AGI locations, of which 29 penetrate the injection zone. There are no completions or current production in the proposed injection zone in this area.
- Within one half mile of the proposed locations, there are only 9 wells (7 active and 2 plugged) penetrating the injection zone.
- A review of the plugging and completion reports indicates that the injection zone is properly isolated by all of the plugged wells within calculated radius of injection of the proposed AGI wells, including a 100% volume safety factor (<0.37 miles from the injection point of each proposed well).



Wells Penetrating Injection Zone Within One Mile of Proposed Wells Zia AGI #1 and Zia AGI #2



Wells Penetrating the Injection Zone Located Within One Half Mile of the Proposed AGI Wells

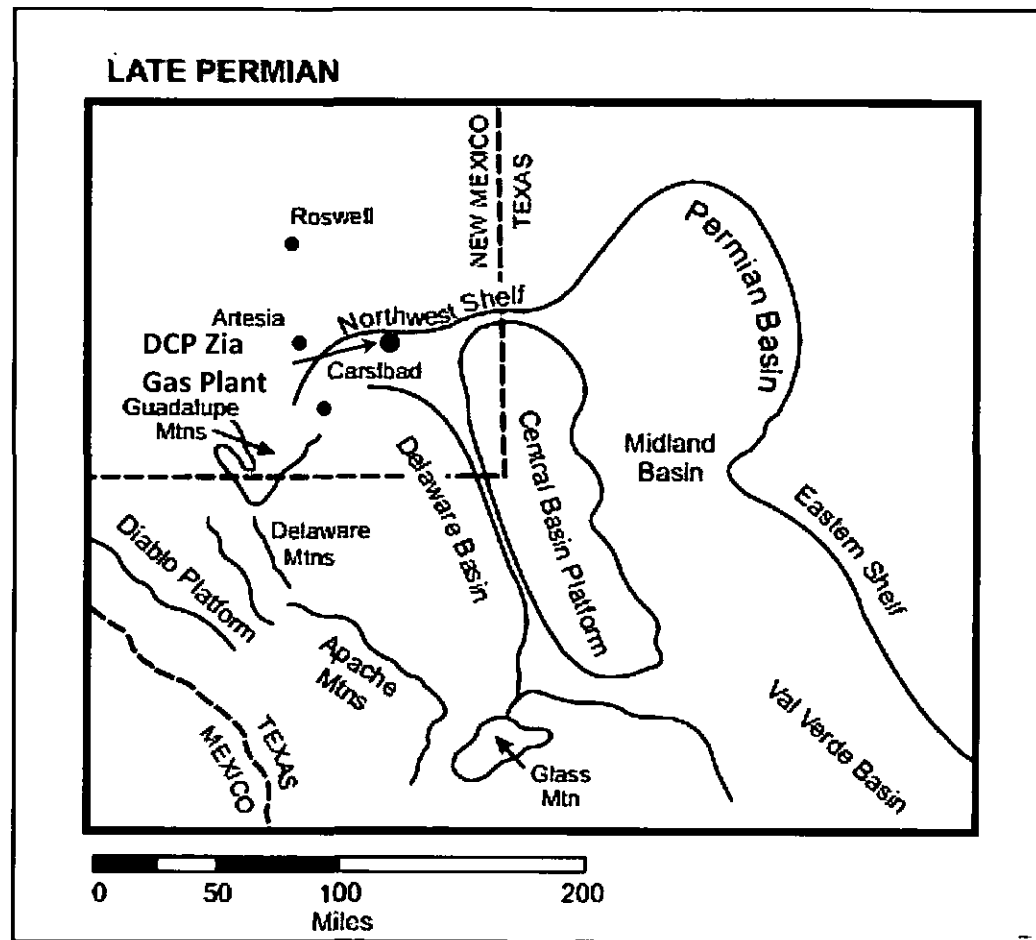


Circles Show Anticipated Footprint of Planned Injection Rate of 7.5 MMSCFD (red) and 100% Safety Factor Injection Rate 15 MMSCFD (blue)

Stratigraphy of Proposed Injection Area

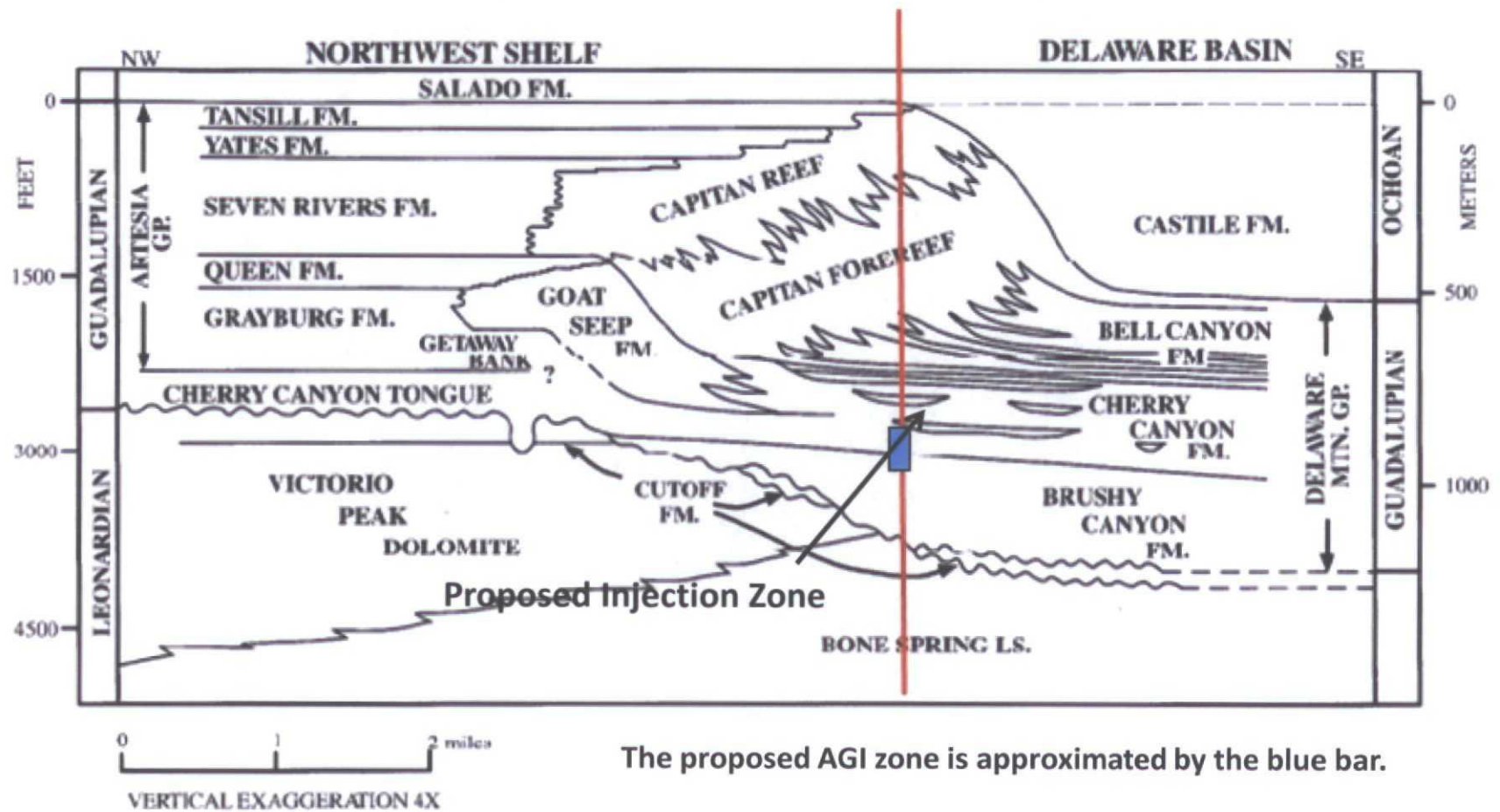
- The proposed wells will be located on the southern slope of the northwest shelf of the Permian Basin.
- The Cherry Canyon and Brushy Canyon Formations are sandstone units deposited at the toe of the Capitan Forereef, and are contained above and below by low-permeability siltstone and shale.
- The wells will penetrate the Capitan Aquifer (usable, not potable water) and BLM protection rules require that the intermediate casing extend beneath this zone.

Structural Features of the Permian Basin During the Late Permian (Modified from Ward, et al (1968)).

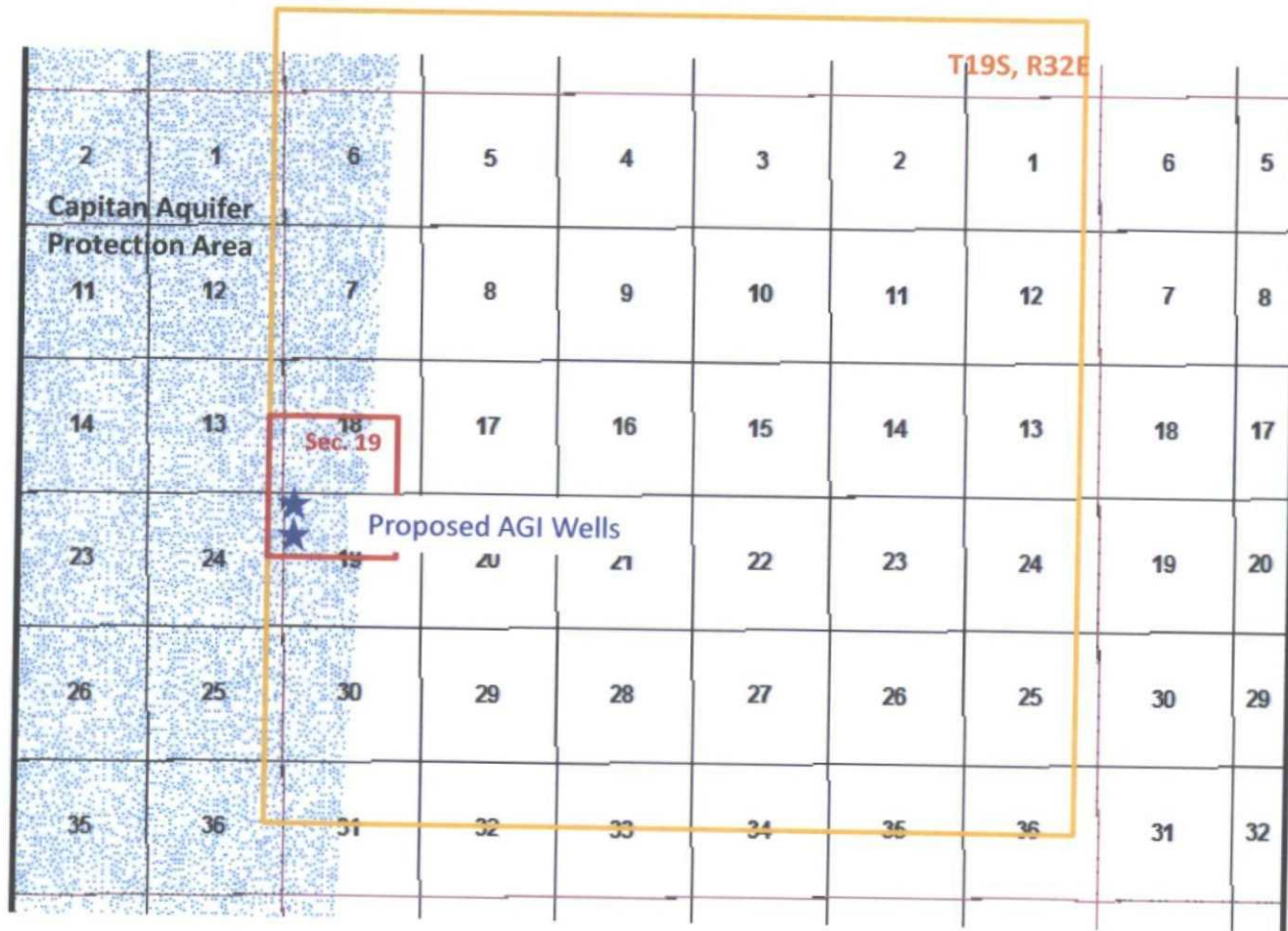


Approximate Location of the proposed DCP Zia Gas Plant is Shown by the Blue Arrow.

Cross Section Showing General Stratigraphy Around Proposed Zia Gas Plant

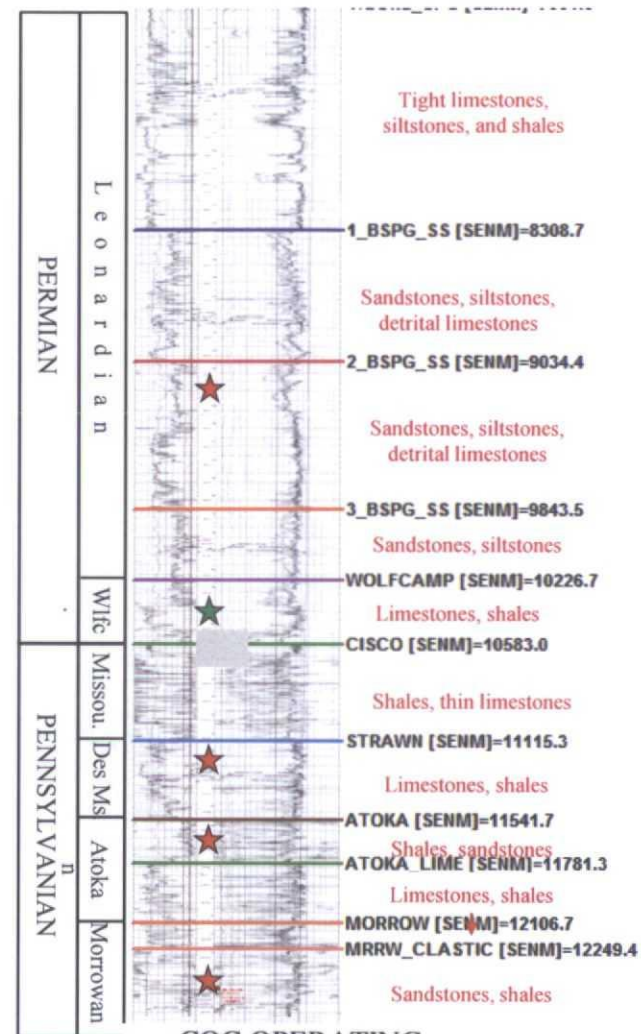
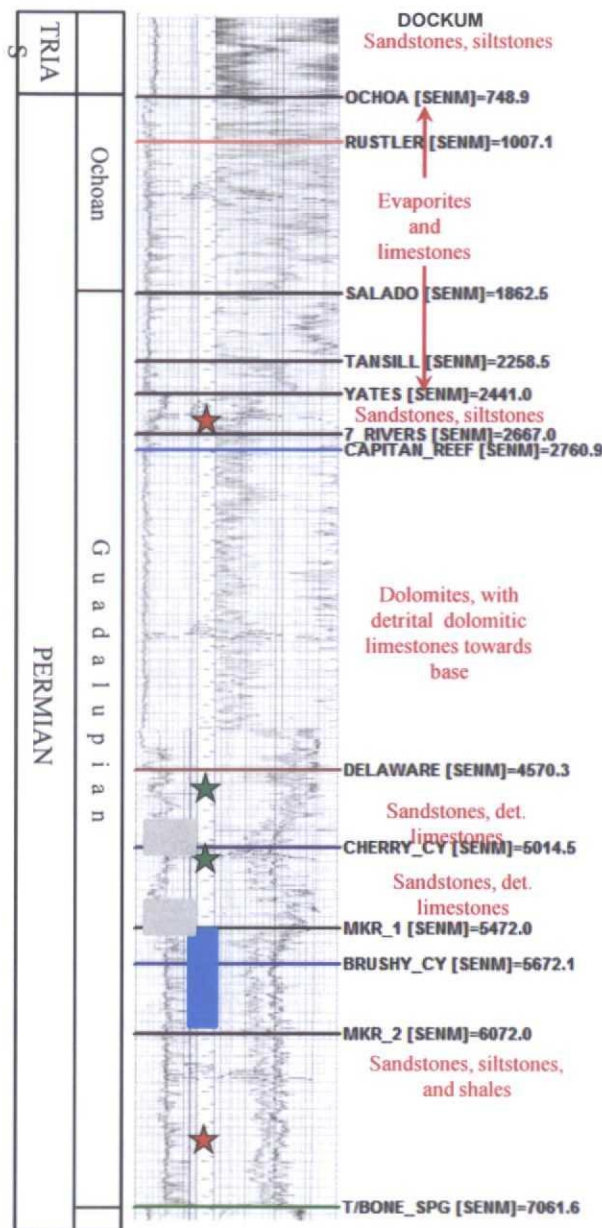


BLM-Designated Capitan Aquifer Protection Area



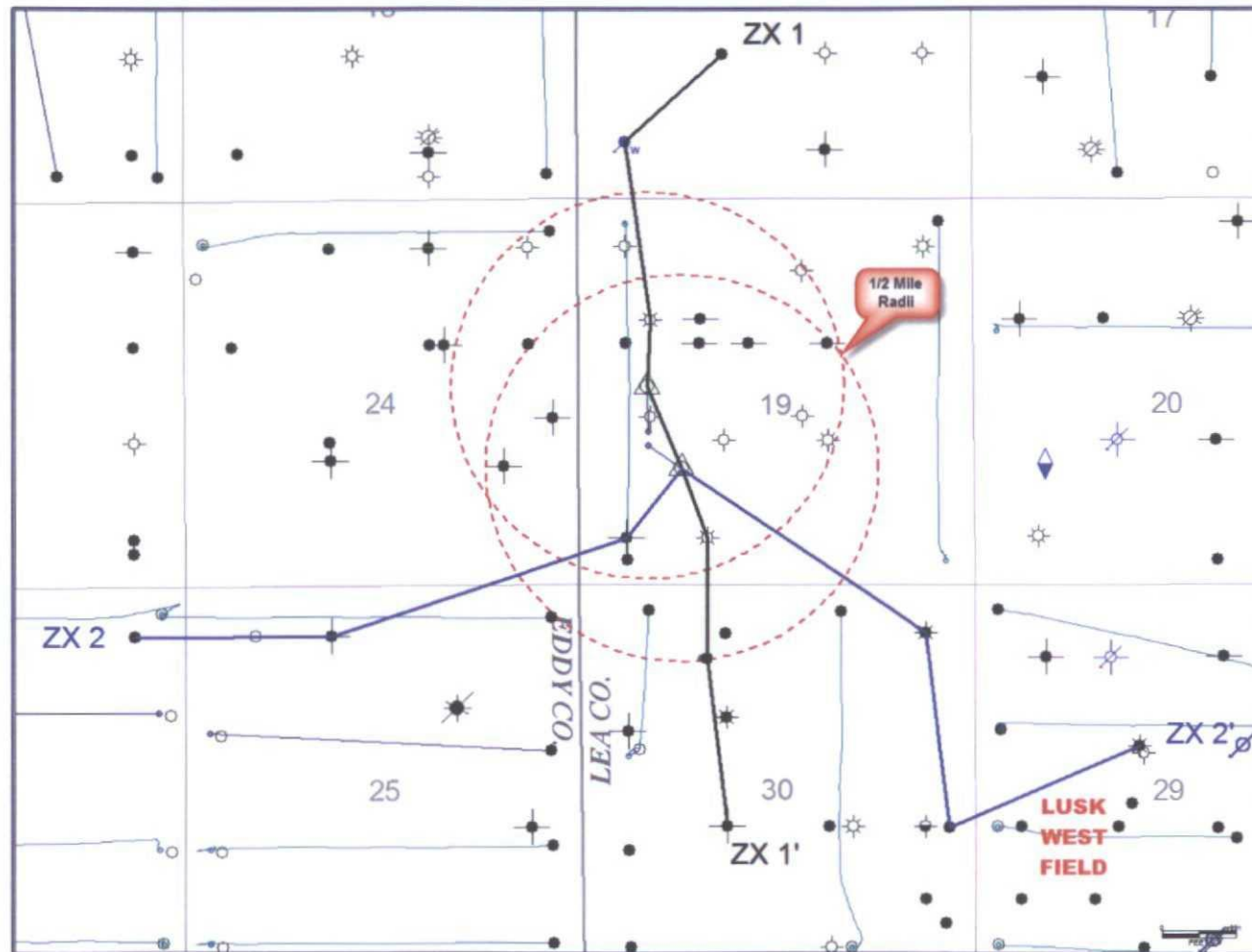
Stratigraphy and Lithology of Producing Zones Above and Below Proposed Injection Zone

Stratigraphy and generalized lithology of the subsurface formations underlying the proposed Zia AGI sites. Zones with active pay within the radii of investigation are shown by the red stars. Zones with pay outside the areas of investigation are shown by the green stars. Other than the Delaware Mountain Group, none of the other formations present under the site contain reservoirs adequate to support the AGI needs of the proposed Plant. The Delaware Group, specifically the interval shown by the blue bar, is the only formation with laterally-extensive reservoirs and are sufficiently isolated from active pay zones either above or below.

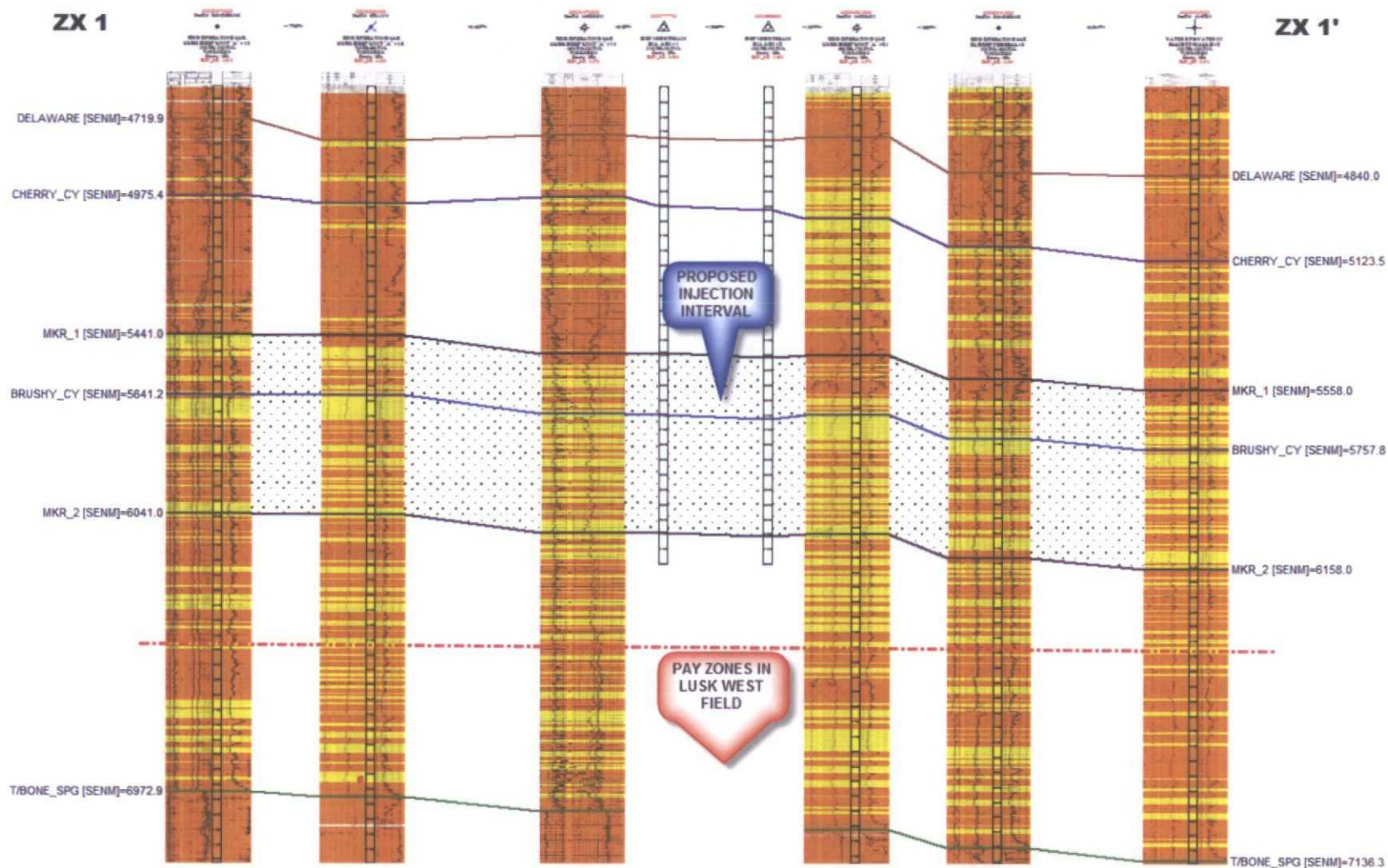


COG OPERATING
LUSK DEEP UNIT 'A' #21
660 FSL 1750 FWL
T19S R32E S19
County : LEA

Locations of Cross-Sections ZP-1 and ZP-2

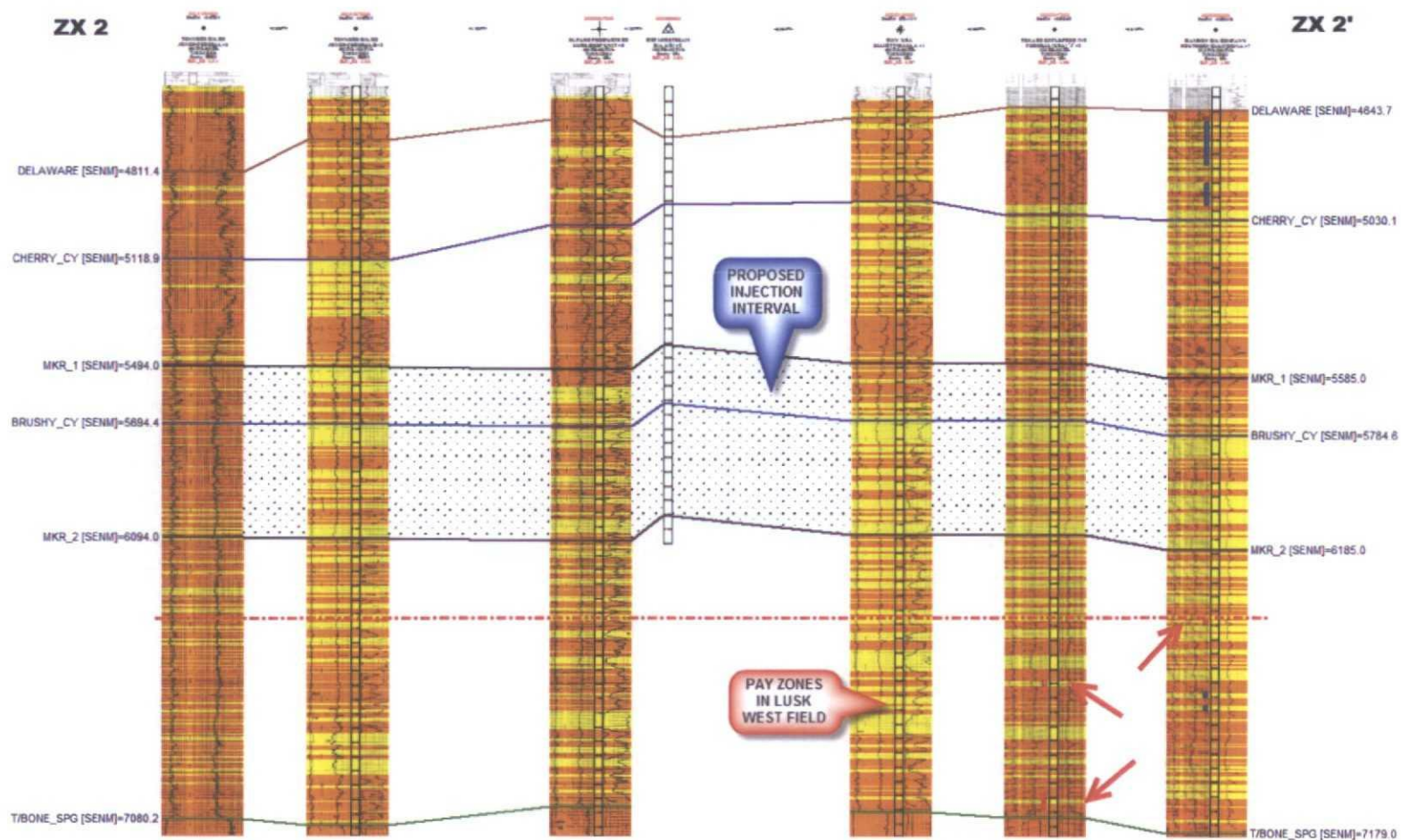


Northwest-Southeast Cross Section Through Delaware Mountain Group in Proposed Injection Area



Yellow shading denotes sandstone porosity in excess of 10%, and brown shading shows tight facies. There are very thick sections of tight rock above the proposed injection interval that will prevent upward migration of fluids into shallower (Yates) pay zones, and even shallower groundwater zones. There are also alternating tight and sandy facies between the injection interval and lower Brushy Canyon pay zones in the nearby Lusk West Field.

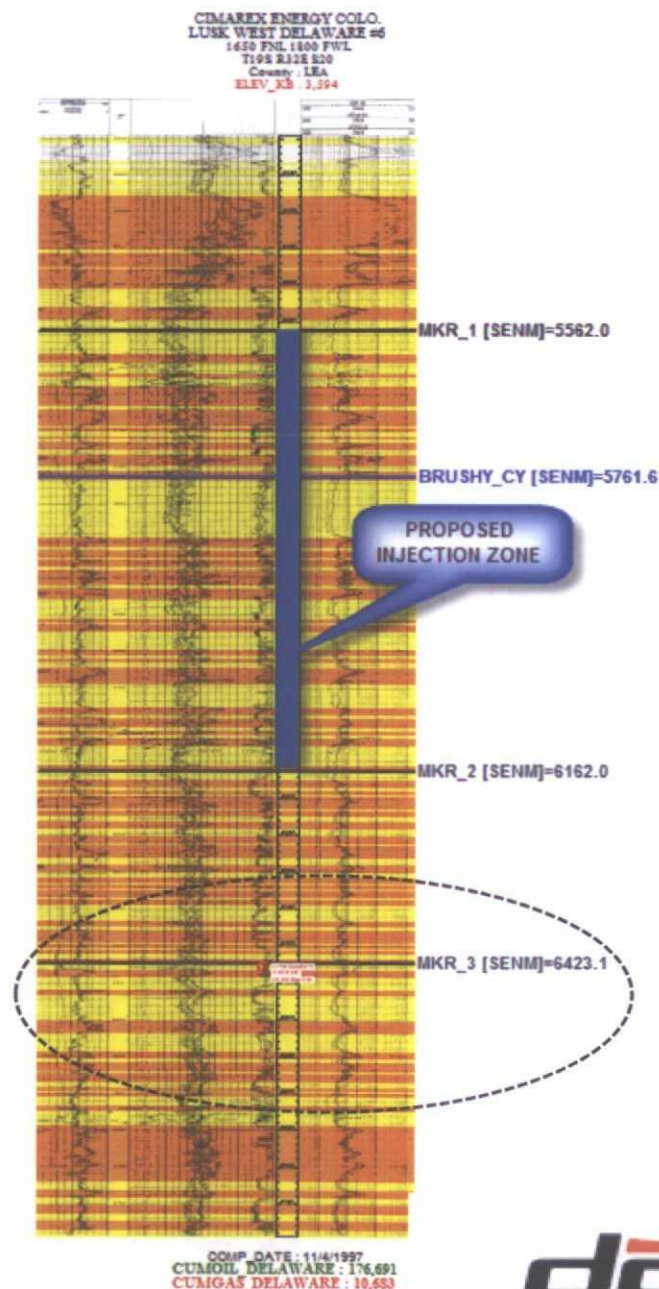
West-East Cross Section Through Delaware Mountain Group in Proposed Injection Area



The W-E structure section shows the caprock relationship above the proposed injection interval, and the intervening tight facies below that would isolate the injection interval from any remaining pay zones in the lower Brushy Canyon. The Lusk West Field produces from several confined, thinner-bedded channel sands that are encased in tight facies.

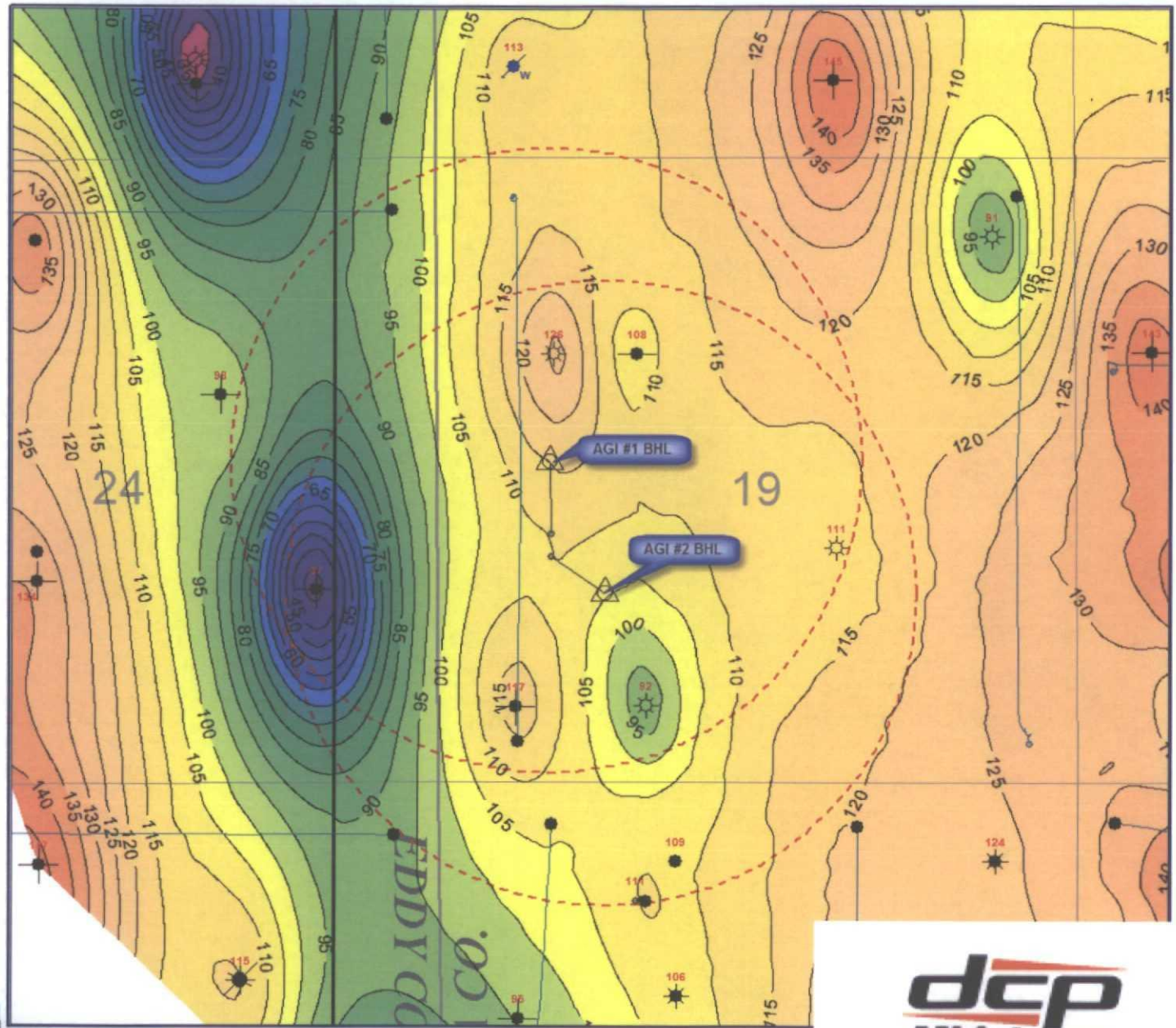
Composite Log Showing Proposed Injection Zone

The well log composite through the proposed injection interval and the lower Brushy Canyon pay zone in the active well shows a typical Delaware sequence of sands (yellow shading) and intercalated tight shales and silts (brown shading). The sands vary in porosity and generally have low permeability. The base of the proposed injection zone is nearly 300 feet above the active pay zone, separated from it by medium-bedded tight facies and interbedded sands.



Net Sandstone With Porosity >10%, Lower 200 Feet Of The Cherry Canyon

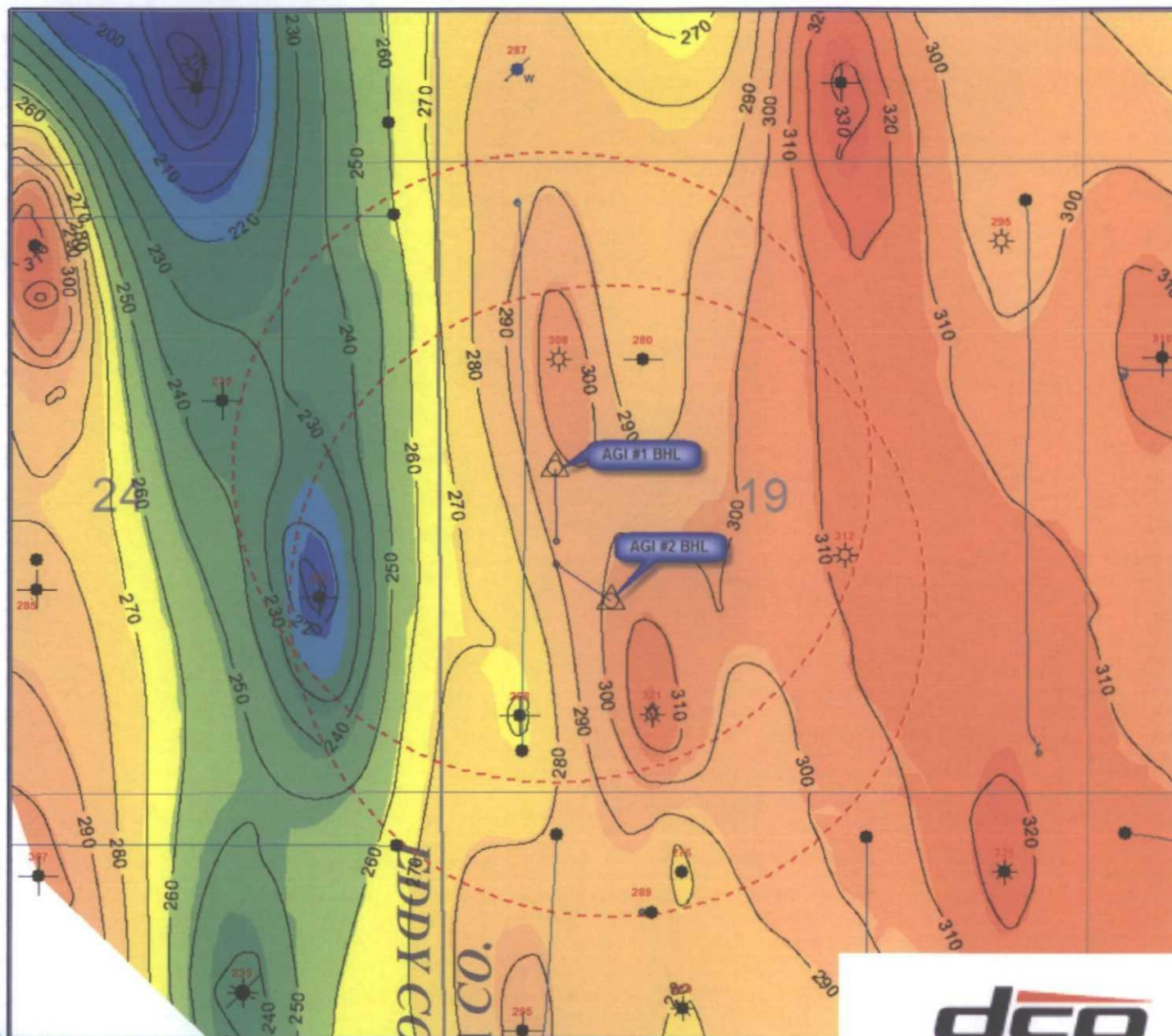
Only wells that penetrate through the proposed AGI interval are shown. The average net sand within the 1/2-mile radii is estimated at 102 feet based on a regular grid of data points that include the wells inside each radius.



Contour interval is 5 feet

Net Sandstone With Porosity >10%, Upper 400 Feet Of The Brushy Canyon

Only wells that
penetrate through the
proposed AGI interval
are shown. The average
net sand within the 1/2-
mile radii is estimated at
267 feet, based on a
regular grid of data
points that include the
wells inside each radius.



Contour Interval = 10 Feet

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Midstream.

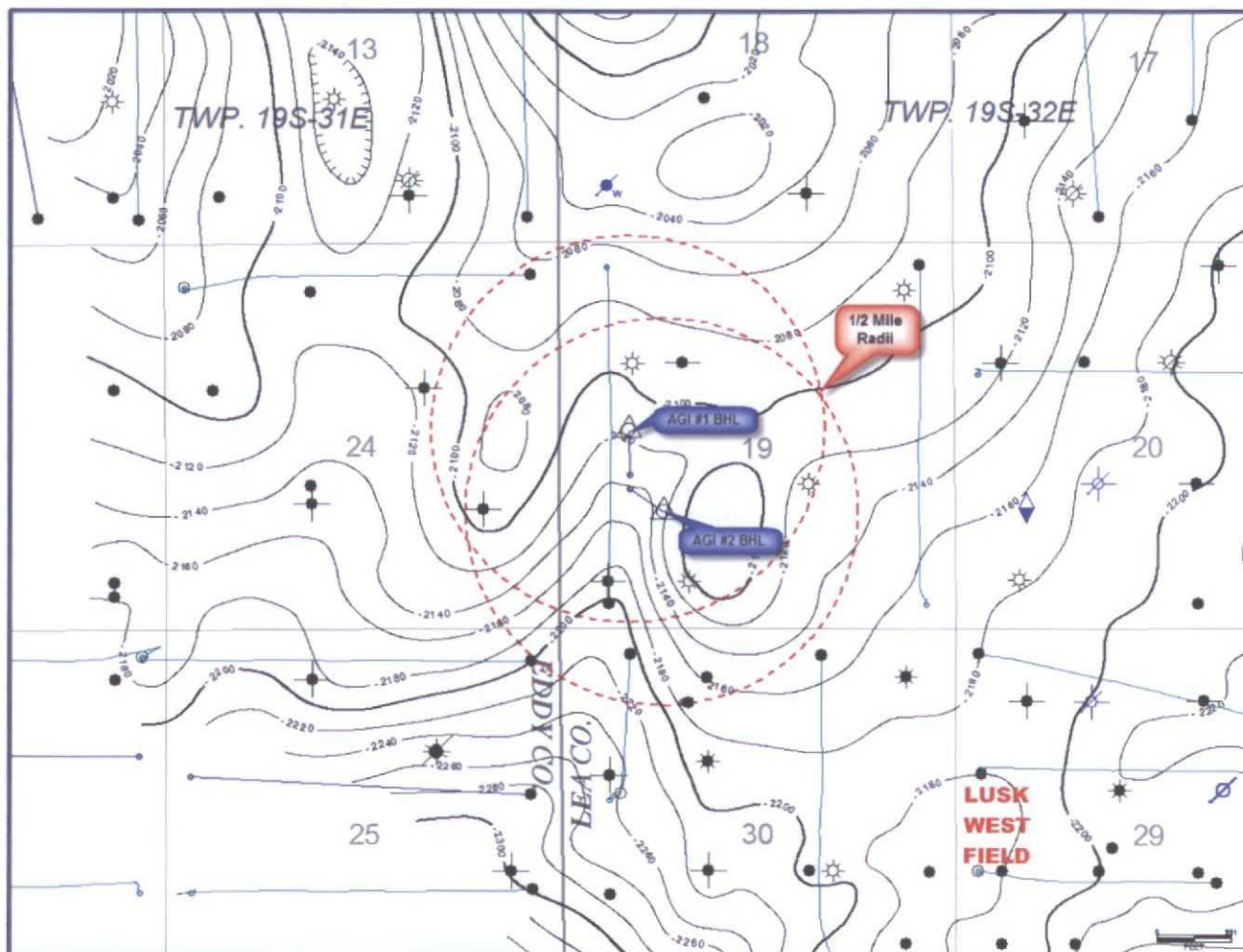
Structure in Injection Area

- Figure on next slide shows the structure of the top of the Brushy Canyon Formation.
- The formation dips south at approximately 1.5 degrees.
- There is no evidence of faulting at this level in this area.



Contour Map Showing Structure on Top of Brushy Canyon

Only wells that penetrate through the proposed AGI interval are shown. Many of the lower Brushy Canyon wells in Lusk West Field have been plugged or temporarily abandoned.



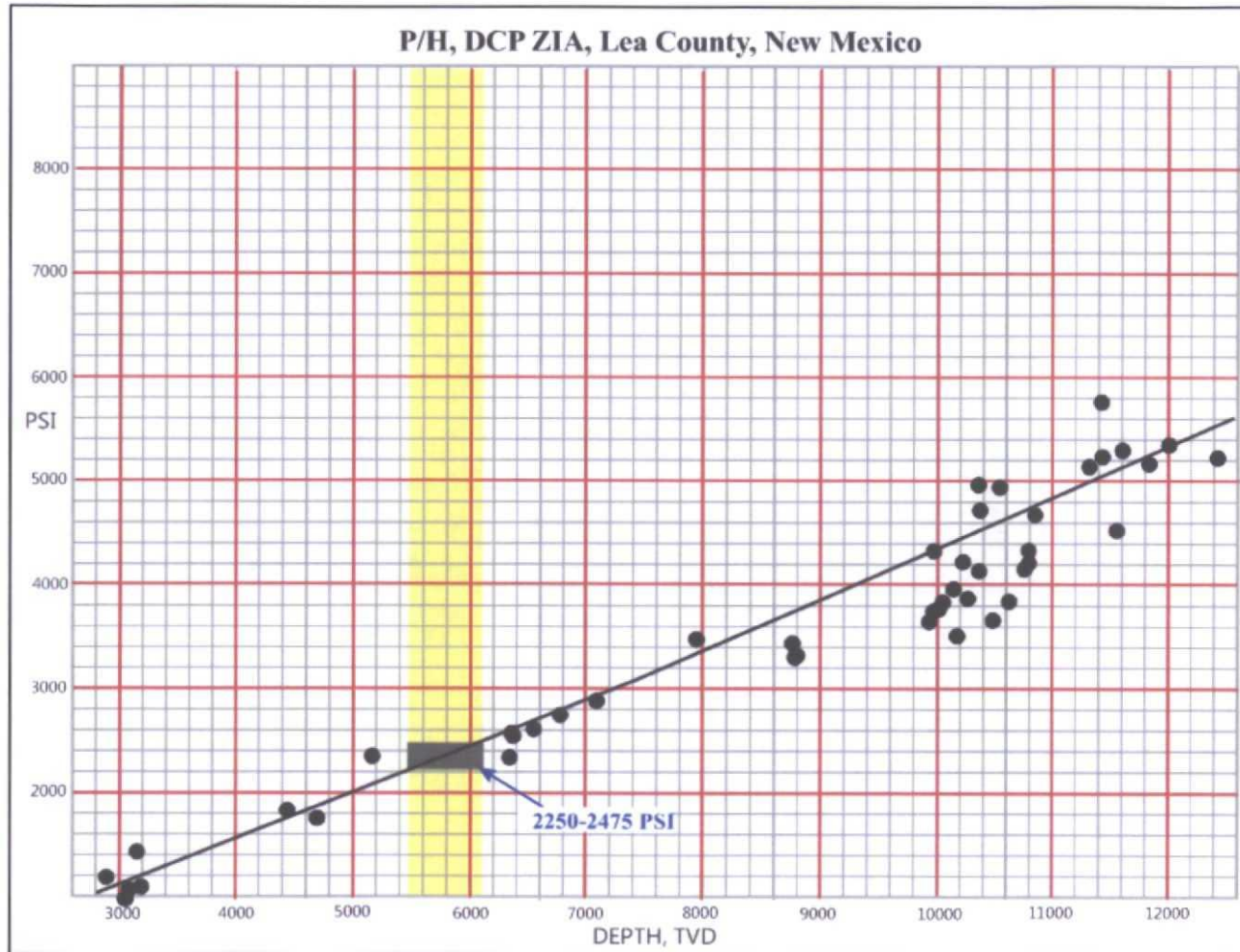
Contour Interval = 20 feet

Calculations of Reservoir Area Affected after 30 Years of Injection

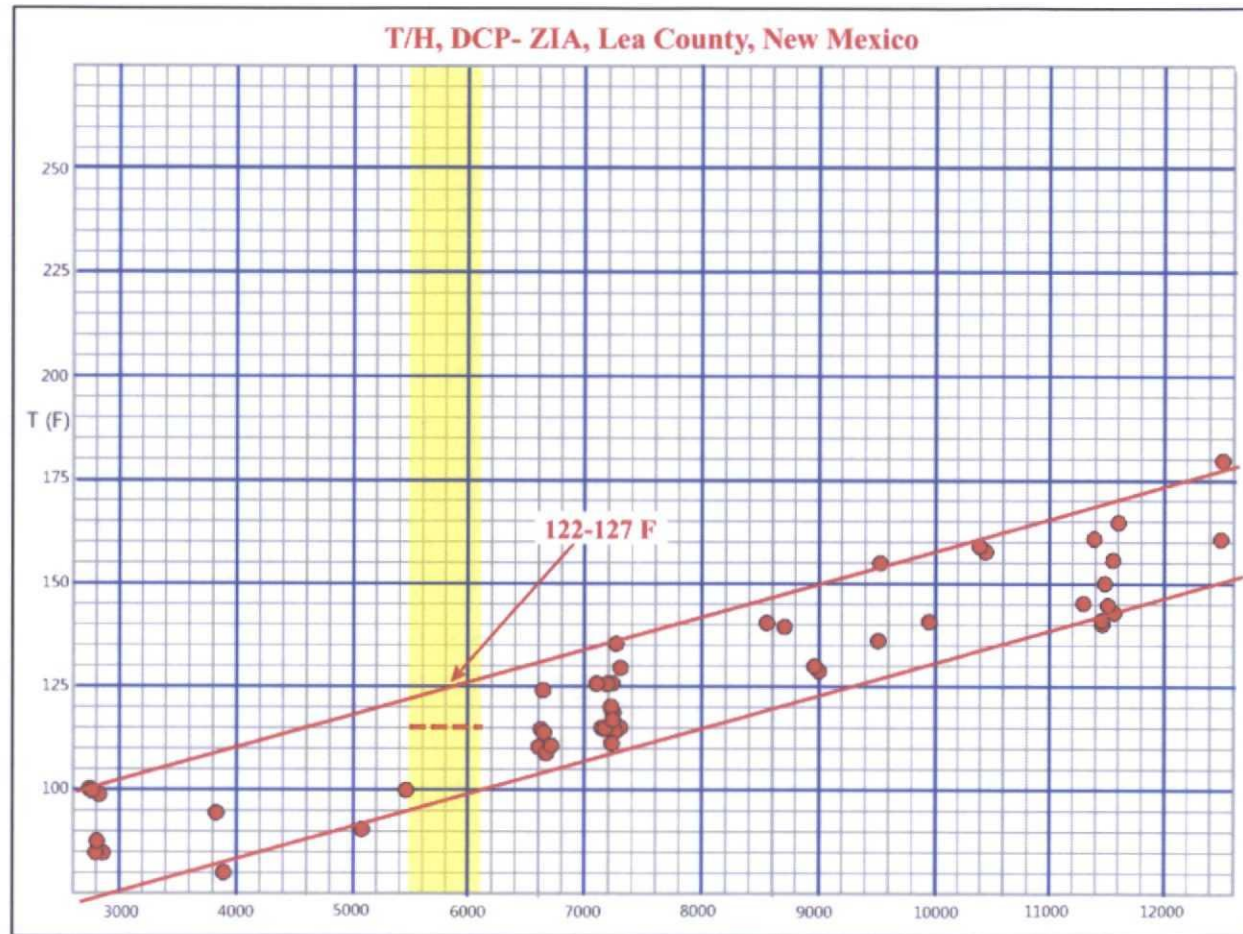
- The calculations are based on surface injection pressures of 1,200 psig, and a temperature of 100° F.
- A calculated bottom-hole pressure of 2,400 psig and temperature of 120° Fahrenheit is based on field data from nearby wells.



Bottom Hole Pressure Trends of Wells in Area



Bottom Hole Temperatures from Nearby Wells



Based On Measured Bottom Hole Temperatures On Well Logs From Nearby Wells

Calculated Reservoir Volumes and Areas

- Based on a TAG mixture of 89% CO₂ and 11% H₂S, the FlowPhase AQUAlibrium 3.1 software was used to calculate the density and volume of the TAG at surface and reservoir conditions.
- As shown below, a daily injection rate of 15.0 MMSCFD would occupy a radius of < 0.37 miles in the reservoir after 30 years. Partitioned between two wells at 7.5 MMSCFD, the radius for each well would be 0.26 miles.



Volumes, Pressures and 30 Year Injection Area

Table 1 Pressure and Volume Calculations for TAG at DCP's Zia Plant

PROPOSED INJECTION STREAM CHARACTERISTICS

TAG	H ₂ S	CO ₂	H ₂ S	CO ₂	TAG
Gas vol	conc.	conc.	inject rate	inject rate	inject rate
MMSCFD	mol %	mol %	lb/day	lb/day	lb/day
15	11	89	156622	1636394	1793016

CONDITIONS AT WELL HEAD

Well Head Conditions		TAG							
Temp	Pressure	Gas vol	Comp	Inject Rate	Density ¹	SG ²	density	volume	volume
F	psi	MMSCFD	CO ₂ :H ₂ S	lb/day	kg/m ³		lb/gal	ft ³	bbl
100	1200	15	89:11	1793016	484.00	0.48	4.04	59313	10564

CONDITIONS AT BOTTOM OF WELL

Injection Zone Conditions					TAG				
Temp	Pressure ³	Depth _{top}	Depth _{bottom}	Thickness ⁴	Density ¹	SG ²	density	volume	volume
F	psi	ft	ft	ft	kg/m ³		lb/gal	ft ³	bbl
120	2400	5750	6170	420	726.00	0.73	6.06	39542	7043

CONDITIONS IN RESERVOIR AT EQUILIBRIUM

Injection Reservoir Conditions					TAG				
Temp ⁵	Pressure ³	Ave. Porosity ¹	Sw ⁶	Porosity	Density ¹	SG ²	density	volume	volume
F	psi	%		ft	kg/m ³		lb/gal	ft ³	bbl
120	2400	15.0	0.41	37.17	726.00	0.73	6.06	39542	7043

CONSTANTS

	SCF/mol	
Molar volume at STD	0.7915	
	g/mol	lb/mol
Molar weight of H ₂ S	34.0809	0.0751
Molar weight of CO ₂	44.0096	0.0970
Molar weight of H ₂ O	18.015	0.0397

CALCULATION OF MAXIMUM INJECTION PRESSURE LIMITATION

SG _{TAG}	0.6050
PG = 0.2 + 0.433 (1.04 - SG _{TAG})	0.388 psi/ft
IP _{max} = PG * Depth	2233 psi

Where: SG_{TAG} is specific gravity of TAG; PG is calculated pressure gradient; and IP_{max} is calculated maximum injection pressure.

CALCULATION OF 30 YEAR AREA OF INJECTION

Cubic Feet/day (5.6146 ft ³ /bbl)	39542 ft ³ /day
Cubic Feet/30 years	433282411 ft ³ /30 years
Area = V/Net Porosity (ft)	11656777 ft ² /30 years
Area = V/Net Porosity (ft) (43560 ft ² /acre)	267.6 acres/30 years
Radius =	1926 ft
Radius =	0.36 miles

¹ Density calculated using AQUALIBrium software

² Specific gravity calculated assuming a constant density for water

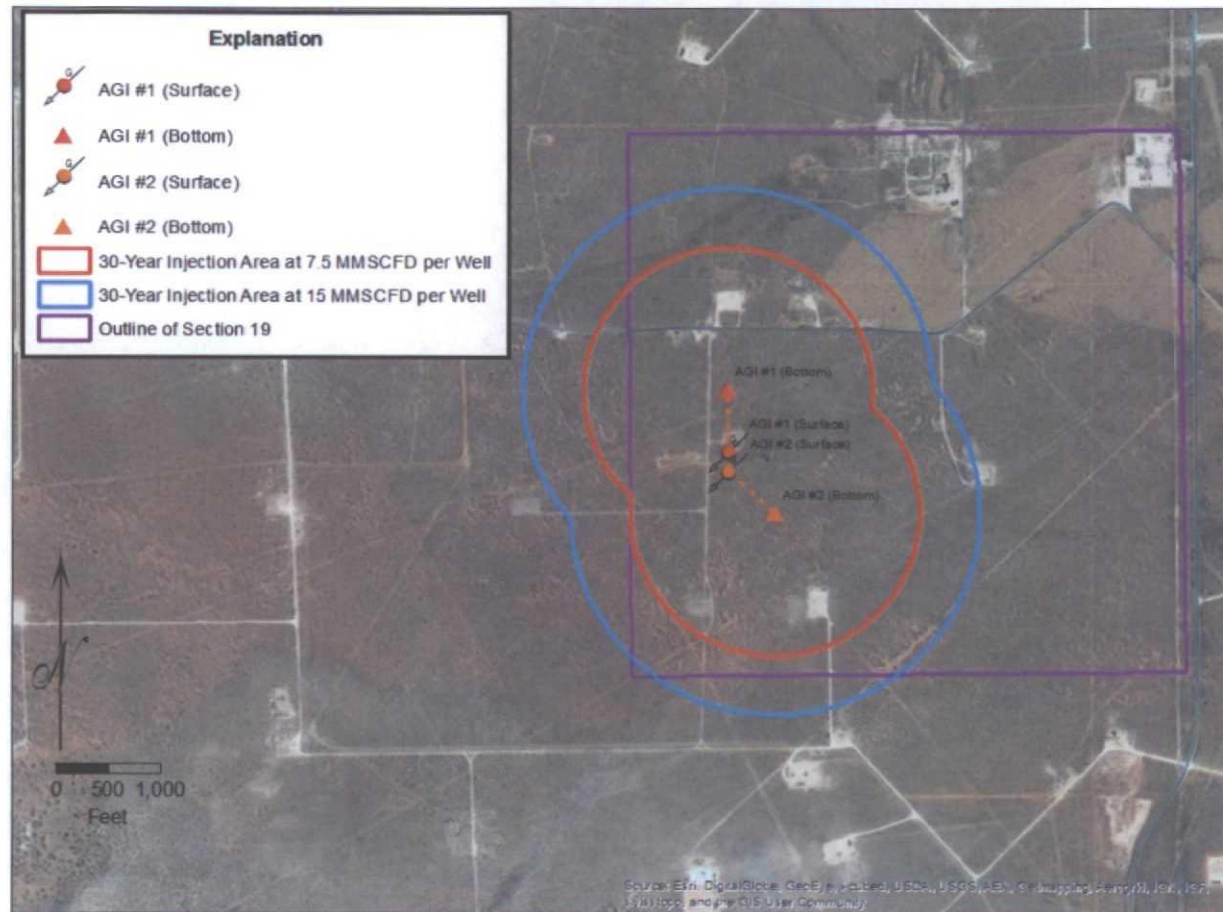
³ PP is extrapolated using successful Drill Stem Tests at nearby wells

⁴ Thickness is the average total thickness of coarse sand units in the reservoir zone

⁵ Reservoir temp. is extrapolated from bottomhole temp. measured at nearby wells

⁶ Porosity is estimated using geophysical logs from nearby wells

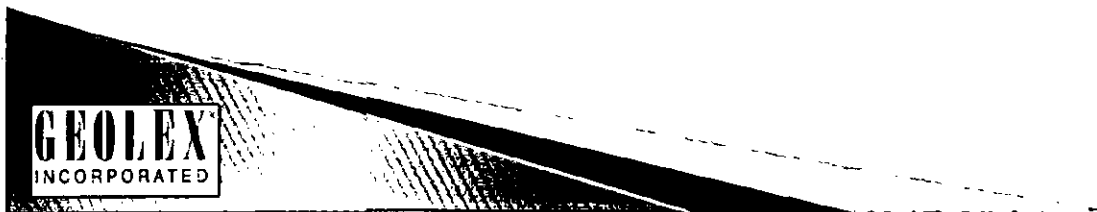
Calculated 30-Year Radii of Injection from DCP Zia AGI Wells #1 and #2



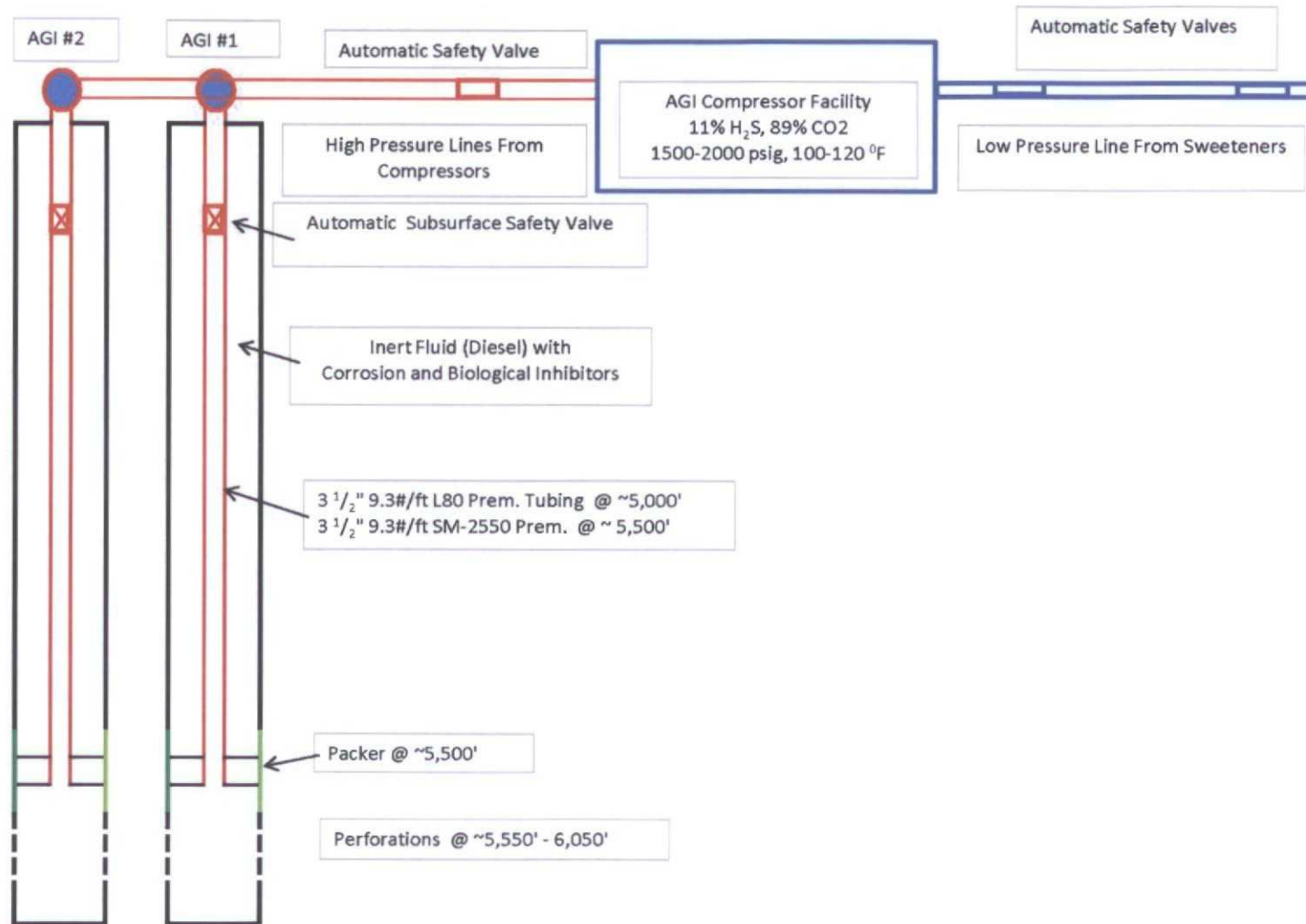
Circles Show Anticipated Footprint of Planned Injection Rate of 7.5 MMSCFD (red) and 100% Safety Factor Injection Rate 15 MMSCFD (blue)

General Design of AGI System

- A schematic of the AGI system is shown on next slide and the well details are shown in the following slide.
- The surface compressors and lines will be protected with automatic safety valves to prevent overpressure, and to isolate the TAG lines in the event of leaks.
- The well will include an automatic subsurface safety valve (SSSV).
- Fresh water will be protected by the surface casing, extending to 1,025'.
- The Capitan Aquifer (usable, not potable water) will be completely isolated by the intermediate casing, set at 4,600 feet.
- Approximately 250 feet of corrosion-resistant production casing will be installed between 5,400 to 5,650 feet to protect the packer and packer seat.
- The entire production tubing will be lined with fiberglass to prevent corrosion.
- The annulus between the production casing and tubing will be filled with corrosion-inhibited diesel fuel.
- Annular and injection tubing pressures and temperatures will be continuously monitored and recorded.

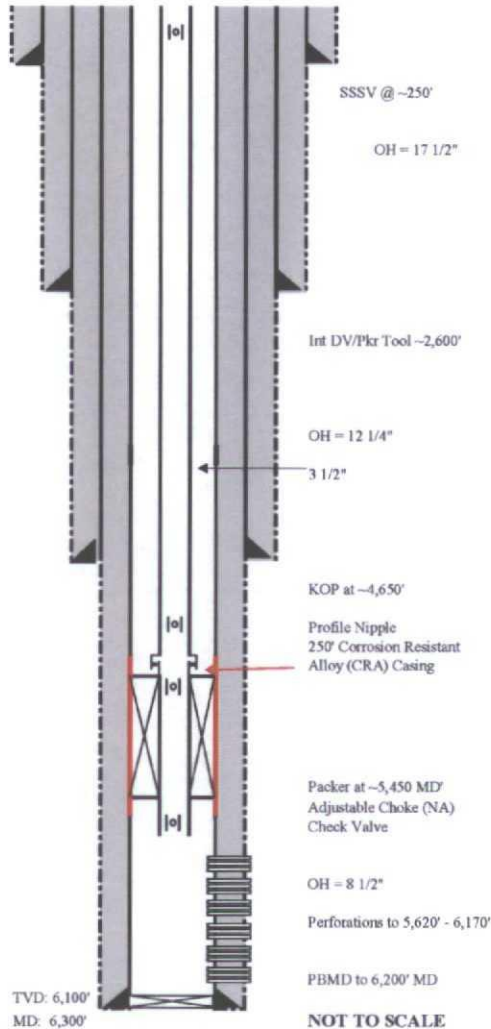


General Schematic of AGI System



Location: DCP Zia AGI #1 & #2
 STR Section 19, T19S-R32E
 County, St.: LEA COUNTY, NEW MEXICO

27 DEGREE SLANT



CONDUCTOR CASING

20" Conductor at 40'

SURFACE CASING

13 3/8", 48.00 #/ft, H40, STC at 1025'

INTERMEDIATE CASING:

9 5/8", 40.0 #/ft, J55, LTC at 4,600'

PRODUCTION CASING:

7", 26 #/ft, L-80, Prem to 5,250'

7", 26 #/ft, SM-2550, Prem to 5,500'

7", 26 #/ft, L-80, Prem to 6,300' (MTD)

ANNULAR FLUID:

Diesel Fuel from top of packer to surface

TUBING:

3 1/2", 9.3 #/ft, L-80, Prem at ~5,450' MD

3 1/2", 9.3 #/ft, Lined Tubing at ~5,450'

PACKER:

Permanent Production Packer @ 5,450' MD

Adj. Choke (if needed, placed in nipple below packer)

Check valve (if needed, placed in nipple below packer)

PERFORATIONS:

Primary Targets:	
Cherry Canyon	
Brushy Canyon	
TVD	MD
5,500'-6,000'	5,620' - 6,170'

Well Design Zia AGI Wells

Casing and Cement Details

- All casing strings will be cemented to the surface, pressure tested, and verified using 360-degree cement bond logs.
- The deviated production string (below 4,650') will be cemented in the critical cap-rock area with acid-resistant cement (CORROSACEM™ or equivalent).
- In the deviated interval, additional centralizers will be used to assure that the casing is centered in the borehole, and that cement flow is continuous.
- This casing and cement program is consistent with BLM guidelines applicable to wells on BLM lands in this area.

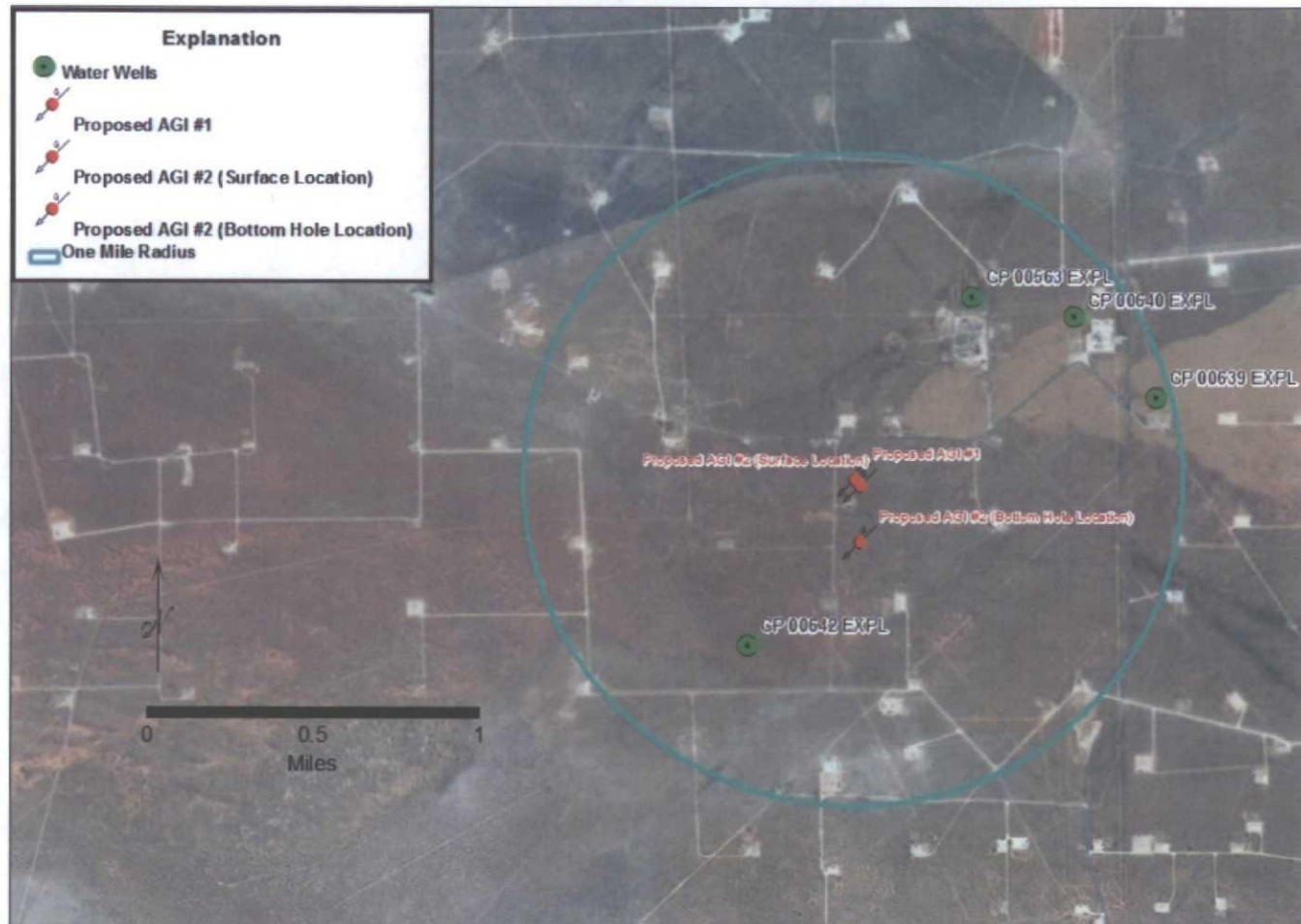


Groundwater Conditions in the Area of Review

- Based on the New Mexico Water Rights Database from the New Mexico Office of the State Engineer, there are four freshwater wells located within a one mile radius of the DCP Zia AGI wells (see next slide)
- All wells within the one mile radius are shallow, collecting water from about 250' to 350' depth, in the Triassic redbeds.
- These wells were drilled for exploratory purposes by Phillips Petroleum in 1982, and do not produce any water for consumption.



Water Wells Identified by the New Mexico State Engineer's Files within One Mile of the Proposed Zia AGI Wells



Summary of Geologic Factors Assuring Integrity and Safety of Proposed AGI Wells

- No faults or structural pathways identified in the area of review.
- Wells penetrating injection zone within area of review are well isolated in that zone.
- Caprock is low porosity, impermeable rock which is effective barrier above injection zone.
- Injection zone is vertically and horizontally isolated adjacent production zones.
- All fresh water zones isolated by conductor and surface casing.
- Proposed injection pressure is well below fracture pressure of reservoir and caprock.
- Log analyses demonstrate closed system.

DCP's Request for NMOCC Order

- Drill, test and complete AGI wells as specified in DCP's C-108 application the locations identified in Section 19 T19S R32E adjacent to the proposed Zia Gas Plant.
- DCP requests permission to inject acid gas at an approximate rate of 15 MMCFD and maximum operating pressure of 2,233 psig for at least 30 years.
- DCP would like to have three years to allow for plant construction and the well drilling, completion and commissioning.

