



RAILROAD COMMISSION OF TEXAS

HEARINGS DIVISION

OIL AND GAS DOCKET NO. 01-0294386

THE APPLICATION OF EQUIPMENT TRANSPORT, LLC 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, QUAILEO LEASE, WELL NO. 2, WINTER GARDEN, S. (OLMOS 2900) FIELD, DIMMIT COUNTY, TEXAS

HEARD BY: Karl Caldwell - Technical Examiner
Cecile Hanna - Administrative Law Judge

PROPOSAL FOR DECISION PREPARED BY: Karl Caldwell - Technical Examiner
Marshall Enquist - Administrative Law Judge

PROCEDURAL HISTORY

Application Filed:	August 11, 2014
Protest Received:	August 13, 2014
Request for Hearing:	October 30, 2014
Notice of Hearing:	January 8, 2015 & March 31, 2015
Hearings Held:	May 13 & 14, 2015
Transcript Received:	May 29, 2015
Closing Statements Received:	June 22, 2015
Replies to Closing Statements Received:	July 2, 2015
Proposal for Decision Issued:	November 30, 2015

APPEARANCES:

APPLICANT:

John Soule
Arthur Streeter
J. Dan Arthur
Greg Casey
Fernando De Leon
David Channel

REPRESENTING:

Equipment Transport, LLC

PROTESTANT:

Wintergarden Groundwater Conservation District

Peter Gregg
Ed Walker
Dr. Ronald Green
F. Paul Bertetti

CASE SUMMARY

Equipment Transport, LLC (“Equipment Transport”) is applying for a commercial disposal permit pursuant to 16 Tex. Admin. Code § 3.9 for the Quaileo Lease, Well No. 2 (“Quaileo No. 2”), Winter Garden, S. (Olmos 2900) Field, Dimmit County, Texas. The Applicant is requesting commercial disposal authority for a maximum injection volume of 25,000 bpd in the Edwards and Glen Rose Formations between 6,500 feet and 9,000 feet at a maximum surface injection pressure of 3,250 psi for the Quaileo No. 2. The application is protested by Wintergarden Groundwater Conservation District (“WGCD”). WGCD is protesting the application for the Quaileo No. 2 due to a concern that the Glen Rose Formation could potentially contain usable-quality water.

Based on the evidence, the Examiners conclude that the base of usable quality water (BUQW) is at a depth of 1,150 feet at the applied-for well location. The use of the Edwards and Glen Rose Formations will not endanger the freshwater strata in the area and the formations are not freshwater-bearing. Furthermore, the Edwards and Glen Rose Formations are separated from freshwater formations by impervious beds which will give adequate protection to such freshwater formations. The Examiners’ recommend the Railroad Commission of Texas (“Commission”) approve 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 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 (Equipment Transport, LLC)

Application

The application for the Qualeo No. 2 was mailed to all adjacent surface owners, the Dimmit County Clerk, and CML Exploration ("CML"), the only operator within a half-mile of the proposed disposal well. Equipment Transport owns 100% of the surface rights and 50% of the mineral rights for the tract where the subject wells will be drilled. Notice of the application was published in the *Carrizo Springs Javelin*, a newspaper of general circulation in Dimmit County, on Wednesday August 6, 2014. Commission Staff determined that the application was administratively complete, but due to receiving a protest from WGCD, Staff was unable to approve the application administratively.¹ As a result of a protest, the Applicant requested a hearing.²

Qualeo No. 2

Injection Interval and Well Construction

The Applicant proposes to inject a maximum volume of 25,000 bpd of salt water and RCRA-exempt waste³ in the Edwards and Glen Rose Formations, between 6,500 feet and 9,000 feet at a maximum surface injection pressure of 3,250 psi. The Commission's Groundwater Advisory Unit (GAU) identifies the BUQW at a depth of approximately 1,150 feet at the proposed Qualeo No. 2 location and estimates the depth of underground sources of drinking water (USDW) to be at approximately 1,200 feet. The Applicant submitted a letter from the GAU stating that the use of such formations will not endanger the freshwater strata in that area and that the formations to be used for disposal are not freshwater-bearing.⁴ The Qualeo No. 2

¹ Equipment Transport, LLC Exhibit Nos. 26 & 27.

² CML was inadvertently left off the Notice of Hearing service list when an internal memo was sent from Injection-Storage Permits to Docket Services. In a signed waiver, CML confirms that notice of the applications were received and no protests were filed. In addition, a Supplemental Notice of Hearing for each application were mailed to CML and CML signed a waiver waiving objection as to timing of the notice of hearing and has no objection to approval of the applications (Equipment Transport, LLC Exhibit No. 32). Due to returned envelopes for the Notice of Hearing for both applications and the uncertainty of correct addresses for Jesse Frank Guerra and John Pattison Tatum, Notices of Hearing were published in the *Carrizo Springs Javelin*, for four consecutive weeks, (April 8, 15, 22, and 29, 2015) for each application. In addition, supplemental Notices of Hearings were mailed on April 13, 2015 to corrected addresses for Jesse Frank Guerra and John Pattison Tatum.

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 16 Tex. Admin. Code §3.9 (2)

application is filed pursuant to Statewide Rule 9 since there is no current or past production from the proposed injection interval within a two-mile radius. Within two miles there are productive formations above the proposed disposal interval. These productive formations are the Austin Chalk Formation, at a depth of approximately 4,900 feet, and the Eagleford Formation, at depths ranging from 5,800 feet to 6,100 feet.⁵

Quaileo No. 2 has not yet been drilled, but the proposed well construction plan meets the requirements of Statewide Rule 13. The well construction plan is to set 9-5/8 inch, 32 lb-per-foot surface casing at a depth of 1,350 feet, 200 feet deeper than the BUQW and the surface casing will be cemented with cement circulated to surface. 7-inch, 24 lb.-per-foot longstring casing will be set at a depth of 9,000 feet and cemented in place with cement circulated to surface.

Confining Intervals and Nearby Wellbores

The Shook 1-1H (API No. 42-127-33631), located approximately six miles to the southwest, is the only available nearby well log considered to be of good quality, that penetrates through the base of the Glen Rose Formation. Mr. Channell projects the top of the Edwards Formation to be at approximately 6,500 feet at the proposed Quaileo No. 2 location. The upper confining interval is the Del Rio Formation located directly above Edwards Formation. The Del Rio Formation is a tight shale interval, approximately 200 feet thick, and uniform across the area. The base of the Glen Rose Formation is estimated to be at a depth of 9,100 feet at the proposed well location, and the bottom of injection interval will be at 9,000 feet. A shale interval at the base of the Glen Rose Formation will be a lower confining layer. There is no production below the Glen Rose Formation in this area and there are no wellbores that penetrate the proposed disposal interval within a quarter-mile radius.

Edwards and Glen Rose Formation Analysis

In addition to the GAU determination that the BUQW occurs at a depth of 1,150 feet and the USDW at a depth of 1,200 feet at the proposed well locations, a review of other BUQW and USDW determinations in Dimmit County shows the BUQW ranges from 650 feet to 1,600 feet, while the base of USDW ranges from 950 feet to 2,245 feet.⁶ The deepest depth of USDW identified in Commission records in this area of Dimmit County is at a depth of 2,245 feet at the Pecan Tree SWD, Well No. 1. The Pecan Tree SWD, Well No. 1 is located approximately 3.75 miles north-northeast of the proposed disposal well location.

The Commission has approved disposal into the Glen Rose Formation in numerous well locations to the east, west, north, and south of the proposed locations. Equipment Transport's expert witness Fernando DeLeon, an engineer with experience in injection well permitting, monitoring, and testing examined Commission records and identified a total of 14 wells in

⁵ Applicant's Exhibit No. 15

⁶ Equipment Transport Exhibit Nos. 19 & 20.

Dimmit County that are permitted for disposal in the Glen Rose Formation.⁷ All of these permits identify the Glen Rose Formation as a disposal formation except one, which indicates the disposal formation to be the Lower Cretaceous. In Mr. De Leon's opinion, that interval includes the Glen Rose Formation. At least two of the wells, the Choya Operating LLC/Carla SWD Nos. 1 and 2, are permitted for disposal in the Glen Rose Formation within 10 miles of the proposed Quaileo No. 2 location.

James Daniel Arthur, another expert witness for Equipment Transport, a registered professional engineer in the State of Texas, conducted an analysis to estimate the salinity and TDS concentration of the Edwards and Glen Rose Formation water in the vicinity of the proposed Quaileo No. 2. Mr. Arthur used Spontaneous Potential (SP) information from open-hole logs of wells drilled with water-based mud, and equations to calculate formation fluid salinity (sodium chloride, NaCl). Mr. Arthur then used a ratio to estimate the the total dissolved solids (TDS) concentration. The ratio was based on the assumption that the salinity value calculated would be 80% of the TDS concentration. Mr. Arthur considers this ratio to be "pretty conservative."⁸

Thirty-one logs within the vicinity of the proposed well locations that had corresponding SP curves were identified. Only three of the well logs in the immediate area penetrated the Glen Rose Formation to a sufficient depth and contained a consistent, representative zone to estimate a salinity value. According to Mr. Arthur, the Glen Rose Formation has "some shale in it. So you want to make sure you're picking a non-shale portion of this. Because we're wanting to look at the fluid and...not the rock."⁹ The salinity and corresponding TDS concentrations for these three wells varied between 17,000 ppm salinity to 22,000 ppm salinity, or 20,400 ppm TDS to 26,400 ppm TDS. "What we found is that if we looked at both the Edwards and the Glen Rose, that the TDS values were above that of what would constitute an underground source of drinking water. So higher than 10,000 milligram per liter [ppm] total dissolved solids."¹⁰ In Mr. Arthur's opinion, "those are not USDWs."¹¹ The estimated TDS concentration in the Edwards Formation ranged from 11,250 ppm to 31,250 ppm. The Glen Rose Formation is deeper than the Edwards Formation, and Mr. Arthur would typically expect the deeper formation to be more saline than the shallower formation.

Existing Disposal Wells in the Area

Two commercial disposal permits have been granted that include the Glen Rose Formation as a disposal formation within a ten-mile radius of the proposed disposal well location. These wells are the Choya Operating, LLC Carla SWD Nos. 1 and 2. In total, seventeen commercial disposal permits have been granted within a ten-mile radius of the

⁷ Equipment Transport Exhibit Nos. 36 & 37.

⁸ Tr. Vol. I, pg. 208, ln 8.

⁹ Tr. Vol. I, pg. 217 ln 1-4.

¹⁰ Tr. Vol. I, pg. 204, ln 20-24.

¹¹ Tr. Vol. I, pg. 227, ln 17.

proposed disposal well that inject into various formations. The total permitted volume of all seventeen disposal permits within a ten mile radius is 232,500 bpd. However, this total includes two wells that have been plugged, leaving a total of fifteen commercial disposal well permits within a ten-mile radius.

Of the remaining fifteen permits, only eight are currently active. The total permitted volume for the eight active permits is 97,500 bpd. The actual average daily injection volume is 40,127 bpd. The status of the remaining seven permits that have been granted, but not activated is unknown. Four of the eight activated commercial disposal permits have reported a maximum injection pressure in excess of the maximum permitted injection pressure. The Applicant believes that this indicates that the facilities do not have additional disposal capacity, even though the actual average daily injection volume is less than the permitted volume. The facilities may have permitted capacity, however, since they are at or above the maximum permitted pressure, they cannot inject any more fluid.

Although the other four active permits have not reported a maximum injection pressure in excess of the permitted maximum, three of the four have reported a maximum injection pressure that is 85% or greater of the maximum permitted injection pressure. In Mr. De Leon's opinion, there is a large discrepancy between permitted and actual capacity since "the injection disposal permits are requested in hope of any possible anticipated volume and pressure that might be used, so they're maximized so as to not require a permit amendment down the road."¹²

ALL Consulting, LLC ("ALL") works with oil and gas companies, to aid in the management of waste and wastewater disposal. Mr. Casey has performed audits of facilities in the area and has first-hand knowledge of disposal operations in this area of Dimmit County. Mr. Casey stated that when he conducts an audit "we have a copy of the injection permit with us, and we physically look at the gauges on the well and talk with the people on-site...we do a complete audit to determine how they're operating a facility."¹³

Disposal wells within a ten-mile radius of the Equipment Transport Qualeo Lease include the Texas Energy Services, LLC Frost National Bank, Well No. 1. At the time of the audit, this facility was operating near maximum capacity and only accepting water from their own trucks. In addition, the Basic Energy Services, L.P. Carrizo Springs SWD, Well No. 1 was accepting approximately 90% of their own water, experiencing injection issues, and operating close to maximum capacity. During ALL's study for Murphy Oil, Mr. Casey visited two Olmos/San Miguel Formation disposal wells, and "both of the facilities I visited...they're running...at or above their maximum allowable injection pressure...one of the reasons why I didn't approve them for use by Murphy."¹⁴

¹² Tr. Vol. I, pg. 54, ln 12-15.

¹³ Tr. Vol. II, pg. 139. Ln 10-14.

¹⁴ Tr. Vol. I, pg 133, ln 6-10.

Equipment Transport's Proposed Facility and Current Operations

According to Arthur Streeter, vice president of legal permitting and compliance, corporate secretary, and general counsel for Equipment Transport, the company has been involved in the fluid transportation business since 2010. Equipment Transport's business operations include transporting produced water, flowback water, and fresh water for oil and gas companies. Equipment Transport's Texas operations are mainly conducted in Dimmit, Webb, and Maverick Counties. Derrell Hardison, General Manager of Texas operations, has over 20 years of experience in the oil and gas industry, including injection wells. Equipment Transport has an active P-5 and a hauler's permit (Permit No. 5377) with the Commission. Equipment Transport's current business does not require financial assurance, but if a permit is granted, Mr. Streeter stated that the company is prepared to forward a \$25,000 letter of credit.

The proposed disposal well location is the Qualeo Lease, which is Equipment Transport's Texas operations center. The proposed disposal facility will be located on FM 186, approximately 5 miles southwest of Carrizo Springs. Current operations on the lease include a shop with 8 full-time mechanics to service trucks, as well as administrative offices for Texas operations. Equipment Transport currently operates approximately 55 transport trucks with 130 to 150 barrel trailers. These trucks currently haul produced and flowback water to other disposal sites, requiring the trucks to travel past Equipment Transport's yard to dispose of the water at a disposal site. If the applied-for permit is approved, Equipment Transport anticipates water that is currently hauled to other disposal wells will be disposed of at their own well. A large amount of gathered, produced and flowback water is generated southwest of Carrizo Springs and the proposed disposal well will increase efficiency. If the permit is granted, Equipment Transport trucks will not have to travel as far to do the same amount of work, reducing the number of highway miles, in addition to reducing traffic through Carrizo Springs.

In Mr. Casey's opinion, many facilities are not designed to adequately filter oilfield fluids prior to injection. In Mr. Casey's nearly 30 years of experience with injection wells, typical problems occur due to a lack of filtration of the disposal waste prior to injection, to filter out solids and to remove contaminants that tend to cause scaling issues and bacteria growth downhole. Over time, these fluids damage the wellbore, resulting in declining injection rates over the life of disposal wells, requiring remedial work of the wellbore. ALL's design for the proposed disposal facility incorporates desander-type systems to remove solids and specialized equipment to reduce oil and oil particulates to less than 20 parts per million (ppm) prior to injection.

Equipment Transport has determined that there is a need for additional disposal in the vicinity of their Texas operations. Commission documents show 6,287 permitted locations representing pending oil or gas wells, where either the operator has not yet filed completion paperwork with the Commission, or the completed well has not yet been set up with a Commission identification number. There are 8,026 oil wells on schedule and 4,102 gas wells on schedule in the Eagle Ford Shale play as of April 2, 2015. Between May 1, 2014 and April 30, 2015, a total of 1,898 drilling permits were issued for Dimmit, Zavala and Webb Counties. Of these 1,898 permits issued, 1,620 were for Eagle Ford wells.

Seismic Survey

A survey of information from the United States Geological Survey (USGS) shows that there are no historical seismic events within an 18 km radius, or a circular area of 397.6 square miles around the proposed disposal well location.

WGCD's Evidence, Quaileo No. 2

Ed Walker, WGCD General Manager, states that the WGCD is protesting the Quaileo No. 2 because the district feels there could be usable water in the Glen Rose Formation, and therefore it should be protected as a groundwater source. On cross-examination, Mr. Walker stated that WGCD has not approached the Texas Water Development Board and specifically stated that they think the Glen Rose Formation at this location has future potential for desalination projects.

Paul Bertetti, WGCD's geoscientist witness, states that if the proposed Quaileo No. 2 is completed in the Glen Rose Formation it could potentially inject into a zone with usable-quality water. Mr. Bertetti has researched discharge permit information from wells completed in the Glen Rose Formation on the Comanche Ranch Lease ("CR Lease") in Maverick and Dimmit Counties. These discharge permits grant the discharge of produced water on the surface and in the waters of the state of Texas. This water is produced in conjunction with the production of oil and gas on the CR Lease. According to Mr. Bertetti, the CR Lease wells all produce from the upper Glen Rose Formation and the TDS concentrations range from 1,190 ppm to 3,240 ppm. Mr. Bertetti referred to a report written by Robert Scott in 2004 and states that Mr. Scott noted that the oil production in the Glen Rose Formation is water-driven, and Mr. Scott also noted examples of fresh water discovered in conjunction with these wells. Mr. Bertetti estimates that the CR Lease wells are a minimum of 12 miles to the northwest of the proposed Quaileo No. 2. The depth to the top of the Glen Rose Formation for the CMR wells ranges between 5,690 feet and 6,256 feet.

Mr. Bertetti used the well log for the Shook No. 8-1H (API No. 42-127-33704), at a depth of 8,425 feet to read the resistivity curves that could be converted to a salinity estimate and then to a TDS estimate at that depth. "Commonly we would want to use the deep resistivity curve, which is the red curve in this plot; although, they kind of plot on top of each other here...so...I estimate a value of about 17 [ohm-meters] for that zone."¹⁵ Mr. Bertetti estimates a salinity of 4,500 ppm, and using the Applicant's rule of thumb that the TDS concentration is approximately 20% higher than the NaCl salinity, estimates a value of 5,400 ppm TDS. By varying an assumption in the calculation, Mr. Bertetti estimates the range of TDS concentrations to be 3,500 to 7,000 ppm from 8,380 feet to 8,425 feet at the Shook No. 8-1H location, and within the guidelines for USDW.

¹⁵ Tr. Vol. II, pg. 189, ln 24 – pg. 190, ln 3.

In Mr. Bertetti's opinion, the Applicant's calculated values of salinity and TDS for the Glen Rose Formation are not applicable since they were not estimated at depths deep enough to be in the Glen Rose Formation. "It's very difficult to actually pick the transition between the Edwards and the Glen Rose from geophysical logs. It usually is very helpful to have well cuttings and other analysis. The reason is, there's not really a transition...so the implication there is the salinity calculations that they've presented for the Glen Rose. In the best case, one of them is actually right-conducted over a region that's actually across the boundary of the Glen Rose and the Edwards"¹⁶

On cross-examination, the log header for the Shook No. 8-1H well used by the Protestant to estimate the salinity and TDS concentrations in the Glen Rose Formation indicates the well was drilled with oil-based mud. In Mr. Bertetti's opinion, the reason that the shallow and deep resistivity curves overlay each other at a depth starting at approximately 8,380 feet is "that there's probably...penetration of the mud...as detected by the tool...so there's little differentiation between the lines [resistivity curves] at that location [depth]."¹⁷ In Mr. Bertetti's opinion, it is possible that the resistivity tool is measuring the resistivity of the rock and not the fluid that might otherwise be contained in the rock. However, Mr. Bertetti concludes that "the zones are porous. And that's the data that I have available...so I made the calculation as best I could based on the available information."¹⁸ Mr. Bertetti agrees that the well logs used in his salinity calculations, are generally further from the locations of the proposed disposal wells than the well logs used by the Applicant's witness in their salinity calculations. Mr. Bertetti also agrees that the CR Lease area is at least 12 miles to the northwest and "definitely updip"¹⁹ of the proposed disposal well locations.

EXAMINERS' ANALYSIS OF THE EVIDENCE

Public Interest

The Examiners conclude that the Applicant provided evidence that there is need for additional disposal in this area, and therefore, the proposed disposal well is in the public interest. The Protestant did not offer any contradicting evidence or rebut the Applicant's evidence that additional disposal is needed. Equipment Transport services the Eagleford shale play in Texas, and Commission documents show there are 6,287 permitted locations representing pending oil or gas wells in the Eagleford shale play as of April 2, 2015. Between May 1, 2014 and April 30, 2015, a total of 1,898 drilling permits were issued for Dimmit, Zavala and Webb Counties. Of these 1,898 permits issued, 1,620 were for Eagleford wells. Equipment Transport has knowledge of the volume of water generated in the area that requires disposal. Equipment Transport currently operates approximately 55 transport trucks that haul produced and flowback water to

¹⁶ Tr. Vol. II, pg. 213, ln 18- pg. 214, ln 8.

¹⁷ Tr. Vol. II, pg. 228, ln 7-13.

¹⁸ Tr. Vol. II, pg. 228, ln 18-21.

¹⁹ Tr. vol. II, pg. 233, ln 5.

other disposal sites. The proposed disposal well will increase efficiency, in terms of reducing both truck travel time and miles driven to properly dispose of water.

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

Within two miles of the proposed well the productive formations are the Austin Chalk Formation, at a depth of approximately 4,900 feet, and the Eagleford Formation, at depths ranging from 5,800 feet to 6,100 feet. The Qualeo No. 2 application is filed pursuant to Statewide Rule 9 since there is no current or past production from the proposed injection interval (Edwards and Glen Rose Formations) within a two-mile radius.

The permit for Qualeo No. 2 will authorize the injection of a maximum volume of 25,000 bpd of salt water and RCRA-exempt waste in the Edwards and Glen Rose Formations between 6,500 feet and 9,000 feet. The productive formations within two miles of the proposed well are the Austin Chalk and Eagleford Formations, which are located above the proposed disposal interval: Qualeo No. 2 has not yet been drilled, but the proposed casing and cementing program meets the requirements of Statewide Rule 13 and will protect the Austin Chalk and Eagleford Formations. The well construction plan is to set 9-5/8 inch, 32 lb-per-foot surface casing at a depth of 1,350 feet, 200 feet deeper than the BUQW and the surface casing will be cemented with cement circulated to surface. 7-inch, 24 lb.-per-foot longstring casing will be set at a depth of 9,000 feet and cemented in place with cement circulated to surface. Disposal fluids injected in the Edwards and Glen Rose Formations will be confined to the disposal interval. The upper confining interval is the Del Rio Formation, located directly above Edwards Formation. The Del Rio Formation is a tight shale interval, approximately 200 feet thick and uniform across the area. The base of the Glen Rose Formation is estimated to be at a depth of 9,100 feet at the proposed well location, and the bottom of injection interval will be at 9,000 feet. The Applicant identified a shale interval at the base of the Glen Rose Formation that will be a lower confining layer. There is no production below the Glen Rose Formation in this area.

Adequate Protection of Ground and Surface Fresh Water

The GAU identifies the BUQW at a depth of approximately 1,150 feet at the Qualeo Lease and the base of USDW at a depth of approximately 1,200 feet. The Applicant provided a letter from the GAU stating that the use of such formations will not endanger the freshwater strata in that area and that the formations to be used for disposal are not freshwater-bearing. The disposal interval in the Edwards and the Glen Rose Formations between 6,500 feet and 9,000 feet will be separated from freshwater formations by impervious beds which will give adequate protection to such freshwater formations. The Del Rio Formation located directly above Edwards Formation is a tight shale, approximately 200 feet thick, and uniform across the area.

The WGCD is protesting the Qualeo No. 2 application due to a concern that the water quality of the disposal interval, specifically the Glen Rose Formation, at the proposed well location may be considered a USDW²⁰ and therefore should not be authorized for disposal. Both

²⁰ TDS concentration less than 10,000 ppm.

the Applicant and the Protestant analyzed well logs in the area to estimate the TDS concentration of the disposal interval. The Examiners conclude that no evidence was presented that contradicts the GAU's BUQW or USWD determination at the proposed well locations. The Applicant analyzed the SP information of nearby open-hole logs of wells drilled with water-based mud, and concluded that the TDS concentration in the Edwards and Glen Rose Formations were greater than 10,000 ppm and therefore not considered USDW. The Protestant did not have any issues with the methodology of the Applicant's analysis. However, the Protestant believes that only one of Applicant's analyses was performed at a depth that could possibly be considered to be in the Glen Rose Formation, and the other analyses were performed in the Edwards Formation. The Protestant analyzed the resistivity of well logs in the area and concluded that the TDS concentration ranges from 3,500 ppm to 7,000 ppm between 8,380 feet and 8,425 feet in the Shook 8-1H well. However, the log header shows that the well was drilled with oil-based mud. On cross-examination, the Protestant's witness opined that the shallow and deep resistivity curves overlap at these depths due to the penetration of the drilling mud as detected by the tool. The Protestant's witness also stated that another possibility could be that the resistivity tool is measuring the resistivity of the rock. Neither of these opinions support the Protestant's position that these the deep resistivity readings are representative of the resistivity of the formation fluid, which could thereby be converted to a salinity and TDS estimate. Therefore, the Protestant's information fails to be persuasive for the Examiners to conclude that the GAU's determination of the BUQW and USDW are not correct for this location.

Financial Responsibility

Equipment Transport has an active Organization Report (Form P-5) on file with the Commission. Equipment Transport's current operations do not require financial assurance. Mr. Streeter stated that the company will file a letter of credit in the amount of \$25,000 if a disposal permit is granted.

FINDINGS OF FACT

1. Equipment Transport, LLC seeks a permit authorizing commercial disposal operations pursuant to 16 Tex. Admin. Code § 3.9 for the Qualeo Lease, Well No. 2, Winter Garden, S. (Olmos 2900) Field, Dimmit County, Texas.
2. The application for the Qualeo Lease, Well No. 2 was mailed to all adjacent surface owners, the Dimmit County Clerk, and CML Exploration ("CML"), the only operator within a half-mile of the proposed disposal well. 16 Tex. Admin. Code § 3.9(5)(A), (B).
3. Notice of the Qualeo Lease, Well No. 2 commercial disposal well application was published in the *Carrizo Springs Javelin*, a newspaper of general circulation in Dimmit County, Texas on August 6, 2014. 16 Tex. Admin. Code § 3.9(5)(D).

4. Wintergarden Groundwater Conservation District's jurisdiction includes Dimmit County and protested the Quaileo Lease, Well No. 2 application.
5. At least 10 days' notice of the hearing was provided to all adjacent surface owners of the surface and to the Dimmit County Clerk. The Applicant is the owner of the surface tract. CML Exploration is the only operator within a half-mile radius of the proposed well. A waiver signed by CML Exploration states that there is no objection as to timing of the notice of hearing and that the company has no objection to approval of the application. 16 Tex. Admin. Code § 3.9(5)(E)(i).
6. The use or installation of the Quaileo Lease, Well No. 2 is in the public interest.
 - a. As of April 2, 2015 there are 6,287 permitted locations representing pending oil or gas wells in the Eagleford shale play. Between May 1, 2014 and April 30, 2015, a total of 1,898 drilling permits were issued for Dimmit, Zavala and Webb Counties. Of these 1,898 permits issued, 1,620 were for Eagleford wells.
 - b. Equipment Transport currently operate approximately 55 transport trucks that haul produced and flowback water to disposal sites;
 - c. The proposed disposal wells will be increase efficiency, in terms of reducing both truck travel time and miles driven to properly dispose of water.
7. The use or installation of the Quaileo Lease, Well No. 2 will not endanger or injure oil, gas, or other mineral formations.
 - a. The productive formations within two miles of proposed Quaileo Lease, Well No. 2 are the Austin Chalk Formation, at a depth of approximately 4,900 feet, and the Eagleford Formation, at depths ranging from 5,800 feet to 6,100 feet;
 - c. The requested disposal formations for the Quaileo Lease, Well No. 2 are the Edwards and Glen Rose Formations.
 - I. The Edwards and Glen Rose Formations are deeper than the productive Austin Chalk and Eagleford Formations;
 - II. The Del Rio Formation located directly above Edwards Formation will be an upper confining interval to prevent the upward migration of injected fluids. The Del Rio Formation is a tight shale, approximately 200 feet thick in this area.

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 1,150 feet.
 - II. The Quaileo Lease, Well No. 2 will be constructed with 9-5/8 inch, 32 lb.-per-foot surface casing at a depth of 1,350 feet. 7-inch, 24 lb.-per-foot longstring casing will be set at a depth of 9,000 feet and cemented in place with cement circulated to surface.
 - i. The disposal interval is between 6,500 feet and 9,000 feet in the Edwards and Glen Rose Formations;
 - ii. The maximum surface injection pressure will be 3,250 psi; and
 - iii. The maximum daily injection volume for will be 25,000 bpd
 - b. No wellbores with a quarter-mile radius penetrate the Quaileo Lease Well No. 2 disposal interval.
 - c. The Glen Rose Formation has been authorized for commercial disposal activities within a ten-mile radius of the proposed Quaileo Lease, Well No. 2 location.
9. Equipment Transport has an active P-5 on file with the Commission. Equipment Transport's current operates do not require financial assurance. Financial assurance will be required prior to commencing disposal operations.

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. Equipment Transport has met its burden of proof and the application for the Quaileo Lease, Well No. 2 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 Equipment Transport for commercial disposal authority pursuant to Statewide Rule 9 for the Quaileo Lease, Well No. 2, Winter Garden, S. (Olmos 290) Field, Dimmit County, Texas, be approved, as set out in the attached Final Order.

Respectfully submitted,



Karl Caldwell
Technical Examiner



Marshall Enquist
Administrative Law Judge