



RAILROAD COMMISSION OF TEXAS

HEARINGS DIVISION

PROPOSAL FOR DECISION

OIL AND GAS DOCKET NO. 8A-0285976

THE APPLICATION OF AGGIETECH OIL, LTD. PURSUANT TO STATEWIDE RULE 9 FOR A COMMERCIAL PERMIT TO DISPOSE OF OIL AND GAS WASTE BY INJECTION INTO A RESERVOIR NOT PRODUCTIVE OF OIL OR GAS FOR THE ROY SWD LEASE, WELL NO. 2 HERMLEIGH (STRAWN) FIELD, SCURRY COUNTY, TEXAS

OIL AND GAS DOCKET NO. 8A-0285973

THE APPLICATION OF AGGIETECH OIL, LTD. PURSUANT TO STATEWIDE RULE 9 FOR A COMMERCIAL PERMIT TO DISPOSE OF OIL AND GAS WASTE BY INJECTION INTO A RESERVOIR NOT PRODUCTIVE OF OIL OR GAS FOR THE ROY SWD LEASE, WELL NO. 1 HERMLEIGH (STRAWN) FIELD, SCURRY COUNTY, TEXAS

HEARD BY: Karl Caldwell - Technical Examiner
Laura Miles-Valdez - Legal Examiner

PROCEDURAL HISTORY

Application Filed:	May 30, 2013
Protest Received:	June 18, 2013
Request for Hearing:	November 12, 2013
Notice of Hearing:	February 26, 2014 and April 1, 2014
Hearing Held:	May 9, 2014
Transcript Received:	May 21, 2014
Proposal for Decision Issued:	May 29, 2015

APPEARANCES:

APPLICANT:
Christopher Hotchkiss
James Clark
Toben Scott
Michael Brandon

REPRESENTING:

AggieTech Oil, Ltd.

PROTESTANTS:

Ricky Fritz, Scurry County Judge
Jimmy McMillan

Scurry County
Self

INTERESTED PARTIES:

Terry Boaz
Charlie Boaz

STATEMENT OF THE CASE

The Applicant is requesting to drill a commercial disposal well on the Roy SWD Lease, which is located approximately 0.5 miles north of Hermleigh, Scurry County. Although there are two applications listing two different well numbers, the applications refer to the same wellbore. The two applications contain different well numbers to differentiate between the two distinct, separate disposal intervals requested by the Applicant. Well No. 1 is an application for a disposal interval in the Wichita Albany Formation between a depth of 3,500 feet to 4,700 feet, whereas Well No. 2 is an application to inject fluids into the Ellenburger Formation between the subsurface interval of 7,600 feet and 8,400 feet. If both applications are approved by the Railroad Commission of Texas (Commission), neither application will be authorized to commence injection operations until one of the permits is cancelled. At no time will there be two separate disposal intervals authorized to receive disposal fluids after the well is completed. This will be a permit condition for each application. Both applications are protested by Jimmy McMillan, an adjacent surface owner, as well as Ricky Fritz, Scurry County Judge. Nearby landowners Terry and Charlie Boaz also appeared at the hearing as interested parties in opposition of the applications.

CASE SUMMARY

The Applicant is requesting approval of two commercial disposal well permits on the Roy SWD Lease. One permit would authorize disposal in the Wichita-Albany Formation between 3,500 feet to 4,700 feet (Roy SWD Lease, Well No. 1) while the Roy SWD Lease, Well No. 2 permit application would authorize disposal in the Ellenburger Formation between 7,600 feet and 8,400 feet. If both permits are granted, the Applicant will drill the wellbore to a depth of 8,500 feet to the bottom to log the wellbore and potentially run a fluid injection test to evaluate the Ellenburger Formation, as there are not many wellbores that have penetrated the Ellenburger Formation in this area. If the Ellenburger Formation is determined to be more favorable for disposal than the Wichita-Albany Formation in this wellbore, the well will be cased and cemented for injection in the Ellenburger Formation. If the Wichita-Albany Formation is determined to be better suited for disposal than the Ellenburger Formation, the wellbore will be properly plugged below the Wichita-Albany Formation and cased to the bottom of the Wichita-Albany Formation. The Protestants are

concerned with protecting fresh water in the area, ensuring that prime farmland in the area is protected, and are also concerned with the potential for an increase in truck traffic in the area. The Applicant is willing to install a monitor well as a permit condition to show that groundwater in the area is protected. The Examiners recommend that both applications be approved.

DISCUSSION OF THE EVIDENCE

AggieTech Oil, Ltd.'s Evidence

Notice of Application

Roy SWD Lease, Well No. 1 ("Roy SWD No. 1")

On May, 1, 2013, the Roy SWD No. 1 commercial disposal well application was published in the *Snyder Daily News*, a newspaper of general circulation in Scurry County, Texas. On May 30, 2013, a copy of the Roy SWD Well No. 1 commercial disposal well application was mailed to the surface owner of the well site tract, to adjacent surface owners of the drill site tract, and to the Scurry County Clerk. There are no operators within a one-half mile radius of the proposed disposal well location. The application is protested by Jimmy McMillan, an adjacent surface owner and Ricky Fritz, Scurry County Judge, representing citizens of Scurry County. Terry and Charlie Boaz, surface land owners with property located approximately 0.75 miles west of the proposed disposal well location appeared at the hearing in opposition of the application.

Roy SWD Lease, Well No. 2 ("Roy SWD No. 2")

On May, 17, 2013, the Roy SWD No. 2 commercial disposal well application was published in the *Snyder Daily News*, a newspaper of general circulation in Scurry County, Texas. On May 30, 2013, a copy of the Roy SWD Lease, Well No. 2 commercial disposal well application was mailed to the surface owner of the well site tract, to adjacent surface owners of the drill site tract, and to the Scurry County Clerk. There are no operators within a one-half mile radius of the proposed disposal well location. The application is protested by Jimmy McMillan, an adjacent surface owner, Ricky Fritz, Scurry County Judge, representing the citizens of Scurry County. Terry and Charlie Boaz, surface land owners located approximately 0.75 miles west of the proposed disposal well location appeared at the hearing in opposition of the application.

Additional Adjacent Surface Owner Identified

At the hearing the Applicant stated that Terry Lee Sowell and Julia Marie Sowell ("Sowells") are an adjacent surface owner and did not receive a copy of the application and were not included on the Notice of Hearing service list. On May 19, 2014, a letter containing a copy of the Notice of Hearing for both the Roy SWD Nos. 1 and 2 commercial disposal well applications were mailed to the Sowells with instructions to inform the Examiners in writing with ten days from the date of the

letter if the Sowell had any objections to the applications. On May 27, 2014 the Examiners received a letter from the Sowell that they are opposed to the applications and cited numerous reasons: possible contamination of groundwater that is an important resource in the farming community; the possibility of a lightning strike or other source causing a fire or explosion; smell of gas; the location is close to railroad tracks and something could happen on the tracks that could be cause for concern; increased truck traffic; and the possibility of an accident. On May 30, 2014, the Applicant provided the Sowell with a copy of the transcript of the hearing that was held on the applications. On June 2, 2014 the Examiners mailed a letter to the Sowell confirming receipt of the Sowell's response listing objections to the applications. The June 2, 2014 letter stated that the hearing may be re-opened to provide the Sowell an opportunity to participate in the hearing process, allowing the Sowell to offer any testimony or evidence in support of their position, as well as any objections to the applications, with a response to re-open the hearing required by the close of business on June 10, 2014. No response to re-open the hearing was received.

During the hearing, Mr. McMillan stated that the adjacent surface owner of property ID 22384 was not given notice of the applications. The Applicant stated that the Scurry County Records show that Roy Gill is the owner, who was provided notice of the applications. On May 14, 2014, the Examiners received a copy of the property details from the Applicant which confirmed that Roy and Cindy Gill are listed as the property owners of property ID 22384. Roy and Cindy Gill are also the surface owner of the disposal well tract and had previously received proper notice of the applications.

Well Construction

Surface Casing

The Commission's Groundwater Advisory Unit (GAU) identified the base of usable-quality groundwater (BUQW) at a depth of approximately 425 feet and the base of the USDW at a depth of approximately 450 feet at the proposed disposal well location. The Roy SWD Nos. 1 and 2 have not yet been drilled, but the proposed well construction plan for setting the surface casing is identical for each application and will protect the BUQW as well as the base of the USDW. The wellbore will have 9 5/8-inch surface casing set to a depth of 500 feet and cemented in-place with cement circulated to surface.

Protestant Jimmy McMillan questioned why surface casing will be set to a depth of 500 feet and not deeper. Mr. McMillan has production in the area and the operator set 1,200 feet of surface casing in these wells. AggieTech is willing to set the surface casing deeper than 500 feet if recommended by the Commission. Setting excess surface casing deeper than required by Commission rules requires a special permit. Jim Clark, the Applicant's engineering witness stated

that the deeper you go below the water you're protecting, the greater the increase that you're not going to get a good cement all the way to surface and a good cement bond.¹

Long String Casing

Since the well must be drilled to a deeper depth to evaluate the Ellenburger Formation before the Wichita-Albany Formation, the Roy SWD No. 2 application will be discussed before the Wichita-Albany Formation application, which is the Roy SWD No. 1.

Long String Casing Well No.2 (Ellenburger Formation Disposal Interval)

The disposal well will be drilled to a depth of 8,500 feet in order to evaluate the Ellenburger Formation. The Applicant will log the well to determine the porosity, and possibly run a brief injection test in the proposed disposal interval in Ellenburger Formation. The Ellenburger Formation has not been penetrated by many wellbores in this area at this time as the Ellenburger Formation is not productive within atleast two miles of this location.

If the Applicant determines the Ellenburger Formation is the best interval for disposal in this well, 7-inch long string casing will be set to a depth of 8,500 feet. A multi-stage cementing tool (DV tool) will be set at a depth of 4,750 feet to pump cement from the 7-inch casing shoe at 8,500 feet up to the DV tool at 4,750 feet. Cement would be pumped from the DV tool at 4,750 feet to surface, with the intent to have cement behind every foot of both the surface casing and long string casing (Attachment A). AggieTech will run a cement bond log after cementing the casing to verify the top of cement (TOC).

Long String Casing Well No.1 (Wichita-Albany Formation Disposal Interval)

If the Applicant determines that the Wichita Albany Formation is best suited for the injection interval at this location, the Applicant will abandon the wellbore below the Wichita Albany Formation. The Applicant will set cement plugs in the open hole section of the wellbore below the Wichita-Albany disposal interval as required by the RRC district office. The Applicant would then set 7-inch long string casing to a depth of 4,750 feet and cement the casing in place with cement circulated to surface (Attachment B). In Mr. Clark's opinion, a multi-stage cementing tool would not be required since the long string casing string in this application will be set at a shallower depth as compared to running casing to the Ellenburger Formation.

¹ Tr. 84.

Injection Interval, Maximum Injection Volume and Surface Injection Pressure

Well No.2 (Ellenburger Formation Disposal Interval)

The proposed disposal interval in the Roy SWD No. 2 is from 7,600 feet to 8,400 feet in the Ellenburger Formation. Directly above the injection interval at 7,600 feet is a thin shale interval, three to four feet in thickness. According to the Applicant, “[t]he fluids that get injected into the Ellenburger will remain in the Ellenburger as the shale streak at the top of the Ellenburger will be an effective barrier to upward migration.”² In addition, an offset well log shows the Cline Shale Formation from 6,550 feet to 7,130 feet is an additional shale interval in excess of 500 feet in thickness between the injection interval and the BUQW. The maximum daily injection volume requested for the Roy SWD No. 2 is 30,000 barrels per day (bpd) of salt water and RCRA-exempt waste.³ The maximum requested surface injection pressure is injection 3,625 psi.⁴

Well No.1 (Wichita Albany Formation Disposal Interval)

The proposed disposal interval in the Roy SWD No. 1 is from 3,500 feet to 4,700 feet in the Wichita Albany Formation. Immediately above the injection interval at 3,500 feet there is approximately 450 feet of impermeable strata above the top of the injection interval. The Wichita Albany Formation has been used in other commercial and non-commercial disposal wells in the area.

The maximum daily injection volume requested for the Roy SWD No. 1 is 20,000 bpd of salt water and RCRA-exempt waste. The maximum requested surface injection pressure for the Roy SWD No. 1 well 1,750 psi.

Nearby Wellbores

There are no wellbores located within a one-quarter mile radius of the proposed disposal well location, and there are no operators within one-half mile of the proposed disposal well location. A review of the public water supply wells in the area shows that all water wells are completed shallower than 500 feet in this area. This information supports the GAU determination that the usable-quality water occurs from the land surface to a depth of 500 feet at the proposed location.

² Testimony of Mr. Clark, P.E., Tr. 55.

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 The permitted pressure will not exceed 0.5 psi per foot of depth to the top of the injection/disposal interval, unless the results of a fracture pressure step-rate test support a higher pressure.
(<http://www.rrc.state.tx.us/oil-gas/publications-and-notices/manuals/injectiondisposal-well-manual/summary-of-standards-and-procedures/technical-review/>)

Oil and Gas Activity in the Area

There is no production from the Ellenburger Formation for at least two miles from the proposed disposal well location. There is some production from the Ellenburger Formation further to the northeast of the proposed disposal well location. The Wichita-Albany Formation in the area is used for disposal.⁵ The only productive formation within two miles of the proposed disposal well location is the Strawn Formation, although, the Cline Shale is also an emerging play in the area.

The Hermleigh (Strawn) Field is located to the southwest and northeast of the proposed disposal well location. The current field production is 5,000 barrels of oil (BO), and approximately 20 MMcf of gas, per month. Production in the Hermleigh (Strawn) Field has been on an upward trend since 2009 due to the introduction of horizontal well completions in the field. In Mr. Clark's opinion, future development of the Hermleigh (Strawn) Field will be a result of horizontal well completions. The Earnest (6500) Sand Field is another Strawn sand field in the area. This field has demonstrated an increase in oil and gas production, and an increase in the well count in the field since 2009. The increases in production and well count are attributed to horizontal well completions in the field.

The horizontal well completions in the Strawn Formation require multiple hydraulic fracture stimulation stages that result in the flowback of large volumes of produced water for disposal. For example, the Completion Report (Form W-2) for the Earnest 34 Lease, Well No. 2H (API No. 42-415-34675) showed initial production was 340 BOPD, 361 Mcf of gas per day and 1,896 barrels of water per day (bwpd).

Nearby Disposal Wells

There are two commercial disposal wells in the area:

- 1) The Earnest SWD Lease, Well No. 1 (API No. 42-415-34558) is located approximately 3.2 miles west of the proposed disposal well location. The disposal interval is from 1,750 feet to 2,200 feet in the San Andres Formation. This well is permitted to inject salt water only, at a maximum daily injection volume of 15,000 bpd. In this well, 9 5/8-inch surface casing was set to a depth of 500 feet and cemented with cement circulated to surface.
- 2) The Henderson Lease, Well No. 1 (API No. 42-415-34113) is located approximately 7 miles north-northeast of the proposed disposal well location. Surface casing was set to a depth of 500 feet and cemented with cement circulated to surface. The disposal interval is from 3,671 feet to 3,723 feet in the Wichita-Albany Formation. This well is permitted to inject salt water only, at a maximum daily injection volume

⁵ See *Nearby Disposal Wells*. p.7.

of 25,000 bpd. In this well, 9 5/8-inch surface casing was set to a depth of 1,700 feet and cemented with cement circulated to surface. The well was drilled in 2004 and the well completion report indicates that the operator that drilled the well received a letter granting an exception to set the surface casing deeper.

There is one non-commercial disposal well in the area, the Raw Gota Have It Lease, Well No. 1 (API No. 42-415-34542), which is located approximately 5.5 miles southwest of the proposed disposal well location. The disposal interval is from 3,500 feet to 4,500 feet in the stratigraphic equivalent of the Wichita-Albany Formation. This well is permitted to inject salt water at a maximum daily injection volume of 3,000 bpd. In this well, 8 5/8-inch surface casing was set to a depth of 445 feet and cemented with cement circulated to surface.

Location of the Roy SWD Lease

The Roy SWD Lease is a 5.26 acre tract located approximately five miles north of Hermleigh in Scurry County. The tract is bordered by U.S Highway 84 to the west, and FM 644 to the north. Factors considered in selecting this location for the proposed disposal well include good access to a highway, and close proximity to current oil and gas activity. The location is expected to appeal to operators requiring disposal within a twenty-mile radius, and according to AggieTech's information, the proposed disposal facility would be the only facility permitted for RCRA-exempt waste within a twenty-mile radius. There have been 383 drilling permits issued in the past two years within a twenty mile radius of the proposed disposal well location, including 179 drilling permits issued in the previous twelve months prior to the hearing.

AggieTech and the Proposed Facility

AggieTech has an active P-5 and a \$50,000 letter of credit on file with the Commission for financial assurance. AggieTech is an operator in good standing with no current Commission enforcement actions against the company. AggieTech owns and operates seven commercial disposal wells, in addition to operating approximately twenty oil and gas wells.

Toben Scott, President of AggieTech considers the saltwater disposal business plan as a long-term operation. In his opinion, "[t]his was not a short-term build and flip business plan for us. Therefore we decided to spend anywhere we could that would help distance ourselves from any liabilities that there may be both on the surface or with the community or downhole."⁶ Mr. Scott stated that there will not be any pits on the Roy SWD Lease except during the drilling process of the well, where there will be freshwater drilling mud only.⁷ The proposed facility is designed as a

⁶ Tr. 103.

⁷ Tr. 97.

closed loop system; “once the truck pulls up to the facility, its hose then is connected to the internal part or internal workings of the facility and the water is never exposed to the air.”⁸

The entire facility will be inside a containment area with a galvanized steel metal wall with steel reinforced posts. A chip base, fine crushed caliche will line the surface of the facility, and a thick felt material will line the entire chip-based surface to the edges of the steel wall to ensure that there are no underlying rocks that will pierce the lining. Lastly, “the entire inside of the facility [will be] sprayed with a polyurethane material, same as a vinyl liner in your pickup, a very thick material which holds all the water inside the facility.”⁹ There will also be a number of sump pumps within the footprint of the facility. AggieTech also plans to run heavier casing than would be required and plan to externally coat the 7-inch long string casing with a product that will provide an extra line of defense to prevent corrosion of the casing if exposed to corrosive intervals.¹⁰

AggieTech is sensitive to the need for good quality water and the company is willing to drill a monitoring well as a special condition of the disposal permit for the proposed disposal well.¹¹ The groundwater monitoring well would be located near, or between its proposed disposal well and the Hermleigh city water well, with reasonable baseline parameters. Mr. Scott stated that “we would drill a monitor well and we would concede that the monitoring process could be controlled or dictated by the concerned parties in this case.”¹²

Protestants’ Evidence

Ricky Fritz, Scurry County Judge, appeared at the hearing representing local government and the citizens in protest of the application. There is a concern with the location of the proposed disposal well and the potential impact on fresh water. This area experiences limited rainfall, and the groundwater supply is adequate for the size of the community, but if there’s no groundwater there is no community. The Applicant’s Exhibit 7 half-mile area map from the proposed disposal well location covers half of the community. According to Judge Fritz the proposed well location is “right on the city limits, what used to be the old city limits when it was incorporated.”¹³

⁸ Tr. 99.

⁹ Tr. 98.

¹⁰ Tr. 103-105.

¹¹ Tr. 106.

¹² Tr. 106.

¹³ Tr. 124.

Jimmy McMillan, an adjacent surface owner is concerned with the protection of groundwater, as well as surface contamination as a result of the disposal facility. Other concerns include truck traffic turning into the facility, and the ability to access to his property with farming equipment between the proposed location and the railroad tracks.

Mr. McMillan stated that in May 1982 the area received five inches of rainfall by midnight, and before sunrise there was an additional five inches of rain. As a result, the whole countryside was flooded. Mr. McMillan provided a copy of rainfall information for Scurry County that showed 8.04 inches of rainfall was measured in Scurry County in May 1982. A topographic map shows the land slopes from the proposed disposal well location in the direction of Mr. McMillan's property at a rate of approximately 1 foot of decline per 180 feet. Mr. McMillan is concerned that the facility will not be able to prevent surface contamination if a 100-year rainfall event occurs and the water would go "right under this railroad trestle right across some of the finest black land in that area."¹⁴

Interested Parties:

Terry Boaz and Charlie Boaz own 90 acres of land that is located approximately 0.7 miles west of the proposed disposal well location. The Boaz's are concerned with the location, and with the potential for groundwater or surface contamination. This particular location is next to a major farming community where there is prime crop land. Mrs. Boaz is concerned that water wells for the community are located south of the proposed disposal well location. If there is a leak, it will contaminate the groundwater. A second concern is possible surface contamination that would go east-northeast across prime crop land. The Boaz's also expressed a concern regarding access to facility from FM 644 and U.S. Highway 84.

EXAMINERS' OPINION

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.

¹⁴ Tr. 126.

In the Examiners' opinion, the Applicant has adequately demonstrated that disposal into either the Ellenburger Formation (Roy SWD No. 2) or Wichita-Albany Formation (Roy SWD No. 1) will meet these four requirements. The Examiners also recommend two special permit conditions, as proposed by the Applicant: running a cement bond log in the Roy SWD No. 2; and installing a groundwater monitoring well between the disposal well and the Hermleigh water wells.

Public Interest

Pursuant to Texas Water Code § 27.051(d), in determining whether the proposed application demonstrates a public interest, several factors may be considered, which include: whether there is a practical, economic, and feasible alternative to an injection well reasonably available; compliance history; as well as other considerations raised by the Commission in consideration of the application.¹⁵ In the Examiners' opinion, the two applications in this case are in the public interest. The Applicant expects to service oil and gas activity within a twenty mile radius of the disposal well. The evidence in the record shows that there has been an increase in the number of drilling permits issued over the past two years within a twenty mile radius of the disposal well location. A large percentage of these wells are horizontal completions with multiple hydraulic fracturing stimulation treatments per well that require large fluid volumes. These wells require operators to dispose of large volumes of fluid recovered during the initial stages of flowback .

There are only two active, commercial disposal wells, and one active, non-commercial disposal well within a 10-mile radius of the proposed disposal well location. None of these wells are permitted to disposal of RCRA-exempt waste. As a result, the proposed disposal well would be the only disposal well within atleast a ten mile radius with the ability to dispose of RCRA-exempt waste.

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

In the Examiners' opinion, the use or installation of the injection well will not endanger or injure any oil, gas, or other mineral formation. In the Roy SWD No. 2 application, the Applicant is requesting to inject fluids into an interval from 7,600 feet to 8,400 feet in the Ellenburger Formation. The Roy SWD No. 2 will have 7-inch casing set to a depth of 8,500 feet. A multi-stage cementing tool (DV tool) will be set at a depth of 4,750 feet to pump cement from the 7-inch casing shoe at 8,500 feet up to the DV tool at 4,750 feet. Cement will be pumped from the DV tool at 4,750 feet to surface, with the intent to have cement behind every foot of both the surface casing and long string casing. AggieTech will run a cement bond log after cementing the casing to verify the top of cement.

¹⁵ The "public interest" finding required by Texas Water Code 27.051(b) is limited to matters related to oil and gas production, and does not include issues such as traffic safety and road conditions.

The only productive formation within two miles of the proposed disposal well location is the Strawn Formation. The two Strawn Formation fields in the area are the Hermleigh (Strawn) Field and the Earnest (6500 Sand) Field. Applicant's Exhibit No. 19 lists the top of the Strawn Sand in the Hermleigh (Strawn) Field at a measured depth (MD) of 6,892 feet. Applicant's Exhibit No. 22 shows the true vertical depth (TVD) of the top of pay to be 6,650 feet and the total depth to be 6,996 feet in the Earnest (6500 Sand) Field. Therefore, the bottom of the Strawn Formation in the area is approximately 600 feet above the top of the proposed disposal interval in the Ellenburger Formation. At the top of the Ellenburger Formation at approximately 7,600 feet there is a thin shale interval in addition to 600 feet of unproductive strata between the proposed disposal interval and the productive Strawn Formation to keep injected fluids from endangering the productive formation in this area. There are no existing wellbores within a one-quarter mile radius.

In the Roy SWD No. 1 application the Applicant is requesting to inject fluids into an interval from 3,500 feet to 4,700 feet in the Wichita-Albany Formation. Immediately above the top of the injection interval at 3,500 feet is approximately 450 feet of impermeable strata that will prevent injected fluids from escaping the permitted disposal interval. There is more than 2,000 feet of unproductive strata below the requested injection interval and the productive Strawn Formation. In addition, The Wichita Albany Formation has been used in other commercial and non-commercial disposal wells in the area. If the Applicant determines that the Wichita Albany Formation is best suited for the injection interval at this location, the Applicant will abandon the wellbore below the Wichita Albany Formation and set cement plugs in the open hole section of the wellbore below this disposal interval as required by the Commission district office. The Applicant will then set 7-inch long string casing to a depth of 4,750 feet and cement the casing in place with cement circulated to surface.

Ground and Surface Fresh Water Adequately Protected From Pollution

In the Examiners' opinion, the installation and use of either the Roy SWD No. 1 or 2 will ensure that both ground and surface fresh water will be adequately protected from pollution. The GAU identified the BUQW at a depth of approximately 425 feet and the base of the USDW at a depth of approximately 450 feet at the proposed disposal well location. The Roy SWD Nos. 1 and 2 have not yet been drilled, but the plan to set surface casing is identical for each application and will protect the BUQW as well as the base of the USDW. The wellbore will have 9 5/8-inch surface casing set to a depth of 500 feet and cemented in-place with cement circulated to surface. The Protestants questioned why the surface casing would not be set deeper. However, Statewide Rule 3.13(b)(1)(B)(I) states that surface casing may not be set deeper than 200 feet below the depth of the usable quality water. Further, setting the surface casing to a depth of 500 feet will protect the usable-quality water at the proposed disposal well location and meets the requirement of Statewide Rule 3.13. That being said, AggieTech is willing to set the surface casing deeper than 500 feet if required to do so by the Commission.

The Roy SWD No. 2 will have 7-inch casing set to a depth of 8,500 feet. A multi-stage cementing tool (DV tool) will be set at a depth of 4,750 feet to pump cement from the 7-inch casing

shoe at 8,500 feet up to the DV tool at 4,750 feet. Cement would be pumped from the DV tool at 4,750 feet to surface, with the intent to have cement behind every foot of both the surface casing and long string casing. AggieTech will run a cement bond log after cementing the casing to verify the top of cement. There is a shale interval at the top of the Ellenburger Formation, in addition to 600 feet of unproductive strata between the Ellenburger Formation and the productive Strawn Formation in addition approximately 450 feet of impermeable strata at a depth of 3,500 feet that will prevent injected fluids from migrating to the useable-quality water at the proposed disposal well location. As described in the previous section, there are no existing wellbores within a one-quarter mile radius.

The Roy SWD No. 1 will have cement plugs in the open hole section of the wellbore below the Wichita-Albany Formation as required by the Commission district office. 7-inch long string casing will be set to a depth of 4,750 feet and cemented in place with cement circulated to surface. Above the top of the injection interval in the Wichita-Albany Formation at 3,500 feet is approximately 450 feet of impermeable strata that will prevent injected fluids from migrating to the useable-quality water at the proposed disposal well location.

Installation of a Groundwater Monitoring Well

The Applicant has offered to install a groundwater monitoring well between the disposal well and the Hermleigh city water wells as a special permit condition. The groundwater monitoring well will establish the baseline fresh groundwater quality on the Roy SWD Lease prior to the use of the disposal well and will be used to monitor the fresh groundwater quality during the life of the disposal well. The monitoring well will be located between the disposal well on the Roy SWD Lease and the Hermleigh City water wells. Protestant Late-Filed Exhibit No. 3 shows Hermleigh city water well Nos. 1 and 2 to be located on the southwest corner of the intersection of German Street and Hermleigh Street (Attachment C). City Well Nos. 3 and 4 are located on the southeast corner of the intersection of Wheat Street and Willis Street. AggieTech's Exhibit No. 7 shows the location of these city water wells to be approximately 0.5 to 0.6 miles south to south-southeast of the proposed disposal well location. Therefore, in order for the disposal well to be located between the proposed disposal well and the city water wells, the monitoring well must be located south to slightly south-southeast of the proposed disposal well location. The monitoring well should be located on the Roy SWD Lease to ensure access to the well for collecting water samples as well to ensure any potential pollution of groundwater is detected as early as possible to prevent further migration.

In the Examiner's opinion, the monitoring well should be sampled and tested prior to commencing injection operations to establish baseline conditions to be used to compare to future water test results. Afterward the initial baseline test, the Examiners' recommend that the monitoring well be tested a minimum of every six months for the life of the injection well. At a minimum, the water should be tested for Benzene, Toluene, Ethyl Benzene and Xylene (BTEX), or Total Petroleum Hydrocarbons (TPH), in addition to chlorides, total dissolved solids (TDS), pH, Potassium, Iron, and Barite.

Financial Assurance

The Examiners conclude that the Applicant has made a satisfactory showing of financial responsibility as required by Section 27.073 of the Texas Water Code. The Applicant has a current approved Form P-5 (Organization Report) and a \$50,000 letter of credit on file with the Commission for financial assurance. There is no evidence to suggest any current active enforcement matters involving the Applicant.

FINDINGS OF FACT

1. At least 10 days' notice of the hearing was provided to the owner of the surface tract, to the Scurry County Clerk, and to all adjacent surface owners with the exception of Terry and Julia Sowell. Notice of the hearing was mailed to the Sowell on May 19, 2014. On June 2, 2014 the Examiners mailed a letter to the Sowell stating that the hearing may be re-opened to provide the Sowell an opportunity to participate in the hearing process, and to offer any testimony or evidence, with a response to re-open the hearing required by the close of business on June 10, 2014. No response to re-open the hearing was received.
2. There are no offset operators within one-half mile from the proposed location of either the Roy Lease, Well Nos. 1 or 2.
3. Notice of the Roy SWD Lease, Well No. 1 commercial disposal well application was published in the *Snyder Daily News*, a newspaper of general circulation in Scurry County, Texas on May, 1, 2013.
4. Notice of the Roy SWD Lease, Well No. 2 commercial disposal well application was published in the *Snyder Daily News*, a newspaper of general circulation in Scurry County, Texas on May, 17, 2013.
5. Both applications are protested by Jimmy McMillan, an adjacent surface owner, as well as Ricky Fritz, Scurry County Judge, representing Scurry County.
6. AggieTech Oil, Ltd. seeks a permit authorizing commercial disposal operations pursuant to 16 Tex. Admin. Code § 3.9 for the Roy SWD Lease, Well Nos. 1 and 2, Hermleigh (Strawn) Field, Scurry County, Texas.
7. The use or installation of the either the Roy SWD Lease, Well No. 1 or 2 injection well is in the public interest.
 - a. There are two commercial disposal wells and one non-commercial disposal well active within ten miles of the proposed Roy Lease, Well Nos. 1 and 2;

- b. The Roy Lease, Well Nos. 1 and 2 would be permitted for the disposal of salt water and RCRA-exempt waste;
 - c. The three disposal wells within ten-miles of the Roy Lease, Well Nos. 1 and 2 are only permitted to dispose of salt water and not RCRA-exempt waste;
 - d. There were 383 drilling permits issued within twenty miles of the Roy SWD Lease, Well Nos. 1 and 2 in the two years prior to the hearing; and
 - e. A large number of wells completed in the two fields in the area are horizontal well completions which require multiple hydraulic fracture stimulations stages and flowback a large amount of water after initial completion that must be disposed of.
8. The use or installation of the Roy SWD Lease, Well No. 1 or 2 will not endanger or injure oil, gas, or other mineral formations.
- a. The only productive formation within two miles of the Roy SWD Lease is the Strawn Formation;
 - b. The requested disposal formation for the Roy SWD Lease, Well No.2 is the Ellenburger Formation.
 - I. The Ellenburger Formation is located below the Strawn Formation.
 - II. There is a shale layer at the top of the disposal interval in addition to 600 feet of unproductive strata between the top of the injection interval and the Strawn Formation to prevent injected fluids from endangering the productive formation.
 - c. The requested disposal formation for the Roy SWD Lease, Well No.1 is the Wichita-Albany Formation.
 - I. The Wichita-Albany Formation is located above the Strawn Formation;
 - II. There is more than 2,000 feet of unproductive strata between the top of the injection interval and the Strawn Formation to prevent injected fluids from endangering the productive formation.
 - d. There are no wellbores within a one-quarter mile radius of the proposed location of the Roy SWD Lease, Well No. 1 or 2.

9. 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 425 feet. The well will be cased and cemented to isolate the BUQW. Surface casing will be set to a depth of 500 feet and will be cemented with cement circulated to the surface.
 - b. The Roy SWD lease, Well No. 2 will have 7-inch long string casing set to a depth of 8,500 feet;
 - I. A multi-stage cementing tool will be set at 4,750 feet and cement will be circulated behind the long string casing from the DV tool at 4,750 feet to surface;
 - II. A cement bond log will be run to verify the top of cement;
 - III. Injected fluids will be in the Ellenburger Formation with a permitted disposal interval from 7,600 feet to 8,500 feet;
 - IV. The maximum surface injection pressure will be 3,625 psi; and
 - V. The maximum daily injection volume for will be 30,000 bpd.
 - c. The Roy SWD lease, Well No. 1 will have 7-inch long string casing set to a depth of 4,750 feet;
 - I. The long string casing will be cemented with cement behind the pipe circulated to surface;
 - II. Fluids will be injected in the Wichita-Albany Formation with a permitted disposal interval from 3,500 feet to 4,700 feet;
 - III. The maximum surface injection pressure will be 1,750 psi; and
 - IV. The maximum daily injection volume for will be 20,000 bpd.
 - d. A monitor well will be installed on the Roy SWD Lease between the disposal well location and the Hermleigh city water wells.

- I. the location of the Hermleigh city water wells are approximately 0.5 to 0.6 miles south to south-southeast of the proposed disposal well location;
- II. the monitoring well will be sampled and tested prior to commencing injection operations to establish the baseline fresh groundwater quality on the Roy SWD Lease;
- III. after the initial baseline test, the monitoring well will be tested a minimum of every six months for the life of the injection well; and
- IV. at a minimum, the groundwater sample from the monitoring well will be tested for Benzene, Toluene, Ethyl Benzene and Xylene (BTEX), or Total Petroleum Hydrocarbons (TPH), in addition to chlorides, total dissolved solids (TDS), pH, Potassium, Iron, and Barite.

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. 16 TEX. ADMIN. CODE § 3.9.
3. The installation and use of the proposed commercial disposal well is in the public interest. Texas Water Code § 27.051(b)(1).
4. AggieTech Oil, Ltd. has met its burden of proof and its application satisfies the requirements of Chapter 27 of the Texas Water Code and the Railroad Commission's Statewide Rule 9.

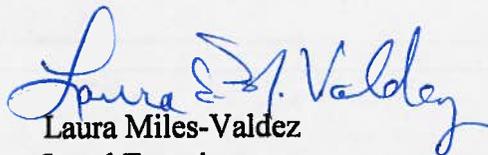
EXAMINERS' RECOMMENDATION

Based on the above findings of fact and conclusions of law, the Examiners recommend that the application of AggieTech Oil, Ltd. for commercial disposal authority pursuant to Statewide Rule 9 for the for the Roy SWD Lease, Well Nos. 1 and 2, Hermleigh (Strawn) Field, Scurry County, Texas, be approved, as set out in the attached Final Orders.

Respectfully submitted,



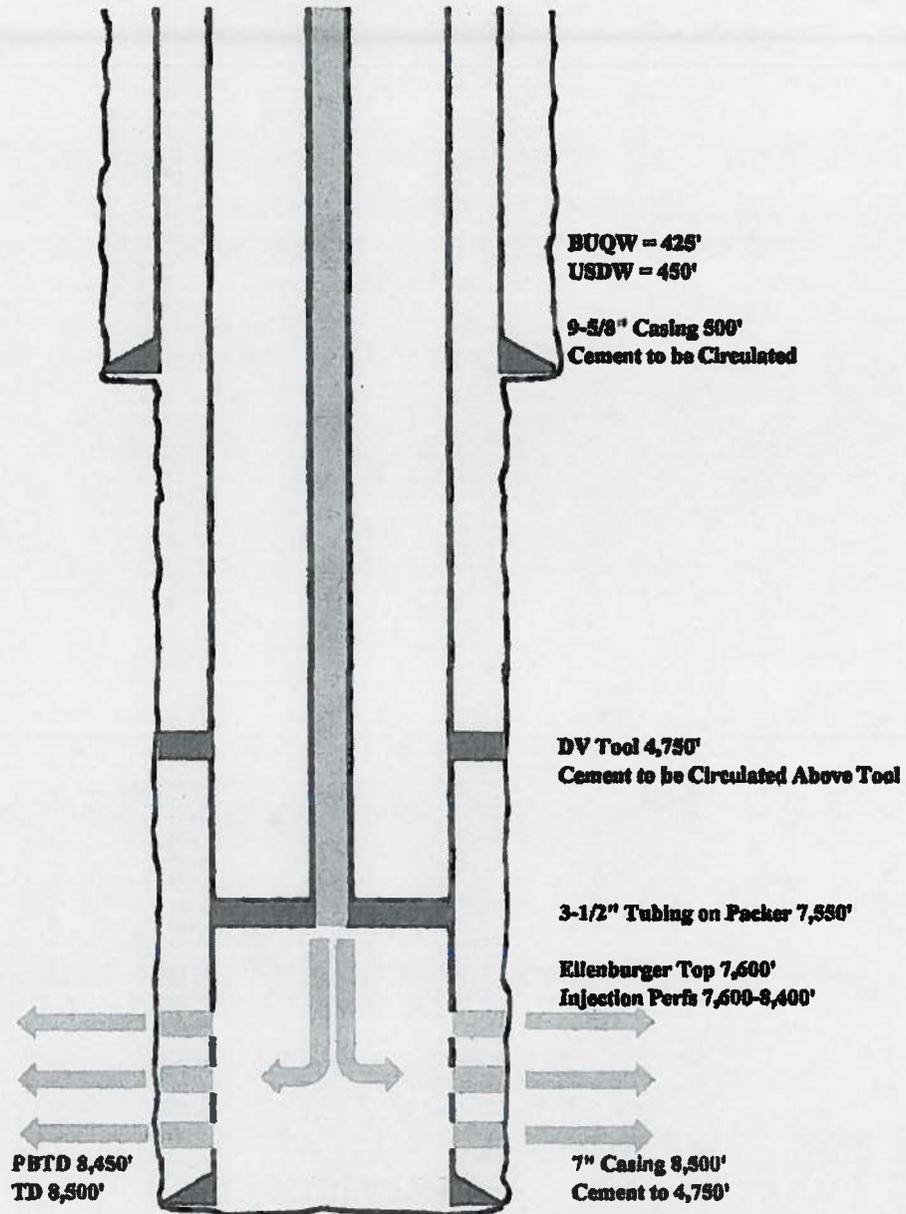
Karl Caldwell
Technical Examiner



Laura Miles-Valdez
Legal Examiner

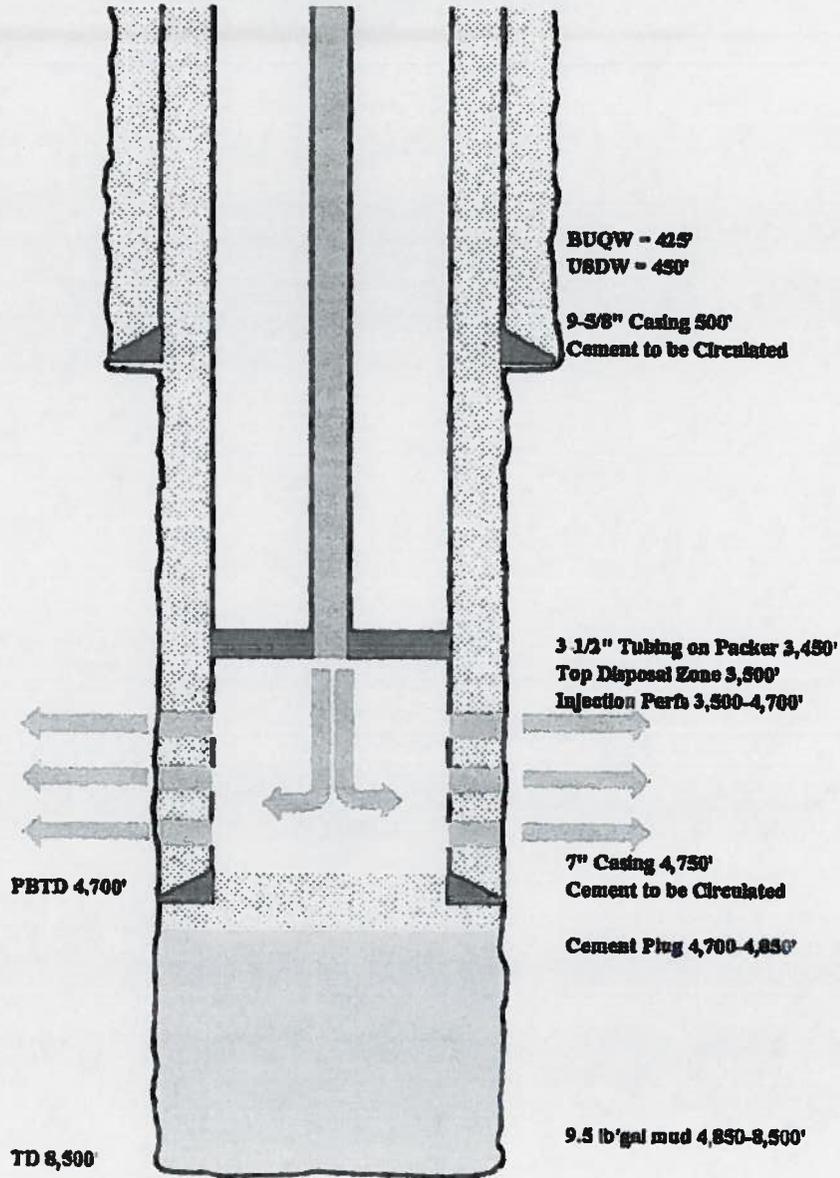
ATTACHMENT A

**Aggitech Roy SWD No. 2
Proposed Ellenburger Disposal Well**



ATTACHMENT B

**Aggitech Roy SWD No. 1
Proposed Wichita-Albany Disposal Well**



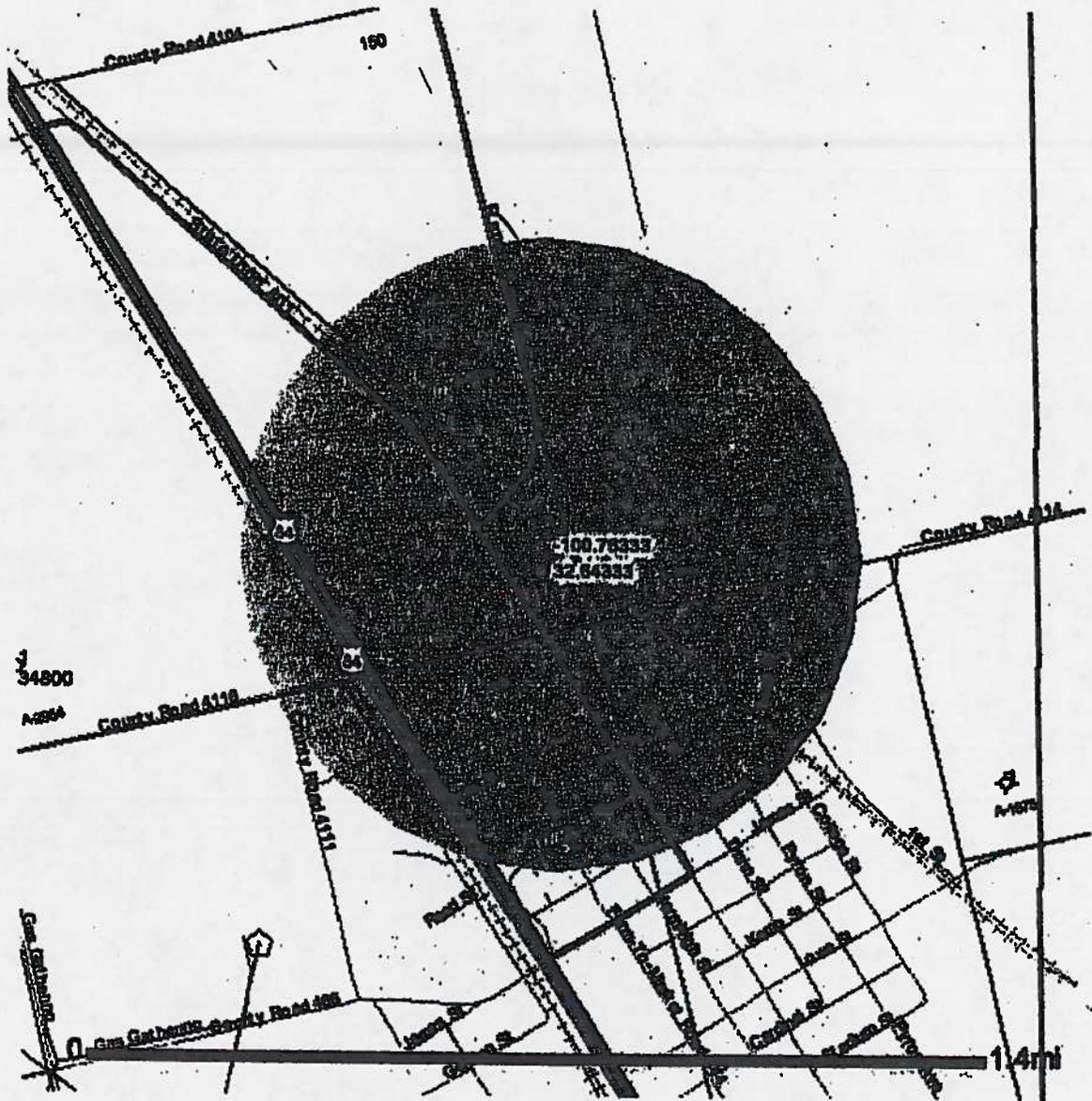
Aggitech Oil

ATTACHMENT C

Protest Exhibit 3
Oil & Gas Docket NO. 8A- 0285973
Wichota-Albany Application

38301





AggieTech Oil, Ltd. - P-5 # 008718

Roy SWD #1

579' FSL & 191' FEL of Sec. 150, Block 3, H & TC RR Co., Scurry County, TX

Half-Mile Radius for Operator Notification

NO OPERATORS ✓

Oil and Gas Docket No. 8A-0285973

Aggiotech Oil, Ltd.

May 9, 2014

Exhibit No. 7