

**STATE OF NEW MEXICO
ENERGY, MINERALS, AND NATURAL RESOURCES DEPARTMENT
OIL CONSERVATION DIVISION**

**IN THE MATTER OF THE HEARING
CALLED BY THE OIL CONSERVATION
DIVISION FOR THE PURPOSE OF
CONSIDERING:**

**CASE NO. 13695
ORDER NO. R-12616**

**APPLICATION OF CHAPARRAL ENERGY, LLC FOR APPROVAL OF A
SALT WATER DISPOSAL WELL, LEA COUNTY, NEW MEXICO.**

ORDER OF THE DIVISION

BY THE DIVISION:

This case came on for hearing at 8:15 a.m. on June 8, 2006 and on July 6, 2006, at Santa Fe, New Mexico, before Examiners William V. Jones and Richard Ezeanyim.

NOW, on this 30th day of August, 2006, the Division Director, having considered the testimony, the record, and the recommendations of the Examiner,

FINDS THAT:

- (1) Due public notice has been given, and the Division has jurisdiction of this case and its subject matter.
- (2) The applicant, Chaparral Energy, LLC ("Chaparral"), seeks authority to utilize its State K Well No. 1 (API No. 30-025-22049) located 1980 feet from the South line and 1980 feet from the West line, Section 21, Township 11 South, Range 33 East, NMPM, Lea County, New Mexico, to dispose of produced water into the San Andres formation at open-hole depths from 3850 feet to 4469 feet.
- (3) On August 12, 2005, Chaparral submitted an administrative application to the Division asking for approval of this well for injection of salt water. On July 18, 2005 the Division received a letter of protest from the surface lessee, Mr. Weldon L. Dallas of Tatum, New Mexico. On March 6, 2006, the Division received a request from Chaparral to place this application on a hearing docket.
- (4) This case was presented to the Division on June 8 with testimony from a Chaparral engineer. The case was then continued until July 6, 2006, at which time Chaparral presented additional proof of notice and wellbore diagrams within the area of review. The case was taken under advisement on July 6, with the understanding that

Case No. 13695
Order No. R-12616
Page 2 of 6

Chaparral would come under compliance with Division Rule 40 requirements within one month.

(5) The objection letter from Weldon L. Dallas mentioned a concern that this injection well may contaminate ground water. Mr. Dallas did not enter an appearance in this case and was not present at either of the two hearings.

(6) No other party entered an appearance in this case or otherwise opposed this application.

(7) Chaparral presented exhibits and testimony at the June 8, 2006 hearing as follows.

(a) The subject well was drilled in 1967 as a Permo-Penn producer. At that same time the well was approved for injection by the Division, and briefly used for injection down the bradenhead into the same interval as is now proposed.

(b) As preparation for this application, Chaparral has repaired an 8-5/8 inch casing leak at 329 feet and then pressure tested the 8-5/8 inch casing from surface to 3,722 feet. If approved for injection, Chaparral plans to install 5-1/2 inch casing inside the 8-5/8 inch casing and cement it to the surface.

(c) Chaparral intends to initially use the subject well only for disposal of produced water from one other well, which is also located on this lease.

(8) The proposed open-hole injection interval is bounded on the bottom by a retainer and cement and will be bounded on the top by two cemented casing strings. An injection survey done after injection has begun would verify the competency of the bottom plug as well as determine which intervals in the open hole are taking fluid.

(9) Chaparral supplied two fresh water analyses from nearby wells as part of this application. These indicate ground water in this area at this time contains 500 to 650 milligrams per liter of "total dissolved solids". The injection well when equipped as proposed by Chaparral should isolate ground water from any fluids disposed of into this wellbore.

(10) Chaparral has recently met the requirements of Rule 40 and has made application for saltwater disposal pursuant to all requirements within Rule 701B.

(11) The operator should take all steps necessary to ensure that the injected water enters only the proposed injection interval and is not; permitted to escape to other formations or onto the surface.

(12) There are four wells within ½ mile of this proposed injection well without adequate cement to prevent vertical migration of injected fluids. The following remedial cementing work should be done prior to any injection into the subject well.

(a) The State "K" Well No. 2 (API No. 30-025-22478) was drilled in 1968, is now operated by Chaparral, and is an inactive producer. This well must be plugged and abandoned with a procedure approved by the Division's district office and designed to isolate the injection interval from 3850 feet to 4469 feet.

(b) The State "K" Well No. 3 (API No. 30-025-37061) was drilled in 2005 and is operated by Chaparral. This well must have cement squeezed behind pipe at approximately 4469 feet to prevent movement of injected fluid below the intended injection interval.

(c) The Bell "B" Well No. 1 (API No. 30-025-21954) was drilled in 1967 and has been plugged and abandoned. Unless a stage cement diverter tool was used, the cement top on the 4-1/2 inch casing is below the bottom of the intended injection interval. Unless additional records confirming the presence of this stage tool are located, this well must be re-entered and the 4-1/2 inch casing perforated and squeezed at approximately 4469 feet to prevent movement of injected fluid below the intended injection interval.

(d) The Bell "A" Well No. 1 (API No. 30-025-21783) was drilled in 1966, is operated by Phoenix Hydrocarbons, and produces from the North Bagley-Permo Perm Pool (3820). In order to protect fresh water and prevent movement of injected fluid out of zone, this well must have the 4-1/2 inch casing perforated below 4469 feet and cement squeezed into the annulus to a height above the bottom of the 8-5/8 inch casing at 3750 feet.

(13) This application to inject saltwater into the San Andres formation should be approved with the following stipulations pertaining to the proposed injection well.

(a) An additional casing should be installed from surface to 3850 feet and cemented to the surface.

(b) Plastic-lined tubing should be installed in this well with a plastic lined packer located within 100 feet of the top of the injection interval. The casing-tubing annulus should be loaded with an inert fluid and equipped with a pressure gauge or an approved leak detection device in order to determine leakage in the casing, tubing, or packer. The casing-tubing annulus should be pressure tested from the surface to the packer setting depth to assure mechanical integrity.

(c) Surface injection pressure should be constantly monitored and restricted to a maximum gradient of 0.2 psi per foot above the top permitted

depth. This maximum pressure should be increased only upon proof that additional pressure will not result in fluid movement out of zone.

(d) Injection should be confined to the San Andres formation and within open-hole depths of 3850 feet to 4469 feet. An injection profile log should be run within six months of commencing injection in order to determine which intervals in the San Andres are taking fluid and to verify all injection fluid is staying in zone.

IT IS THEREFORE ORDERED THAT:

(1) The applicant, Chaparral Energy, LLC ("Chaparral"), is **hereby permitted** to utilize its State K Well No. 1 (API No. 30-025-22049) located 1980 feet from the South line and 1980 feet from the West line, Section 21, Township 11 South, Range 33 East, NMPM, Lea County, New Mexico, to dispose of produced water into the San Andres formation through an open-hole interval from 3850 feet to 4469 feet.

(2) The following remedial operations are required on wells within the area of review prior to any injection in the State K Well No. 1.

(a) The State "K" Well No. 2 (API No. 30-025-22478) shall be plugged and abandoned with a procedure approved by the Division's district office and designed to isolate the injection interval from 3850 feet to 4469 feet.

(b) The State "K" Well No. 3 (API No. 30-025-37061) shall have cement squeezed behind pipe at approximately 4469 feet to prevent movement of injected fluid below the intended injection interval.

(c) The Bell "B" Well No. 1 (API No. 30-025-21954) shall be re-entered and the 4-1/2 inch casing perforated and squeezed at approximately 4469 feet to prevent movement of injected fluid below the intended injection interval. The well shall then be re-plugged to the surface and the site abandoned.

(d) The Bell "A" Well No. 1 (API No. 30-025-21783) shall have the 4-1/2 inch casing perforated below 4469 feet and cement squeezed into the annulus to a height above the bottom of the 8-5/8 inch casing at 3750 feet.

(3) The following operations, equipping and testing shall be done on the approved injection well prior to injection.

(a) An additional casing shall be installed from surface to approximately 3850 feet and cemented to the surface.

(b) Plastic-lined tubing shall be installed in this well with a plastic lined packer located within 100 feet of the top of the injection interval. The

Case No. 13695
Order No. R-12616
Page 5 of 6

casing-tubing annulus shall be loaded with an inert fluid and equipped with a pressure gauge or an approved leak detection device in order to determine leakage in the casing, tubing, or packer.

(c) The casing-tubing annulus shall be pressure tested from the surface to the packer setting depth to assure mechanical integrity.

(4) The operator shall provide written verification to the Engineering Bureau in the Santa Fe office of the Division of completion of the foregoing requirements in ordering paragraphs (2) and (3). **The operator shall not commence injection until the Division issues written confirmation that these pre-injection requirements have been completed.**

IT IS FURTHER ORDERED THAT:

(5) The operator shall take all steps necessary to ensure that the injected water enters only the proposed injection interval and is not permitted to escape to other formations or onto the surface.

(6) The wellhead injection pressure on the well shall be limited to **no more than 770 psi**. In addition, the injection well or system shall be equipped with a pressure limiting device in workable condition which shall, at all times, limit surface injection pressure to the maximum allowable pressure for this well. The Director of the Division may authorize an increase in injection pressure upon a proper showing by the operator of said well that such higher pressure will not result in migration of the injected fluid from the injection formation. Such proper showing shall consist of a valid step-rate test run in accordance with and acceptable to this office.

(7) The operator shall provide written notice of the date of commencement of injection to the district office of the Division. The operator shall report the estimated initial static reservoir pressure of the injection interval on a sundry report. The operator shall submit monthly reports of the disposal operations on Division Form C-115, in accordance with Rule Nos. 706 and 1120 of the Division Rules and Regulations.

(8) The operator shall immediately notify the district office of the Division of the failure of the tubing, casing, or packer in said well and shall take such steps as may be timely and necessary to correct such failure or leakage.

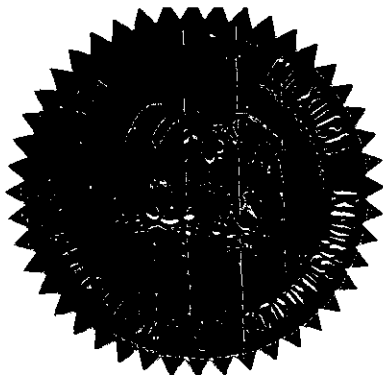
(9) Injection shall be confined to the San Andres formation through specific injection intervals as detailed above. A temperature and radioactive tracer injection profile log shall be run within 6 months of commencing injection in order to determine which intervals in the San Andres are taking fluid, and to see if injection fluid is moving vertically, near the **wellbore**, out of the permitted injection interval. The log of the survey results shall be supplied to the Engineering Bureau of the Division in Santa Fe.

Case No. 13695
Order No. R-12616
Page 6 of 6

(10) In accordance with Rule No 705.C, the injection authority granted herein for each well shall terminate one year after the effective date of this order if the operator has not commenced injection operations into that well, and will terminate *ipso facto*, one year after injection operations into that well have ceased.

(11) Jurisdiction is retained by the Division for the entry of such further orders as may be necessary for the prevention of waste and/or protection of correlative rights or upon failure of the operator to conduct operations (1) to protect fresh water or (2) consistent with the requirements in this order, whereupon the Division may, after notice and hearing, terminate the injection authority granted herein.

DONE at Santa Fe, New Mexico, on the day and year hereinabove designated.



SEAL

STATE OF NEW MEXICO
OIL CONSERVATION DIVISION


per MARK E. FESMIRE, P.E.
DIRECTOR