

OIL AND GAS DOCKET NO. 02-0239731

THE APPLICATION OF W. C. MILLER OPERATING COMPANY TO DISPOSE OF OIL AND GAS WASTE BY INJECTION INTO A POROUS FORMATION NOT PRODUCTIVE OF OIL OR GAS, W. B. FOWLER LEASE, WELL NO. 6, SANDY CREEK FIELD, JACKSON COUNTY, TEXAS

Heard by: Donna K. Chandler, Technical Examiner
Mark J. Helmueller, Hearings Examiner

Procedural history:

Application received:	July 1, 2004
Administrative denial:	July 15, 2004
Hearing held:	September 9, 2004
PFD Issued:	October 12, 2004

Appearances:

Representing:

Applicant:

Glenn George
Gene Day
Bill Miller

W. C. Miller Operating Company

Protestant:

David Cooney
Doug Johnson

Railroad Commission of Texas,
Environmental Services

EXAMINERS' REPORT AND PROPOSAL FOR DECISION

STATEMENT OF THE CASE

W. C. Miller Operating Company ("Miller") requests authority to dispose of produced salt water in its W. B. Fowler No. 6 in Jackson County. The application could not be administratively approved by Environmental Services because data in the application indicated that injected fluids may not be confined to the injection interval due to the presence of two "unknown status" wells within the one-quarter mile radius of review.

Environmental Services appeared at the hearing in protest to the application.

DISCUSSION OF THE EVIDENCE

Applicant's Evidence

The W. B. Fowler No. 6 was drilled in 1978 to a total depth of 4,812 feet. The well produced from the Sandy Creek (Frio 4700 B) Field and was plugged in 1979. Miller plans to re-enter the well and dispose of lease-produced salt water into the Catahoula Formation between 3,420 feet and 3,900 feet.

The Texas Commission on Environmental Quality has determined that usable quality water occurs to a depth of approximately 1,800 feet in this area. The subject well is completed with 553 feet of 8" casing and 4,814 feet of 4 ½" production casing. Both strings of casing are cemented to surface. A log of a nearby well indicates the presence of hundreds of feet of shale between the disposal interval and the base of usable quality water.

Miller requests authority to dispose of a maximum of 1,200 barrels of salt water per day, with a maximum surface injection pressure of 1,700 psig. There is one producing well on the W. B. Fowler lease, the No. 2R, which produces approximately 20 BOPD and 1,000 BWPD. Miller had previously used the No. 1R well on the lease for disposal, but this well had to be plugged and abandoned recently due to mechanical problems. The No. 2R has been shut-in because it is not economic to haul the large volume of produced water to a commercial facility.

There are 13 wellbores within a ¼ mile radius of the No. 6 well. Eleven of the wells, not including the No. 6, have been plugged and abandoned. Plugging records for two of these plugged wells indicate that the wells have no cement plug between the disposal interval and the base of usable quality water at 1,800 feet. Both wells are approximately 1,000 feet from the No. 6 well. The first well, the H. P. Fowler No. 1, was drilled in 1949 and plugged in 1963. The well has a plug set at total depth of 4,850 feet and a plug set at the base of the surface casing at 762 feet. The second well, the W. B. Fowler No. 3 was drilled in 1942 and plugged as a dry hole. The well has a total depth of 5,250 feet and has a single plug across the base of the surface casing at 936 feet. Plugging reports for both wells indicate that the wells were filled with mud-laden fluid, as required by Commission rules in effect at the time of plugging.

Pressure calculations reveal that the pressure in the disposal interval in either of the previously discussed plugged wells will be 1,562 psi after 20 years of injection at the maximum injection rate. Additionally, a formation pressure of 1,691 psi would be necessary to overcome the weight of a column of 9.5 pound per gallon fluid in the plugged wellbores.

Miller submitted the Final Order in Docket No. 02-0236005, which was an application of Jackson County Vacuum Truck Service for disposal authority in a well in Jackson County about 3,500 feet to the east of the W. B. Fowler No. 6. In that docket, there were four wells of

unknown status within a ¼ mile radius, all of which had no plug set between the base of usable quality water and the Catahoula injection interval. The Commission approved the disposal authority in that docket on January 23, 2004, adopting the Findings of Fact that the “unknown status” wells were filled with mud-laden fluid as required by rules in effect at the time the wells were plugged.

Environmental Services' Position

Environmental Services believes the application should be denied. Due to the existence of the two previously discussed “unknown status” wells, the application could not be administratively approved. In addition, the pressure calculations presented by applicant show that the pressure increase in the two wells, as a result of the proposed injection, would be sufficient to raise a column of oilfield brine up to the base of usable quality water. These calculations assume that the wellbores were not filled with mud below the surface casing plugs.

EXAMINERS' OPINION

The examiners recommend that the application be approved. The subject well is cased and cemented in a manner which will confine injected fluids to the disposal zone. Because the surface casing is not set and cemented through the base of usable quality water at 1,800 feet, it is recommended that Miller be required to perform an annual annulus pressure test on the well and that the tubing-casing annulus pressure be monitored on a weekly basis to insure the mechanical integrity of the production casing, which is cemented to surface.

There are two plugged wellbores approximately 1,000 feet from the W. B. Fowler No. 6 well, which do not have plugs set between the disposal interval at 3,400 feet and the base of usable quality water at 1,800 feet. The H. P. Fowler No. 1 was plugged in 1963 with a plug at total depth of 4,850 feet and a plug across the base of the surface casing at 762 feet. The W. B. Fowler No. 3 was drilled and plugged in 1942 and has only a plug across the base of the surface casing at 936 feet. Plugging reports for both wells indicate that the wells are filled with mud-laden fluid. Though these wells are not plugged in a manner which would meet current Commission standards, Miller showed that injection into the W. B. Fowler No. 6 would not pose a risk to usable quality water through the two wells. Pressure calculations demonstrate that even after 20 years of injection at the maximum volume, the pressure increase in either well would be insufficient to overcome the weight of the mud in the wellbores.

Use of the well is necessary to continue producing the No. 2R on the lease, which produces large volumes of water. Approval of this application will provide an economical method to dispose of this produced water. The No. 2R has been shut-in since the previous disposal well on the lease, the No. 1R, was plugged in April 2004.

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 *Jackson County Tribune*, a newspaper of general circulation in Jackson County, on May 26, 2004.
3. The W. B. Fowler No. 6 was drilled in 1978 and was plugged in 1979 after limited production from the Sandy Creek (Frio 4700 B) Field.
4. The W. B. Fowler No. 1R was a disposal well on the lease which was recently plugged due to mechanical problems.
5. The proposed disposal well is necessary to dispose of up to 1,200 barrels of produced water per day from the W. B. Fowler No. 2R.
6. The oil production from the W. B. Fowler No. 2R cannot be economically produced without on-lease disposal of water.
7. The proposed disposal operations into the W. B. Fowler No. 6 will not endanger any oil, gas or other mineral formation and will not endanger usable quality water.
 - a. The Texas Commission on Environmental Quality recommends protection of usable quality water resources to a depth of 1,800 feet in the area of the subject well.
 - b. The subject well has 553 feet of 8 $\frac{1}{2}$ " casing cemented to surface.
 - c. The well has 4,814 feet of 4 $\frac{1}{2}$ " casing set and cemented to surface.
8. Disposal fluids will be confined to the proposed disposal interval between 3,420 feet and 3,900 feet.
 - a. Disposal will be through tubing set on a packer will be set at approximately 3,305 feet on 2 $\frac{1}{2}$ " tubing.
 - b. There are several hundred feet of shale between 3,400 feet and 1,800 feet.
9. The two wells within a $\frac{1}{4}$ mile radius of the W. B. Fowler No. 6 which do not have plugs between the disposal interval and the base of usable quality water will not provide a conduit for fluid migration into usable quality water at 1,800 feet.
 - a. The H. P. Fowler No. 1 and the W. B. Fowler No. 3 are approximately 1,000 feet from the W. B. Fowler No. 6.

- b. The H. P. Fowler No. 1 was drilled in 1949 and plugged in 1963, with plugs set at total depth of 4,850 feet and at the base of surface casing at 762 feet.
- c. The W. B. Fowler No. 3 was drilled and plugged in 1942, with only a plug set at the base of surface casing at 936 feet.
- d. According to plugging reports, both wellbores have mud-laden fluid below the surface casing plugs, as required by Commission rules at the time of plugging.
- e. The pressure increase as a result of the proposed disposal is not sufficient to overcome the weight of a column of drilling fluid.

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. W. C. Miller Operating Company 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.
- 4. Approval of this application will prevent waste of hydrocarbons that otherwise would remain unrecovered.
- 5. Approval of the application will not harm usable quality water resources and will not present a hazard to other mineral bearing formations.

EXAMINERS' RECOMMENDATION

Based on the above findings and conclusions, the examiners recommend that the application of W. C. Miller Operating Company for authority to dispose of oil and gas waste into its W. B. Fowler Well No. 6 be approved as set out in the attached Final Order.

Respectfully submitted,

Donna K. Chandler
Technical Examiner

Mark J. Helmueller
Hearings Examiner