



RAILROAD COMMISSION OF TEXAS

HEARINGS DIVISION

OIL & GAS DOCKET NO. 7C-0285968

THE APPLICATION OF TANKERSLEY SWD 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, CAUTHORN LEASE, WELL NO. 1, HALL (SAN ANDRES) FIELD, TOM GREEN COUNTY, TEXAS.

HEARD BY: Paul Dubois – Technical Examiner
Michael Crnich – Hearings Examiner

APPEARANCES:

APPLICANT:

George Neale
John Miller
Kevin Thorp

REPRESENTING:

Tankersley SWD, LLC

PROTESTANTS:

Patrick Resnick
Glenda Willis
James Sefcik
Jerry Brewer

Glenda Willis

Self
Self

INTERVENOR:

Rick Bacon

Tom Green County Commissioner

PROCEDURAL HISTORY

Application Filed:	June 27, 2013
Protest Received:	July 8, 2013
Request for Hearing:	July 11, 2013
Notice of Hearing:	January 15, 2014
Date of Hearing:	April 9, 2014
Transcript Received:	April 21, 2014
Proposal For Decision Issued:	July 25, 2014

EXAMINERS' REPORT AND PROPOSAL FOR DECISION**STATEMENT OF THE CASE**

This is the application of Tankersley SWD, LLC (Tankersley)(Operator P-5 No. 835747) 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 Cauthorn Lease, Well No. 1, in Tom Green County, Texas. The application is for a new well that will be used to dispose fluids by injection into the Wolfcamp Lime Formation. The well will be administratively assigned to the Hall (San Andres) Field. The well location is about one mile northwest of the unincorporated community of Water Valley.

On June 27, 2013, notice of the application was given to the surface owner, adjacent surface owners, and the Tom Green County Clerk in San Angelo. There are no offsetting operators within a one-half mile radius of the proposed well. Notice of the application was published in the *Standard Times*, a newspaper of general circulation in Tom Green County, Texas, on November 7, 2013. The application is protested by a number of persons in the area of the well. Protestants at the hearing included Glenda Willis, James Sefcik, and Jerry Brewer. Tom Green County Commissioner Rick Bacon appeared at the hearing as an intervenor.

The examiners recommend the application be approved. The Applicant 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.

DISCUSSION OF THE EVIDENCE**Applicant's Evidence**

Tankersley proposes to drill the Cauthorn Lease Well No. 1 on a 6.17-acre tract of land located about one mile northwest of the unincorporated town of Water Valley in Tom Green County, Texas. The location is on the south side of U.S. Highway 87, west of the intersection with FM 2034. The well will be a commercial disposal well injecting fluids into the Wolfcamp Lime Formation and administratively assigned to the Hall (San Andres) Field. Tankersley proposes to drill, complete and operate the well as follows:

- The well will be drilled to a total depth of 3,850 feet.
- Surface casing (9 5/8 inch) will be set to a depth of 495 feet, and will be circulated to the surface with 200 bags of Class C cement.
- Long-string casing (7 inch) will be set to 3,800 feet and will be circulated

to the surface with 450 bags of Class C cement.

- The injection interval will be perforated from 2,800 feet to 3,700 feet in the Wolfcamp Lime Formation.
- Injection tubing (3 ½ inch) will be set on a packer at a depth of 2,770 feet.
- Fluids injected for disposal will be limited to salt water and RCRA-exempt oil and gas waste¹.
- The maximum daily injection volume will be 25,000 barrels, and the average daily injection volume will be 15,000 barrels.
- The maximum surface injection pressure will be 1,400 psig, and the average surface injection pressure will be 1,000 psig.

The Commission's Groundwater Advisory Unit (GAU) has determined that the interval from the land surface to 20 feet below the base of the Cretaceous-age beds (the base of usable quality ground water, or BUQW) must be protected. The base of the Cretaceous is estimated to occur at a depth of 275 feet. The base of underground sources of drinking water (USDW) is approximately 400 feet. The GAU also stated, "Our review of the data provided by you as representative of site geologic conditions and of other available geologic data indicates that drilling and using this disposal well and injecting oil and gas waste into the subsurface stratum will not endanger the freshwater strata in that area." On its initial application, Tankersley proposed surface casing be set to a depth of 350 feet, a depth sufficient to isolate the BUQW. At the hearing, Tankersley's expert engineering witness, John Miller, P.E., asked the examiners to revise the Form W-14 to indicate that 495 feet of surface casing would be set, extending the protection through the base of USDW.

There were no wellbores within a one-half mile radius of the proposed disposal well. One dry hole was drilled about 3,100 feet northeast of the proposed well, but the dry hole was only drilled to a total depth of 1,307 feet and did not penetrate the disposal interval. Within a two-mile radius there were a total of six wellbores—all dry holes.

Tankersley offered a cross section drawn from two wells, one located in Coke County about two miles northwest of the proposed well (Pennzoil United Garner No. 1, API No. 081-30022) and one located about two miles to the southeast (Hexagon Cargile 237 No. 1, API No. 451-31751). Mr. Miller described his geological

¹ Resource Conservation and Recovery Act: Examples of RCRA exempt oil and gas waste includes produced water, drilling fluids, frac flowback fluids, rigwash and workover wastes.

interpretation of the cross section, which includes dolomite and limestone intervals with low porosity tight streaks above the top of the disposal interval to about 2,000 feet. Above this depth are shale and anhydrite formations. Mr. Miller stated his opinion that the tighter dolomite streaks and limestone streaks, in addition to the uphole shale and anhydrites, will prevent fluid migration up the wellbore.

Tankersley believes there is a need for additional disposal capacity to serve the industry in the area, and its proposed Cauthorn location is well situated to meet this need. There are many existing wells in the area, and several of the larger fields include the Sugg Ranch (Canyon), Spraberry (Trend Area) and Conger (Penn). Much of the current local permitting and drilling activity is being driven by exploration and production in the Garden City S (Wolfcamp) Field, which is a play in the Cline Shale. Horizontal wells completed in this field require fracture stimulation, resulting in large volumes of flowback and produced water requiring disposal. A typical fracture stimulation in the area may require from 50,000 to more than 500,000 barrels of water, a portion of which will flow back from the well. April 2014 production test rates indicate new horizontal wells producing more than 1,000 barrels of flow back water per day. In addition, existing vertical wells continue to produce water, but typically at lower levels.

The development patterns are generally moving from west to east, towards the Cauthorn location, Water Valley and San Angelo. The proposed well's location on U.S. Hwy. 87 is, according to the Applicant, ideal because it will keep waste haulers from having to drive through Water Valley or into San Angelo to access other disposal facilities. Within a 20-mile radius of the proposed location, drilling permits have increased from 29 in all of 2011, to 71 in the first four months of 2014.

If approved, the Cauthorn No. 1 well will be Tankersley's fourth disposal well in the greater vicinity that includes parts of Sterling, Irion, and Coke Counties, in addition to Tom Green County. These wells are situated in a somewhat circular pattern of which the diameter is roughly 20 to 30 miles. The Cauthorn well is the northern most and the only one of the four on U.S. Hwy. 87. By direct measurement it is about 22 miles from Tankersley's Lee "N" 1 well, but the roadway driving distance is closer to 40 miles.

Within a 20 mile radius of the proposed Cauthorn disposal well there are three currently active disposal wells, three drilled but not yet active disposal wells, and five permitted but not yet drilled disposal wells. These wells inject into various formations, including the Strawn, Ellenburger, Grayburg, Clear Fork, Wolfcamp, and San Andres. Of the three active disposal wells, Tankersley notes the following:

- The Jatam Turner Prop-Hicks No. 10 well is permitted for 1,500 bbl per day and is operating near its pressure limit. This well is not available for public use by any licensed waste hauler.

- The Aggietech Copeland SWD No. 1 is permitted for 20,000 bbl per day and is operating near its pressure limit.
- The Giebel Doss SWD No. 1 is permitted for 1,500 bbl per day. This well is not available for public use by any licensed waste hauler.

Thus, the only currently active salt water disposal well in the area available to any licensed waste hauler is the Copeland SWD No. 1, which is about 18 miles from the proposed Cauthorn well. The wells that are permitted but not drilled or not yet active have volume capacities of 20,000 to 30,000 bbl per day. Two of these are located on U.S. Hwy. 87 about six to eight miles northwest of the proposed Cauthorn well. Tankersley stated that waste haulers often have to drive more than fifty miles one-way to dispose of waste water. Expanding disposal capacity in the area will benefit the industry by lowering disposal costs for operators and waste haulers.

Tankersley has a current and active Form P-5 Organizational Report on file with the Commission and a \$25,000 letter of credit to satisfy financial assurance requirements. Tankersley is a related entity to two other operators, Petrodata Resources, Inc. (Operator P-5 No. 660208), and Soggy D, LLC (Operator P-5 No. 800299). These firms all have experience operating disposal and producing wells and hauling waste. Mr. Kevin Thorp, an owner of Tankersley and the other entities, testified that he personally, and Tankersley specifically, have experience operating disposal wells in Texas. Mr. Thorpe testified that the surface facilities at the well will be constructed in accordance with the special permit provisions for commercial disposal wells with regard to containment and other pollution prevention features.

Protestants' Evidence

The application was protested at the hearing by several area residents. Mr. James Sefcik, who lives on a non-adjointing tract about a mile and a half from the proposed Cauthorn well, appeared at the hearing in protest. He spoke about an incident in January 2014 on a friend's property thirty miles from the Cauthorn site in which ground water was contaminated by an injection well. He provided no specific details sufficient to identify the incident in Commission records, but he did state that the Commission investigated the matter. Mr. Sefcik stated his understanding that injection wells are needed, but his primary concerns are for water safety and security.

Mr. Jerry Brewer, who lives on a non-adjointing tract about a mile south of the proposed well location, appeared at the hearing in protest. He stated his understanding of the importance of oil field development in the area, but he also was concerned for the protection of freshwater resources. He made reference to the many protest letters from people in Water Valley and downstream that have been submitted to the Commission on this application. Specifically, he spoke of his concerns about how fresh

water is protected when drilling activities necessarily have to pass through the shallow freshwater zones; he questioned why sentinel wells were not required near injection wells. He also stated that there was a popular camping spot on the North Concho River about eight-tenths of a mile south of the proposed location; he is concerned that the proposed facility could vent gases that could harm people using that park land.

Ms. Glenda Willis owns property across FM 2034 and within one-quarter mile of the proposed facility. She was noticed on Tankersley's original application as an adjacent landowner within one-half mile of the proposed facility. She is protesting the facility to protect the freshwater resources in the area—namely, the North Concho River and ground water. She stated that Water Valley is an unincorporated community, and it does not have the local government infrastructure to tend to the community's interests. She is concerned about the long-term integrity of well casing and cement. Her water wells have been sampled and tested, and she plans on testing them annually. She also stated that she was not sympathetic to the Applicant's desire to save money on disposal costs; to her, saving money is not the important issue, protecting the water supply is.

Ms. Willis entered into evidence a 1987 report funded by the Railroad Commission entitled "*Sources of Ground Water Salinization in Parts of West Texas*,"² which studied ground water chemistry in Tom Green, Runnels and Concho Counties. The report explored distinctions between two categories of mechanisms responsible for shallow saline ground water: (1) the mixing of deep-basin brines with shallow low-chloride water, and (2) the evaporation of shallow ground water leaving residual water with higher chloride levels. The Protestant pointed to a conclusion of the report pertaining to western Tom Green County stating that the chemical composition of low chloride ground water appeared to be the result of mixing with deep-basin brine, although the specific mechanism causing the mixing was not known. In closing statements, the Applicant pointed to the portion of the report identifying four possible mechanisms causing deep brines to mix with shallow water (natural discharge of artesian saltwater in outcrops, discharge of salt water through unplugged exploratory water wells, activities related to the extensive and historical petroleum exploration and production in the area, and open surface pits used for brine disposal until the late 1960s); the Applicant noted that injection was not mentioned.

Intervenor's Statement

Mr. Rick Bacon, Tom Green County Commissioner, expressed his primary

² Richter, Bernd C., and Kreidler, Charles W. 1987. National Ground Water Association, *Ground Water Monitoring & Remediation*. Vol. 7, Issue 4. December. pp 75-84. Acknowledgment: "Funding for this project was provided by the Railroad Commission of Texas under contract no. IAC (84-85)-2122."

concern as being for his constituents whose deep concern is for the future of their water supply. He stated that the aquifer in this area of northwestern Tom Green County is the sole source of water for people—residents, farmers and ranchers—in the area. He stated that the lake that supplies San Angelo is at 60 percent capacity, and the City has only a 14-month supply of fresh water.

Mr. Bacon stated that he understood the economics and need for disposal capacity, “But,” he went on to say, “I also have to offer up for your consideration that sometimes the economics is not the option that we need. We need to – we need to take an approach of making certain that what water we do have out in West Texas, by any means necessary, is not able to be contaminated.”³ Further, Commissioner Bacon formally requested that the Commission conduct further analysis of the water situation and the possibility for contamination of the water supply in the future.

EXAMINERS’ OPINION

The Railroad Commission may grant an application for a disposal well permit under Chapter 27 of the Texas Water Code, Subchapter C in whole or part and may issue a permit if it finds:

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

The examiners recommend the application be approved. The Applicant has demonstrated that the installation and use of the disposal well meets the requirements of Chapter 27 of the Water Code and Statewide Rule 9, as discussed below.

Public Interest

The application of Tankersley to install and use its Cauthorn disposal well is in the public interest as that term applies to the jurisdiction of the Railroad Commission as the State’s regulatory agency overseeing the production of oil and gas. The Applicant

³ Transcript, page 80, lines 2-9.

has demonstrated a current and increasing need for additional salt water disposal capacity in northwestern Tom Green County and surrounding areas. The Protestants' testimony has not demonstrated otherwise, and, for the most part, acknowledges this need.

Protection of Any Oil, Gas, or Other Mineral Formation

The Applicant has demonstrated that the installation and use of the Cauthorn disposal well will not endanger or harm oil, gas or other mineral resources. There are six dry holes within a two-mile radius of the proposed disposal well. The nearest of these is about 3,100 feet to the northeast. It was drilled to a depth of 1,307 feet and did not penetrate the disposal interval. The Wolfcamp Lime disposal interval is above the Cline Shale interval that is the target of production in the greater area.

Protection of Ground and Surface Fresh Water

The disposal well is designed to meet the requirements of Statewide Rule 9 regarding the protection of ground water and surface water. Statewide Rules 9 and 13 require surface casing to be set and cemented through the BUQW, determined by the GAU to be at a depth of 295 feet. In this case, the Applicant has chosen to set surface casing through this interval to a depth of 495 feet, also isolating the USDW. The annular space between the steel casing and the shallow formations will be sealed by pumping cement through the bottom of the surface casing until it reaches the surface (i.e., "circulating" to the surface). The well will also include two additional protective features. The long-string casing will be set to the bottom of the well, and it, too, will have cement circulated to the surface. Finally, fluids injected into the well for disposal will be pumped through steel tubing to the disposal zone. Thus, the well will include three layers of protection made of steel (tubing, long-string casing and surface casing) and two cemented annuli outside of the two steel casing strings.

The protestants are concerned that the construction and operation of the well will harm ground water in the area, causing it to be unfit for domestic or farm use, in an area in which the shallow ground water is the only source of usable water. The 1987 Commission-funded report, "*Sources of Ground Water Salinization in Parts of West Texas*," makes generalized conclusions about natural and anthropogenic mechanisms causing degradation of shallow fresh water zones; natural mechanisms involving seeps and artesian brines are implicated, along with water well drilling and oil and gas exploration and production. Any penetration of a wellbore into a freshwater zone may introduce some risk of contamination.

Penetrating a freshwater zone is necessary for both ground water and oil and gas production. State law protects the rights of water and mineral owners to develop—or not—their resources. State law also prevents one from harming the

resources of the other. In this case, State law and Commission Rules work to prevent the pollution of ground water by establishing standards for injection/disposal well construction and operation. Namely, well drilling and completion practices that require the placement of steel and cement to isolate and protect valuable resources have been established.

Financial Responsibility

Tankersley has made a satisfactory showing of financial responsibility as required by Section 27.073 of the Texas Water Code. Tankersley has a current and active Form P-5 Organizational Report on file with the Commission and a \$25,000 letter of credit to satisfy financial assurance requirements.

FINDINGS OF FACT

1. Notice of the subject application was published in the *Standard Times*, a newspaper of general circulation in Tom Green County, on November 7, 2013.
2. Notice of the application was sent to the Tom Green County Clerk, the surface owner of the subject tract, and nearby surface owners within ½ mile on June 27, 2013. There are no offset operators within ½ mile of the proposed well location.
3. The application is protested. At the hearing, nearby residents Glenda Willis, James Sefcik and Jerry Brewer appeared in protest. Tom Green County Commissioner Rick Bacon appeared as an intervenor.
4. The application was properly filed on Form W-14 under 16 TAC § 3.9. Changes made to the W-14 at the start of the hearing to amend the surface casing depth do not require additional notice or publication.
5. Tankersley proposes to permit a newly-drilled commercial disposal well in the Wolfcamp Lime Formation and assigned to the Hall (San Andres) Field. Tankersley proposes to construct and operate the well as follows:
 - a. The proposed well will be drilled to a depth of 3,850 feet.
 - b. 9 5/8-inch surface casing will be set to a depth of 495 feet and cemented to the surface with 200 bags of cement.
 - c. 7-inch long-string casing will be set to a depth of 3,800 feet, and

- cemented to the surface with 450 bags of cement.
- d. 3 1/2-inch injection tubing will be set with a packer at 2,770 feet.
 - e. The perforated disposal interval will be from a depth of 2,800 feet to 3,700 feet.
 - f. The maximum daily injection volume will be 25,000 bpd, and the average daily injection volume will be 15,000 bpd.
 - g. The maximum surface injection pressure will be 1,400 psig, and the average surface injection pressure will be 1,000 psig.
6. The proposed disposal well is in the public interest as there is a market demand for the disposal of produced salt water and liquid oil and gas waste generated in Tom Green and adjacent counties.
- a. Ongoing development of various resource plays in Tom Green and surrounding counties are generating waste fluids requiring disposal.
 - b. Wolfcamp and Cline Shale development activity is generally moving from west to east, towards the proposed location and the community of Water Valley.
 - c. Drilling permits in the area have increased in each of the last four years.
 - d. There are 3 active permitted commercial disposal wells within a 20-mile radius of the proposed location; only one of these is available for use by the general waste-hauling public.
 - e. Within a 20 mile radius there are an additional three commercial disposal wells that have been drilled but are not yet active, and there are five wells that have been permitted but not yet drilled.
7. The Applicant has demonstrated that injected fluids will be confined to the injection interval, and thus will not endanger or injure oil or gas formations.
- a. There is no oil and gas production within two miles of the proposed disposal well.
 - b. Six dry holes have been drilled within a two-mile radius of the proposed disposal well, the nearest being about 3,100 feet to the

northeast.

- c. The injection interval is overlain by dolomite and limestone intervals with low porosity tight streaks to about 2,000 feet; above this depth are shale and anhydrite formations.
8. With proper safeguards, both ground and surface fresh water can be adequately protected from pollution.
 - a. The shallow ground water aquifer is the only source of drinking water for people, farms and ranches in the Water Valley community area.
 - b. The protestants want to ensure protection of the shallow ground water aquifer.
 - c. The well will be cased and cemented through the USDW to the surface, and the surface and long-string casing will include full cement overlap.
 - d. There are no active or plugged wellbores within a one-half mile radius of the proposed injection well.
 - e. The 1987 Commission-funded report, "*Sources of Ground Water Salinization in Parts of West Texas*," makes generalized conclusions about natural and anthropogenic mechanisms causing degradation of shallow fresh water zones, including: natural mechanisms involving seeps and artesian brines, water well drilling and oil and gas exploration and production activities.
 9. Tankersley has a current approved Form P-5 (Organization Report) and has posted a \$25,000 financial assurance letter of credit.

CONCLUSIONS OF LAW

1. Proper notice was issued in accordance with the applicable statutory and regulatory requirements.
2. All things have occurred to give the Railroad Commission jurisdiction to consider this matter.
3. The installation and use of the proposed commercial disposal well is in the

public interest.

4. The installation and use of the proposed injection well will not endanger or injure any oil, gas, or other mineral formation.
5. With proper safeguards, as provided by terms and conditions in the attached final order, which are incorporated herein by reference, both ground and surface fresh water can be adequately protected from pollution.
6. Tankersley has made a satisfactory showing of financial responsibility to the extent required by Section 27.073 of the Texas Water Code.
7. Tankersley has met its burden of proof and satisfied the requirements of Chapter 27 of the Texas Water Code and the Railroad Commission's Statewide Rule 9.

EXAMINERS' RECOMMENDATION

The examiners recommend that Tankersley's application for its proposed Cauthorn No. 1 commercial disposal well be approved. The Applicant has demonstrated that the use and installation of the disposal well meets the requirements of Chapter 27 of the Water Code and Statewide Rule 9

Respectfully Submitted,



Paul Dubois
Technical Examiner



Michael Crnich
Hearings Examiner

**Proposed Wellbore Schematic
Cauthorn SWD No. 1
Tankersley SWD LLC**

HOLE SIZE: 12-1/4"

Casing: 9-5/8" 36# @ 380'
200 sx

495'

BUQW @ 295'

USDW @ 400'

Tubing: 3-1/2" @ 2,770'

Wolfcamp Lime

Injection Interval 2800-3700'

HOLE SIZE: 8-3/4"

Casing: 7" 26# @ 3,800'; 450 sx

TD 3,850'

Exhibit No.:	5
Operator:	Tankersley SWD, L.L.C.
Docket No.:	7C-0285968
Date:	April 9, 2014