

**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. 13865  
ORDER NO. R-12809**

**APPLICATION OF VERSADO GAS PROCESSORS, LLC, OPERATED BY  
TARGA RESOURCES, LLC, FOR APPROVAL OF AN ACID GAS INJECTION  
WELL, LEA COUNTY, NEW MEXICO**

**ORDER OF THE DIVISION**

**BY THE DIVISION:**

This case came before the Oil Conservation Division for hearing at 8:15 a.m. on February 1, 2007 and again on July 26, 2007, at Santa Fe, New Mexico, before Examiner William V. Jones.

NOW, on this 14<sup>th</sup> day of September, 2007, 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, Versado Gas Processors, LLC as operated by Targa Resources, LLC (hereinafter collectively referred to as "Targa"), seeks authority to inject waste water and acid gas (hydrogen sulfide and carbon dioxide) into the San Andres formation, at a depth interval approximately 4500 feet to 5000 feet below the surface, through its proposed Versado AGI Well No. 1 (API No. 30-045-NA) which it proposes to drill at a location 2250 feet from the South line and 1200 feet from the West line (Unit L) of Section 27, Township 22 South, Range 37 East, NMPM, Lea County, New Mexico. The purpose of the injection is to dispose of natural gas processing wastes from Versado's South Eunice Gas Plant. This well will replace the Eunice Gas Plant SWD Well No. 1 (API No. 30-025-21497) which is located 2580 feet from the South line and 1200 feet from the West line of said Section 27.

(3) Targa filed its application (Division Form C-108) on December 20, 2006, and at the direction of the Director of the Division, the application was set for hearing before a Division Examiner pursuant to the provisions of Division Rule 701.D.

(4) This case was first heard on February 1 2007. At that time, no operator or other party appeared in the case in opposition to the application.

(5) Targa produced one witness at this hearing, Alberto Gutierrez, a hydrogeologist from Geolex, Inc. who testified as follows:

(a) Targa had engaged Geolex Inc. to locate a suitable subsurface reservoir into which it could inject the waste water and acid gas from its Eunice Gas Plants. Mr. Gutierrez reviewed the study conducted on behalf of Targa to find a suitable location for acid gas injection and concluded that the proposed injection site met the requisite reservoir criteria. Based on his stratigraphic studies of the formations in this area, Mr. Gutierrez concluded that the San Andres formation has excellent porosity development to the south of the Plant and other reservoir development characteristics that will enable Targa to successfully inject waste water and acid gas into this reservoir.

(b) Targa intends to abandon the existing open-hole San Andres UIC Class II injection well due to the age of the well and possible mechanical problems and drill a new well specifically to inject non-hazardous wastewater as well as both hydrogen sulfide and carbon dioxide from Targa's plants through perforations from approximately 4500 to 5000 feet into the San Andres formation. These waste streams would all be continuously mixed and kept under pressure so as to inject in a "liquid" phase.

(c) Targa owns the surface and minerals at the proposed injection site in fee, and Targa has obtained all necessary easements and other rights for its surface facilities.

(d) Targa has furnished notice to all surface owners and all "affected parties" in the San Andres formation within a one-mile radius of the wellbore, and from the surface to the top of the San Andres and below the base of the San Andres to all "affected parties" within one-half mile of the proposed location as required by the Division.

(e) Targa will prepare a hydrogen sulfide contingency plan that complies with OCD Rule 118 prior to activating the system.

(6) Subsequent to the February 1, 2007 hearing, the case was re-opened for more testimony. Prior to the date of the new hearing, the Division entered appearances from the Environmental Bureau and from the Hobbs District Office. No other parties appeared or otherwise opposed this application.

(7) At the Division hearing on July 26, 2007, the Applicant produced one witness, Cal Wrangham, a senior environmental safety and health specialist employed by Targa Midstream Services, LP. Mr. Wrangham testified as follows:

(a) The proposed well is located in Versado's South Eunice Compressor Station. The land is deeded and owned by Versado Gas Processors, LLC, and Targa is the lessee of oil and gas rights under this tract.

(b) Gauge, density, and sonar surveys have been run on the closest of four nearby Liquefied Petroleum Gas ("LPG") storage wells which were drilled to store "product" in the Salado ("salt") formation at depths from approximately 1200 to 2400 feet. The Skelly Gasoline Plant Well No. 4 (API No. 30-025-23853) was drilled to a depth of 2075 feet, according to Division records, and is located 2471 feet from the South line and 1658 feet from the West line of Section 27, or 509 feet from the proposed acid gas injection well. The surveys on this well show the well has no remaining LPG "product" in the well and the well's enlarged radius (begun just below the 7-inch casing shoe at 1857 feet) extends a maximum of 60 feet in the direction of the proposed acid gas injection well.

(c) None of the four LPG wells identified as being within ½ mile of this proposed injection well is being used anymore. All of these wells are planned to be plugged, but the nearest well would be plugged first.

(d) The proposed operator for the new injection well will be Targa Midstream Services LP, who is also the operator of the existing injection well and of the nearby LPG wells. The bond with the Division is under the name of Targa Midstream Services LP.

(e) Targa is willing to set surface casing as deep as is needed to protect fresh water.

(f) The wellhead will be equipped with a back pressure valve designed to maintain pressure on the waste stream in order to keep the wastes in a liquid phase. The maximum surface injection pressure will be 750 psi or as permitted by the Division.

(g) Targa has never injected acid gas into the Eunice Gas Plant SWD Well No. 1.

(h) Targa operates an acid gas injection well in Crane County, Texas, which also injects water, hydrogen sulfide, and carbon dioxide.

(i) The source of the H<sub>2</sub>S to be injected into this proposed well is approximately 5 miles away. The pipeline will be permitted separately from this injection permit.

(j) The proposed acid gas injection well will enable Targa to shut down the sulfur recovery unit at its main Eunice gas processing plant. The sulfur recovery unit is an air emission source and is costly to maintain.

(k) The proposed acid gas injection well will enable Targa to discontinue releasing into the atmosphere approximately 1226 tons per year of sulfur dioxide and 200 tons per year of carbon dioxide. Instead these gases will be injected back underground where they originated.

(8) The Environmental Bureau (the "Bureau") of the Division and the Hobbs District office (the "District") each presented one witness at this hearing who testified as follows:

(a) The Bureau is charged with regulating LPG wells in New Mexico and was at first concerned about deep acid gas injection and its effect on these LPG wells, or its effect on the fresh water. The Bureau determined that the J.V. Baker Wells No. 1, 2, and 3 were drilled in 1952 and the Skelly Gasoline Plant Well No. 4 in 1971.

(b) The Bureau asked Targa prior to this hearing for the sonar survey on the Skelly Gasoline Plant Well No. 4 in lieu of a simple calculation of borehole volume. The Bureau wants Targa to test the mechanical integrity ("MIT" test) and then plug these wells prior to injecting acid gas into the proposed injection well.

(c) The Bureau will be working with Targa on the pipeline permitting and H2S surface safety issues.

(d) The Bureau does not otherwise oppose the granting of a permit to inject acid gas into the proposed injection well.

(e) The supervisor of the Division's Hobbs district office also supports the granting of this injection permit as long as the well is drilled, cased, cemented, and equipped in a manner which will isolate injection into the intended injection interval, prevent corrosion from the salt interval, and protect fresh water, public health and safety.

(f) After investigation into reported depths of "protectable" waters encountered in adjacent lands during drilling operations, the supervisor of the Division's Hobbs district has determined that Targa should set surface pipe into the top of the Rustler anhydrite and cement this pipe completely to surface. Setting pipe to this depth will ensure the protection of all possible Ogallala and Santa Rosa water intervals.

(g) The District will require the cement job on the injection casing to be designed with the intention to circulate to surface, and injection tubing to be

lined with a material designed to withstand both types of acid which will be generated from water combining with carbon dioxide and with hydrogen sulfide.

(h) The District recommends the LPG wells be plugged prior to drilling the proposed well in order to ensure the drilling operations do not cause "fingering" into the LPG wells and migration upward of pressurized waters.

(i) The District recommends a cement bond log be run after cementing the injection casing even if cement has visually circulated to surface.

(j) The District recommends an MIT test be run more often than the normal five year interval.

(9) Division records show the Eunice Gas Plant SWD Well No. 1 (API No. 30-025-21497) was drilled for the purpose of injection and was permitted (prior to the well completion) on September 21, 1961, for injection into an open-hole interval within the upper San Andres formation from approximately 3935 to 4000 feet (SWD-29). The well was actually completed as an open-hole injection well from 4010 to 4550 feet. Injection records indicate the well has very high capability of taking water, and the operator was still reporting substantial injection volumes as of June of 2007. In 1983, a pump-in injection test reached a rate of 10 barrels per minute at a bottomhole pressure of 3000 psi without showing any apparent evidence of fracturing.

(10) The Eunice Gas Plant SWD Well No. 1 should be plugged and abandoned under supervision of the Hobbs district office prior to any injection into the proposed injection well.

(11) Prior to drilling the proposed new injection well, the Skelly Gasoline Plant Well No. 4 LPG storage well should be MIT tested under the direction of the Division's Environmental Bureau and then plugged and abandoned with a procedure acceptable to the District office and the Environmental Bureau.

(12) With the exception of the Eunice Gas Plant SWD Well No. 1, there are no wells within ½ mile of the proposed well which penetrate the top of the proposed injection interval.

(13) There are approximately nine wells producing from the Penrose sand within ½ mile of the proposed injection well. The most common total depths of these Penrose wells are 3700 feet deep with the deepest at 4075 feet.

(14) The proposed well should be cased and cemented with a program in accordance with the requirements of the Hobbs district office and allowing for possible cement thief zones in the San Andres injection interval, and protection of the Penrose sands, the Salado salt interval, and all water sands down to the Rustler anhydrite.

(15) Targa should conduct any reservoir tests, such as falloff or step-rate tests, on the newly drilled well prior to injecting acid gas into the well for the first time. The bottomhole injection pressure, allowing for density of injected fluids, should be restricted to a pressure which will not cause formation fracturing. Any future application to raise the permitted injection pressure into this well should include notice provided to surrounding operators in the overlying Penrose sands.

(16) The proposed well should be equipped with injection tubing coated to prevent corrosion from a mixture of hydrogen sulfide, wastewater, and carbon dioxide. The casing-tubing annulus should be filled with diesel or corrosion inhibited fluid – as directed by the District. The well should be equipped with a back pressure choke or valve designed to maintain pressure on the injection stream so the injection mixture stays primarily in a liquid phase. The well should have gauges installed to record pressures both before and after this tubing choke and on the annulus. A record should be maintained by the operator of these wellhead pressures and of injection rates and volumes of all components entering the well.

(17) Due to the probable complexity of this order and the possible need for small future changes, the Division should include a provision in this order allowing the operator to apply administratively, after proper notice, for amendments – except for amendments changing the depth of the injection interval or the injection formation.

(18) The Division concludes that Targa's proposed injection well should be approved, and the proposed injection operation can be conducted in a safe and responsible manner, without causing waste, impairing correlative rights or endangering fresh water, public health or the environment.

(19) The proposed operation is an environmentally superior means of disposing of wastes generated at the South Eunice Gas Plant because it will provide for the sequestration of the greenhouse gases: hydrogen sulfide and carbon dioxide.

**IT IS THEREFORE ORDERED THAT:**

(1) Targa Midstream Services LP ("Targa" or "operator") is hereby authorized to inject natural gas processing wastes such as waste water, hydrogen sulfide, and carbon dioxide for disposal purposes into its proposed Versado AGI Well No. 1 which will be drilled 2250 feet from the South line and 1200 feet from the West line (Unit L) of Section 27, Township 22 South, Range 37 East, NMPM, in Lea County, New Mexico. Injection is permitted into the San Andres formation through perforations from approximately 4500 feet to 5000 feet below the surface, through tubing set in a packer located within 100 feet of the top injection perforation.

(2) Prior to drilling the Versado AGI Well No. 1 for purposes of injection, the Skelly Gasoline Plant Well No. 4 LPG storage well shall be MIT tested under the direction of the Environmental Bureau and then plugged and abandoned with a procedure acceptable to the Hobbs district office and the Environmental Bureau.

(3) Targa shall obtain a permit to drill the Versado AGI Well No. 1 from the District. During drilling operations of the Versado AGI Well No. 1, Targa shall monitor the well for hydrocarbon shows, lost circulation zones, and water flows, and shall report any of these events to the District on sundry forms.

(4) The well shall be drilled, cased, and cemented using information gathered during drilling and according to the requirements of the District. The design shall effectively isolate the injection fluid into the intended injection formation, isolate the Penrose sand oil producing interval and the Salado salt with casing and cement, and cover all water sands to the top of the Rustler anhydrite with two casing strings and at least one cement sheath. A cement bond log shall be run from total depth to the surface on any casing which did not circulate cement and also after cementing the final casing, even if cement did visually circulate.

(5) The tubing and packer shall be coated with material rated to protect against corrosion due to a mixture of water, carbon dioxide, and hydrogen sulfide or as required by the District. The tubing shall be equipped with a back pressure choke in order to maintain pressure on the injection mixture and keep the mixture in a liquid phase. The well shall have gauges installed to record and control pressures both before and after this tubing choke.

(6) The casing-tubing annulus shall be loaded with an inert, corrosion resistant fluid such as diesel or inhibited water [or as specified by the District] and equipped with a gauge and a leak detection device capable of determining any leakage in the casing, tubing, or packer.

(7) Mechanical integrity testing is required after installation of the injection tubing and prior to commencing injection operations, and at least once every two years thereafter.

(8) Gandy shall notify the District of the time of the setting of the tubing and packer and of any mechanical integrity test ("MIT") so such operations can be witnessed or inspected.

(9) Prior to any injection into the approved injection well, the Eunice Gas Plant SWD Well No. 1 (API No. 30-025-21497) shall be plugged and abandoned under supervision of the District and a final sundry report filed with the Division showing evidence of plugging.

(10) The surface injection pressure downstream of the installed choke shall be regulated such that bottomhole pressure at 4500 feet in the injection well does not exceed 2850 psi. This bottomhole pressure equates to maintaining a maximum of 900 psi on the surface of the well if injecting pure water – or a higher allowable surface pressure if injecting lighter weight fluid.

(11) The Director may administratively authorize an increase in the injection pressure if the operator shows that a higher pressure will not result in formation fracturing or migration of injected fluids from the permitted injection formation. As justification, the operator must submit results of an injection test such as a Step-Rate-Test to the Division and must provide notice thereof to affected persons, including offset operators in the overlying Penrose sands.

(12) A daily record shall be maintained by the operator of these three wellhead pressures and of injection rates and volumes of all components entering the well. The operator shall report these readings annually to the Engineering Bureau in the Division's Santa Fe Office and to the District. Each such report shall include the well name, location, API Number and the number of this order.

(13) The operator of the well (Targa or any successor operator) shall take all steps necessary to insure that injected fluids enter the proposed injection interval and do not escape to other formations or onto the surface.

(14) Without limitation on the duties of the operator as provided in Division Rules 19 and 116, or otherwise; the operator shall immediately notify the District of any failure of the tubing, casing or packer in the well, or of any leakage or release of water, oil or gas from 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.

(15) Prior to commencing injection of acid gas, the operator shall prepare and secure approval by the Division's Environmental Bureau of a hydrogen sulfide contingency plan that complies with Division Rule 118.

(16) The operator may commence injection of produced water prior to injection of acid gas and may inject either or both fluids pursuant to the limitations of this order, depending on operational considerations. The operator shall submit monthly reports of injection volumes of waste water and acid gas on Form C-115, in accordance with Division Rules 706 and 1115.

(17) The injection authority herein granted shall terminate one year after the effective date of this order if the operator has not commenced injection operations pursuant hereto; provided however, the Division Director, upon written request of the operator received by the Division prior to the end of one year, may extend this time for good cause shown.

(18) 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.

(19) At the discretion of the Division Director and after proper notice is provided, any proposed amendments or changes to this order may be granted administratively; provided however, proposed amendments to raise the depth of the

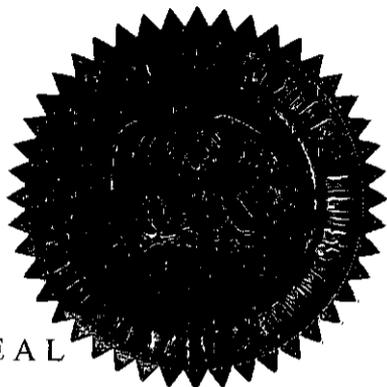
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injection interval or change the target injection formation may be granted only after notice and hearing.

(20) Jurisdiction is retained by the Division for the entry of 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 (i) to protect fresh water or (ii) 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

  
for MARK E. FESMIRE, P.E.  
Director