



APPLICATION TO THE NMOCC FOR AN AMENDMENT TO ORDERS R-13052, R-13052-A, SWD-1654 AND SWD-1671 TO INCREASE THE APPROVED AGGREGATE DAILY INJECTION RATE FOR TARGA MONUMENT AGI SYSTEM FROM 2.5 TO 5.0 MMSCFD



July 13, 2017 - Case No. 15740

Prepared For:

New Mexico Oil Conservation Commission 1220 S. St. Francis Drive, Santa Fe, NM 87505

Submitted By:

Targa Midstream Services LLC 1000 Louisiana, Suite 4300 Houston, Texas 77022-5032

Figure 1: Location of Targa Monument Natural Gas Plant

Summary of Targa Midstream Services LLC Operations in SE NM

- Targa is a long-term and significant employer in SENM
- Several gas plants and related assets in SENM including the Monument Plant
- Targa is a full-service gas processing company with a significant and expanding presence in the Permian Basin of SENM and West Texas
- The Monument Plant has had an AGI Facility since 2011 and currently has a processing capacity of 85MMSCFD
- Changes in inlet gas composition have occurred as production areas change and develop in areas served by the plant

Factors Resulting in Need to Increase TAG Injection Rate

- Increased Production with higher CO₂ concentration from new tie-ins to the gathering system have resulted in significant increases in AGI production
- The increase in CO₂ concentration has resulted in an overall increase in TAG; however, the concentration of H₂S has been significantly reduced and CO₂ concentration has increased.
- The current 2.5 MMSCFD rate limitations is curtailing the plant's ability to adequately serve surrounding operators who are producing and needing to tie in gas with elevated CO₂ concentrations.
- While it may be a while before the plant reaches the full 5.0 MMSCFD injection rate, the plant is already being curtailed by the current limit.



CURRICULUM VITAE

James C. Hunter, R.G.

PERSONAL

Name:

James Carl Hunter

Birthdate:

December 22, 1948

Birthplace:

Winchester, Virginia

Specialization:

Acid Gas Injection Systems Design, Permitting and Operations; Reservoir

Evaluation and Modeling; Geophysical Borehole and Seismic Interpretation;

Well Site Supervision of Drilling, Logging, Testing and Completion; Workover Design and Operations; Hydrogeological Investigations, Modeling and Permitting; Expert Witness Support for Environmental and

Oil/Gas Related Cases.

EDUCATION

Colorado School of Mines - 1986 M.S. Geology – Geology

University of New Mexico, 1980 B.S. (Honors) – Geology

PROFESSIONAL CERTIFICATIONS AND REGISTRATIONS

Registered Professional Geologist - State of California #4467

Hearing Date: July 13, 2017 Case No. 15740

EXPERIENCE

April 1997 – Present Consulting Senior Geologist Geolex, Inc. 500 Marquette Avenue NW #1350 Albuquerque, New Mexico 87102

Duties, Accomplishments, Responsibilities:

Mr. Hunter plans and directs acid gas injection project for clients in New Mexico, Texas, Utah and other areas. His acid gas injection work involves initial feasibility studies, well design and AFE development, preparation and submittal of state and Federal permits, on-site well supervision, and well testing, completion, and subsequent operational support.

He also manages environmental investigations and analyses, primarily related to litigation support. He critically reviews the methods, results, and conclusions of other consultants and expert witnesses, as well as planning and implementing independent data collection, analysis and computer modeling. He also contributes to the preparation and review of Geolex's expert reports, and consults with clients and attorneys regarding response and litigation strategies. His recent projects have included:

- Acid gas injection (AGI) project management for a total of 17 wells for clients including: Agave, Anadarko, DCP Midstream, Frontier Field Services, Holly Frontier, Regency, Santa Fe Midstream, Southern Union, Stakeholders Midstream, and Targa.
- Develop and apply methods to calculate the migration of acid gas injected into underground reservoirs, incorporating reservoir petrophysical properties, acid gas phase equilibria over a wide range of pressures and temperatures, variable injection locations and rates, and ultimate acid gas distribution over the life of the injection project.
- 3. Evaluation of the current and long-term integrity of existing and planned wells that penetrate the injection zones to assure that no migration paths exist. As necessary, develop and direct programs to re-enter and remediate wells with casing and/or cement deficiencies.
- 4. Designing additional AGI wells that will be completed in existing, active AGI reservoirs. These wells require significant attention to metallurgy (corrosive-resistant alloys) and specialized cements. Drilling methods must also be modified to assure that acid gases are not released to adjacent formations or to the surface. Comprehensive safety plans, training and equipment are also used to assure personnel protection.
- Providing regulatory interface with NMOCD and TRRC prior, during and after AGI well drilling, testing and completion. Responsibilities included permit negotiations and applications, preparation and submittal of requires sundries and interim reports, planning and supervising mechanical integrity testing, and overseeing post-drilling site reclamation.
- Planned and implemented workover projects for AGI wells with operational problems, including hydrate blockages, gas bubbles, tubing and/or casing failures, and mechanical problems including surface and subsurface equipment.
- 7. Incorporated 3-D seismic studies and geophysical well logs to identify and characterize several deep injection targets for a Class I non-hazardous wastewater well in southeastern New Mexico. The project included the acquisition of seismic data over two areas, each approximately 9 square miles in extent. The data was processed and inversion techniques were used to identify zones with good potential porosity. The project is now proceeding with well site and well design phases.
- 8. Reviewed the soil and groundwater impacts from UST releases in 11 states in the Midwest and western US. Case involved cost allocation among previous and current site owners and insurance carriers. Developed detailed analyses of remediation costs-to-date, as well as projected future costs for

remediation and monitoring, and provided estimates for potential future liabilities for closed sites.

- 9. Developed site-wide geological model for petroleum releases in shallow, alluvial aquifers beneath a pipeline terminal in the Black Warrior Basin in Alabama. The case revolved over alleged impacts from hydrocarbon vapors to nearby landowners. Determined that migration of NAPL and dissolved-phase hydrocarbons were controlled by variations in grain size and permeability of subsurface strata. Also supported analysis of releases to air from contaminated surface and groundwater, demonstrating that no releases above levels of concern reached properties of adjacent plaintiffs.
- 10. Studied the impacts to soils and groundwater from oil & gas production facilities in Texas, where drilling wastes were improperly disposed of on land and into surface waters. Demonstrated that heavy metals as well as hydrocarbons were generated by the drilling processes, and had migrated to groundwater.
- 11. Evaluation and modeling of the chemical behavior of a complex, multi-source groundwater plume containing PCE, TCE, TCA, DCE and MeCl at the Redfield Site in Denver, Colorado, for Brown Group Retail. This case also included evaluation of the performance of groundwater control and treatment systems, and detailed studies of indoor air impacts from the shallow groundwater plume.
- 12. Investigation and modeling of historical and potential future behavior of a TCE plume originating from a former United States Air Force facility and migrating into a residential area for the U.S. Department of Justice. Potential indoor air effects and the effectiveness of mitigation systems were also evaluated.
- 13. Investigation of the sources, transport and fate of a PCE plume which has migrated from an industrial facility into a drinking water aquifer for Ingersoll Rand Corporation, Schlage Lock Division. The study has also investigated the effectiveness of groundwater containment and remediation systems, as well as the operation of wellhead control systems.
- 14. Groundwater investigations, chemical and stable isotope studies, and groundwater flow and contaminant-transport modeling to identify sources and flow paths for composite groundwater contamination plumes resulting from releases from multiple pipeline releases for Duke Energy Field Services.
- 15. Investigation of airborne lead contamination originating from former battery-recycling smelters in 3 sites in the central and western U.S. for AIG as insurers of a lead smelter company. This project involved the detailed analysis of smelting processes, and the development of models which allowed the identification of routine versus accidental releases of lead particulates to air and surrounding soils.

November 1993 to March 1997: President James C. Hunter & Associates 2529 Georgene NE Albuquerque, New Mexico 87112

Duties, Accomplishments, Responsibilities:

Providing environmental compliance services to private and government clients, including semiconductor manufacturers, remediation contractors, and National Laboratories.

- Development and implementation of waste management, treatment, disposal and compliance program for major semiconductor fabrication facility, including innovative techniques to decontaminate equipment in clean room environments.
- Direction of remediation activities at 6 Voluntary Corrective Action sites at Los Alamos
 National Laboratory. These sites involved organic solvents, PCBs, demolition debris, and
 potentially radioactive wastes. Work was performed in radiological and explosive-ordnance
 control areas.
- Design and installation of soil and groundwater remediation systems for combined solvent and hydrocarbon releases at a chemical supply facility.
- Direction of remediation of soils and debris contaminated with hazardous and radioactive
 wastes at a USAF facility. This project also involved on-site classification and stabilization
 of wastes.

1991 to November 1993 Vice President, Technical Services Monteverde Environmental Consultants, Inc. 11930 Menaul NE Albuquerque New Mexico 87112

Duties, Accomplishments, Responsibilities:

Responsible for supervision of technical staff of hydrogeologists, chemists, and microbiologists. Also developed corporate and divisional budgets, prepared business and strategic plans, and supported business development and proposal efforts.

- Directed preparation of OPA 90 Spill Control Plans for three product-dispensing facilities in New Mexico and Arizona. Evaluated existing conditions and spill control measures, developed additional measures and procedures for current compliance.
- 2. Analysis of chemical, stable-isotope and radioisotope impacts to archaeological sites and materials resulting from the Exxon Valdez oil spill.
- 3. Direction of remediation efforts at over 25 UST and AST sites, including soil removal, groundwater treatment, and bioremediation methods.
- Litigation support and expert witness testimony in a criminal case involving allegations of illegal hazardous waste storage and disposal. This case also involved site investigations including soil sampling and analysis, groundwater monitoring, and analysis of contaminant transport.

1989 to 1991 Division Manager Groundwater and Waste Management Division Mariah Associates, Inc. Albuquerque, New Mexico

Duties, Accomplishments, Responsibilities:

Headed Mariah's program to provide hydrogeologic and permitting services for clients in the western United States.

- 1. Investigation of potential impacts to cultural resources from construction activities related to the construction of the Waste Isolation Pilot Project near Carlsbad, New Mexico.
- 2. Field investigations and remediation studies related to releases from produced-water pits and releases from petroleum transportation and storage facilities.
- 3. Environmental assessments and audits of commercial and industrial facilities.

1984 to 1989 Program Manager Geoscience Consultants, Ltd. Albuquerque, New Mexico

Duties, Accomplishments, Responsibilities:

Provided compliance and consulting services for a range of private and government clients, including USEPA. Served as contract compliance inspector for EPA evaluations of RCRA and CERCLA sites. Developed and implemented waste minimization audits for Federal facilities. Supervised technical staff division, including chemists, geologists, biologists, and industrial hygienists.

- Direction of document review and site audits for all RCRA and CERCLA investigations at the Idaho National Engineering Laboratory. These services were provided under contract with USEPA and included hazardous waste permits, corrective action studies and work plans, RI/FS activities, closure plans, groundwater monitoring, and data management, sampling and analysis, and QA/QC plans. Site issues involved soil and groundwater contamination by TCE, PCE, metals and radionuclides.
- Direction of a site investigation related to the Rocky Mountain Arsenal CERCLA site.
 Design and installation of monitor well clusters, sampling and analysis of soil and
 groundwater, and analysis of stream/aquifer interactions. Groundwater contamination
 involved TCE, PCE, and pesticides.
- 3. Quality Assurance Quality Control oversight for groundwater monitoring of organic solvent plume at NASA White Sands Test Facility. Directed the efforts of chemists and geologists in reviewing and validating monitoring data from over 20 monitor wells, and integrated groundwater data with geologic, seismic and soil-gas surveys. Supervised and edited report preparation and presentations to NASA and regulatory agencies.
- 4. Project Manager for development of expert testimony in support of revised produced-water regulations in the San Juan Basin. Performed well-site investigations (soil and groundwater sampling and monitoring) and developed computer models for transport and fate of hydrocarbons in groundwater.
- 5. Direction of document review and site inspections (under contract with USEPA) for over 25 sites nationwide, including the Idaho National Engineering Laboratory and the Rocky Mountain Arsenal. Work included review of plans, site inspections, program quality assurance, and participation in negotiations with state and Federal regulatory agencies. Private-sector work has included RCRA permitting, design and installation of groundwater monitoring networks, site characterization, closure plans, and remedial action.

1982 to 1984 Teaching and Research Assistant Colorado School of Mines Golden, Colorado

Duties, Accomplishments, Responsibilities:

Responsible for developing and teaching undergraduate courses in earth materials, structural geology, and petroleum geology. Also organized graduate field seminars in mapping and interpreting complex structural areas.

1981 to 1982 Staff Member Geochemistry Group Los Alamos National Laboratory Los Alamos, New Mexico

Duties, Accomplishments, Responsibilities:

Co-Principal investigator for the State-Coupled Low Temperature Geothermal Resource Program. Planned and conducted field studies related to geothermal gradients in northern New Mexico.

1979 to 1981 Exploration Geologist Tenneco Minerals, Inc. Tucson, Arizona

Duties, Accomplishments, Responsibilities:

Explored for base, precious, industrial and energy minerals throughout the western United States. Planned and supervised sampling, mapping and drilling projects, prepared recommendations for management.

PUBLICATIONS

- Hunter, J. C. and Gutierrez, A.A.: Redundant AGI Wells for Gas Processing Plants: Operational, Environmental, And Regulatory Benefits. AGIS VI International Symposium; Houston, Texas USA, October 27, 2016.
- Gutierrez, A.A, and Hunter, J. C.: Review and Testing of Radial Simulations of Plume Expansion and Confirmation of Acid Gas Containment Associated with Acid Gas Injection in an Underpressured Clastic Carbonate Reservoir AGIS V International Symposium, Banff, Alberta, Canada May 21, 2015
- Gutierrez, A.A, and Hunter, J. C.: Control and Prevention of Hydrate Formation and Accumulation in Acid Gas Injection Systems during Transient Pressure/Temperature Conditions. AGIS IV International Symposium Calgary, Alberta, Canada, September 25, 2013.
- Nelson, E.P. and Hunter, J.C., 1986; Laramide Thin-Skinned Deformation in Permian Rocks, Fra Cristobal Range, South Central New Mexico; in New Mexico Geological Society Thirty-Seventh Annual Field Conference Guidebook, October 1986.
- Shagam, J.Y., Hunter, J.C., Brown, W.J., and Scott, R.M., 1992; Microbial Remediation of a UST Site in Albuquerque's South Valley; presented at New Mexico Environment Department First Annual Conference on the Environment, Albuquerque, New Mexico, September 1992.

- Hunter, J.C. and Gutierrez, A.G., 1985; Exploring for Groundwater in Fractured Carbonates, East-Central New Mexico; in Proceedings of the Association of Groundwater Scientists and Engineers, Western Regional Conference, January 1985.
- Hunter, J.C. and Nelson, E.P., 1984: Complex Laramide Deformation in the Fra Cristobal Range, New Mexico; <u>in</u> Proceedings of the Geological Society of America, Cordilleran Section Conference, Durango, Colorado, May 1984.
- Wilson, J.L., Van Allan, B.R., and Hunter, J.C., 1984: Sunset Ridge Fluorite Deposit, Sierra County, New Mexico; New Mexico Geology, February 1984.
- Hunter, J.C., 1983: Measured Geothermal Gradients in northern New Mexico; Los Alamos National Laboratory Special Report, DOE/IDO/1717-4.
- Hunter, J.C. and Ingersoll, R.V., 1981: Cañas Gypsum Member of the Yeso Formation; New Mexico Geology, September 1981.





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May 25, 2017

Prepared For:

New Mexico Oil Conservation Commission 1220 S. St. Francis Drive, Santa Fe, NM 87505

Prepared By:

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Targa Midstream Services LLC 1000 Louisiana, Suite 4300 Houston, Texas 77022-5032

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Geolex, Inc. 5/25/2017

APPLICATION TO THE NMOCC FOR AN AMENDMENT TO ORDERS R-13052, R-13052-A, SWD-1654 AND SWD-1671 TO INCREASE THE APPROVED AGGREGATE DAILY INJECTION RATE FOR TARGA MONUMENT AGI SYSTEM FROM 2.5 TO 5.0 MMSCFD

1.0 BACKGROUND AND REGULATORY HISTORY

On November 18, 2008 the New Mexico Oil Conservation Division (NMOCD) approved the application (Case No. 14161) submitted by Targa Resources Midstream, Ltd. (Targa) to drill and operate an acid gas injection (AGI) well at Targa's Monument natural gas processing plant in Lea County, New Mexico (NMOCC Order R-13052). The Order allowed Targa to inject into the Devonian and Fusselman zones at depths from 8,350 to 9,200 feet, with a maximum allowable operation pressure (MAOP) of 1,660 psig for combined treated acid gases (TAG) and wastewater with no limits on either TAG or wastewater injection rates.

On November 7, 2011 the NMOCC reopened Order R-13052 and in an amended Order (R-13052-A) placed a limit on injection rates to cap the daily total injectate volume at 5,000 barrels per day, with no more than 1,400 barrels to be TAG. Depending on actual wellhead pressures and temperatures, the amount of 1,400 barrels of TAG closely corresponds to approximately 2.5 to 2.7 MMSCFD.

The approved well, Monument AGI #1 (3002540002) began injection in December of 2011 and was operated until August of 2016, when mechanical problems forced the plugging and abandonment of the well.

On October 19, 2016 Targa submitted an application to NMOCD for an administrative authorization to replace Monument AGI #1 with a new dry (TAG only) AGI well (Monument AGI #D2; 3002543470), to be completed adjacent to the former well in the same zone and essentially identical depths. This application was administratively approved as Order SWD-1654 on November 10, 2016. This Order provides an MAOP of 3,000 psig (TAG only), and limited the total injection rate to 2.5 MMSCFD. At this rate of injection, the 30-year radius of influence was calculated to be 0.33 miles.

The well was spudded on November 23, 2016 and after completion and testing was placed into operation on March 23, 2017. The well is now in normal service. In the first quarter of 2017, the average injection rate was 1.54 MMSCFD, at an average pressure of 1,989 psig.

On December 9, 2016 Targa submitted an application (C-108) to the NMOCD requesting administrative approval for an additional, redundant well, Targa Monument AGI #3. The Targa Monument AGI #3 well would be drilled at a surface location approximately 200 feet north of AGI #2D, and will be completed in the same Devonian and Fusselman zones (Figure 1). This application was approved on April 24, 2017 in NMOCD Administrative Order SWD-1671. Again, the maximum injection rate for TAG only was set at 2.5 MMSCFD.

2.0 REQUEST FOR ORDER MODIFICATION

Since the replacement well AGI #2D was placed into operation there have been significant increases in CO_2 in the natural gas processed by the Monument gas plant, as well as additional wells added to the inlet feed which will result in a daily amount of TAG up to 5.0 MMSCFD in the very near future. Targa has calculated the impacts of the proposed increase in injection rates, including both the active AGI #D2 and the proposed AGI #3, and has determined that:

- 1. The radii of the injected areas of 5.0 MMSCFD will only grow to 0.47 miles, versus the plume radius of 0.33 miles calculated for the original rate of 2.5 MMSCFD.
- 2. These calculated radii are shown for AGI #D2 (Figure 2) and proposed AGI #3 (Figure 2).
- 3. Table 1 lists all 10 reported wells penetrating the injection zone within one mile of the project. These wells were identified in the applications for AGI #D2 and AGI #3.
- 4. The applications for AGI #D2 and AGI #3 identified 10 wells within a one-mile radius of the new well that penetrated the injection zone (Table 1). The conditions of these wells were documented and discussed in the AGI #D2 and AGI #3 applications, and Orders SWD-1654 and SWD-1671were approved in part on the bases of these evaluations. No additional wells inside the one-mile circle have been identified in an updated database search.
- 5. With respect to AGI #D2, only 3 of these wells (the original AGI #1, State Gas Com 005, and North Monument G/SA Unit 032) were within the 0.33 mile radius of the original calculated TAG plume (2.5 MMSCFD for 30 years). The proposed expansion of the plume to 0.47 miles (5.0 MMSCFD for 30 years) will only encompass one additional well, J.R. Phillips 005 (Figure 2; Table 1).
- 6. The J.R. Phillips 005 well was spudded in 1947 and produced oil and gas from the Simpson Sand (9,610' to 9,870'). It was recompleted as an Abo gas well in 1998 by back plugging with a CIBP at 7,785' and perforations from 6,968' to 7,145'. A review of well records (Attachment A) indicates that the original 9,941' 5 ½" production casing in the 7 ¾" borehole was cemented with 1500 sacks. The Halliburton Redbook indicates this geometry would yield an annular volume of 6.15 feet per cubic foot of cement. This would represent approximately 9,225 feet of filled annulus at only 1.0 cubic feet per sack. Clearly, the production casing was cemented to or very close to the surface, and safely protects the zones below the CIBP.
- 7. Considering the not-yet-drilled AGI #3, the proposed expanded plume of 0.47 miles only includes one additional well, North Monument G/SA Unit 286 (Figure 3; Table 1). The Unit 286 well was a dry hole, and was plugged and abandoned in March 1963. The well was re-entered in August of 1995 to a depth of 3,760 feet as a potential Eunice-Monument zone. The well was not recompleted, and is currently in Temporary Abandoned status. The last MIT was performed in April 2008. Relevant well records are provided as Attachment B.
- 8. As detailed in Table 1, all of these wells are properly completed and/or plugged and abandoned, and do not pose a hazard for migration of the injected TAG into any other zones.

Targa respectfully requests that Orders R-13052-A, SWD-1654 and SWD-1671 be amended to increase the total maximum injection rate (combined rate of both or either well) from 2.5 to 5.0 MMSCFD. Targa does not request any increase in the current MAOP of 3,000 psig, and will continue to comply with all other conditions of these Orders.

Geolex, Inc. 5/25/2017

3.0 IDENTIFICATION OF INTERESTED PARTIES IN AREA OF REVIEW

Geolex has reviewed the land status and operators within one-half mile of the currently operating AGI #D2 and the permitted, yet-to-be drilled AGI #3, and two of the three operators identified in the original Order (Apache Corporation and XTO) remain on the list of operators of record. Three additional operators/lease holders, however, are located within the one-half mile radius of the wells. They are Lea Co. New Mexico Exploration and Production, LLC; Jack Huff Energy and Targa Midstream Services, LLC. There are only two operators within the one-half mile radius with wells penetrating the injection zone (Targa and Apache).

Surface owners within the area of review were also identified in Appendix B of the C-108 applications for both wells. These surface owners are identified in Table 2.

All interested parties will be individually noticed when a hearing date is set pursuant to NMOCC requirements.

TABLES

TABLE 1: Wells Penetrating Injection Zone within One Mile of the Active Targa AGI #D2 and

Proposed Monument AGI #3

API	OPERATOR	DEPTH	WELLNAME	STATUS	Notes
3002540002	TARGA RESOURCES	9200	MONUMENT AGI #1	Plugged	Pumped cmt 3,500' to surface.
3002512473	APACHE CORP	10255	STATE F GAS COM 005	Active	Plugged back to Eumont/Seven Rivers at 3,400' (in 5 1/2" casing) 9/11/96. CIBP's w/cmt @ 7,800', 6,850', 5,640', 3,420'.
3002512478	APACHE CORP	9822	NORTH MONUMENT G/SA UNIT 032	Plugged	CIBP w/cmt @ 9,475'; squeezed cmt plugs @ 7,590', 7,160', 5,710" CIBP w/cmt @ 4,500'; Spot cmt @ 2,900', 2,345', 1,330', 367 to surface.
3002512481	APACHE CORP	10100	NORTH MONUMENT G/SA UNIT 285	Active	Plugged & abandoned 3/5/59. Spot cmt @ 9,900', 9,755', 6,305', and 5,655' 3,780'. Reentered and recompleted 3,930' in Eunice Monument 2/14/96; Re-entered and attempted to re-plugged deeper zones per NMOCD Order R-13052 2/2011. Unsuccessful, released rig May 2011. Well returned to production 7/15/11. Requirement to re-plug well rescinded per Order R-13052 (Reopened) 11/17/2011.
3002520517	APACHE CORP	9900	NORTH MONUMENT G/SA UNIT 286	TA	Dry hole; P&A w/spot plugs @ 10,080', 9,790', 9068', 8,180', 7,865', 6,770', 6,205', 5,642', 5,075', 3/750', 1,450' to surface, 12/28/62. Re-entered 6/7/95 cleaned to 3,760' (Eunice Monument). Not perforated. Status Temporary Abandoned.
3002505780	ATLANTIC RICHFIELD	9900	J R PHILLIPS A 008	Plugged	CIBP w/cmt @ 9,475'; squeezed cmt plugs @ 7,652', 5,742', 4,897, 3,442', 2,097', 880', 81' to surface.
3002523632	ARCO PERMIAN	9650	J R PHILLIPS A 009	Plugged	CIBP's w/cmt @ 9435', 6,620', 6,186', 5,655', 5,255',5,069'; Cmt plugs @ 3,645', 1,1125', 610', Surface.
3002504134	APACHE CORP	9953	J R PHILLIPS 005	Active	Recompleted 7/12/98; CIBP at 7,785', perforated 6,965' to 7,685'.
3002504136	APACHE CORP	10214	J R PHILLIPS 007	Active	Temp. abandoned 8/6/92, CIBP's w/cmt @ 9,700', 6,700', 6,275', 5,590'. Recompleted in Paddock 5,264' to 5,530' 3/2010
3002505964	CHEVRON U S A INC	9814	J R PHILLIPS 011	Active	Producing in McKee-Ellenburger 9,490' to 9,800'.

Wells highlighted are within the 0.47 mile radius of the proposed 5.0 MMSCFD rate increase which were not within the 0.33 mile radius of the original rate limitation of 2.5 MMSCFD.

Note: The cement and completion status of all of these wells was reviewed in the C-108 applications, resulting in NMOCD Orders SWD-1654 and SWD 1671.

Table 2: Surface Owners Within One Half Mile of Targa Monument AGI System

Surface Owner	Legal	Acres
		Acres
State of New Mexico	T19S-R36E	240.00
New Mexico State Land Office	Section 25: SE/4, E/2SW/4	240.00
310 Old Santa Fe Trail	G	260.00
Santa Fe, NM 87501	Section 36: NW/4, S/2NE/4, N/2SE/4,	360.00
	N/2N/2SW/4	
	<u>T20S-R36E</u>	
	Section 1: Pt. W/2NE/4, Pt. NW/4, SW/4, Pt. SE/4	463.65
DLD Corporation &	<u>T19S-R36E</u>	
Any Successors-in		
Interest/Assignees	Section 36: S/2N/2SW/4	
1314 Brittany	Parcel #: 4000428830001	40.00
Hobbs, NM 88240		
Versado Gas Processors, LLC	<u>T19S-R36E</u>	
1900 Dalrock Rd.	Section 36: S/2SW/4, SW/4SE/4	120.00
Rowlett, TX 75088	Parcel #: 4000423510003	
	<u>T20S-R36E</u>	
	Section 1: Pt. N/2NE/4NW/4	18.13
	Parcel #: 4000423510004	
Chevron USA, Inc.	T19S-R36E	40.00
P.O. Box 285	Section 36: SE/4SE/4	40.00
Houston, TX 77001	Parcel #: 4000409030001	
Charlie E David at al	T100 D27E	
Charlie F. Byrd, et al	T19S-R37E Section 31: W/2, W/2NE/4, Pt. E/2NE/4	460.44
P.O. Box 32	Parcel #: 4000402920004	400.44
Monument, NM 88265	Faice #: 4000402920004	
	,	
	T20S-R37E	
	Section 6: Lots 3 – 5, SE/4NW/4	157.77
	Parcel #: 4000402920002	137.77
	Parcel #: 4000402920002	

James R. Byrd P.O. Box 32	T20S-R36E	
Monument, NM 88265	Section 1: Pt. NE/4 Parcel #: 4000792560001	33.93
Juan Carlos Martinez 210 W. Chance Dr.	T20S-R36E Section 1: Pt. NW/4	9.56
Hobbs, NM 88242	Parcel #: 4000407150001	

FIGURES

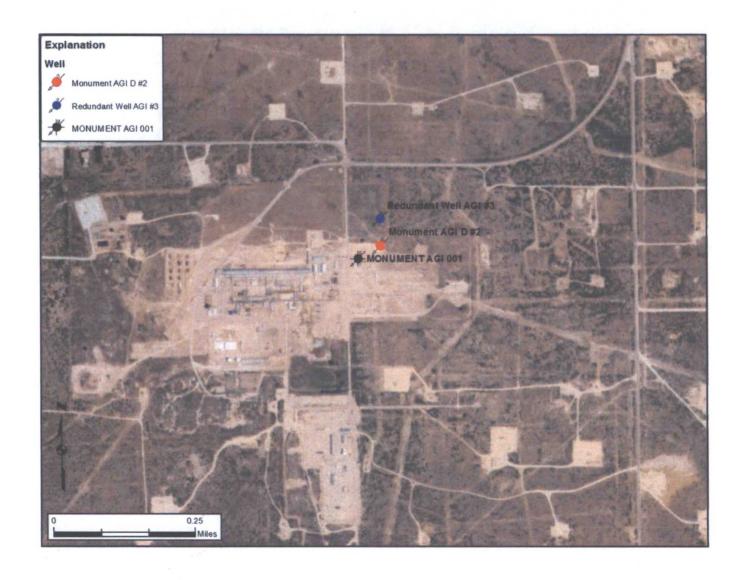


Figure 1: Locations of AGI Wells at Targa Monument Natural Gas Plant

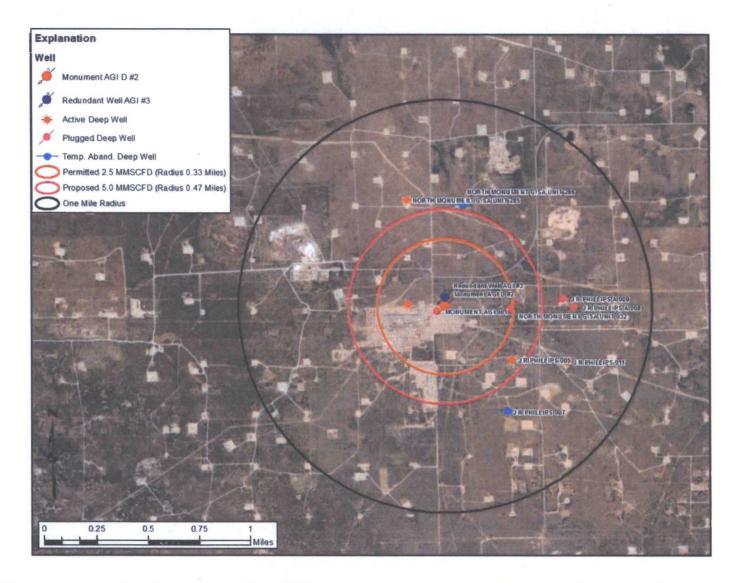


Figure 2: Calculated Radii of TAG Plume From AGI #D2 after 30 Years of Injection at 2.5 MMSCFD (0.33 Miles) and 5.0 MMSCFD (0.47Miles)

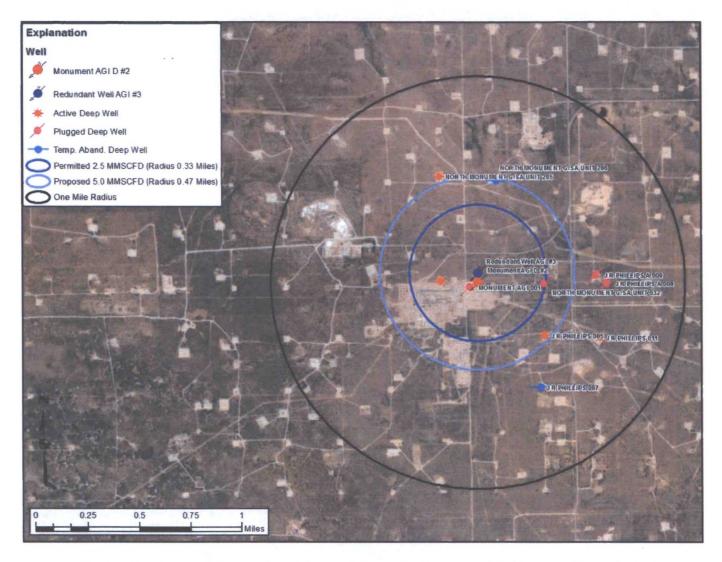


Figure 3: Calculated Radii of TAG Plume From AGI #3 after 30 Years of Injection at 2.5 MMSCFD (0.33 Miles) and 5.0 MMSCFD (0.47 Miles)

ATTACHMENT A COMPLETION AND RECOMPLETION RECORDS, J. R. PHILLIPS OO5 (API 3002504134)

NEW .. LEXICO OIL CONSERVATION COMP .. SION

Santa Fe, New Mexico EOUEST FOR (OIL) - (GAS) ALLOWABLE Recompletion This form shall be submitted by the operator before an initial allowable will be assigned to any completed Oil or Gas well. Form C104 is to be submitted in QUADRUPLICATE to the same District Office to which Form C-101 was sent. The allowable will be assigned effective 7:00 A.M. on date of completion or recompletion, provided this form is filed during calendar month of completion or recompletion. The completion date shall be that date in the case of an oil well when oil is delivered into the stock tanks. Gas must be reported on 15.025 psia at 60° Fahrenheit. July 24, 1956 Moragmont, New Mexico (Date) WE ARE HEREBY REQUESTING AN ALLOWABLE FOR A WELL KNOWN AS: Amerada Petroleum Corperation J.R. Phillips Well No. 5 in HE 1/4 (Company or Operator) (Lease) A , Sec. 1 , T 20-8 , R 36-E , NMPM , Monument Melice Pool (Unit) Recompleted - July 17, 1956 Lon County, Date Completed. Please indicate location: Elevation 3576 DF Total Depth 9953 P.B 9885 Top oil/gas pay. 9610! Name of Prod. Form Simpson Send Casing Perforations: 9610! to 9700!; 9710! to 9740!, 9750! to 9790! & Section # 98001 to 98701. Depth to Casing shoe of Prod. String..... based on bbls. Oil in Hrs. Min. B-36-E Casing and Comenting Record Size Feet Sax Gas Well Potential Calculated Open Flow 26,600,000 en. ft. of gas per day, with 65 bbls. of 65.9 gravity about 900 Size choke in inches dietillate. 1250 Gas - Permian Basin Pipe Line Company Transporter taking Oil or Gas: Oil - Taxas-New Mexico Pipe Line Company 2,500 Remarks: After perferating, ran tubing, opened well & started flowing naturally. 10 . 11 . 11 . 1 . 1 I hereby certify that the information given above is true and complete to the best of my knowledge. Amerada Petrolaum Carperation (Company or Operator) OIL CONSERVATION COMMISSION Signatur

15 10

Title Ferman

Send Communications regarding well to:

Name Amerada Potro Lemm Corporation

Submit to Appropriate

State of New Mexico Energy, Minerals and Natural Resources Department

Form C-105

State Lease - 6 copies Fee Lease - 5 copies		Enc	igy, willicia	is and Ivalu	nai ives	ources D	chart	mon			R	evised 1-1-89
Fee Lease - 5 copies DISTRICT [× 0001	777777777	TTON	TEXE	OT	W W	ELL API	NO.		
P.O. Box 1980, Hobbs	, NM 88240	OI	L CONS				.510	and the same	30-025-			
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OSTRICT III	Aziec, NM 8	7410					_	0	, State Oil	& Gas Lease	No.	
WELL CO	MPLETIC	N OR RE	COMPLET	ION REPO	RT AN	DLOG						
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Disposition of Gas (S	Sold, used fo	r fuel, vente	d, etc.)						Test V	Vitnessed By		
Sold												
List Attachments	104											
I bereby certify that		tion shown o	on both sides o	f this form is	true and	d complete	to the	best of my	knowledg	e and belief		
Signature A Ca	Ul/hu	lud		Printed Name	R. L.	Wheeler	, Jr	Tid	Admin	. Svc. Co	ord. Da	7 · 23 · 98
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INSTRUCTIONS

This form is to be filed with the appropriate District Office of the Division not later than 20 days after the completion of any newly-drilled or deepened well. It shall be accompanied by one copy of all electrical and radio-activity logs run on the well and a summary of all special tests conducted, including drill stem tests. All depths reported shall be measured depths. In the case of directionally drilled wells, true vertical depths shall also be reported. For multiple completions, Items 25 through 29 shall be reported for each zone. The form is to be filed in quintuplicate except on state land, where six copies are required. See Rule 1105.

INDICATE FORMATION TOPS IN CONFORMANCE WITH GEOGRAPHICAL SECTION OF STATE Southeastern New Mexico Northeastern New Mexico

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Submit 3 Copies to Appropriate District Office

. Be

State of New Mexico Energy, Minerals and Natural Resources Department

Form C-103 Revised 1-1-89

12. Describe Proposed or Completed Operations (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work) SEE RULE 1103. 6-1 thru 7-12-98 MIRU Dawson Prod. Svc. pulling Unit. Removed wellhead, installed 80P & TOH w/tbg. & pkr. TIH w/4.34" gauge ring to 7830' & TOH. TIH w/5-1/2" CIBP set at 7785'. Circ. tbg. & csg. w/KCL water & press. tested csg. to 500 PSI. Held OK. Schlumberger ran VSI/CCL/GR log. Schlumberger perf. 5-1/2" csg. in Abo Zone using 4" Hegs csg. gun w/4 SPF, total 1569 shots. at following intervals: 6968 - 6971', 6979' - 6982', 6989' - 6992', 7000' - 7060', 7070' - 7145', 7155' - 7260', 7335' - 7345', 7370' - 7380', 7440' - 7455', 7475' - 7515'. 7540' - 7560', 7590' - 7600' & fr. 7650' - 7685'. American Fracmaster acidized Abo Zone 5-1/2" csg. perfs. fr. 6968' - 7685' w/19,600 gal. 15% HCL acid. Swabbed & flowed well. GPM connected gas Meter No. 711202 & began taking gas on 6-12-98. CONTINUED OVER I hereby certify that the information above is tops and symplets to the best of my knowledge and ballef. TITLE Admin. Syc. Coord. DATE 7-23-98 TYPE OR PRINT NAME ROY L. Wheeler, Jr.	P.O. Box 1980, Hobbs NN 81241-1980 Sunda Fe, NM 87505 Sanda Fe, NM 87505 Sanda Fe, NM 87505 Sanda Fe, NM 87505 Sanda Fe, NM 87505 Sunda Fe,	District Office	Actual 1-1-07
Santa Fe, NM 87505 S. Indicate Type of Lease STATE FEE STATE	DISTRICT II P.O. Drivery DO, Arteria, NM 88210 Sabta Fe, NM 87505 5. Indicate Type of Lease P.O. Drivery DO, Arteria, NM 88210 SUNDRY NOTICES AND REPORTS ON WELLS (DO NOT USE THIS FORM FOR PROPOSALS TO DRILL OR TO DESPEN OR PLUT BROWN FOR PROPOSALS TO DRILL OR TO DESPEN OR PRINT (PORM C-101) FOR SUCH PROPOSALS.) 1. Type of Wall: WELL DO OTHER 3. Well No. Address of Operator Address of Operator Unit Latter A : 660 Feet From The NOrth Line and 660 Feet From The East Line Unit Latter A : 660 Feet From The NOrth Line and 660 Feet From The East Line NOTICE OF INTENTION TO: Check Appropriate Box to Indicate Nature of Notice, Report, or Other Data NOTICE OF INTENTION TO: PERFORM REMEDIAL WORK PLUS AND ABANDON REMEDIAL WORK ALTERING CASING CHANGE PLANS OTHER DATA AND CEMENT JOB HIRU Dawson Prod. Svc. pulling Unit. Removed well head. installed BOP & TOH w/tbg. & pkr. Till w/d. 34" gauge ring to 7830" & TOH. Till w/S-1/2" CISP Set Latter, including estimated date of starting any proposed work) SER PULE 1103. 6-1 thru 7-12-98 HIRU Dawson Prod. Svc. pulling Unit. Removed well head. installed BOP & TOH w/tbg. & pkr. Till w/d. 34" gauge ring to 7830" & TOH. Till w/S-1/2" CISP Set Latter 7785. FOR COMMENCE DRILLING OPNS. CHARLES AND CEMENT JOB OTHER RECORDILETION. 6-1 thru 7-12-98 HIRU Dawson Prod. Svc. pulling Unit. Removed well head. installed BOP & TOH w/tbg. & pkr. Till w/d. 34" gauge ring to 7830" & TOH. Till w/S-1/2" CISP Set Latter 7785. FOR COMMENCE DRILLING OPNS. CHARLES AND CEMENT JOB OTHER RECORDILETION. 6-1 thru 7-12-98 HIRU Dawson Prod. Svc. pulling Unit. Removed well head. installed BOP & TOH w/tbg. & pkr. Till w/d. 34" gauge ring to 7830" & TOH. Till w/S-1/2" CISP Set Latter 7785. FOR COMMENCE DRILLING OPNS. CHARLES AND CEMENT JOB OTHER RECORDILETION. 6-1 thru 7-12-98 HIRU Dawson Prod. Svc. pulling Unit. Removed well head. installed BOP & TOH w/tbg. & pkr. Till w/d. 34" gauge ring to 7830" & TOH. Till w/S-1/2" CISP Set Latter 7785. FOR COMMENCE OF TILL REMOVED W/tbg. & pkr. Till w/d.	P.O. Box 1980, Hobbs NM 88241-1980	WELL AFTING.
STATE FEE Suits Oil & States No.	DISTRICT III 1000 Ro Brazos Rd., Asset, NM 87410 (S. Suiso Ri & Gis Lease No. SUNDRY NOTICES AND REPORTS ON WELLS (DO NOT USE THIS FORM FOR PROPOSALS TO DRILL OR TO DEEPEN OR PLUG BACK TO A DEFERENCE RESERVOING USE APPLICATION FOR PERMIT (PORM C-101) FOR SUCH FRACPORALS) (I. Type of Well: WELL III OTHER 2. Name of Operator P. O. Box 840, Seninole, Texas 79360 4. Wall Location of Operator P. O. Box 840, Seninole, Texas 79360 4. Wall Location of Operator P. O. Box 840, Seninole, Texas 79360 1. Tompship 20S Range 36E NMPM Lea NOTICE OF INTENTION TO: SUBSEQUENT REPORT OF: Check Appropriate Box to Indicate Nature of Notice, Report, or Other Data NOTICE OF INTENTION TO: CERFORM REMEDIAL WORK PLUG AND ABANDON REMEDIAL WORK ALTERING CASING CHANGE PLANS CHANGE PRINT OF COMMENCE DRILLING OPNS. CHANGE PLANS COMMENCE DRILLING OPNS. CHANGE PLANS COMMENCE DRILLING OPNS. CHANGE PLANS COMMENCE DRILLING OPNS. CASING TEST AND CEMENT JOB COMMENCE DRILLING OPNS. CHANGE PLANS COMMENCE DRILLING OPNS. CHANGE SER RULE 1(3). 6-1 thru 7-12-98 HIRU DAWSON PROD. SVC. pulling Unit. Removed wellhead, installed BOP & TOH W/tbg. & pkr. TIH W/A. 34° gauge ring to 7830 & TOH. TIH W/S-1/2° CISP Seet at 7785. CIRC TO, 7590 CHANGE OF SEET COMMENCE OF SERVING AND CAMERY OF SEET COMMENCE OF SERVING AND CAMERY OF SERVING AND CAMERY OF SEET COMMENCE OF SERVING AND CAMERY OF SEET	DISTRICT II	37505 5 Indicate Type of Lease
SUNDRY NOTICES AND REPORTS ON WELLS (DO NOT USE THIS FORM FOR PROPOSALS TO DRILL OR TO DEEPEN OR PLUG BACK TO A DIFFERENT RESERVOIR USE "APPLICATION FOR PERMIT" (FORM—101) FOR SUCH PROPOSALS.) 1. Type of Well: Other State of Departor Amerada Hass Corporation 1. Address of Operator P. O. Box 840, Seatingle, Texas 79360 4. Well Localism Unit Latter A : 660 Feet From The North Line and 660 Feet From The East Line 1. Type of Well: Other State of Departor P. O. Box 840, Seatingle, Texas 79360 1. Township 205 Range State Morrument Abo 1. Elevation (Show whether DF, RKB, RT, GR, etc.) SSP) DF 11. Check Appropriate Box to Indicate Nature of Notice, Report, or Other Data NOTICE OF INTENTION TO: SUBSEQUENT REPORT OF: TEMPORARILY ABANDON CHANGE PLANS CASHAND CEMENT JOB OTHER RECORDISTION. 12. Describe Proposed or Completed Operations (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work) SEE RULE 1103. 6-1 thru 7-12-98 MIRU Dawson Prod. Svc. pulling Unit. Removed wellhead, installed BOP & TOH w/tbg, & pkr. TIH w/4.34" gauge ring to 7830" & TOH. TIH w/5-1/2" CIBP set at 7785". Circ. tbg, & csg. w/KCL water & press, tested csg. to 500 PSI. Held OK. Schlumberger ran VSI/CCL/GR log. Schlumberger perf. 5-1/2" csg. in Abo Zone using 4" Hega csg. gg. ym w/4 SPF, total 1569 shots, at following intervals: 6968 - 6971". 6979" - 6982". 6982". 6992". 7000" - 7060". 1 betab carrier of the press of the performance of the pe	Suito Rid Bazas Rd., Aster, NM 87410 S. Suito Gil & Gis Lesse No.	110. Bland BB, Allega, Interest	STATE FEE X
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DIFFERENT RESERVOIR USE 'APPLICATION FOR PERMIT' (FORM C-101) FOR SUCH PROPOSALS.)	DIFFERENT RESERVORL USE 'APPLICATION FOR PERMIT' (PCOMUC-101) FOR SUCH PROPOSALS.) 1. Type of Well: VILL		the state of the s
OTHER 2. Name of Operator Amerada Hess Corporation 3. Address of Operator P. O. Box 840, Seminole, Texas 79360 4. Well Location Unit Latter A. 660 Feet From The Including Amerada Hess Including Seminole, Texas 79360 1. Township 20S Ranse 36E NMPM Lea County 10. Elevation (Show whether DF, RKB, RT, GR, etc.) 3587 OF 11. Check Appropriate Box to Indicate NOTICE OF INTENTION TO: SUBSEQUENT REPORT OF: PERFORM REMEDIAL WORK PLUG AND ABANDON CHANGE PLANS COMMENCE DRILLING OPNS. PLUG AND ABANDONMENT CASING TEST AND CEMENT JOB OTHER 12. Describe Proposed or Completed Operations (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work) SEE RULE 1103. 6-1 thru 7-198 MIRU Dawson Prod. Svc. pulling Unit. Removed wellhead, installed BOP & TOH w/tbg. & pkr. TIH w/4.34* gauge ring to 7830* & TOH. TIH w/5-1/2* CIBP set at 7785*. Circ. tbg. & csg. w/KCL water & press. tested csg. to 500 PSI. Held OK. Schlumberger perf. 5-1/2* csg. in Abo Zone using 4* Hegs csg. gun w/4 SPF, total 1569 shots. at following intervals: 6968 of 6971. 6979* 6982*, 6989*. 6992*, 7000*. 7700*. 71A5*, 7155* 7260*, 7335* 7345*, 7370* 7380*, 7440* 7455*, 7475* 7515*, 7540* 7560*, 7590* 7600* & fr. 7650*, 7655* M/19,600 gal. 155* HEL acid. Swabed & Flowed well. GPM connected gas Meter No. 711202 & began taking gas on 6-12-98. CONTINUED OVER 1 bereby centry May Be information above is type and complete to the best of my knowledge and ballef. TYPE OR PRICTY NAME ROY L. Hibeeler. Jr. TELEPHONE NO. 915 758-6700.	OTHER 2. Name of Operator Americal Ress Corporation 3. Address of Operator P. O. Box 240. Seminole, Texas 79360 4. Well Lestion P. O. Box 240. Seminole, Texas 79360 4. Well Lestion 1. Township 20S Range 36E NMPM Lea County 10. Elevation (Show whether DF, RKB, RT, GR, etc.) 3887 DF 11. Check Appropriate Box to Indicate Nature of Notice, Report, or Other Data NOTICE OF INTENTION TO: SUBSEQUENT REPORT OF: PERFORM REMEDIAL WORK PLUG AND ABANDON REMEDIAL WORK ALTERING CASING COMMENCE OFFILLING OPNS. PLUG AND ABANDON CHANGE PLANS COMMENCE OFFILLING OPNS. PLUG AND ABANDON CHANGE PLANS COMMENCE OFFILLING OPNS. PLUG AND ABANDON CASING TEST AND CEMENT JOB OTHER RECOMPLETION. X 12. Describe Proposed or Completed Operations (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work) SEE RULE 1103. 6-1 thru 7-12-98 MIRU Dawson Prod. Svc. pulling Unit. Removed wellhead, installed 80P & TOH w/tbg. & pkr. 11H w/4.34" gauge ring to 7830" & TOH. TIH w/5-1/2" CISP set at 7/85". Circ. tbg. & csg. w/KCL water & press. tested csg. to 500 PSI. Held OK. Schlumberger per 15-1/2" csg. in Abo Zone using 4" Hegs csg. gun w/4 SPF, total 1569 shots, at following intervals: 6988 - 691", 6999" - 6992", 7000" - 7060", 77590" - 7600" & fr. 7650" - 7685" American Fracmaster acidized Abo Zone 5-1/4" - 7560", 7590" - 7600" & fr. 7650" - 7685" American Fracmaster acidized Abo Zone 5-1/2" csg. perfs. fr. 6968 " - 7685" w/19,600 gal. 151 HCL acid. Swabbed & Flowed well. 6PH connected gas Meter No. 711202 & began taking gas on 6-12-98. CONTINUED OVER 1 binsy carrier takes Roy L, Hipepler. Jr. TELEPHONE No. 915 758-6700. 1 binsy carrier value Roy L, Hipepler. Jr. Telephone No. 915 758-6700. 1 binsy carrier value Roy L, Hipepler. Jr. Telephone No. 915 758-6700.	DIFFERENT RESERVOIR. USE "APPLICATION FOR PERMIT	
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3. Address of Operator P. O. Box 840. Seminole, Texas 79360 4. Wall Location Unit Letter A : 660 Feet From The North Line and 660 Feet From The East Line Section 1 Township 20S Range 36E NMPM Lea County 10. Elevation (Show whether DF, RKB, RT, GR, etc.) 3587' OF 11. Check Appropriate Box to Indicate Nature of Notice, Report, or Other Data NOTICE OF INTENTION TO: SUBSEQUENT REPORT OF: PERFORM REMEDIAL WORK PLUG AND ABANDON ABANDON ALTERING CASING TEMPORARILY ABANDON CHANGE PLANS COMMENCE DRILLING OPNS. PLUG AND ABANDONMENT PULL OR ALTER CASING OTHER OTHER RECOMPLETION. 12. Describe Proposed or Completed Operations (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed works) SEE RULE 1103. 6-1 thru 7-12-98 HIRU Dawson Proposed or Completed Operations (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed works) W/KCL water & press. tested csg. to 500 PSI. Held OK. Schlumberger ran VSI/CCL/GR log. Schlumberger perf. 5-1/2' csg. in Abo Zone using 4" Hegs csg. gun w/4 SPF. total 1569 shots. at following intervals: 6968 6971', 6979' 6989' 6989' 6989' 7909' 700' 7145', 7155' 7260', 7335' 7345', 7370' 7380', 7440' 7455', 7475' 7515'. 7540' 7560', 7590' 7600' & fr. 7650' 7685' Merican Fracmaster acidized Abo Zone 5-1/2" csg. perfs. fr. 6968' 7685' w/19,600 gal 154 HcL acid. Swabbed & Flowed well. GPM connected gas Meter No. 711202 & began taking gas on 6-12-98. 1 bents's certify that/9e informytion above it type and graphetes to the best of my knowledge and ballet. TITLE Admin. Syc. Coord. 1 DATE 7-23-98 1 TYPE OR PRETT NAME ROY L, Wheeler, Jr. T. 1 TITLE Admin. Syc. Coord. 1 TITLE Admin. Syc. Coord.	3. Address of Operator P. D. Box 840, Seminole, Texas 79360 4. Well Leastion Unit Later A : 660 Feet From The North Line and 660 Sect From The East Line Section. 1 Township 205 Ranse 36E NMPM Lea County 3587' DF 10. Elevation (Show whether DF, RKB, RT, GR, etc.) 3587' DF 11. Check Appropriate Box to Indicate NOTICE OF INTENTION TO: SUBSEQUENT REPORT OF: REMPORABILY ABANDON		8. Well No.
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at following intervals: 6968 - 6971', 6979' - 6982', 6989' - 6992', 7000' - 7060', 7070' - 7145', 7155' - 7260', 7335' - 7345', 7370' - 7380', 7440' - 7455', 7475' - 7515', 7540' - 7560', 7590' - 7600' & fr. 7650' - 7685'. American Fracmaster acidized Abo Zone 5-1/2" csg. perfs. fr. 6968' - 7685' w/19,600 gal. 15% HCL acid. Swabbed & flowed well. GPM connected gas Meter No. 711202 & began taking gas on 6-12-98. CONTINUED OVER I hereby certify that the information above is toge and complete to the best of my knowledge and belief. SIGNATURE May be blocked. Date 7-23-98 TYPE OR PRINT NAME ROY L. Wheeler, Jr. TELEPHONE NO. 915 758-6700	at following intervals: 6968 - 6971', 6979' - 6982', 6989' - 6992', 7000' - 7060', 7070' - 7145', 7155' - 7260', 7335' - 7345', 7370' - 7380', 7440' - 7455', 7475' - 7515'. 7540' - 7560', 7590' - 7600' & fr. 7650' - 7685'. American Fracmaster acidized Abo Zone 5-1/2" csg. perfs. fr. 6968' - 7685' w/19,600 gal. 15% HCL acid. Swabbed & flowed well. GPM connected gas Meter No. 711202 & began taking gas on 6-12-98. CONTINUED OVER I hereby certify that the information above is toze and complete to the best of my knowledge and belief. SIGNATURE Roy L. Wheeler. Jr. TITLE Admin. Syc. Coord. DATE 7-23-98 TYPE OR PRINT NAME ROY L. Wheeler. Jr. TELEPHONE NO. 915 758-6700 (This space for State Use) ORIGINAL STONE OF SWILLIAMS APPROVED BY DICTION OF SWILLIAMS		
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TIH w/TAC on 2-7/8" tbg. & set tbg. OE at 7747'. Swabbed well. TIH w/pump & rods. could not get below 6888'. TOH w/rods, pump, & tbg. TIH w/4-3/4" csg. swedge to 7785' & TOH. TIH w/pkr. testing at intervals & located csg. leak between 5159' - 5191'. TIH w/5-1/2" Md. "G" Baker RBP set at 6325'. Spotted 2 sks. sand on top RBP. TIH w/5-1/2" cement retainer set at 5061'. Halliburton Svc. pumped 100 sks. premium plus neat cement. WOC. TIH w/4-3/4" bit, tagged TOC at 5056' & drld. cement, retainer fr. 5061' - 5063' & cement out at 5207'. Circ. well clean. TIH, circ. sand off RBP at 6325', latched onto & TOH w/RBP. TIH w/5-1/2" Baker TAC on 2-7/8" tbg. & set tbg. at 7443' w/TAC at 6912'. Removed 80P & installed wellhead. TIH w/pump & rods. RDPU & cleaned location. Set pumping unit & motor. Connected electrical svc. & began pumping well on 7-12-98.

Test of 7-19-98: Produced 26 B.O./D., 73 B.W./D., & 191 MCFGPD in 24 hours.

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ATTACHMENT B

PLUGGING AND RECOMPLETION RECORDS, NORTH MONUMENT G/SA UNIT 286 (3002520517)

	ES ECEIVED									
SANTA FI	STRIBUTION		NEW	MEXICO	חוו כו	INSER	VATION (COMMISSION		FORM C-103
U.S.G.S. LAND OFFICE WISCELLANEOUS REPORTS ON WELLS WISCELLANEOUS REPORTS ON WELLS										
PRORATION OFF	GAS		1			:				
OPERATOR			(Submit to	appropriate			as per Com	mission Rule 1		
Name of Comp		0	ł .m		Addres		460	Hobbs Ner		rten
Lease	S Larron	num Corporat:	Well	No. Uni			Township		lange	
State !	formed	Pool		5	G	36	County	9-3	3	16-I
Date Work 1 C		Manne		oKoo			Les			
T Pasiasia	- Deillies On			Test and Ce						
	g Drilling Op	erations (ment Job		Other (E	xpiain):		
Plugging		one, nature and qu		ial Work		 				
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1 14 1	il comen		P	Position			Company	Patrolaum (Carne	eration
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Submit 3 Copies

State of New Mexico

Form C-103

to Appropriate District Office	Energy, Minerals and Natural R	esources Department	Revised 1-1-89
DISTRICT I	OIL CONSERVATIO	N DIVISION	
P.O. Box 1980, Hobbs NM 88241-1980	P.O. Box 208	38	WELL API NO. 30-025-20517
DISTRICT II P.O. Drawer DD, Artesia, NM 88210	Santa Fe, New Mexico	87504-2088	5. Indicate Type of Lease
DISTRICT III 1000 Rio Brazos Rd., Aztec, NM 87410			STATE A FEE 6. State Oil & Gas Lease No.
			B-1626
	TICES AND REPORTS ON WELL ROPOSALS TO DRILL OR TO DEEPEN O		
	ERVOIR. USE "APPLICATION FOR PER C-101) FOR SUCH PROPOSALS.)	MIT"	7. Lease Name or Unit Agreement Name
I. Type of Well:			
OIL GAS WELL	OTHER P & A	'd	STATE "V"
2. Name of Operator	hidan		8. Well No.
Amerada Hess Corporation 3. Address of Operator	J10N		9. Pool name or Wildcat
P. O. Drawer D. Monus	nent, NM 88265		EUNICE MONUMENT GB/SA
4. Well Location Unit Letter G: 19	980 Feet From The NORTH	Line and 183	O Feet From The EAST Line
Section 36	Township 19S Ra 10. Elevation (Show whether		NMPM LEA County
	ppropriate Box to Indicate NTENTION TO:	1	Report, or Other Data
NOTICE OF I	NIENTION TO:	306	SEQUENT REPORT OF:
PERFORM REMEDIAL WORK	PLUG AND ABANDON	REMEDIAL WORK	ALTERING CASING
TEMPORARILY ABANDON	CHANGE PLANS	COMMENCE DRILLING	OPNS. PLUG AND ABANDONMENT
PULL OR ALTER CASING		CASING TEST AND CE	MENT JOB
OTHER:		OTHER: Status C	hg. fr. PA'd to TA'd.
Describe Proposed or Completed Owork) SEE RULE 1103.	perations (Clearly state all pertinent deta	ails, and give pertinent dat	tes, including estimated date of starting any proposed
AHC State "V" #5 (0	08-07-95 Thru 08-11-95)		
Recorded the press. a BOP on 10" surf. csg. surf. to 150'. Fell & tagged up at 722'. out 7-5/8" prod. csg. out & circ. 7-5/8" cs 540 psi. Held OK. I ran PAL fr. 3,670' to TOC at 1,750'. Have	flange. Ran bit on d free & ran drill collar Circ. clean. Star Too to 3,136'. Recovered gg. clean fr. 3,136'-3,6 Pulled & laid dwn. tbg., o surf. Csg. good. Ran	ress. off to reversity collars & rest of a total collars of a total collars of a total o	rerse pit in 1 min. Install drilled solid cmt. fr. the of 8 drill collars. Ran tbg. ag to 722'. Drld. & cleaned alsion. Circ. clean. Drld. I heavy mud. Tst'd csg. to and bit. Schlumberger RU & fr. 3,670' to surf. Found dell passed the csg. integrity and On Back)
SIGNATURE PERSON	4 /		sistant DATE 09-18-95
		011 00011 713	
	L. Harvey		TELEPHONE NO. 505 393-2144
(This space for State Use)	e COM Portandos		
APPROVED BY	тпі	LE	DATE OCT 0 2 1995
CONDITIONS OF APPROVAL, IF-ANY	proval of Tamporary	15-48	41
Abandon	ment Expires		7.4

AHC State "V" #5 - Continued - Page 2

test. Schlumberger shot 4 holes in 7-5/8" prod. csg. at 1,510'. Ran Baker loc-set pkr. & set at 1,384'. Star Tool circ. 100 bls. fresh water through 7-5/8" csg. perfs. & out 10-3/4" surf. csg. at 4 BPM & 200 psi. TOH w/tbg. & pkr. Ran cmt. retainer on tbg. Pumped through tool w/10 bbls. fresh water & set at 1,450'. Halliburton pressured up on the csg. to 500 psi. Established rate into the perfs. at 3 BPM at 200 psi. Pumped 400 sacks of Premium Plus cmt. w/2% Calcium Chloride. Circ. out 10-3/4" surf. csg., pumped 4 sks. to pit, left 4 sks. on top of the retainer, left 12 sks. below the retainer & 380 sks. in the formation & between the 7-5/8" & 10-3/4" csg. Stung out of the retainer & reversed out. TOH w/the tbg. Removed the BOP & capped the wellhead. Cleaned location and RD & moved out pulling unit. TA'd well. Well donated to unit as NMGSAU Well No. 1423. NMOCD Well No. 286. Well TA'd for future use in North Monument Grayburg San Andres Unit.

Submit 3 Copies To Appropriate District Office		of New Me			Form C-103
District I 1625 N. French Dr., Hobbs, NM 88240	Energy, Minera	ils and Natu	iral Resources	WELL API NO	May 27, 2004
District II	OIL CONSEI	RVATION	DIVISION		30-025-20517
1301 W Grand Ave , Artesia, NM 88210 District III		th St. Fran		5. Indicate Typ STATE	e of Lease X FEE
1000 Rio Brazos Rd., Aztec, NM 87410 District IV	Santa	Fe, NM 8	7505	6. State Oil & C	
1220 S. St Francis Dr , Santa Fe, NM 87505			,	BO-1626	
SUNDRY NOT (DO NOT USE THIS FORM FOR PROPO DIFFERENT RESERVOIR USE "APPLI		EEPEN OR PL	UG BACK TO A	7. Lease Name North Monume Well 23	or Unit Agreement Name nt G/SA Unit: Blk 14
PROPOSALS.) 1. Type of Well: Oil Well X	Gas Well Other			8. Well Number	r 286
Name of Operator Apache Corp				9. OGRID Num	nber 00873
3. Address of Operator 6120 S Y	ale Ave, Suite 1500			10. Pool name o	,
4. Well Location	K 74136-4224			Eunice Monun	nent; Grayburg-San Andres
1	1980 feet from th	ne North	line and 183	30 feet fr	om the East line
Section 36	Township 1		inge 36E	NMPM	CountyLea
	11. Elevation (Show 3603' DF		RKB, RT, GR, etc.)	4	
Pit or Below-grade Tank Application 🔲 o					, and the second
Pit typeDepth to Groundw			ater wellDist		rface water
Pit Liner Thickness: mil				nstruction Material	
12. Check	Appropriate Box to	Indicate N	ature of Notice,	Report or Othe	r Data
NOTICE OF IN	ITENTION TO:		SUBS	SEQUENT RE	EPORT OF:
PERFORM REMEDIAL WORK	PLUG AND ABANDO	ON 🗆	REMEDIAL WORK	<	ALTERING CASING
TEMPORARILY ABANDON	CHANGE PLANS		COMMENCE DRI		P AND A
PULL OR ALTER CASING	MULTIPLE COMPL		CASING/CEMENT	JOB 📙	
OTHER:			OTHER:Request e		
					tes, including estimated date train of proposed completion
or recompletion.				FREM	The state of the s
Notified OCD of MIT. Successfull	y ran MIT 3/25/2008. S	See attached	chart.		
Apache respectfully requests to exte	end TA status on this we	ell.		APR 1 1 2008	
				DDC	
				DDO U	ICD
This Approval of Tempora Abandonment Expires —	ary / /2013				
This Approval of Tempore	2/16/20			*	
Abandonment Explica	/				
I hereby certify that the information grade tank has been/will be constructed or	above is true and compled closed according to NMOCI	ete to the be	st of my knowledge , a general permit 🔲 o	and belief. I furth	ner certify that any pit or below-
SIGNATURE Applie	Mackay	_TITLE Eng	ineering Tech		DATE 04/04/2008
Type or print name Sophie Mackay For State Use Only	5	E-mail add	dress:sophie.mackay	@apachecorp.c@i	relephone No. (918)491-4864
11-3	OCD	STECT SU	PERMICAN TO		APR 16 2008
APPROVED BY: // Conditions of Approval (if any):	Alleans	TITLE_	PERVISOR/GENER	al manager	DATE ' 10 LOUG

James C. Hunter, R.G. Summary of Education and Experience

- University of New Mexico, 1980: B.S. (Honors) Geology
- Colorado School of Mines, 1986: M.S. Geology
- Registered Professional Geologist: State of California #4467
- Previous Experience: Tenneco Minerals, Los Alamos National Laboratory, Geoscience Consultants, Ltd., Mariah Associates, Monteverde Environmental Consultants, J. C. Hunter & Associates
- Geolex, Inc. from 1997 to present. Projects include:
 - Acid gas injection (AGI) project management for a total of 17 AGI wells for clients including: Agave, Anadarko, DCP Midstream, Frontier Field Services, Holly Frontier, Regency, Santa Fe Midstream, Southern Union, Stakeholders Midstream, and Targa.
 - Developed and applied methods to calculate the migration of acid gas injected into underground reservoirs, incorporating reservoir petrophysical properties and acid gas phase equilibria over a wide range of pressures and temperatures.
 - Designing replacement AGI wells that were completed in existing, active AGI reservoirs.
 These wells required significant attention to metallurgy (corrosive-resistant alloys) and specialized cements, as well as drilling techniques and enhanced safety protocols.
 - Planned and implemented workover projects for AGI wells with operational problems, including hydrate blockages, gas bubbles, tubing and/or casing failures, and mechanical problems including surface and subsurface equipment.



Basis of Request for Order Modification

- Since the replacement well AGI D#2 was placed in operation, there have been significant increases in the CO₂ levels in the feed gas received by the Monument plant, and the amount of gas available for the plant has also increased.
- These conditions have created a need for additional gas processing which benefits operators, the State of New Mexico and Targa.
- The increased TAG plume will not impact any wells that penetrate the injection zone and that are not properly cased and cemented to prevent TAG migration.
- Step rate testing of AGI D#2 demonstrates that the MAOP currently approved will be sufficient to accommodate the proposed 5.0 MMSCFD injection rate.
- All of the potentially affected interested parties have been properly notified and have not objected to Targa's application for an increased injection rate.



Background and Regulatory History

- November 18, 2008: NMOCD approves application for Targa Monument AGI #1 (Order R-13052) injecting mixed wastewater and TAG in the Devonian and Fusselman zones. The mixed-fluid MAOP was 1,660 psig, with no limits on either wastewater or TAG injection rates.
- November 7, 2011: Case re-opened and NMOCC issued an amended Order (R-13052-A) capping the total injection rates at 5,000 BBL/day with a maximum TAG amount of 1,400 BBL/day (1,400 BBL/day is approximately 1 BBL/min or 2.5 to 2.7 MMSCFD at normal surface temperatures and pressures).
- August 2016: Mechanical problems force the plugging and abandonment of Targa AGI #1.
- October 19, 2016: NMOCD approves an administrative Order (SWD-1654) to replace AGI #1
 with AGI D#2 in the same zones, with a MAOP of 3,000 psig for TAG only, and a maximum
 injection rate of 2.5 MMSCFD.
- April 4, 2017: NMOCD and Geolex brief NMOCC on failure of AGI #1 well, status of replacement well AGI D#2 and the AGI #3 application status.
- April 24, 2017: NMOCD approves an administrative Order (SWD-1671) for a additional AGI well (AGI #3), again with an MAOP of 3,000 psig and an injection rate of 2.5 MMSCFD.
- May 25, 2017: Targa files request for injection rate increase with NMOCC after conferring with NMOCD technical staff.





Figure 2: AGI Wells at Targa Monument Plant



Operational History of AGI #D2 (March through May, 2017)

- The average injection rate was 1.36 MMSCFD, with a maximum of 2.15 MMSCFD.
- During this period the average surface pressure was 1,707 psig, with a maximum of 1,961 psig.
- As seen in Figure 3, both surface and bottom hole pressure do not significantly increase with higher injection rates.
- Surface pressures currently remain at least 1,000 psig below the MAOP of 3,000 psig.
- Bottom hole pressures averaged 4,576 psig, with a maximum of 4,848 psig.



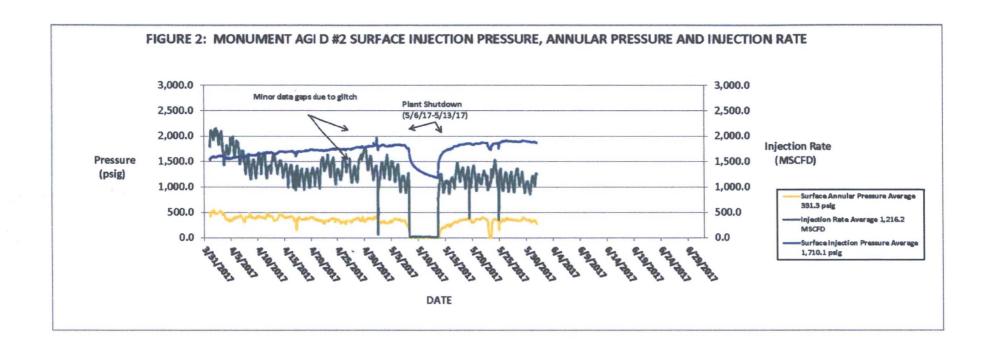


Figure 3: Injection Rate vs Injection Pressure, Second Quarter 2017



Effect of Proposed Injection Rate Increase

- The increase of injection rates from 2.5 to 5.0 MMSCFD only expands the calculated TAG plume from 0.33 to 0.47 miles.
- In Orders SWD-1654 and SWD-1671, three wells were identified and reviewed.
 The conditions of these wells were deemed acceptable for injection approval.
- As shown in Figure 4, only one additional well (J. R. Phillips 005) was identified as
 within the proposed expanded TAG plume from AGI #2D. As detailed in
 Attachment A of Targa's May 25, 2017 Application, records indicate that this well is
 properly cemented across the injection zone and poses no threat for TAG
 migration.
- With respect to the permitted but not-yet-drilled Targa AGI #3, this well's proposed expanded TAG plume will only encompass one additional well, the North Monument G/SA Unit 286. Records included in our May 25 application demonstrate that this well is properly cemented across the injection zone.



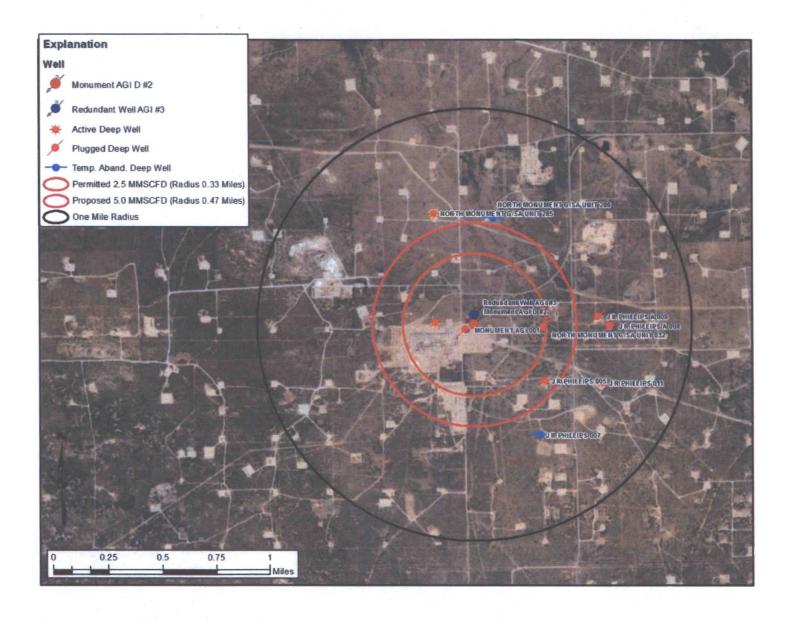


Figure 4: Calculated Radii of TAG Plume From AGI D#2 after 30 Years of Injection at 2.5 MMSCFD (0.33 Miles) and 5.0 MMSCFD (0.47Miles)

Identification and Notification of Interested Parties in Area of Review

- In preparing the applications for the replacement well AGI D #2 and approved well AGI #3, operators, lease holders and surface owners were identified and notified (see Appendix B of the C-108 application).
- The area of review was re-evaluated for the increased injection rate application, and three additional parties were included in the notification due to the expanded projected TAG plume.
- Return receipts indicate that notifications were received and no protests to this application have been filed.



Summary

- Targa requests that the current maximum injection rate for their Monument Gas Plant be raised from 2.5 to 5.0 MMSCFD.
- This injection increase remains a safe and effective method for disposing of TAG that will be generated from both the increase in CO₂ in inlet gas, as well as the anticipated growth in production and processing.
- Targa will continue to maintain the current MAOP of 3,000 psig, and will comply with all of the other conditions of Orders R-13052, R-13052-a, and SWD1654 and SWD-1671.
- The approved H₂S contingency plan for this facility incorporates H₂S concentrations and volumes which will be encountered in at the proposed injection rate.



June 13, 2016

State of New Mexico New Mexico State Land Office 310 Old Santa Fe Trail Santa Fe, NM 87501

VIA CERTIFIED MAIL
RETURN RECEIPT REQUESTED

RE: Targa Midstream Services LLC Application for Approval to Increase Injection Rate at Targa Monument AGI D#2 NMOCC CASE 15740, July 13, 2017

TARGA MIDSTREAM SERVICES LLC, whose address is 1000 Louisiana, Suite 4300, Houston, TX 77022-5036, proposes to increase the approved injection rate in order (R-13502-A) to 5MMSCFD of treated acid gas from its natural gas plant operations in Monument, New Mexico. The Monument AGI D#2 well (API # 30-025-43470) located 685' FSL and 2,362' FEL of Section 36, T19S, R36E in Lea County, New Mexico. This request is the only change proposed to the existing order and all other parameters such as the injection zone, depths, pressure remain the same for this well as are currently approved under NMOCD Order R-13052, 13502-A and SWD-1654 and 1671. The injection interval remains unchanged in the Devonian/Fusselman formations at a depth of approximately 8,350 to 9,200 feet. The proposed maximum average injection rate will be approximately 5.0 million standard cubic feet per day of acid gases, at the already approved a maximum surface pressure of 3,000 psig. This increased rate does not affect any additional wells than those originally identified in the applications which formed the basis for the existing approved injection orders. Interested parties must file objections with the New Mexico Oil Conservation Division, 1220 South St. Francis Dr., Santa Fe, New Mexico 87505, within 15 days.

Inquiries regarding this application should be directed to Mr. Alberto A. Gutierrez or Mr. James C. Hunter at Geolex Inc, 500 Marquette Ave. NW, Albuquerque New Mexico 87102, (505)-842-8000.

Sincerely, Geolex, Inc.

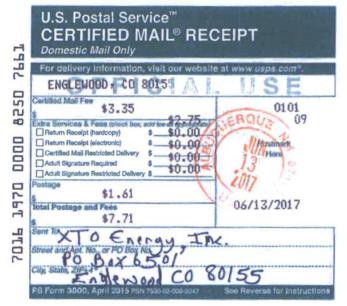
Alberto A. Gutiérrez, C.P.G. President Consultant to Targa Midstream Services LLC

Enclosure: Application to the NMOCC for an Amendment to Orders R-13052, R-13052-A, SWD-1654 and SWD-1671 to Increase the Approved Aggregate Daily Injection Rate for Targa Monument AGI System from 2.5 to 5.0 MMSCFD

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Case No. 15740











Before the Oil Conservation Commission Santa Fe, New Mexico Exhibit No. 5B

SENDER: COMPLETE THIS SECTION	COMPLETE THIS SECTION ON DELIVERY	SENDER: COMPLETE THIS SECTION	COMPLETE THIS SECTION ON DELIVERY
■ Complete items 1, 2, and 3. ■ Print your name and address on the reverse so that we can return the card to you. ■ Attach this card to the back of the mailpiece, or on the front if space permits. 1. Article Addressed to: Twen Carles Markinez 210 W. Chance Dr. H.bbs NM 88242	A. Signature Agent Addresse B. Received by (Printed Name) C. Date of Deliver D. is delivery address different from item 17 Yes If YES, enter delivery address below:	So that we can return the card to you.	A. Signature X B. Received by (Printed Name) D. Is delivery address different from Item 1? If YES, enter delivery address below: No. 18 delivery address different from Item 1? No. 18 delivery address delivery address below: No
9590 9402 2370 6249 0048 90	3. Service Type □ Priority Mail Express® □ Registered Mail™ Registered Mail™ Restricted Delivery □ Registered Mail Restrict Delivery □ Collect on Delivery □ Receipt for Merchandise	9590 9402 2370 6249 0048 38	3. Service Type Adult Signature Adult Signature Restricted Delivery Cortified Mail Restricted Delivery Cortified Mail Restricted Delivery Cortified Mail Restricted Delivery Collect on Delivery
2. Article Number (Transfer from service label) 7016 1970 0000 8250 7654	☐ Collect on Delivery Restricted Delivery ☐ Insured Mail ☐ Insured Mail ☐ Insured Mell Restricted Delivery (over \$500) Restricted Delivery	2. Article Number (Transfer from service lebel) . 014 1970 0000 8250 7497	☐ Collect on Delivery Restricted Delivery ☐ Signature Confirmation™
PS Form 3811, July 2015 PSN 7530-02-000-9053		PS Form 3811, July 2015 PSN 7530-02-000-9053	Domestic Return Receipt

		DELIVERY
 Complete items 1, 2, and 3. Print your name and address on the reverse so that we can return the card to you. Attach this card to the back of the mailpiece, or on the front if space permits. 1. Article Addressed to: Charlie F. Bynd, et al. PO Box 32 Monument NM 88265 	A. Signature X. Adamse Burd Addressee B. Backived by (Printed Name) C. Date of Delivery V. ANNE PURD C. Date of Delivery D. Is delivery address different from item 11 Ves If YES, enter delivery address below: No	
9590 9402 2370 6249 0048 52 2. Article Number (Transfer from service label) 7016 1970 0000 8250 7715	3. Service Type Adult Signature Adult Signature Restricted Delivery Certified Mail® Certified Mail Restricted Delivery Collect on Delivery Collect on Delivery Restricted Delivery Insured Mail Insured Mail (over \$500)	□ Priority Mail Express® □ Registered Mail ™ □ Registered Mail Restricted Delivery □ Return Receipt for Merchandise □ Signature Confirmation™ □ Restricted Delivery

Before the Oil Conservation Commission
Santa Fe, New Mexico
Exhibit No. 5C
ubmitted by: Targa Midstream Services LLC
Hearing Date: July 13, 2017
Case No. 15740



