

**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 THE:**

**APPLICATION OF ENSTOR GRAMA RIDGE STORAGE AND
TRANSPORTATION, L. L. C. FOR THE ESTABLISHMENT OF PRESSURE
LIMITATIONS FOR INJECTION WELLS IN THE GRAMA RIDGE GAS
STORAGE PROJECT AREA, LEA COUNTY, NEW MEXICO.**

**CASE NO. 14518
ORDER NO. R-11611-B**

ORDER OF THE DIVISION

BY THE DIVISION:

This matter came on for hearing at 8:15 a.m. on July 22, 2010, at Santa Fe, New Mexico, before Examiner William V. Jones.

NOW, on this 31st day of January, 2011, 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 of the subject matter.

(2) The applicant, Enstor Grama Ridge Storage and Transportation, L.L.C. ("Enstor"), seeks an order (i) re-approving the injection and storage and withdrawal of natural gas in certain wells in the Grama Ridge Gas Storage Project (Storage Project), (ii) the establishment of a surface injection pressure limit of 5,000 pounds per square inch, gauge (psig) for all injection wells in the Storage Project, and (iii) the authorization of an administrative procedure for the addition of injection wells to the Storage Project without notice and hearing.

(3) Enstor presented the testimony of landman Daryl Gee as follows:

A. The Grama Ridge Gas Storage Project Area encompasses the following 6 sections of land located in Lea County, New Mexico:

Township 21 South, Range 34 East, NMPM

Section 33: All

Section 34: All

Township 22 South, Range 34 East, NMPM

Section 3: All

Section 4: All

Section 9: All

Section 10 All

- B. Sections 33, 34, Township 21 South, Range 34 East, NMPM and Section 3, Township 22 South, Range 34 East, NMPM are state and fee lands. These lands are operated as part of this Storage Project pursuant to the Unit Agreement approved by Division Order No. R-4473, dated January 29, 1973.
- C. By Order No. R-4491, dated March 16, 1973, the Division approved injection of purchased gas into the State GRA Well No. 1 located in Section 3, Township 22 South, Range 34 East, NMPM and into the GRA Well No. 2 located in Section 34, Township 21 South, Range 34 East, NMPM.
- D. In 1976, by amendment to the Unit Agreement, Section 33, Township 21 South, Range 34 East, NMPM was added to the Grama Ridge Storage Project on which was located an additional injection well: the State GRA Well No. 3. All injection wells on State and Fee lands were committed to the Storage Project on or before September 1, 1976.
- E. In 2006, Enstor entered into an "Agreement for Natural Gas Storage in the Grama Ridge-Morrow Formation," Right-of-Way Easement No. RW-30222, with the Commissioner of Public Lands in order to reaffirm and restate the rights of Enstor to conduct gas storage operations on the State lands committed to the Grama Ridge Storage Project Area.
- F. Sections 4 and 10, Township 22 South, Range 34 East, NMPM are federal lands. One injection well, the GRU Well No. 4, is located in Section 4. These lands and well have been operated as part of this Storage Project pursuant to an "Agreement for Subsurface Storage of Gas, Morrow Formation, Grama Ridge Area, Lea County, New Mexico" with the United States Department of the Interior, dated November 24, 1975, as amended ("Storage Agreement"). This injection well in Section 4 was committed to the Storage Project on or before April 15, 1981.
- G. Enstor acquired its interest in the Grama Ridge Storage Area and became the operator of this Storage Project in 2005.

- H. Since becoming operator of the Unit, Enstor, by agreement with the Commissioner of Public Lands, amended the provisions of the Unit Agreement and Enstor entered an Amended and Restated Federal Storage Agreement for Subsurface Storage of Gas, Agreement No. 14-08-0001-14227 (NMNM70953X), Morrow Formation, Grama Ridge Area, Lea County, New Mexico with the United States Department of Interior, Bureau of Land Management.
- I. Pursuant to the provisions of the Storage Agreement, Enstor also added Section 9, Township 22 South, Range 34 East, NMPM to the Grama Ridge Storage Area in 2009 and by Order No. R-11611-A, dated September 29, 2009, the Division approved injection in the Grama Ridge Federal 8817-JVP Well No. 1 (API No. 30-025-30686) located 660 feet from the North line and 1980 feet from the East line (Unit B) of said Section. The Division also approved a surface injection pressure for this well of 5000 psig.
- J. Although the injection authorizations and approved pressure limitations for the Grama Ridge Storage Area were obtained prior to the adoption of the current Division rules that govern this activity, the Division has entered numerous orders addressing the Grama Ridge Storage Area, including the injection wells therein, and the volumes injected and produced and the pressure utilized in the Grama Ridge Storage Area have been timely reported to the Division.
- K. The current status of the Storage Project is as follows:

Sections 33, 34, Township 21 South, Range 34 East, NMPM and Section 3, Township 22 South, Range 34 East, NMPM are state and fee lands. These lands are operated as part of this Storage Project pursuant to the Unit Agreement approved by Division Order No. R-4473, dated January 29, 1973, as amended, and the "Agreement for Natural Gas Storage in the Grama Ridge-Morrow Formation," Right-of-Way Easement No. RW-30222, entered in 2006 with the Commissioner of Public Lands.

Sections 4, 9 and 10, Township 22 South, Range 34 East, NMPM are federal lands on which two injection wells are located. These lands and wells are operated as part of the Storage Project pursuant to Storage Agreement with the Bureau of Land Management, dated November 24, 1975, as amended.

- (4) The following five wells in the Storage Project have previously been approved by the Division for injection, storage and withdrawal of natural gas:

- A. Grama Ridge Morrow Unit Well No. 001 (API No. 30-025- 21336) located 1980 feet from the North line and 660 feet from the West line (Unit E) of Section 33, Township 22 South, Range 34 East, NMPM;
- B. Grama Ridge Morrow Unit Well No. 002 (API No. 30-025-21717) located 1980 feet from the South line and 660 feet from the West line (Unit L) of Section 34, Township 21 South, Range 34 East, NMPM;
- C. Grama Ridge Morrow Unit Well No. 003 (API No. 30-025-21746) located 1980 feet from the South and East lines (Unit J) of Section 33, Township 21 South, Range 34 East, NMPM (Enstor plans to disconnect this well and use it as an observation well);
- D. Grama Ridge Morrow Unit Well No. 004 (API No. 30-025-21334) located 2310 feet from the North and West lines (Unit F) of Section 4, Township 22 South, Range 34 East, NMPM; and
- E. Grama Ridge Federal 8817-JVP Well No. 1 (API No. 30-025-30686) located 660 feet from the North line and 1980 feet from the East line (Unit B) of said Section 9, Township 22 South, Range 34 East, NMPM.

(5) The following are the current perforations and packer setting depths for each well within this project, according to Division records and the submitted C-108's with this Case:

Well No. 001 (API No. 30-025-21336) 12826 to 13025 feet with injection packer at 12760 feet.
Well No. 002 (API No. 30-025-21717) 12921 to 13074 feet with injection packer at 12826 feet.
Well No. 003 (API No. 30-025-21746) 13029 to 13252 feet with injection packer at 12839 feet.
Well No. 004 (API No. 30-025-21334) 12886 to 13111 feet with injection packer at 12795 feet.
8817-JVP Well No. 001 (API No. 30-025-30686) 12828 to 13057 feet with injection packer at 12765 feet.

(6) As part of its efforts to bring the Storage Project under the current regulatory requirements of all responsible government agencies, Enstor discovered the injection authorization for the Grama Ridge Morrow Unit Wells Nos. 001, 002, 003 and 004 had been obtained prior to the current Division rules governing the injection of fluids into reservoirs. Accordingly, Enstor agreed to file the Form C-108 applications in this case to seek Oil Conservation Division approval of the other current injection wells in the Storage Project and to also seek approval of a surface injection pressure for all wells in the Storage Project of 5000 psig.

(7) Enstor presented the testimony of geologist Vicki Devine that established:

- A. the Morrow formation under the Storage Project is a typical Morrow sand that demonstrates wide variations in porosity and permeability;
- B. the Morrow Sandstones are 10 to 30 feet thick, discontinuous and less than a mile wide;
- C. the gas storage interval includes the Morrow "A" through "D" sands although only the "A" through "C" sands are currently perforated; and
- D. the reservoir demonstrates geological containment and the Morrow formation under the Storage project is therefore a geologically suitable structure for the storage of natural gas.

(8) Enstor presented the testimony of engineer John Wells that established:

- A. Enstor seeks authorization to inject natural gas into the Morrow formation in its Storage Project at surface pressures up to 5000 psig.
- B. The original Morrow formation bottomhole reservoir pressure in the Grama Ridge Storage Area was 7,557 psi.
- C. Operators of this Storage Project have successfully injected natural gas at pressures as high as those requested in this hearing for over 30 years.
- D. Injection at surface pressures not exceeding 5000 psig can occur in the Morrow formation, Grama Ridge Gas Storage Project, without exceeding the reservoir parting pressure.

(9) Enstor's application for injection into the Morrow formation in its Grama Ridge Morrow Unit Wells Nos. 001, 002, 003 and 004 should be granted.

(10) Injection of natural gas into the Storage Project at a maximum surface injection pressure of 5000 psig will not damage the Morrow reservoir or cause injected gas to escape from the injection interval and should be approved.

(11) The proposed Gas Storage Project should be approved and should be governed by Division Rule 19.15.26.8.A et seq., which among other matters, authorize the administrative approval of additional injection wells within the Storage Project without hearing.

IT IS THEREFORE ORDERED THAT:

(1) The application of Enstor Grama Ridge Storage and Transportation, LLC for (i) re-approving the injection, storage, and withdrawal of natural gas in certain wells in the Grama Ridge Gas Storage Project (Storage Project), (ii) the establishment of a surface injection pressure limit of 5,000 pounds per square inch, gauge (psig) for all injection wells in the Storage Project, and (iii) the authorization of an administrative procedure for the addition of injection wells to the Storage Project without notice and hearing, is hereby granted.

(2) The Grama Ridge Gas Storage Project Area being the Morrow formation within the following lands in Lea County, New Mexico:

Township 21 South, Range 34 East, NMPM

Section 33: All

Section 34: All

Township 22 South, Range 34 East, NMPM

Section 3: All

Section 4: All

Section 9: All

Section 10: All

The following wells are hereby approved as injection and withdrawal wells within this project:

- a. Grama Ridge Morrow Unit Well No. 001 (API No. 30-025-21336) 1980 feet from the North line and 660 feet from the West line (Unit E) of Section 33.
- b. Grama Ridge Morrow Unit Well No. 002 (API No. 30-025-21717) 1980 feet from the South line and 660 feet from the West line (Unit L) of Section 34.
- c. Grama Ridge Morrow Unit Well No. 003 (API No. 30-025-21746) 1980 feet from the South and East lines (Unit J) of Section 33.
- d. Grama Ridge Morrow Unit Well No. 004 (API No. 30-025-21334) 2310 feet from the North and West lines (Unit F) of Section 4.

In addition, the following well, approved under Division Order No R-13174, remains approved within this project as an injection and withdrawal well:

Grama Ridge Federal 8817-JVP Well No. 1 (API No. 30-025-30686) 660 feet from the North line and 1980 feet from the East line (Unit B) of said Section 9.

(3) The operator shall take all steps necessary to ensure that the injected gas enters only the Morrow formation storage intervals and is not permitted to escape to other formations or onto the surface from injection, production, or plugged and abandoned wells.

(4) Injection shall be accomplished through carbon steel tubing installed in a packer set within 100 feet of the uppermost injection perforation in the injection wells. The Division director is allowed to administratively approve alternate packer setting depths, exceeding these tolerances, for good cause shown. The Grama Ridge Morrow Unit Well No. 003 is permitted a packer setting depth of approximately 12,839 feet.

(5) The casing-tubing annulus shall be filled with an inert fluid and a gauge or approved leak-detection device shall be attached to the annulus in order to determine leakage in the casing, tubing, or packer.

(6) The injection wells shall be equipped with a pressure control device or acceptable substitute that will limit the surface injection pressure to no more than **5000** pounds per square inch.

(7) Applications to exceed this 5000 psi maximum limit on any injection and storage well within this project shall be processed at a public hearing after proper notice is provided to affected parties including those parties controlling minerals within the Atoka or Morrow formations within 1 mile.

(8) The operator shall give advance notice to the supervisor of the Division's Hobbs District Office of the date and time the mechanical integrity pressure tests will be conducted on the injection wells, so these operations may be witnessed.

(9) The operator shall immediately notify the supervisor of the Division's Hobbs District Office of the failure of the tubing, casing or packer in any injection well, or the leakage of water, oil or gas from or around any producing or plugged and abandoned wells within the project area, and shall take all steps as may be timely and necessary to correct such failure or leakage.

(10) The Gas Storage Project shall be governed by Division Rule 19.15.26.8.C NMAC et seq., notwithstanding limitations within this or other existing orders.

(11) The Division Director may administratively authorize additional injection wells within the Storage Project as provided in 19.15.26.8G(5) NMAC.

(12) Without limitation on the duties of the operator as provided in Division Rules 30 and 29, or otherwise, the operator shall immediately notify the Division's district office of any failure of the tubing, casing or packer in the well, or of any leakage or release of water, oil or gas from or around any produced or plugged and abandoned well in the area, and shall take such measures as may be timely and necessary to correct such failure or leakage.

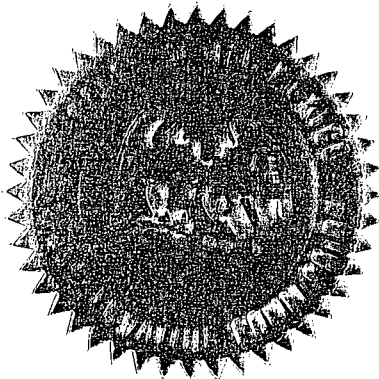
(13) The injection authority granted under this order is not transferable except upon division approval. The division may require the operator to demonstrate mechanical integrity of any injection well that will be transferred prior to approving transfer of authority to inject.

(14) The division may revoke this injection permit after notice and hearing if the operator is in violation of 19.15.5.9 NMAC.

(15) Compliance with this order does not relieve the operator of the obligation to comply with other applicable federal, state or local laws or rules, or to exercise due care for the protection of fresh water, public health and safety and the environment.

(16) 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 or protectable waters or (2) consistent with the requirements in this order, whereupon the Division may, after notice and hearing (or without prior notice and hearing in case of emergency), 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

A handwritten signature in dark ink, appearing to read "Daniel Sanchez", written in a cursive style.

DANIEL SANCHEZ
Acting Director