

RECENT DEVELOPMENT

TEXAS WATER USE, MANDATORY FLUID COMPONENT DISCLOSURES, AND STATE REGULATIONS ON HYDRAULIC FRACTURING

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The 2010 BP Macondo Blowout reignited public debate about the current federal environmental regulatory scheme and its effectiveness in preventing man-made ecological disasters. Environmental groups quickly spoke out and vehemently criticized the entire energy industry for the negligence of an individual operator. The proliferation of hydraulic fracturing and horizontal drilling has made oil and gas development available in locations where it previously was not economically or scientifically feasible, such as the Marcellus Shale in the Northeast United States. Although hydraulic fracturing has been around for decades, environmental groups, fueled by media reports and the Academy-award nominated *Gasland*, have made fracking their new “it cause.”

Environmentalists’ most common concerns regard the chemical components of fracking fluids used in drilling, the possibility of drinking water contamination, the availability of drinking water, earthquakes, air pollution from vapors emitting from natural gas storage tanks and methane emissions.¹ Opponents argue that hydraulic fracturing should lose its exemption from the Safe Water Drinking Act and the government should legally require disclosure of the components of fracking fluid.

The success of mineral operations in traditional oil and gas producing states (Texas, Oklahoma, Louisiana, Arkansas) has led to a proliferation of horizontal drilling and hydraulic fracturing across the United States and throughout the world. Available causes of action and regulatory safeguards will perpetually lag

1. Mike Soraghan, *Groundtruthing Academy Award Nominee ‘Gasland’*, N.Y. TIMES, February 24 2011, available at www.nytimes.com/gwire/2011/02/24/24greenwire-groundtruthing-academy-award-nominee-gasland-33229.html.

behind technological innovation and market practices, so it falls upon an individual state's legislative branch to balance the interests of the private and public landowners by continuing to protect individual property and correlative rights while encouraging commercial ingenuity and entrepreneurial innovation.

On December 13, 2011 the Texas Railroad Commission (hereinafter "RRC") adopted a rule requiring companies conducting hydraulic fracturing to publicly disclose the components of fracturing fluids used in well-completion on a national public website.² Compliance with the mandatory chemical constituents disclosure requirement is effective for all initial drilling permits issued after February 1, 2012.³ Operators must upload the water volume and chemical component data to the public website FracFocus.org.⁴ However, "supplier, service companies, or operators are not required to disclose trade secret information unless the Attorney General or court determines that the information is not entitled to trade secret protection."⁵

Industry reaction to the passing of this bill has been overwhelmingly positive. Texas Oil and Gas Association Vice-President in charge of environmental issues stated "The transparency and accessibility achieved by this legislation will reinforce how and why hydraulic fracturing has been safely used for the past 60 years."⁶ Texas and Colorado join Pennsylvania and several other states granting the general public formerly unreleased information regarding the chemicals used in the hydraulic fracturing process.⁷ Individual states rather than federal agencies should regulate the mineral activities of each state in accordance with that state's geology, energy needs, and business environment.

Dynamic economies require increasingly large amounts of energy to meet the nearly insatiable appetite of modern industry and household consumers. By 2030, aggregate global energy demand is expected to increase by 35 percent.⁸ Emerging

2. Karen Boman, *Railroad Commission Adopts Fracturing Fluids Disclosure Rule*, RIGZONE, December 13, 2011, available at http://www.rigzone.com/news/article.asp?a_aid=113347.

3. *Id.*

4. *Id.*

5. *Id.*

6. Tom Fowler, *New Fracturing Disclosure Rules May Take Awhile*, HOUSTON CHRONICLE, June 1, 2011, available at <http://www.chron.com/business/energy/articleNew-Fracturing-disclosure-rules-may-take-awhile-1692713.php>.

7. David B. Spence, *Federalism, Regulatory Lags, and the Political Economy of Energy Production*, Law and Economics Research paper No. 222 at 18 (2012).

8. ExxonMobil, *Outlook for Energy: A View to 2030* (2009), available at http://www.exxonmobil.com/Corporate/files/news_pub_eo_2009.pdf.

markets in the developing world, specifically China, India, Brazil, and Russia, are scrambling to develop energy sources that will further fuel their rapidly growing infrastructures. This increased demand has led to a spike in the worldwide price of energy commodities, especially crude oil.

America's status as a global leader in marketplace innovation and commercial development rests on its ability to provide affordable energy to consumers and industries. Public discontent with offshore drilling after the Deepwater Horizon blowout, recent volatility and geopolitical unrest in foreign oil-producing countries, as well as the widespread implementation of hydraulic fracturing and horizontal drilling have led to an explosion of interest and activity in the exploitation of domestic hydrocarbon resources available from unconventional shale gas reservoirs. The proliferation of horizontal drilling and hydraulic fracturing in the United States has allowed operators to develop and produce previously impermeable shale gas formations and has exponentially raised supply of natural gas available domestically. As of today, nearly a third of natural gas in the United States is produced via the hydraulic fracturing process.⁹

Natural gas is the cleanest-burning, most efficient and environmentally friendly fossil fuel.¹⁰ Natural gas produces less carbon emissions than all forms of crude oil and produces virtually no mercury or particulate byproduct.¹¹ When used as motor vehicle fuel, natural gas emits 30 percent less carbon dioxide than gasoline and 50 percent less carbon dioxide than coal when used for power generation.¹² Natural gas ranks among the most abundant, flexible and efficient sources of energy available in the United States. Energy Information Agency (EIA) estimates project that more than 827 trillion cubic feet (TCF) of recoverable natural gas from shale formations in the United States.¹³ The development of domestic shale gas is capable of transforming America, a traditionally heavy importer of energy, into a natural gas and liquids exporter.

9. Jennifer Dlouhy, Tracy Idell Hamilton, *EPA Ties Fracking to Water Pollution*, SAN ANTONIO EXPRESS-NEWS, December 9, 2011, available at http://www.mysanantonio.com/news/local_news/article/EPA-ties-fracking-to-water-pollution-2390112.php.

10. Matthew E. Mantell, *Deep Shale Natural Gas: Abundant Affordable and Surprisingly Water Efficient*, 2009 GWPC WATER/ENERGY SUSTAINABILITY SYMPOSIUM (2009), available at http://www.energyindepth.org/wp-content/uploads/2009/03/MMantell_GWPC_Water_Energy_Paper_Final.pdf.

11. *Id.*

12. *Id.*

13. U.S. Department of Energy, *Shale Gas: Applying Technology to Solve America's Energy Challenges*, NATIONAL ENERGY TECHNOLOGY LABORATORY (2011), available at www.netl.doe.gov/technologies/oil-gas/.../Shale_Gas_March_2011.pdf.

This new mandatory disclosure requirement rationally differentiates between protecting a business's legitimate proprietary trade secret and components of fluids used by nearly all operators. Almost all companies' fracturing fluids universally consist of (1) a friction reducer, a type of polymer blend used to reduce pressure in the wellbore when pumping the well at high rates; (2) a biocide, to prevent microbiology problems that can become expensive to deal with at later stages; (3) a nonemulsifier used to reduce surface tension; (4) a corrosion inhibitor used to protect the steel casing of the well from surrounding rock and prevent holes in the casing from spilling into the formation; (5) a scale inhibitor; and (6) hydrochloric acid.¹⁴

While many Texas operators already voluntarily disclose the components of their individual fracturing fluids, the RRC's mandated disclosure requirements eases public discontent and increases general awareness to the overall safety of behind the process of shale gas development.¹⁵ Although operators utilized hydraulic fracturing in Texas safely for more than 50 years, this disclosure requirement greatly helps clear up public misconceptions behind the development of shale gas and oil while continuing to protect the intellectual property interests of the operators.¹⁶ It is a simple economic fact that without hydraulic fracturing the recovery of minerals from tight shale gas formations would not be financially feasible. Prudent operators must understand the regulatory system in place to minimize the potential liability associated with mineral production.

It is estimated that recoverable natural gas reservoirs in the United States could supply the entire country for nearly a century.¹⁷ Much of this supply lies in the Northeast in formations such as the Marcellus Shale. This presents new challenges because this formation is located in New York, Pennsylvania, West Virginia, and Ohio—states that are not traditionally known as hotbeds of oil and gas activities. Texas, the global leader in oil and gas development since the first burst of Spindletop more than 100 years ago, must once again lead the world in this new generation of energy development: natural gas from unconventional shale plays through hydraulic fracturing and horizontal drilling. Unlike prior oil booms based on traditional vertical drilling, it has been smaller independents,

14. Frac Focus, *Chemical Use in Hydraulic Fracturing*, CHEMICAL DISCLOSURE REGISTRY, available at <http://fracfocus.org/chemical-use/what-chemicals-are-used>.

15. Boman, *supra* note 2.

16. *Id.*

17. Ben Casselman, *U.S. Gas Fields Go From Bust to Boom*, WALL ST. J., April 30, 2009, available at online.wsj.com/article/SB1241044549891270585.html.

rather than multinational oil companies, on the forefront of development. However, utilizing the techniques developed by Mitchell Energy, many super-majors are scrambling to catch up.¹⁸

Hydraulic fracturing is a well-completion simulation technique utilized in the extraction of oil and natural gas. It was first used commercially in 1947 in Grant County, Kansas.¹⁹ First, the well is drilled and completed with steel casing to prevent fluids from escaping into the natural formation.²⁰ Next, a wireline is pumped down a hole where the operator wants a fracture to occur.²¹ After a plug is set to isolate the desired area for a fracture a cluster of perforations are fired puncturing holes in the steel casing so that the fracturing fluid can enter the formation.²² After this is completed, the wireline is then pulled out, and the well is ready to undergo fracturing.²³ The first stage or “pad stage” is where operators pump fresh water along with a friction reducer to break down the formation and create an area for the propagate to fill.²⁴ After this, sand is pumped at graduated increasing densities.²⁵

After this process is repeated several times, a graduated proppant schedule keeps the cracks open and permits maximum recovery of hydrocarbons.²⁶ This process exacerbates the cracks in the shale by effectively extending the wellbore length throughout the length of the fracture and stimulates the release of hydrocarbons back up the wellhead by creating a greater reservoir contact area.²⁷ This “fracing” fluid consists of more than 99 percent water and sand.²⁸ The remaining .05 percent consists of common household chemical additives and a proponent to keep the cracks open and permit maximum recovery of the hydrocarbons.²⁹ Horizontal drilling allows for mineral recovery from under cities, lakes, parks, and schools, and unlike

18. Brian O'Keefe, *Exxon's Big Bet on Shale Gas*, <http://tech.fortune.cnn.com/2012/04/16/exxon-shale-gas-fracking/> (last visited April 17, 2012).

19. JOHN L. GIDLEY ET AL., *RECENT ADVANCES IN HYDRAULIC FRACTURING 1* (John L. Gidley ed., Society of Petroleum Engineers 1989).

20. *Id.*

21. *Id.*

22. *Id.* at 4.

23. *Id.*

24. *RECENT ADVANCES IN HYDRAULIC FRACTURING*, *supra* note 19.

25. *Id.*

26. GREGORY S. MCRAE & CAROLYN RUPPEL, *THE FUTURE OF NATURAL GAS: AN INTRADISCIPLINARY MIT STUDY*, p. 40 *available at* http://web.mit.edu/mitei/research/studies/documents/natural-gas-2011/NaturalGas_Report.pdf (last visited February 21, 2012).

27. *RECENT ADVANCES IN HYDRAULIC FRACTURING*, *supra* note 19, at 23.

28. MCRAE AND RUPPEL, *The Future of Natural Gas*, *supra* note 26, at 42.

29. *Id.*

traditional vertical drill sites, one pad can easily sustain multiple wells. However, the popularity of this industry method is because it effectively allows an operator to locate the well site in the most advantageous position considering that these formations are often located in places where it is difficult to find enough flat ground to set up the necessary equipment.

Water management and energy production are irrevocably intertwined. Energy is needed to ensure the efficient, consistent, and timely distribution and availability of water, while water is needed to develop and extract hydrocarbons from underground reservoirs.³⁰ Shale gas formations are stingy, naturally tight formations that do not easily give up hydrocarbons due to naturally low permeability. It is only through hydraulic fracturing that the development of natural gas is economically feasible for producers.

Water is used in operations to (1) lubricate the drillbit during horizontal drilling; (2) mix with a proponent and other natural and synthetic fluids; and (3) shoot down the wellbore and into the fractures to further crack the shale.³¹ Flow-back water is usually captured in lined pits and then moved to a reinjection site where it enters deep-water disposal wells.³² A 2004 EPA study on methane extraction concluded that fluids utilized in the hydraulic fracturing process did not pose a threat to human health.³³ Congress then exempted water utilized in hydraulic fracturing from the Clean Water Act based on this study's findings.³⁴ To date, there has not been one case of proven aquifer contamination from hydraulic fracturing in Texas.³⁵ Residents of development areas such as the Eagle Ford, Haynesville and Utica shale formations certainly welcome the economic benefits of shale gas development but do not want this development to come at the expense of drinking water quality.

Nevertheless, a preliminary draft of an EPA report released in December 2011 shows the first recorded link between hydraulic fracturing and water contamination in the United States.³⁶ The EPA states that it has found synthetic chemicals like those associated with oil and gas activities inside deep-water wells in Wyoming.³⁷ However, the EPA and industry alike

30. Mantell, *supra* note 10.

31. Mark McPherson, *Frac Me With This: The Challenges of Obtaining Water for Production*, DALLAS BAR ASSOC. REVIEW OF OIL & GAS LAW, August 26-27, 2010.

32. Spence, *Federalism, Regulatory Lags, and The Political Economy of Energy Production*, *supra* note 7, at 41.

33. McPherson, *supra* note 31, at 2.

34. *Id.*

35. Soraghan, *supra* note 1.

36. Dlouhy, *supra* note 9.

37. *Id.*

strongly emphasize that the preliminary report's findings are limited to Pavillion, Wyoming.³⁸ Unlike other locations throughout the country, fracking is taking place in and beneath drinking water aquifers and water wells.³⁹ The region's geology is so unique in fact that there is a "complex system of folded crust containing at least thirty water-bearing aquifer layers."⁴⁰

Conversely, the Eagle Ford shale in South Texas is located at depths more than 4,000 feet from the surface, and several thousand feet of rock separate the drinkable water aquifer and the shale.⁴¹ Therefore, it is most effective and efficient to allow states to regulate the process and propagate their own disclosure requirements in accordance with the individual geology and geophysics of the formations in the individual state.

Approximately 3.5 million gallons of water are used on an average light sand well. To put this in context, the Dallas-Fort Worth Metroplex consumes four million gallons in six minutes and a standard golf course consumes four million gallons in twenty days.⁴² Water quality and availability are recurrent issues in any shale gas play, but especially so in formations located near populous regions. It is also important to keep in mind that the quantity of drilling operations and subsequently the amount of water utilized is highly sensitive to the market price of natural gas.

In addition several operators, led by Devon Energy, have instituted water-recycling programs so that the water from the fracking operations can be filtered and reused in future fracking operations.⁴³ The RRC regulates the use of water in drilling fluids, and in 2006, it authorized Fountain Quail Water Management to utilize mobile distillation units to recycle flowback water for use in future Devon fracturing operations.⁴⁴ Through this process Devon has been able to successfully recycle several million gallons of water in the Barnett Shale located in the Fort Worth Metropolitan area.⁴⁵ However, recycling the

38. *Id.*

39. *Id.*

40. *Id.*

41. Dlouhy, *supra* note 9.

42. CHESAPEAKE ENERGY, WATER USE IN BARNET DEEP SHALE GAS EXPLORATION 1 (May 2011), available at www.chk.com/Media/BarnettMediaKits/Barnett_Water_Use_Fact_Sheet.pdf.

43. Steven Quinn, *Devon Pushes The Water Recycling Envelope*, <http://www.greeningofoil.com/post/Devon-pushes-the-water-recycling-envelope.aspx> (last visited April 18, 2012).

44. *The Future of Water Recycling*, Basin Oil and Gas Issue 34, January 2011 available at <http://www.fwbog.com/index.php?page=article&article=18> (last visited April 18, 2012).

45. *Id.*

flowback water costs an operator more than double what it costs to reinject the water into a waste disposal well.⁴⁶

Various property owners in Wyoming, Texas, and Pennsylvania have reported health problems coinciding with the commencement of hydraulic fracturing operations in their vicinity.⁴⁷ Even though New York currently imports 95 percent of their natural gas and sits above one the largest shale formations in the country, New York has issued a moratorium on hydraulic fracturing drilling operations until 2011.⁴⁸ Extension of the moratorium is still being debated.⁴⁹ The EPA expects to release a new study regarding the environmental effects of hydraulic fracturing in first half of 2012.⁵⁰ Whether or not illnesses resulted from the nearby shale gas development, in the entire history of hydraulic fracturing there has not been one documented case of water contamination related to fracing operations in Texas, a state with high industry standards and a long history of natural gas development.⁵¹ Despite their opposition, even the most ardent opponents of hydraulic fracturing cannot argue against natural gas being the cleanest burning, lowest-emitting, most environmentally-friendly fossil fuel available.

A 2004 EPA study of hydraulic fracturing concluded that fracing fluids did not pose a threat to human health, underground drinking water, or the environment.⁵² Based on this, the Energy Policy Act of 2005 exempted hydraulic fracturing from the Safe Water Drinking Act.⁵³ Underground injection is defined as the use of injection for natural gas storage, injecting proponents below the surface as a drilling lubricant or as a propping agent in oil and gas exploration and “geothermal production activities.”⁵⁴ The EPA still claims authority over hydraulic fracturing activities involving the use of diesel fuel and states that EPA permits are required if an operator will be

46. *The Future of Water Recycling*, BASIN OIL AND GAS, July 2008.

47. Kate Galbraith, *Resistance to Gas Drilling Rises on Unlikely Soil*, N.Y. TIMES, April 23, 2011, available at www.nytimes.com/2011/04/24/us/24ttnaturalgas.html.

48. Thomas E. Kurth et al., *American Law and Jurisprudence on Fracing*, 47 ROCKY MTN. MIN. L. INST. No. 2, 277, 314 (2010).

49. *Id.*

50. Walter G. Mayfield, *America's Battle With Energy: An Overview of American Energy And Update On Federal And State Regulatory Issues*, 5 State Bar of Texas 28th Annual Advanced Oil, Gas and Energy Resources Law Course, 1 (2010).

51. Soraghan, *supra* note 1.

52. U.S. ENVTL. PROT. AGENCY, EVALUATION OF IMPACTS TO UNDERGROUND SOURCES OF DRINKING WATER BY HYDRAULIC FRACTURING OF COALBED METHANE RESERVOIRS (2006), available at http://www.epa.gov/OGWNW/uic/wells_coalbed_methanestudy.html.

53. 42 U.S.C. §§ 300F(d), (h) (2000).

54. *Id.*

conducting hydraulic fracturing operations using diesel fuel.⁵⁵ In December 2010, the EPA issued an emergency order instructing Range Resources to provide Parker County residents with safe drinking water.⁵⁶

However, public uneasiness with hydraulic fracturing has led to federal legislative action on the issue, but no bill has made it through Congress. Because the Republicans control the House of Representatives, it is expected that Congressional action on hydraulic fracturing will only happen when the EPA releases its report. The individual shale plays are the greatest working laboratory for shale gas development and the unique legal and logistical challenges in shale drilling. While the RRC issues field orders, protects correlative rights of mineral owners, and prevents economic and physical waste of the state's mineral resources, municipalities can issue restrictions over the time, place and manner of local drilling activities.

Studies by Titan Engineering found that the amount of benzene and other pollutants in the air were below levels dangerous to human health.⁵⁷ The City of Flower Mound also conducted a similar study and failed to find dangerous levels of benzene.⁵⁸ In May 2010, the TCEQ tested air emissions around several fracing operations in the Barnett Shale and discovered that several chemicals (N-cotane, n-pentane, and 1,2-dibromoethane) were above their short-term levels.⁵⁹ However, these readings have fallen and were likely caused by equipment problems, according to the TCEQ.⁶⁰ In January 2011, the TCEQ issued new more stringent Permits by Rule and Standard Permits regarding air emissions resulting from oil and gas development.⁶¹ These rules took effect in the Barnett Shale

55. McPherson, *supra* note 31, at 1.

56. Pamela M. Gibling, J. Scott Janoe and Matthew L. Kuryla, *EPA Issues Emergency Order to Shale Gas Driller, Alleges Water Contamination*, available at <http://www.lexology.com/library/detail.aspx?g=8925362c-a7b4-4845-a263-8590fb5ee7c2> (last visited April 18, 2012).

57. Aman Betheja, *Air Quality Around Barnett Shale is Fine, Industry-Financed Study Finds*, FORT WORTH STAR TELEGRAM, June 14, 2010 available at www.star-telegram.com/2010/07/13/2333491/air-quality-around-barnett-shale.html

58. No Cancer Clusters in Flower Mound, NBC 5 DALLAS-FORT WORTH, <http://www.nbcdfw.com/news/health/No-Cancer-Clusters-in-Flower-Mound-Health-Dept-89059402.html> (last visited Apr. 18, 2012); see also Brenda J. Mokry, *Summary of Investigation into the Occurrence of Cancer Zip Codes 75022 and 75028, Flower Mound*, available at http://www.dshs.state.tx.us/epitox/consults/flower_mound32010.pdf (last visited Apr. 18 2012).

59. Aman Betheja, *High Toxin Levels at Two Sites Fixed, State Agency says*, FORT WORTH STAR TELEGRAM, June 22, 2010 at B04.

60. *Id.*

61. Mike Wilson, *Oil & Gas And Air Permitting*, available at www.texasalliance.org/admin/assets/Oil_and_Gas_and_Air_Permitting_by_Wilson.pdf (last visited Apr. 18, 2012).

beginning the first of February and will apply throughout the state beginning January 5, 2012.⁶²

Concerns over the increased noise, trailer truck traffic, and air emissions are best handled at the local level. The City of Fort Worth formed a “natural gas task force,” which provides direction to the city council in mineral development issues.⁶³ The Barnett Shale Energy Education Council (hereinafter “BSEEC”) also serves to inform the public about the logistics, legal structure, and effects of natural gas drilling on the environment.⁶⁴

In August 2010, property owners in Parker County filed a complaint to the EPA alleging that shale gas development conducted by Range Resources rendered their drinking water flammable and bubbly as it streamed from their tap.⁶⁵ After the EPA analyzed the complainants’ drinking water the agency found “extremely high levels” of natural gas in the drinking water, but the EPA has not determined if these are a result of hydraulic fracturing.⁶⁶ When Range Resources compared a gas spectrogram of the natural gas from its well to the sample provided by the property owners, large discrepancies appeared and made it very unlikely that the gas came from one of Range Resource’s operations.⁶⁷ The RRC was ordered to conduct an investigation but has not yet found conclusive evidence linking Range Resources operations to the drinking water contamination.⁶⁸

Energy companies quickly point out that additives constitute less than 0.5 percent of the total composition of fracing fluid. It is mostly made up of water and sand. The Independent Oil and Gas Association of New York states:

0.5 percent of the solution contains three primary ingredients: a friction reducer, similar to canola oil, which

62. Matthew Tresague and John MacCormack, *Fracking chemicals disclosures set off few alarms*, HOUSTON CHRONICLE, <http://www.chron.com/news/houston-texas/article/Fracking-chemicals-disclosures-set-off-few-alarms-3450152.php> (last visited Apr. 18, 2012).

63. Doug Livingston, *Ohio can learn from Texas’ experience with fracking industry*, <http://www.ohio.com/news/local-news/ohio-can-learn-from-texas-experience-with-fracking-industry-1.292620> (last visited Apr. 18, 2012).

64. Barnett Shale Energy Education Council, *available at* <http://www.bseec.org/stories/drilling%2526fracturing> (last visited Apr. 18, 2012).

65. Jack Z. Smith, *Texas Railroad Commission Says Driller Not Responsible For Water Contamination*, FORT WORTH STAR TELEGRAM, Mar. 28, 2011, *available at* <http://www.star-telegram.com/2011/03/028/2954643/texas-railroad-commission-says.htm>.

66. *Id.*

67. Jack Z. Smith, *EPA Official is Grilled in Range Resources Water Well Case*, FORT WORTH STAR TELEGRAM, Feb. 11, 2011, *available at* <http://www.star-telegram.com/2011/02/10/2840390/epa-official-is-grilled-in-range.html>

68. RIGZONE - RRC Calls EPA Investigation into Contaminated Well Premature, http://www.rigzone.com/news/article.asp?a_id=102002 (last visited Apr. 18, 2012).

thickens the fluid, and a bactericide, like chlorine, which is used in the same way chlorine is used in drinking water. The fluid also contains 0.1 portion of micro emulsion elements similar to those found in personal care products, such as shampoos, and cutting oils.⁶⁹

Furthermore, research demonstrates that nearly four-fifths of the total fracturing fluid injected into the ground is subsequently recovered.⁷⁰ Also, hydraulic fracturing occurs at depths several thousand feet below the water table. If the operator properly installs casing and cementing layers at the penetration point, it is nearly impossible for any fracturing fluid or natural gas to contaminate the aquifer.⁷¹

Industry operators and developers should proactively educate citizens regarding the true consequences of natural gas development rather than allow the press and sensationalistic video documentaries to monopolize control of public opinion. Many companies, specifically Devon Energy, have developed and employed technology such as frac water recycling programs and noise cancellation systems to ensure a peaceful coexistence between shale gas development and local communities.⁷²

As prices at the neighborhood fueling station continue to climb, Americans grow increasingly aware of the importance of energy and the economic consequences of our dependence on foreign oil. There is swelling public pressure in favor of the development of domestically available renewable resources, and thanks to George Mitchell and other forward-thinking independents, natural gas from unconventional shale gas reservoirs can fulfill current energy demand and act as a bridge until the technology associated with other renewable energy sources such as solar and wind is available.⁷³ As stated before, it is estimated that recoverable natural gas reservoirs available in the United States could supply the entire country for nearly a century.⁷⁴ Much of the domestic fracturing work conducted is used as a secondary recovery technique from older wells, especially in Texas and New Mexico, which have already been

69. Kurth et al., *supra* note 48, at 291.

70. Id.

71. MCRAE AND RUPPEL, *The Future of Natural Gas*, *supra* note 26 at 41.

72. RUSSELL GOLD, *Eyeing Regulations, Drillers* · *WSJ.com*, <http://online.wsj.com/article/SB10001424052702304818404577349853872701474.html> (last visited Apr. 18, 2012); *see also* *The Future of Water Recycling, Basin Oil and Gas* Issue 34, January 2011.

73. Natural Gas: The Bridge to Renewable Energy, <http://www.txchnologist.com/volume/natural-gas> (last visited Apr. 18, 2012).

74. Casselman, *supra* note 17.

produced or have stopped producing.⁷⁵ Hydraulic fracturing breathes new life into even non-shale formations and effectuates the RRC's ultimate goal of full exploitation of the state's mineral resources. Furthermore, shale gas production alone accounted for more than "600,000 jobs last year, will support 870,000 jobs by 2015, as well as contribute \$118 billion in economic growth."⁷⁶

The decision as to whether hydraulic fracturing, a process which has been used safely in the United States for more than 50 years, should be subject to further regulation needs to be left up to individual states rather than federal agencies such as the EPA. Each state is unique and individual. States are in a superior position to judge which regulatory scheme works in their locality. As demonstrated by this new mandatory disclosure requirement, even traditionally conservative, oil and gas friendly states, such as Texas, will self-regulate and autonomously determine how to balance the needs of the environment, its citizenry, and industry (CITE).

Oil and gas companies have understood the economic value of the development of shale gas reservoirs since the beginning; it now falls upon politicians, landmen, legislators, and especially attorneys to inform and educate the public about the national security, economic and environmental benefits associated with unconventional gas development. Nevertheless, shale gas production is about more than mere profits, job creation, and industry innovation; it is about domestically developing the energy resources that will power America's future.

75. RealClearEnergy, North Sea Oil and Gas Just Won't Quit, *available at* http://www.realclearenergy.org/2012/02/21/north_sea_oil_and_gas_just_won039t_quit_244897.html (last visited Apr. 18, 2012).

76. *Dangers of Fracking Still Becoming Clear*, AUSTIN AMERICAN STATESMAN, Dec. 28, 2011, *available at* <http://www.statesman.com/opinion/dangers-of-fracking-still-becoming-clear-2063702.html>.