



RAILROAD COMMISSION OF TEXAS

HEARINGS DIVISION

OIL AND GAS DOCKET NO. 03-0295136

THE APPLICATION OF OSR SWD, L.L.C. PURSUANT TO STATEWIDE RULE 9 FOR A COMMERCIAL PERMIT TO DISPOSE OF OIL AND GAS WASTE BY INJECTION INTO A POROUS FORMATION NOT PRODUCTIVE OF OIL OR GAS, FOR THE OSR-TORRES HWY. 21 LEASE, WELL NO. 1, CALDWELL, NE (GEORGETOWN) FIELD, BRAZOS COUNTY, TEXAS

HEARD BY: Karl Caldwell - Technical Examiner
Marshall Enquist – Administrative Law Judge

PROCEDURAL HISTORY

Application Filed:	October 3, 2014
Protest Received:	October 24, 2014
Request for Hearing:	December 19, 2014
Notice of Hearing:	March 12, 2015
Hearing Held:	June 26, 2015
Transcript Received:	July 7, 2015
Proposal for Decision Issued:	January 5, 2016

APPEARANCES:

REPRESENTING:

APPLICANT:

OSR SWD L.L.C.

Stephen Fenoglio
Kerry Pollard
William Feathergail Wilson
Krystal Eversdyk
P.J. Vargas, Jr

PROTESTANTS:

GSI Oil and Gas, Inc. and Carrabba Brothers Limited

Rob Hargrove
James D. Lampley, Jr.
John B. Westmoreland

CASE SUMMARY

The Applicant is requesting to drill a new well for commercial disposal on the OSR-Torres Hwy. 21 Lease, located approximately 10 miles southwest of Bryan, Brazos County, Texas. The Applicant is requesting to inject in the Glen Rose Formation in the depth interval between 8,650 feet and 10,150 feet. The application is protested by GSI, an operator with a producing well within a half mile of the proposed well, and Carrabba Brothers, Ltd., an adjacent surface owner. The Protestants have two general concerns with the application. The first concern is that the Georgetown and/or Edwards Formations which overlie the disposal interval are productive, or potentially productive. The Protestants' second concern is that the proposed commercial disposal well is not in the public interest. More specifically, that there is not an industry-wide need for additional commercial disposal capacity at this location at this time. Based on the evidence, the Examiners recommend approval of the application.

APPLICABLE LAW

Any person who disposes of saltwater or other oil and gas waste by injection into a porous formation not productive of oil, gas, or geothermal resources shall be responsible for complying with 16 Tex. Admin. Code §3.9, Texas Water Code, Chapter 27, and Title 3 of the Natural Resources Code. Pursuant to Texas Water Code § 27.051(b), the Railroad Commission of Texas (Commission) has authority to permit disposal and injection wells if it finds:

- (1) that the use or installation of the injection well is in the public interest;
- (2) that the use or installation of the injection well will not endanger or injure any oil, gas, or other mineral formation;
- (3) that, with proper safeguards, both ground and surface fresh water can be adequately protected from pollution; and
- (4) that the applicant has made a satisfactory showing of financial responsibility if required by Section 27.073 of this code.

DISCUSSION OF THE EVIDENCE

Applicant's Evidence (OSR SWD, LLC)

Application

OSR SWD, L.L.C. ("OSR") requests commercial disposal authority pursuant to Statewide Rule 9¹ for the OSR-Torres Hwy. 21 Lease, Well No. 1 ("OSR-Torres Hwy. 21 No. 1") Caldwell, NE (Georgetown) Field, Brazos County, Texas. The proposed disposal well will be located on a 7.84 acre tract approximately 10 miles southwest of Bryan, Texas.

¹ 16 Tex. Admin. Code § 3.9 (Disposal Wells)

Notice of the application was published in *The Eagle*, a newspaper of general circulation in Brazos County, on November 25, 2014. Notice of the application was mailed to the owner of the surface tract of the proposed disposal well location, to adjacent surface owners, to the Brazos County County Clerk, and to operators within a half-mile of the proposed disposal well location.² The only operators with active wells within a half-mile of the proposed disposal well location are Apache Corporation (“Apache”), and GSI Oil & Gas, Inc. (“GSI”). The application is protested by GSI, and by Carrabba Brothers Ltd, an adjacent surface owner.

Injection Interval and Confining Intervals

The Applicant proposes to inject a maximum volume of 25,000 bpd of salt water and RCRA-exempt waste³ in the Glen Rose Formation between 8,650 feet and 10,150 feet, at a maximum surface injection pressure of 4,000 psi. The injection interval published in *The Eagle* on November 25, 2014, listed the Edwards and Glen Rose Formations as the disposal formations, in the depth interval between 8,000 feet and 10,150 feet. Kerry Pollard, the Applicant’s engineering witness, has recommended lowering the top of the injection interval from 8,150 feet to 8,650 feet.⁴ The recommendation to lower the top of the disposal interval by 500 feet is in response to the Protestants’ concern that the Edwards and/or Georgetown Formations may be productive. In lowering the top of the disposal interval, the entire disposal interval will be within the Glen Rose Formation, and fluids will be confined to the Glen Rose Formation.

William Feathergail Wilson, a state licensed geoscientist, projects the entire Glen Rose Formation to extend from 8,145 feet to 10,295 feet at the proposed disposal well location. Mr. Wilson has further sub-divided the Glen Rose Formation into an upper Glen Rose section and a lower Glen Rose section. The upper Glen Rose section is projected to extend from 8,145 feet to 9,113 feet, while the lower Glen Rose section is projected to extend from 9,113 feet to 10,295 feet.

On cross-examination, Mr. Pollard acknowledged that the proposed top of the disposal interval at 8,650 feet is shallower than Mr. Wilson has identified as the top of the lower Glen Rose section. Mr. Wilson has estimated the delineation between the upper Glen Rose section and the lower Glen Rose section to be at 9,113 feet at the proposed well location. Mr. Pollard stated that the proposed top of the disposal interval at 8,650 feet will provide the Applicant some flexibility once the well is drilled in the event that the top of the lower Glen Rose section at this particular location isn’t exactly at the depth of 9,113 feet as identified by Mr. Wilson.

² 16 Tex. Admin. Code § 3.9(5) (Notice and Opportunity for Hearing).

³ Resource Conservation and Recovery Act: Examples of RCRA exempt oil and gas waste includes produced water, drilling fluids, hydraulic fracturing flow back fluids, rig wash and workover wastes.

⁴ Based on Commission precedent, applicants are allowed to amend the disposal interval provided it remains within the upper and lower boundaries originally noticed to all affected parties and as noticed by publication. In addition, the amendment to the interval must not change the applicable Statewide Rule (i.e. from Statewide Rule 9 to Statewide Rule 46, or vice versa).

Lowering the top of the injection interval to 8,650 feet will provide an additional 500 feet of separation between the top of the disposal interval within the Glen Rose Formation and the Georgetown and Edwards Formations. Mr. Wilson reviewed well logs in the area and prepared a cross section to identify intervals that would act as geological barriers to confine injected fluids to the disposal interval.⁵ In Mr. Wilson's opinion, the upper Glen Rose section is a seal of approximately 1,000 feet, based on the well log for the the Amoco Production Company Well No. 1A-Texas A&M University, API No. 42-051-30198, ("Amoco 1-TAMU). This well is located approximately 10 miles south of the proposed disposal well location. This well log shows the upper 968 feet of the Glen Rose Formation to be a marl-interbedded, dense limestone seal between Georgetown/Edwards Formations and the lower section of the Glen Rose Formation. Mr. Wilson considers the lower portion of the Glen Rose Formation to be the preferred zone for disposal. Mr. Wilson stated that "the lower Glen Rose has...several porosity permeability zones...the Amoco Texas A&M log shows...that you have high permeability in at least two zones covering about 350 feet."⁶

The Pearsall Formation is a shale interval that is located directly below the Glen Rose Formation. The Pearsall Formation is consistent across a 64-mile well log cross section and will provide an 800-foot impermeable barrier below the Glen Rose Formation.

Fresh Water Formations

The Commission's Groundwater Advisory Unit (GAU) identifies the base of usable-quality water (BUQW) at a depth of approximately 3,050 feet at the proposed OSR-Torres Hwy. 21 No. 1 location, and estimates the depth of underground sources of drinking water (USDW) to be at a depth of approximately 3,600 feet.⁷ The Applicant submitted a GAU letter that stated if otherwise compliant with Railroad Commission rules and guidance, drilling and using this disposal well and injecting waste into the subsurface stratum in the depth interval from 8,000 feet to 10,150 feet will not endanger the freshwater strata in that area.⁸

Productive Formations in the Area

Zones productive of oil and gas within two miles of the proposed OSR-Torres Hwy. 21 No. 1 location are the Austin Chalk, Eagleford, Buda, and Georgetown Formations. All of these formations are shallower than the proposed disposal interval in the Glen Rose Formation between 8,650 feet and 10,150 feet.

⁵ OSR SWD L.L.C. Exhibit No. 7.

⁶ Tr. pg. 32, ln 8-19.

⁷ OSR SWD, LLC Exhibit No. 11.

⁸ OSR SWD, LLC Exhibit No. 12.

Well Construction

Since the OSR-Torres Hwy. 21 No. 1 has not yet been drilled, the Applicant has the ability to alter the proposed well construction plan if the Commission deems any changes are necessary. The Applicant proposes to set 9-5/8 inch surface casing at a depth of 3,700 feet, and the surface casing will be cemented with cement circulated to surface. Mr. Pollard stated that the Applicant would not have a problem if the Commission wanted to limit the depth of surface casing to 3,100 feet.⁹ Setting the surface casing at a depth of 3,100 feet would be through the base of usable quality water, which the GAU estimated to be at a depth of 3,050 feet.¹⁰ Mr. Pollard testified that 7-inch longstring casing will be set at a depth of 10,250 feet and cement will be circulated behind the longstring casing with cement behind casing “to cover the entire injection interval as well as get above the producing intervals.”¹¹

Nearby Wellbores

There are three existing wellbores located within a quarter-mile radius of the proposed disposal well location. None of these wellbores penetrate the disposal interval. A total of ten wellbores are located within a half-mile radius of the proposed disposal well location. None of these wellbores penetrate the proposed disposal interval. The deepest depth to which any well has been drilled within a half mile radius of the proposed well site is a total depth (TD) of 8,035 feet, in the Leon F. Cash Unit, Well No. 1 (API No. 42-041-31170).

Existing Commercial Disposal Wells and Oil and Gas Activity in the Area

The proposed OSR-Torres Hwy. 21 No. 1 disposal well will be located in the Eaglebine Trend area. Mr. Pollard describes the Eaglebine Trend as an extension of the Eagleford Trend with the presence of some Woodbine sands in this area. Three wells have been completed within five miles of the proposed disposal well site as of June 26, 2015, and two more drilling permits have been issued. Mr. Pollard states that “there’s been a dip in the price of oil...I think that’s highly effected [affected] the completions lately but I truly believe that when the price of oil does start back inclining again, that this activity will pick up. It doesn’t mean we still don’t have an increased activity as far as need for saltwater disposal.”¹² In 2014, a total of 370 drilling permits were issued within a twenty-mile radius of the proposed well site, while a total of 157 wells were completed in 2014. As of June 2015, a total of 68 drilling permits had been issued within a twenty-mile radius of the proposed well site, while a total of 40 wells have been completed as of June 2015.

⁹ Tr. pg. 48, ln 4.

¹⁰ 16 Tex. Admin. Code § 3.13(b)(1)(B)(i) states that an operator shall set and cement sufficient surface casing to protect all useable-quality water strata, as defined by the Groundwater Advisory Unit of the Oil and Gas division. In no case, is surface casing to be set deeper than 200 feet below the specified depth without prior approval from the district director.

¹¹ Tr. pg. 44, ln 8-10.

¹² Tr. pg. 61, ln 2-8.

According to Mr. Pollard "...then starting approximately a year ago, there's been a steady increase [in] injection in this area and there's been an injection [increase] of about 50 percent...so in my opinion, the activity in this area has picked up. There is [a need for] additional disposal and the need is increasing. And again, this is with not very dense development as I think we showed...that this area still has a lot of room to grow...a lot of additional drilling and so there will be a need, a very much increase in my opinion, in the amount of water that will need to be disposed."¹³

Mr. Pollard conducted a study of activated commercial disposal well ("CDW") permits within a 20-mile radius of the proposed disposal well location. Mr. Pollard considers an activated CDW permit to be well with a permit for commercial disposal, and either the completion papers have been filed, and/or a Form H-5 and/or a Form P-18 has been filed. No CDW permits have been activated within a 5-mile radius of the proposed disposal well location. Within 10-miles, there are four activated CDWs, and within a 15-mile radius, there are still only the same four CDWs. Within a 20-mile radius there are a total of 12 activated CDWs.

All but one of the existing CDWs within a twenty-mile radius of the proposed disposal well location are permitted for disposal in the Wilcox Formation, which is a shallower interval than the interval in the applied-for permit. The only existing CDW within 20 miles that is not permitted for disposal in the Wilcox Formation is the M & B SWD, operated by GSI, a Protestant in this case. Mr. Pollard believes that this GSI CDW is completed in the Edwards Formation. In Mr. Pollard's opinion, injection into an interval that is deeper than the productive intervals in the area would be advantageous for operators. The operators would not be required to set an additional casing string or be required to cement across the disposal interval.

Mr. Pollard believes another reason the proposed disposal well is important is that it will meet all of the Commission's current requirements. In Mr. Pollard's opinion, there is a need in this area for a disposal well with a contemporary design that does not pose any threat to either production or useable-quality water. In examining the four activated CDW permits within a 15-mile radius of the proposed well location, Mr. Pollard concludes that these CDWs would have some issues if they were permitted today. For example, the GSI M & B SWD was permitted in 1997. "This well had surface casing that was set 2,000 feet too shallow...the useable-quality water was at 3,000 feet for that well, and the surface casing was set at 1,030, so it was approximately 2,000 feet too shallow. In the current scheme of wells, that well would have a difficult time getting permitted."¹⁴

Financial Assurance

OSR SWD, LLC was formed by Pablo J. Vargas, Jr. The company has an active P-5 on file with the Commission and is in good standing. Mr. Vargas stated that since the subject application has not yet been approved, a bond for financial assurance has not yet been filed. Mr. Vargas stated that the intent is to file the bond if the permit is granted.

¹³ Tr. pg. 66, ln 18 – pg. 67, ln 5.

¹⁴ Tr. pg. 69, ln 10-22.

On cross examination, Mr. Vargas acknowledged that OSR is listed as the operator on the Project No. F-19856 commercial injection permit for the OSR Torres SWD Lease Well No. 1. (“Torres SWD No. 1”). Mr. Vargas stated that OSR has not built the Torres SWD No. 1 commercial injection well facility. Mr. Vargas stated that OSR’s intent was to submit an application for the subject location and for the Torres SWD No. 1, and then evaluate the location of both applications. No protests were received for the Torres SWD No. 1 and the application was approved administratively. Mr. Vargas testified that “our plan is to operate this [subject application] facility.”¹⁵ OSR does not currently operate any saltwater disposal-injection facilities.

Seismic Survey

A survey of information from the United States Geological Survey (USGS) since January 1, 1970 shows no historical seismic events within a 6 mile radius, or a circular area of 113 square miles around the proposed disposal well location.

Protestants’ Evidence (GSI and Carrabba Brothers Ltd.)

The application is protested by GSI, an operator with a producing well within a half mile of the proposed well, and Carrabba Brothers, Ltd., an adjacent surface owner. The Protestants have two general concerns:

1. The Georgetown Formation in the vicinity of the proposed well is productive or potentially productive; and
2. The proposed commercial disposal well is not in the public interest. There is not an industry-wide need for additional commercial disposal capacity at this location at this time.

James D. Lampley, Jr. is the Operations Manager for GSI. The owners of GSI are Mark and David Carrabba. The other Protestant in this case is Carrabba Brothers, Ltd. Mr. Lampley confirmed that the principals in GSI are the same individuals that own Carrabba Brothers, Ltd.¹⁶ Mr. Lampley stated that Carrabba Brothers, Ltd. “own property in the surrounding counties, including the surface and mineral interests in properties that adjoin or in fact the mineral interests under the tract [where]...a permit is being sought...by OSR.”¹⁷

GSI operate a total of five commercial disposal facilities. Mr. Lampley considers two of these commercial disposal facilities, M & B SWD and Texas Speedway Facility, to be in the vicinity of OSR’s proposed location. The M & B SWD is the only GSI commercial disposal well within a ten-mile radius. Mr. Lampley estimates that the M & B SWD facility was

¹⁵ Tr. pg. 98, ln 2.

¹⁶ Tr. pg. 128, ln 1-7.

¹⁷ Tr. Pg. 107, ln 14-18.

operating at approximately 25% in May 2015, which was not due to any operational or technical issues. Mr. Lampley testified that if more water were available at that location, then the facility could dispose of more than 25% of its permitted volume. Mr. Lampley also testified that the GSI Texas Speedway Facility, located more than 20 miles from the proposed well location is also only disposing of approximately 25% of the facility's maximum permitted capacity. Mr. Lampley does not consider the relatively low disposal volume as a percentage of its permitted volume to be due to any technical issues with the well.

Mr. Lampley has calculated the monthly percentage of actual disposal volumes relative to the permitted maximum disposal volume of all commercial disposal wells within a 20-mile radius from January 2015 to May 2015. The total disposal volume for January 2015 was 2,197,852 barrels (bbl), 29.98% of the total permitted capacity. The April 2015 data shows the disposal volume had decreased to a total of 1,904,404 bbl, which was 26.84% of the maximum permitted volume. The Baker Rig count for Commission District 3 from January 2015 to May 2015 shows the number of rigs have decreased from 50 rigs in January 2015 to 20 rigs in May 2015.

In Mr. Lampley's opinion, a significant amount of water to be disposed is frac flowback water. Mr. Lampley expects a lag time of months before one would start to see the disposal well volumes of water going down, so it's possible volume are still declining. On cross examination, Mr. Lampley stated that he has not performed a study to form that statement. Mr Lampley stated "All I can tell you is what my systems have done today...they've gone from 20 to 30 loads a day down to 10 and 15 which you're not going to see until our P-18 hits in June and July and August."¹⁸

On cross examination, Mr. Lampley stated that he has not determined whether the injection intervals for any of the wells referenced in his study will actually accept the maximum permitted daily volumes. Mr Lampley stated that the ability of an injection well to inject its maximum permitted capacity is a function of the size of tubing, as well as the number, size, and horsepower of the injection pumps. Mr. Lampley also stated that the number of trucks that can be parked on-site, as well as on-site storage capacity are other factors that affect daily disposal volumes. Other factors that affect the daily injection volume of a disposal well include the maximum permitted surface injection pressure, as well as geological considerations, such as porosity, permeability, and the number of perforations in the injection interval. Mr Lampley stated "I don't know anything about any of these other systems with regards to those items [variables that affect daily injection volumes] with the exception of the GSI ones [disposal wells]."¹⁹

Mr. Lampley stated that two-to-three of GSI's disposal wells are probably close to each well's maximum permitted surface injection pressure. Mr. Lampley estimated that the Speedway is operating at 1,450 psi and is permitted at a maximum surface injection pressure of 1,600 psi; 90.6% of the maximum permitted surface injection pressure.

¹⁸ Tr. Pg. 148, ln 9-12.

¹⁹ Tr. Pg. 118, ln 16-18.

One of Mr. Lampley's concerns with the subject well application is that the disposal well will be in competition with GSI's disposal wells in the area. Mr. Lampley expressed a concern that "as an operator of an offset well and as an employee of an interest that's owned in the mineral interest under the tract you're proposing to drill, I'm concerned about that as well that it doesn't harm the mineral."²⁰ Mr. Lampley has some ownership interest in GSI's disposal wells, including the Speedway and the M&B SWD. When questioned whether Mr. Lampley would have to reduce disposal rates to stay competitive if the subject application were to be approved, Mr. Lampley stated "we might."²¹

The GSI M&B SWD is permitted for injection in the Edwards Formation and is located approximately 6 miles from the proposed disposal well site. According to Mr. Lampley, when GSI drilled and logged the well, the Edwards Formation at that location was determined to be "water wet"²² and there were no hydrocarbons in that area. Mr. Lampley stated that GSI has two producing wells within a mile of the proposed disposal well. The two wells are the Carrabba Brothers and the Catron. Neither well is currently producing from the Georgetown Formation. The Carrabba Brothers Well was originally completed in the Georgetown Formation, while the Catron Well was drilled in the Georgetown Formation, completed in the Austin Chalk Formation, and is currently producing from the Buda Formation.

Rebuttal Evidence

The 3-D Disposal LLC Davidson Disposal Lease, Well No. 1 ("Davidson No. 1"), API No. 42-051-31392, is a commercial disposal well located within a twenty mile radius of the proposed disposal well location. The Davidson No. 1 was one of the wells used in the Protestants' calculations comparing actual disposal volumes to maximum permitted disposal volumes. The H-10 information for the Davidson No. 1 shows that the average daily disposal volume from January 2015 to March 2015 was 2,000 to 3,000 bpd.²³ The maximum permitted disposal volume is 15,000 bpd. On a percentage basis, the actual volume of water injected as a percentage of the maximum permitted capacity ranged from 13% to 22%. During this same time period, the average injection pressure was 85% to 95% of the maximum permitted injection pressure. Based on the current maximum surface injection pressure, Mr. Lampley agreed that the operator could not inject the maximum permitted injection volume of 15,000 bpd.

On cross-examination by the Protestants, Mr. Lampley noted that the monthly disposal volume for the Davidson No. 1 decreased to 11,143 bbl in April 2015 and 3,957 bbl in May 2015.²⁴

²⁰ Tr. Pg. 133, ln 13-17.

²¹ Tr. Pg. 135, ln 12.

²² Tr. pg. 127, ln 4.

²³ OSR SWD. LLC Exhibit No. 26.

²⁴ Protestants GSI & Carrabba Bros Exhibit No. 7.

EXAMINERS' ANALYSIS OF THE EVIDENCE

Public Interest

The Examiners conclude that the proposed commercial disposal well is in the public interest, in terms of a need for additional disposal capacity. The proposed location of the disposal well is in the Eaglebine Trend area. There are no activated commercial disposal wells within a 5-mile radius of the proposed location. Three oil/gas wells have been completed within a 5-mile radius between January 2015 and June 2015, and two drilling permits have been issued within a 5-mile radius between this same time period. A total of 370 drilling permits were issued within a 20 mile radius of the proposed well site in 2014 while only 157 wells have completion papers filed. As of June 2015, a total of 68 drilling permits had been issued within a 20-mile radius of the proposed well site, while only 40 wells had completion reports filed. Based on the evidence, the 20-mile radius surrounding the proposed disposal well location has the potential for additional well completions, and therefore, the need for expanded disposal capacity.

Within a 20-mile radius, there are fourteen activated commercial disposal wells. Only four of these fourteen activated commercial disposal wells are located within a 15-mile radius of the proposed disposal well location. Several of these wells are older wells, in which the surface casing is set at a depth that is above the BUQW. As a result, these wells would not meet current Statewide Rule 13 requirements if the wells were to be drilled, cased, and cemented today. This may be an indicator that these wells are older, and later in their life cycles.

The Protestants in this case are the Carrabba Brothers, Ltd. and GSI. Mark and David Carrabba are the principles for both GSI, and Carrabba Brothers. Ltd. GSI operates a commercial disposal well within a 15-mile radius of the proposed disposal well location, the M & B SWD. The Protestants' witness stated that he considers the proposed disposal well to be in competition with GSI's disposal wells in the area. The Applicant's witness also stated that if the subject application were granted, GSI may have to lower disposal rates. Based on the evidence, the proposed disposal well may result in lower disposal costs for operators in this area.

The Protestants are opposed to the application, stating there is not an industry-wide need for additional commercial disposal capacity at this location, at this time. Therefore, the well is not in the public interest. The Protestants' witness provided evidence that the actual disposal volume in January 2015 was approximately 30% of the maximum permitted capacity. In April 2015, the actual disposal volume was approximately 27% of the total maximum permitted volume. However, there is evidence that at least one well within a 20-mile radius could not inject volumes that approach its maximum permitted volume, as the well is limited by its maximum surface injection pressure. The Protestant's witness testified that GSI is also operating two or three of its wells at pressures that are approaching the maximum permitted surface injection pressure. The Protestant's witness stated that the GSI Texas Speedway Facility is only disposing of approximately 25% of the facility's maximum permitted capacity. However, the same witness later estimated that this same facility was operating at 1,450 psi and is permitted at a maximum surface injection pressure of 1,600 psi, or 90.6% of the maximum

permitted surface injection pressure. The evidence in this case shows that some of the disposal wells in operation in this area may not be able to inject up to the maximum permitted volumes due to geological limitations or well design constraints as opposed to a lack of industry need. The Examiners conclude that the evidence in this case indicates that the permitted capacity is not necessarily a direct correlation of available disposal capacity in this area.

Any Injury to Any Oil, Gas, or Other Mineral Formation

Based on the evidence, the Examiners conclude the proposed disposal well will not harm or injure the productive formations in the area, provided the well is cased and cemented in a manner that complies with Statewide Rule 13. The OSR-Torres Hwy. 21 No. 1 has not yet been drilled and as such, the Applicant's engineering witness stated that the proposed well construction plan can be altered if deemed necessary by the Commission. The Applicant intends to set 7-inch longstring casing at a depth of 10,250 feet which will be deeper than the productive formations at this location. However, the Applicant's engineering witness did not provide a numerical estimate in terms of the top of cement or the number of sacks of cement that will be pumped to ensure that the 7-inch longstring casing will be cemented across and above all formations required by Statewide Rule 13. The Applicant's engineering witness simply stated that cement will be circulated behind the longstring casing to cover the entire injection interval as well as get above the producing intervals. As a result, the Examiners recommend a special permit condition that the drilling, casing, and cementing of the well meet the requirements of Statewide Rule 13 (Casing, Cementing, Drilling, Well Control, and Completion Requirements).

The productive formations within two miles of the proposed disposal well location are the Austin Chalk, Eagleford, Buda, and Georgetown Formations. All of these formations are shallower than the disposal interval. The amended disposal interval from 8,650 feet to 10,125 feet is in the Glen Rose Formation. The upper approximately 500 feet of the Glen Rose Formation from 8,145 feet to 8,650 feet is composed of a marl interbedded dense limestone that will act as an upper confining interval that will prevent injected fluids from migrating upward to the productive formations.

The Protestants expressed a concern with the original injection interval from 8,150 feet to 10,150 feet due to the belief that the Edwards/Georgetown Formations may be productive. However, with the Applicant lowering the top of the disposal interval 500 feet from 8,150 feet to 8,650 feet, the Protestant did not cross-examine the Applicant's geology or engineering witnesses, or provide any evidence that there was insufficient geological isolation to prevent the upward migration of injected fluids to productive formations.

Adequate Protection of Ground and Surface Fresh Water

The GAU identifies the BUQW at a depth of approximately 3,050 feet at the OSR-Torres Hwy. 21 No. 1 location and the base of USDW at a depth of approximately 3,600 feet. The Applicant submitted a GAU letter that stated if otherwise compliant with Railroad Commission rules and guidance, drilling and using this disposal well and injecting waste into the subsurface stratum in the depth interval from 8,000 feet to 10,150 feet will not endanger the freshwater

strata in that area. In this case, the Applicant has proposed to inject waste into the depth interval between 8,650 feet and 10,150 feet in the Glen Rose Formation, which is within the depth interval referenced by the GAU.

The Examiners conclude that casing and cementing the well in accordance with Statewide Rule 13 will provide adequate protection of ground and surface fresh water. As previously stated, the Examiners recommend a special permit condition that the drilling, casing and cementing of the well meet the requirements of Statewide Rule 13. This includes a change to the depth in which the Applicant has proposed setting the surface casing. The Applicant's engineering witness stated the current plan is to set the surface casing at a depth of 3,700 feet, or 650 feet deeper than the base of useable quality water as identified by the GAU. Statewide Rule 3.13(b)(1)(B)(i) states that an operator shall set and cement sufficient surface casing to protect all useable-quality water strata, as defined by the Groundwater Advisory Unit of the Oil and Gas Division. In no case, is surface casing to be set deeper than 200 feet below the specified depth without prior approval from the district director. The Applicant provided no reason for setting the surface casing 650 feet deeper than the useable-quality water, other than an apparent mislabeling of the depth of the useable quality water as 3,600 feet on its wellbore schematic (OSR SWD, LLC Exhibit No. 10), which is the depth at which the GAU identified the USDW. The Applicant's engineering witness corrected this mislabeling on Exhibit No. 10 during the hearing and stated that the Applicant would not have an issue if the Commission wanted to limit the surface casing depth to 3,100 feet, which would meet the requirements of Statewide Rule 3.13(b)(1)(B)(i). The Examiners recommend that the surface casing be set at a depth that meets the requirements of Statewide Rule 13. Setting the surface casing at a depth of 3,100 feet would meet this requirement based on the BUQW at a depth of 3,050 feet at the proposed well location.

The disposal interval in the Glen Rose Formation between 8,650 feet and 10,150 feet will be separated from freshwater formations by impervious beds which will give adequate protection to such freshwater formations. The upper 505 feet of the Glen Rose Formation from 8,145 feet to 8,650 feet is composed of a marl interbedded dense limestone which will act as an upper confining interval that will prevent the upward migration of injected fluids.

Financial Responsibility

OSR SWD, LLC has an active Organization Report (Form P-5) on file with the Commission. Mr. Vargas stated that a bond for financial assurance has not been filed as of yet, since the subject application has not yet been approved. Mr. Vargas stated that the intent is to file the bond if the permit is granted.

Additional Information

The Applicant's review of seismic information since January 1, 1970 to June 23, 2015 shows no seismic events have been reported within 100 square miles of the proposed location.

FINDINGS OF FACT

1. OSR SWD, LLC seeks a permit authorizing commercial disposal operations pursuant to 16 Tex. Admin. Code § 3.9 for the OSR-Torres Hwy. 21 Lease, Well No. 1, Caldwell, NE (Georgetown) Field, Brazos County, Texas.
2. The application for the OSR-Torres Hwy. 21 Lease, Well No. 1 was mailed to the owner of the surface tract, to adjacent surface owners, to the Brazos County Clerk, to Apache Corporation, and to GSI Oil & Gas, Inc. 16 Tex. Admin. Code § 3.9(5)(A), (B).
3. Notice of the OSR-Torres Hwy. 21 Lease, Well No. 1 commercial disposal well application was published in *The Eagle*, a newspaper of general circulation in Brazos County, Texas on November 25, 2014. 16 Tex. Admin. Code § 3.9(5)(D).
4. The application is protested by GSI Oil & Gas, Inc., an operator within a half-mile of the proposed commercial disposal well location, and by Carrabba Brothers Ltd., an adjacent surface owner.
5. At least 10 days' notice of the hearing was provided to the owner of the surface tract, to adjacent surface owners, to the Brazos County Clerk, to Apache Corporation, and to GSI Oil & Gas, Inc. 16 Tex. Admin. Code § 3.9(5)(E)(i).
6. The use or installation of the OSR-Torres Hwy. 21 Lease, Well No. 1 is in the public interest in terms of a need for additional disposal capacity in this area.
 - a. There are no activated commercial disposal wells within a five mile radius of the proposed OSR-Torres Hwy. 21 Lease, Well No. 1 location;
 - b. Within a five-mile radius of the proposed OSR-Torres Hwy. 21 Lease, Well No. 1 location three wells had been completed, and two additional drilling permits had been issued between January and June 2015;
 - c. There are a total of four activated commercial disposal wells with a fifteen-mile radius of the proposed OSR-Torres Hwy. 21 Lease, Well No. 1 location;
 - d. At least one of the four commercial disposal wells within a fifteen mile radius of the proposed OSR-Torres Hwy. 21 Lease, Well No. 1 location cannot inject the maximum permitted daily volume due to injection pressure limitations;
 - e. In 2014, a total of 370 drilling permits were issued and 157 completion reports were filed for wells within a 20 mile radius of the proposed well site; and

- f. As of June 2015, a total of 68 drilling permits had been issued and 40 wells had completion reports filed for 2015 within a 20-mile radius of the proposed well site.
- 7. The use or installation of the OSR-Torres Hwy. 21 Lease, Well No. 1 will not endanger or injure oil, gas, or other mineral formations.
 - a. The OSR-Torres Hwy. 21 Lease, Well No. 1 commercial disposal well will inject salt water and RCRA-exempt waste in the Glen Rose Formation between 8,650 feet and 10,150 feet;
 - b. The Glen Rose Formation is deeper than the productive Austin Chalk, Eagleford, Buda, and Georgetown Formations; and
 - c. Injected fluids will be confined to the disposal interval:
 - i. The upper 505 feet of the Glen Rose Formation from 8,145 feet to 8,650 feet is composed of a marl interbedded dense limestone that will act as an upper confining interval; and
 - ii. The Pearsall Formation, a shale interval approximately 800 feet in thickness, is located directly below the Glen Rose Formation and will act as a lower confining interval.
- 8. With proper safeguards, both ground and surface fresh water can be adequately protected from pollution.
 - a. The base of usable-quality water (BUQW) occurs from surface to a depth of 3,050 feet.
 - b. The OSR-Torres Hwy. 21 Lease, Well No. 1 will be constructed with 9-5/8 inch surface casing set at a depth of 3,100 feet and cemented in place with cement circulated to surface to protect the BUQW.
 - c. The disposal interval is between 8,650 feet and 10,150 feet in the Glen Rose Formation;
 - d. The upper 505 feet of the Glen Rose Formation from 8,145 feet to 8,650 feet is composed of a marl interbedded dense limestone that will act as an upper confining interval;
 - e. The maximum surface injection pressure will be 4,000 psi;
 - f. The maximum daily injection volume for will be 25,000 bpd; and

- g. No wellbores with a half mile radius penetrate the disposal interval.
- 9. OSR SWD, LLC has an active P-5 on file with the Commission. OSR SWD, LLC's does not have any current operations that require financial assurance. Financial assurance will be required prior to commencing disposal operations.
- 10. No seismic events have been reported within 100 square miles of the proposed disposal well location between January 1, 1970 and June 23, 2015.

CONCLUSIONS OF LAW

- 1. Resolution of the subject application is a matter committed to the jurisdiction of the Railroad Commission of Texas. TEX. NAT. RES. CODE § 81.051.
- 2. The proposed fluid disposal operations will not cause the pollution of freshwater strata and will not endanger oil, gas or geothermal resources. Texas Water Code § 27.051(b)(2-3).
- 3. The installation and use of the proposed commercial disposal well is in the public interest. Texas Water Code § 27.051(b)(1).
- 4. OSR SWD, LLC has met its burden of proof and the application for the OSR-Torres Hwy. 21 Lease, Well No. 1 satisfies the requirements of Chapter 27 of the Texas Water Code and the Railroad Commission's Statewide Rule 9.

EXAMINERS' RECOMMENDATION

Based on the above findings of fact and conclusions of law, the Examiners recommend that the application of OSR SWD, LLC for commercial disposal authority pursuant to Statewide Rule 9 for the OSR-Torres Hwy. 21 Lease, Well No. 1, Caldwell, NE (Georgetown) Field, Brazos County, Texas, be approved, as set out in the attached Final Order.

Respectfully submitted,



Karl Caldwell
Technical Examiner



Marshall Enquist
Administrative Law Judge