



# RAILROAD COMMISSION OF TEXAS

## HEARINGS DIVISION

**OIL AND GAS DOCKET NO. 06-0275285**

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**THE APPLICATION OF DENNY M SMITH - OIL ACCOUNT FOR A COMMERCIAL PERMIT TO DISPOSE OF OIL AND GAS WASTE BY INJECTION INTO A POROUS FORMATION NOT PRODUCTIVE OF OIL OR GAS, SMITH SWD LEASE WELL NO. 1, FORT TRINIDAD (GLEN ROSE UPPER) FIELD, HOUSTON COUNTY, TEXAS**

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**HEARD BY:** Andres J. Trevino P.E., Technical Examiner  
Terry Johnson, Hearings Examiner

### APPEARANCES:

**APPLICANT:**

John Hays  
Alicia Ringuet  
Denny M. Smith  
Randy Early  
Gerald Pybas

**REPRESENTING:**

Denny M Smith - Oil Account

**PROTESTANTS:**

George Neale  
Christopher S. Hotchkiss  
Rick Johnston  
Clay Kenley  
Michael Krischke

Clay Kenley, et al

### PROCEDURAL HISTORY

Application Filed:	January 30, 2012
Request for Hearing:	March 15, 2012
Notice of Hearing:	March 26, 2012
Date of Hearing (Recessed):	June 5, 2012
Date of Hearing (Reconvened):	August 14, 2012
Date of Record Closed:	October 5, 2012
Proposal For Decision Issued:	February 22, 2013

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

Denny M Smith - Oil Account ("Denny M Smith") requests authority pursuant to Statewide Rule 9 to operate the Well No. 1 on its Smith SWD Lease in Houston County as a commercial disposal well. This application is protested by Mr. Clay Kenley, an adjacent landowner. Additionally, Mr. Kenley's attorney is representing Mr. Michael Krischke, Charles Spellman, Vernon Moseley, the Bromberg Charitable Trust and Mr. Chapoton whom are also protesting the application. The Protestants own tracts adjacent to the tract on which the proposed disposal well is located. Only Mr. Kenley and Mr. Krischke were present at the hearing.

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

The subject well has not yet been drilled. It is proposed that the well be drilled through the Subclarksville and Woodbine sands to a maximum depth of 8,000 feet. It is proposed that the well have 3,700 feet of 10¾" surface casing with cement circulated from the casing shoe to the ground surface, and 7" casing set through the Subclarksville and Woodbine sands, estimated to occur beginning at a depth of 7,540 feet. The 7" casing will be cemented with 300 sacks of cement with the top of cement behind the longstring casing estimated to be at 6,799 feet. (See Wellbore Diagram attachment). The Commission's Groundwater Advisory Unit recommends that usable-quality ground water be protected to a depth of 3,650 feet. The Groundwater Advisory Unit further recommends that fresh water contained in the interval from the land surface to a depth of 100 feet and the zone contained in the Sparta from a depth of 400 feet to 750 feet be protected. Furthermore, the Groundwater Advisory Unit requires the Carrizo from 1,175 feet to 1,525 feet, must be isolated from water in the underlying and overlying beds. The Groundwater Advisory Unit identifies the base of USDW as being at a depth approximately at 4,250 feet.

The proposed injection will be through 3½" tubing set on a packer at approximately 7,500 feet. The proposed injection interval is the Subclarksville and Woodbine (Lewisville section) formation, the top of which is expected to occur at about 7,540 feet. The proposed injection interval is between 7,540 and 7,930 feet. This estimated depth of the Subclarksville and Woodbine is based on the log of the Paxton & Cone & Grover's Wayman-Bromberg-Green No. 1. This well is approximately one mile to the south of the proposed well and is the closest well which penetrated the Subclarksville and Woodbine and for which an electric log is available. The proposed maximum injection volume is 20,000 BWPD, with an estimated average of 10,000 BWPD. The proposed maximum injection pressure is 3,770 psig.

There are no oil or gas wellbores within a ¼ mile radius of the proposed disposal

well. Without any wellbores within the ¼ miles radius, there are no conduits for injected fluids to escape the proposed disposal interval. There are only dry holes within three miles of the proposed disposal well demonstrating the lack of oil and gas production near the proposed disposal well. Nearest Woodbine production is 12 miles to the south.

Denny M Smith plans to use the proposed well to dispose of produced water and frac water generated as a result of anticipated increased development of the Buda, Glenn Rose, and the Dexter member of the Woodbine formation in this area. Denny M Smith believes that additional disposal facilities are necessary to accommodate the existing and anticipated increased drilling as there is only one commercial well in Houston County. Mr. Smith has visited with consultants that indicate companies such as Chesapeake, Burke Royalty and Western Chief have recently leased up 200,000 acres of land within 20 miles of the proposed disposal well. With only one commercial disposal well in Houston County, located approximately 7.5 miles south of the proposed disposal well, and with the anticipated increased drilling which is expected to occur, the one commercial disposal well will not have sufficient capacity to dispose of the additional water production generated by drilling on 200,000 acres. Western Chief submitted a letter to the Commission's Injection-Storage Permits dated April 18, 2012, stating they leased the minerals for the acreage where the disposal well will be located and do not have a concern that the disposal activity will negatively impact any hydrocarbon production. Western Chief further stated that the well's location would benefit them as they are actively drilling in the area. Denny Smith believes providing additional disposal facilities near present and future drilling sites will reduce disposal costs and reduce fuel costs by not having to transport disposal water to adjacent counties. The facility will have four to five offloading stations to reduce waiting and unloading times. The facility will use six inch pumps to decrease unloading times. The site was selected due to the heavy truck traffic already existing on Highway 21, lack of adjacent property owners living on their property and the long line of sight on each direction of Highway 21. Highway 21 is a paved all weather road. The facility will meet all requirements for construction for commercial disposal facilities.

Denny M Smith - Oil Account has an active P-5 on file with the Commission, with \$25,000 financial assurance. There are no past or pending enforcement actions against Denny M Smith - Oil Account.

Notice of the subject application was published in *Houston County Courier*, a newspaper of general circulation in Houston County, on January 15, 2012. A copy of the application was mailed on January 11, 2012 to the Houston County Clerk's Office and the offsetting surface owners and operators within ½ mile of the proposed well. A second notice with the revised location as sent on August 7, 2012 to County Clerk's Office. Denny M Smith owns the surface of the 75 acre tract on which the well is proposed. The tract was purchased from Charles and Kimberly Spellman.

**Protestant's Evidence**

Mr. Clay Kenley, was present to represent his family and other Protestants' concerns. Mr. Kenley partially owns 3,750 acres of land with a half interest of the minerals that adjoins the proposed disposal well's location. Mr. Kenley has concerns that the proposed well will cause pollution and potentially adversely affect the Sparta groundwater due to the existence of improperly plugged dry holes. Mr. Kenley's uses one water well on his property that is drilled to a depth of 450 feet and is completed in the Sparta sands. Mr. Kenley lives on the property and uses the well for domestic and farm uses. Any damage to the Sparta Aquifer will damage the value of their land. He stated that the water well on his land is currently not contaminated.

Mr. Kenley and the Protestants are also concerned the proposed disposal well will impair their mineral estates in the area. They believe the disposal well will damage possible future mineral production from the Woodbine Sand and the Eagle Ford Shale. Mr. Kenley believes with water being disposed of in the formations below and above the Eagle Ford Shale, the Eagle Ford will become a less attractive formation for area operators to produce. Mr. Kenley and the Protestants believe that no operator will drill an oil well next to a disposal well. Mr. Kenley further stated that with the proposed disposal interval, which includes the Eagle Ford Shale within the interval, Denny Smith would have the authority to perforate and inject into the Eagle Ford Shale. Mr. Kenley has leased his minerals to Terrence Trivium (Trivium). Trivium was advised by Mr. Kenley of the proposed disposal well application and they chose not to attend the hearing to protest the disposal well.

The Protestants' expert engineering witness identified three plugged dry holes they claimed could be problem wells. The Protestants' expert believe the plugged dry holes could become a conduit for disposal water to leave the disposal zone and enter the usable quality water. The plugged dry holes are located between .8 miles to two miles from the proposed disposal well's location. All Commission forms indicate mud and plugs were set to plug the dry holes according to the Commission standards at the time.

The Smith Et Al No. 1 was plugged in 1959. It was drilled to a depth of 8,235 feet, plugs were set at depths of 7,600 feet, 1,200 feet and 700 feet. The well was filled with 10 lb/g mud. There is no plug set at the current usable quality water depth of 3,650 feet. The groundwater protection depth at the time is assumed to have been 700 feet based on the depth the surface casing was set. A permit was issued by the Commission to convert the well to a fresh water well.

The W.C. Lamb No. 1 was plugged in 1979. It was drilled to a depth of 10,500 feet, plugs were set at depths of 2,100 feet, 1,946 feet and 150 feet. The well was filled with 10 lb/g mud. There is no plug set at the current usable quality water depth of 3,650 feet. The groundwater protection depth at the time was 1,700 feet. No bottom plug appears to be set.

The Wayman-Bromberg No. 1 was plugged in 1947. It was drilled to a depth of 7,812 feet, the plugging form indicates plugs were set, but does not identify the depths.

The well was filled with mud, but of unknown weight. It is unknown if plugs were set at the current usable quality water depth of 3,650 feet. The groundwater protection depth at the time is assumed to have been 400 feet based on the depth the surface casing was set.

The Protestants' expert engineering witness further identified an active blowout (July 2012) from a well two miles to the southwest of the proposed disposal well. The well was being fractured stimulated when a casing failure occurred. The expert implied the well had a casing failure along with a poor cement job on the production string. The well was being fracked at the 10,500 foot level, where it is believed the casing failed. The Protestants' expert later admitted he did not think the well blowout would be a problem well as the operator will most likely repair it.

The Protestants' expert engineering witness also performed pressure front calculations at various rates, at one mile distance and after a 20 year time period. The expert used 16% porosity, permeability of 1,000 millidarcies, 150 feet of net reservoir thickness and an injection rate of 20,000 BWPD. According to his calculations, after injecting 20,000 BWPD for 20 years, at a distance of one mile the reservoir pressure is expected to increase by 70 psi from 3,000 psi (reservoir gradient of 0.407 psi/ft assumed) to 3,070 psi. The expert calculated it would take a reservoir pressure of 1,860 psi for brine with a weight of 8.95 lb/gal to reach the base of the usable quality water found at a depth of 3,650 feet. The expert stated with the current estimated reservoir pressure of 3,000 psi, there already exists sufficient reservoir pressure to raise fluid to the base of the usable quality water. The disposal rates of 10,000 BWPD and 5,000 BWPD were also used to calculate increases in reservoir pressures of 35 psi and 17 psi, respectively. The Protestants alleged that this constitutes a potential for pollution.

The Protestants further believe that there is no industry need for additional disposal capacity in this area at this time. They believe there is insufficient drilling occurring today to justify approving a second commercial disposal well in Houston County.

The Protestants' expert further disputes the application should not be approved as the W-14 application filed on June 21, 2012 does not have a latitude and longitude measurement indicating where the well will be located. The Protestants believe the groundwater determination letter dated July 13, 2012 is in valid because the latitude and longitude on the letter does not match with the survey measurements on the revised W-14 application. The same survey measurements that were provided on the groundwater determination letter were provided on the revised W-14 application filed on June 21, 2012. The applicant stated they will drill the well based on the latitude and longitude provided in the groundwater determination letter dated July 13, 2012.

#### **EXAMINERS' OPINION**

The examiners believe that this application should be approved. The Smith SWD No. 1 will be completed in a manner which will confine disposal fluids to the proposed disposal interval in the Subclarksville and Lewisville section of the Woodbine sands. Surface casing will be set and cemented through the base of usable quality water. There is over 2,000 feet of impervious shale and tight limestone intervals separating the 7,540 foot top of the disposal interval and the base of the usable quality water found at a depth

of 3,650 feet. The longstring production casing will also be cemented up to a depth of 6,799 feet to prevent migration from the injection interval. There are no oil or gas wells within the expanded two mile radius of review that pose a threat to groundwater. All dry holes that penetrated the disposal interval, inside of a two mile radius are plugged with mud or in accordance to the Commission's requirements at the time the dry holes were plugged.

The Protestants' engineering expert performed pressure front calculations that he believed would demonstrate increased injection pressure would be sufficient to cause brine to rise to the base of the usable quality of water. The expert did not consider that the plugged dry holes are filled with 10 lb/g mud. The purpose of the mud is to create a higher hydrostatic pressure against the formation to prevent the migration of reservoir fluids from entering the wellbore. The difference in 10 lb/g (0.5195 psi/ft) mud and the assumed reservoir gradient of 0.407 psi/ft is 0.1125 psi/ft. With a column of mud 7,540 feet in depth (top of the disposal interval), the additional pressure the mud will exert on the reservoir is 848.2 psi, well exceeding the 70 psi the expert estimated the disposal well is expected to create after 20 years of injecting at a rate of 20,000 barrels of water per day.

The plugged dry holes are unlikely to be conduits for fluids to enter the groundwater. Even though some of the wells have been plugged for over 65 years, to date, there is no evidence that groundwater contamination has occurred. Mr. Kenley himself stated his well water is not contaminated. Adding an additional 70 psi of reservoir pressure from 20 years of future disposal activity will be insufficient to overcome the 848 psi exerted by the mud in the dry holes and will not allow fluid flow into the wellbores.

The proposed disposal interval contains 290 feet of highly permeable sands. The highly permeable sands available for disposal will minimize the potential to over pressure any one sand above or below the Eagle Ford Shale. The Examiners recommend that a permit condition be placed in the permit that excludes the Eagle Ford Shale from being perforated and being used for disposal. Operators with leased minerals in the area (Western Chief and Trivium) are aware of the proposed disposal well and are not concerned that their minerals will be negatively affected. Western Chief supports the proposed disposal well as it will benefit by having the proposed disposal well available to its current and future production and completion activity.

The Lewisville zone of the Woodbine is the preferred formation for disposal in the area as evidenced by the numerous non-commercial disposal wells currently disposing in the Lewisville. The Lewisville is highly permeable and is expansive throughout the area. The single commercial well located seven miles south of the proposed disposal well is permitted for disposal in the Lewisville formation. The majority of non commercial disposal wells are also permitted to dispose of into the Lewisville. There is no evidence that current disposal into the Lewisville is impacting hydrocarbon production or leasing around the existing permitted disposal wells.

The Eagle Ford Shale is relatively thin in this area and is currently unproductive and is considered uneconomic to produce in this area. Log data provided for the area cross sections show the Eagle Ford Shale to be between 70 and 100 feet thick at most.

Commission data from the Karnes County area, considered a prime area for drilling Eagle Ford wells, shows the Eagle Ford to be 200 to 250 feet thick. In addition to thickness, a shale must have sufficient organic content within the rock and have sufficient thermal maturity to have "cooked" the organic contents into producible hydrocarbons. There is no evidence the Eagle Ford Shale in this area has sufficient organic content required or thermal maturity to produce economic volumes of hydrocarbons. As of December 11, 2012, the Commission's drilling data available on the Commission's website shows no wells have been permitted or completed in Eagle Ford Shale in Houston County. The Subclarksville and Lewisville located above and below the Eagle Ford are currently assumed to be saturated with saltwater even without Denny Smith's disposal well being placed into service. Disposal into the proposed interval will cause a minimal pressure increase in the disposal formations above and below the Eagle Ford Shale. The protestant's own engineering expert calculated the disposal interval's formation pressure will rise by only 70 psi within one mile radius of the proposed disposal well after 20 years of injection at the maximum rate of 20,000 BWPD. The minimal pressure increase is due to the disposal formation's thickness and high permeability of 1,000 millidarcies.

Approval of the requested permit is in the public interest given it is in the public interest to promote the development of the Glen Rose, Buda and Dexter section of the Woodbine in Houston County by adding disposal capacity. Denny Smith has shown that the proposed disposal well is necessary to provide needed capacity for disposal of frac and produced water from numerous wells being drilled or expected to be drilled and produced within Houston and surrounding counties. The proposed Smith SWD disposal well is located on the edge of increasing development. Denny Smith, through their research of leasing and drilling activity and operator surveys believes the well is necessary and will be a commercial success. There is only one commercial well in Houston County. Having two competing commercial disposal wells located in an active area of the county is preferable to having one well. The Smith SWD disposal well will reduce truck traffic from distant wells being drilled in adjacent counties. The Smith SWD disposal well will prevent congestion at the other disposal facility in Houston County. Horizontal drilling is increasing in the area in the Buda and Glen Rose in Houston, and Madison Counties. Having a disposal facility close to the horizontal wells will reduce disposal costs to operators, which will lower the economic limit of wells and thereby ultimately increase total production. The evidence indicates that the operation of the subject disposal well and facility will not adversely impact any surface or subsurface useable quality water or will endanger or injure any oil, gas, or other mineral formation.

#### FINDINGS OF FACT

1. Notice of this hearing was given to all persons entitled to notice at least ten (10) days prior to the hearing. Notice of the application was published in *Houston County Courier*, a newspaper of general circulation in Houston County, on January 15, 2012. Notices of the application was sent to the Houston County Clerk, offset Operators within ½ mile, and to the surface owners of each tract which adjoins the disposal tract on January 11, 2012.
2. The Smith SWD No. 1 has not been drilled. Denny M Smith - Oil Account plans to drill the well to a maximum depth of approximately 8,000 feet. The top of the

Subclarksville and Woodbine is expected to occur at approximately 7,540 feet.

3. The maximum requested injection volume is 20,000 barrels of water per day and the maximum requested surface injection pressure is 3,770 psi. The requested disposal interval is the Subclarksville and Woodbine formation between approximately 7,540 and 7,930 feet.
4. The Smith SWD No. 1 will be cased and cemented in a manner to protect usable quality water, the USDW and injection will be confined to the injection interval.
  - a. The subject well will have 3,700 feet of 10¾" surface casing cemented to surface.
  - b. The subject well will have approximately 7,980 feet of 7" casing, cemented with 300 sacks of cement with a top of cement at approximately 6,799 feet.
  - c. Injection will be through tubing set on a packer no higher than 100 feet above the top of the injection interval.
  - d. The Commission's Groundwater Advisory Unit recommends that usable-quality ground water be protected to a depth of 3,650 feet in the area of the proposed well.
  - e. Injection will not occur into the USDW zone; the base is estimated to be found at a depth of 4,250 feet.
  - f. Latitude and longitude measurements are optional on W-14 applications.
  - g. The well's location will be based on the latitude and longitude referenced on the groundwater protection determination letter dated July 13, 2012.
5. There are no wellbores within one-half mile of the proposed disposal well.
6. There are three plugged dry holes within two miles of the proposed disposal well that have penetrated the disposal interval.
  - a. The wells are outside the normal ¼ mile area of review.
  - b. The Smith Et Al No. 1 was plugged in 1959. It was drilled to a depth of 8,235 feet, plugs were set at depths of 7,600 feet, 1,200 feet and 700 feet. The well was filled with 10 lb/g mud. There is no plug set at the current usable quality water depth of 3,650 feet.
  - c. The W.C. Lamb No. 1 was plugged in 1979. It was drilled to a depth of 10,500 feet, plugs were set at depths of 2,100 feet, 1,946 feet and 150 feet. The well was filled with 10 lb/g mud. There is no plug set at the current usable quality water depth of 3,650 feet. The groundwater protection depth at the time was 1,700 feet. There is no record of a bottom plug being set.

- d. The Wayman-Bromberg No. 1 was plugged in 1947. It was drilled to a depth of 7,812 feet, the form filed indicates plugs were set, but does not identify the depths. The well was filled with mud, but of unknown weight. It is unknown if plugs were set at the current usable quality water depth of 3,650 feet.
  - e. All wells are filled with mud, with plugging forms in two of the wells indicating 10 lb/g mud weight was used.
  - f. All three plugged dry holes are more than  $\frac{3}{4}$  miles from the proposed well, significantly outside the usual  $\frac{1}{4}$  mile area of review.
6. The three plugged dry holes are plugged in a manner to protect usable quality water.
- a. Mud and plugs placed in the dry holes will prevent the migration of fluids from entering the wellbores.
  - b. With a mud weight of 10 lb/g, a column of mud 7,650 feet in height (depth to the top of the disposal interval) is expected to exert an additional 848.2 psi of pressure against the reservoir.
7. The proposed disposal interval is a highly permeable formation and is expected to have only a minor increase in reservoir pressure after 20 years of injection.
- a. Pressure front calculations performed by the Protestants engineering expert demonstrates that the reservoir pressure will rise by 70 psi after injecting 20,000 BWPD for 20 years at a radius of one mile.
  - b. At a rate of 10,000 BWPD the reservoir pressure will rise by 35 psi at a radius of one mile.
  - c. The expected pressure increases due to disposal activity are insufficient to overcome the mud weight pressures exerted by the mud in the dry holes.
8. The Eagle Ford Shale is not productive in Houston County.
- a. As of December 11, 2012, the Commission's drilling data available on the Commission's website shows no wells have been permitted or completed in Eagle Ford Shale in Houston County.
  - b. Log data provided for the area cross sections show the Eagle Ford Shale to be between 70 and 100 feet thick at most.
  - c. Commission data from the Karnes County area, a highly productive area for the Eagle Ford Shale shows the Eagle Ford to be 200 to 250 feet thick.
  - d. No evidence was provided that shows the Eagle Ford formation in Houston County contains sufficient organic content and thermal maturity to generate

economic volumes of hydrocarbons.

9. Operators that have leased the mineral rights in the immediate area support the disposal well and are not concerned about any potential negative impacts on their minerals.
  - a. Western Chief submitted a letter to the Commission's Injection-Storage Permits dated April 18, 2012, stating they leased the minerals for the acreage where the disposal well will be located and do not have a concern that the disposal activity will negatively impact any hydrocarbon production. Western Chief further stated the well's location would benefit them as they are actively drilling in the area.
  - b. Mr. Kenley has leased his minerals to Terrence Trivium (Trivium). Trivium was advised by Mr. Kenley of the proposed disposal well application. Mr. Kenley stated Trivium was not concerned and therefore chose not to attend the hearing to protest the disposal well.
10. Consultants to Denny M Smith indicate that companies such as Chesapeake, Burke Royalty and Western Chief have recently leased up 200,000 acres of land within 20 miles of the proposed disposal well.
11. Denny M Smith anticipates future drilling will increase based on increasing leasing activity in the immediate area of the proposed disposal well.
12. There is only one commercial disposal well in Houston County.
13. Due to increasing development of the Glen Rose and Buda with horizontal drilling in this area, large quantities of produced water must be disposed of. Use of the Smith SWD No. 1 as a commercial disposal well is in the public interest to promote this development by providing a safe and economic means of disposal of the fluids associated with production.
14. Denny M Smith - Oil Account has an active P-5 on file with the Commission, with \$25,000 financial assurance.

#### **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 use or installation of the proposed injection well is in the public interest.
4. The use or installation 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. Denny M Smith - Oil Account has made a satisfactory showing of financial responsibility to the extent required by Section 27.073 of the Texas Water Code.
7. Denny M Smith - Oil Account 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**

Based on the above findings and conclusions, the examiners recommend that the application be approved as set out in the attached Final Order.

Respectfully submitted,



Andres J. Trevino  
Technical Examiner

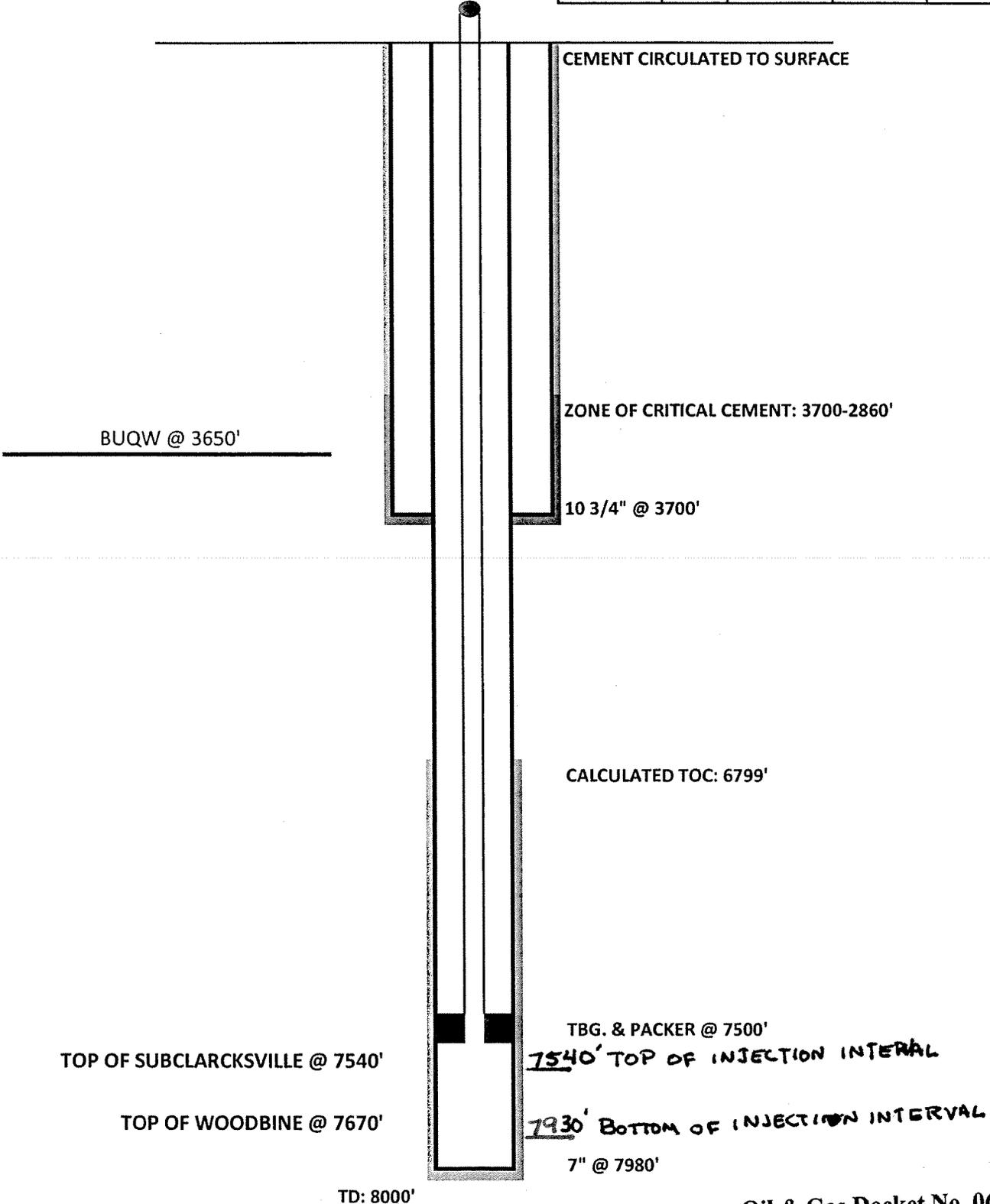


Terry Johnson  
Hearings Examiner

PROPOSED WELLBORE SCHEMATIC  
DENNY M. SMITH OIL ACCOUNT (790552)

WELL: SMITH SWD #1  
API: N/A  
FIELD: FT TRINIDAD (GLENROSE, UPPER)  
LOCATION: WALLER COUNTY, DIST. 06  
PROPOSED INJECTION INTERVAL: 7540-7930'

Csg. Size (in.)	Depth Set (ft)	Top of Cement (ft)	Tbg. Size (in.)	Packer Depth (ft.)
10 3/4	3700	Surface	3 1/2	7500
7	7980	6799		



Oil & Gas Docket No. 06-0275285  
Denny Smith Ex. No. 16