

**OIL AND GAS DOCKET NO. 06-0249174**

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**THE APPLICATION OF GOLDSTON OIL CORPORATION TO INJECT FLUID INTO A RESERVOIR PRODUCTIVE OF OIL AND GAS, DELONEY HEIRS LEASE WELL NO. 21, QUITMAN-ROBBINS (ROD.-KIRK.) FIELD, WOOD COUNTY, TEXAS**

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**Heard By:** Donna K. Chandler, Technical Examiner  
Marshall F. Enquist, Hearings Examiner

**Appearances:**

John Soule  
Rodney Henckel

Kyle Hayes  
Buford Delk

**Representing:**

Goldston Oil Corporation

Kyle Hayes

**Procedural History of Case:**

Application Filed:	August 22, 2006
Request for Hearing:	September 28, 2006
Notice of Hearing:	October 6, 2006
Hearing Held:	November 7, 2006
Transcript Date:	November 21, 2006
Hearing Re-opened:	February 9, 2007
Transcript Date:	February 21, 2007
Proposal for Decision Issued:	March 8, 2007

**EXAMINERS' REPORT AND PROPOSAL FOR DECISION**

**STATEMENT OF THE CASE**

Goldston Oil Corporation ("Goldston") requests authority to inject salt water into a productive reservoir in its Deloney Heirs Well No. 21 in the Quitman-Robbins (Rod.-Kirk.) Field, pursuant to Statewide Rule 46.

This application is protested by Kyle Hayes, the surface owner of the tract on which the proposed injection well is located.

Goldston submitted late-filed exhibits on December 18, 2006. The hearing was re-opened to consider the admission of the late-filed exhibits.

**DISCUSSION OF THE EVIDENCE**

Applicant's Evidence

The Quitman-Robbins (Rod.-Kirk.) Field was discovered in September 2005 when Goldston completed its Deloney Heirs No. 1 with perforations between 7,894 and 7,911 feet. There are no other producing wells in the field. Based on Goldston's mapping, it was expected that the Deloney Heirs No. 1 would encounter virgin pressure of about 3,650 psi, as there was no other production from this reservoir in the area. The actual initial pressure in the well was only 1,607 psi and the reservoir had obviously been depleted by production from another well. However, Goldston's further investigation revealed no reported perforations in any well in this reservoir.

The Deloney Heirs No. 2I (originally permitted as McMillian No. 2) was drilled in December 2005 and was proposed as a producer in either the Paluxy or Sub-Clarksville formations. However, Goldston drilled the well deep enough to encounter the deeper Rodessa-Kirkland interval. In the No. 2I well, the Rodessa-Kirkland was found 242 feet downdip to the Deloney Heirs No. 1. Logs of the No. 2I indicate about 6 feet of porosity in the Rodessa-Kirkland, very near the oil-water contact of the reservoir. The bottomhole pressure in the No. 2I was 1,613 psi, confirming that is in a common reservoir with the No. 1 well. Goldston decided to use the No. 2I as an injection well to re-pressure this depletion drive reservoir for secondary recovery. The No. 1 and No. 2I wells are approximately 1,500 feet apart, as shown on the attached plat.

The No. 2I has a total depth of 8,250 feet. The well has 856 feet of 9 5/8" surface casing cemented to surface and 8,235 feet of 5 1/2" casing. The top of cement behind the 5 1/2" casing is at approximately 3,000 feet, with a multi-stage cementing tool at 6,487 feet. The Texas Commission on Environmental Quality recommends that usable-quality ground water be protected to 750 feet. (See attached wellbore diagram).

The proposed injection will be through tubing with a packer set at 8,084 feet. The proposed injection interval is between 8,149 feet and 8,157 feet. The maximum rate of injection requested is 600 barrels of water per day. The maximum requested injection pressure is 4,074 psi.

The water to be injected is produced salt water from Deloney Heirs No. 1, which currently produces about 17 BOPD, 130 MCFD and 25 BWPD, based on October 2006 production. Reservoir voidage from the No. 1 well is 90-100 BPD. Make-up water to re-pressure the reservoir will be taken from Goldston's salt water disposal system at its Blalock "A" No. 2D. This well is currently disposing of approximately 1,800 BWPD from various Goldston leases in the area. Goldston believes that the proposed injection will increase the reservoir pressure, resulting in the recovery of 100,000 BO which would not otherwise be recovered under primary methods.

There are two wellbores within a 1/4 mile radius of the Deloney Heirs No. 2I which penetrated the proposed injection interval. Both are plugged wellbores. (See attached plat). The McManus No. 1, located about 1,200 feet southwest of the proposed injection well, was drilled in 1961 to a total depth of 8,475 feet and has 762 feet of surface casing. This well

produced from the Cathey-Pettit reservoir at 8,436-8,444 feet and was plugged in 1967 with a plug at 6,100 feet and at the surface. The McMillian Heirs No. 1, located 300 feet north of the proposed injection well, was drilled in 1983 to a total depth of 8,800 feet. This well has 730 feet of surface casing. Completion reports indicate that this well was completed in the Pettit between 8,296 and 8,431 feet. This well was plugged in 1994 with plugs at 4,150 feet, 850 feet and at the surface.

### Protestant's Evidence

Kyle Hayes owns the surface on which the No. 21 is located. Mr. Hayes has a dairy farm on this acreage and depends on his water well for this operation. Mr. Hayes' well is approximately 500 feet deep.

Mr. Hayes experienced a problem with his water well December 22, 2005. On that day, water produced into wash vats inside the dairy barns was contaminated with a black/brown, greasy substance, some of which came out in large "chunks", as described by Mr. Hayes. These wash vats are used to clean out the milking system and it is essential that the water be clean.

After the substance appeared in the water, Mr. Hayes notified the Commission's District Office to inspect the well. After the initial inspection on December 27, 2005, the Commission collected a sample from the water well on January 4, 2006. The analysis of the sample indicated the barium content was 1.34 mg/L, which is below the contaminant level of 2.0 mg/L for barium designated by the EPA. Another sample was taken on January 12, 2006 by the Commission. This sample was analyzed for Total Petroleum Hydrocarbons (TPH), Benzene, Ethyl Benzene, Toluene and Xylene. All tested below reporting limits. The District Office concluded that Mr. Hayes' well was not contaminated by oilfield activities. On January 9, 2006, Mr. Hayes took a water sample from the well for analysis. This analysis indicated Total Dissolved Solids of 226,000 mg/L and 10.8 mg/L TPH. After about four months, the water well had cleaned up and had not had a problem since that time.

Mr. Hayes believes that the problem with his water well is that it has been contaminated with drilling mud. Mr. Hayes suggests that the cementing of the production casing on the No. 21 well, which took place on December 21, 2005, resulted in communication with the plugged McMillian Heirs No. 1 about 300 feet north of from the No. 21 well. Mr. Hayes further suggests that the McMillian Heirs No. 1 was not plugged as indicated on plugging reports and possibly had a casing leak. These circumstances could have resulted in communication into the useable quality water zone in Mr. Hayes' well. If injection is allowed into the No. 21, Mr. Hayes believes that further contamination will occur to the fresh water.

### Re-Opened Hearing

Goldston

At the re-opened hearing, Goldston presented evidence to demonstrate that Mr. Hayes' water well could not have been contaminated by the cementing of the No. 21 well. For Mr. Hayes' water well to have been affected by the cementing of the No. 21 well, each of the following must be assumed:

1. Lost circulation into the Rodessa during the cementing of the longstring of the No. 21 well on December 21, 2005.
2. Fluid in the No. 21 would have to travel 300 feet north in the Rodessa formation from the No. 21 to the McMillian Heirs No. 1.
3. The McMillian Heirs No. 1 would not have a cement plug at approximately 4,000 feet, as indicated on its plugging report.
4. The McMillian Heirs No. 1 would not have a plug across the base of surface casing at 730 feet, as indicated on the plugging report for the well.
5. Fluid in the McMillian Heirs No. 1 would rise to the level of useable quality water.
6. Fluid from the McMillian No. 1 would travel almost 1,200 feet south, within the useable quality water zone at 500 feet, to Mr. Hayes' water well.

Goldston provided cementing reports from Halliburton and an affidavit from a Goldston employee on site that lost circulation did not occur in the cementing of the longstring of the No. 21 well. Assuming that some volume of fluid had been lost to the Rodessa during cementing of the No. 21, it would require a minimum of 60,000 barrels of fluid just to re-pressurize the reservoir from its depleted pressure of 1,600 psi. The volume of fluid pumped during the cementing job was only 484 barrels. Further assuming that the McMillian Heirs No. 1 did not have plugs set as indicated on the plugging report and that the well had only 8.5 ppg water in the wellbore, the cementing of the longstring casing could not have caused a pressure increase in the McMillian Heirs No. 1 sufficient to re-pressurize the reservoir and raise the 8,000 feet of fluid in that well to the level of useable quality water. Goldston estimates that the volume of fluid required for all of the fluid movement postulated by protestant is about 28 million barrels.

Additionally, Goldston supplied a log of a nearby well which indicates the presence of a fresh water sand at approximately 700 feet. This sand is about 100 feet thick. Any fluid which moves from the McMillian Heirs No. 1 would go into this deeper fresh water sand before entering the sand at 500 feet, in which Mr. Hayes' well is completed.

Regarding the "chunks" of substance recovered from Mr. Hayes' water well, Goldston points out that water sands act as filters for solid materials and large "chunks" of material would not move through the porous sands and into the wellbore. Goldston suggests that the problem is with Mr. Hayes' well itself.

Hayes

Mr. Hayes submitted an additional analyses run in January 2007 of a water sample from his well, which had been collected in early 2006. The analyses indicate the presence of barium, selenium and lead in the sample, at 215, 5.28 and 25 micrograms/L, respectively. Mr. Hayes believes that the analysis indicates that his water well is contaminated with drilling mud, though safe levels in drinking water for these materials were not provided.

Mr. Hayes supplied a letter from the chemical supply company which provides chemicals for cleaning the milking equipment. The letter indicates that the presence of barium, selenium and lead in the water adversely react with the cleaning chemicals, resulting in the formation of black residue in the wash vats.

At the re-opened hearing, Mr. Hayes testified that he had recently replaced the pump in his water well and water from the wellhead now produces small amounts of "black, sandy mud", a different substance than was produced into his wash vats in late December 2005.

**EXAMINERS' OPINION**

The examiners recommend that the application be approved. The proposed injection well is completed in a manner which will protect useable quality water resources and will confine the injected fluids to the injection interval. Use of the well for injection will result in the recovery of approximately 100,000 BO as the reservoir is re-pressured.

The examiners do not believe that the cementing of the longstring in the No. 21 well contributed in any way to the problems with Mr. Hayes' water well. Goldston provided documentation in several forms indicating that circulation was not lost during the cementing of the No. 21. The path of fluid migration suggested by protestants is not credible. The pressure in the Rodessa is depleted (documented by measured pressures) and Commission records reflect the presence of plugs in the McMillian Heirs No. 1. The fluid would have had to travel north 300 feet in the Rodessa from the No. 21 well to the McMillian Heirs No. 1, up the McMillian Heirs wellbore filled with fluid and several plugs, then 1,200 feet south within the water zone to Mr. Hayes' water well, all within a span of 3 days. Further, the large pieces of material which appeared in the dairy wash vats would have been filtered out by the water formation and gravel-packing in the water well if the pieces had originated downhole in the water zone.

**FINDINGS OF FACT**

1. Notice of this application and hearing was provided to all persons entitled to notice at least ten (10) days prior to the date of the hearing.
2. Notice of this application was published in *The Wood County Democrat*, a

newspaper of general circulation in Wood County, on August 9, 2006.

3. The Quitman-Robbins (Rod.-Kirk.) Field was discovered in September 2005 when Goldston completed its Deloney Heirs No. 1 with perforations between 7,894 and 7,911 feet. There are no other producing wells in the field.
4. The Deloney Heirs No. 1 encountered depleted pressure of only 1,607 psi, indicating that the reservoir had been depleted by production from another well. No wells in the area have reported perforations in the correlative interval.
5. The Deloney Heirs No. 2I was drilled in December 2005 to a total depth of 8,250 feet. The Rodessa-Kirkland in this well was found to be 242 feet down dip to the discovery well. Initial pressure in the No. 2I was also depleted, at 1,613 psi.
6. Injection into the No. 2I will allow Goldston to re-pressurize this depletion drive reservoir for secondary recovery. Expected additional recovery is approximately 100,000 BO.
7. There are two wellbores within a  $\frac{1}{4}$  mile radius of the Deloney Heirs No. 2I. These wellbores are plugged and cased in a manner which will not provide a conduit for migration of injected water from the injection interval into other oil, gas or mineral bearing formations.
8. The proposed injection into the Deloney Heirs No. 2I will not endanger useable quality water.
  - a. The Texas Commission on Environmental Quality recommends protection of useable quality water resources to a depth of 750 feet the area of these wells.
  - b. The well has 856 feet of 9  $\frac{5}{8}$ " surface casing cemented to surface and 8,235 feet of 5  $\frac{1}{2}$ " casing. The top of cement behind the 5  $\frac{1}{2}$ " casing is at approximately 3,000 feet, with a multi-stage cementing tool at 6,487 feet.
  - c. Injected fluids will be confined to the injection interval between 8,149 feet and 8,157 feet.
9. The proposed injection is in the public interest because it will result in the recovery of additional oil from the Quitman-Robbins (Rod.-Kirk.) Field.

#### **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. Goldston Oil Corporation 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 46.
4. Approval of the application will not harm useable quality water resources, will not present a hazard to other mineral bearing formations, and will result in the recovery of additional secondary reserves from the Quitman-Robbins (Rod.-Kirk.) Field.

**EXAMINERS' RECOMMENDATION**

Based on the above findings and conclusions, the examiners recommend that the application of Goldston Oil Corporation for authority to inject into its Deloney Heirs No. 21 be approved as set out in the attached Final Order.

Respectfully submitted,

Donna K. Chandler  
Technical Examiner

Marshall F. Enquist  
Hearings Examiner