TESTIMONY OF BRIAN J. MADDEN
IN OPPOSITION TO HOUSE BILL NO. 2132
TO THE KANSAS COMMITTEE ON ENERGY AND ENVIRONMENT

My name is Brian Madden, and I am a licensed Kansas attorney with the law firm of Wagstaff & Cartmell, LLP. I represent a Pratt, Kansas independent oil company by the name of Nash Oil & Gas, Inc., which has been involved in litigation with Northern Natural Gas Co. regarding title to gas north of the Cunningham storage field since 2004. I also represent Peoples Bank of Pratt, Kansas, which holds interests in Kansas gas leases.

Northern's proposed amendments to K.S.A. 55-1210 would allow Northern to go anywhere in the State of Kansas and claim that natural gas belongs to Northern, so long as Northern can prove that the gas "looks like" their storage gas. Such a threat of litigation by Northern will chill gas exploration in the State, which will have a direct and negative impact upon Kansas tax revenue generated from gas production.

A brief history of Northern litigation involving its Cunningham storage field is as follows:

2002: Northern sued Trans-Pacific Oil Corp., accusing Trans-Pacific of stealing gas from north of Northern's Cunningham storage field. Northern lost this case. 2005 WL 2334688 (D. Kan. 2005).

2004: Northern sued Nash Oil & Gas, accusing Nash of stealing gas from north of Northern's Cunningham storage field. Northern lost this case. 506 F.Supp.2d 520.

2008: Northern again sued Trans-Pacific in federal court regarding gas north of Northern's Cunningham storage field. This case was settled. 08-1365-WEB-DWB.

December 2008: Northern sued L.D. Drilling, Inc. and Nash Oil & Gas in federal court, alleging that L.D. Drilling and Nash Oil & Gas were producing Northern storage gas from wells located miles north of the Cunningham storage field. 08-1400-MLB-DWB and 08-1405-MLB-DWB. These cases are ongoing, and currently stayed.

December 2009: Northern sued ONEOK and Lumen in Pratt County, Kansas state court. These companies purchase gas from L.D. Drilling and Nash. Northern alleged that ONEOK and Lumen were converting Northern's storage gas by purchasing it from L.D. Drilling and Nash. ONEOK and Lumen brought Nash and L.D. Drilling into the case as third-parties. The Pratt County District Court issued summary judgment rulings against Northern, holding that Northern lost title to any gas that migrated further than one mile from its storage field, and the Kansas Supreme Court affirmed. 296 P.3d 1106 (Kan. 2013).

July 2010: Northern filed a condemnation action in federal court against producers and landowners as far as eight miles north of the Cunningham storage field. 10-1232-MLB-DWB. The case was tried for six weeks to a Commission in 2014. The Commission

has issued findings, but the federal court has not ruled on the Commission's findings as of this date.

As one can see from the above abbreviated history, Northern is litigious. The proposed legislation will only make Northern more litigious against Kansas landowners, who cannot afford to engage in multi-year litigation with Northern.

Northern stores gas gathered from across the country in its Cunningham storage field. Because such gas comes from various locations in the country, the gas has differing chemical characteristics. Despite the fact that the Cunningham gas is a mixture of different gases from across the country, Northern employs experts who claim to be able to "fingerprint" the Cunningham storage gas and contrast it from native Kansas gas. As a practical matter, expert litigation regarding the chemical fingerprint of gas will cost Kansas landowners millions of dollars when Northern asserts that the chemical fingerprint of such gas resembles its storage gas. Such a real litigation threat makes the risk of drilling gas wells anywhere in the vicinity of a storage field economically unfeasible.

In the recent federal six-week condemnation trial, Northern's experts conceded that the area to the north of the Cunningham storage field is and always has been in pressure communication through a two-mile wide breach in the Cunningham storage field. (Transcript, attached hereto as Exhibit A, at pp. 587, 665). Northern represented to FERC that 17-18 BCF escaped through this breach in the early fill-up of the Cunningham field. (Exhibit B at pp. 2-3). The proposed legislation will allow Northern to bring suit against landowners in the vicinity of the Cunningham field to attempt to recover the 17-18 BCF Northern lost.

Northern experts opined at the federal condemnation trial that its storage gas mixed with native gas in areas north of its storage field. For example, Northern's chemical fingerprint expert Boehm opined that the Nash Holland 1-26 well produced 11% to 23% native gas over time as the native gas mixed with storage gas that migrated from the Cunningham storage field. (Exhibit C). Under the proposed legislation, how would the landowner or producer with native gas under its land or lease be treated? Would Northern have title to all the gas (whether storage or native) simply because Northern storage gas migrated and mixed with the native gas? The proposed legislation does not answer these questions. Further, it would be cost prohibitive for a landowner to litigate the issue of native vs. storage gas in such a situation, which would create a windfall to Northern for the native gas in place under the land.

The Cunningham storage field breach is not resolved. Northern's expert Shaner testified at the federal condemnation hearing that despite Northern's water injection program north of the Cunningham field, the field still leaks storage gas. (Exhibit A at pp. 2871-72). As Mr. Shaner testified, the Cunningham field "still leaks, it does not hold gas ...." The proposed legislation does nothing to encourage Northern to fix this dangerous situation – in fact the proposed legislation encourages Northern to do nothing to remedy the situation.

The current legislation would keep any landowners and producers from exploring for gas anywhere near Northern's field. Indeed, Northern is claiming gas in the federal condemnation case as far away as eight miles from its storage field. The threat of litigation from Northern

would simply be too steep to justify the expense of exploration. The proposed legislation would allow Northern to store its gas in underground formations that Northern does not own or control and that FERC has not authorized Northern to use. That is the practical effect of Northern's proposed changes to K.S.A. 55-1210, and it amounts to an unconstitutional taking of property without just compensation to the landowner.

Thank you for your time and attention to this matter.

Brian J. Madden KS 15897

to include that acreage. And you talked about pressures. Is it your position that the Section 28 wells are in communication with the Cunningham Storage Field?

A. They are in pressure communication, yes.

Q. And is gas flowing from the storage field over to the Section 28 area?

A. That's a possibility, but we don't have testing to verify that.

Q. Okay. And it's fair to say none of your maps draw any conclusions in that regard, correct?

A. That's correct.

Q. And you have offered no opinion in this case that gas is migrating over to the Section 28 wells?

A. That's correct.

Q. Okay. At one point, Mr. Coldiron asked you a question about the non-sealing fault. And I'd like to talk to you about that non-sealing fault for just a moment. You believe the non-sealing fault is essentially two miles wide or thereabouts, correct?

A. We have evidence to verify it's at least two miles wide, yes.

Q. Okay. When you say evidence, is that the

the gas is located in the Viola formation?

A. There isn't any noticeable gas in the Viola. If there is any, it may be right at the top section. This is the area that was perforated, which includes that little bit of the that top section. And we do have minor volume gas -- no volume, it's a minor amount of gas and some slight cycling with the field, the storage field.

Q. So you're telling us your analysis of this log shows no gas other than at the very top? Is that what you're telling us?

A. Yes. And it's not much at the top, I mean, it's not producible gas.

Q. You would agree with me, Mr. Cook, that all of the Extension Area is and has been in pressure communication with the Cunningham Storage Field through the non-sealing fault?

A. That's correct.

Q. And you participated in a couple of injunction hearings wherein Northern sought to first shut-in the wells in the 2010 Extension Area, and then Northern sought permission to perform water injection, right?

A. To access the wells, yes.

Q. Uh-huh, right. And the wells were all

storage. The value of those underground storage rights is about nil for an individual owner.

Q. Okay.

A. An individual owner doesn't have the ability to store under their property. You own a property of 160 acres, you've got all the rights from the center of the earth into the atmosphere. But do you have the ability on your own to store natural gas and recover natural gas? No. Not until you have assembled with a lot of other properties, and if you have the proper formations and physical abilities and legal abilities, that's a business operation and the landowner doesn't have that capability.

Q. And didn't we already establish that these underground formations are geologically in formation?

A. We only established that they are in communication with the Cunningham Storage Field. They are not suitable for storage, from the testimony I've heard. They leak. They don't hold the gas. They have to be -- I mean, Northern has to inject water just to get this back to serve as storage for their storage field, and it's a long-term plan for Northern to even get it to where it

will serve as buffer. As it is, March 30th, 2012, it leaks, it doesn't hold gas, it's not suitable for anything, and the landowner doesn't have the ability -- individual landowners don't have the ability to reap any benefit from that.

Q. But as an assemblage of formations, those properties have held storage gas, true, as an assemblage?

A. I think the testimony is they haven't been holding the storage gas. It has been moving through the area.

Q. The testimony you've just given about, apparently about the storage field and the Extension Area leaking, is that significant in your opinion of value in this case?

A. It goes to the highest and best use of the subject properties. The subject properties do not have the physical possibility to serve as storage or buffer as of the Date of Taking.

Q. And as a matter of fact, in your highest and best use analysis, every single property in this Extension Area you said was agricultural alone, correct?

A. Or mineral, gas production, oil and gas.

Q. Right. Some of them you said had

125 FERC ¶ 61,127
UNITED STATES OF AMERICA
FEDERAL ENERGY REGULATORY COMMISSION

Before Commissioners: Joseph T. Kelliher, Chairman;
Suedeen G. Kelly, Marc Spitzer,
Philip D. Moeller, and Jon Wellinghoff.

Northern Natural Gas Company Docket No. CP07-107-000

ORDER ISSUING CERTIFICATE

(Issued October 30, 2008)

1. On March 16, 2007, Northern Natural Gas Company (Northern) filed an application pursuant to section 7 of the Natural Gas Act (NGA) for a certificate of public convenience and necessity to expand the certificated boundary of its Cunningham Storage Field (Cunningham). For the reasons discussed below, we will grant Northern certificate authority for a portion of the proposed expansion area.

I. Background and Proposal

2. Northern was granted certificate authorization in 1978 to develop and operate the Cunningham storage facility in Pratt and Kingman Counties, Kansas.[1] Currently, Cunningham encompasses approximately 26,240 acres in the Viola formation and the underlying Simpson formation. The storage facility has 81 wells, including 52 injection/withdrawal wells, 28 observation wells, and a water disposal well; pipelines interconnecting the wells; and compression facilities. In 1978, when Northern was originally authorized to develop the Cunningham Storage Field, the available information suggested that the Viola formation was an isolated reservoir. In 1996, after information came to light showing that the Viola formation was in communication with the underlying Simpson formation, the Commission granted Northern certificate authority to also use the Simpson formation for gas storage.[2]

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[1] The original 1978 certificate authorizing construction of the Cunningham Storage Field was granted by an unpublished letter order. *See Northern Natural Gas Company*, 77 FERC ¶ 61,069, at 61,297 (1996).

[2] *Id.* at 61,298. *See also* Application, Exhibit Z at 2.

of Northern's migrated storage gas, but that some native natural gas also may be present in those wells.[19]

23. The geologic and engineering data presented by Northern addresses only part of the proposed expansion area, and provides no evidence for the rest of this area. Thus, the Commission is authorizing Northern to expand the boundary of its storage field into only part of the approximately 4,800 acres proposed in its application.

VI. Gas Migration Mechanisms

24. A basic understanding of the geology and the theoretical gas migration pathway in Cunningham's currently certificated boundary and proposed expansion area is essential in evaluating the gas migration issues presented in this proceeding. Cunningham's storage reservoir, a former gas production reservoir, is comprised of the Viola formation and the hydraulically connected and underlying Simpson formation. The Kinderhook Shale serves as the cap rock[20] that overlies the Viola formation.

25. Northern contends that natural gas migrates laterally to the north through a non-sealing fault. Northern states that the reservoir pressure in the Cunningham field was reduced as natural gas was produced, and a higher pressure aquifer that surrounds Cunningham enabled groundwater to flow to the lower pressure Cunningham storage reservoir. Northern also states that native hydrocarbons located north of the certificated boundary in the Park lease structure were pulled by fluid expansion and pressure depletion into Cunningham. Northern states that the pressure decline created permeable gas-saturated pathways to the north of the fault.

26. Northern has presented evidence demonstrating that when storage injections began into Cunningham around 1978 and storage reservoir pressures increased, the result was gas movement out of the Cunningham storage reservoir via the non-sealing fault. Northern states that the migrating storage gas created highly permeable gas-saturated pathways until the field stabilized around 1984 and

[19] The Park A-1 well and the Park 1 well are on leases occupying 320 out of the 4,800 acres included in Northern's proposed extension area.

[20] A cap rock is a relatively impermeable rock that forms a barrier or seal around reservoir rock so that fluids cannot migrate beyond the reservoir.

remained stabilized until around 1996.[21] Northern estimates that approximately 17-18 Bcf of natural gas migrated prior to stabilization. Northern states that production from the Park leases began in 1989 and that Nash Oil & Gas, Inc. (Nash) began producing from nearby wells around 1995.[22] In all, Northern estimates that approximately 6 Bcf of storage gas migrated from Cunningham between the years 1995-1996 and 2006-2007.[23]

27. Trans Pac contends that its experts who evaluated Northern's theoretical gas migration determined that a pathway does not exist. Trans Pac submitted, as Attachment C of its protest, a report by Michael Crouch, Consulting Geophysicist, who stated that the "Park gas unit is on the downthrow[24] side of the fault and appears to be geophysical[ly] isolated from the gas storage unit."

28. Trans Pac also provided, as Attachment D of its protest, an analysis by Lee Keeling and Associates, Inc. (LKA) of reports prepared for Northern regarding the litigation between Trans Pac and Northern, as well as an independent analysis by LKA of the same issue.[25] The LKA report states in its review of expert analysis performed on behalf of Northern by Netherland Sewell & Associates, Inc. (NSAI), that the

> report also indicates that it might be possible for gas to migrate from the facility in what is termed a 'Simpson-to-Viola pathway.' This pathway would occur where the Simpson zone in the storage reservoir on the

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[21] Staff analyzed Northern's Exhibit Z that provided pressure vs. inventory curves from the years 1980 to 1998 and found that this information supports Northern's assertion of gas loss and stabilization.

[22] The Nash wells are located approximately four miles from the Northern Boundary of the Cunningham Storage Field, but outside and to the north of Northern's proposed expansion area.

[23] Exhibit 57 of Exhibit Z indicates an approximate gas loss of 6 Bcf.

[24] Downthrow is that side of a fault that has moved downward relative to the other side.

[25] Analysis Regarding Park Field Production of Native Hydrocarbons and Technical Review of NSAI Geologic and Field Studies for Northern Natural Gas v. Trans Pacific Oil Corporation, et. al. Case No. 02-1418-JTM. (March 17, 2004).

Table 1. Percent native gas composition in third-party gas wells

Standardized Well ID	Samples Near Key Dates of June 2, 2010 and March 30, 2012	Laboratory, Analyzed By	Helium (%)	Ratio C1/C2+	Percent Native Gas	
					Value	95% Conf. Limits
PARK 1	12/28/07	Isotech Laboratories, Inc.	0.0940	14.9007	0%	(overlaps with the
	12/28/07	Isotech Laboratories, Inc.	0.0942	16.2233	0%	storage gas samples)
PARK A1	12/28/07	Isotech Laboratories, Inc.	0.0735	17.4283	0%	(overlaps with the
	12/28/07	Isotech Laboratories, Inc.	0.0738	18.4837	0%	storage gas samples)
CRC 1	06/22/09	Isotech Laboratories, Inc.	0.0556	18.0861	0%	(overlaps with the
	06/22/09	Isotech Laboratories, Inc.	0.0921	18.6297	0%	storage gas samples)
	11/18/09	Isotech Laboratories, Inc.	0.0418	18.4428	0%	
	11/18/09	Isotech Laboratories, Inc.	0.0420	18.3340	0%	
CRC 2	05/29/09	Isotech Laboratories, Inc.	0.0430	18.3164	0%	(overlaps with the
	05/29/09	Isotech Laboratories, Inc.	0.0431	18.4694	0%	storage gas samples)
	06/22/09	Isotech Laboratories, Inc.	0.0448	18.4104	0%	
	06/22/09	Isotech Laboratories, Inc.	0.0478	18.5523	0%	
	11/18/09	Isotech Laboratories, Inc.	0.0358	19.0916	0%	
	11/18/09	Isotech Laboratories, Inc.	0.0361	18.8903	0%	
TRINKLE 1	05/29/09	Isotech Laboratories, Inc.	0.0552	18.0073	0%	(overlaps with the
	05/29/09	Isotech Laboratories, Inc.	0.0545	17.6496	0%	storage gas samples)
	06/22/09	Isotech Laboratories, Inc.	0.0612	18.0995	0%	
	06/22/09	Isotech Laboratories, Inc.	0.0602	18.1130	0%	
	11/18/09	Isotech Laboratories, Inc.	0.0375	18.2950	0%	
	11/18/09	Isotech Laboratories, Inc.	0.0376	18.7367	0%	
STAAB 1	05/29/09	Isotech Laboratories, Inc.	0.1510	13.9146	0%	(overlaps with the
	05/29/09	Isotech Laboratories, Inc.	0.1510	14.3765	0%	storage gas samples)
	06/22/09	Isotech Laboratories, Inc.	0.0503	18.3278	0%	
	06/22/09	Isotech Laboratories, Inc.	0.0510	18.2200	0%	
	11/18/09	Isotech Laboratories, Inc.	0.0421	17.8243	0%	
	11/18/09	Isotech Laboratories, Inc.	0.0425	18.1624	0%	
MARTIN 1	09/08/10	Isotech Laboratories, Inc.	0.0494	17.4950	0%	(overlaps with the
	09/08/10	Isotech Laboratories, Inc.	0.0492	17.4099	0%	storage gas samples)
	02/15/11	Isotech Laboratories, Inc.	0.0497	20.7119	0%	
	02/15/11	Isotech Laboratories, Inc.	0.0484	19.8759	0%	
BROWN A1	09/08/10	Isotech Laboratories, Inc.	0.0640	16.5857	0%	(overlaps with the
	09/08/10	Isotech Laboratories, Inc.	0.0628	16.5804	0%	storage gas samples)
	02/15/11	Isotech Laboratories, Inc.	0.0496	21.2438	0%	
	02/15/11	Isotech Laboratories, Inc.	0.0491	20.9068	0%	
MILTON 1	09/08/10	Isotech Laboratories, Inc.	0.0659	15.6412	0%	(overlaps with the
	09/08/10	Isotech Laboratories, Inc.	0.0656	15.2960	0%	storage gas samples)
	02/15/11	Isotech Laboratories, Inc.	0.0608	16.1430	0%	
	02/15/11	Isotech Laboratories, Inc.	0.0608	15.9193	0%	
MEZGER 2	09/08/10	Isotech Laboratories, Inc.	0.0575	17.1198	0%	storage gas samples)
	09/08/10	Isotech Laboratories, Inc.	0.0570	16.9087	0%	
	02/15/11	Isotech Laboratories, Inc.	0.0455	21.6495	0%	
	02/15/11	Isotech Laboratories, Inc.	0.0462	21.6778	0%	
HOLLAND 2-26	11/29/12	Isotech Laboratories, Inc.	0.0538	19.8532	0%	(overlaps with the
	11/29/12	Isotech Laboratories, Inc.	0.0552	19.6870	0%	storage gas samples)
HOLLAND 1-26	08/30/98	Thurmond-McGlothlin Inc.	0.1724	12.7275	11.5%	9.8% - 13.2%
	02/23/04	Thurmond-McGlothlin, Inc.	0.1990	13.5789	6.7%	5.0% - 8.4%
	11/18/09	Isotech Laboratories, Inc.	0.1610	11.1542	23.4%	21.6% - 25.2%
	11/18/09	Isotech Laboratories, Inc.	0.1610	11.1888	23.1%	21.4% - 24.9%
	06/23/10	J-W Measurement Company	0.1360	16.6655	0%	(overlaps with the
	06/23/10	ONEOK Partners	0.1360	16.6679	0%	storage gas samples)
	08/16/12	Measurement Solutions, Inc.	0.0607	18.0850	0%	
STANTON 1	09/08/10	Isotech Laboratories, Inc.	0.0540	17.1570	0%	(overlaps with the
	09/08/10	Isotech Laboratories, Inc.	0.0533	17.4681	0%	storage gas samples)
	02/15/11	Isotech Laboratories, Inc.	0.0485	20.0158	0%	
	02/15/11	Isotech Laboratories, Inc.	0.0485	19.8040	0%	
MEZGER 1	09/08/10	Isotech Laboratories, Inc.	0.0617	16.9594	0%	(overlaps with the
	09/08/10	Isotech Laboratories, Inc.	0.0607	17.1012	0%	storage gas samples)
	02/15/11	Isotech Laboratories, Inc.	0.0518	18.8195	0%	
	02/15/11	Isotech Laboratories, Inc.	0.0516	18.9970	0%	

EXHIBIT
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