MINUTES

SPECIAL COMMITTEE ON NATURAL GAS STORAGE FIELDS AND FACILITIES

October 28, 2010
Room 144-S—Statehouse

Members Present

Senator Carolyn McGinn, Chairperson
Representative Carl Holmes, Vice-chairperson
Senator Marci Francisco
Senator Steve Morris
Senator Mark Taddiken
Senator Ruth Teichman
Representative Gary Hayzlett
Representative Mitch Holmes
Representative Forrest Knox
Representative Ann Mah
Representative Cindy Neighbor
Representative Joe Siewert
Representative Dale Swenson

Staff Present

Cindy Lash, Kansas Legislative Research Department
Heather O'Hara, Kansas Legislative Research Department
Raney Gilliland, Kansas Legislative Research Department
Laura Younker, Kansas Legislative Research Department
Matt Sterling, Office of the Revisor of Statutes
Scott Wells, Office of the Revisor of Statutes
Gordon Self, Office of the Revisor of Statutes
Renae Hansen, Committee Assistant

Others Attending

Sixty including the attached list.

Overview of Committee Charge and Presentation of Background Information

Cindy Lash, Kansas Legislative Research Department, provided an overview to the Committee of the testimony they had before them. Included in the packet was a list of Committee members and the charge set forth for the Committee (Attachment 1).

Scott Wells, Office of the Revisor of Statutes (Attachment 2), gave an overview to the Committee on SB 553 that was introduced by Senator Teichman during the 2010 Legislative Session. Mr. Wells gave background information on the bill. Additionally, Mr. Wells discussed the legal definition of the term "adjoining" (Attachment 3). He further explained KSA 55-1,115 and 55-1201, as the statutes pertain to the issue of natural gas storage fields and facilities.

Heather O'Hara, Kansas Legislative Research Department (Attachment 4), spoke to the Committee on the legislative history of Kansas statutes regarding underground storage issues.

Laura Younker, Kansas Legislative Research Department (Attachment 5), spoke to the Committee on comparisons of state laws regarding the migration of natural gas. Ms. Younker answered questions by Committee members. In the surrounding states, the law states that when natural gas is injected into underground storage, the injector is the owner of the natural gas. Ms. Younker will provide follow-up information on how surrounding states assess liability for damages resulting from migrating gas.

Matt Sterling, Office of the Revisor of Statutes, presented several documents pertaining to the overview of recent court decisions and federal actions:

- Federal Regulation of the Interstate Distribution of Gas, (Attachment 6);
- *Colorado Interstate Gas Company v. Thomas E. Wright, et al.* Kansas Corporation Commission (KCC), (Attachment 7);
- Federal Energy Regulatory Commission (FERC) Order Concerning Northern Natural Gas, (Attachment 8); and
- *Northern Natural Gas Company v. ONEOK* and *Lumen v. Nash and L.D.*, (Attachment 9).

In response to questions by the Committee, it was noted if it is interstate natural gas, then it is FERC's jurisdiction and if it is intrastate natural gas, then it is the State of Kansas' jurisdiction.

Tom Stratton, KCC Chief Litigation Counsel (Attachment 10), spoke to the Committee on the issues surrounding natural gas storage in Kansas. Mr. Stratton and other KCC staff addressed the issues set forth below.

- Review of Regulation of Underground Storage Facilities Procedures.

John McCannon, KCC Litigation Counsel, reviewed the KCC regulations of underground storage facilities. He said liability for the Yaggy Storage Field explosion in Hutchinson, Kansas, in 2001, fell on ONEOK, which operated the storage field.

Tom Stratton presented information about the *Colorado Interstate Gas Co. v. Thomas E. Wright, et al.* case. He noted that the Federal Natural Gas Act and the Pipeline Safety Act preempted any state regulation that was in effect at that time. He noted that the court primarily addressed two aspects of the KCC's regulations: permitting and safety. Mr. Stratton noted that there was an absence of U.S. Department of Transportation regulation of the pipelines, leaving an opening for the KCC to have some authority over them, which was welcomed by FERC.

Doug Louis, KCC Conservation Director, reviewed Northern Natural Gas' containment plan for the migrating natural gas. Mr. Louis stated that Northern Natural Gas set forth several goals and a specific plan was filed with FERC on July 23, 2010.

Overview of Recent Court Decisions and Federal Actions

Tom Stratton continued speaking in the afternoon about the Southern Star Storage Field expansion with regard to FERC rulings. He noted that Southern Star lost close to $2 million in its investment at the South Welda field due, in large part, to gas migration. FERC determined that due to this migration, Southern Star should be authorized to buy all the mineral rights within the certificated boundary of the South Welda storage area.

Rule of Capture

John McCannon spoke to the Committee on the rule of capture. Once minerals move off the landowner's property, the landowner loses his or her ownership rights to the minerals. The rule of capture protects adjacent landowners who, through production on his or her land, cause the minerals to migrate across surface boundaries.

Federal and State Court Litigation Involving Interstate Pipeline Gas Storage Facilities

Tom Stratton spoke to the Committee in detail on two cases: *Northern Natural Gas v. Trans Pacific Oil* and *Northern Natural Gas v. Nash Oil & Gas, Inc.* He discussed several other cases involving Northern Natural Gas versus various other plaintiffs. Andrew Shulte, KCC, litigation counsel, spoke to the Committee on the differences between the state and federal court rulings regarding KSA. 55-1210.

Kansas Gas Storage Facilities; General Information and KCC's Current Regulatory Role and Update on Natural Gas Storage Field Pressures in Kansas

Doug Louis provided a map showing the location of active natural gas porosity storage fields in the state. Included in the testimony was a table showing extensive information about the various fields. Mr. Louis spoke on the specific regulations for natural gas storage facilities, which are broken up into groups by permitting requirements, operational requirements, and abandonment requirements. He gave the Committee a briefing on the current draft resolutions that are being put forth to FERC.

In response to questions, KCC staff members answered they were unaware if federal law would prohibit someone from injecting gas into an underground water aquifer. Mr. Stratton commented that the TransCanada pipeline under construction in Kansas is an interstate pipeline and FERC will have the controlling jurisdiction on that pipeline, because it will carry oil. He noted that FERC has the ultimate authority to increase the storage acreage for natural gas. The KCC staff members noted that Northern Natural Gas has alleged it has been losing money due to the migration of the natural gas.

Representative Carl Holmes noted the only time production goes up in a natural gas well is when there is injection of natural gas into the ground. The standard curve of production for a natural gas well is always on a declining curve from the moment of production.

Senator Morris noted that the Legislature may need to clarify current state statutes so that it becomes clear where the state stands on the issue of natural gas storage.

Written testimony and other documents provided in the Committee folders included:

- Written testimony by Northern Natural Gas (Attachment 11);
- Written testimony by William M. Cobb and Associates (Attachment 12);
- A research paper by Jacob L. Porter, Research Paper (Attachment 13);
- Written testimony by Southern Star Central Gas Pipeline, Inc. (Attachment 14);
- A listing from the Kansas Legislative Research Department summarizing Proponents' and Opponents' Testimony on 2010 SB 553 (Attachment 15);
- A Timeline of Events for Natural Gas Storage, developed by the Kansas Legislative Research Department (Attachment 16); and
- Article: "The Basics of Underground Natural Gas Storage" (Attachment 17).

The following outlines Committee discussion, recommendations, and direction to staff:

- It was determined to let the appropriate House and Senate standing committees address tax issues referenced in the Special Committee's charge;
- Representative Carl Holmes stated the Committee should encourage the KCC and the Interstate Oil and Gas Compact Commission (IOGCC) to push the safety issue before the March 2011 meeting of the Energy Council. In conjunction, a state resolution addressing safety should be drafted and passed by the Legislature in time to accompany this effort;
- Senator Morris noted that the KCC needs to be the oversight organization for the natural gas storage solution in Kansas, rather than FERC. A separate legislative resolution to that effect should be drafted and worked by the 2011 Legislature;
- Kansas needs to identify other states that might join in approaching the Energy Council on the safety issue; and

- The appropriate standing committees should review KSA 55-1210 to determine if changes need to be made to clarify the definition of "adjoining."

There are no further meetings scheduled.

The meeting was adjourned at 3:48 p.m.

Prepared by Ranae Hansen
Edited by Heather O'Hara

Approved by Committee on:

January 20, 2011
(Date)

51001

SPECIAL COMMITTEE ON NATURAL GAS STORAGE FIELDS AND FACILITIES GUEST LIST

DATE: October 28,2010

NAME	REPRESENTING
Ron Gaches	Atmos Energy, El Paso, Southern Star
Doug Louis	KCC
John McCannon	KCC
Tom Stratton	KCC
Dorothy Jrinkle	Haynesville Group
Wes Ashton	Black Hills Energy
LARRY BERG	MIDWEST ENERGY
Melissa Wagenmann	KAC
Whitney Damron	ONEOK / KS Gas Service
Steve Johnson	ONEOK
Shane Lyle	KGS
Terry Humphrey	Terry Humphrey Public Affairs
Rod Secker	KAEP
Bill Watts	PVD KDOR
Rob Neal	Kennedy & Assoc.
John A. Donley	KS Lusk. Assn
John Peterson	Capitol Strategies - NI Natural Gas
Michael Wales	ILLRD
Dennis Hein	Hein Law Firm

SPECIAL COMMITTEE ON NATURAL GAS STORAGE FIELDS AND FACILITIES GUEST LIST

DATE: October 28,2010

NAME	REPRESENTING
Mark Low	Fi Co App
Leon Reimer	Meade County App
D J. McMurry	PGAT Co App
GAYLA GODFREY	RICE COUNTY APPRAISER
Ed Cross	KIOGA
Mike Cochran	KDHE
Mark Jennings	KDHE
Trent Casey	GBA
Gene Lueger	KDHE
Ruth Mergen Urban	Haynesvilles Owners Assoc.
Sonja Steeds	Haynesville Owners Assoc.
Doug Stacy	
Shari Albrecht	KDHE
TIM KEENAN	LD Drilling Inc.
L D Davis	L D Drilling Inc
Marilyn Davis	L D Drilling Inc
Lawrence Garrett	Colorado Interstate Gas Co
Sarah Blaine	Panhandle Eastern

Doug Smith

Haynesville Surface Owners

SPECIAL COMMITTEE ON NATURAL GAS STORAGE FIELDS AND FACILITIES GUEST LIST

DATE: October 28,2010

NAME	REPRESENTING
TOM MAITZ	Northern Natural Gas
Tom Cook	Northern Natural
Mark Hewett	North Natl Gas Co.
Jim Talcott	" " "
Randal M Brush	William M. Cobb & Assoc., Inc
JPSMALL	KOCH INDUSTRIES EXXON
Jacob Porter	—
Ray Bergmeier	KCC
Andrew Schulte	KCC
MIKE LOEFFLER	Northern Natural Gass
Bill Brady	NNG
Ken PETERSON	KS Petroleum Council
Michelle Butler	Capitol Strategies
Pat Hubbell	BNSF
Sean Miller	Capitol Strategies
GORDON STULL	HAYNESVILLE ASSOCIATON
DOUG SHATAS	ATMOS ENERGY
JIM BARTLING	✓ ✓

name	representing
Con Stanton	Northern Natural Gas
Tom Day	KCC.

2010 SPECIAL COMMITTEE ON NATURAL GAS STORAGE FIELDS AND FACILITIES

Senate	House
Sen. Carolyn McGinn, Chairperson	Rep. Carl Holmes, Vice-chairperson
Sen. Marci Francisco	Rep. Gary Hayzlett
Sen. Steve Morris	Rep. Mitch Holmes
Sen. Mark Taddiken	Rep. Forrest Knox
Sen. Ruth Teichman	Rep. Ann Mah
	Rep. Cindy Neighbor
	Rep. Joe Siewert
	Rep. Dale Swenson

Kansas Legislative Research Department	Revisor of Statutes Office
Cindy Lash; Heather O'Hara; Raney Gilliland Renae Hansen, Committee Secretary	Scott Wells, Matt Sterling, Gordon Self

CHARGE

Natural Gas Storage Fields and Facilities. Study the impact of two recent court cases and their potential effects on state law and regulations associated with natural gas storage fields and facilities in Kansas. Review the potential impact on the state's ability to regulate natural gas storage fields (including safety of the fields) as a result of the Federal District Court's decision in *Colorado Interstate Gas Company vs. Thomas E. Wright, et. al.* Study current law and the potential impact on state law as a result of the Kansas District Court's decision in *Northern Natural Gas Company vs. ONEOK Field Services Company, et. al.* Review the need to amend current state law based on these court decisions. Study the taxation of natural gas in underground storage facilities, the fields, storage gas, cushion gas and other minerals produced from storage fields. Review the current law that does not impose a tax on oil produced when storage gas is withdrawn from a natural gas storage field.

Special Committee on Natural Gas Storage Fields and Facilities

Date: 10/28/10

Attachment: 1

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MEMORANDUM

To: Joint Committee on Natural Gas Storage Fields and Facilities

From: Scott Wells, Assistant Revisor

Date: October 28, 2010

Subject: 2010 SB 553

Background

2010 Senate Bill 553 was introduced at the behest of Senator Teichman and approved for introduction on February 23, 2010, by the Senate committee on Ways and Means. The bill was referred to the Senate committee on Natural Resources on the following day and was the subject of hearings held by that committee on the 4th, 10th, and 11th, of March. After hearing testimony on the bill, no action was taken by the committee and an interim study of the issue, outcomes of recent court cases

At the time of its introduction, the provisions of SB 553 addressed a dispute in Pratt country between Northern Natural Gas Company, Inc. (Northern) and local property owners who receive royalties from natural gas wells that are located in an area within 6 miles of Northern's Cunningham storage field. The central issue to this dispute is determining who has title to the gas being produced at the wells in the impacted area. Northern asserts that the gas in question is actually storage gas which has migrated outside the certified storage boundary to adjoining property and therefore it still retains title to that gas. The property owners argued that they were the ones who had title to the gas being produced either because it was native gas or because even if the gas was originally storage gas belonging to Northern, it had migrated beyond adjoining property and was thus subject to the rule of capture. Wrapped up within this issue of title is a myriad of other issues that include public safety, private property right's of landowners in the affected area and lost tax revenues. SB 553 was introduced to address all these issues.

After hearing testimony from both proponents and opponents of SB 553, no action was taken by the committee. Subsequently, an interim study of this topic, including the outcomes of recent court cases and their potential impact on the provisions of the bill itself, was requested by Senate President Steve Morris. In that light, the Joi

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Gas Storage Fields and Facilities was charged with: Reviewing the potential impact on the state's ability to regulate natural gas storage fields (including safety of the fields) as a result fo the Federal District Court's decision in Colorado Interstate Gas Company v. Thomas E. Wright, et. al.; studying current law and the potential impact on state law as a result of the Kansas District Court's decision in Northern Natural Gas Company v. ONEOK Field Services Company, et. al.; studying the taxation of natural gas in underground storage facilities, the fields, storage gas, cushion gas and other minerals produced from storage fields; and reviewing the current law that does not impose a tax on oil produced when storage gas is withdrawn from a natural gas storage field.

Provisions of SB 553

A. Amendments to K.S.A. 55-1,115 and 55-1201. Section 1 of the bill amends K.S.A. 55-1,115 by preventing the Kansas Corporation Commission from renewing or amending underground porosity storage permits issued after July 1, 2002, if the permit holder is seeking a certificate of public convenience and necessity pursuant to 15.U.S.C. 717F in order to recover gas beyond the boundaries set forth in K.S.A. 55-1210[1]. This section is also amended to give the commission the power to assess a $1000 penalty per day that a natural gas public utility is found to be in violation of KCC rules and regulations due to leaking or migrating gas. The commission would also be given the power to suspend or cancel underground porosity storage permits in the case that such storage facility causes waste, pollution or a threat to public safety.

Section 2 amends K.S.A. 55-1201 to amend the definition of "natural gas public utility" to include those entities engaged in the business of underground storage of natural gas and also add three new definitions. Of the new definitions, the one most central to the issues surrounding the bill would be the new definition of "adjoining"[2]. In the bill, the term "adjoining" is defined as "the area which includes the surface and subsurface area within a ½ mile radius of a certified boundary of an underground storage field". This definition would apply to all of Article 12 of Chapter 55 of the Kansas Statutes, which covers underground storage of natural gas.

B. Amendments to 55-1210

1. Current law. Senate Bill 553 proposes extensive amendments to K.S.A. 55-1210, which is the provision of Kansas law that addresses what's commonly known as the rule or

1 The two citations here are incorrectly listed in the bill as 15 U.S.C. 715f and K.S.A. 12-1210.
2 The other two definitions are for "conservation division" and "state emergency management".

law of "capture". Very generally speaking, not taking into consideration the amendments proposed in the bill, this section states that one who injects (including heirs or assigns) natural gas into the ground retains possession of that gas. Subsection (c) of this section goes on to specifically address gas which has migrated onto "adjoining property" and delineates the rights of both the injector and the landowner. In that case, the injector (heirs or assigns) retains title to the gas given it can be proven by a preponderance of the evidence that the gas was originally injected in underground storage. The injector also has the right to conduct tests on existing wells on adjoining property, at their own expense, that may be reasonable in order to determine the ownership of any gas being produced. The landowner would then be entitled to compensation for use of or damage to the surface or substratum and to recover costs and expenses, including attorney's fees, if litigation was necessary to enforce rights under subsection (c) and the injector did not prevail.

2. Proposed Amendments. Subsection (a) of this section would be amended to make clear that the injector retains title to the injected gas except as limited by the provisions of the section. Because of the addition of the definition of "adjoining" in K.S.A. 55-1201, subsection (c) would now only apply to gas which has migrated to property within an area of ½ mile from the certified boundary of a storage field. Under the proposed amendments to the bill, an injector would now has to show "clear and convincing" evidence that such gas was originally injected into underground storage as opposed to the current, less stringent standard of a preponderance of the evidence.

Landowners outside the certified storage boundary would be entitled collect compensation under a number of new situations, including trespass, conversion and slander of title. Also, litigation would no longer be necessary to award reasonable attorney fees and expenses could be awarded under a number of new situations, including determining the extent of migrated and migrating natural gas, negotiating of lease agreements for storage of natural gas, proceedings in front of any state or federal agency having oversight of underground storage fields or the transportation of natural gas, and any other litigation necessary to enforce any rights under that subsection. Language goes on to state that subsection (c) shall apply retroactively to all such litigation and such state and federal proceedings. Language which awarded attorney fees to enforce rights under subsection (c) where litigation was necessary and the injector did not prevail has been removed.

New paragraphs 4, 5 to subsection (c) outline some instances where the injector does lose title to injected gas which has migrated. The first instance would be if such gas has

migrated as a result of pressure in a storage field in excess of 75% of the fracture gradient of such field or reservoir. Secondly, the injector would lose title if the injector is aware of or has reason to know that natural gas is migrating or has migrated and fails to notify certain listed parties within 30 days of the date the injector knows or has reason to know of the migration. New paragraph 6 would make it clear that the "rule of capture" applies to any gas that has migrated or is migrating beyond "adjacent" property as described in subsection (c)[3].

New paragraph 7 requires the injector to compensate any taxing entity which suffers a loss of ad valorem taxes due to the injector's gas migrating into property outside the certified storage area if such migration or condemnation of property affected by the migration results in a cessation of production from an existing oil or gas well which was subject to ad valorem taxation at the time of cessation. The amount of compensation is based on the fair market value of the proved producing and proved non-producing gas or oil which could have been produced from the well during its commercial life but for the cessation. A claim for recovery under this section is to be made in the county where the well is located and the amount of recovery to be determined by the county appraiser. The county appraiser is to assume that the fair market value was or could have been produced in the year of cessation or condemnation, whichever is latest. The injector is then required to file a statement of assessment with the county appraiser on or before April 1 of the year following cessation or condemnation. The mill levy rate for the affected taxing entities in effect for the year of cessation or condemnation is to be applied to determine the tax compensation. If the injector fails to pay the tax within 30 days, the tax will become delinquent and be a lien on the injector's real and personal property located in the county. Delinquent taxes will accrue interest and penalties in accordance with K.S.A. 79-2004.

Finally, subsection (d) is amended to state that landowners with title or an interest in an underground storage field, reservoir or facility or an area containing migrated or migrating gas has the right to compel compliance with this section by injunction or other appropriate relief by application to a court of competent jurisdiction. Landowners bringing any such actions are then entitled to recover costs described in subsection (c)(3).

As it is currently written, SB 553 would become effective upon publication in the Kansas Register.

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3 The term "adjacent" as used here appears to actually mean "adjoining" and should be considered a technical amendment that would be necessary if the bill were reintroduced in the future.

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MEMORANDUM

To: Joint Committee on Natural Gas Storage Fields and Facilities

From: Scott Wells, Assistant Revisor

Date: October 28, 2010

Subject: Definition of "adjoining"

The Kansas Supreme Court has specifically ruled on the meaning of the term "adjoining" as it is used in K.S.A. 55-1210. In *Williams Natural Gas Co. v. Supra Energy, Inc.*, 261. Kan 624, 931 P.2d 7 (1997), the court upheld the lower courts ruling that "adjoining" was any section adjacent to a storage field. (Williams at 630). The Court went on to clarify that, "any section of land which touched a section containing a storage field was adjoining" finding that interpretation of the word was consistent with prior court holdings (Williams at 630 citing *State, ex rel., v. Bunton*, 141 Kan. 104, 40 P.2d 326 (1935))[1].

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1 In the *Bunton* case, the Kansas Supreme Court cited to Webster's International Dictionary for a definition of "adjoining". In that case, it was determined that adjoining meant "to be contiguous to; to be in contact with; to abut upon".

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October 28, 2010

To: Special Committee on Natural Gas Fields and Facilities

From: Cindy Lash, Heather O'Hara, and Raney Gilliland, Legislative Research Department

Re: History of Kansas Statutes Regarding Underground Storage

Under a series of Kansas Supreme Court decisions in the 1980s, the Court ruled that an entity which injected natural gas into storage formations lost title to the gas it injected if the storage gas migrated beyond the lateral boundaries of the storage facility and was produced from wells on adjoining property to which the injector had no storage rights and had not obtained certification from the Kansas Corporation Commission (KCC). In the Court's opinion, this "rule of capture" was reflected in the Kansas statutes, as originally passed in 1951 and 1961, which regulate the underground storage of gas.

The original statutes of KSA 55-1201, *et seq.* that were considered by the Kansas Supreme Court in the 1980s are as follows:

- KSA 55-1201 contains a definition section, defining the terms underground storage, natural gas, native gas, natural gas public utility, and commission.

- KSA 55-1202 states that the underground storage of natural gas which promotes conservation, permits the building of reserves for orderly withdrawal in periods of peak demand, and makes natural gas resources more readily available to consumers promotes the public interest and welfare of the state. The statute also states that the KCC may find and determine that the underground storage of natural gas is defined as in the public interest.

- KSA 55-1203 provided that any natural gas public utility may appropriate for its use for the underground storage of natural gas any subsurface stratum or formation in any land which the KCC finds to be suitable and in the public interest for the underground storage of natural gas.

- KSA 55-1204 and 1205 discuss eminent domain procedures for the purpose of acquiring property for underground storage of natural gas.

- KSA 55-1207 provides for the leasing of state-owned land for the underground storage of natural gas.

In 1993, the Legislature introduced and held hearings on Senate Bill 168, which provided that the injector would not lose title to, or the right of possession of, gas previously injected if it could be proved by a preponderance of the evidence that the gas was originally injected by the injector.

Special Committee on Natural Gas Storage Fields and Facilities

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According to the available committee minutes, the bill language was based upon existing Oklahoma statutes dealing with underground gas storage. However, one key difference between SB 168 and the Oklahoma statute was that the Kansas language contained a reference to gas that has migrated to adjoining property. This language, distinguishing adjoining property, does not appear in the Oklahoma statutes.

During the committee hearings on SB 168, the conferees on the bill included the Williams Natural Gas Company, Southwest Kansas Royalty Owners Association, Panhandle Eastern Pipeline Company, and the Kansas Corporation Commission. Specifically, the Williams Natural Gas Company testified that as the largest underground storage company in Kansas, the bill would provide for statutory protection of title, or right of possession, of natural gas which has been injected into an underground facility. In addition, the company representative added, the bill would protect the adjoining surface and mineral owners by requiring that any testing to be completed on the natural gas would be done at the sole expense of the injectors. The bill also entitles adjoining property owners to compensation for damages and expenses if the injector does not prevail in litigation. The Kansas Corporation Commission provided testimony stating the court system was the proper forum for determining the title to natural gas stored in an underground storage facility that had become fugitive and escaped into other strata or migrated beyond the boundaries of the facility.

Various amendments were offered and accepted by conferees and committee members during the Senate and House committee process. On March 2, 1993, the Senate passed the bill by a vote of 37-3 and the House passed the bill by a vote of 122-2 on March 22. Governor Joan Finney signed the bill on April 4, 1993.

The provisions of SB 168 became KSA 55-1210, which includes four subsections, that are detailed below:

- Subsection (a) states that natural gas which is subsequently injected into underground storage fields, sands, reservoirs, and facilities is the property of the injector.

- Subsection (b) denies the mineral and surface owners of lands containing storage fields any rights to the injected gas in the storage fields. This subsection states that the rule of capture does not apply to injected gas.

- Subsection (c) describes the injector's rights with regard to natural gas that has migrated to adjoining property or to a stratum, which has not been condemned.

- Subsection (c)(1) states that injectors do not lose title or possession to the migrating gas to adjoining property if they can prove by a preponderance of the evidence that the gas was originally injected into the underground storage.

- Subsection (c)(2) states that injectors have the right to conduct tests on existing wells on adjoining property at their own risk and expense to determine ownership of the gas.

- Subsection (c)(3) states that the owners of the stratum and the owner of the surface shall be entitled to compensation for use of or damage to the surface or substratum, and all costs and expenses, if litigation is necessary to enforce subsection (c) and the injector does not prevail.

- Subsection (d) states that the injector has the right to compel compliance with the statute through court actions.

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On January 17 and 18, 2001, natural gas exploded in Hutchinson, Kansas, which killed two people, destroyed two downtown businesses, and created a series of geyser-like spouts of water and gas throughout the town. State geologists and local officials later said the probable cause of the explosions was approximately 143 million cubic feet of gas that had leaked from an underground storage cavern northwest of Hutchinson.

During the 2001 Legislative Session, House Bill 2200 was introduced and passed by the Legislature. Within the bill's numerous sections on oil and gas issues, the bill included language that prohibited underground porosity storage of hydrocarbons (for example, natural gas or propane) in certain rock formations that contain water with relatively low salt concentrations, which was defined as less than 5,000 milligrams of chlorides per liter. Other provisions of the bill included regulations for porosity storage of hydrocarbons. The Legislature approved the bill and the Governor signed the bill into law. This portion of the bill became KSA 55-1,115.

During the 2003 Legislative Session, a bill was requested for introduction by a pipeline company that recently purchased existing porosity storage facilities in Kansas. The bill amended KSA 55-1,115 by allowing existing underground porosity storage to continue if it was already in use prior to July 1, 2002. A representative of the company and a representative of the KCC spoke in favor of the bill with no opposition. The bill was passed by the Legislature and the Governor signed the bill into law.

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October 28, 2010

To: Special Committee on Natural Gas Storage Fields and Facilities

From: Laura Younker, Legislative Fellow

Re: Comparison of State Laws Regarding Migration of Natural Gas

The table below compares statutes from Colorado, Missouri, Nebraska, Oklahoma, and Texas regarding ownership of natural gas storage. These states have not defined the terms "adjoining" or "rule of capture" in statute. All of the surrounding states do not follow the rule of capture regarding migrating natural gas. Furthermore, these states have not addressed natural gas migration in regards to compensation to landowners.

Comparison of Natural Gas Storage Statutes in Surrounding States

Colorado	All natural gas in said underground reservoir, and the rights reasonably necessary for the injection and storage in and withdrawal from said underground reservoir of said natural gas, as defined and limited by the decree of the district court, shall be the property of said natural gas public utility. In no event shall such gas be subject to the right of the owner of the surface of said lands or of any mineral interest therein or of any person other than the public utility, its successors, or its assigns, to produce, take, reduce to possession, or otherwise interfere with or exercise any control over the gas. The right of condemnation granted by this article shall be without prejudice to the rights of the owner of said land or of other rights and interests therein to drill or bore through the underground stratum or formation so appropriated in such manner as to comply with orders, rules, and regulations of the commission issued for the purpose of protecting underground storage, strata, or formations against pollution or against the escape of natural gas therefrom, and shall be without prejudice to the rights of the owner of said lands or other rights or interests therein as to all other uses thereof. The additional cost of complying with such regulations or orders in order to protect the storage shall be paid by the public utility. Colo Rev. Stat. § 34-64-107 (2010).
Missouri	Whenever gas belonging to any person or corporation is injected into underground storage, it shall, unless and until it be abandoned by the owner thereof, be and remain personal property and the property of the owner thereof, and shall not be subject to production, taking, reduction to possession, waste or interference by the owner of the surface of the land under which the gas storage company has obtained the right to store gas, or by any person whomsoever except the owner thereof and persons acting by his authority; provided nothing herein contained shall apply to a person under

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	whose land gas may be stored without the gas storage company having obtained the right to store gas. Mo. Rev. Stat. § 393.500 (2010).
Nebraska	All natural gas or liquefied petroleum gas which has previously been reduced to possession, and which is subsequently injected into an underground storage reservoir, shall at all times be deemed the property of the condemner, his heirs, successors or assigns; and in no event shall such natural gas or liquefied petroleum gas be subject to the right of the owner of the surface of said lands or of any mineral interest therein, under which said gas storage reservoir lies, or of any person other than the condemner, his heirs, successors and assigns, to produce, take, reduce to possession, waste, or otherwise interfere with or exercise any control thereover; *Provided*, that the condemner, his heirs, successors and assigns, shall have no right to natural gas or liquefied petroleum gas in any stratum, or portion thereof, which has not been condemned under the provisions of sections 57-601 to 57-609, or otherwise purchased. Neb. Rev. Stat. § 57-608 (2010).
Oklahoma	All natural gas which has previously been reduced to possession, and which is subsequently injected into underground storage fields, sands, reservoirs and facilities, shall at all times be deemed the property of the injector, his heirs, successors or assigns. In no event shall such gas be subject to the right of the owner of the surface of said lands or of any mineral interest therein, under which said gas storage fields, sands, reservoirs, and facilities lie, or of any person other than the injector, his heirs, successors and assigns, to produce, take, reduce to possession, waste, or otherwise interfere with or exercise any control thereover. With regard to natural gas in a stratum, or portion thereof, which has not been condemned or otherwise purchased under the provisions of this act: 1. The injector, his heirs, successors and assigns shall not lose title to such gas if such injector, his heirs, successors or assigns can prove by a preponderance of the evidence that such gas was originally injected into the underground storage; 2. The injector, his heirs, successors and assigns, shall have the right to conduct such tests, at his sole risk and expense including, but not limited to, the value of any lost production of other than the injector's gas, as may be reasonable to determine ownership of such gas; and 3. The owner of the stratum shall be entitled to such compensation as is provided by law. Okla Stat. tit. 52 § 36.6 (2010).
Texas	All natural gas in the stratum condemned which is not native gas, and which is subsequently injected into storage facilities is personal property and is the property of the injector or its assigns, and in no event is the gas subject

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Attachment:

	to the right of the owner of the surface of the land or of any mineral or royalty owner's interest under which the storage facilities lie, or of any person other than the injector to produce, take, reduce to possession, either by means of the law of capture or otherwise, waste, or otherwise interfere with or exercise any control over a storage facility. Upon failure, neglect, or refusal of the person to comply with this section, the storer has the right to compel compliance by injunction or by other appropriate relief by application to a court of competent jurisdiction. Tex. Nat. Res. Code Ann. § 91.182 (Vernon 2010).

Utility Company's Duty to Compensate Landowners

From the statutes cited above, none have dealt with the issue of whether utility companies are required to compensate landowners for costs the landowner incurs to defend a claim by the utility company (e.g., hiring engineers or geologists as witnesses). Okla Stat. tit. 52 § 36.6 touches on the right of an injector to conduct tests, but not the rights of the landowner of the adjoining property. In the Colorado statute, it could be argued that the public utility company could have to compensate the landowner in defending a claim by the utility company as part of the statutory mandate that the public utility company must pay to protect the stored natural gas as required by the relevant regulation. However, this has not been interpreted by a court in the context of a claim by a public utility against a landowner regarding migrating natural gas.

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MEMORANDUM

To: Chairperson McGinn and members of the Special Committee on Natural Gas Storage
From: Matt Sterling, Assistant Revisor of Statutes
Date: 10/28/10
Subject: Federal Regulation of the Interstate Distribution of Gas

There are two federal statutes that govern the interstate distribution of natural gas: The Natural Gas Act, 15 U.S.C. § 717 (NGA) and the Natural Gas and Hazardous Materials Pipeline Safety Act, 49 U.S.C. § 60101 (NGPSA). The NGA is a regulatory scheme concerning the interstate transportation and sale of natural gas for distribution to the public and the NGPSA regulates the safety of natural gas pipelines. In 1988, the U.S. Supreme Court found that Congress had occupied the field of matters relating to the transportation of natural gas in interstate commerce. *Schneiderwind v. ANR Pipeline Co.*, 485 U.S. 293, 300 (1988).

The NGA provides that the business of transporting and selling natural gas for the ultimate distribution to the public is affected with a public interest, and that federal regulation in matters relating to the transportation of natural gas and the sale thereof in interstate commerce is necessary and in the public interest. 15 U.S.C. § 717(a). The NGA also expressly states that its provisions and the regulations promulgated thereunder apply to the transportation of natural gas in interstate commerce and to the sale in interstate commerce of natural gas for resale for ultimate public consumption for domestic, industrial, and other uses. 15 U.S.C. § 717(b).

The NGA requires that a natural gas company obtain a certificate of public convenience and necessity from the Federal Energy Regulatory Commission (FERC) in order to transport, sell, construct, extend, acquire or operate any natural gas facility. 15 U.S.C. §717f(c). In order to obtain a certificate, a natural gas company must submit an application to FERC to engage in these activities. 15 U.S.C. §717f(d). FERC uses an extensive administrative process to determine whether to issue a certificate of public convenience and necessity that analyzes all aspects of the proposed action including the location, construction, and environmental impacts of the proposed action. 18 C.F.R. Part 157.

Once this administrative process is completed, FERC will issue a certificate if the natural gas company is willing and able and to do the acts and perform the services proposed in the application, to conform to the provisions of the NGA, and to conform to FERC regulations. FERC must also find that the service, sale, operation, construction, extension, or acquisition is or will be required by the present or future public convenience and necessity to the extent authorized by the certificate. 15 U.S.C. § 717f(e). Once a certificate has been issued, the NGA grants the applicant the power of eminent domain to construct natural gas pipelines and facilities. 15 U.S.C. § 717f(h).

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In addition to the NGA, Congress also adopted the NGPSA. The NGPSA provides that the Secretary of Transportation shall prescribe the minimum safety standards for pipeline transportation and for pipeline facilities. The standards apply to owners and operators of pipeline facilities; may apply to the design, installation, inspection, emergency plans and procedures, testing, construction, extension, operation, replacement, and maintenance of pipeline facilities; and shall include a requirement that all individuals who operate and maintain pipeline facilities shall be qualified to operate and maintain the pipeline facilities. 49 U.S.C. § 60102(a). The NGPSA further provides that a state is permitted to adopt additional or more stringent safety standards for intrastate pipeline facilities and intrastate pipeline transportation so long as such standards are compatible with the minimum standards prescribed by the act. However, a state agency is not permitted to adopt or continue in force any safety standards for interstate pipeline facilities, or interstate pipeline transportation. 49 U.S.C. § 60104(c).

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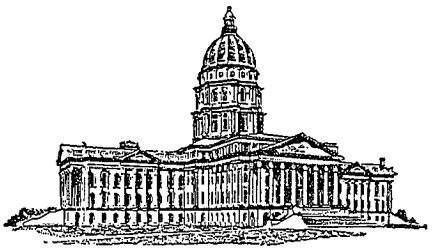

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MEMORANDUM

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To: Chairperson McGinn and members of the Special Committee on Natural Gas Storage
From: Matt Sterling, Assistant Revisor of Statutes
Date: 10/28/10
Subject: Colorado Interstate Gas Company v. Thomas E. Wright, et al. (KCC)

In this case, Colorado Interstate Gas Company (CIG), an Operator of underground natural gas storage facility brought action seeking both declaratory and injunctive relief against the commissioners and officials with the Kansas Corporation Commission (KCC), alleging that the Kansas gas storage statutes and regulations were preempted by the Natural Gas Act (NGA) and the Pipeline Safety Act (PSA), violate the Supremacy Clause, and had no force or effect on CIG. The court held that the Kansas gas storage statutes and regulations were directed at controlling facilities of natural gas companies used in transportation of natural gas in interstate commerce, and thus were preempted by the NGA and PSA.

CIG is subject to federal jurisdiction and regulation by the Federal Energy Regulatory Commission (FERC) under the NGA, 15 U.S.C. 717-717w. On June 5, 1945, CIG was issued a Certificate of Public Convenience and Necessity under the NGA, finding that CIG was "... engaged in the transportation of natural gas in interstate commerce and ... is a 'natural-gas company' within the meaning of the Natural Gas Act". *Colorado Interstate Gas Company v. Thomas E. Wright, et al.*, 707 F.Supp.2d 1169, 1172 (D. Kan. 2010) (hereinafter CIG); *See* Docket No G-294, 4 F.P.C. 936, 1945 WL 1027 (F.P.C.).

At the time of the 2001 Yaggy incident, Mid-Continent (a wholly-owned subsidiary of ONEOK) provided interstate natural gas service pursuant to a certificate issued by FERC, exempting Mid-Continent from the requirements of the NGA under the Hinshaw exemption. Docket No. CP95-684-000, 72 F.E.R.C. 62274, 1995 WL 562483 (F.E.R.C.) (1995). The FERC Order issuing the certificate stated that Mid-Continent "meets the qualifications for a Hinshaw exemption under Sec. 1(c) of the NGA because all the gas received from interstate pipelines is received within the state of Kansas, consumed within the state of Kansas, and all transactions involving the gas are regulated by the KCC." *CIG* at 1173.

In May, 2001, the Kansas Legislature passed HB 2200, which is codified at K.S.A. 55-1,115 et seq. The bill vested jurisdiction for the safety of underground porosity storage of natural gas with the KCC, and vested jurisdiction for the safety of underground storage of natural gas in salt caverns with the KDHE. Both the KCC and the KDHE were directed to adopt regulations that would protect the public safety by regulating and ensuring the safety of underground storage in natural gas in Kansas. These regulations are codified at K.A.R. 82-3-1000 through 82-3-1012. The KCC implemented and commenced enforcement of these regulations and applied those regulations to all those storing gas in underground porosity fields, including CIG, which stores natural gas in its Boehm Gas Storage Facility

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in Morton County, Kansas. *Id.*

The Supremacy Clause of Article VI of the Constitution gives the U.S. Congress the authority to preempt or supersede state laws that interfere with, conflict with, or are contrary to federal law. In determining whether a statute is preempted, the court "is guided by the rule that '[t]he purpose of Congress is the ultimate touchstone in every pre-emption case.' "*CIG* at ; *Altria Group, Inc. v. Good*, 129 S.Ct. 538, 543 (2008) (quoting *Medtronic, Inc. v. Lohr*, 518 U.S. 470, 485 (1996)).

A state statute is preempted when "it regulates conduct in a field that Congress intended the Federal Government to occupy exclusively... or when it actually conflicts with federal law." *English v. General Electric Co.*, 496 U.S. 72, 79 (1990). Conflict preemption "occurs where it is impossible for a private party to comply with both state and federal requirements, or where state law stands as an obstacle to the accomplishment and execution of the full purposes and objectives of Congress." *CIG* at 1175; *Ramsey Winch Inc. v. Henry*, 555 F.3d 1199, 1204 (10th Cir.2009).

In determining whether a statute is preempted, there is an assumption that unless Congress' intent is clear and manifest, a federal act does not supersede the states' historic police powers, particularly in a "field traditionally occupied by the states." *Altria* at 543. However, this " 'assumption' of non-preemption is not triggered when the State regulates in an area where there has been a history of significant federal presence." *CIG* at 1175; *United States v. Locke*, 529 U.S. 89, 108 (2000).

In determining whether a statute expressly or implicitly preempts state law, the court's "primary task in interpreting statutes [is] to determine congressional intent, using traditional tools of statutory construction." *United States v. Manning*, 526 F.3d 611, 614 (10th Cir.2008). In determining such congressional intent, the court examines the statute's plain language. "If the statute's plain language is ambiguous as to Congressional intent, [the court] look[s] to the legislative history and the underlying public policy of the statute."*CIG* at 1176; *Manning* at 614.

Federal regulations have the same "preemptive effect" as federal statutes if promulgated pursuant to the discretion and within the authority given by Congress. *Capital Cities Cable, Inc. v. Crisp*, 467 U.S. 691, 699 (1984). Federal regulations also are "indicative" of what powers Congress intended for an agency to exercise and of the parameters of the occupied regulatory field. *CIG* at 1176; *Schneidewind w. ANR Pipeline Co.*, 485 U.S. 293, 309 (1988).

The NGA has been recognized as a "comprehensive scheme of federal regulation of 'all wholesales of natural gas in interstate commerce.' " *Northern Natural Gas Co. v. State Corporation Comm'n of Kansas*, 372 U.S. 84, 91 (1963), quoting *Phillips Petroleum Co. v. Wisconsin*, 347 U.S. 672, 682 (1954). The NGA confers upon FERC exclusive jurisdiction over the transportation and sale of natural gas in interstate commerce for resale. *Northern* at 89. The court noted that even before the NGA, the states' regulatory reach did not extend to interstate transportation of natural gas. *CIG* at 1177; *Michigan Consol. Gas Co. v. Panhandle Eastern Pipe Line Co.*, 887 F.2d 1295, 1301 (6th Cir.1989), cert. denied, 494 U.S. 1079 (1990).

The court noted that, in the NGA, "Congress carefully divided up regulatory power over the natural gas industry" specifying "the intended reach of federal power." *Northwest Central Pipeline Corp. v. State Corp. Com'n of Kansas*, 489 U.S. 493, 510 (1989). The NGA gives exclusive FERC "jurisdiction over the transportation of natural gas in interstate commerce." *Northwest Central Pipeline*, 489 U.S. 493, 506 (1989). "This jurisdiction encompasses regulation of market entry through FERC's [*i.e.*, 'permitting authority'] authority to issue certificates of public convenience and necessity

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authorizing pipelines to transport and sell gas in interstate commerce, ..., and of market exit through FERC's control over [*i.e.,* 'abandonment authority'] the abandonment of certificated interstate service." *Id.* Thus, "[t]he NGA confers upon FERC exclusive jurisdiction over the transportation and sale of natural gas in interstate commerce for resale," and "FERC exercises authority over the rates and facilities of natural gas companies used in this transportation and sale through a variety of powers." *Schneidewind* at 300-301. Furthermore, "FERC has authority to regulate the construction, extension, operation, and acquisition of natural gas facilities, *see id.* § 717f(c)(1)(A), and does so through its extensive and detailed regulations concerning applications for certificates. *See generally* 18 C.F.R. Part 157, Subpart A." *CIG* at 1177; *Northern Natural Gas Co. v. Iowa Utilities Bd.*, 377 F.3d 817, 821 (8th Cir.2004).

Since the storage of gas in interstate commerce falls within the scope of transportation covered by the NGA, *Schneidewind* at 295, the court stated that the central question was whether the Kansas gas storage statutes and regulations were a regulation of the " facilities of natural gas companies used in transportation and sale for resale of natural gas in interstate commerce." *Id.* at 305-306. The court stated that because "every state statute has some indirect effect on ... facilities of natural gas companies," it is important to consider whether the purpose of the state law "is to regulate matters Congress intended FERC to regulate" and whether there is the "imminent possibility of collision between" the state law and the NGA. *CIG* at 1178; *Schneidewind* at 308-310.

The court stated that Congress exercised its Constitutional authority by enacting the NGA and the NGPSA. The court stated that these statutes, together with the regulations promulgated pursuant to them, establish a comprehensive scheme of federal regulation that the Supreme Court has said confers upon FERC exclusive jurisdiction over the transportation and sale of natural gas in interstate commerce. The court found that there is nothing to indicate that Congress passed the NGPSA because it believed that FERC lacked jurisdiction to regulate the safety of interstate transportation or that Congress later intended to deny FERC of that safety jurisdiction. The court noted that explicit in the NGPSA is Congress's stated intent to preempt state safety standards[1]. In passing the NGPSA with the express preemption clause, Congress rejected the notion " 'that gas safety matters are primarily of local concern and subject to regulation by the States.'" *CIG* at 1183-184; *Northern Border Pipeline Co. v. Jackson County et al.*, 512 F.Supp. 1261, 1265 (quoting H.R.Rep. No. 1390 (1968).

The court further stated that, since the parties stipulated that the Kansas gas storage statutes directed the KCC to adopt regulations for protecting and ensuring public safety from underground storage of natural gas in Kansas, if CIG's storage field in Kansas met the definition of an interstate pipeline facility or interstate pipeline transportation, then the Kansas statute and regulations would be preempted by the NGPSA. *CIG* at 1184.

Under the NGPSA, "'pipeline facility' means a gas pipeline facility," 49 U.S.C. § 60101(a)(18), and " 'pipeline transportation' means transporting gas," 49 U.S.C. § 60101(a)(19). A "'gas pipeline facility' includes a pipeline, a right of way, a facility, a building, or equipment used in transporting gas or treating gas during its transportation." 49 U.S.C. § 60101(a)(3). An "'interstate gas pipeline facility' means a gas pipeline facility-(A) used to transport gas; and (B) subject to the jurisdiction of the Commission under the Natural Gas Act (15 U.S.C. 717 et seq.)." 49 U.S.C. § 60101(a)(6). Finally, "

1 49 U.S.C. § 60104(c) Preemption.- A State authority that has submitted a current certification under section 60105(a) of this title may adopt additional or more stringent safety standards for intrastate pipeline facilities and intrastate pipeline transportation only if those standards are compatible with the minimum standards prescribed under this chapter. A State authority may not adopt or continue in force safety standards for interstate pipeline facilities or interstate pipeline transportation.

'transporting gas' (A) means the gathering, transmission, or distribution of gas by pipeline, or the storage of gas, interstate or foreign commerce...." 49 U.S.C. § 60101(a)(21). The court found that by the terms of the statute, CIG's storage field in Kansas meets the definition of an interstate gas pipeline facility, because it is subject to FERC jurisdiction and because it is used to store gas which is one of the statutorily defined ways of transporting gas. *CIG* at 1184.

The court found that the state regulation in this case was not compatible and would interfere with the federal regulatory scheme and would compromise the federal agencies' ability to achieve a comprehensive and uniform scheme. The court found that the KCC's exercise of its permitting authority ran afoul with the exclusive permitting authority of FERC. The court found that since "it is settled that if the NGA grants jurisdiction to the Commission over a matter, as it does here, its jurisdiction is exclusive" *Cascade Natural Gas Corp. v. F.E.R.C.*, 955 F.2d 1412, 1421 (10th Cir.1992), the State's enforcement of its safety standards through permits, fines and administrative actions presents the real possibility of a disagreement over the safety of the facilities and over what measures are appropriate and necessary to address any safety concerns. The court found that a "state-ordered" change in the operation of the interstate natural gas facility "would impinge on the federal" permitting authority. *See Schneidewind*, 485 U.S. at 310, and that the State's exercise of concurrent review and enforcement authority of different safety standards would likely burden, frustrate and delay the operation, any extensions, and/or eventual abandonment of the storage facility. *CIG* at 1188-1189; *See Nat'l Fuel Gas Supply Corp. v. Pub. Serv. Com'n*, 894 F.2d 571, 576-77 (1990); *Michigan Consolidated Gas Co. v. Panhandle Eastern Pipe Line Co.*, 887 F.2d 1295, 1301 (1989); *Northern Natural Gas Co. v. Munns*, 254 F.Supp.2d 1103, 1110-12 (2003).

The defendants argued that there is a "heavy presumption against preemption in the area of state safety regulation" and that the state has an overriding interest in protecting life and property through a comprehensive regulatory scheme addressing safe gas containment. The court rejected this argument stating that the presumption "is not triggered when the State regulates in an area where there has been a history of significant federal presence." *United States v. Locke*, 529 U.S. 89, 108 (2000). This situation is not an instance of a state's exercise of historic police powers with a mere indirect effect upon interstate natural gas transportation. Rather, the defendants here are actually exercising direct permitting and abandoning authority over interstate natural gas transportation. Prior to the NGA, the states were "powerless to regulate" in this area by reason of the Supreme Court decisions. *CIG* at 1189; *Cascade Natural Gas Corp. v. FERC*, 955 F.2d at 1416.

The court concluded that the Kansas Gas Storage Statutes, K.S.A. §§ 55-1,115 and 55-182(a), and the Kansas Gas Storage Regulations, §§ 82-3-105, 82-3-113, 82-3-114, 82-3-117, 82-3-120, and 82-3-1000 through 82-3-1012, violate the Supremacy Clause and are preempted by both the NGA and the NGPSA. The court also stated that the Kansas enabling statutes purported to give the KCC the authority for permitting and abandoning storage facilities of interstate natural gas transportation companies like CIG, and this statute and the regulations promulgated in the exercise of that authority are impliedly preempted by the NGA. In addition, the Kansas statute and regulations setting forth and enforcing safety standards on CIG's underground storage facility, which is an interstate natural gas pipeline facility, are expressly preempted by the PSA. Thus, the court found that the Kansas Gas Storage Statutes and the Kansas Gas Storage Regulations have no force or effect on the plaintiff's interstate natural gas pipeline, storage facilities and transportation at CIG's Boehm Underground Gas Storage Field. *CIG* at 1189-1190.

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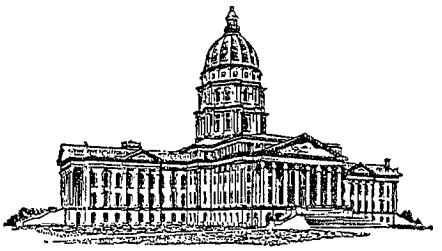

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MEMORANDUM

To: Chairperson McGinn and members of the Special Committee on Natural Gas Storage
From: Matt Sterling, Assistant Revisor of Statutes
Date: 10/28/10
Subject: FERC Order Concerning Northern Natural Gas

Northern Natural Gas Company (Northern) filed an application pursuant to section 717f of the Natural Gas Act (NGA) for a certificate of public convenience and necessity to expand the certificated protective boundary around the Cunningham Field. Because Northern sought certificate authority to enlarge its facility for the storage of natural gas in interstate commerce, the proposal was subject to the requirements of subsections (c) and (e) of Section 717f of the NGA. The Commission found that the public convenience and necessity required certificate authorization for Northern to expand the certificated boundary of the Cunningham field and required Northern to file a comprehensive management plan detailing how it would effectively slow and reverse the migration of gas out of the field.

When hearing a proposed project, the Commission is directed by the Certificate Policy Statement, which "established criteria for determining whether there is a need for a proposed project and whether the proposed project will serve the public interest. The Certificate Policy Statement explains that in deciding whether to authorize the expansion of natural gas facilities, the Commission balances the public benefits against the potential adverse consequences." *Northern Natural Gas Company,* 131 FERC ¶ 61,209 at 6 (2010) (hereinafter Order).

The threshold requirement for issuance of a certificate is that the applicant must be able to financially support the project without subsidization from its existing customers. However, the Certificate Policy Statement also provides that existing customers should pay for the costs of projects designed to improve their service, such as projects to replace existing capacity, improve reliability, or provide additional flexibility. Under the Certificate Policy Statement, increasing the rates of existing customers to pay for these types of improvements does not constitute a subsidy, and the costs of such projects are permitted to be rolled into system-wide rates. *Id at 7; citing Certification of New Interstate Natural Gas Pipeline Facilities*, 88 FERC ¶ 61,227 at 61,747, n.12 (1999). The Commission determined that since expansion of the Cunningham storage field's certificated boundary would protect the security and integrity of the storage field and would improve service for Northern's existing customers by increasing the reliability of its storage services, that it would be appropriate to permit Northern to apply the reasonable project costs to its customers.

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The Commission grants jurisdictional storage field operators additional certificate authority to revise the boundary of storage fields when the applicant can demonstrate, with engineering and geological data, that such authorization is required by the public convenience and necessity in order to improve the operation of the storage field or to maintain its integrity. *Northern* at 10; *see Williams Natural Gas Co.*, 83 FERC ¶ 61,120 (1998). In determining whether the public convenience and necessity requires approval of a request to enlarge a storage boundary due to gas migration problems, a material consideration for the Commission is whether the storage reservoir has expanded and whether the applicant's estimations of the reservoir and protective boundaries are reasonable. *Id.*; *ANR Pipeline Co.*, 76 FERC ¶ 61,263, at 62,346 (1996).

The Commission found that Northern had a responsibility to protect the natural gas that its customers entrusted to Northern to store for them in the Cunningham field, as well as a responsibility to maintain the integrity of the storage reservoir. The Commission found Northern to be obligated to protect the integrity of the storage field, which benefits the customers of the local distribution companies storing gas in the Cunningham field. *Order* at 9.

In order to ensure the integrity of the storage reservoir and the efficient operation of the storage facility, the Commission typically either revises a storage facility's certificated boundaries to conform to the enlarged contours of the actual underground reservoir or alters the operating parameters of the storage facility to prevent gas from migrating beyond the facility's certificated boundaries. *Northern* at 9-10; *See Williston Basin Interstate Pipeline Co.*, 127 FERC ¶ 61,045 (2009); *Equitrans, L.P.*, 119 FERC ¶ 71,287 (2007).

The Commission found that limited expansion of the Cunningham field buffer zone would not affect the certificated operational parameters of the storage field, nor would it degrade any existing service provided by Northern. The Commission also found that Northern's proposal would have no adverse impact on other pipelines or their customers. *Order* at 7.

The Commission balanced the interests of surrounding land and mineral rights owners against the public benefits of a secure Cunningham storage field, and found that the potential adverse economic impact to the interests of the property rights owners were outweighed by the substantial public benefits associated with the need for Northern to protect the integrity of its storage field. Accordingly, the Commission found that, consistent with the Certificate Policy Statement and section 7 of the NGA, approval of the limited expansion of the Cunningham storage field's buffer zone is in the public convenience and necessity. *Order* at 9.

The Commission found that Northern had demonstrated the presence of storage gas in the primary gas migration pathway within the proposed expansion area, with higher concentrations of storage gas present in wells located nearest the Cunningham reservoir, and decreasing concentrations as the gas migration tracks north. The Commission also found that there was a two-mile wide primary gas migration pathway from the storage field that is framed by a series of structurally high areas. The Commission further found that Northern had demonstrated the presence of storage gas in certain wells located within this pathway. *Northern* at 24. However, the Commission found that the engineering and geologic data did not definitively indicate storage gas presence in a portion of Northern's requested expansion area, an area of 1,920 acres referred to as "section 28." Therefore, the Commission found that the proposed extent of the expansion of the Cunningham reservoir and protective boundaries was not reasonable and thus only authorized 12,320 acres instead of the proposed 14,240. *Order* at 27.

As part of its certification application, Northern sought authorization of a four step "management plan" in which it would (1) shut in all third-party production north of the northern fault; (2) monitor pressures to see if they return to pre-migration levels of 1995; (3) implement a water injection program to re-pressurize the proposed expansion area if the pressures do not return to pre-migration levels in a "reasonable" period of time; and (4) have the option of bringing shut-in wells into production or installing wells to offset third-party production, if third-party producers choose to drill Viola production wells adjacent to the proposed expansion area. *Order* at 28.

The Commission found that the first three steps of Northern's management plan were appropriate, but was concerned that the fourth step was inadequate. The Commission stated that unless a more proactive plan was implemented, that the gas migration issue could persist. Therefore, the Commission refused to authorize the proposed management plan and instead required Northern to file a comprehensive and specific management plan to slow and reverse the flow of gas out of the field. *Order* at 28-29.

The Commission received comment letters from the KCC expressing concern for water quality in surrounding fresh water aquifers that could be impacted by the storage field expansion. The Environmental Assessment found that since Northern's proposed storage field expansion did not involve the construction of any facilities, no groundwater impacts would result from approval of the proposal. *Order* at 30. The KCC also suggested that the EA failed to adequately evaluate the alternatives to the proposal, such as abandonment of the field or a reduction in the operating pressure and volume. The Commission stated that "[a]bandonment of the storage field or pressure and volume reduction were not considered to be reasonable alternatives at this time because there is the possibility that Northern could halt the gas migration and stabilize the storage field for continued service. Further, the Commission finds that the KCC has not provided any information that challenges the EA's determination that the shallow aquifers in the expanded buffer zone are in any way threatened by Northern's storage gas." *Order* at 31.

On July 23, 2010, Northern filed a management plan with FERC as required by the Order. The stated goals of the updated management plan included the following: Halting third-party production throughout the Extension Area, obtaining access to the Extension Area, identifying appropriate locations for water injection, restoring the Extension Area to premigration stable conditions and halting further storage gas migration, reducing the potential for any storage gas production by third-party wells outside the Extension Area, and monitoring "section 28" area production rates and obtaining gas compositions.

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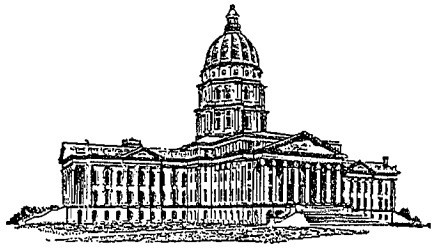

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MEMORANDUM

To: Chairperson McGinn and members of the Special Committee on Natural Gas Storage
From: Matt Sterling, Assistant Revisor of Statutes
Date: 10/28/10
Subject: Northern Natural Gas Company v. ONEOK and Lumen v. Nash and L.D.

In this case, Northern Natural Gas (Northern), claimed that the gas produced from wells operated by the third-party defendants, Nash Oil (Nash) and L.D. Drilling (L.D.) and purchased by defendants ONEOK Field Services Company and ONEOK Midstream Partnership (ONEOK) and Lumen Energy Corp. and Lumen /Midstream Partnership (Lumen) was storage gas that had migrated from the Cunningham Field, an underground gas storage field owned by Northern. Northern claimed it had title to the gas and that ONEOK and Lumen were converting storage gas. Nash and L.D. moved for summary judgment, claiming that their wells were located too far from the Cunningham field to be on adjoining property to that field. They argued that Northern had lost title to the gas and that they had a right under the "rule of capture[1]" to produce any gas that had migrated from the Cunningham field. The court stated that the determinative issue was whether under K.S.A. 55-1210(c)(1), a storage field operator retains title to storage gas that migrates beyond "adjoining" property[2].

1The rule of capture is a principle of Kansas law that holds that "natural gas in the ground is part of the real estate until it is actually produced and severed. At that point, it becomes personalty." *Anderson v. Beech Aircraft Corp.*, 237 Kan. 336, 342 (1985).

2 K.S.A. 55-1210 states:

(a) All natural gas which has previously been reduced to possession, and which is subsequently injected into underground storage fields, sands, reservoirs and facilities, whether such storage rights were acquired by eminent domain or otherwise, shall at all times be the property of the injector, such injector's heirs, successors or assigns, whether owned by the injector or stored under contract.

(b) In no event shall such gas be subject to the right of the owner of the surface of such lands or of any mineral interest therein, under which such gas storage fields, sands, reservoirs and facilities lie, or of any person, other than the injector, such injector's heirs, successors and assigns, to produce, take, reduce to possession, either by means of the law of capture or otherwise, waste, or otherwise interfere with or exercise any control over such gas. Nothing in this subsection shall be deemed to affect the right of the owner of the surface of such lands or of any mineral interest therein to drill or bore through the underground storage fields, sands, reservoirs and facilities in such a manner as will protect such fields, sand, reservoirs and facilities against pollution and the escape of the natural gas being stored.

(c) With regard to natural gas that has migrated to adjoining property or to a stratum, or portion thereof, which has not been condemned as allowed by law or otherwise purchased:

(1) The injector, such injector's heirs, successors and assigns shall not lose title to or possession of such gas if such injector, such injector's heirs, successors or assigns can prove by a preponderance of the evidence that such gas was originally injected into the underground storage.

(2) The injector, such injector's heirs, successors and assigns, shall have the right to conduct such tests on any existing wells on adjoining property, at such injector's sole risk and expense including, but not limited to, the value of any lost production of other than the injector's gas, as may be reasonable to determine ownership of such gas.

(3) The owner of the stratum and the owner of the surface shall be entitled to such compensation, including compensation for use of or damage to the surface or substratum, as is provided by law, and shall be entitled to recovery of all costs and expenses, including reasonable attorney fees, if litigation is necessary to enforce any rights under this subsection (c) and the injector does not prevail.

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Special Committee on Natural Gas Storage Fields and Facilities
Date: 10/28/10
Attachment: 9

While the term "adjoining property" is not defined in statute, it has been interpreted to mean that "any section of land which touch[es] a section containing a storage field [is] adjoining." *Williams Natural Gas Co. v. Supra Energy, Inc.*, 261 Kan. 624, 630 (1997). The court found that since none of the wells identified by Northern were in a section of land touching a section containing the Cunningham Field as determined by its FERC-certified boundaries, none of the wells could be considered to be located on property "adjoining" the Cunningham field. Northern Natural Gas Company v. ONEOK Field Services Company, LLC, et al., at 16, No. 2009-CV-111, (2010) (hereinafter ONEOK).

In interpreting K.S.A. 55-1210, the court rejected Northern's interpretation that an injector would maintain title to storage gas no matter how far away from the storage field that gas migrated, stating that this interpretation would deny any effect to subsection (c)(1) of the statute. The court agreed with the interpretation offered by Nash and L.D. that subsection (a) applies to gas that is injected into an underground storage field, subsection (b) applies to storage gas that migrates vertically within the boundaries of the storage field and subsection (c) applies when gas migrates horizontally outside the storage field boundaries to nearby property that qualifies as adjoining. The court stated that when "gas migrates further, to more distant property that does not qualify as 'adjoining,' the injector loses title to the gas and the common law rule of capture comes into play." *ONEOK* at 20.

The court stated that, to rule otherwise, would permit injectors to take areas of private property to be used for storage gas and to prevent leasing and exploration in areas outside their storage fields under color of state law and without just compensation to the landowners, constituting an unconstitutional taking and possibly rendering K.S.A 55-1210 unconstitutional. *ONEOK* at 21. The court also cited that under previous cases, a natural gas public utility such as Northern lost title to its gas it injected into storage if the gas migrated beyond the lateral boundaries of the storage facility and is produced from wells on adjoining property to which the injector has no storage rights or certification from the KCC. *ONEOK* at 22-23; *See Anderson v. Beech Aircraft Corp.*, 237 Kan. 336 (1985); *Union Gas Sys., Inc. v. Carnahan*, 245 Kan. 80 (1989).

In the parallel federal case, the Brown court offered a different interpretation of K.S.A. 55-1210, finding that subsection (a) seemingly grants absolute title to the injected gas and that the interpretation by Judge Schmisseur ,in the ONEOK case, that subsection (c) was a limitation that cuts off title for injected gas that migrates beyond adjoining property was problematic. The Brown court was troubled by an interpretation that results in a loss of title to the gas by implication from the statement in subsection (c) that the injector retains title when storage gas migrates to adjoining property. The Brown court found further fault with this, stating that the "statute unambiguously declares that injected storage gas 'shall at all times' be the property of the injector, and the apparent purpose of the law was to supplant the rule of capture by establishing an injector's property rights in injected storage gas." *Northern Natural Gas Co. v. L.D. Drilling, Inc., et al.*, 2010 WL 3892227 (D. Kan.); *cf. Northern Natural Gas Co. v. Nash Oil & Gas, Inc.*, 526 F.3d 626, 632 (2008).

The Schmisseur court acknowledged an earlier decision in the federal case in which Judge Brown ruled that four of the wells operated by Nash were on adjoining property. The Brown court held that the storage field in the *Williams* definition includes land on which Northern has acquired storage leases, as well as the certificated boundaries of the Cunningham Field. *ONEOK* at 17; *See Northern Natural Gas Co. v. L.D. Drilling, Inc.*, 618 F.Supp.2d 1280 (D. Kan. 2009). The court in the ONEOK decision stated that since FERC had explicitly denied Northern's application to expand the Cunningham

(d) The injector, such injector's heirs, successors and assigns shall have the right to compel compliance with this section by injunction or other appropriate relief by application to a court of competent jurisdiction.

Field to include the storage areas, the court believed it was incorrect to include them as part of Northern's storage field for the purposes of determining whether the wells were on adjoining property[3].

The Schmisseur court concluded that none of the Nash and L.D. wells were located on property adjoining Northern's Cunningham field and that K.S.A. 55-1210(c)(1) "protects a storage field operator's title to previously injected storage gas that migrates horizontally, beyond the boundaries of the storage field, only if that gas migrates to 'adjoining property,' and not if it migrates further, to property that is too far from the storage field to qualify as 'adjoining property.'" *ONEOK* at 31. The court granted the summary judgment motions of Nash and L.D. as to all the gas purchased by ONEOK and Lumen from any of the Nash or L.D. wells identified in the case.

The ONEOK case is currently in the appeals process and will likely not be decided until later in 2011. As the court noted, it believed that the legal issues presented by the summary judgment motions had never been ruled upon by the Kansas Supreme Court or the Court of Appeals. Furthermore, the different approach taken by Judge Brown in the federal case in interpreting K.S.A. 55-1210 underscores the uncertainty of how this issue of law will be resolved.

3While FERC had previously denied Northern's application to expand its certified boundaries to include the storage areas, the FERC Order issued June 2, 2010 expanded the certified area so that many of the storage areas are now either within the boundaries or within one mile of the boundaries. This created further uncertainty as to whether these storage areas would be considered to be on adjoining property. *See Northern Natural Gas Company*, 131 FERC ¶ 61,209.

Gas Storage in Kansas:

Kansas Corporation Commission
Presentation to Special Committee on
Natural Gas Storage Fields and Facilities
October 28, 2010

Doug Louis
Tom Stratton
John McCannon

1

Special Committee on Natural Gas
Storage Fields and Facilities

Date: 10/28/10
Attachment: 10

Table of Contents

KCC Regulation of Gas Storage Facilities

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Yaggy

Following the loss of containment at the Yaggy gas storage cavern that caused gas explosions in Hutchinson, the Legislature wanted more state regulation of gas storage. In 2001, the Legislature enacted K.S.A. 55-1,115 which granted jurisdiction over porosity gas storage to the KCC and cavern gas storage to KDHE.

4

KCC Regulations

In 2002, the KCC adopted K.A.R. 82-3-1000 through K.A.R. 82-3-1012. These regulations implemented K.S.A. 55-1,115. They cover permitting, well construction and testing, containment, safety measures, inspections, well plugging and abandonment. The regulations were intended to make sure that storage fields had containment and were being safely operated.

5

Number of Storage Fields in Kansas

Initially there were twenty-four (24) storage fields, eight (8) of which were intrastate fields. Several of the storage fields are in the process of being abandoned. From 2002 to now, the KCC issued fully authorized permits for two (2) storage fields. Several others were close to being issued at the time of the *Colorado Interstate Gas Co. v. Thomas E. Wright,* U.S. District Court Case No. 09-4031-SAC decision. More on that decision follows.

6

KCC Regulation of Underground Storage of Natural Gas by Interstate Pipeline

Colorado Interstate Gas Co. v. Thomas E. Wright, et al.

U.S. District Court Case No. 09-4031-SAC

Issue

KCC jurisdiction over interstate gas storage facilities

CIG v. Wright

Background

- August 1973 – Federal Power Commission issues CIG a certificate to build, operate and maintain the Boehm Gas Field in Morton County, Kansas.
- January 2001 – Gas being stored in underground salt caverns near Hutchinson, Kansas escapes causing two explosions.
- 2001-2002 – Kansas statutes and KCC regulations enacted and adopted in direct response to Hutchinson explosions.
- CIG brought action seeking injunctive and declaratory relief.

8

CIG v. Wright, et al.

These federal statutes were determined to preempt state regulation of interstate gas storage fields:

- Natural Gas Act ("NGA") – 15 U.S.C. §§ 717 *et. seq.*
- Pipeline Safety Act ("PSA") – 49 U.S.C. §§ 60101 *et. seq.*

9

CIG v. Wright

Permitting and Safety

- The court's decision addresses primarily two aspects of the KCC's regulations – permitting and safety. The permitting aspect involves pre-emption issues related to FERC's authority under the Natural Gas Act; the safety aspect involves pre-emption issues related to the USDOT's authority under the Pipeline Safety Act.
- KCC advanced a number of arguments, including attacking definitions of "pipeline" and "facility." These contentions were comprehensively addressed and dismantled by Court.

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CIG v. Wright

Conflict with FERC's NGA certificate regulations; NGA Preemption

- The FERC has exclusive jurisdiction of the rates and facilities of interstate natural gas companies. This jurisdiction includes all aspects of operations, including economic matters and safety.
- The Court determined that the KCC's regulations are "plainly focused upon regulating a field exclusively occupied by FERC's permitting authority." P. 22.

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CIG v. Wright

Court's Ruling on PSA Preemption

- PSA includes a provision that explicitly forbids any state safety regulation over pipeline transportation or pipeline facilities
- The court found that the Pipeline Safety Act "expressly pre-empts all state 'safety standards' imposed for the purpose of addressing [risks to life and property posed by pipeline transportation and pipeline facilities]. P. 42.

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CIG v. Wright

Possible Safety Regulatory Role for State

- PSA preemption was based on the plain language of the Act as well as several judicial decisions. One of those cases suggests there is a role for states in safety regulation. That case is *Olympic Pipe Line Co. v. City of Seattle*, 437 F. 3d 872, 878, (9th Cir. 2006) ("*Olympic*") which the court cites at P. 33, n.9.
- *Olympic* references two exceptions to federal pre-emption in the Pipeline Safety Act.

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CIG v. Wright;
Possible Next Steps

Under the *Olympic* exceptions, it is possible for the USDOT to:

- Authorize the state authority to participate in the oversight of interstate pipeline facilities. *See* 49 U.S.C § 60106(a).
- Designate the state as an agent with delegated authority to conduct inspections of pipeline operators and facilities to ensure compliance with federal safety standards on behalf of the USDOT. *See* 49 U.S.C § 60117(c).

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CIG v. Wright;
Possible Next Steps

The *Olympic* exceptions allow DOT's Pipeline and Hazardous Materials Safety Administration (PHMSA) to designate a state as its agent to perform inspections and provide results to PHMSA, for PHMSA's enforcement. Under these agreements the state can only inspect for compliance with federal pipeline safety regulations. There are no such regulations for underground gas storage. *See* 49 CFR §192. Therefore a state acting as PHMSA's agent for inspection of interstate pipeline facilities has no basis for an inspection of storage and PHMSA has nothing to enforce.

The KCC has worked to secure resolutions in support of an expanded role for state regulators interested in safe operation of interstate storage fields. Two resolutions are addressed later in this presentation. The KCC continues to explore options for maintaining a safety presence.

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FERC Regulation of Interstate Pipeline Gas Storage Facilities

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NNG Cunningham Storage Field: A Brief Chronology

- Cunningham Storage Field in Pratt and Kingman Counties
  - Comprised of the Viola and underlying Simpson formation
- Disputes involving migration of natural gas
- Courts and agencies involved:
  - Federal District Court in the District of Kansas
  - Kansas Supreme Court
  - Kansas State District Court
  - Federal Energy Regulatory Commission

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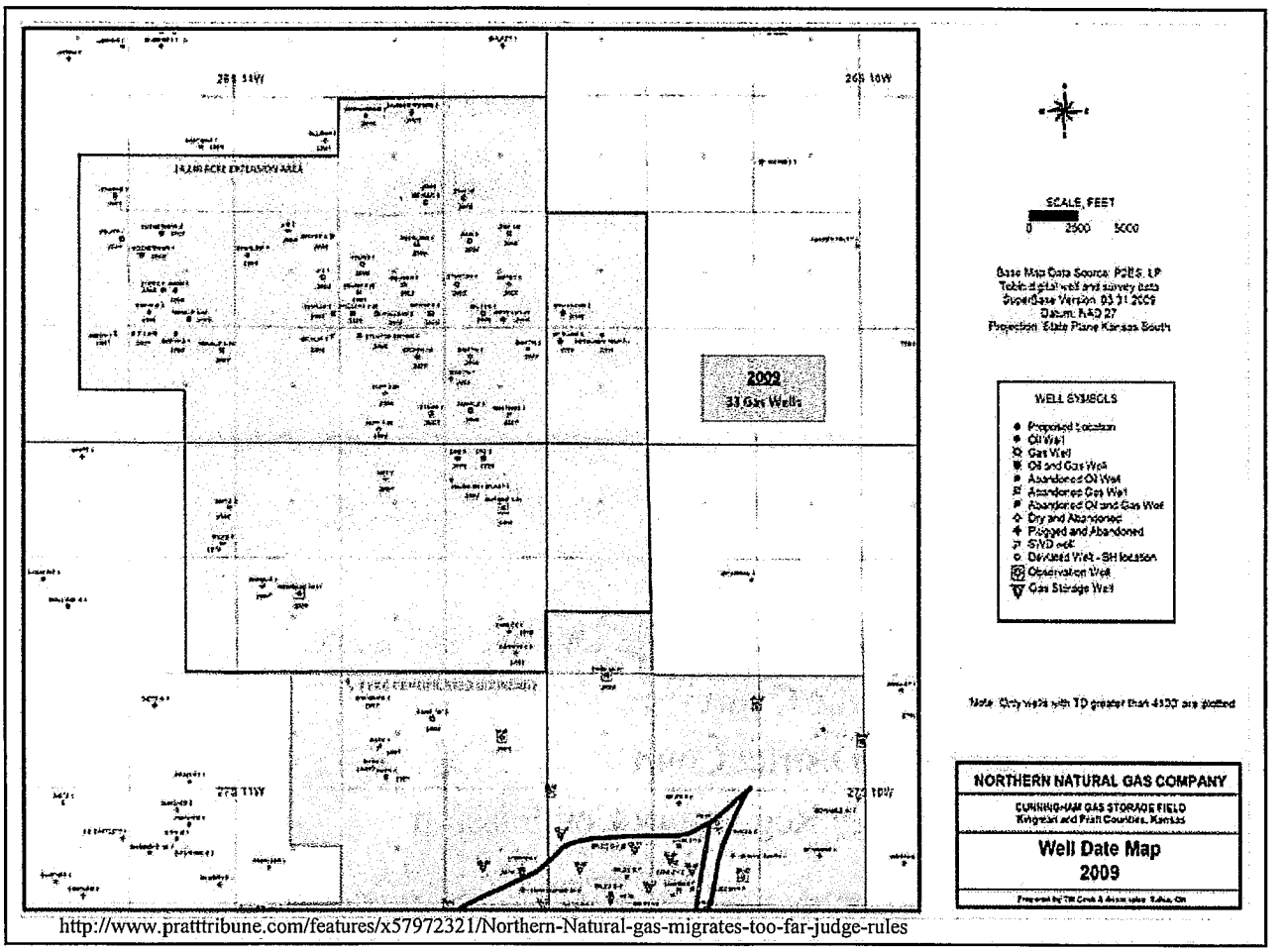

http://www.pratttribune.com/features/x57972321/Northern-Natural-gas-migrates-too-far-judge-rules

FERC Certification and Migration

- 1978 – The FERC granted certification to NNG to develop and operate Cunningham storage facility. FERC Docket No. CP77-193-000.
- 1996 – The FERC granted certification to NNG to use underlying Simpson formation after data reveals Viola formation is in communication with Simpson formation. FERC Docket No. CP77-193-002.
- 2005 – Gas sampling revealed that gas was migrating away from the Cunningham field. See FERC Docket No. CP09-465-000 (as stated in ¶ 3 of the June 2, 2010 Order).

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Cunningham Field Expansion at FERC

- March 2007 – NNG filed an application at the FERC to expand the Cunningham storage field by 4,800 acres. FERC Docket No. CP07-107-000.
- October 2008 – The FERC authorized expansion by 1,760 acres, increasing the area of the field and buffer zone to approximately 28,000 acres. FERC Docket No. CP07-107-000.

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Cunningham Field Expansion at FERC, CP09-465

- September 2009 – NNG filed an application at the FERC to expand its certificated area at Cunningham field by 14,240 acres. FERC Docket No. CP09-465-000.
- October 2009-March 2010 – KCC intervened and addressed concerns about gas migration and potential effect on underground water.

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Cunningham Field Expansion at FERC, CP09-465

- June 2, 2010 – The FERC orders a certificate for expansion by 12,320 acres (¶28), stating economic issues raised by surrounding landowners will be addressed in subsequent negotiation or eminent domain proceedings (¶21). FERC noted there is inherent uncertainty regarding the performance of an underground reservoir (¶25) and extensively addressed the existence and extent of gas migration. (¶¶29-67). It found no environmental impact but acknowledged that issue could be revisited. (¶¶89-91). It ordered NNG to design and implement a plan to prevent migration of gas. FERC Docket No. CP09-465-000.

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NNG's Containment Plan filed July 23, 2010 in CP09-465

NNG's Storage Gas Containment Plan Goals Include:

- Halt third-party production throughout the extension area.
- Obtain access to the extension area.
- Identify appropriate locations for water injection.
- Restore the extension area to premigration stable conditions and halt further storage gas migration.
- Reduce the potential for any storage gas production by third-party wells outside the extension area.
- Monitor Section 28 area production rates and obtain gas compositions.

FERC Docket No. CP09-465-000 (July 23, 2010)

23

NNG's Containment Plan filed at FERC July 23, 2010

1. Halt third-party production and gain access to the Extension Area.
2. Gather necessary reservoir data.
3. Install facilities necessary to halt gas migration.
4. Halt gas migration through appropriate operation of injection facilities.
5. Maintain stable conditions in the Extension Area and continue to optimize Cunningham Field operations.
6. Monitor third-party activities near the Cunningham Field.
7. File quarterly status reports with FERC.

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NNG Containment Plan Step 1: Halt third-party production and gain access to the Extension Area

- Halt third-party production:
  - Following the June 2nd FERC Order, NNG sought voluntary shut-in of alleged third-party production and then sought injunctive relief in federal court.
- Gain access to the Extension Area:
  - Good faith negotiations for storage leases within the Extension Area.
  - Eminent domain action filed in federal court on July 16, 2010; injunctive relief sought.

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NNG Containment Plan Step 2: Gather necessary reservoir data

- Install additional observation wells
- Analyze collected data to determine specific actions needed to implement the Plan to halt storage gas migration, including installation of water injection wells and facilities, followed by the injection of water to reestablish the stable reservoir conditions that existed from 1985 through 1994.
- Monitor the Extension Area using both available existing wells and new observation wells

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NNG Containment Plan Step 3: Install facilities necessary to halt gas migration

- Determine appropriate water injection well locations after two months of study.
- Using field data and computer simulation model, evaluate the behavior of the Extension Area and identify injection locations and associated water injection volumes needed to restore the Extension Area to stable conditions.
- Obtain necessary approvals from all required agencies for installation of water injection facilities.
- Drill new water injection wells and source water wells as needed and complete installation of the remainder of the water well facilities.

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NNG Containment Plan Step 4: Halt gas migration through injection facilities

- After installation of water injection facilities, inject water at target rates and use observation wells to monitor reservoir's response to water injection in the Extension Area.
- Water injection targeted at the thin, gas-bearing, upper layer of the Viola formation.
- Injected water will serve to re-pressurize the total Viola formation to stable conditions.
- Modify injection volumes and water injection well locations as appropriate to stabilize the Extension Area and halt storage gas migration from Cunningham Field.

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NNG Containment Plan Step 5: Maintain stable conditions and optimize operations

- Requirement for water injection expected to decrease once stable conditions have been reestablished. Dependent on any third-party development activities outside of, but near, the Extension Area.
- Update the simulation model periodically with latest data to identify and track gas movement in the Extension Area.

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NNG Containment Plan Step 5 continued - management of storage gas migration

- Produce recycle wells as long as they assist in reducing gas migration.
- Inject no gas north of the non-sealing fault or into wells that are in proximity to the fault on the south side.
- Concentrate field gas injection into the center of the storage reservoir, distant from the non-sealing fault area.
- Reduce maximum gas injection rates as the reservoir pressure approaches the certificated field pressure.
- Maximize withdrawal rates from all wells in proximity of the non-sealing portions of the fault when the storage field is in the withdrawal mode.

30

NNG Containment Step 6: Monitor third-party activities near the Cunningham Field

- Monitor gas production from Section 28 including gas samples from wells, monitor production rates and determine if any other actions are necessary to address storage gas production in Section 28.
- Monitor other areas near the Extension Area for all new intents to drill wells into or through the Viola or Simpson formations.
- May need to modify the operation or configuration of the Extension Area observation wells and water wells in response to third-party operators' activities.

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NNG Containment Step 7: File quarterly status reports with FERC

- Provide quarterly status reports on Plan implementation to include:
  - Extension Area pressures and water injection data.
  - Status of NNG's access to the Extension Area and third-party drilling activity.
  - Cunningham Field pressures, gas injection volumes and gas withdrawal volumes.
  - Updates to geologic and engineering interpretations.
  - Location of observation or water wells planned or constructed pursuant to this Plan.
  - Identification and plans for any Section 7 facilities.

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Southern Star – FERC

- Docket No. CP07-89, Expansion of North Welda Storage Field:
  - February 23, 2007: Southern Star applied to expand the field by 1,240 lateral acres, obtain all oil rights above and below the field, reclassify the cap rock, and install a gas compressor. Southern Star claimed gas was migrating due to oil well development in the area.
  - July 16, 2008: FERC denied the request for lateral acres, but granted the request for oil rights above and below the certificated field, reclassified the cap rock, and granted the request to install a gas compressor.
  - December 18, 2008: FERC denied Southern Star's request for a rehearing.

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Southern Star – FERC cont'd

- Docket No. CP08-4, Expansion of South Welda Storage Field:
  - October 5, 2007: Southern Star applied to expand the field by 560 lateral acres and for other relief, citing reasons comparable to those cited in N. Welda filing.
  - May 9, 2008: FERC denied the request for lateral acres and oil rights, but granted the request for an additional gas compressor and to reclassify the cap rock to include the area above and below the current field.
  - May 30, 2008 – Southern Star requested a rehearing.
  - August 5, 2008 – FERC amended certificate "to include authority … to acquire all interests . . . in all strata underlying the certificated surface boundary of the South Welda Storage Field"

Southern Star – FERC cont'd

- Docket No. CP10-2
  - October 9, 2009: Southern Star applied to increase the capacity of Elk City Storage Field, provide storage service at market-based rates, convert base gas capacity to working gas capacity and add compressors to increase the maximum daily withdrawal.
  - May 20, 2010: FERC issued an order granting the majority of Southern Star's request, but denied the request to convert 1.4 Bcf of base gas capacity to working gas capacity.
  - July 2, 2010: Request to amend the Order to convert 1.4 Bcf of base gas capacity to working gas capacity, based on new studies, and increase the maximum daily withdrawal.
  - October 21, 2010: FERC issued an order granting this request.

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A QUICK REVIEW OF THE RULE OF CAPTURE

36

Ownership of Minerals

The landowner owns the minerals beneath his land as long as the minerals stay there.

Zinc Co. v. Freeman, 68 Kan. 691, 75 P.995 (1904)

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Rule of Capture

Once minerals move off the landowner's property and are produced or captured by someone else, the landowner loses his ownership rights to those minerals. To perfect his ownership interest in minerals underlying his land, the landowner must produce or capture those minerals. The rule of capture protects an adjacent landowner who, through production on his land, causes the minerals to migrate across surface boundaries.

Natural Gas Co. v. Baker, 197 F.2d 647 (10th Cir. 1952)

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Gas Storage and the Rule of Capture

The rule of capture applies to gas storage fields in Kansas. A gas storage operator loses ownership of the storage gas if it is produced by someone else through a well located outside the storage field boundary.

Anderson v. Beech Aircraft Corp. 237 Kan. 336, 699 P.2d 1023 (1985)

Also see Reese v. Williams Natural Gas, 983, F.2d 1514 (1993) and Northern Natural Gas Company v. Martin, Pringle, 289 Kan. 777, 217 P.3d 966 (2009) for discussion and applicability of Anderson to other factual situations.

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Inroads into the Rule of Capture

The rule of capture is a nice, simple, neat way to determine ownership of minerals: if you produce it, it is yours. However as production out-stripped demand and our understanding of how reservoirs operate grew, the fairness and wisdom of strictly applying the rule of capture came into question.

Kansas has chipped away at the rule of capture through legislation based on two public policy doctrines: protection of correlative rights and prevention of waste.

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Inroads into the Rule of Capture

Continued

K.S.A. 55-603 and 55-703 make protection of correlative rights and prevention of waste applicable to oil and gas respectively. These statutes direct the KCC to prevent inequitable or unfair taking of oil and gas in a way that is injurious to the correlative rights of producers in a reservoir.

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Inroads into the Rule of Capture

Continued

The KCC has implemented these statutes by adopting regulations covering well locations, spacing, production limits, allowables, proration and unitization.

In 1993, the legislature enacted K.S.A. 55-1210 to limit the applicability of the rule of capture to gas storage. As evidenced by the recent Northern cases, that hasn't been 100% successful.

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Federal and State Court Litigation Involving Interstate Pipeline Gas Storage Facilities

43

NNG Federal Civil Litigation

NNG v. Trans Pacific Oil, et al. No. 02-1418 (D. Kan. 2005), *aff'd,* 248 Fed. Appx. 882 (10th Cir. 2007)

- NNG sued under K.S.A. 55-1210 alleging production of gas that had migrated away from its Cunningham field. Defendants asserted various counterclaims.
- NNG lost its claim because it did not prove the gas migrated on or after July 1, 1993, the effective date of K.S.A. 55-1210.
- Defendants were awarded $4.65M on counterclaim for damages sustained for shut in of their wells.

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NNG Federal Civil Litigation, Cont'd

NNG v. Nash Oil & Gas, Inc., No. 04-1295 (D. Kan. 2007), *aff'd,* 526 F.3d 626 (10th Cir. 2008)

- NNG sued under common law claiming conversion and unjust enrichment, and under K.S.A. 55-1210, alleging production of migrated gas from Cunningham Storage Field.
- On common-law claims, NNG was barred from recovery due to operation of statute of limitations.
- The statutory claim was dismissed because no independent cause of action was created by the statute, "rather, it simply abolishes the common-law rule of capture with respect to property rights of migrated gas such that a plaintiff is no longer precluded from bringing some other cause of action [such as conversion] to enforce those rights." 526 F.3d 626, 632.

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NNG Federal Civil Litigation, Cont'd

NNG v. L.D. Drilling, Inc., et al. No. 08-1400 (D. Kan.), consolidated with No. 08-1405

- NNG sued L.D., Val Energy Inc., Nash Oil & Gas, and others, advancing several claims, citing production of NNG's storage gas causing "pressure sinks" drawing gas away from its Cunningham field. Defendants counterclaimed.
- Parties' dispositive motions granted in part and denied in part by Judge Brown. Collateral estoppel applies to gas that migrated before expansion of the storage field by FERC on June 2, 2010.
- Proposed stay of action on remaining issues until Kansas Supreme Court interprets K.S.A. 55-1210 (See summary of Pratt Co. Dist. Ct. case now before Supreme Ct., to follow). Court scheduled this for October 6, 2010 arguments on preliminary injunction.
  - "The Supreme Court's ruling could impact any future determination of the remaining issues in this action (and possibly other actions) and has the potential to nullify much of what would be decided in this action." September 29, 2010 Memorandum & Order, p. 37.

NNG Federal Civil Litigation, Cont'd

NNG v. Approximately 9117.53 acres in Pratt, Kingman, and Reno Counties, Kansas, et al., Case No. 10-1232-KHV-KMH (D. Kan. 2010)

- July 16, 2010 – NNG filed eminent domain case to acquire much of the property made part of Cunningham Field by June 2, 2010 FERC order in CP09-465.
- At an early stage; answers and a few dispositive motions have been filed.

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NNG Pratt County District Court Case

NNG v. Oneok Field Services., et al. v. Nash Oil & Gas, Inc. and L.D. Drilling, No. 2009-CV-111 (30th Judicial Dis.)

- NNG filed action for the conversion of migrated storage gas. Oneok and Lumen filed third-party indemnity claims against Nash and L.D.
- Pratt County District Court Judge Schmisseur granted Nash's and L.D.'s motions for summary judgment finding:
  - The wells at issue are too far from the Cunningham Field to qualify as "adjoining property" as the term is used in K.S.A. 55-1210(c)
  - Meaning of the term given interpretation in *Williams* (1997) – "any section of land which touch[es] a section containing a storage field [is] adjoining."
  - K.S.A. 55-1210 does not protect title to gas that has allegedly migrated to property more distant than "adjoining property."
- NNG appealed; transferred to Kansas Supreme Court on July 1, 2010

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State & Federal Court Split

State Court

- Judge Schmisseur's interpretation of K.S.A. 55-1210:
  - 55-1210(c) protects a storage field operator's title to previously injected storage gas that migrates horizontally, beyond the boundaries of the storage field, only if that gas migrates to "adjoining property" which means "any section of land which touch[es] a section containing a storage field." Citing *Williams*, 261 Kan. at 630.
  - Boundaries of storage field determined only by certificated area (not as may be established by lease or otherwise).

Federal Court

- Judge Brown's interpretation of K.S.A. 55-1210:
  - "The obvious purpose of Section 55-1210 was to change the 'rule of capture' and protect an injector's title …" Thus, any ambiguity in subsection (c) should be construed against an implied forfeiture of the injector's property rights.
  - Nothing in 55-1210 "expressly limits its application to only areas that are approved or certified as storage fields." Therefore, NNG's storage lease rights must be considered when determining "adjoining property."

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NNG Kansas Supreme Court Case

Questions that May Be Answered

- Is the definition of "adjoining property" as "any section of land which touch[es] a section containing a storage field" still good law? *Williams Natural Gas Co. v. Supra Energy, Inc.*, 261 Kan. 624, 630 (1997).
- Are the borders of the "storage field" for purposes of 55-1210(c) determined by (a) the FERC or KCC certificated area, or (b) by land that the gas storage company has rights to use for storage (through condemnation, purchase, lease, or otherwise)?
- Does the FERC's approval of expansion vest the storage company's rights in the new area (and property adjoining thereto), or do rights only vest upon payment in a condemnation proceeding?
  - Note: this issue is not directly addressed in the Pratt County certified opinion due to timing of FERC's June 2nd Order, but it is an issue that must eventually be addressed.

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Southern Star Federal Litigation

Southern Star Central Gas Pipeline v. 842 Mineral and Leasehold Acres of Land in Anderson County, Kansas, Case No. 08-CV-1313-MLB-KMH (D. Kan. 2008)

- October 16, 2008 – Southern Star filed condemnation case to acquire much of the property made part of the Welda Storage Fields as certificated by FERC on May 9, 2008 and August 5, 2008 in Docket No. CP08-4 (North Welda) and the July 16, 2008 Order in Docket No. CP07-89 (South Welda).
- February 10, 2009 – Southern Star filed motion to confirm condemnation authority; granted May 27, 2009
- September 28, 2010 – Jury returns verdict for defendants with compensation values.

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Kansas Gas Storage Facilities:
General Information and KCC's Current Regulatory Role

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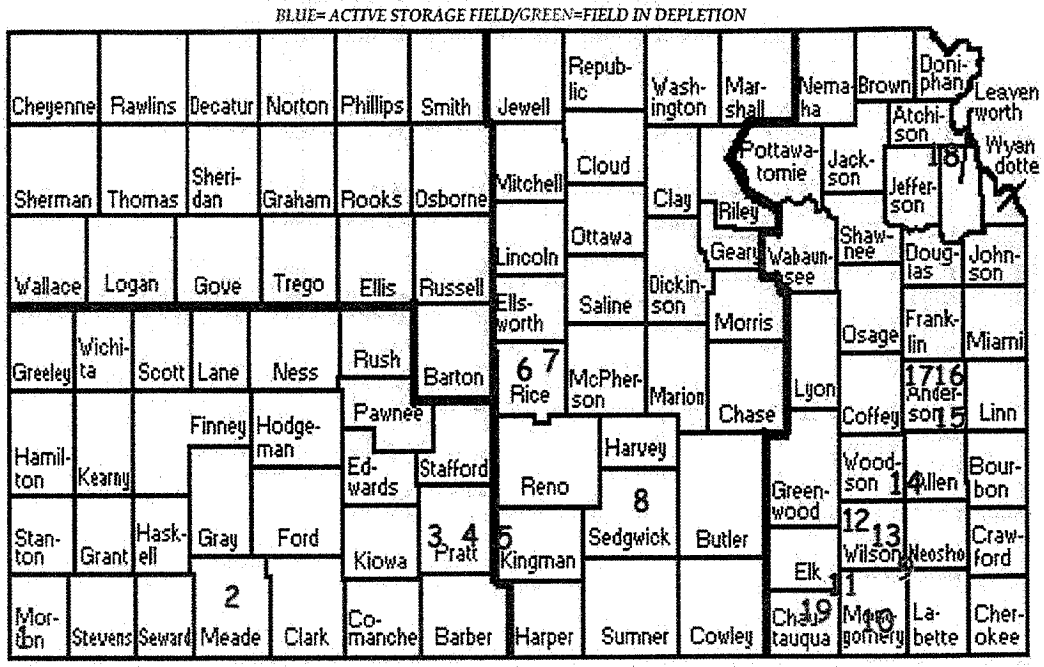
ACTIVE NATURAL GAS POROSITY STORAGE FIELDS

BLUE= ACTIVE STORAGE FIELD/GREEN=FIELD IN DEPLETION



1- BOEHM (CIG)
2- BORCHERS N. (Pan Gas Storage Co.)
3- BREHM (OneOK)
4- KONOLD EAST (OneOK)
5- CUNNINGHAM (NNG)
6- ALDEN (SSC)
7- LYONS (NNG)
8- RAYTHEON AIRCRAFT (Raytheon)
9- LIBERTY NORTH (Atmos)
10- LIBERTY SOUTH (Atmos)
11- ELK CITY (SSC)
12- BUFFALO (Cherokee Wells)
13- FREDONIA (Cherokee Wells)
14- PIQUA (SSC)
15- COLONY (SSC)
16- SOUTH WELDA (SSC)
17- NORTH WELDA (SSC)
18- MCLOUTH (SSC)
19- LONGTON (Post Rock Energy)

Table of Natural Gas Storage Fields

Field Name	Operator	Storage Formation	Wells INJ-WD	Maximum Authorized Volume MMCFG	Max Authorized Pressure	County	Approximate Depth (feet)
Alden	Southern Star Central	Meisner	23	14,700	1120	RC	3300
Boehm	Colorado Inter. Gas Co	Morrow & Keyes	35	12,729	1714	MO	4900
Borchers North	Pan Gas Storage CO	Morrow SS	55	61,400	1875	ME	5500
Brehm	OneOK	Simpson SS	17	3,885	1260	PR	4300
Buffalo	Cherokee Wells	Buffalo LS	19	380	100	WL	200
Colony-Welda	Southern Star Central	Colony SS	85	12,700	433	AN	880
Cunningham	Northern Natural Gas	Viola & Simpson	80	62,000	1695	KG/PR	4100
Elk City	Southern Star Central	Burgress SS	67	30,070	595	EK,CQ,MG	1350
Fredonia	Cherokee Wells	Cherryvale SS	15	360	120	WL	250
Konold East	OneOK	Langdon SS	4	1,108	1100	PR	2875
Liberty North	Atmos Energy	Squirrel SS	41	4,800	225	MG	450
Liberty South	Atmos Energy	Squirrel SS	7	739	225	MG	550
Lyons	Northern	Arbuckle	56	24,000	1440	RC	3600
McLouth	Southern Star Central	Bartlesville SS	124	14,100	684	JA, LV	1400
Piqua	Southern Star Central	Colony SS	22	3,200	298	AL, WO	900
Raytheon Aircraft	Raytheon	Stalnaker SS	2	1,055	1000	SG	2200
Welda N	Southern Star Central	Colony SS	75	15,500	430	AN	900
Welda S	Southern Star Central	Colony SS	103	18,300	430	AN	900
Longton	Post Rock Energy	Layton	35	288	In Depletion	CQ	650

*** Note: Highlighted Facilities are Intrastate Gas Storage Facilities

Natural Gas Storage Procedures Grouped By Function

Major Groups	Purpose	Perimeters Considered	Examples	Required Documentation	Regulation
Permitting	Demonstrate the proposed				
Requirements	facility/site can safely				
	store natural gas	Storage field rock properties			
			Receiving rock porosity	Down-hole electric logs	82-3-1003 b
			Receiving rock frac pressure	Calc. By licensed engineer	82-3-1003 b
			Vertical continuity	Geologic structural maps	82-3-1003 b
			Horizontal continuity	Stratigraphic cross sections	82-3-1003 b
			Maximum storage volume	Calc. By licensed engineer	82-3-1003 b
			Water quality	Sample analysis by cert. Lab	82-3-1003 b
		Confining-layers properties			
			Trapping mechanisms	Geologic structural maps	82-3-1003b
			Review of abandon wells	Review of plugged wells	82-3-1003b
			Identification of spill points	Geologic structural maps	82-3-1003b
		Storage-well construction			
			Storage well is adequately	Well-completion job logs	82-3-1003 e
			piped and cemented	cementing job logs	
			Wellhead valves/pipe sizing	Required installment	82-3-1003 f
		Safety-plan			
			Detailed emergency response	Current written plans	82-3-1003 c
			procedures	List of emerg. responders	
		Required systems	Leak-detectors	Leak detectors installment	82-3-1003 d
			Storage well signage	Storage well sign installment	
			Gas volume metering	Required installation	82-3-1003 h
		Notice requirements			
			Affected property owners	Written notice and newspaper	82-3-1004
				notices	

Natural Gas Storage Procedures Grouped By Function

Major Groups	Purpose	Perimeters	Examples	Required Documentation	Regulation
Operational					
Requirements	Ensure facility is safely				
	storing natural gas				
		Mechanical integrity of well	Operator demonstrate no leaks in	Operators perform pressure or alt.	82-3-1005
			wells	test on wells every 5 years	
		Facility operator license req.	Operators must maintain KCC license	Annual filing of license application	82-3-1009
		Gas volume monitoring	Monitor amount inj & withdrawn	Monthly submittal to KCC staff	82-3-1006
		Well-head pressure monitoring	Monitor operating pressure	Annual submittal of monthly readings	82-3-1006
		Gas leak detection	Pressure changes indicate	Report leak or loss of containment	82-3-1006
			leak in well or reservoir containment	to KCC staff	
		Notice of material change	Addition of well storage well	Well-construction permitting req.	82-3-1003 k
			Increase of operating pressure	Amendment to permit req.	82-3-1003 k
			Increase of facility boundary	Notice to KCC and affected parties	
		Leak detector inspections	Detectors must be tested annually	Record retention for 5 years	82-3-1005
		Storage Well Identification	Maintain Well Sign	Operator safety plan, KCC inspection	82-3-1007
		Safety Inspections	Annual safety inspections required	KCC witness company safety inspect	82-3-1008
			Safety equipment is in operating cond.	KCC witness company safety inspect	82-3-1008

Natural Gas Storage Procedures Grouped By Function

Major Groups	Purpose	Perimeters Considered	Examples	Required Documentation	Regulation
Abandonment					
Requirements	Ensure the storage				
	facility is safely				
	abandoned				
		Temporary abandonment	Wells are inactive	Facility operator apply for temp.	82-3-1011
		of storage well or field	after 90 days	status in writing to KCC staff	
		Permanent abandonment	Operator intends to	Application, KCC staff evaluates	82-3-1010
		of wells	plug storage well	procedure and witnesses plugging	
		Permanent abandonment	Decommission, plug	Written notice to KCC staff	82-3-1011
		of facility	wells remove surface		
			structures		

Resolutions for Regulation of Gas Storage Facilities

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DRAFT RESOLUTION 10.113

Establishing Of An Inter-Governmental Task Force To Ensure The Safe Storage Of Underground Natural Gas

WHEREAS, the underground storage of natural gas within an interstate transportation system is a vital process to ensure efficient development and production of domestic natural gas resources; and

WHEREAS, for decades natural gas transportation companies have integrated underground natural gas storage into their interstate pipeline operations to increase deliverability and decrease overall costs; and

WHEREAS, there are about 120 entities that currently operate the nearly 400 active underground storage facilities in the lower 48 states. In turn, these operating entities are owned by, or are subsidiaries of, fewer than 80 corporate entities; and

WHEREAS, the regulation of underground natural gas storage has been performed by State agencies, the Federal Energy Regulatory Commission and the United States Department of Transportation by varying degrees across the nation; and

WHEREAS, 49 CFR Part 192 defines a "Pipeline facility" to mean new and existing pipelines, rights-of-way, and any equipment, facility, or building used in the transportation of gas or in the treatment of gas during the course of transportation; and

WHEREAS, a Pipeline Facility has been determined to include wellbores, geologic reservoirs, and aquifers used to store gas in a storage field; and

WHEREAS, through Advisory Bulletin ADB-97-04 and other correspondence, the Pipeline and Hazardous Materials Safety Administration (PHMSA) or its predecessor agency has noted gas storage facilities are not covered by PHMSA pipeline safety regulations; and

WHEREAS, PHMSA has urged state regulators to develop state-sponsored safety programs to make new federal regulations unnecessary; and

WHEREAS, many states have adopted rules and regulations regarding the safe operation of underground gas and liquid storage facilities; and

WHEREAS, unless a storage facility is subject to FERC jurisdiction, it is state regulated; and

WHEREAS, as per 49 U.S.C. § 60104(c) A State authority may not adopt or continue to enforce safety standards for interstate pipeline facilities or pipelines transporting gas in interstate transportation; and

WHEREAS, several significant incidents have occurred where natural gas or hazardous liquids have escaped from storage and resulted in loss of life and property; and

WHEREAS, the IOGCC and FERC have a Memorandum of Understanding which allows for the entities to work on pertinent issues.

10.113 Submitted for consideration at the Annual Meeting by Tom Wright, Official Representative, Kansas, September 22, 2010

NOW, THEREFORE, BE IT RESOLVED, that the Interstate Oil and Gas Compact Commission facilitate coordination and cooperation among its member states, State oil and gas agencies, the U.S. Department of Transportation, the Federal Energy Regulatory Commission, and other orgnizations with an interest in the underground storage of natural gas.

BE IT FURTHER RESOLVED, that the Interstate Oil and Gas Compact Commission coordinate with PHMSA and FERC to establish an Underground Natural Gas Storage Task Force and develop model regulations which address the safety and mechanical integrity of natural gas injection and withdrawal wells associated with the storage of natural gas.

10.113 Submitted for consideration at the Annual Meeting by Tom Wright, Official Representative, Kansas, September 22, 2010

DRAFT RESOLUTION 10.113
ACTION PLAN

Establishing An Inter-Governmental Task Force To Ensure The Safe Storage Of Underground Natural Gas

1. Send resolution to all IOGCC governors and official representatives.
2. Send resolution to Federal Energy Regulatory Commission commissioners, PHMSA Administrator, Chairman of the House Committee on Transportation and Infrastructure and all other officials as appropriate.
3. Send resolution to oil and gas departments in each state.
4. Charge the IOGCC staff to develop a plan to support the proposal.

10.113 Submitted for consideration at the Annual Meeting by Tom Wright, Official Representative, Kansas, September 22, 2010

NATIONAL ASSOCIATION OF PIPELINE SAFETY REPRESENTATIVES
RESOLUTION

Western Region **Action Category 2**
State of Colorado
Resolution 2010-03 AC-2

URGING PHMSA TO DEVELOP REGULATIONS AND POLICIES TO ADDRESS THE SAFE CONSTRUCTION AND OPERATION OF NATURAL GAS AND HAZARDOUS LIQUIDS STORAGE FIELD WELLBORES AND GEOLOGIC FORMATIONS

WHEREAS: Underground natural gas storage is a key component of the natural gas market that maintains reliability of gas supplies during periods of high demand;

WHEREAS: There are about 120 entities that currently operate the nearly 400 active underground storage facilities in the lower 48 states. In turn, these operating entities are owned by, or are subsidiaries of, fewer than 80 corporate entities;

WHEREAS: 49 CFR Part 192 defines a "Pipeline facility" to mean new and existing pipelines, rights-of-way, and any equipment, facility, or building used in the transportation of gas or in the treatment of gas during the course of transportation;

WHEREAS: A Pipeline facility would include the wellbores, geologic reservoirs, and aquifers used to store gas in a storage field;

WHEREAS: Through Advisory Bulletin ADB-97-04 and other correspondence, PHMSA or its predecessor agency has noted that gas storage facilities are not covered by PHMSA pipeline safety regulations;

WHEREAS: PHMSA has noted that unique geologic storage structures make it difficult to develop regulations that would adequately protect the safety and the environment for each reservoir;

WHEREAS: PHMSA has urged state regulators to develop state sponsored safety programs to make new federal regulations unnecessary;

WHEREAS: Many states have adopted rules and regulations regarding the safe operation of underground gas and liquid storage facilities;

WHEREAS: If a storage facility serves interstate commerce, it is subject to the jurisdiction of the Federal Energy Regulatory Commission (FERC); otherwise, it is state-regulated;

WHEREAS: As per 49 U.S.C. § 60104(c) A State authority may not adopt or continue in force safety standards for interstate pipeline facilities or interstate pipeline transportation; and

WHEREAS: Several significant incidents, (Wesley, Texas, in 1992; Hutchinson, Kansas, in 2001, Moss Bluff, Texas, in 2003, and Fort Morgan Colorado, in 2006), have occurred where natural gas or hazardous liquids have escaped from storage and resulted in loss of life and/or property.

NOW THEREFORE BE IT RESOLVED: That PHMSA be urged to:

1. Develop regulations and policies to address the assessment of the integrity of existing wellbores used for the purposes of storing natural gas or hazardous liquids; the safe operation and construction of natural gas and hazardous liquid storage wellbores; and the safe operation of the geologic formations used for gas and hazardous liquid storage; or
2. Support modification of the Pipeline Safety Act, (49 U.S.C. §§ 60101 et seq.), to allow state regulation of geologic reservoirs and wellbores used for storage of natural gas or hazardous liquids that are in interstate transportation; or
3. Make specific written delegations of authority for regulation of all underground natural gas or hazardous liquid storage facilities to the state pipeline safety programs that partner with PHMSA under USC 60105 certification; or
4. Develop an interagency agreement with the Federal Energy Regulatory Commission to address storage field integrity management policies.

Approved on September 30, 2010 by vote of Board Directors by a 9 to 1 vote with the condition that the language highlighted in yellow be added.

Approved on October 22, 2010 by vote of Board of Directors.

Questions?

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APPENDIX A
CHRONOLOGY OF FERC REGULATION AND CIVIL LITIGATION REGARDING INTERSTATE PIPELINE GAS STORAGE FACILITIES

NORTHERN NATURAL GAS COMPANY

The following chronology traces litigation regarding Northern Natural Gas' (NNG's) Cunningham Storage Field in Pratt and Kingman Counties, Kansas. In addition to NNG, the parties involved in the litigation are Nash Oil & Gas (Nash), Trans Pacific Oil (Trans Pac), L.D. Drilling, Inc. (L.D.), Val Energy (Val), and Martin, Pringle, Oliver, Wallace & Bauer, L.L.P (Martin Pringle). Although the issues are interrelated, the litigation has occurred in several separate cases. This chronology begins with a lawsuit brought by NNG against Trans Pac, that was decided in 2005 and ends with a federal condemnation brought by NNG seeking to condemn the acreage covered by a June, 2010 FERC Order. Throughout the litigation, NNG also filed applications and motions with the Federal Energy Regulatory Commission (FERC), which are also referred to below.

Cases

1. *Northern Natural Gas Co. v. Trans Pacific Oil, et al.*, No. 02-1418 (D. Kan. May 2005), *aff'd*, 2007 WL 2753079 (10th Cir. 2007) (affirming the jury verdict), and 529 F.3d 1248 (10th Cir. 2008) (affirming the injunction denial).
   - NNG lost its claim because it could not prove that the gas migrated after 1993. Defendants won their counterclaim and were awarded $4.65 million for damages sustained for shut in of their wells.
   - Trans Pac lost its motion for an injunction to stop NNG from filing an application with FERC to expand the Cunningham Storage Field.
2. *Northern Natural Gas Co. v. Nash Oil & Gas, Inc.*, No. 04-1295 (D. Kan. March, 2007), *aff'd*, 526 F.3d 626 (10th Cir. 2008).
   - NNG was not entitled to recovery due to the statute of limitations.
3. *Northern Natural Gas Co. v. Trans Pacific Oil Corp.*, No. 08-1365 (D. Kan. settled Feb., 2009).
   - NNG sued for conversion of gas that migrated after 1993. A settlement provided NNG with leases on land north of the certified boundary of Cunningham.
4. *Northern Natural Gas Co. v. Martin, Pringle, Oliver, Wallace & Bauer, L.L.P.*, 289 Kan. 777 (2009).
   - NNG sued its former counsel for failing to object to a jury instruction that stated NNG could only recover if it proved that gas migrated *after* 1993. NNG lost the malpractice suit when the Kansas Supreme Court ruled that the jury instruction was accurate.

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5. *Northern Natural Gas Co. v. L.D. Drilling, Inc., et al.*, No. 08-1400 (D. Kan. Dec. 2008).
    - NNG sued L.D. and Val for producing NNG's storage gas. This case was combined with Case No. 08-1405.
6. *Northern Natural Gas Co. v. L.D. Drilling, Inc., et al.*, No. 08-1405 (D. Kan. Dec. 2008).
    - NNG filed a separate action against L.D., Val, Nash and many others for producing NNG's storage gas and creating "pressure sinks" that draw gas away from Cunningham.
    - NNG's amended complaint included: claims for title; declaratory and injunctive relief; conversion; unjust enrichment; nuisance; and civil conspiracy.
    - Defendants asserted the following counterclaims: tortious interference with contract and business expectations; outrage; trespass; nuisance; slander of title; inverse condemnation; abuse of process; unjust enrichment; lost production; and punitive damages.
    - May 12, 2009 - Judge issued order granting NNG's motion for preliminary injunction to test four wells operated by Nash.
    - November 6, 2009 - Judge issued order denying motions to dismiss by NNG and defendants and combining Case Nos. 08-1400 and 08-1405.
    - March 26, 2010 - Judge issued order:
        - Denying NNG's request to re-test the four Nash wells
        - Taking under advisement NNG's motion to test additional wells, pending a ruling by the state court in 2009-CV-111
    - Aug. 4, 2010 - Judge issued order:
        - Granting NNG's Motion for Reconsideration that will now allow the re-testing of four Nash wells and 25 L.D. drilling wells due to the newly expanded field boundaries
        - Denying defendant's Motion for Immediate Stay of All Discovery
        - Denying defendant's Motion for Protective Order
    - NNG filed motions to dismiss counterclaims and defendants filed a motion for summary judgment.
    - Sept. 29, 2010 – Judge issued order:
        - Granting in part and denying in part parties' dispositive motions
        - Applying collateral estoppel (due to 2009-CV-111) for claims of conversion on gas that migrated before expansion of the storage field by FERC on June 2, 2010
        - Proposing a stay of action until the Kansas Supreme Court has issued a decision – no final order on the proposed stay has been issued as of October 20, 2010
7. *Northern Natural Gas Co. v. Oneok Field Services Co., et al., v. Nash Oil & Gas, Inc. and L.D. Drilling*, No. 2009-CV-111 (30th Jud. Dis. Dec. 2009).
    - NNG filed a state action in Pratt County on December 2, 2009 against Oneok Field Service Co. and others for the purchasing, taking, and

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conversion of gas that NNG claims title. ONEOK and Lumen filed third-party indemnity claims against Nash and L.D.

- Nash and L.D. filed a motion for summary judgment arguing:
  - their wells were too far away from the Cunningham Field to be considered on "adjoining property," and
  - consequently the rule of capture, not K.S.A. 55-1210, applied to determine title between them and NNG, and
  - they had legal right and title to the gas they produced.
- Pratt County Judge granted Nash's and L.D.'s motion for summary judgment finding:
  - The wells at issue are too far from the Cunningham Field to qualify as "adjoining property" as the term is used in K.S.A. 55-1210(c)
  - K.S.A. 55-1210 does not protect title to gas that has allegedly migrated to property more distant than "adjoining property"
  - The judgment was limited to gas that migrated before the FERC approved expansion of the Cunningham Storage Field on June 2, 2010
- NNG appealed this order to the Kansas Court of Appeals on May 6, 2010.

8. *Northern Natural Gas Co. v. Oneok Field Services Co., et al., v. Nash Oil & Gas, Inc. and L.D. Drilling*, Appellate Case Number 104279 (Kan. Court of Appeals, docketed May 6, 2010).
   - NNG appealed Pratt Co. Judge's order granting Nash's and L.D.'s motion for summary judgment to Kansas Court of Appeals.
   - The case was transferred to Kansas Supreme Court on July 1, 2010.
   - As of October 21, 2010, only NNG, appellant, has filed its brief.
9. *Northern Natural Gas Co. v. Approximately 9117.53 acres in Pratt, Kingman, and Reno Counties, Kansas, et al.*, No. 10-1232 (D. Kan. filed July 2010).
   - NNG filed a federal condemnation action seeking to condemn the acreage covered by the FERC June 2, 2010 Certificate.

FERC Dockets

1. Docket No. CP05-55-000, Test Wells:
   - NNG was granted permission to install test wells
2. Docket No. CP07-107-000, Expansion of Cunningham Storage Field:
   - NNG applied to expand Cunningham by 4,800 acres, but was only granted permission to expand by 1,760 acres.
3. Docket No. CP09-465-000, Expansion of Cunningham Storage Field:
   - NNG applied to expand Cunningham by over 14,000 acres. FERC authorized NNG to expand Cunningham by 12,320 acres. NNG, however, must design and implement a plan that will prevent the migration of storage gas beyond the newly authorized boundary.

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- NNG submitted its containment plan and as of October 21, 2010, FERC has not issued an order regarding this plan (it does not appear FERC will issue an order addressing this plan).

Chronology

May 2005: U.S. District Court jury denied NNG's request to test Nash's wells and awarded Nash $4.25 million on its counterclaim for wrongful shut-in of its wells. Case No. 02-1418.

Sept. 2005: FERC gave NNG permission to install test wells near northern boundary of Cunningham Storage Field to test migration. Docket No. CP05-55-000.

March 2007: District Court granted summary judgment to Nash due to statute of limitations and collateral estoppel in Case No. 04-1295.

March 2007: NNG filed application with FERC to expand the certified boundary of Cunningham by 4,800 acres, based on evidence of migrating gas from the test wells installed in 2005. Docket No. CP07-107-000.

July 2007: District Court denied Nash's injunction against NNG's FERC application, claiming lack of jurisdiction. Case No. 02-1418.

Sept. 2007: 10th Circuit denied NNG's appeal of Case No. 02-1418. NNG claimed that the District Court erred by instructing the jury that it must find that the gas migrated *after* 1993 (the year K.S.A. 55-1210 went into effect). 10th Circuit denied the appeal because NNG failed to object to the jury instruction at trial. This gave rise to a lawsuit by NNG against its attorneys for malpractice.

May 19, 2008: 10th Circuit affirmed the statute of limitations ruling in Case No. 04-1295. One judge dissented based on a continuing torts theory.

June 17, 2008: 10th Circuit affirmed District Court's denial of Nash's request for injunction in Case No. 02-1418, agreeing that District Court did not have the jurisdiction to provide injunctive relief.

Oct. 2008: FERC granted certification to extend Cunningham by 1,760 acres (not the 4,800 requested). FERC stated that the expansion was not barred by the *Trans Pac* case because it is immaterial when the gas migrated for FERC's purposes. FERC also stated that migrating gas made up "some but not all" of the gas in the area. Docket No. CP07-107-000.

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Nov. 2008: NNG sued Nash/Trans Pac, for conversion of gas that migrated *after* 1993. Case settled in February, 2009. The settlement included leases for NNG in areas north of the certified expansion. Case No. 08-1365.

Dec. 2008: NNG filed suit against L.D. and Val for producing NNG's storage gas. Case No. 08-1400. Four days later, NNG filed a separate action against L.D., Val, and Nash for producing NNG's storage gas and creating "pressure sinks" that draw gas away from Cunningham. Case No. 08-1405.

April 2009: FERC denied NNG's motion for rehearing on expansion, saying settlement with Trans Pac provided NNG with the leases necessary to test 3,900 of the 4,800 acres requested. Docket No. CP07-107-000.

May 12, 2009: District Court granted NNG's request for injunction to test four of Nash's wells involved in Case No. 08-1405. There was controversy over what constituted "adjacent property" and "storage area" under K.S.A. 55-1210. The District Court found that "storage area" included NNG's leases, even though the area was not certified by FERC or the KCC.

Oct. 2009: The Kansas Supreme Court ruled that the jury instruction that stated that NNG could only recover if it proved that the gas migrated after 1993 was correct. Therefore, NNG lost its malpractice claim against its former counsel. *Northern Natural Gas Co. v. Martin, Pringle, Oliver, Wallace & Bauer, L.L.P.*, 289 Kan. 777 (2009).

Nov. 6, 2009: The defendants moved to dismiss NNG's claims for conversion, etc. in Case Nos. 08-1400 and 08-1405. NNG moved to dismiss the defendant's counterclaims for trespass, etc. Both motions to dismiss were denied. NNG's motion to consolidate was granted.

Dec. 2, 2009: NNG filed a state action in Pratt Co., Thirtieth Judicial District, against ONEOK Field Service Co. and others for the purchasing, taking, and conversion of gas that NNG claims title. Case No. 09-CV-111. ONEOK and Lumen filed third-party indemnity claims against Nash and L.D.

Jan. 22, 2010: NNG objected to the Magistrate's order to consolidate because of certain interpretations of 55-1210 that were included in the order. The objection was dismissed because the interpretations made by the Magistrate are not binding on the Court. Case No. 08-1405.

Feb. 1, 2010: Protective orders for confidential evidence entered in Case No. 08-1405.

March 26, 2010: District Court issued an Order in Case No. 08-1405 denying NNG's request to re-test the four Nash wells, and taking under advisement NNG's motion to test additional wells, pending a ruling by the state court in 2009-CV-111.

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April 15, 2010: Pratt Co. Judge granted Nash's and L.D.'s motion for summary judgment. Case No. 09-CV-111.

May 6, 2010: NNG appealed Pratt Co. Judge's Apr. 15, 2010 Order to Kansas Court of Appeals. Appellate Case Number 104279.

June 2, 2010: FERC authorized NNG to expand Cunningham by 12,320 acres. Docket No. CP09-465-000.

June 23, 2010: NNG submitted its containment plan per June 2nd FERC Order. Docket No. CP09-465-000.

July 1, 2010: NNG appeal of 09-CV-111 transferred to Supreme Court. Appellate Case Number 104279.

July 16, 2010: NNG filed a federal condemnation action in the District Court of Kansas seeking to condemn the acreage covered by the FERC June 2, 2010 Certificate. Case No. 10-1232.

July 23, 2010: NNG filed its storage gas containment plan with FERC as required by the FERC June 2, 2010 order authorizing NNG to expand Cunningham by 12,320 acres. Docket No. CP09-465-000.

Aug. 4, 2010: Judge granted NNG's Motion for Reconsideration that will now allow the testing of four Nash wells and 25 L.D. drilling wells; denied defendant's Motion for Immediate Stay of All Discovery; and denied defendant's Motion for Protective Order. Case No. 08-1405.

Aug. 18, 2010: NNG's Appellant Brief filed. As of October 18, 2010, defendants have filed motions for extension of time to file briefs. Kansas Supreme Court Appellate Case No. 104279

Sept. 20, 2010: Answers filed in condemnation case. Case No. 10-1232.

Sept. 29, 2010: Parties' dispositive motions granted in part and denied in part by Judge Brown. Collateral estoppel applied to gas that migrated before expansion of the storage field by FERC on June 2, 2010. Judge also issued a proposed stay of action. Case No. 08-1405.

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SOUTHERN STAR CENTRAL GAS PIPELINE, INC.

The following chronology traces the expansion of the North and South Welda Storage Fields in Anderson County, Kansas as well as the Elk City Storage Field in Elk, Montgomery, and Chautauqua Counties, Kansas, all operated by Southern Star Central Gas Pipeline, Inc.

Cases

1. *Southern Star Central Gas Pipeline v. 842 Mineral and Leasehold Acres of Land in Anderson County, Kansas*, Case No. 08-1313 (D. Kan. 2008)
   - Southern Star filed a condemnation case to acquire much of the property made part of the Welda Storage Fields as certificated by FERC on May 9, 2008 and August 5, 2008 in Docket No. CP08-4 (North Welda) and the July 16, 2008 Order in Docket No. CP07-89 (South Welda).
   - Jury returned verdict for defendants with compensation values on September 28, 2010.

FERC Dockets

1. Docket No. CP07-89, Expansion of North Welda Storage Field:
   - FERC denied Southern Star's request for lateral acres, but granted the request for oil rights above and below the North Welda Storage Field, reclassified the cap rock, and granted the request to install a gas compressor.
2. Docket No. CP08-4, Expansion of South Welda Storage Field:
   - FERC denied Southern Star's request for lateral acres and oil rights, but granted the request for an additional gas compressor and the request to reclassify the cap rock to include the area above and below the current South Welda Storage Field.
3. Docket No. CP10-2, Expansion of Elk City Storage Field:
   - Southern applied to increase the capacity of Elk City Storage Field, provide storage service at market-based rates, and add additional compressors to increase the maximum daily withdrawal
   - FERC issued an order granting the majority of Southern Star's request, but initially denied Southern Star's request to convert 1.4 Bcf of base gas capacity to working gas capacity.
   - FERC eventually granted Southern Star's request to convert base gas and increase the maximum withdrawal based on new studies.

Chronology

February 23, 2007: Southern Star applied to expand the North Welda Storage Field by 1,240 lateral acres, obtain all oil rights above and below the field, reclassify the cap rock,

and install a gas compressor. Southern Star claimed gas was migrating due to oil well development in the area. Docket No. CP07-89.

October 5, 2007: Southern Star applied to expand the South Welda Storage Field by 560 lateral acres, obtain oil rights above and below the certified field, reclassify the cap rock, and install an additional gas compressor. Southern Star claimed gas was migrating due to oil well development in the area. Docket No. CP08-4.

May 9, 2008: FERC denied the request for lateral acres and oil rights, but granted the request for an additional gas compressor and the request to reclassify the cap rock to include the area above and below the current South Welda Storage Field. Docket No. CP08-4.

July 16, 2008: FERC denied the request for lateral acres, but granted the request for oil rights above and below the North Welda Storage Field, reclassified the cap rock, and granted the request to install a gas compressor. Docket No. CP07-89.

October 16, 2008: Southern Star filed condemnation case to acquire much of the property made part of the Welda Storage Fields as certificated by FERC in Docket No. CP08-4 (North Welda) and Docket No. CP07-89 (South Welda). Case No. 08-1313.

December 18, 2008: FERC denied Southern Star's request for a rehearing regarding the lateral acres in Docket No. CP07-89.

February 10, 2009: Southern Star filed motion to confirm condemnation authority in District Court Case No. 08-1313.

May 27, 2009: District Court granted Southern Star's motion to confirm condemnation authority. Case No. 08-1313.

October 9, 2009: Southern Star applied to increase the capacity of Elk City Storage Field, provide storage service at market-based rates, and add additional compressors to increase the maximum daily withdrawal. Docket No. CP10-2.

May 20, 2010: FERC issued an order granting the majority of Southern Star's request, but denied Southern Star's request to convert 1.4 Bcf of bas gas capacity to working gas capacity in the Elk City Storage Field. Docket No. CP10-2.

July 2, 2010: Southern Star requested to amend the Order to convert 1.4 Bcf of base gas capacity to working gas capacity, based on new studies, and increase the maximum daily withdrawal of the Elk City Storage Field. Docket No. CP10-2.

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September 28, 2010: Jury returned verdict for defendants with compensation values in the district court condemnation proceeding. Case No. 08-1313.

October 21, 2010: FERC issued an order granting Southern Star's request to convert 1.4 Bcf of base gas capacity to working gas capacity, based on new studies, and increase the maximum daily withdrawal of the Elk City Storage Field. Docket No. CP10-2.

Northern Natural Gas
A MIDAMERICAN ENERGY HOLDINGS COMPANY

Memorandum

Memo to: Members of the Kansas Legislature

From: Mike Loeffler
Senior Director of External Affairs
Northern Natural Gas Company

Date: October 26, 2010

Based upon information publicly available from the Energy Information Administration, there are 25 states that have storage operations and 16 states which, in addition to Kansas, have abolished the rule of capture without limitation as to migrated hydrocarbons. The table below summarizes the information on the those states:

STATE	AUTHORITIES
Alabama	Ala. Code 1975 §9-17-153 (gas subsequently injected shall at all times be deemed the property of the injector and in no event shall any other person produce, take, or reduce to possession such gas).
California	*Pacific Gas & Electric Co. v. Zuckerman*, 189 Cal.App.3d 1113, 234 Cal.Rptr. 630 (Ct.App.3d 1987)(holding that an injector of natural gas does not lose title to migrated storage gas unless it evidences an intent to abandon the migrated storage gas).
Colorado	C.R.S.A. §34-64-107 (gas subsequently injected shall at all times be deemed the property of the injector and in no event shall any other person produce, take, or reduce to possession such gas).
Georgia	Ga. Code. Ann. §46-4-58 (all gas which has previously been reduced to possession and subsequently inject shall at all times be deemed the property of the injector and in no event shall be subject to any right of any person other than such injector).
Kentucky	*Tex. Am. Energy Corp. v. Citizens Fid. Bank & Trust Co.*, 736 S.W.2d 25 (Ky. 1987)(holding that when previously extracted oil or gas is subsequently stored in underground reservoirs capable of being defined with certainty and the integrity of said reservoirs is capable of being maintained, title to such oil or gas is not lost).

Special Committee on Natural Gas
Storage Fields and Facilities

Date: 10/28/10
Attachment: 11

STATE	AUTHORITIES
Louisiana	LSA-R.S. 30:22 (gas subsequently injected shall at all times be deemed the property of the injector and in no event shall any other person produce, take, or reduce to possession such gas).
Michigan	ANR Pipeline Co. v. 60 Acres of Land, 418 F. Supp.2d 933 (W.D. Mich. 2006)(holding that "extraneous or injected gas is subject to different rules. Injected gas which has previously been produced, reduced to possession, and then re-injected into the ground is not subject to the rule of capture. Once severed from the realty, gas becomes personal property, and title to that property is not lost when it is injected into underground storage reservoirs. *See, e.g., Ellis v. Arkansas Louisiana Gas Co.,* 450 F. Supp. 412, 419 (E.D.Okla.1978); *White v. New York State Natural Gas Corp.,* 190 F. Supp. 342, 349 (W.D.Pa.1960). Accordingly, if injected gas moves across boundaries there may be a trespass.").
Mississippi	MS ST. A. §53-3-157 "Protection Against Escape of Gas" (gas subsequently injected shall at all times be deemed the property of the injector and in no event shall any other person produce, take, or reduce to possession such gas).
Missouri	V.A.M.S. 393.500 (gas subsequently injected shall at all times be deemed the property of the injector and in no event shall any other person produce, take, or reduce to possession such gas).
Nebraska	*K N Energy, Inc. v. Marathon Oil Co.*, 1983 WL 1430, (D.Neb. Oct 26, 1983)(holding that the injector did not lose title to its injected gas because the court found no evidence that KN Energy intended to abandon the gas it injected in to the reservoir; holding that unless one believes that injecting gas into what is reasonably thought to be a well-defined storage reservoir for storage purposes constitutes an intent to abandon, one must conclude that title to stored gas which migrates is not lost; and recognizing that those cases applying the rule of capture to migrated storage gas are criticized by many).
Ohio	*Columbia Gas Transmission Corp.*, 1986 WL 20906, at *2 (July 18, 1986 N.D. Ohio) ("...gas which may have escaped the plaintiff's storage facilities and is discovered by the defendants does not *ipso facto* belong to the defendants unless the defendants show that the plaintiff intended to abandon the gas.").

STATE	AUTHORITIES
Oklahoma	*Champlin Exploration, Inc. v. Western Bridge and Steel Co., Inc.*, 597 P.2d 1215 (Okla. 1979) (holding that "[i]t is uniformly held, once oil and gas is extracted from the earth, it becomes tangible, personal property and subject to absolute ownership.... Thus the law of capture in oil and as to chattels previously reduced to possession by an owner is conditioned on the well known and existing theory of abandonment of lost property. Professor Eugene Kuntz ...in his definitive work on oil and gas, states the principle as follows: 'If oil should escape from a well, tank, or pipeline, the owner may lose possession but he retains title unless the oil is abandoned.' We can see no reason why his conclusions should not apply to refined hydrocarbons where problems of identity and other applications of the laws of evidence are comparatively simple and easy to apply" [citation omitted]). OKLA. STAT. ANN. Tit. 52, § 36.6 (gas subsequently injected shall at all times be deemed the property of the injector and in no event shall any other person produce, take, or reduce to possession such gas).
Oregon	O.R.S. §520.350 (gas subsequently injected shall at all times be deemed the property of the injector and in no event shall any other person produce, take, or reduce to possession such gas).
Pennsylvania	*White v. New York State Natural Gas Corp.*, 190 F. Supp. 342 (D.C.Pa. 1960) (refusing to apply the "wild animal" analogy to stored gas, stating that the law relating to ownership of wild animals is based on possessory concepts, with the title being acquired only be reduction of the animal *farae naturae* to possession and being divested by loss of possession through escape and return of the animal to its natural and ferocious state and holding that there had been no return of the storage gas to its "natural habitat" because it was Southwest gas, differing from native Pennsylvania gas).
Texas	*Coastal Oil & Gas Corp.*, 268 S.W.3d 1 (Tex. 2008)(holding that the rule of capture cannot be used to shield misconduct that is illegal, malicious, reckless, or intended to harm another without commercial justification, should such a case ever arise.); *Lone Star Gas Co. v. Murchison*, 353 S.W.2d 870 (Tex.Civ.App. – Dallas 1962) (holding that the injector did not lose title to migrating storage gas because the owner of personal property does not lose his title thereto without evidence of abandonment); V.T.C.A. §91.182 (gas subsequently injected shall at all times be deemed the property of the injector and in no event shall any other person produce, take, or reduce to possession such gas).

STATE	AUTHORITIES
Washington	RCWA 80.40.050 (gas subsequently injected shall at all times be deemed the property of the injector and in no event shall any other person produce, take, or reduce to possession such gas).

CUNNINGHAM, KANSAS
UNDERGROUND NATURAL GAS STORAGE FIELD

PRESENTED BY

RANDAL M. BRUSH, P.E.

VICE PRESIDENT, WILLIAM M. COBB & ASSOCIATES, INC.

SPECIAL INTERIM COMMITTEE ON NATURAL GAS STORAGE FIELDS AND FACILITIES

OCTOBER 28, 2010

My name is Randy Brush and I am vice president of William M. Cobb & Associates, Inc. headquartered in Dallas, Texas. I am a professional engineer with a master's in petroleum engineering from Stanford University and a bachelor's in chemical engineering from Rice University. I have worked for 30 years on reservoir engineering issues. I specialize in reservoir management evaluations and in the development and application of simulation studies. These evaluations and studies are used to estimate oil and gas reserves, provide ultimate recovery estimates, and predict reservoir performance under alternate development plans and various reservoir drive mechanisms.

I began my analysis of the underground natural gas storage field at Cunningham, Kansas, for Northern Natural Gas Company in March 2006. During the last four years, I have evaluated the history of the Cunningham field, both before and during storage operations. I have evaluated the production activities of the third-party operators to the north of the Cunningham field and the impact of that third-party production on the Cunningham field. I have assisted with the preparation of filings and technical reviews for the Kansas Corporation Commission, and with two expansion requests, along with associated data request response documents, filed with the Federal Energy Regulatory Commission. The most recent expansion request resulted in a June 2, 2010, order from FERC expanding the certificated boundaries of the Cunningham field by 12,320 acres. In the following comments, I will refer to this additional acreage as the "extension area."

First, let me provide an overview of the history of the Cunningham field. The Cunningham field was discovered in 1932 and is comprised of the Viola and Simpson gas-bearing formations and the massive overlying Kinderhook shale, which provides the caprock necessary to prevent vertical storage gas movement. (See Exhibit 1). Native gas production from the Cunningham field commenced in 1934. A total of approximately 79 billion

cubic feet (Bcf) of native gas was produced, representing approximately 91 percent of the original native gas in place. During this period of primary gas production at the Cunningham field, a total of 17 exploration wells were drilled in and adjacent to the extension area. (See Exhibit 2). All were found to be dry holes - that is, they did not produce commercial volumes of native gas or oil from the Viola formation. In fact, no economically recoverable native hydrocarbons have ever been discovered in the Viola and Simpson formations anywhere in the extension area prior to gas storage operations.

The Cunningham field's suitability for gas storage was subsequently recognized, and once converted, the field has been operated as a gas storage field for more than 30 years. The Cunningham field was certificated by KCC and FERC in 1977 and 1978, respectively. Initially, the Viola formation was certificated for storage at a pressure of 1,590 psia. Responding to a 1994 filing by Northern, KCC and FERC found through independent reviews that the Simpson and Viola formations were in communication and served as a single reservoir. KCC and FERC certificated the Simpson formation as part of the Cunningham field in 1996. At the same time, KCC and FERC also approved an increase of the maximum allowable reservoir pressure to 1,710 psia (1695 psig) to reflect the documented original discovery pressure of the reservoir.

12-3

Based on studies indicating the loss of storage gas to the north of the Cunningham field, on September 15, 2005, FERC granted Northern the authority to drill two recycle wells that the commission concluded would be "used only to recapture gas that is presently migrating beyond the boundaries of the storage field." FERC also concluded that the original gas reservoir boundary had expanded, and that Northern's geological, engineering and storage operational data clearly demonstrated evidence of gas migration from the Cunningham field. Northern subsequently drilled the two approved recycle wells (wells 19-14 and 24-42) in an attempt to prevent gas from moving past the certificated boundary and into the Extension area. Northern also drilled two observation wells (wells 13-31 and 18-21) at the boundary of the Cunningham field as it existed at that time to monitor the success of the two recycle wells. (See Exhibit 3).

Northern found from operations and subsequent studies that, as a consequence of the rapid development of the area north of the Cunningham field by third-party operators, the two recycle wells were not capable of preventing the migration of storage gas out of the Cunningham field into the extension area. Therefore, on March 16, 2007, Northern filed with FERC to expand the Cunningham field by approximately 4,800 acres. FERC granted a portion of Northern's request, approximately 1,760 acres, in an Order

12-4

Issuing Certificate, Docket Number CP07-107-000, issued October 30, 2008. In that order, FERC found that storage gas was moving north of the Cunningham field and was being produced at two third-party wells owned by Trans Pacific Oil Corporation, the Park 1 and Park 1A wells. (See Exhibit 3). These wells produced Northern's storage gas from 1989 through 2009 (Exhibit 4) and have since been plugged and abandoned. FERC stated that additional engineering and geologic information was needed to substantiate further expansion of the Cunningham field. In response, Northern gathered and analyzed extensive additional data in and around the extension area. Northern gathered additional three-dimensional seismic data, obtained recently released production rate data and producing well gas sample composition data from Kansas state records, and, at the direction of the federal court and FERC, sampled the gas from additional third-party operators' wells within the extension area, along with continued gas sampling of several Northern wells. These new data and the associated analyses were the basis for Northern's September 14, 2009, filing with FERC requesting expansion of the Cunningham field. In response to Northern's filing, FERC agreed with Northern's findings and issued the June 2, 2010, order expanding the boundaries of the Cunningham field and certificating the extension area by 12,320 acres.

12-5

I have evaluated Northern's storage gas migration out of the Cunningham field and the causes of that migration. I found that the migration of storage gas was instigated by and continues to be caused by the ongoing production activities at wells drilled by third-party operators in the extension area, and prior production activities by Trans Pacific Oil Corporation in the expansion area granted by FERC in 2008. I identified three phases of behavior at this field, including initial fill-up of the reservoir prior to 1984, 10 years of stable migration-free operation from 1985 through 1994, followed by a significant and ongoing gas migration resulting from the production of Northern's storage gas by third-party operators. The Cunningham field's stability as a storage field was destroyed by the third-party operators' production activities. Without the migration induced by the production of storage gas and aquifer water by the third-party operators, the Cunningham field would be stable today, with no migration of storage gas.

Until recently, third-party operators had 25 producing wells in the extension area. In July of this year, some of the third-party operators voluntarily shut in 11 of their wells. As shown on Exhibit 5, the extension area gas production had been increasing exponentially during the last 15 years. Exhibit 6 shows that both the production rate and producing well count in the extension area increased rapidly during the last four years. The

12-6

number of producing wells increased by more than 66% during that period, with an even larger increase in gas production volumes. The ongoing production of gas and associated water from these wells continues to further exacerbate the migration problem.

Employing appropriate industry-accepted principles, techniques, and methodologies to analyze the data related to the effect of storage gas and aquifer water production by third-party operators on the Cunningham field, I concluded that the migration of storage gas from the Cunningham field to the extension area is caused - both as to the volume of gas migration and timing of the gas migration - by the production of large volumes of storage gas and aquifer water by the third-party operators. This conclusion was reached as a result of my evaluation of, among other things, the Cunningham field inventory and pressure history and my comparison of that history to the production data from the wells in the extension area and the Trans Pacific wells. These results are supported by the abnormal production behavior of the third-party operator wells, including both the clear relationship between the pressure of the Cunningham field and the production rate from their wells, and the increasing average production rate for these wells with time which is in strong contrast with the normal decreasing production rate with time for wells producing out of naturally occurring gas accumulations.

12-7

Analyzing the pressure-inventory data to estimate the year-by-year average Cunningham field storage gas inventory, I plotted the yearly average storage gas inventory values as a function of time (Exhibits 7 and 8). I then compared the observed inventory changes to the third-party operators' cumulative produced gas and water volumes (Exhibits 9 and 10). As shown in Exhibits 7 and 8, there was an initial fill-up period resulting from the need to refill the depleted Cunningham field, including displacing out some of the aquifer water that had flowed into the previously gas-bearing part of the reservoir and the movement of a small volume of storage gas, thereby re-pressurizing the depleted limited aquifer adjacent to the Cunningham field. Following completion of this initial fill-up in 1984, the Cunningham field was stable (i.e., there was no observed migration) for the 10-year period from 1985 through 1994, with average inventory of 44 to 45 Bcf. Following this stable period, the volumes of gas and water produced by the third-party operators were found to match both the volume and timing of the increases observed in the average inventory at the Cunningham field. Loss of stable storage conditions becomes apparent in 1995 and increases in an exponential manner from that time through the most recent inventory analysis. During the stable operating period, the average inventory was approximately 44.5 Bcf, while the average inventory was 57.3 Bcf in April 2009. Therefore,

12-8

there has been approximately 13 Bcf of average inventory change (migration) from 1995 to April 2009 (Exhibit 8).

As shown in Exhibits 9 and 10, analysis of the third-party operators' production data demonstrates that the 13 Bcf of gas migration occurring since the end of 1994 has resulted directly from the production of storage gas and aquifer water from the Viola formation in the extension area. Exhibit 9 has two added curves. The first curve, labeled *Cumulative Production by Third-party Operators*, shows that the onset and magnitude of gas migration at the Cunningham field coincide, both in time and in volume, with the production of gas by the third-party operators. This is further demonstrated in this Exhibit by the curve labeled *Average Inventory Adjusted for Gas Production by Third-party Operators*, which is equal to the *Average Inventory* values minus the *Cumulative Production by Third-party Operators*. Note that the nearly horizontal appearance of the *Average Inventory Adjusted for Gas Production by Third-party Operators* curve indicates the migration from 1995 to 2009 was largely caused by the third-party operators' production of storage gas. That curve shows only a slight amount of gas migration (1.6 Bcf, 12 percent of the 13 Bcf of total gas migration) during the 14-year period from 1995 to 2009 that is not accounted for by third-party gas production. The cause of this remaining 1.6

Bcf of migration is the additional production of aquifer water by the third-party operators. Reports filed by the third-party operators with the KCC indicate that approximately 0.5 barrel of aquifer water was produced with each Mcf of storage gas in 2008. The reservoir pressure impact of this water production is significant. At reservoir conditions, 0.5 barrel of water occupies the same reservoir volume as would approximately 0.25 Mcf of gas. Exhibit 10 shows that adjusting for this level of water production accounts for the remaining 1.6 Bcf of migration during this period, as demonstrated by the horizontal appearance of the *Average Inventory Adjusted for Gas and Water Production by Third-party Operator*s curve. Based on these analyses, I conclude that the Cunningham field's decade-long stable storage condition was destroyed by the production of storage gas and aquifer water by third-party operators. Without the production of storage gas and water by the third-party operators, no migration of storage gas would have occurred from the Cunningham field after 1984.

This destruction of the Cunningham field's stable operating conditions is the direct result of third-party operators producing large volumes of storage gas and aquifer water in the extension area. This gas and water production has reduced the reservoir pressure in the extension area, thereby creating a large pressure difference between the Cunningham field and these

12-10

low-pressure areas (pressure sinks) the third-party operators have created and are maintaining in the extension area. These pressure sinks destabilize containment of the Cunningham field and cause the ongoing migration of storage gas to the extension area. Typical year-average Cunningham field pressure is approximately 1,160 psig. In contrast, the measured producing bottom-hole pressure at several extension area wells is between 224 psig and 718 psig. These low bottom-hole pressures are achieved with the help of extremely large water-pumping units installed on the wells (Exhibit 11). The vast majority of natural gas wells in other producing fields require no pumping units whatsoever. Exhibit 12, a list of water production volumes filed by the third-party operators with the state, documents the widespread production of large volumes of water (often over 200 barrels of water per day). Producing these large volumes of water greatly increases the pressure drawdown because of the large effect that removing an incompressible water volume has on decreasing reservoir pressure. The resulting low producing bottom-hole pressures cause significant storage gas migration to these wells from the Cunningham field even when the Cunningham field is at its lowest operating pressure. As a result of their production activities, the third-party operators have been able to produce storage gas year-round, at all levels of storage field pressure (Exhibit 13). Thus, no level of reduced operating

12-11

pressure at the Cunningham field would ensure that gas would not be pulled to the third-party wells.

In support of these conclusions, I have observed the third-party operators' wells annual cyclic production behavior and discovered two unusual patterns. The first results from their close pressure communication with the Cunningham field and their production of Cunningham field storage gas. In essence, the production of gas by these third-party operators directly correlates with the inventory of the Cunningham field. Exhibit 14 compares the total production rate of third-party operators' wells to the Cunningham field pressure over time. There is an obvious relationship between the periodic increase and decrease in Cunningham field pressure and the matching increase and decrease in the total gas production rate. The total gas production rate's annual cycles match the annual period of the cyclical pressure history of the Cunningham field. This relationship provides strong evidence of a migration pathway from the Cunningham field and the extension area and that the third-party operators' wells are producing Cunningham field storage gas.

The second unusual production pattern is that the third-party operators' wells do not show the normal declining production behavior

12-12

expected of wells producing from native hydrocarbon accumulations. Exhibit 15 is a plot of average per-well extension area production rate over time for the last three years, in comparison to the average per-well production rate of all other Kansas gas production wells. The trend of increasing production rate with time for the third-party operators' wells is clearly evident and contrasts with the decreasing rate of production of the wells producing from native gas reservoirs. This shows that the transmission pathway is growing larger and more permeable as the extension area wells pull more and more storage gas from the Cunningham field. Putting the evidence together, the production patterns from these third-party operators' wells are contrary to the expected and normal production of other natural gas wells in the state, and this extraordinary gas production volume comes from the same area that resulted in only dry holes prior to 1979.

In the June 2, 2010, order issued by FERC expanding the certificated boundaries of the Cunningham field by 12,320 acres, the commission adopted Northern's geologic, geochemical and engineering evidence. Significantly, FERC made the following findings regarding gas migration at the Cunningham field:

12-13

- The northern fault is non-sealing and storage gas migrates unimpeded to the north through a two-mile wide primary gas migration pathway.
- The Cunningham field was depleted by gas production prior to 1977. An aquifer that served as a hydrostatic seal for the reservoir extends north of the northern fault. During gas production, the aquifer acted as a limited water drive for the gas reservoir, pushing the gas out of the pore spaces within the reservoir and allowing water to fill up the previously gas-filled pore spaces. As gas was produced from the field, the pressure of the aquifer north of the field decreased.
- As storage gas filled the depleted Cunningham reservoir, the gas searched out a path of least resistance (i.e., through porous, permeable rock at lower pressure), moving north beyond the original gas-water contact, past the northern fault and into the aquifer. The pressure in the aquifer north of the field increased during the fill-up stage of the Cunningham storage reservoir.
- The field stabilized in 1985 and remained stable for a period of 10 years, at which time a new gas-water contact formed north of the fault.

12-14

- At about 1994, gas loss began to occur as a result of third-party production north of the field. Low wellbore pressures at the third-party wells create a pressure sink, where gas can more easily be produced by the third-party wells as it seeks equilibrium by migrating from higher to lower pressures.
- Production from third-party wells exhibit cyclical production that correlates with storage operations.
- Geochemical fingerprinting demonstrates that third-party wells are producing storage gas.

Let me now address certain specific claims that have been made by those producing and selling Northern's customers' storage gas. One claim has been that the third-party operators are not producing storage gas in the extension area. This claim has been thoroughly refuted by Northern's geochemical evidence including a recent sampling of 21 wells in September 2010 and FERC's findings in two separate orders, including the June 2, 2010, order. Moreover, in a hearing earlier this month, one of the experts testifying on behalf of the third-party operators testified on cross-examination that the third-party wells are producing storage gas.

1215

Another claim is that Northern has operated the Cunningham field at pressures in excess of the original reservoir discovery pressure. Following an extensive study of documents from the time of field discovery, the literature of the day as it relates to pressure measurement and nomenclature, and a detailed evaluation of pressure data in and around the Cunningham field, I concluded that the current certificated pressure of the Cunningham field, 1695 psig, is an accurate estimate of the original reservoir pressure. In addition, KCC and FERC, having reviewed all of the data related to field, including data related to the original producing wells, would not have certificated the field for a pressure in excess of the original reservoir discovery pressure. Finally, claims made by interveners in Northern's recent FERC expansion filing that the field has been operated in excess of the original reservoir pressure were rejected by FERC.

My independent analysis of the original reservoir pressure of the Cunningham field demonstrates that Northern has never exceeded the original reservoir pressure of the field. Exhibit 16 is a map showing the location of first three wells drilled into the Cunningham field, the Leisman #1, East Maxedon #3 and Interurban #3. I examined the records related to these wells (and other early wells) and determined that that original reservoir pressure of the Cunningham field was approximately 1695 psig. Exhibit 17

12-16

is the 1932 Leisman #1 well record. The Leisman #1 well was the first well completed in the field. According to this record, a Braden Head pressure was recorded of 1475 psig. As commonly known in the industry and agreed-to by the third-parties' expert in the hearing earlier this month, the Braden Head pressure is a surface pressure. From this surface pressure, a bottom-hole pressure of approximately 1733 psig can be calculated. Additional support for the 1475 psig wellhead pressure can be found in Exhibits 18 and 19 which are additional Leisman #1 well records. Exhibit 20 is a 1936 East Maxedon #3 well record that shows a surface pressure of 1380 psig, which would calculate to a bottom-hole pressure of 1618 psig. Finally, Exhibit 21 contains well records from 1937 for the Interurban #3 well. These records show a "rock pressure" of 1475 psig, corresponding to a bottom-hole pressure of 1732 psig (rock pressure was commonly known to be synonymous with surface pressure). The pressure recordings in these original field well records could not be down-hole (reservoir) pressures, because none of the detailed well records reflect the extensive and expensive procedures that would have been necessary to record such measurements given the technology available at the time. The average of these three pressures is 1694 psig, essentially identical to the 1695 psig certificated

12-17

pressure value, a limit to which Northern has adhered throughout storage operations at the Cunningham field .

Based on my review of the Cunningham field history, my professional conclusion is that Northern has operated the Cunningham field in a reasonable and prudent manner, taking all reasonable steps to both limit gas migration and to gather the data, conduct the studies and request the appropriate regulatory actions needed to understand and control gas migration. Northern has consistently acted to ensure the integrity of the field, to protect its storage gas from loss and to manage the migration of storage gas.

To summarize, I have reached the following conclusions regarding the migration of storage gas at the Cunningham field:

1. No commercial gas wells existed in the extension area prior to storage operations at the Cunningham field.
2. Extension area producing wells remove storage gas and aquifer water to create pressure sinks.
3. These resulting pressure sinks draw storage gas from the Cunningham field.

12-18

4. The continued operation of the extension area wells has destabilized storage gas containment at the Cunningham field.
5. The extension area wells have produced over 11 Bcf of storage gas.
6. The increasing average rates from the extension area wells show that they are exacerbating the storage gas transmission pathway.
7. The extension area wells have seriously compromised the ability of Northern to provide stable storage gas containment.
8. The certificated pressure of 1695 psig is fully supported by all available primary documentation.
9. Northern has operated the Cunningham field in a reasonable and prudent manner.

12-19

Underground Fences and Storage Gas Migration: K.S.A. § 55-1210 and Property Rights to Injected Natural Gas

Jacob L. Porter

"Good fences make good neighbours."[1]

I. INTRODUCTION

The underground natural gas storer and the landowners near the storage field can be at odds when injected gas migrates. This is an important issue for all gas consumers and particularly for Kansans because of the high volume of natural gas stored in the state.[2] Storers

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[1]ROBERT FROST, NORTH OF BOSTON 13 (2nd ed. 1915). The circumstances of the poem, *Mending Wall*, are of neighbors annual repairing of a stone wall with no apparent purpose beyond delineation of their properties:

> . . .
> And on a day we meet to walk the line
> And set the wall between us once again
> . . .
> There where it is we do not need the wall:
> He is all pine and I am apple orchard.
> My apple trees will never get across
> And eat the cones under his pines, I tell him.
> He only says, "Good fences make good neighbours."
> . . .

ROBERT FROST, NORTH OF BOSTON 11-12 (2nd ed. 1915).

[2]Underground natural gas storage provides a valuable service by assuring reliable natural gas delivery and mitigating seasonal demand variation. ENERGY INFORMATION ADMINISTRATION, U.S. UNDERGROUND NATURAL GAS STORAGE DEVELOPMENTS: 1998-2005 1 (2006), http://www.eia.doe.gov/pub/oil_gas/natural_gas/feature_articles/2006/ngstorage/ngstorage.pdf. Five percent of the United States' 394 underground gas storage facilities are in Kansas. *Id.* at 3. The United States total working gas capacity is approximately 4 trillion cubic feet. *Id.* at 1. Working gas capacity is the operational capacity of the storage reservoir. Total gas storage volume includes both working gas and cushion gas (also known as base gas) left in the reservoir when "empty." *See id.* at 4. Kansas has nineteen gas storage facilities with 118 billion cubic feet of working gas capacity. *Id.* at 3. Eighteen of Kansas' gas storage facilities are porosity storage in depleted gas fields and the other is storage in salt caverns. *Id.* at 3. A salt cavern is open space formed underground by the dissolution of salt by repeated introduction of fresh water. *See id.* at 7. Porosity storage is typically a depleted gas reservoir from which the natural gas has been produced prior to conversion to a storage field. *Id.* Salt cavern storage is more expensive to construct but less expensive to operate. *Id.* Salt cavern storage offers better operational cost efficiency, and the cavern is typically filled and emptied multiple times per year. *Id.* The Yaggy field, the only salt cavern storage facility in Kansas, had a catastrophic migration of gas in 2001, resulting in explosions, fires, and deaths. *Id.*; M. Lee Allison, *Hutchinson Kansas A Geologic Detective Story*, GEOTIMES, October 2001, http://www.agiweb.org/geotimes/oct01/feature_kansas.html. The Yaggy salt cavern storage facility, several miles northwest of Hutchinson, leaked with the gas migrating to downtown Hutchinson and exploding on January 17,

can condemn property inadvertently used for storage.[3] The adjacent landowners may drill for natural gas and consequently produce migrated gas, alone or mixed with native gas. In 1985, the Kansas Supreme Court held that the rule of capture determines ownership of migrating injected gas.[4] In 1993, storers successfully lobbied for Kansas Statutes Annotated § 55-1210 which effectively excluded injected gas from the rule of capture by granting continual ownership of injected gas to the storer and allowing the storer to test adjoining landowners' production wells for migrating gas.[5] Numerous cases in state and federal court interpreted K.S.A. § 55-1210 and clarified the implementation of the statute, yet uncertainty regarding ownership of migrated gas remains.[6] In 2010, stakeholders unhappy with these court decisions and uncertain property rights in and around the Cunningham field offered and debated legislative changes proposed in Kansas Senate Bill 553.[7]

2001 and destroying downtown businesses. Allison, *supra*. Additional explosions occurred on January 18, 2001, resulting in the destruction of a mobile home and the deaths of two people. *Id.*

[3]*See* KAN. STAT. ANN. §§ 55-1203 to 1205 (2005). K.S.A. § 55-1203 gives natural gas public utilities the power to appropriate property suitable for underground gas storage. K.S.A. § 55-1204 describes the process by which the gas storage utility must obtain a certificate from the Kansas Corporation Commission before filing an eminent domain action. K.S.A. § 55-1205 directs the gas storage utility to proceed with eminent domain action as described in K.S.A. §§ 26-501 to 26-517. Additional authority for condemnation by a gas storage utility is in the federal Natural Gas Act, 15 U.S.C. § 717f(h) (2006).

[4]Anderson v. Beech Aircraft Corp., 699 P.2d 1023, 1031-32 (Kan. 1985). Kansas had previously recognized the rule of capture with regard to natural gas. *Id.* at 1028. The rule of capture grants title to extracted gas to the producer of that gas, with no regard for the original position of that gas. *Id.* ; *See* 6 Thompson on Real Property, Second Thomas Edition § 49.02(b) (David A. Thomas ed., 2003); Tanya J. Treadway, Note, *Oil & Gas Law - The Rule of Capture Applied to the Underground Storage of Natural Gas* - Anderson v. Beech Aircraft Corp., 34 U. KAN. L. REV. 801, 802 (1986). Effectively, the production well owner owns the produced gas, even if the gas migrated from adjacent property. Tanya J. Treadway, Note, *Oil & Gas Law - The Rule of Capture Applied to the Underground Storage of Natural Gas* - Anderson v. Beech Aircraft Corp., 34 U. KAN. L. REV. 801, 802 (1986).

[5]*See* KAN. STAT. ANN. § 55-1210 (2005). Kansas Statutes Annotated (K.S.A.) § 55-1210 was enacted by passage of Senate Bill (S.B.) 168.

[6]*See, e.g.*, Williams Natural Gas Co. v. Supra Energy, Inc., 931 P.2d 7, 15 (Kan. 1997) (finding constitutional the testing provisions of § 55-1210); Beck v. N. Natural Gas Co., 170 F.3d 1018, 1024 (10th Cir. 1999) (limiting damages to the landowner to the value of a storage lease of the underground formation); N. Natural Gas Co. v. L.D. Drilling, Inc., 618 F. Supp. 2d 1280, 1292 (D. Kan. 2009) (attempting to define the term "adjoining" and its proper usage in § 55-1210).

[7]S.B. 553, 2010 Sess. (Kan. 2010), *available at* http://www.kslegislature.org/bills/2010/553.pdf. Numerous stakeholders have offered testimony during multiple legislative committee meetings. *Hearing on S.B. 553 Before the Kan. S. Natural Resource Comm.*, 83d Leg., 2010 Sess. (Mar. 4 & 10, 2010) (minutes of the Kansas Senate Natural Resource Committee). The Cunningham gas storage field in south-central Kansas provides a cautionary tale

This note examines the judicial and legislative responses to disputes between storers and other stakeholders over the ownership of migrating injected natural gas. The note addresses the historical context of the enactment of K.S.A. § 55-1210 and includes a discussion of cases decided before the passage of S.B. 168 enacting K.S.A. § 55-1210 in 1993, the legislative history of S.B. 168, and the state and federal cases interpreting K.S.A. § 55-1210. This note suggests an improvement to S.B. 553 to better manage the inherent conflict between storers and nearby landowners.[8] An apocryphal underground fence would be helpful in delineating the property and rights of the parties near underground gas storage fields.

II. HISTORICAL COMINGLED PROPERTY DISPUTES

Some types of property need to be segregated to maintain identity and ownership of the property. When attempts to segregate property fail, disputes often arise. In the context of comingled property, whether it be cattle, grain, or natural gas, Kansas law offers rules to prevent and resolve disputes.

A. Fence Law

Fence law is instructive in framing potential disputes between adjacent property owners.[9] Partition fence must be maintained in equal shares.[10] Kansas law requires that cattle be fenced

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regarding the management of gas storage conflicts. Gale Rose, *Northern Natural Gas Migrates Too Far, Judge Rules*, PRATT TRIBUNE, Apr. 27, 2010, http://www.pratttribune.com/features/x57972321/Northern-Natural-gas-migrates-too-far-judge-rules. Several cases after the passage of K.S.A. § 55-1210 involve the application of the statute to production of gas allegedly migrated from the Cunningham gas storage field. Beck v. N. Natural Gas Co., 170 F.3d 1018, 1021 (10th Cir. 1999); N. Natural Gas Co. v. Trans Pac. Oil Corp., 248 F. App'x 882, 2007 WL 2753079, at *884 (10th Cir. 2007); N. Natural Gas Co. v. Nash Oil & Gas, Inc., 526 F.3d 626, 628 (10th Cir. 2008); N. Natural Gas Co. v. L.D. Drilling, Inc., 618 F. Supp. 2d 1280, 1285 (D. Kan. 2009); N. Natural Gas Co. v. Martin, Pringle, Oliver, Wallace & Bauer, L.L.P., 217 P.3d 966, 969 (Kan. 2009); N. Natural Gas Co. v. Oneok Field Services Co., No. 2009-CV-111, 2010 WL 2243637, at 1 (Kan. Dist. 30th Apr. 15, 2010). Any proposed legislation would be well served by consideration of the statute's effect on the stakeholders typified by the property interests in and around the Cunningham field.

[8] S.B. 553 (2010) is pending legislation to amend K.S.A. § 55-1210.

[9] *See generally*, Roger A. McEowen, *Kansas Fence Law*, KANSAS FARM AND ESTATE LAW, June 2010, at 17.

in.[11] Mere escape of cattle is not sufficient to make a rancher liable for resulting damages.[12] Rather, a showing of negligence is typically required.[13] Examples of negligence actions include poor fence maintenance or knowledge and tolerance of animal escape.[14] The fenceline between a rancher and farmer can be compared to an underground fence between the storer and the adjacent landowner whose interest is in mineral exploration. Both parties appear to have obligations regarding formation and maintenance of an effective boundary between their property holdings, but the storer may face liability for negligent operations.

B. Confusion of Goods Doctrine

Confusion of goods is a common law doctrine applicable to comingled gas.[15] The doctrine of confusion of goods applies when the property of multiple parties cannot be separately identified.[16] The confusion may arise in multiple ways including: (1) willful or tortuous conduct, (2) mixture by consent, (3) mixture by mistake, or (4) mixture by inevitable accident.[17] The confusion of goods doctrine is one of equity intended to prevent profit by the wrongdoer.[18]

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[10]KAN. STAT. ANN. § 29-301 (2000). However, a landowner does not have to contribute to the fence if the tracts are used in common. KAN. STAT. ANN. § 29-309 (2000). Used in common does not include used for different purposes, as in a crop field adjacent to a pasture. *See* Roger A. McEowen, *Kansas Fence Law*, KANSAS FARM AND ESTATE LAW, June 2010, at 18 (citing Kan. Att'y Gen. Op. Nos. 83-43 (Mar. 25, 1983) and 87-28 (Feb. 16, 1987)).
[11]KAN. STAT. ANN. § 47-122 (2000); KAN. STAT. ANN. § 29-101 (2000).
[12]Spain v. Schroeder, 98 P.3d 303, 2004 WL 2238770 (Kan. App. 2004) discusses Kansas law regarding escape of cattle subsequently involved in a collision with a vehicle. Interestingly, *res ipsa loquitur* is inapplicable to domestic animal escape in Kansas. *See* Spain v. Schroeder, 98 P.3d 303, 2004 WL 2238770, at *5 (Kan. App. 2004) (Malone, J., dissenting) (arguing negligence is a question for the jury). A negligence finding appears to be an important threshold requirement in cases of escaped domestic animals. *See id.* at *4 (finding lack of negligence and summary judgment for defendant owner of escaped cattle).
[13]*See* Roger A. McEowen, *Kansas Fence Law*, KANSAS FARM AND ESTATE LAW, June 2010, at 20.
[14]*Id.* (citing Cooper v. Eberly, 508 P.2d 943 (Kan. 1973)).
[15]*See generally*, 2 Thompson on Real Property, Second Thomas Edition § 13.04(h) (David A. Thomas ed., 2003); 1 AM. JUR. 2D ACCESSION AND CONFUSION § 2 (2005). Natural gas can be a good. KN Energy, Inc. v. Great W. Sugar Co., 698 P.2d 769, 778 (Colo. 1985). A Kansas court has found natural gas to be a good. Sunflower Elec. Co-op, Inc. v. Tomlinson Oil Co., 638 P.2d 963, 969 (Kan. App. 1981).
[16]*See* 1 AM. JUR. 2D ACCESSION AND CONFUSION, at § 2 (citing In re Jamail, 609 F.2d 1387 (5th Cir. 1980)).
[17]*Id.*
[18]*Id.*

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The confusion of goods doctrine can be applied strictly or leniently, depending upon the existence and level of wrongdoing.[19] Simply put, innocent mixing results in the parties becoming tenants in common to the resulting mixture, while wrongful mixing results in the wrongful mixer bearing the loss.[20] There is a generally held obligation on a negligent mixer to establish his proportion of the intermingled goods or suffer forfeiture of his share.[21]

Kansas courts have acknowledged the confusion of goods doctrine, including in the context of natural gas.[22] In *Hall v. Shaffer*,[23] the Kansas Supreme Court applied the confusion of goods doctrine to intermingled gas from production wells owned by different parties.[24] In *Hall*, the Court equated wrongful mixing of gas with forfeiture of the wrongdoer's interest in the combined gas by stating "the defendants wrongfully mingled their gas with that of the plaintiffs, so that there was no way of distinguishing that of the plaintiffs from the part belonging to the defendants, in a sense forfeits their interest."[25]

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[19]*Id.* at §§ 10-13 (citing Basin Elec. Power Co-op. v. ANR Western Coal Development Co., 105 F.3d 417 (8th Cir. 1997)).

[20]*Id.* at §§ 10, 13. Incidentally, all interest holders are eligible to benefit from the doctrine, including royalty and working interest owners. *See Id.* at § 10 (citing Stone v. Marshall Oil Co., 57 A. 183 (Pa. 1904)).

[21]*Id.* at § 11. Furthermore, it is generally held that trustees suffer forfeiture when they negligently allow mixing. *Id.* (citing Page v. Jones, 190 P. 541 (N.M. 1920)).

[22]*See* Johnson v. Kan. Natural Gas Co., 135 P. 589, 590 (Kan. 1913). Supporting the analogy of migrating gas to escaped cattle, an Iowa court refers to confusion of goods in assessing a wrongdoer's ownership share in a mixed herd of cattle. Ontario Livestock Comm'n Co. v. Flynn, 126 N.W.2d 362, 368 (Iowa 1964).

[23]289 P. 442 (Kan. 1930).

[24]Hall v. Shaffer, 289 P. 442, 444 (Kan. 1930).

[25]*Id.* The Court later cited *Hall* and applied the confusion of goods doctrine to a pile of both mortgaged and unencumbered wheat. Allis Chalmers Mfg. Co. v. Sec. Elevator Co., 38 P.2d 138, 140 (Kan. 1934). However, they refused to apply the confusion of goods doctrine when commingled funds at a bank are insufficient to establish commingled land title. Citizens State Bank v. Fairchilds, 101 P.2d 923, 926-27 (Kan. 1940). *Johnson v. Kansas Natural Gas Co.* involved an unleased heir who sued to recover proceeds of a gas well. Johnson v. Kan. Natural Gas Co., 135 P. 589, 590 (Kan. 1913). The innocent party takes all remedy of the harsh application of the confusion of goods was effectively waived by Johnson in lower court proceedings, and the Court applied a tenants in common analysis to ascertain damages. *Id.* This application of tenants in common allocation is functionally equivalent to a lenient application of the confusion of goods doctrine when identity of the goods could not be determined. Identity, and more importantly quantity, of the goods were at issue because the gas company was reluctant to release production records, and the lease was lump sum rather than proportionate to production. *Id.* at 590-92. *Moherman v. Anthony* found confusion of goods to be inapplicable when the identity of the owned property was maintained

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C. Title to Natural Gas

Kansas follows the rule of capture and grants title to natural gas when it is extracted from the reservoir.[26] In the 1985 case of *Anderson v. Beech Aircraft Corp.*,[27] the Court discussed the history of ownership of natural gas and title to natural gas under Kansas law and held that the rule of capture determines ownership of migrating gas.[28] *Anderson* agreed with a line of cases beginning with an early Kentucky case, *Hammonds v. Central Kentucky Natural Gas Co.*,[29] that analogized wild animals in finding an exclusive right of the mineral owner to produce gas, thereby defeating a trespass claim against the storer because the storer had lost title to the gas.[30] A more recent federal court decision acknowledged the same principle of lost title to migrating gas while interpreting Oklahoma law.[31]

Not all jurisdictions subscribe to a uniform rule of capture in which injected gas is without title.[32] A federal court interpreting Pennsylvania law held that the storer retained ownership of injected and migrated gas.[33] A 1962 Texas appellate court criticized the wild

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under facts of selling an oil and gas lease as part of a larger package. Moherman v. Anthony, 175 P. 676, 677-78 (Kan. 1918).

[26]*See* 6 Thompson on Real Property, Second Thomas Edition § 49.02(b) (David A. Thomas ed., 2003).

[27]699 P.2d 1023 (Kan. 1985).

[28]Anderson v. Beech Aircraft Corp., 699 P.2d at 1028-31.

[29]75 S.W.2d 204 (Ky. 1934).

[30]Anderson v. Beech Aircraft Corp., 699 P.2d at 1028-29. The *Hammonds* trespass claim could not stand because the storer had lost title to the gas. *Id.*; *see also* Central Kentucky Natural Gas Co. v. Smallwood, 252 S.W.2d 866, 867-68 (Ky. 1952); *but see* Treadway, *supra* note 4, at 812-13 (criticizing the gas title basis of the *Anderson* decision and arguing that the trespass claim should be determinative). Wild animals are the property of the person that captures them. Anderson v. Beech Aircraft Corp., 699 P.2d at 1028. The *Hammonds* line of cases treats natural gas like a wild animal that must be captured to establish ownership and held in captivity to maintain ownership. *See id.*

[31]Anderson v. Beech Aircraft Corp., 699 P.2d at 1029 (citing Bezzi v. Hocker, 370 F.2d 533 (10th Cir. 1966) (citing W. Edmond Salt Water Disposal Ass'n v. Rosecrans, 226 P.2d 965 (Okla. 1950))). However, a subsequent federal case from Oklahoma distinguished *Bezzi* in holding that a storer retained title to the migrated gas because the storer had acquired a prescriptive easement. Anderson v. Beech Aircraft Corp., 699 P.2d at 1030 (citing Ellis v. Ark. La. Gas Co., 450 F.Supp. 412 (E.D. Okla 1978), *aff'd*, 609 F.2d 436 (10th Cir. 1979), *cert. denied*, 445 U.S. 964 (1980)).

[32]*See* Treadway, *supra* note 4, at 805-10.

[33]A. Petry, *Rights and Liabilities with Respect to Natural Gas Reduced to Possession and Subsequently Stored in Natural Reservoir*, 94 ALR.2d 543, 546 (1964) (citing White v. N.Y. State Natural Gas Corp., 190 F.Supp. 342 (D.

animal analogy by distinguishing gas from wild animals and determined that the rule of capture applied only to the initial production of natural gas.[34] More recently, a Michigan court also limited the rule of capture to the initial production, specifically excluding injected gas from the purview of the rule of capture.[35] Despite these few outlying cases, and as discussed in *Anderson*, the prevailing Kansas judicial interpretation is that the rule of capture applies to all natural gas within an underground reservoir, absent statutory provisions such as K.S.A. § 55-1210.[36]

D. Adjudication of Migrating Gas Disputes

1. Migrating Gas Disputes Before Kansas Statutes Annotated § 55-1210

The Kansas Supreme Court applied the rule of capture in *Anderson*, effectively ruling that the storer loses title when the gas migrates offsite.[37] The Court in *Anderson* confirmed Kansas' application of the rule of capture with regard to natural gas.[38] The Court summarized case law and statutes involving title to injected gas.[39] The Court briefly noted the existence of applicable condemnation statutes in various states.[40] The Court cited *Strain v. Cities Service Gas Co.*[41] as barring condemnation of the subsurface by natural gas storers.[42] The Court noted that

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Pa. 1960)). The court rejected the wild animal analogy when the gas was foreign to Pennsylvania. *Id.* The gas had been produced in the southwestern United States and subsequently transported to and stored in Pennsylvania. *Id.*

[34]*Id.* at 547 (citing Lone Star Gas Co. v. Murchison, 353 S.W.2d 870 (Tex. Civ. App. 1962)).

[35]ANR Pipeline Co. v. 60 Acres of Land, 418 F. Supp. 2d 933, 940 (W.D. Mich. 2006).

[36]Anderson v. Beech Aircraft Corp., 699 P.2d 1023, 1031-32 (Kan. 1985). This interpretation is followed in other jurisdictions. *See, e.g.*, Bezzi v. Hocker, 370 F.2d 533, 535-36 (10th Cir. 1966) Cont'l Res. of Ill., Inc. v. Ill. Methane, LLC, 847 N.E.2d 897, 899 (Ill. App. Ct. 2006); Michale F. Geiger, LLC v. United States, 456 F. Supp. 2d 885, 889 (W.D. Ky. 2006) (applying the rule of capture).

[37]Anderson v. Beech Aircraft Corp., 699 P.2d 1023, 1024 (Kan. 1985). Anderson produced natural gas from Anderson's property that was previously injected for storage by Beech under Beech's property. *Id.* at 1025. The holding was limited to the facts of the case where the storer was not a utility company and there was no Kansas Corporation Commission (KCC) certificate authorizing gas storage. *Id.* at 1024.

[38]*Id.* at 1028 (citing Burden v. Gypsy Oil Co., 40 P.2d 463 (Kan. 1935); Gas Co. v. Neosho County, 89 P. 750 (Kan. 1907); In re Estate of Sellens, 637 P.2d 483 (Kan. App. 1981), *rev. denied* 230 Kan. 818 (1982)).

[39]Anderson v. Beech Aircraft Corp., 699 P.2d at 1028-31.

[40]*Id.* at 1030.

[41]83 P.2d 124 (Kan. 1938).

[42]Anderson v. Beech Aircraft Corp., 699 P.2d at 1030.

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legislation subsequent to *Strain* allowed condemnation of the subsurface by a natural gas public utility.[43]

The Kansas Supreme Court addressed condemnation and valuation in *Union Gas System, Inc. v. Carnahan*,[44] and held that migrating gas is not adverse possession of the storage formation.[45] The owners of the mineral rights got all of the gas produced prior to the storer getting rights to store natural gas on the property, as indicated by certification from the regulator.[46] Carnahan drilled wells outside of Union Gas' storage field and produced gas.[47] Approximately fifteen percent of the produced gas was native, and the other eighty-five percent of the gas migrated from the storage field.[48] The Court denied Union Gas' request for an injunction to stop Carnahan's production.[49] Thereafter, Union Gas successfully initiated the condemnation process.[50] The Court credited Union Gas with gas produced after it received KCC certification authorizing gas storage.[51] The Court termed Carnahan's production of migrating gas a "scheme" and "a clever circle of purloined production."[52] The Court engaged in an extended evaluation of the condemnation valuation, limiting valuation to the difference in property value before and after the taking.[53]

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[43] *Id.* at 1030-31 (Kan. 1985); *see* KAN. STAT. ANN. §§ 55-1203 to 1205 (2005) (enacted in 1951). However, the storer in *Anderson*, Beech Aircraft, was not a public utility and therefore could not condemn Anderson's property.
[44] 774 P.2d 962 (Kan. 1989).
[45] Union Gas Sys., Inc. v. Carnahan, 774 P.2d 962, 963-64 (Kan. 1989). The Court found Union Gas's adverse possession claim to be without merit, citing a lack of open and exclusive possession. *Id.* at 967.
[46] *Id.* at 963.
[47] *Id.* at 965.
[48] *Id.*
[49] *Id.*
[50] *Id.* at 966. The condemnation process is initiated by use of K.S.A. §§ 55-1203 to 1205.
[51] *Id.* at 968. The Court determined that the appropriate date was the KCC certification date of K.S.A. § 55-1204 rather than the later takings date. *Id.* The takings date was when title passed to Union Gas after payment of the valuation of the condemned property.
[52] *Id.*
[53] *Id.* at 969-71.

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In *Reese Exploration, Inc. v. Williams Natural Gas Co.*,[54] the court held a storer liable for negligence when gas migrated outside the storage zone.[55] The court found coexisting rights to store gas and produce oil.[56] However, Williams' storage operations were interfering with Reese's secondary recovery of oil by waterflood.[57] The court analogized easements in finding Williams could not expand its gas storage zone to the detriment of others.[58] Reese received monetary damages for harm to its oil lease rights but did not receive an injunction because of the court's emphasis on the public importance of natural gas storage.[59] Additionally, Reese's claim for declaratory relief, effectively seeking title to the migrated gas as in *Anderson*, was curiously denied by distinguishing *Anderson* because migration was horizontal in *Reese* as opposed to the vertical migration in *Anderson*.[60]

2. Passage of S.B. 168 Enacting Kansas Statutes Annotated § 55-1210

Storers lobbied for K.S.A. § 55-1210 as a reaction to prior cases decided against gas storage operators who were not pleased with the Kansas Supreme Court's adoption of the rule of capture for migrated gas.[61] After its loss in *Reese*, Williams Natural Gas Co. requested the introduction of S.B. 168 and testified in support of the bill because as the largest storer in the

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[54]768 F. Supp. 1416 (D. Kan. 1991).
[55]Reese Exploration, Inc. v. Williams Natural Gas Co., 768 F. Supp. 1416, 1425 (D. Kan. 1991).
[56]*Id.* at 1423.
[57]*Id.* at 1419. Secondary recovery by waterflood is pumping water into the oil bearing formation in an attempt to push any remaining oil toward production wells. *See id.*
[58]*Id.* at 1424. Williams had a 50-year history of storing gas in the Bartlesville formation, however no implied easement was granted in the overlying oil-bearing Squirrel formation in which Reese had lease rights.
[59]*Id.* at 1426-27.
[60]*Id.* at 1427. The court offered no reasoning beyond the factual difference that the vertical gas migration of *Reese* is not the horizontal gas migration of *Anderson*. *Id.*
[61]STATE OF KAN., KANSAS SENATE ACTIONS REPORT 37 (1993). The Kansas Senate Committee on Energy and Natural Resources heard testimony. *Hearing on S.B. 168 Before the Kan. S. Comm. on Energy and Natural Resources*, 75th Leg., 1993 Sess. (Feb. 23, 1993) (minutes of the Kansas Senate Committee on Energy and Natural Resources).

state they wanted title to their injected gas.[62] The Southwest Kansas Royalty Owners Association (SWKROA) testified in opposition because the bill was broader in reach, both physical and temporal, than the model Oklahoma statute.[63] The Senate committee recommended passage of the bill as amended, further minor amendment occurred in the house and S.B. 168 was passed.[64]

S.B. 168 enacted K.S.A. § 55-1210.[65] Subsection (a) effectively grants ownership of injected gas to the storer by making injected gas the personal property of the injector.[66]

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[62]*See Hearing on S.B. 168 Before the Kan. S. Comm. on Energy and Natural Resources*, 75th Leg., 1993 Sess., 1-2 (Feb. 23, 1993) (letter from Williams Natural Gas Co. to Kan. Senate Comm. on Energy and Natural Res, attachment 2 to Senate committee 2/23/1993 minutes). The committee heard further testimony of support from Panhandle Eastern Pipe Line Co. *Hearing on S.B. 168 Before the Kan. S. Comm. on Energy and Natural Resources*, 75th Leg., 1993 Sess. (Feb. 26, 1993) (minutes of the Kansas Senate Committee on Energy and Natural Resources).

[63]*See Hearing on S.B. 168 Before the Kan. S. Comm. on Energy and Natural Resources*, 75th Leg., 1993 Sess., 1-3 (Feb. 25, 1993) (letter from Southwest Kan. Royalty Owners Assoc. to Kan. Senate Comm. on Energy and Natural Res, attachment 3 to House committee 3/16/1993 minutes). One of SWKROA's proposed amendments, which was not incorporated into KAN. STAT. ANN. § 55-1210, was intended to better mimic OKLA. STAT. tit. 52, § 36.6 by not referring directly to migrated gas or adjoining property. *Id.* The KCC opposed the bill because it said the courts were the proper forum for disputes about gas title. *Hearing on S.B. 168 Before the Kan. S. Comm. on Energy and Natural Resources*, 75th Leg., 1993 Sess. (Feb. 26, 1993) (minutes of the Kansas Senate Committee on Energy and Natural Resources). The bill language tasking the KCC with regulatory authority was subsequently removed. *See Hearing on S.B. 168 Before the Kan. H. Comm. on Energy and Natural Resources*, 75th Leg., 1993 Sess., 6 (Mar. 16, 1993) (memorandum from Williams Pipeline Co. to the Kan. House Comm. on Energy and Natural Res., attachment 1 to House committee 3/16/1993 minutes).

[64]STATE OF KAN., *supra* note 61, at 37. The bill was further amended in the full Senate and passed. *Id.* On March 2, the Senate vote was 37 yeas and 3 nays. *Id.* The Kansas House Committee on Energy and Natural Resources then heard similar testimony. *Hearing on S.B. 168 Before the Kan. H. Comm. on Energy and Natural Resources*, 75th Leg., 1993 Sess. (Mar. 16, 1993) (minutes of the Kansas House Committee on Energy and Natural Resources). Williams Natural Gas Co. and Panhandle Eastern Pipe Line Co. testified in support. *Id.* SWKROA reiterated the need for an amendment to delete a reference to adjoining property, putting the bill in better agreement with OKLA. STAT. tit. 52, § 36.6 addressing the same issue. *See Hearing on S.B. 168 Before the Kan. H. Comm. on Energy and Natural Resources*, 75th Leg., 1993 Sess., 1-2 (Mar. 16, 1993) (letter from Southwest Kan. Royalty Owners Assoc. to Kan. House Comm. on Energy and Natural Res, attachment 3 to House committee 3/16/1993 minutes). The House committee amended the bill to include recovery of attorney fees and recommended passage of the bill. *Hearing on S.B. 168 Before the Kan. H. Comm. on Energy and Natural Resources*, 75th Leg., 1993 Sess. (Mar. 17, 1993) (minutes of the Kansas House Committee on Energy and Natural Resources). The Kansas House passed the amended bill, and the governor approved it. STATE OF KAN., *supra* note 61, at 37. On March 22, vote was 122 yeas and 2 nays in the House. *Id.* Senate concurred with 40 yeas and 0 nays. *Id.* Governor Joan Finney approved on April 4, 1993. *Id.*

[65]K.S.A. § 55-1210(a)-(d) (2005) states:

> Property rights to injected natural gas established
>
> (a) All natural gas which has previously been reduced to possession, and which is subsequently injected into underground storage fields, sands, reservoirs and facilities, whether such storage rights were acquired by eminent domain or otherwise, shall at all times be the property of the

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Subsection (b) explicitly denies the mineral and surface owners of lands containing storage fields any rights in the injected gas in the storage field.[67] Subsection (c) describes the storer's retention of title to migrated gas if well testing data or other evidence establishes that the migrated gas was injected by the storer.[68] Subsection (d) allows the storer to request a court to enforce the provisions of § 55-1210.[69]

3. Migrating Gas Issues Under Kansas Statutes Annotated § 55-1210

K.S.A. § 55-1210 makes a poor fence between the storer and nearby landowners. Judicial interpretation of K.S.A. § 55-1210 has been wide-ranging and thoughtful but ultimately

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injector, such injector's heirs, successors or assigns, whether owned by the injector or stored under contract.

(b) In no event shall such gas be subject to the right of the owner of the surface of such lands or of any mineral interest therein, under which such gas storage fields, sands, reservoirs and facilities lie, or of any person, other than the injector, such injector's heirs, successors and assigns, to produce, take, reduce to possession, either by means of the law of capture or otherwise, waste, or otherwise interfere with or exercise any control over such gas. Nothing in this subsection shall be deemed to affect the right of the owner of the surface of such lands or of any mineral interest therein to drill or bore through the underground storage fields, sands, reservoirs and facilities in such a manner as will protect such fields, sand, reservoirs and facilities against pollution and the escape of the natural gas being stored.

(c) With regard to natural gas that has migrated to adjoining property or to a stratum, or portion thereof, which has not been condemned as allowed by law or otherwise purchased:

(1) The injector, such injector's heirs, successors and assigns shall not lose title to or possession of such gas if such injector, such injector's heirs, successors or assigns can prove by a preponderance of the evidence that such gas was originally injected into the underground storage.

(2) The injector, such injector's heirs, successors and assigns, shall have the right to conduct such tests on any existing wells on adjoining property, at such injector's sole risk and expense including, but not limited to, the value of any lost production of other than the injector's gas, as may be reasonable to determine ownership of such gas.

(3) The owner of the stratum and the owner of the surface shall be entitled to such compensation, including compensation for use of or damage to the surface or substratum, as is provided by law, and shall be entitled to recovery of all costs and expenses, including reasonable attorney fees, if litigation is necessary to enforce any rights under this subsection (c) and the injector does not prevail.

(d) The injector, such injector's heirs, successors and assigns shall have the right to compel compliance with this section by injunction or other appropriate relief by application to a court of competent jurisdiction.

KAN. STAT. ANN. § 55-1210 (2005).

[66] § 55-1210(a).

[67] § 55-1210(b).

[68] § 55-1210(c).

[69] § 55-1210(d).

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inadequate in clarifying the proper application of the statute. Multiple adjudicated issues are discussed below, several of which remain functionally unresolved after 17 years of litigation under K.S.A. § 55-1210.

a. Adjoining Lands

K.S.A. § 55-1210(c) uses the term "adjoining property" to describe the area surrounding the storage field in which the storer can conduct tests to determine the identity of any gas and thus maintain their ownership of any injected gas that has migrated.[70] This "adjoining property" is effectively a buffer zone in which the storer has testing rights. K.S.A. § 55-1210 and related statutes do not provide a definition for the term "adjoining."[71]

Supra v. Williams Natural Gas Co. addressed an issue of continuing dispute, the definition of the term "adjoining."[72] Supra alleged that the term "adjoining" was overly vague.[73] The *Supra* trial court established that the term "adjoining" meant "any section adjacent to a storage field."[74] The *Supra* Court described the term adjoining as "any section of land which touched a section containing a storage field," while acknowledging an earlier case defining the term adjoining as having its "usual and ordinary meaning, that of being contiguous or touching."[75] The *Supra* Court significantly broadened the usual and ordinary meaning of the term "adjoining."

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[70] § 55-1210(c).
[71] § 55-1201 (2005); § 55-1210.
[72] Williams Natural Gas Co. v. Supra Energy, Inc., 931 P.2d 7, 14-15 (Kan. 1997).
[73] *Id.* at 14.
[74] *Id.*
[75] *Id.* (citing State v. Bunton, 40 P.2d 326 (Kan. 1935)).

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Northern Natural Gas Co. v. L.D. Drilling, Inc.[76] examined the term "adjoining" and found that storage leases without Federal Energy Regulatory Commission (FERC) or KCC certification are a sufficient basis for adjacency to producing gas wells to trigger the testing provisions of K.S.A. § 55-1210.[77] A FERC ruling granted a partial extension of Northern's certificated storage but not to the extent requested to achieve adjacency.[78] Despite the lack of adjacent certificated storage field, the court noted the nearby gas storage leases in granting an injunction for production well testing.[79]

b. Injunction to Test Wells

Supra described the reasonable grounds for the testing of producing gas wells on "adjoining property."[80] The *Supra* trial court granted a temporary injunction and the Kansas Supreme Court found no abuse of discretion, despite Supra's arguments against irreparable injury.[81] The Court decided that the testing procedures are "reasonable to determine ownership of the gas."[82] *Supra* established that the testing procedures of K.S.A. § 55-1210 could be utilized separately from the condemnation procedures of K.S.A. § 55-1203 through § 55-1205.[83] After *Supra*, storers appeared to have an adequate testing mechanism for determining the identity, and

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[76]618 F. Supp. 2d 1280 (D. Kan. 2009).
[77]N. Natural Gas Co. v. L.D. Drilling, Inc., 618 F. Supp. 2d 1280, 1292 (D. Kan. 2009). *L.D. Drilling* is effectively a continuation of the factually similar *Nash* and *Trans Pacific* cases involving migrating gas from the Cunningham gas storage field in Pratt County Kansas. *Id.* at 1282-83. Northern expanded its gas storage lease holdings northward toward the producer's wells. *Id.* at 1289-90.
[78]*Id.* at 1285.
[79]*Id.* at 1292-94.
[80]Williams Natural Gas Co. v. Supra Energy, Inc., 931 P.2d 7, 14 (Kan. 1997). The requirements for obtaining the injunction are: (1) substantial likelihood of prevailing on merits; (2) irreparable injury; (3) threatened injury exceeds damage from injunction; and (4) not adverse to public interest. *Id.* (citing St. David's Episcopal Church v. Westboro Baptist Church, Inc., 921 P.2d 821 (Kan. App. 1996)).
[81]*Id.* at 15.
[82]*Id.*
[83]*Id.*

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thus the ownership, of migrated gas and for preventing further storage gas migration and drainage.

c. Damages

Beck v. Northern Natural Gas Co.[84] affirmed an unjust enrichment verdict for the landowner, but damages were limited to fair rental value of the underground formation for storage use in a case involving gas stored in the Viola formation that migrated vertically up to the Simpson formation.[85] Northern Natural Gas Co., the storer at the Cunningham field, obtained storage leases or condemned by eminent domain the Simpson formation in the area.[86] Beck brought claims of unjust enrichment and trespass.[87] Beck prevailed, but damages were limited to one recovery for one wrong.[88] The *Beck* court found that no cause of action for trespass is created by K.S.A. § 55-1210(c)(3).[89] Attorney fees were awarded under K.S.A. § 55-1210(c)(3).[90]

Northern Natural Gas Co. v. Trans Pacific Oil Corp.[91] affirmed counter-claim damages granted by the jury to the operator of the production well.[92] K.S.A. § 55-1210 is not retroactive so gas migrating before enactment of the statute in 1993 is the property of the producer Trans Pacific because of the rule of capture.[93] The jury effectively determined that all relevant gas

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[84]170 F.3d 1018 (10th Cir. 1999).
[85]Beck v. N. Natural Gas Co., 170 F.3d 1018, 1021, 1024 (10th Cir. 1999).
[86]*Id.* at 1021.
[87]*Id.*
[88]*Id.* at 1024.
[89]*Id.*
[90]*Id.* at 1025. Attorney fees were calculated by the lodestar method, i.e. reimbursement for hours worked at the market rate, rather than the contractual contingency fee. *Id.*
[91]248 F. App'x 882, 2007 WL 2753079 (10th Cir. 2007).
[92]N. Natural Gas Co. v. Trans Pac. Oil Corp., 248 F. App'x 882, 2007 WL 2753079, at *886, *889 (10th Cir. 2007).
[93]*Id.* at *885.

migrated before 1993 and awarded Trans Pacific ownership of the gas.[94] Consequently, Northern was ordered to reimburse Trans Pacific for the lost production of that gas.[95] Trans Pacific also received shut-in damages from the jury as reimbursement for the gas production foregone subsequent to the injunction stopping gas production.[96]

d. Ongoing Litigation

In *Northern Natural Gas Co. v. Oneok Field Services Co.*,[97] the Pratt County District Court agreed that Northern lost title to gas that migrated onto non-adjoining property.[98] The court granted Oneok's motion for summary judgment in a case again applying K.S.A. § 55-1210 to gas migration near the Cunningham field.[99] Oneok is the gas purchaser for natural gas from wells operated by Nash and L.D. Drilling near, but not adjoining, Northern's Cunningham gas storage field.[100]

e. Statutes of Limitation and Causes of Action

In *Northern Natural Gas Co. v. Nash Oil & Gas, Inc.*,[101] the court decided that the storer Northern could not recover from the producer Nash because the statute of limitations for

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[94]*See id.*
[95]*Id.* at *885-86.
[96]*Id.* at *886-87. Shut-in damages refer to those damages, typically loss of production, incurred because a production well is manually closed to prevent extraction of oil or gas. The industry term for a well in that condition is a shut-in well. KANSAS DEPARTMENT OF REVENUE, 2010 YEAR OIL & GAS APPRAISAL GUIDE 39 (Jan. 2010), *available at* http://www.ksrevenue.org/pdf/10oilgasguide.pdf. Northern did not preserve the shut-in damages issue for review by failing to object to the jury instructions allowing the shut-in damages claim. N. Natural Gas Co. v. Trans Pac. Oil Corp., 248 F. App'x 882, 2007 WL 2753079, at *887 (10th Cir. 2007).
[97]No. 2009-CV-111, 2010 WL 2243637 (Kan. Dist. 30th Apr. 15, 2010).
[98]*Id.* at 2, 20-21.
[99]*Id.* at 20; *See* Memorandum and Order, N. Natural Gas Co. v. L.D. Drilling, Inc., Case No. 08-1405-WEB-DWB, at 3-4 (D. Kan., Aug. 4, 2010) (describing sequence of Northern litigation and referring to continuing Pratt County case, N. Natural Gas Co. v. Oneok Field Services Co.).
[100]N. Natural Gas Co. v. Oneok Field Services Co., No. 2009-CV-111, 2010 WL 2243637, at 20 (Kan. Dist. 30th Apr. 15, 2010).
[101]526 F.3d 626 (10th Cir. 2008).

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conversion and unjust enrichment claims applied.[102] Northern injected gas into the Viola formation at the Cunningham field and the injected gas migrated vertically into the underlying Simpson formation and horizontally outside of the storage facility.[103] *Nash* affirmed that K.S.A. § 55-1210 provides no statutory cause of action.[104] Instead, K.S.A. § 55-1210 merely provides an exemption to the rule of capture and allows common law claims such as conversion.[105]

f. Kansas Statutes Annotated § 55-1210 is not retroactive

Northern Natural Gas Co. v. Martin, Pringle, Oliver, Wallace & Bauer, L.L.P.[106] confirmed that K.S.A. § 55-1210 is not retroactive because the Court deemed the change in the statute to be substantive.[107] The case arose as a certified question from a Nebraska federal district court tasked with adjudicating a malpractice claim resulting from *Northern Natural Gas Co. v. Trans Pacific Oil Corp.*[108] The Kansas Supreme Court acknowledged the possibility of Northern's malpractice claim as a collateral attack on producers and adjacent landowners.[109] In effect, Northern sought a different interpretation than that in *Trans Pacific.*[110] After a review of the law of gas title before and after K.S.A. § 55-1210, the Court reiterated that K.S.A. § 55-1210

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[102]N. Natural Gas Co. v. Nash Oil & Gas, Inc., 526 F.3d 626, 628, 633 (10th Cir. 2008). The statute of limitations is two years for conversion and three years for unjust enrichment. *Id.* at 629-30. The discovery rule did not save Northern's claims. *Id.* at 630. The discovery rule would have delayed the start of the statute of limitations until injury was reasonably ascertainable. *Id.* The court also rejected the continuing tort theory. *Id.* at 630-31. Continuing tort theory is another mechanism for circumventing the statute of limitations when the tortuous conduct is ongoing. *Id.* However, the dissent found merit in the continuing tort theory because the extraction of gas by the producing well was ongoing. *Id.* at 633-34 (Henry, J., dissenting). The dissent cited cases from Rhode Island and Wyoming and emphasized the effect of the jury instructions in *Northern Natural Gas Co. v. Trans Pacific Oil Corp. Id.*

[103]*Id.* at 628.

[104]*Id.* at 632-33.

[105]*Id.* Other common law claims potentially applicable to gas migration include trespass, slander of title, and unjust enrichment. In *Nash*, conversion was difficult to prove because the storer could not test the producer's wells, which were not located on adjoining lands. *Id.* at 633.

[106]217 P.3d 966 (Kan. 2009).

[107]N. Natural Gas Co. v. Martin, Pringle, Oliver, Wallace & Bauer, L.L.P., 217 P.3d 966, 976 (Kan. 2009).

[108]*Id.* at 969.

[109]*Id.* at 972.

[110]*Id.* at 972-73.

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abolished the nearby mineral owner's right to produce migrated gas and effectively permitted migrating gas to trespass.[111] K.S.A. § 55-1210 was ruled a substantive change in the law.[112]

g. Constitutionality

In *Williams Natural Gas Co. v. Supra Energy, Inc.*,[113] the Court found portions of K.S.A. § 55-1210 constitutional, while reserving judgment on other portions, and discussed the proper use of the statute to obtain an injunction allowing a gas storage operator to test nearby gas production wells.[114] The Court accentuated the severability of statute subsections, § 55-1210 (a), (b), and (c)(1), while maintaining the validity and constitutionality of the testing subsections of K.S.A. § 55-1210, specifically (c)(2), (c)(3), and (d).[115] The Court refuted Supra's lack-of-due-process argument and found a reasonable public purpose expressed by the legislature in K.S.A. §§ 55-1202 and 55-1210.[116] The Court also disagreed with Supra's argument that initiation of a condemnation proceeding is required to invoke the testing provisions of K.S.A. § 55-1210.[117] The Court determined that the testing portions of the statute are constitutional and affirmed the injunction that allowed testing of Supra's producing well by the storer Williams.[118]

h. Attorney Fees

In *Hayes Sight & Sound, Inc. v. Oneok, Inc.*,[119] the Court determined that the attorney fees provision of K.S.A. § 55-1210 was applicable even when gas ownership was not disputed.[120]

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[111] *Id.* at 976.
[112] *Id.*
[113] 931 P.2d 7 (Kan. 1997).
[114] Williams Natural Gas Co. v. Supra Energy, Inc., 931 P.2d 7, 14-15 (Kan. 1997).
[115] *Id.* at 13.
[116] *Id.*
[117] *Id.* at 15.
[118] *Id.*
[119] 136 P.3d 428 (Kan. 2006).
[120] Hayes Sight & Sound, Inc. v. Oneok, Inc., 136 P.3d 428, 454-55 (Kan. 2006).

Hayes Sight & Sound concerned a negligence finding against gas storage operator Oneok for damages from migrating injected gas from the Yaggy field to downtown Hutchinson.[121] The Kansas Supreme Court awarded attorney fees citing *Beck* in support.[122]

E. Kansas Senate Bill 553

A review of the proposed amendment provided by S.B. 553 is helpful in identifying the proper changes to K.S.A. § 55-1210. S.B. 553 amendments to § 55-1210 most prominently include a mandate to KCC to regulate, reinstatement of the rule of capture outside a one-half mile buffer zone, and access to injunction or other relief for nearby land and mineral owners.[123] S.B. 553 was introduced during the 2010 legislative session and testimony was heard at committee hearings.[124]

1. Summary of S.B. 553 Amendments to Kansas Statutes Annotated § 55-1210

S.B. 553 amendments to § 55-1210 include an elevated burden of proof, statutory causes of action, attorney fees win or lose, mandate to KCC to regulate, migration gas notification requirement, reinstatement of the rule of capture outside the one-half mile buffer zone, convoluted tax reimbursement, and access to injunction or other relief for land and mineral

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[121]Hayes Sight & Sound, Inc. v. Oneok, Inc., 136 P.3d 428, 433 (Kan. 2006). The migrating gas from the Yaggy field caused gas leaks, explosions, fires, and deaths in Hutchinson. Allison, *supra* note 2. Much of the opinion addresses tort law and punitive damages. Hayes Sight & Sound, Inc. v. Oneok, Inc., 136 P.3d 428, 437-53 (Kan. 2006).

[122]*Id.* at 453-57.

[123]S.B. 553, 2010 Sess. (Kan. 2010), *available at* http://www.kslegislature.org/bills/2010/553.pdf.

[124]Full History on bill 553, http://www.kslegislature.org/legsrv-legisportal/index.do (enter bill # 553 under Track a Bill and hit search). S.B. was introduced on February 23, 2010. Based upon legislative testimony, the bill appears to be resultant of continued and extensive disputes around the Cunningham gas storage field. *Hearing on S.B. 553 Before the Kan. S. Natural Resource Comm.*, 83d Leg., 2010 Sess. (Mar. 4, 2010) (written testimony of Southwest Kan. Royalty Owners Assoc. to Kan. Senate Natural Res. Comm., attachment to Senate committee 3/4/2010 minutes). The Senate Natural Resources Committee heard testimony on the bill at three meetings on March 4, 10, and 11. *Id.* Interested parties testified and took questions. *Hearing on S.B. 553 Before the Kan. S. Natural Resource Comm.*, 83d Leg., 2010 Sess. (Mar. 4 & 10, 2010) (minutes of the Kansas Senate Committee on Energy and Natural Resources).

owners.[125] S.B. 553 also amends K.S.A. § 55-1115 and § 55-1201.[126] The S.B. 553 amendments to § 55-1115 attempt to institute a ban on KCC permits to storers with ongoing migrating gas issues.[127] The S.B. 553 amendments to § 55-1201 add a new definition of "adjoining" as "the area which includes the surface and subsurface area within a 1 2 mile radius of a certified boundary of an underground storage field."[128]

2. Legislative Hearing Testimony

The KCC presented testimony and recommended further study of S.B. 553.[129] The KCC expressed concern regarding overlapping state and federal jurisdiction.[130] The KCC provided the legislature with comments on an environmental assessment for expansion of a gas storage field that had been previously submitted to FERC.[131] Generally, the KCC was not satisfied with gas storage operations in Kansas and requested a technical conference with FERC.[132]

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[125]S.B. 553, 2010 Sess. (Kan. 2010), *available at* http://www.kslegislature.org/bills/2010/553.pdf. *See* Appendix 1, *infra*.

[126] S.B. 553, 2010 Sess. (Kan. 2010), *available at* http://www.kslegislature.org/bills/2010/553.pdf.

[127]*Id.* The KCC permitting system of § 55-1115 and K.A.R. 82-3-1000 through 82-3-1012 were enacted after the Yaggy disaster. Colo. Interstate Gas Co. v. Wright, 707 F. Supp. 2d 1169, 2010 WL 1488934, at *3 (D. Kan. 2010).

[128]Kan. S.B. 553, *available at* http://www.kslegislature.org/bills/2010/553.pdf.

[129]*Hearing on S.B. 553 Before the Kan. S. Natural Resource Comm.*, 83d Leg., 2010 Sess., 4 (Mar. 4, 2010) (letter from Kan. Corp. Comm. to Kan. Senate Natural Res. Comm., attachment 4 to Senate committee 3/10/2010 minutes).

[130]*Id.* The *Colorado Interstate Gas Co. v. Wright* decision discusses the limits of the KCC's regulatory jurisdiction regarding interstate gas. Colo. Interstate Gas Co. v. Wright, 707 F. Supp. 2d 1169, 2010 WL 1488934, at *16 (D. Kan. 2010). Also, the broadening of the attorney fees provisions to encompass many of the landowners expenses, win or lose, was deemed "unprecedented" by the KCC. *Hearing on S.B. 553 Before the Kan. S. Natural Resource Comm.*, 83d Leg., 2010 Sess., 3 (Mar. 4, 2010) (letter from Kan. Corp. Comm. to Kan. Senate Natural Res. Comm., attachment 4 to Senate committee 3/10/2010 minutes). Additionally, the KCC requested clarification of the bill and its regulatory role in administering it. *Id.* at 2-3.

[131]*Hearing on S.B. 553 Before the Kan. S. Natural Resource Comm.*, 83d Leg., 2010 Sess., 1-9 (Feb. 25, 2010) (comments from Kan. Corp. Comm. to F. Energy Regulatory Comm., Docket No. CP09-465-0000, attachment 10 to Kan. Senate Natural Res. Comm. 3/10/2010 minutes). The environmental assessment was for Northern's Cunningham gas storage field. *Id.* at 1. The comments included technical data and evaluation of gas containment at the Cunningham gas storage field. *Id.* 5-7.

[132]*Id.* at 8-9. The KCC noted the increased pressure in the storage field caused by Northern's successful attempt to store greater quantities of gas at the Cunningham facility, which the KCC viewed as a likely cause of migrating gas. *Id.* at 7.

Storers, including Northern Natural Gas Co., testified in opposition.[133] After extensive testimony regarding the positive impacts of Northern's operations and the public value of gas storage, Northern addressed the situation at the Cunningham gas storage field, maintaining that gas has migrated to producing wells to the north.[134] Northern provided a legal opinion arguing that S.B. 553 is unconstitutional.[135] Panhandle Energy objected to the reinstatement of the rule of capture for gas more than one-half mile from the gas storage field, a higher burden of proof to establish ownership of migrated gas, the explicit statutory claims made available, and the ad valorem tax reimbursement provision.[136] Several other gas storers and distributors offered similar opposing testimony.[137] John Steffen, Kingman County Commissioner, opposed the bill

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[133]*Hearing on S.B. 553 Before the Kan. S. Natural Resource Comm.*, 83d Leg., 2010 Sess., 1 (Mar. 4, 2010) (letter from N. Natural Gas Co. to Kan. Senate Natural Res. Comm., attachment 5 to Senate committee 3/10/2010 minutes).

[134]*Id.* Northern's migration claim is based on the matching chemical composition of the gas, the atypical increasing gas well production, and FERC findings. *Id.* at 6-7. Incidentally, the KCC remains unconvinced that gas has migrated from the Cunningham gas storage field. *Hearing on S.B. 553 Before the Kan. S. Natural Resource Comm.*, 83d Leg., 2010 Sess., 1-2, 6-7 (Feb. 25, 2010) (comments from Kan. Corp. Comm. to F. Energy Regulatory Comm., attachment 10 to Kan. Senate Natural Res. Comm. 3/10/2010 minutes).

[135]*Hearing on S.B. 553 Before the Kan. S. Natural Resource Comm.*, 83d Leg., 2010 Sess., 1-4 (Mar. 3, 2010) (letter from Kutak Rock LLP to Kan. Senate Natural Res. Comm., attachment 5 to Senate committee 3/10/2010 minutes). Grounds included federal supremacy, unlawful bill of attainder, void for vagueness, equal protection of the Fifth and Fourteenth Amendments of the U.S. Constitution, open access under the First Amendment of the U.S. Constitution, and the Takings Clause of the Fifth Amendment of the U.S. Constitution. *Id.*

[136]*Hearing on S.B. 553 Before the Kan. S. Natural Resource Comm.*, 83d Leg., 2010 Sess., 3-5 (Mar. 4, 2010) (written testimony of Panhandle Energy to Kan. Senate Natural Res. Comm., attachment 6 to Senate committee 3/10/2010 minutes). The higher burden of proof is a clear and convincing standard. The statutory claims are slander of title, conversion, and trespass. The tax reimbursement provision is lengthy and convoluted. S.B. 553, 2010 Sess. (Kan. 2010).

[137]Southern Star Central Gas Pipeline opposed the bill by arguing federal preemption, vague attorney fees provision, KCC's inability to effectively regulate, and elevated evidentiary burden as bad policy. *Hearing on S.B. 553 Before the Kan. S. Natural Resource Comm.*, 83d Leg., 2010 Sess., 6-7 (Mar. 4, 2010) (written testimony of Southern Star Central Gas Pipeline to Kan. Senate Natural Res. Comm., attachment 3 to Senate committee 3/10/2010 minutes). Additionally, Southern objected to a perceived assumption of the bill that all gas migration is the result of storer error. *Id.* at 5. Kansas Gas Service testified in opposition because of the potential for increased gas cost and gas supply disruption. *Hearing on S.B. 553 Before the Kan. S. Natural Resource Comm.*, 83d Leg., 2010 Sess., 1 (Mar. 4, 2010) (written testimony of Kan. Gas Service to Kan. Senate Natural Res. Comm., attachment 12 to Senate committee 3/4/2010 minutes). Atmos Energy, an operator of gas storage fields, testified in opposition characterizing the bill as "a strong message to gas storage operators that Kansas does not want gas storage in the state." *Hearing on S.B. 553 Before the Kan. S. Natural Resource Comm.*, 83d Leg., 2010 Sess., 1 (Mar. 4, 2010) (written testimony of Atmos Energy to Kan. Senate Natural Res. Comm., attachment 20 to Senate committee 3/4/2010 minutes). Atmos's reasoning cited conflict with federal FERC jurisdiction and arbitrary fines for migrating gas and elevated storage pressures. *Id.* at 2. Colorado Interstate Gas Co. (CIG) objected to the legislation due to improper KCC jurisdiction, tax burden without ownership, and punishment for unintentional migrating gas. *Hearing on S.B. 553*

because of the possibility of Northern closing the Cunningham storage field, thus reducing Kingman County's tax base and employment opportunities.[138]

Gordon Stull, attorney for Haynesville Surface and Mineral Owners Association, Inc., testified in support of the bill, describing K.S.A. § 55-1210 as "attempting to fix a problem but unintentionally created different ones."[139] Stull's testimony summarized the history of conflict surrounding the Cunningham storage field.[140] Stull's arguments were based on public safety, rule of capture, and takings.[141] Dorothy Trinkle, President of Haynesville Surface and Mineral Owners Association, testified in support of the bill, concentrating on the burden on landowners to defend their property rights against Northern.[142] Additional supportive testimony was provided by the Southwest Kansas Royalty Owners Association (SWKROA) putting the onus on

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Before the Kan. S. Natural Resource Comm., 83d Leg., 2010 Sess., 1 (Mar. 10, 2010) (written testimony of Colo Interstate Gas Co. to Kan. Senate Natural Res. Comm., attachment 8 to Senate committee 3/10/2010 minutes). Black Hills Energy offered opposition testimony emphasizing the higher cost to gas consumers and potential wintertime gas shortages as a possible result of the bill's passage. *Hearing on S.B. 553 Before the Kan. S. Natural Resource Comm.*, 83d Leg., 2010 Sess., 1 (Mar. 10, 2010) (written testimony of Black Hills Energy to Kan. Senate Natural Res. Comm., attachment 9 to Senate committee 3/10/2010 minutes).

[138]*Hearing on S.B. 553 Before the Kan. S. Natural Resource Comm.*, 83d Leg., 2010 Sess., 1-2 (Mar. 9, 2010) (written testimony of John Steffen to Kan. Senate Natural Res. Comm., attachment 7 to Senate committee 3/10/2010 minutes).

[139]*Hearing on S.B. 553 Before the Kan. S. Natural Resource Comm.*, 83d Leg., 2010 Sess., 6 (Mar. 4, 2010) (written testimony of Gordon Stull to Kan. Senate Natural Res. Comm., attachment 7 to Senate committee 3/4/2010 minutes).

[140]*Id.* at 1-2.

[141]*See id.* at 2-6. Stull submitted that Northern disregarded its safety obligations and never has reported gas migration to the KCC. *Id.* at 3. According to Stull, FERC granted storage field expansion to encompass the litigated Trans Pacific well, but not the Nash wells. *Id.* at 2. Jeffrey Carmichael, lawyer for Nash Oil & Gas, Inc. and VAL Energy, Inc., offered supportive testimony and extensive amendments to S.B. 553. *Hearing on S.B. 553 Before the Kan Kan. S. Natural Resource Comm.*, 83d Leg., 2010 Sess., 1-7 (written testimony of Jeffery Carmichael to Kan. Senate Natural Res. Comm., attachment 18 to Senate committee 3/4/2010 minutes).

[142]*Hearing on S.B. 553 Before the Kan. S. Natural Resource Comm.*, 83d Leg., 2010 Sess., 1-2 (Mar. 4, 2010) (written testimony of Dorothy Trinkle to Kan. Senate Natural Res. Comm., attachment 9 to Senate committee 3/4/2010). Other area residents offered testimonial letters in support of the bill based on their personal loss of property rights, some for property located more than four miles from the Cunningham storage field. *Hearing on S.B. 553 Before the Kan. S. Natural Resource Comm.*, 83d Leg., 2010 Sess. (Mar. 2-4, 2010) (written testimony of Dennis Huff, Ruth Urban, Clint McGuire, Kermit Brown, Sonja Staab, and Diane Pruitt to Kan. Senate Natural Res. Comm., attachments 10, 13, 14, 15, 16, and 17, respectively, to Senate committee 3/4/2010 minutes).

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the storer to confine gas to the known storage area.[143] Others with connection to the gas exploration and production industry also similarly testified in support.[144] Dwight Adams testified for the Pratt County Commission in support of S.B. 553 and concentrated his testimony on the loss of $967,065.69 in tax revenue to the county if the producing wells north of the Cunningham storage field are condemned by Northern.[145]

III. Alternatives to Kansas Statutes Annotated § 55-1210

K.S.A. § 55-1210 has not effectively mitigated migrating gas disputes.[146] Both state and federal courts have interpreted K.S.A. § 55-1210 without reaching consensus as to its operation and the applicability of the testing procedures to different factual situations. The result is uncertainty and excessive litigation in multiple jurisdictions.[147] Storers seemingly dislike the application of K.S.A. § 55-1210 because of courtroom losses and the uncertain outcomes when requesting injunctions to test production wells. Landowners dislike the application of K.S.A. §

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[143] *Hearing on S.B. 553 Before the Kan. S. Natural Resource Comm.*, 83d Leg., 2010 Sess., 2-3 (Mar. 4, 2010) (written testimony of Southwest Kan. Royalty Owners Assoc. to Kan. Senate Natural Res. Comm., attachment to Senate committee 3/4/2010 minutes). SWKROA articulated a goal of amending K.S.A. § 55-1210 to define "the responsibilities which a storage company should [have, including] know[ing] the areal confines of its storage fields and . . . the storage company's duty to contain such stored gas or face losing title to such gas." *Id.* at 3.

[144] Dennis Hedke, consulting geologist and geophysicist offered generally supportive testimony. *Hearing on S.B. 553 Before the Kan. S. Natural Resource Comm.*, 83d Leg., 2010 Sess., 1-2 (Mar. 10, 2010) (written testimony of Dennis Hedke to Kan. Senate Natural Res. Comm., attachment 1 to Senate committee 3/10/2010 minutes). Hedke placed the responsibility for preventing or determining migrating gas squarely on the storer. *Id.* at 1. Jeffrey Carmichael, lawyer for Nash Oil & Gas, Inc. and VAL Energy, Inc., offered supportive testimony. *Hearing on S.B. 553 Before the Kan. S. Natural Resource Comm.*, 83d Leg., 2010 Sess., 1-2 (written testimony of Jeffery Carmichael to Kan. Senate Natural Res. Comm., attachment 2 to Senate committee 3/10/2010 minutes). Carmichael summarized K.S.A. § 55-1210 and painted the bill as a clarification of the burden on the storer to keep injected gas in the storage field or risk losing title to the migrated gas. *Id.* at 2.

[145] *Hearing on S.B. 553 Before the Kan. S. Natural Resource Comm.*, 83d Leg., 2010 Sess., 1-4 (Mar. 4, 2010) (written testimony of Dwight Adams to Kan. Senate Natural Res. Comm., attachment 8 to Senate committee 3/4/2010 minutes). Northern's condemnation of the producing wells several miles north of the Cunningham field would appear to be made more difficult by the passage of S.B. 553. The tax revenue is from the county's assessment of property tax (ad valorem) on the producing gas leases and would be lost if the leases do not continue to produce. Adams felt the tax loss outweighed the loss of seventeen Northern jobs in Pratt County. *Id.* at 1-2.

[146] *See* Section II *D* 3.

[147] For example, Northern has filed numerous suits in Kansas, Nebraska, and federal courts against multiple defendants consisting of different claims, all in an effort to address factually similar migrating gas disputes at the Cunningham field. The parties would be better served by delineation of the physical boundaries of the storage field thus minimizing the need for continued litigation.

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55-1210 because of the infringement on their property rights and the unpredictability of the physical reach of the statute. K.S.A. § 55-1210 has proven ineffective and should be amended.

A. Suggested Alternative Statute: Fixing the Underground Fence

A statutory buffer zone surrounding underground gas storage fields is a more predictable and enforceable solution to disputes over ownership of migrating gas. A well-defined buffer zone will act as a legal fence between the confined injected gas titled to the storer and the free-ranging gas exposed to capture by petroleum exploration and production industry. The following language is suggested as a replacement for K.S.A. § 55-1210.[148]

> (a) All natural gas which previously has been reduced to possession, and which is subsequently injected into underground storage fields, sands, reservoirs and facilities, shall be the property of the injector except as limited by this section.
>
> (b) With regard to natural gas that has migrated outside the injector's certificated storage boundary or to an area or a stratum that has not been condemned, purchased, or leased by the injector:
>
> > (1) The injector shall lose title to migrated gas.
> >
> > (2) If migrating gas is within the statutory buffer zone, the injector may reestablish title to the gas by proving, by a preponderance of the evidence, that the gas was previously injected.
> >
> > (3) In the event of condemnation for gas storage purposes of property within the injector's certificated storage boundary or within the statutory buffer zone, even if the injector is unable to meet its burden of proof to reestablish title, the injector may prove that migrating gas is not native gas for purposes of K.S.A. § 55-1205.
> >
> > (4) In the event of condemnation for gas storage purposes of property beyond the statutory buffer zone, all gas outside of the statutory buffer zone, to include gas proven to have been migrating gas, shall be deemed to be native gas for purposes of K.S.A. § 55-1205.

[148] Additionally, the following definitions should be added to K.S.A. § 55-1201: "statutory buffer zone" shall mean the land outside of and within a half-mile of the injector's certificated storage boundary; "injector's certificated storage boundary" shall mean a closed delineation surrounding the gas storage facility and includes any administrative buffer zone that is leased, purchased, or condemned by the injector and approved by the controlling regulatory agency; "condemnation" shall mean acquisition by the right of eminent domain.

(c) The injector shall have the right to conduct reasonable tests, at the injector's risk and expense, on any existing gas production wells within the injector's certificated storage boundary and the statutory buffer zone. Upon a showing of a reasonable likelihood of migrating gas, the injector shall have the right to drill and operate observation wells, at the injector's risk and expense, within the injector's certificated storage boundary and within the statutory buffer zone.

(d) The owner of the stratum, the mineral owner, and the owner of the surface property shall be eligible for compensation for use of or damage to the surface or subsurface by migrating gas. For claims related to property within the injector's certificated storage boundary or within the statutory buffer zone, compensation by judicial remedy shall be limited to actual damages, reasonable value of the storage rights, and reasonable attorney fees.

The suggested alternative statute provides a framework for a storer to acquire data near gas storage fields necessary to determine gas migration and support condemnation if appropriate. Yet, the framework is limited to a specified buffer zone and by a required determination that there is a reasonable likelihood of migrating gas to protect nearby land and mineral owners.[149] Ideally, an appropriate balance is struck between the public value of federally regulated underground gas storage and the private property rights of effected Kansas citizens. The suggested alternative statute is superior to S.B. 553 by its simplicity, its predictability in use, and its enforceability by Kansas courts.

B. Evaluation of the S.B. 553 Amendments

A statutorily defined buffer zone around the certificated storage field is an attractive provision because of its simplicity.[150] The proposed statutory buffer zone effectively quantifies and replaces the definition of "adjoining property" and is thus more practical and workable than

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[149]In contrast, S.B. 553 remains overly detrimental to the storer by incorporating inappropriate evidentiary burdens and tax reimbursements. *See* S.B. 553, Sec. 3(c)(1) and 3(c)(7). The structure of S.B. 553 continues to follow the existing structure of K.S.A. 55-1210 with the addition of cumbersome and confusing provisions that are arbitrary and likely unenforceable by state authorities. *See, e.g.*, S.B. 553, Sec. 3(c)(4) and 3(c)(7).

[150]Even simpler is a similar Oklahoma gas storage statute, OKLA. STAT. tit. 52, § 36.6, containing no reference to adjoining lands or migrating gas. 52 OKLA STAT. ANN. tit. 52, § 36.6 (West 2000). The reach of the Oklahoma statute regarding ownership of migrating gas has not been adjudicated. *See* N. Natural Gas Co. v. Oneok Field Services Co., No. 2009-CV-111, 2010 WL 2243637, at 16 (Kan. Dist. 30th Apr. 15, 2010).

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the current judicial interpretation of "adjoining property."[151] This addition would be helpful in limiting the area of potential conflict.

Public safety concerns justify a reporting requirement when a storer learns of migrating gas.[152] However, linking a state permit ban to the existence of FERC permit applications appears unworkable given federal supremacy regarding regulation of interstate gas distribution.[153] If the KCC has insufficient power to regulate the storage industry based upon safety concerns, amendment of K.S.A. § 55-1210 emphasizing gas ownership, an issue within the state's jurisdiction, is preferable.[154]

An elevated burden of proof of clear and convincing evidence is unnecessary because the prevailing civil burden of preponderance of the evidence is the accepted and appropriate

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[151]The proposed definition provides a half-mile buffer zone surrounding the gas storage field boundary. S.B. 553, 2010 Sess. (Kan. 2010), *available at* http://www.kslegislature.org/bills/2010/553.pdf. The current judicial interpretation is discussed in *Supra* as "any section of land which touched a section containing a storage field." Williams Natural Gas Co. v. Supra Energy, Inc., 931 P.2d 7, 14 (Kan. 1997).

[152]A regulatory reporting requirement already exists. *See Hearing on S.B. 553 Before the Kan. S. Natural Resource Comm.*, 83d Leg., 2010 Sess., 1 (Mar. 4, 2010) (letter from Kan. Corp. Comm. to Kan. Senate Natural Res. Comm., attachment 4 to Senate committee 3/10/2010 minutes). The KCC is understandably reluctant to regulate interstate issues susceptible to federal preemption. *See* Colo. Interstate Gas Co. v. Wright, 707 F. Supp. 2d 1169, 2010 WL 1488934, at *16 (D. Kan. 2010). However, the legislature should not hesitate to place the safety of Kansans and the need for ownership predictability above the posturing of out-of-state public utilities, typified by threats of higher gas cost and additional litigation. The cost of storage field delineation will be passed along, either explicitly or implicitly, to consumers, presumably including out-of-state gas consumers. This regulatory cost to the consumer is inherent in the structure of regulated public utilities with a government-approved rate structure. In this case, the greater expense of proper gas storage field delineation is well worth the cost.

[153]KCC regulation of the interstate natural gas industry was found to be preempted by the Natural Gas Act, 15 U.S.C. § 717. Colo. Interstate Gas Co. v. Wright, 707 F. Supp. 2d 1169, 2010 WL 1488934, at *16 (D. Kan. 2010).

[154]Federal regulators can require three-dimensional seismic data acquisition and interpretation of storage fields and adjoining lands. The data acquisition process is currently controlled by FERC orders. The types of data relied upon in the expansion of the certificated boundary of the Cunningham field were primarily gas composition analysis and engineering and geologic data. Northern Natural Gas Co., 125 FERC P 61127, 2008 WL 4760679, at 6-11 (F.E.R.C. Docket No. CP07-107-000, Oct. 30, 2008) (FERC eLibrary), http://elibrary.ferc.gov/idmws/File_list.asp?document_id=13659491. Regulation or adjudication could also establish a minimum scientific basis for gas identification by dye tracer, C1/C2+ ratio, helium content, or other characteristic to establish the identity of produced gas as previously injected gas. C1/C2+ ratio is a comparison of the amount of light molecules, those containing only one carbon atom, and heavy molecules, those containing two or more carbon atoms. Injected gas tends to have comparatively more lighter molecules because the heavier compounds and impurities have been removed during processing, after initial production but before injection.

standard.[155] The provision granting attorney fees to the landowner, win or lose, is unprecedented and may inappropriately encourage nuisance litigation against storers.[156] Tax reimbursement to the counties is inappropriate in the context of K.S.A. § 55-1210.[157] The statute should address the ownership of injected gas and refrain from meddling with the tax base of individual counties.[158] The legislature gains little by incorporating specific causes of action for landowners.[159] All common law claims would remain viable despite a statutory listing of claims in an attempt to narrow the field of adjudication.

C. Confusion of Goods as Judicial Mechanism

In applying the confusion of goods doctrine to a typical case of migrating gas, the storer has the burden either to show a lack of negligence or wrongdoing in allowing the gas migration, or to identify and distinguish the components of the potentially mixed gas.[160] If allowing stored gas to migrate is inherently a wrongdoing, or at least negligent, then the burden is firmly on the storer to identify the nature of the produced gas.[161] The testing procedures of K.S.A. § 55-1210 attempt to statutorily define this gas identification process. However, gas identification has

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[155]*See* WILLIAM R. SAMPSON, BILL J. HAYS & PAUL W. REBEIN, KANSAS TRIAL HANDBOOK § 7:5 (1997).
[156]*See Hearing on S.B. 553 Before the Kan. S. Natural Resource Comm.*, 83d Leg., 2010 Sess., 3 (Mar. 4, 2010) (letter from Kan. Corp. Comm. to Kan. Senate Natural Res. Comm., attachment 4 to Senate committee 3/10/2010 minutes) (stating without elaboration that allowing attorney fees to the losing party is "unprecedented").
[157]If it is migrated gas, it already has been taxed before injection. Producing oil and gas leases are taxed with the valuation being partially based on the quantity of production. KAN. STAT. ANN. § 79-331 (1997). Also, natural gas is taxed when produced under the mineral severance tax. KAN. STAT. ANN. § 79-4217 (1997).
[158]The tax provision appears largely punitive against the storer. A more narrowly tailored tax reimbursement related to the lost value of non-producing minerals or storage rights within the buffer zone around the gas storage fields may be appropriate. Publicly available production records indicate the area of disputed production north of the Cunningham field accounts for well over half of the 2009 Pratt County gas production. Kansas Geological Survey, http://www.kgs.ku.edu/PRS/petroDB.html.
[159]*See* Kan. S.B. 553 (listing trespass, conversion, and slander of title).
[160]*See* 1 AM. JUR. 2D ACCESSION AND CONFUSION § 20 (2005). *See also, id.* at § 10 ("[T]he owner whose wrongful act or default causes the confusion must bear all the inconvenience resulting from such confusion, and the burden of proof is upon him or her to establish his or her rights."). Another factual possibility is that a gas producer drills or operates a well in such a manner as to constitute a wrongful act and therefore bears the burden of identifying the gas.
[161]Storers hold a public trust to the citizens of Kansas to protect their safety by properly confining stored gas. The existence of regulation requiring stored gas confinement could enhance, by use of *res ipsa loquitur*, a negligence claim and argue for any loss to be properly borne by the storer.

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failed in application because the task is nearly impossible.[162] Any minimal level of native gas qualifies as mixing and could trigger the equitable solution of the confusion of goods doctrine. In a typical migrating gas scenario, the storer will not meet its burden and must bear the loss of any negligently migrating gas.[163] Kansas courts have previously applied the confusion of goods doctrine in factual circumstances similar to the wrongful or negligent migration of stored gas and should continue to do so.[164] The confusion of goods doctrine could find analogy in the escape of cattle in that both may place the burden and the liability on the wrongdoer for allowing the escape or mixture.[165] The greater potential danger and extent of damage of migrating gas, as compared to wandering cattle, argues for a strict application of the confusion of goods doctrine when applied to natural gas near storage fields.

IV. Migrating Gas Disputes in the Future

A. Amend Kansas Statutes Annotated § 55-1210

This note proposes adoption of the suggested alternative statute to K.S.A. § 55-1210 and the development of judicial interpretation emphasizing the confusion of goods doctrine, properly placing the burden of proof on the storer to maintain the integrity of storage fields and the

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[162]Dye tracers and chemical ratios are inadequate to detect mixing of low levels of native gas. An amount of native gas sufficient to support an economic gas well may be diluted by the larger volume of migrating stored gas.

[163]The storer may provide evidence of depleted reservoir pressures prior to initial gas injection, indicating the reservoir is empty of native gas and isolated from any nearby native gas reservoirs. However, this historical evidence may have limited weight with regard to the determination of current storage gas containment. For example, operating pressures may influence containment and cause storage gas to migrate into previously isolated native gas reservoirs.

[164]*See* Hall v. Shaffer, 289 P. 442, 443-44 (Kan. 1930). A more recent Texas court also applied confusion of goods analysis to natural gas in a dispute between a gas injector and native gas royalty interest owners, placing the burden of determining equitable shares on the commingling injector. Humble Oil & Refining Co. v. West, 508 S.W.2d 812, 817-19 (Tex. 1974).

[165]*See* Section II *A* (describing Kansas fence law and citing cases dealing with liability for the escape of cattle). An Iowa Court has referred to the confusion of goods doctrine in the context of wrongful comingling of cattle. Ontario Livestock Comm'n Co. v. Flynn, 126 N.W.2d 362, 368 (Iowa 1964). A Wyoming Court found confusion of goods to be theoretically applicable to commingled cattle. Hannah State & Savings Bank v. Matson, 77 P.2d 621, 624 (Wyo. 1938).

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identity of the stored gas. Legislation should accentuate state property law and the ownership of the injected gas.[166] The resulting statute would grant continued title to the storer, subject to containment within the legal boundaries of the gas storage field.[167] Rather, the provisions of amended K.S.A. § 55-1210 should facilitate data acquisition for condemnation proceedings.[168]

The Yaggy leak of 2001 clearly demonstrates the dangers of migrating gas to the public.[169] The public, storers, and landowners benefit by clear delineation of the storage field boundaries.[170] Ideally, storer's storage rights would apply within the actual physical storage field, and storer's testing rights would apply within an appropriately sized buffer zone. Meanwhile, continued exploration for distinct native natural gas reservoirs would occur outside the storage field. However, gas producers would be cognizant of K.S.A. § 55-1210 testing provisions within the buffer zone and the correlative rights of any previously existing gas storage fields and abstain from causing storage gas migration.[171]

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[166]Additional legislation should also consider the developing issue of carbon dioxide sequestration. *See generally*, Owen L. Anderson, *Geologic CO2 Sequestration: Who Owns the Pore Space?*, 9 WYO. L. REV. 97 (2009). The subsurface increasingly may become public domain to facilitate the disposal of carbon dioxide and to restrict underground trespass claims. Sequestration of waste gas is conceptually different than migrating storage gas. Pore space suited for storage and the storage gas have value, whereas waste carbon dioxide gas is predominately a liability. *See generally*, Nathan R. Hoffman, Note, *The Feasibility of Applying Strict-Liability Principles to Carbon Capture and Storage*, 49 Washburn L.J. 527 (2010). Although federal regulation is expected, Kansas has carbon sequestration regulations. *See* K.A.R. §§ 82-3-1100 to 1120 (2010).

[167]Boundaries determined by FERC and their approval of storer's containment plans. Cunningham Gas Storage Field Containment Plan, Docket No. CP09-465-000 (FERC eLibrary), http://elibrary.ferc.gov/idmws/File_list.asp?document_id=13834451.

[168]*See* KAN. STAT. ANN. § 55-1205 (2005); KAN. STAT. ANN. §§ 26-501 to 517 (2000). Amendment of K.S.A. § 55-1210 would not alter the condemnation statutes for storers.

[169]*See* Allison, *supra* note 2. No further justification for increased efforts to safely operate underground gas storage fields and to delineate the boundaries of the storage fields is necessary.

[170]To that end, seismic data acquisition has become the industry standard in the gas production industry and should be utilized by the gas storage industry to delineate storage field boundaries. The seismic process generates sound waves and records the reflection of these waves from subsurface formations. This resulting data is mapped to show the structure of the underground field. *See* Christopher L. Liner, *Interpreting Seismic Data, in* EXPLORING FOR OIL AND GAS TRAPS 12-3 (Edward A. Beaumont & Norman H. Foster eds., 1999).

[171]Any wells drilled in the buffer zone would be subject to testing by the storer. Misguided producer behavior would be rectified by storer testing and, if the acquired data showed to a preponderance of the evidence that the produced gas had migrated from the storage field, condemnation. An example of improper producer behavior is dewatering to reduce local reservoir pressure and induce gas migration from the higher pressure storage field. Correlative rights,

In response to prior adverse court decisions, the storers successfully lobbied for K.S.A. § 55-1210 in 1993.[172] The statute has not been consistently interpreted to the storers' benefit. Following extensive litigation, confusion remains as evidenced by numerous K.S.A. § 55-1210 issues raised in a case recently briefed to the Kansas Supreme Court.[173] Future legislation should encourage delineation of storage field boundaries rather than further litigation.[174] A buffer zone approach should allow the data collection necessary for condemnation while attempting to protect the exploration rights of nearby landowners.[175]

The suggested alternative statute addresses common scenarios of migrating gas. Landowners could bring a claim seeking actual damages including value of the storage rights when stored gas migrates into the subsurface outside of the storage field. Storers could use testing rights and proceed with condemnation, either under K.S.A. § 55-1203 or the federal Natural Gas Act, 15 U.S.C. § 717f(h), when stored gas is produced from nearby lands. Unless the gas mixing is caused by the wrongful action of the gas producer, the burden is clearly on the storer to establish the identity of the produced gas as storage gas under a confusion of goods

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effectively a softening of the pure rule of capture, require the latecomer to acknowledge the existing conditions and not disturb the rights of the prior users. *See generally*, 6 Thompson on Real Property, Second Thomas Edition § 49.02(d)(1) (David A. Thomas ed., 2003). The implied easements of *Reese* are somewhat analogous to correlative rights applied to underground gas storage fields.

[172]STATE OF KAN., *supra* note 61, at 37; *Hearing on S.B. 168 Before the Kan. S. Comm. on Energy and Natural Resources*, 75th Leg., 1993 Sess. (Feb. 23, 1993) (minutes of the Kansas Senate Committee on Energy and Natural Resources); *Hearing on S.B. 168 Before the Kan. S. Comm. on Energy and Natural Resources*, 75th Leg., 1993 Sess. (Feb. 26, 1993) (minutes of the Kansas Senate Committee on Energy and Natural Resources); *Hearing on S.B. 168 Before the Kan. H. Comm. on Energy and Natural Resources*, 75th Leg., 1993 Sess. (Mar. 16, 1993) (minutes of the Kansas House Committee on Energy and Natural Resources).

[173]Brief of Appellant Northern Natural Gas Co. at 17-32, Northern Natural Gas Co. v. Oneok Field Services Co., No. 10-104279-AS (Kan. Aug. 18, 2010).

[174]Complete repeal of K.S.A. § 55-1210 would encourage the storer to define and defend the storage field boundaries by data acquisition, lease negotiation, and condemnation. However, the storer's retained title to injected gas has societal value in protecting their vital industry.

[175]*See* Section III *B*.

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analysis.[176] However, the storer would have access to the buffer zone to obtain data to meet the evidentiary burden.

B. Theoretical Application of Buffer Zone Testing Rights

The process of converting a producing gas reservoir to an underground gas storage field and maintaining physical and legal containment is as follows. The reservoir is depleted by production wells. The low pressures and low gas production rates indicate depletion of native gas and physical separation from any adjacent fields, including any nearby undiscovered native gas fields.[177] Once depletion has occurred, and the rights to the depleted field are acquired, converting the reservoir to gas storage can be undertaken. A certificated storage boundary is established and a containment plan is prepared by the storer and approved by the regulator.[178] Theoretically, the certificated storage boundary establishes the legal bounds of the field, while the containment plan is concerned with the physical bounds of the storage field.[179] Ideally, the extent of the legal storage field is laterally more extensive than the physical storage field.

A concrete and predictable limitation on mineral rights near gas storage fields allows for legitimate exploration for native gas. The limitation on mineral rights in the buffer zone is the granting of well testing rights to the storer upon a showing of a reasonable likelihood of

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[176] *See* Section III.*C.*

[177] Nearby undiscovered gas fields are quite possible given that new gas discoveries are often near existing gas fields. The geologic processes allowing accumulation of the found gas field also influenced the nearby area, making those nearby areas highly prospective to gas producers.

[178] *See, e.g.*, Cunningham Gas Storage Field Containment Plan, *supra* note 167.

[179] Gas occasionally migrating beyond the storage field boundaries is probably unavoidable. *See, e.g.*, Williams Natural Gas Co. v. Supra Energy, Inc., 931 P.2d 7, 11 (Kan. 1997) (Williams claimed Supra was producing migrating gas); N. Natural Gas Co. v. L.D. Drilling, Inc., 618 F. Supp. 2d 1280, 1282-83 (D. Kan. 2009) (Northern claims various producing wells are producing migrating gas). These instances may be induced or exacerbated by the activities of nearby gas producers, attracted either legitimately by the prospect of undiscovered native gas or illegitimately by the opportunity to take advantage of the legal confusion surrounding migrating gas. Legitimate exploration should be encouraged to the extent practicable, but siphoning of stored gas should be discouraged.

migrating gas.[180] The well testing is needed to collect the data necessary to maintain containment, either by operational changes or by condemnation proceedings. The testing may be conducted on existing production wells in the buffer zone or by the drilling of observation wells. The full cost of testing and any damage to the non-storer stakeholders is borne by the storer.[181] The suggested alternative statute is necessary to eliminate legal confusion and allow the storer to maintain containment, both physically and legally.[182]

V. CONCLUSION

K.S.A. § 55-1210 should be amended because the disparate judicial analysis of its provisions demonstrates the unsettled nature of Kansas' underground fence law. While Kansas S.B. 553 and the related testimony provided a beginning point for examining proposed changes to underground gas storage statutes, the suggested alternative statute is simpler, clearer, and more appropriate and therefore should be introduced to and passed by the legislature.[183] Any amending language should offer concrete mechanisms to facilitate the more predictable resolution of ongoing and future migrating gas disputes. Future judicial decisions should address migrating gas within the buffer zone in the context of the confusion of goods doctrine and should

[180]Some recognition of the decrease in value of mineral rights within the buffer zone may be appropriate.
[181]*See* Section III.*A*.
[182]The suggested alternative statute attempts to address two scenarios of migrating gas: induced migration and mistaken boundary delineation. Induced migration can be mitigated by recognition of loss of containment and subsequent use of the proposed testing provision and condemnation process. *See* Section III.*A*. Incorrect boundary delineation can be rectified by the drilling of observation wells in the buffer zone and subsequent expansion of the boundaries if justified by acquired well data. *See* Section III.*A*.
[183]Application of the suggested alternative statute results in the gas within the storage field being the property of the injector. Gas outside of the storage field and the buffer zone is not titled, is not native gas for purposes of K.S.A. § 55-1205, and is subject to the rule of capture. Gas within the buffer zone is not titled but is subject to the testing provisions. Specifically, the injector may test any existing gas production wells within the buffer zone. This mechanism facilitates data collection for use in condemnation proceedings when migrating gas is being produced. If migrating gas is suspected but is not being produced, the injector may negotiate storage leases or seek to acquire data for use in condemnation proceedings, including by the drilling of observation wells within the buffer zone.

develop an evidentiary standard for reasonable likelihood of migrating gas.[184] The Kansas Legislature built an underground fence, and now the legislature needs to fix its fence.

[184]Because native gas may exist within the buffer zone and the mineral owners may retain their exploration rights, conflict between the injector and nearby mineral owners may still occur. Production wells may be drilled within the buffer zone, and the storer is privy to the data from the production well. The confusion of goods doctrine is applicable to the described situation. However, the storer could use the acquired data to identify migrating gas. Reasonable likelihood of migrating gas is the proposed judicial standard for triggering the testing provision of the suggested alternative statute. This proposed standard is lower than a substantial likelihood to prevail on the merits. Extensive well data may not be available at the time of the well testing injunction, however C1/C2+ ratios or comparisons of gas well production records alone may be sufficient to establish a reasonable likelihood of migrating gas. The physical scope of well testing injunctions is limited by the quantified buffer zone. Prior courts' discussion of reasonable grounds for an injunction to allow well testing may be helpful and instructive in establishing the judicial standard. *See* Williams Natural Gas Co. v. Supra Energy, Inc., 931 P.2d 7, 14 (Kan. 1997) (finding constitutional the testing provisions of § 55-1210); N. Natural Gas Co. v. L.D. Drilling, Inc., 618 F. Supp. 2d 1280, 1293-94 (D. Kan. 2009) (discussing the grounds for an injunction).

Appendix 1

Session of 2010
SENATE BILL No. 553
By Committee on Ways and Means
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AN ACT concerning natural gas storage; relating to recovery of migrating gas; amending K.S.A. §§ 55-1,115, 55-1201 and 55-1210 and repealing the existing sections.
Be it enacted by the Legislature of the State of Kansas:
Section 1. K.S.A. 55-1,115 is hereby amended to read as follows:
55-1,115. (a) On or before July 1, 2002, the state corporation commission shall adopt rules and regulations governing underground porosity storage of natural gas. Such rules and regulations shall include the permitting, monitoring and inspecting of underground porosity storage of natural gas and the closure and abandonment of such underground porosity storage of natural gas. Such rules and regulations may establish fees for permitting, monitoring, inspecting and closing or abandoning underground porosity storage of natural gas.
(b) (1) The commission shall not amend or renew any permits issued on or after July 1, 2002, for the underground porosity storage of natural gas to a natural gas public utility seeking renewal of such permit according to rules and regulations as promulgated under subsection (a), if such utility is seeking a certificate of public convenience and necessity pursuant to 15 U.S.C. 715f, in order to recover migrating gas beyond the limitations as set forth in K.S.A. 12-1210, and amendments thereto.
(2) The commission shall assess a $1,000 penalty for each day that such utility is found to be in violation of rules and regulations due to leaking or migrating gas. The commission may suspend or cancel such permits upon a finding that continued operation of the storage facility causes waste, pollution or a threat to public safety.
(b) *(c)* No hydrocarbon storage shall be allowed in any underground formation if water within the formation contains less than 5,000 milligrams per liter chlorides, except that the provisions of this subsection shall not prohibit the storage of hydrocarbons in an underground porosity storage facility if such storage facility was in use before July 1, 2001.
(c) *(d)* The provisions of K.S.A. 55-162 and 55-164, and amendments thereto, shall apply to violations of the rules and regulations adopted pursuant to this section.
(d) *(e)* As used in this section and K.S.A. 55-150, 55-155, 55-182 and 74-623, and amendments thereto, ''underground porosity storage'' means the storage of hydrocarbons in underground, porous and permeable geological strata which have been converted to hydrocarbon storage.
Sec. 2. K.S.A. 55-1201 is hereby amended to read as follows:
55-1201. As used in this act*:* (a) ''Underground storage'' shall mean storage in a subsurface stratum or formation of the earth;
(b) ''natural gas'' shall mean gas either while in its original state or after the same has been processed by removal therefrom of component parts not essential to its use for light and fuel;
(c) ''native gas'' shall mean gas which has not been previously withdrawn from the earth;
(d) ''natural gas public utility'' shall mean any person, firm or corporation authorized to do business in this state and engaged in the business of *the underground storage of natural gas or* transporting or distributing natural gas by means of pipelines into, within or through this state for ultimate public use;
(e) ''commission'' shall mean the state corporation commission.*;*
(f) ''conservation division'' shall mean the conservation division of the state corporation commission;
(g) ''adjoining'' shall mean the area which includes the surface and subsurface area within a 1 2 mile radius of a certified boundary of an underground storage field; and
(h) ''state emergency management'' shall mean the division of emergency management within the office of the adjutant general.
Sec. 3. K.S.A. 55-1210 is hereby amended to read as follows:
55-1210. (a) All natural gas which has previously been reduced to possession, and which is subsequently injected into underground storage fields, sands, reservoirs and facilities, whether

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such storage rights were acquired by eminent domain or otherwise, shall at all times be the property of the injector, such injector's heirs, successors or assigns, whether owned by the injector or stored under contract *except as limited by this section.*

(b) In no event shall such gas be subject to the right of the owner of the surface of such lands or of any mineral interest therein, under which such gas storage fields, sands, reservoirs and facilities lie, or of any person, other than the injector, such injector's heirs, successors and assigns, to produce, take, reduce to possession, either by means of the law of capture or otherwise, waste, or otherwise interfere with or exercise any control over such gas. Nothing in this subsection shall be deemed to affect the right of the owner of the surface of such lands or of any mineral interest therein to drill or bore through the underground storage fields, sands, reservoirs and facilities in such a manner as will protect such fields, sand, reservoirs and facilities against pollution and the escape of the natural gas being stored.

(c) With regard to natural gas that has migrated to adjoining property or to a stratum, or portion thereof, which has not been condemned as allowed by law or otherwise purchased:

(1) The injector, such injector's heirs, successors and assigns shall not lose title to or possession of such gas if such injector, such injector's heirs, successors or assigns can prove by a preponderance of the *clear and convincing* evidence that such gas was originally injected into the underground storage.

(2) The injector, such injector's heirs, successors and assigns, shall have the right to conduct such tests on any existing wells on adjoining property, at such injector's sole risk and expense including, but not limited to, the value of any lost production of other than the injector's gas, as may be reasonable to determine ownership of such gas.

(3) The owner of the stratum and the owner of the surface *property outside the injector's certified storage boundary* shall be entitled to such compensation, including, *but not limited to,* compensation for use of or damage to the surface or substratum, *trespass, conversion and slander of title,* as is provided by law, and shall be entitled to recovery of all costs and expenses, including reasonable attorney fees, if litigation is necessary to enforce any rights under this subsection (c) and the injector does not prevail *associated with determining the extent of migrated and migrating natural gas, the negotiating of lease agreements for the storage of natural gas, any proceedings before any state or federal agency having oversight of underground storage fields or the transportation of natural gas and any other litigation necessary to enforce any rights under this subsection (c). Subsection (c) shall also apply retroactively to all such litigation and such state and federal proceedings.*

(4) The injector and such injector's heirs, successors or assigns shall lose title to and possession of such injected gas if the migration of such gas is a result of pressure in a storage field or reservoir, measured in psig ,in excess of 75% of the fracture gradient of such field or reservoir as determined by a step rate test or as calculated by a licensed engineer or licensed geologist using a testing technique accepted by the conservation division of the state corporation commission.

(5) The injector and such injector's heirs, successors or assigns shall lose title to and possession of migrated and migrating natural gas if such injector, injector's heirs, successors or assigns fail to notify the commission, record owners in effected areas, state emergency management and any other interested parties that such injector and such injector's heirs, successors or assigns knows of or has reason to know of natural gas that is migrating or has migrated outside of a certified storage area. Such notification shall be made within 30 days of the date that the injector and such injector's heirs, successors or assigns, knows of or has reason to know of such migrated and migrating gas.

(6) The rule of capture shall apply to any gas that has migrated or is migrating beyond such adjacent property as described in this section.

(7) (A) The injector and such injector's heirs, successors and assigns shall compensate any taxing entity for loss of ad valorem taxes caused by the migration of the injector's gas into any property outside the injector's certified storage boundary if such migration or subsequent condemnation of the property affected by the migration results in a cessation of production or taking of oil or natural gas from any existing oil or gas well which, at the time of cessation, was subject to ad valorem taxation. (B) The amount of tax compensation shall be based on the fair market value of the proved producing and proved non-producing gas or oil attributable to royalty, overriding royalty, working interest or otherwise, which could have been produced from any such well under

its estimated commercial life but for the cessation caused by the migration of the injector's gas. (C) The claim for recovery for affected taxing entities shall be made by the county in which any such well is located and calculated by the county appraiser. It will be assumed for purposes of this section that the fair market value was or could have been produced in the year of cessation or condemnation, whichever is latest. The valuation of such fair market value will be made by the county appraiser in accordance with K.S.A. 79-329, 79-330 and 79-331, and amendments thereto. The injector and such injector's heirs, successors and assigns shall file with the county appraiser a statement of assessment on or before April 1 of the year following cessation or condemnation in accordance with K.S.A. 79-332a, and amendments thereto. (D) The mill levy for the applicable taxing entities in effect for the year of cessation or condemnation shall be applied in making the tax calculation and such injector, such injector's heirs, successors and assigns will be invoiced for the tax so calculated and if such tax is not paid within 30 days of the invoice, such tax will be delinquent and be a lien on the injector's real and personal property located in such county. Delinquent taxes will accrue interest and penalties in accordance with K.S.A. 79-2004, and amendments thereto.

(d) The injector, *and* such injector's heirs, successors and assigns, *and any surface or mineral rights owner with title or an interest in an underground storage field, reservoir or facility or any area containing migrated and migrating gas,* shall have the right to compel compliance with this section by injunction or other appropriate relief by application to a court of competent jurisdiction. *A surface or mineral rights owner bringing such actions shall be entitled to recover costs as described in subsection (c)(3).*

Sec. 4. K.S.A. 55-1,115, 55-1201 and 55-1210 are hereby repealed.

Sec. 5. This act shall take effect and be in force from and after its publication in the Kansas register.

S.B. 553, 2010 Sess. (Kan. 2010), *available at* http://www.kslegislature.org/bills/2010/553.pdf.

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Senate Natural Resources Special Committee
on Natural Gas Storage Issues
Testimony of Jerry Morris, President & CEO
Southern Star Central Gas Pipeline, Inc.
Thursday, October 28, 2010

Thank you Madame Chairman for this opportunity to speak to the Special Committee on Natural Gas Storage Issues. I am Jerry Morris, President & CEO of Southern Star and presented testimony earlier this year with regard to proposed Senate Bill 553. As you may remember from that earlier proceeding, Southern Star is the former Cities Service Gas Company, or Williams Natural Gas. We are the successor company to those entities and have been partners with Kansas businesses for over 100 years, and have operated storage facilities in the state of Kansas since the 1930's. I have been working in the interstate transmission and storage business myself for over 33 years. I would like to incorporate by reference my testimony submitted on March 4, 2010 before the Senate Natural Resources Committee.

Southern Star is the largest interstate natural gas storage company serving Kansas, with seven operating storage fields in the state. These Kansas fields have seasonal working gas capacity of over 30 billion cubic feet, with ability to deliver over 1.2 billion cubic feet per day to consumers on the coldest day of the year. All of the "working gas" we store is owned by other energy companies or local natural gas utilities in our service territory that provide gas service to families and businesses. These are large investor-owned utilities like KGS, ONEOK, Atmos, and Black Hills Energy, and many municipal systems across Kansas.

Based on the portion of our storage capacity used by Kansas utilities, Southern Star gas storage serves the needs of approximately 300,000 Kansas households, or more than one million Kansas citizens. This storage exists to meet seasonal demands for natural gas when it is very hot, or very cold, and to assist customers in their ability to pursue low cost supply strategies.

It is my understanding that this special committee was convened to study certain issues that were to be addressed in proposed Kansas Senate Bill 553 pertaining to the storage of natural gas in Kansas, as well as consider the impact of two recent court decisions involving gas storage issues in Kansas.

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I am not here to "argue" those cases, one of which has been appealed to the next level of court review, but to express Southern Star's support of the "law of capture" with respect to storage gas, as it stood in Kansas before the recent litigation involving Northern Natural Gas Company's Cunningham field, ("NNG case"), and before the decision was issued in the case of CIG v. Thomas E. Wright, et al., ("the CIG case"), both of which this committee has been charged with studying as to their potential impact on K.S.A. 55-1210, (or what I will refer to throughout my testimony as the "storage statute").

With respect to the CIG case, which involved the question of whether the state of Kansas had jurisdiction to regulate the storage of gas in interstate commerce with respect to safety considerations, it seems that there is little to be "studied". The KCC did not appeal the court's decision in that case, and discussions that have been held between Southern Star representatives and various members of the KCC Staff in Wichita since the issuance of that decision, indicate that the KCC has accepted that it only has "safety" jurisdiction over operators of intrastate storage facilities. However, despite that result, Southern Star wishes to share with the Committee that it has met with the KCC Staff and told them that it plans to adopt, as standard operating procedure in its storage fields, many of the KCC's recommendations regarding safety, including the addition of a separate safety plan in its O&M manual for storage facilities. Southern Star also explained to the KCC Staff that it plans to continue integrity testing of storage wells in its storage fields in Kansas, as well as other states, (as had been our practice before the statute at issue in the CIG case was passed), but on a schedule that is risk-based, consistent with the approach used by the federal Pipeline and Hazardous Materials and Safety Administration ("PHMSA") in regulating interstate transmission pipeline facilities.

With respect to the issues raised in the NNG case, Southern Star's position is, (as it was this Spring), that there are existing regulations and a legal framework in place that treat all parties' concerns fairly. This framework begins with the right available under the "storage statute", to sample or test wells on property adjoining a storage field that the storage operator believes may be producing storage gas. Next, if the storage operator has sufficient proof as a result of these samples and/or other geological and technical studies that its storage gas has migrated beyond the certificated boundaries of its storage field, either vertically or horizontally, the Natural Gas Act ("NGA") provides that the storage operator can file an application for a certificate of public convenience and necessity to expand the boundaries of its storage field and acquire any necessary property interests. This "certificate" application process at the Federal Energy Regulatory Commission ("FERC") provides that all landowners and interest owners discernable from public tax records be notified of the filing of such an application and

have an opportunity to intervene and participate in the decision-making process. Southern Star believes, from the recent experience it has had with this certificate process involving migration issues in its Welda storage complex, that the FERC fairly "weighs" the interest of mineral and working interest owners, as the FERC did not allow Southern Star in one of these proceedings to acquire all of the mineral interests and storage rights it sought to include as part of its certificated storage reservoir, even though the acquisition of the particular tracts was also supported by the KCC, who intervened in all of Southern Star's "Welda" certificate filings.

There is also a legal process in place to fairly compensate the mineral interest owners for the currently held "property rights" that the FERC grants the storage operator the right to acquire, when it issues a certificate order, and that is the condemnation process. This process allows a jury of Kansas citizens to determine fair compensation to be paid to these parties. If a storage company decides to pursue a claim for conversion for storage gas that has been produced by a third party prior to condemnation, a Kansas jury will also be the decision-maker in that process. Given the burden of proof necessary to convince a jury that gas that has already been produced and can no longer be sampled or tested and the technical nature of the proof related to such a claim, Southern Star would argue that the "playing field" in this arena is already "tilted" in favor of the producers and mineral owners. There is no need to put an "artificial" limit, geographical or otherwise, on the amount of migrated gas a storage operator may recover for, if it can "prove its case".

SSCGP's opinion is that any specific limit, especially the one imposed by the court in the NNG case now on appeal, which used a simple "one mile" from the certificated boundary of the storage field, is totally arbitrary and has no geological or technical basis, much less recognize that migration may occur both horizontally and vertically. Having such an "artificial" limit only encourages unethical producers to "punch holes" outside this one mile "limit" of an existing storage field, in hopes of eventually producing storage gas and profiting from that production at the expense of the rate payers who have purchased and stored that gas for future use. And why is that? Because if the state of Kansas allows any storage gas to be legally retained by the producer, then as long as the storage operator has acted prudently in the measures taken to stop that production, (which given the regulatory and legal process described above, can take years), then the storage operator, as a regulated entity, is entitled to seek recovery for that "converted" gas from its rate payers. In the final analysis, the state of Kansas by adopting an artificial limit in conjunction with the "rule of capture", is merely favoring one set of citizens, the mineral interest owners, over another set, the gas utility rate payers.

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I also understand that the committee has been charged with studying the taxation of storage gas and the taxation of oil "produced" by storage operators. Southern Star currently pays property taxes on all gas that it owns in its storage fields, which is what is referred to as "base gas" or "cushion gas". For tax year 2009, Southern Star paid approximately $25,000.00 in property taxes on base gas residing in its seven storage fields in Kansas. Southern Star has some limited oil production associated with its gas storage operations located in various counties in Kansas. This oil is sold to a third party oil field services company which deducts both Kansas severance tax and Kansas conservation tax from the net proceeds payable to Southern Star. To the extent that concerns have been raised that governmental entities will no longer benefit from severance taxes collected on "storage gas" that has been produced by a third party or oil reserves that can no longer be produced without undermining the integrity of a storage field, there is little that can be done. "Storage gas" that has been produced by third parties never legally qualified for a "second" severance tax assessment, as a severance tax had already been assessed and collected in the state where that gas was originally produced. The fact that some oil reserves cannot be produced because of integrity issues with a storage field operated in interstate commerce, which the FERC has acknowledged, and thus no severance tax can be collected by the State, is no different than the situation that exists when a land owner who owns the mineral rights on his or her property and chooses not to lease those rights for production, but instead, "leaves the oil in the ground". There is a loss of "potential revenue" in that scenario also, but I assume the state of Kansas would not penalize a private land owner for his or her choice as to what to do with their property.

In closing, Southern Star urges the Committee to not recommend any legislation that will deter the development of additional natural gas storage in the State of Kansas. The availability of gas storage, as previously expressed, is very important in keeping the cost of natural gas service in Kansas economic and the delivery of that service reliable; as well as being key to Kansas' and the country's goals of "clean" energy and energy independence. Thank you.

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October 28, 2010

To: Special Committee on Natural Gas Storage Fields and Facilities

From: Cindy Lash, Heather O'Hara, and
Raney Gilliland, Legislative Research Department

Re: Proponent and Opponent Testimony on 2010 Senate Bill 553

On March 4 and 11, 2010, the Senate Committee on Natural Resources held a hearing on 2010 Senate Bill 553. The following persons and organizations submitted testimony for the hearing on the bill. Included with the list is a small summary of each piece of testimony that was provided to the Committee.

Proponents of 2010 SB 553

Dennis Hedke, Hedke-Saenger Geoscience, Ltd.

- Mr. Hedke states the subsurface geology of the state is more complex than meets the eye. Cunningham Storage Field is a current case where significant migration of natural gas appears to have taken place.
- The testimony says that when mitigation occurs, the proper mitigation of the leakage should be the responsibility of the facility manager and that should be done at the expense of that facility.

Jeffery L. Carmichael, Morris, Laing, Evans, Brock & Kennedy, Chartered

- The testimony provides discussion on the intent and meaning of KSA 55-1210 and the merits of litigation with Northern Natural Gas, Inc. (Northern) with his clients Nash Oil and Gas, Inc. (Nash) and VAL Energy, Inc.
- Mr. Carmichael states that Northern has attempted to use the statute to enforce rights against gas wells that are miles away from the storage facility, claiming that Northern has a right to the gas that is located there.

Dwight Adams, Pratt County Commissioner

- Mr. Adams is concerned that Northern will receive tax-free the native minerals produced from the area.
- The testimony states the belief that natural gas operators should not be allowed to reap a windfall from the negligent manner in which they have claimed they have operated their storage field.

Gordon B. Stull, Haynesville Surface and Mineral Owners Association, Inc.

- The testimony provides discussion on the merits of the litigation with Northern.
- The testimony states the current statutory system devised by the Legislature in modifying the rule of capture is constitutionally flawed.
- Mr. Stull states that 2010 SB 553 makes it understood that leaking and taking is subject to certain limitations and reasonable compensation.

Dorothy Trinkle, Haynesville Surface and Mineral Owners Association, Inc.

- Ms. Trinkle states that without the passage of 2010 SB 553, landowners have only two options: they can accept what Northern offers as a settlement payment or they can hire lawyers, geologists, and experts who will attempt to determine what is occurring underground.
- In her opinion, no other Kansas law requires the owner of property to pay when somebody else violates the owners' property rights.

Erick Nordling, Southwest Kansas Royalty Owners Association

- Mr. Nordling states that 2010 SB 553 would help address issues related to escaped or migrated natural gas from natural gas storage areas all over the state.
- The testimony states that the current statutes provide no incentive for natural gas companies to ensure that leaks are better defined or better predicted.
- Mr. Nordling states that the provisions of 2010 SB 553 provide that incentive by making the storage companies responsible for knowing the area confines of its storage fields and strengthens the storage companies' duty to contain stored gas or face losing title to it.

Dennis Huff, Preston, Kansas

- Mr. Huff states that passage of 2010 SB 553 would allow landowners to know what lies under their land by allowing them the opportunity to explore what minerals exist beneath their property.
- Mr. Huff expresses concern in his testimony about a recent interaction he had with Northern regarding his property.

Ruth Mezger Urban, Louisburg, Kansas

- The testimony states the bill provides for a safer environment for Kansans and helps businesses make the right choices in how they store natural gas in Kansas.
- Ms. Mezger Urban expresses concern regarding her family's financial situation and the proceeds from the natural gas on the family farm she inherited in Pratt County, Kansas.

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Clint McGuire, Reno County property owner

- Mr. McGuire states in his testimony that 2010 SB 553 would provide surface and mineral owners that surround a natural gas storage field a chance to investigate when the operator of a storage field claims that injected gas has migrated under their property.

Sonja Staab, Russell, Kansas

- Ms. Staab states that passage of the bill would allow Kansas landowners and mineral owners the ability to fight back against companies who believe they have the right to come in and disrupt so many lives.

Kermit Brown, Preston, Kansas

- Mr. Brown states that the passage of 2010 SB 553 would allow him to fight a company that he claimed has trespassed on his property and wants to take his minerals away from him.

Diane Pruitt, Perry, Kansas

- Ms. Pruitt states that the bill would require the accountability of Northern and it protects the rights of Kansans.
- Ms. Pruit expresses concern regarding her family's financial situation.

Opponents to 2010 SB 553

Jerry Morris, Southern Star Central Gas Pipeline

- Mr. Morris states that the requirements in the bill that the Kansas Corporation Commission (KCC) cannot amend or renew gas storage permits if a gas utility or storage operator is seeking a certificate of public convenience and necessity pursuant to 15 USC 715f puts gas utilities and storage operators in a "catch 22" situation.
- The injunction provision of the bill puts gas storage customers at risk of storage field shut-ins.
- The bill would eliminate important protections against unscrupulous gas producers.
- The bill treats all storage operators as bad actors and ignores the realities of the gas storage business and industry.
- Provisions of the bill that purport to authorize cancellation or nonrenewal of storage permits are preempted by federal law.
- The clear and convincing evidence standard is contrary to public interest in gas storage.
- The bill would impose vague and overly broad attorney fee obligations.
- The bill lacks any plausible enforcement mechanism.

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Doug Louis, Kansas Corporation Commission

- Mr. Louis states the bill affects a number of interest groups, some of which have conflicting interests; for example, gas storage is regulated not only by the KCC, but also by FERC and the US Department of Transportation.
- *Colorado Interstate Gas Company v. Thomas E. Wright, et al.*, challenges the jurisdiction of the KCC to regulate any aspect of gas storage, because it is already regulated by the federal government through FERC and US DOT (please note: at the time of this testimony, the case had not yet been decided).
- Mr. Louis details other technical and policy concerns in each section of the bill.
- The testimony states that allowing attorney fees, even when a party does not prevail, is unprecedented.
- Mr. Louis states there may be jurisdictional problems with the state authorizing attorney fees in federal court cases and FERC proceedings.

Mark Hewett, Northern Natural Gas Company

- Mr. Hewett states that 2010 SB 553 is contrary to the state's public policy that is expressed in the state's statutes.
- The testimony states that the bill would have vast consequences for Northern, its employees, its customers, and the six other storage operators and their constituents in the state, as well as the many Kansas companies who do business with Northern and the other storage operators.
- If the bill is passed, it would violate the US Constitution.

Karen Benson, Panhandle Energy

- Ms. Benson states that the bill ties the hands of the KCC in dealing with migration of natural gas.
- The bill imposes an unfamiliar, onerous, and untried burden of proof in requiring "clear and convincing" evidence in determining the title to strayed gas.
- The testimony states the bill imposes an arbitrary limitation on storage field pressure that varies based on the geological characteristics of individual fields.
- Ms. Benson states that the bill resurrects the "rule of capture" for all migrated gas beyond the new ½ mile zone.
- The testimony states that proposed tax obligation for the lost gas is unfair and unworkable and would add to the litigation free-for-all at the expense of the true owners of the lost gas.

John Steffen, Kingman County Commissioner

- Mr. Steffen states that Northern has indicated that if 2010 SB 553 passes, the likelihood is great that it will close Cunningham Storage Field.

- Kingman County stands to lose substantial tax revenue from the taxation on the inventory contained in the Cunningham Storage Field, should it be closed.
- Mr. Steffen states that Northern employs 17 individuals in Kingman County, who would lose their jobs as a result of the passage of this bill.

Laurence E. Garrett, Colorado Interstate Gas Company

- Mr. Garrett states that the bill punishes natural gas storage operators for acts that are most often beyond the storage operators' control.
- The testimony states that the bill would create a hostile business environment for storage operators in Kansas and unnecessarily create tension between the storage operators and landowners, producers and owners of mineral interests.
- Mr. Garrett states that 2010 SB 553 imposes sanctions through the loss of title to gas on storage operators who do not operate storage pressures in accordance with the approval of the KCC, despite the fact that the KCC has no jurisdiction over the operation and maintenance of interstate natural gas pipeline facilities
- The testimony states that the bill unfairly requires storage operators to replace *ad valorem* taxes on property it does not own.
- Mr. Garrett believes the bill is not necessary as federal law adequately protects the interests of landowners, producers, and owners of mineral interests.

Wes Ashton, Black Hills Energy

- Mr. Ashton states that the bill is likely to raise costs for its residential and commercial customers as the costs charged for storage of natural gas is likely to rise.
- The testimony states the bill will likely limit the amount of natural gas storage in Kansas, which Mr. Ashton believes would hinder the ability to acquire and deliver enough natural gas to the company's customers during times of peak demand.

Ron Gaches, Atmos Energy

- Mr. Gaches states that there is nothing in 2010 SB 553 that favors a natural gas operator.
- Mr. Gaches states that the severe penalties for leaking or migrating gas that are included in the bill imply that this is a criminal act.
- The testimony states that migration occurs easily in storage fields and this legislation does not account for that.
- FERC has a clearly defined process for compensating landowners and royalty owners for loss of their mineral interests when the boundaries of a gas storage field must be expanded.
- Mr. Gaches states that storage companies should not be held to a standard of evidence more rigorous than most property law.
- The testimony states that the bill is poorly conceived and drafted in a manner full of contradictions.

Kansas Gas Service

- The company states that it believes the bill could raise the costs for its residential and commercial customers.
- The testimony states that the company feels the bill may threaten its ability to deliver enough natural gas to customers during times of peak demand.

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October 28, 2010

To: Special Committee on Natural Gas Storage Fields and Facilities

From: Cindy Lash, Heather O'Hara, and
Raney Gilliland, Legislative Research Department

Re: Timeline of Events

Please find below a timeline of events for the following regulatory orders and cases:

- Federal Energy Regulatory Commission (FERC) – June 2, 2010, order issued granting Northern Natural Gas Authority (Northern) to expand the Cunningham Storage Field.
- U.S. District Court for the District of Kansas – April 13, 2010, order issued in Colorado Interstate Gas Company (CIG) v. Thomas Wright, et al.
- Pratt County District Court – April 15, 2010, order issued in Northern Natural Gas Company v. ONEOK Field Services Company, et al.

Timeline

June 5, 1945	Federal Power Commission (FPC; the authority and responsibilities of the FPC have been transferred to FERC) issues CIG a Certificate of Public Convenience and Necessity under the federal Natural Gas Act (NGA), because CIG is engaged in the transportation of natural gas in interstate commerce and is a natural gas company within the meaning of the NGA.
August 29, 1973	FPC issues CIG a Certificate of Public Convenience and Necessity under the NGA authorizing CIG to acquire, construct, operate, and maintain the Boehm Gas Field in Morton County, Kansas, as an underground gas storage reservoir.
1978	FERC grants certificate of authorization to Northern to develop and operate the Cunningham Storage Facility in Pratt and Kingman counties, Kansas.
1996	FERC grants Northern certificate authority also to use the underlying Simpson formation as a component of the storage

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	reservoir. The previous certificate had authorized only a storage facility in the Viola formation. New data shows the Viola formation is in communication with the underlying Simpson formation.
2005	Northern's gas sampling, pressure and flow testing, and seismic analysis shows that its storage gas is migrating away from the Cunningham field. Northern proposes and FERC approves the construction of two withdrawal wells and an additional compressor unit to prevent further migration of storage gas.
March 2007	Northern files an application with FERC to expand the Cunningham Storage Field's certificated protective boundary (buffer zone) by 4,800 acres to address continued migration issues.
October 2008	FERC authorizes 1,760 acres of the requested expansion by Northern, which increases the certificated area of the Cunningham Storage Field and buffer zone to 28,000 acres. Northern seeks a rehearing of the October 2008 order.
April 2009	FERC denies Northern's rehearing request.
September 14, 2009	Northern files an application for a Certificate of Public Convenience and Necessity to expand the buffer zone around the Cunningham Storage Field.
September 29, 2009	FERC publishes notice of Northern's application in the *Federal Register*.
October 16, 2009	FERC issues a Notice of Intent to Prepare an Environmental Assessment (NOI) for Northern's proposal.
October 26, 2009	FERC issues a data request seeking compositional analysis from certain Northern wells, as well as from wells under the control of third-party producers (including Nash and others).
November 25, 2009	L.D. Drilling and Val Energy file that they will not allow testing of their wells for the FERC data request.
December 2, 2009	The Kansas Corporation Commission (KCC) is denied cooperating agency status in the preparation of the FERC staff's environmental assessment (EA) toward the NOI, because the KCC is an intervenor in the proceeding.
December 9, 2009	Northern responds to the data request with the results of its compositional analysis from Northern wells and other wells, including the Nash wells, the Schwertfeger well, and other wells under Northern's control.
January 29, 2010	The FERC's EA for Northern's proposal is placed into public record and mailed to affected landowners and stakeholders.

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March 12, 2010	The Pratt County District Court holds an initial hearing in Northern Natural Gas Company v. ONEOK Field Services Company, et al.
April 13, 2010	The U.S. District Court for the District of Kansas finds for CIG in CIG v. Thomas Wright, et al. The Court concludes that Kansas Gas Storage Statutes and Kansas Gas Storage Regulations violate the U.S. Supremacy Clause and are preempted by the NGA and the federal Pipeline Safety Act. The effect of this ruling is that the state statutes and regulations have no force or effect on CIG's interstate natural gas pipeline, storage facilities and transportation at Boehm Underground Gas Storage Field.
April 15, 2010	The Pratt County District Court finds for Nash Oil and Gas, Inc. (Nash) and L.D. Drilling, Inc., (L.D. Drilling) third-party defendants in Northern Natural Gas Company v. ONEOK Field Services Company, et al., because the Nash and L.D. Drilling wells are not considered to be located on "adjoining property" to Northern's FERC-certified boundaries.
June 2, 2010	FERC grants Northern a certificate authorizing an expansion of 12,320 acres in the Cunningham Storage Field buffer zone, rather than Northern's proposed expansion of 14,240 acres.
August 18, 2010	Northern files an appellant brief to the Kansas Supreme Court in Northern Natural Gas Company v. ONEOK Field Services Company, et al.

16-3

The Basics of Underground Natural Gas Storage

Latest update: August 2004

Printer-Friendly Version

Natural gas-a colorless, odorless, gaseous hydrocarbon-may be stored in a number of different ways. It is most commonly held in inventory underground under pressure in three types of facilities. These are: (1) depleted reservoirs in oil and/or gas fields, (2) aquifers, and (3) salt cavern formations. (Natural gas is also stored in liquid form in above-ground tanks. A discussion of liquefied natural gas (LNG) is beyond the scope of this report. For more information about LNG, please see the EIA report, *The Global Liquefied Natural Gas Market: Status & Outlook*.) Each storage type has its own physical characteristics (porosity, permeability, retention capability) and economics (site preparation and maintenance costs, deliverability rates, and cycling capability), which govern its suitability to particular applications. Two of the most important characteristics of an underground storage reservoir are its capacity to hold natural gas for future use and the rate at which gas inventory can be withdrawn-its deliverability rate (see *Storage Measures*, below, for key definitions).

Most existing gas storage in the United States is in **depleted natural gas or oil fields** that are close to consumption centers. Conversion of a field from production to storage duty takes advantage of existing wells, gathering systems, and pipeline connections. Depleted oil and gas reservoirs are the most commonly used underground storage sites because of their wide availability.

In some areas, most notably the Midwestern United States, natural **aquifers** have been converted to gas storage reservoirs. An aquifer is suitable for gas storage if the water bearing sedimentary rock formation is overlaid with an impermeable cap rock. While the geology of aquifers is similar to depleted production fields, their use in gas storage usually requires more base (cushion) gas and greater monitoring of withdrawal and injection performance. Deliverability rates may be enhanced by the presence of an active water drive.

Salt caverns provide very high withdrawal and injection rates relative to their working gas capacity. Base gas requirements are relatively low. The large majority of salt cavern storage facilities have been developed in salt dome formations located in the Gulf Coast states. Salt caverns have also been leached from bedded salt formations in Northeastern, Midwestern, and Southwestern states. Cavern construction is more costly than depleted field conversions when measured on the basis of dollars per thousand cubic feet of working gas capacity, but the ability to perform several withdrawal and injection cycles each year reduces the per-unit cost of each thousand cubic feet of gas injected and withdrawn.

There have been efforts to use abandoned **mines** to store natural gas, with at least one such facility having been in use in the United States in the past. Further, the potential for commercial use of **hard-rock cavern** storage is currently undergoing testing. None are commercially operational as natural gas storage sites at the present time.

Figure 1 is a stylized representation of the various types of underground storage facilities, while Figure 2 shows the location of the nearly 400 active storage facilities in the Lower 48 States.

Figure 1. Types of Underground Natural Gas Storage Facilities

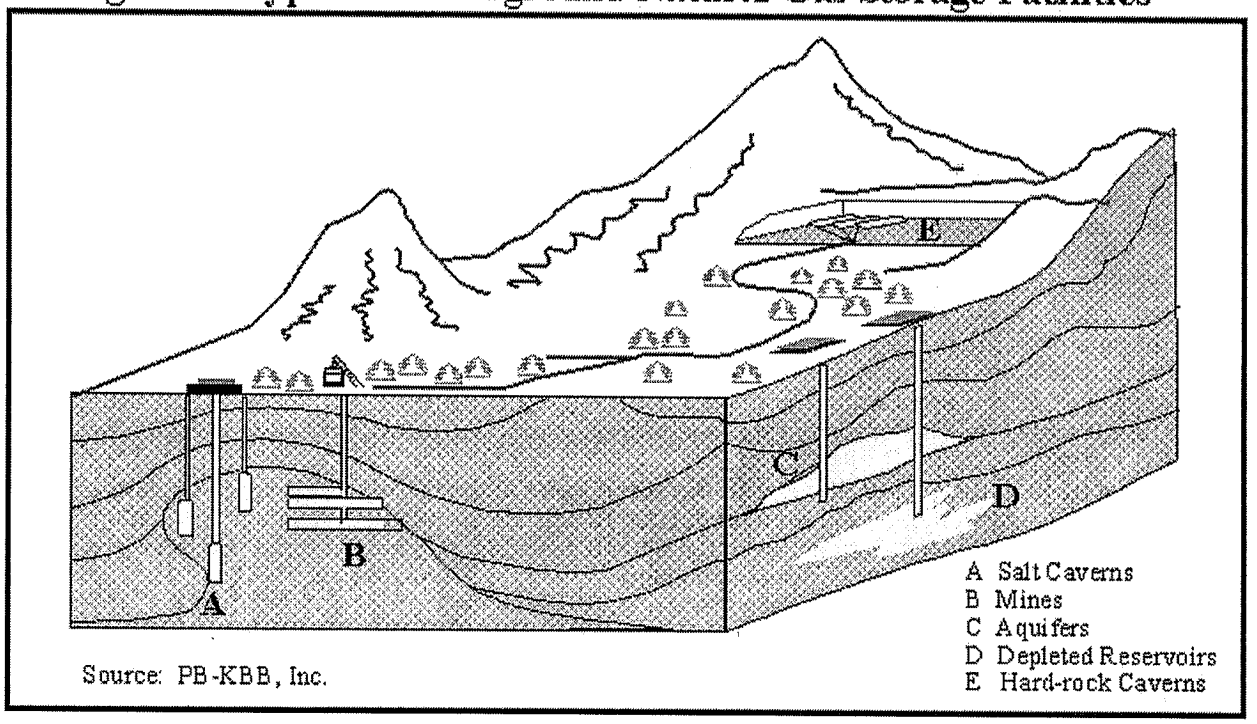
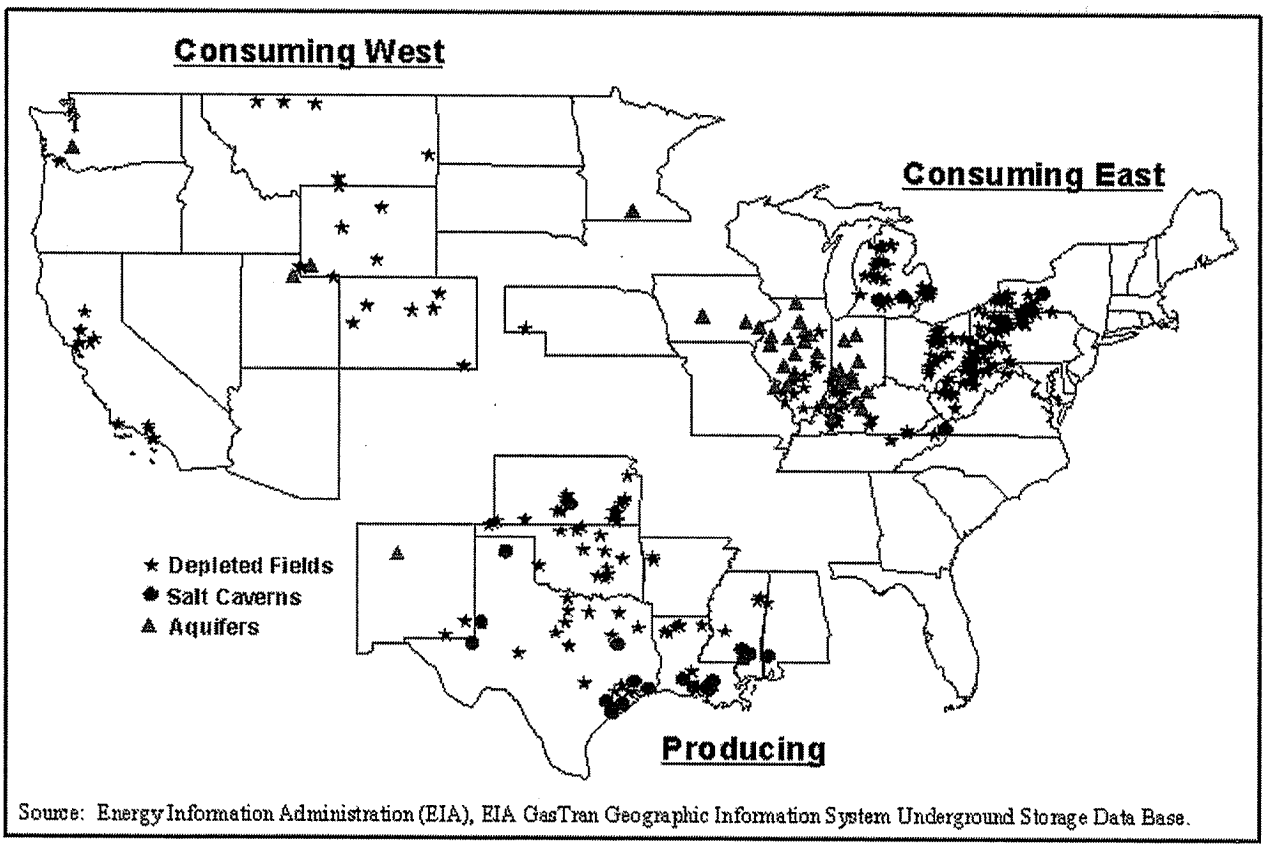


Figure 2. Underground Natural Gas Storage Facilities in the Lower 48 States



Owners and Operators of Storage

The principal owners/operators of underground storage facilities are (1) interstate pipeline companies, (2) intrastate pipeline companies, (3) local distribution companies (LDCs), and (4) independent storage service

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providers. There are about 120 entities that currently operate the nearly 400 active underground storage facilities in the lower 48 states. In turn, these operating entities are owned by, or are subsidiaries of, fewer than 80 corporate entities. If a storage facility serves interstate commerce, it is subject to the jurisdiction of the Federal Energy Regulatory Commission (FERC); otherwise, it is state-regulated.

Owners/operators of storage facilities are not necessarily the owners of the gas held in storage. Indeed, most working gas held in storage facilities is held under lease with shippers, LDCs, or end users who own the gas. On the other hand, the type of entity that owns/operates the facility will determine to some extent how that facility's storage capacity is utilized.

For example, **interstate pipeline companies** rely heavily on underground storage to facilitate load balancing and system supply management on their long haul transmission lines. FERC regulations allow interstate pipeline companies to reserve some portion of their storage capacity for this purpose. Nonetheless, the bulk of their storage capacity is leased to other industry participants. **Intrastate pipeline companie**s also use storage capacity and inventories for similar purposes, in addition to serving end-user customers.

In the past, **LDCs** have generally used underground storage exclusively to serve customer needs directly. However, some LDCs have both recognized and been able to pursue the opportunities for additional revenues available with the deregulation of underground storage (see **"Open Access" to Storage Capacity**, below). These LDCs, which tend to be the ones with large distribution systems and a number of storage facilities, have been able to manage their facilities such that they can lease a portion of their storage capacity to third parties (often marketers) while still fully meeting their obligations to serve core customers. (Of course, these arrangements are subject to approval by the LDCs' respective state-level regulators.)

The deregulation of underground storage has combined with other factors such as the growth in the number of gas-fired electricity generating plants to place a premium on high-deliverability storage facilities. Many salt formation and other high deliverability sites, both existing and under development, have been initiated by **independent storage service providers**, often smaller, more nimble and focused companies started by entrepreneurs who recognized the potential profitability for these specialized facilities. They are utilized almost exclusively to serve third-party customers who can most benefit from the characteristics of these facilities, such as marketers and electricity generators.

Storage Measures

There are several volumetric measures used to quantify the fundamental characteristics of an underground storage facility and the gas contained within it. For some of these measures, it is important to distinguish between the characteristic of a facility such as its *capacity*, and the characteristic of the gas within the facility such as the actual *inventory level*. These measures are as follows:

Total gas storage capacity is the maximum volume of gas that can be stored in an underground storage facility in accordance with its design, which comprises the physical characteristics of the reservoir, installed equipment, and operating procedures particular to the site.

Total gas in storage is the volume of storage in the underground facility at a particular time.

Base gas (or **cushion gas**) is the volume of gas intended as permanent inventory in a storage reservoir to maintain adequate pressure and deliverability rates throughout the withdrawal season.

Working gas capacity refers to total gas storage capacity minus base gas.

Working gas is the volume of gas in the reservoir above the level of base gas. Working gas is available to the marketplace.

Deliverability is most often expressed as a measure of the amount of gas that can be delivered (withdrawn) from a storage facility on a daily basis. Also referred to as the deliverability rate, withdrawal rate, or withdrawal capacity, deliverability is usually expressed in terms of millions of cubic feet per day (MMcf/day). Occasionally, deliverability is expressed in terms of equivalent heat content of the gas withdrawn from the facility, most often in dekatherms per day (a therm is 100,000 Btu, which is roughly equivalent to 100 cubic feet of natural gas; a dekatherm is the equivalent of about one thousand cubic feet (Mcf)). The deliverability of a given storage facility is variable, and depends on factors such as the amount of gas in the reservoir at any particular time, the pressure within the reservoir, compression capability available to the reservoir, the configuration and capabilities of surface facilities associated with the reservoir, and other factors. In general, a facility's deliverability rate varies directly with the total amount of gas in the reservoir: it is at its highest

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when the reservoir is most full and declines as working gas is withdrawn.

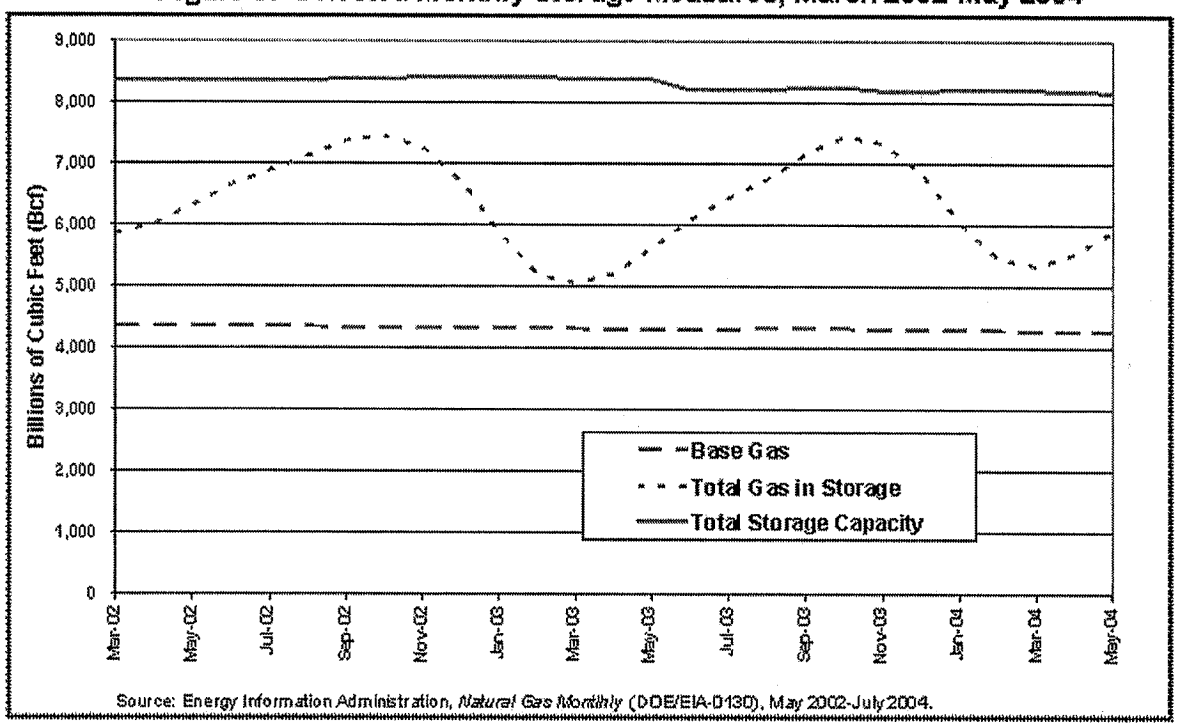
Injection capacity (or rate) is the complement of the deliverability or withdrawal rate-it is the amount of gas that can be injected into a storage facility on a daily basis. As with deliverability, injection capacity is usually expressed in MMcf/day, although dekatherms/day is also used. The injection capacity of a storage facility is also variable, and is dependent on factors comparable to those that determine deliverability. By contrast, the injection rate varies inversely with the total amount of gas in storage: it is at its lowest when the reservoir is most full and increases as working gas is withdrawn.

None of these measures for any given storage facility are fixed or absolute. The rates of injection and withdrawal change as the level of gas varies within the facility. Additionally, in practice a storage facility may be able to exceed certificated total capacity in some circumstances by exceeding certain operational parameters. But the facility's total capacity can also vary, temporarily or permanently, as its defining parameters vary. Further, the measures of base gas, working gas, and working gas capacity can also change from time to time. This occurs, for example, when a storage operator reclassifies one category of gas to the other, often as a result of new wells, equipment, or operating practices (such a change generally requires approval by the appropriate regulatory authority). Also, storage facilities can withdraw base gas for supply to market during times of particularly heavy demand, although by definition, this gas is not intended for that use.

Underground Natural Gas Storage Data

The Energy Information Administration (EIA) collects a variety of data on the storage measures discussed above, and publishes selected data on a weekly, monthly, and annual basis. For example, EIA uses Form EIA-912, *Weekly Natural Gas Storage Report*, to collect data on end-of-week working gas in storage at the company and regional level from a sample of all underground natural gas storage operators. The sample is drawn from the respondents to the EIA-191, *Monthly Underground Gas Storage Report*, which, among other things, collects data on total capacity, base gas, working gas, injections, and withdrawals, by reservoir and storage facility, from all underground natural gas storage operators. Data from the EIA-912 survey are tabulated and published at regional (see Figure 2 for depiction of regions) and national levels on a weekly basis. Data derived from the EIA-191 survey are published on a monthly basis in the *Natural Gas Monthly*. These data include tabulations of base gas, total inventories, total storage capacity, injections, and withdrawals at state and regional levels. Figure 3 below depicts some basic storage statistics compiled by EIA.

Figure 3. Selected Monthly Storage Measures, March 2002-May 2004



Source: Energy Information Administration, *Natural Gas Monthly* (DOE/EIA-0130), May 2002-July 2004.

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Relative Measures of Gas Inventories

For some analytic purposes, there is interest in relative inventory status, expressed in terms of how nearly "full" are the nation's storage facilities. There are different approaches to measure "percent full." The remainder of this section discusses three ways of computing an estimate of how full are the nation's storage facilities, resulting in three numbers, each of which has a different meaning or interpretation.

1. Total Gas in Storage Relative to Capacity
   This measure of full is obtained by dividing the total amount of gas in the facility by its total gas storage capacity. This measure is not often used, because by combining the values for base and working gas, this statistic does not provide information about the potential gas available to the market.

2. Working Gas Relative to Working Gas Capacity Percent full for a given region based on working gas capacity is obtained by dividing the sum of estimates of working gas volumes in storage by the total working gas capacity of the relevant storage facilities. This measure is based on the physical capabilities of storage facilities to hold working gas. Although working gas capacity is not measured directly, a reasonable estimate is total capacity minus base gas for the facility(ies). Hence, working gas capacity will change as its components change.

3. Working Gas Relative to Historical Maximums An approach popularized by the American Gas Association (AGA) was to estimate storage "percent full" by comparing current inventory to the maximum amount of gas held in storage during a given time period. The regional historical maximum used by AGA for its weekly storage report (no longer published) was the sum of the largest volumes held in storage for each facility in a region at any time during 1992-March 2000. The total U.S. historical maximum was the sum of the three regional numbers. It is important to note that the respective historical maximum volumes for storage facilities did not all necessarily occur during the same week, or even the same year. Thus, AGA's regional and total U.S. historical maximums were *non-coincident* peak volumes. AGA's U.S. historical maximum volume determined this way was 3,294 Bcf. This historical maximum volume is virtually certain to be less than the design maximum. In the future, working gas in storage could exceed the historical maximum volume from the period 1992-2000.

The three measures vary with the level of working gas in storage. These relationships may be illustrated in the following scenarios, which use actual EIA storage data from the recent past. The scenarios represent end-of-month storage data for the traditional start and end of a heating season, and were chosen so as to accentuate the effect of working gas levels (i.e., highest to begin the heating season, lowest at the end) on the different measures of percent full. All figures are in billion cubic feet (Bcf):

Scenario	Total Capacity	Base Gas	Working Gas	Working Gas Capacity (Total Capacity minus Base Gas)	Total Gas in Storage (Base Gas plus Working Gas)
A: as of October 31, 2003	8,265	4,327	3,130	3,938	7,457
B: as of March 31, 2004	8,219	4,283	1,058	3,936	5,341

Sources: **October 31, 2003:** Energy Information Administration (EIA), *Natural Gas Monthly* (DOE/EIA-0130), December 2003, Table 14. **March 31, 2004:** *Natural Gas Monthly* (DOE/EIA-0130), May 2004, Table 14.

The various estimates of storage "percent full" for the two scenarios, according to the computation methods described above, are as follows:

	Method 1	Method 2	Method 3
Percent Full Computed as:	Total Gas in Storage ÷ Total Capacity	Working Gas ÷ Working Gas Capacity	Working Gas ÷ AGA Historical Maximum (3,294 Bcf)
Scenario A	90%	79%	95%
Scenario B	65%	27%	32%

While the amount of working gas in storage in a given scenario is fixed, the "percent full" measures vary significantly. For Example, in Scenario A, the Method 3 calculation indicates that working gas stocks are only 5 percent below AGA's historical non-coincident maximum, while the 79 percent from Method 2 indicates that 21 percent of working gas capacity is available if needed. On the other hand, Method 1 shows that only 10 percent of total capacity is available. (In this scenario, Methods 1 and 3 yield percentages that are close in

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value, but this result is conditional on the relatively high level of working gas, as one can see from the results in Scenario B for these two methods.) In Scenario B, Method 2 indicates that gas equivalent to only 27 percent of available working gas capacity remains in storage, while Method 1 shows that storage facilities as a whole are over half "full." Yet the same amount of empty capacity is available for the two methods (Total Capacity minus the sum of Base and Working Gas volumes).

It is important to note that a given measure for percent full for the total U.S., regardless of computation method, may have limited usefulness in assessing the adequacy of inventories going into a heating season. This is true because most storage facilities are located near, and are designed for the most part to serve, local market areas. Storage facilities have therefore tended to cluster in a number of areas (Figure 2). There are impediments to sharing inventories between or among regions. Working gas stocks in the Producing Region can be directed to either of the other two regions, but sharing between the two Consuming regions is limited at best. Thus, inventory status is more realistically assessed on a regional basis.

Shifts in Storage Use Impact Inventories and Storage Activities

The natural gas industry has experienced significant changes in inventory management practices and storage utilization over the past decade or more as a result of market restructuring. During that time, the operational practices of many U.S. underground storage sites became much more market oriented. Seasonal factors are less important now in the use of underground storage inventories. Many storage gas owners (marketers and other third parties) are attempting to synchronize their buying and selling activities more effectively with market needs while minimizing their business costs.

"Open Access" to Storage Capacity

Prior to 1994, interstate pipeline companies, which are subject to the jurisdiction of the FERC, owned all of the gas flowing through their systems, including gas held in storage, and had exclusive control over the capacity and utilization of their storage facilities. With the implementation of FERC Order 636, jurisdictional pipeline companies were required to operate their storage facilities on an open-access basis. That is, the major portion of working gas capacity (beyond what may be reserved by the pipeline/operator to maintain system integrity and for load balancing) at each site must be made available for lease to third parties on a nondiscriminatory basis.

Today, in addition to the interstate storage sites, many storage facilities owned/operated by large LDCs, intrastate pipelines, and independent operators also operate on an open-access basis, especially those sites affiliated with natural gas market centers. Open access has allowed storage to be used other than simply as backup inventory or a supplemental seasonal supply source. For example, marketers and other third parties may move gas into and out of storage (subject to the operational capabilities of the site or the tariff limitations) as changes in price levels present arbitrage opportunities. Further, storage is used in conjunction with various financial instruments (e.g. futures and options contracts, swaps, etc.) in ever more creative and complex ways in an attempt to profit from market conditions. Reflecting this change in focus within the natural gas storage industry during recent years, the largest growth in daily withdrawal capability has been from high deliverability storage sites, which include salt cavern storage reservoirs as well as some depleted oil or gas reservoirs. These facilities can cycle their inventories-i.e., completely withdraw and refill working gas (or vice versa)-more rapidly than can other types of storage, a feature more suitable to the flexible operational needs of today's storage users. Since 1993, daily withdrawal capability from high deliverability salt cavern storage facilities has grown significantly. Nevertheless, conventional storage facilities continue to be very important to the industry as well.

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