DRILLING INTO HYDRAULIC FRACTURING AND SHALE GAS DEVELOPMENT: A TEXAS ENVIRONMENTAL PERSPECTIVE

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I. INTRODUCTION

Natural gas plays a key role in our nation's clean energy future and the process known as hydraulic fracturing is one way of accessing that vital resource.[1] Hydraulic fracturing is used by gas producers to stimulate wells and recover natural gas from sources such as coalbeds and shale gas formations.[2] Hydraulic fracturing is also used for other applications including oil recovery.[3] Over the past few years, several key technical, economic, and energy policy developments have spurred increased use of hydraulic fracturing for gas extraction over a wider diversity of geographic regions and geologic formations.[4] It is projected that shale gas will comprise over 20% of the total US gas supply by 2020.[5] With the expansion of hydraulic fracturing, there have been increasing concerns voiced by the public about potential impacts on drinking water resources, public health, and the environment.[6]

The development and production of oil and gas in the U.S., including shale gas, are regulated under a complex set of federal, state, and local laws that address exploration and operation.[7] The laws and regulations that apply to conventional oil and gas exploration and production activities also apply to shale gas development.[8] The U.S. Environmental Protection Agency ("EPA") administers most of the federal laws.[9] Many of the federal laws are implemented by the states under agreements and plans approved by the appropriate federal agencies.[10] This paper will first discuss the existing federal laws and regulations and proposed federal laws which apply to hydraulic fracturing activities as well as current studies and enforcement actions concerning the same. The paper will then discuss Texas statutes and regulations and various activities that are currently being pursued by the regulatory agencies that govern shale gas exploration in Texas. With respect to local matters, the paper will also briefly consider municipal regulation of the industry. With the rapid growth of shale gas exploration as a result of hydraulic fracturing, increased litigation has likewise grown. The paper will also review recent litigation trends which relate to hydraulic fracturing including an analysis of the typical claims asserted as well as the key applicable defenses under Texas law.

II. FEDERAL

A. Federal Statutes and Regulations

A series of federal laws govern most environmental aspects of hydraulic fracturing and shale gas development.[11] The main statutes include the Safe Drinking Water Act which regulates the underground injection of fluids from shale gas activities; the Clean Water Act which regulates surface discharges of water associated with shale gas drilling and production; and the Clean Air Act which limits air emissions from engines, gas processing equipment, and other sources associated with drilling and production. Additional environmental statutes may also apply to such operations. The following section provides a brief summary of certain provisions from each of these statutes, particularly as those provisions apply to hydraulic fracturing and shale gas development.

1. Safe Drinking Water Act

In 1974, Congress passed the Safe Drinking Water Act ("SDWA") to protect public health by regulating the nation's public drinking water supply.[12] The SDWA authorizes the EPA to set national health-based standards for drinking water to protect against both naturally occurring and man-made contaminants that may be found in drinking water.[13] EPA, states, and municipal water system agencies then work together to make sure that these standards are met.[14] As one aspect of the protection of drinking water supplies, the SDWA establishes a framework for the Underground Injection Control ("UIC") program to prevent the injection of liquid wastes into underground sources of drinking water ("USDW").[15] The EPA and states implement the UIC program, which sets standards for safe waste injection practices and bans certain types of injection altogether.[16]

Prior to 1997, EPA considered hydraulic fracturing to be a well stimulation technique associated with production and therefore not subject to the UIC program under the SDWA.[17] However, in 1994, the Legal Environmental Assistance Foundation challenged EPA's opinion on hydraulic fracturing regulation and in 1997 the Eleventh Circuit ruled that hydraulic fracturing of coalbed methane wells was indeed subject to the SDWA and UIC regulations under Alabama's UIC program.[18]

In 1999, EPA then began a study on hydraulic fracturing used in coalbed methane reservoirs to evaluate the potential risks to USDWs.[19] The study focused on coalbed methane reservoirs because they are typically closer to the surface and in greater proximity to USDWs compared to conventional gas reservoirs.[20] EPA published the coalbed methane study in 2004.[21] In the report, EPA concluded that there was little to no risk of fracturing fluid contaminating underground sources of drinking water during hydraulic fracturing of coalbed methane production wells.[22] EPA had, nonetheless, as a precautionary measure, entered into a Memorandum of Agreement in 2003 with companies that conduct hydraulic fracturing of coalbed methane wells to eliminate use of diesel fuel in fracturing fluids.[23]

In 2005, the Energy Policy Act was passed by Congress which amended SDWA to exclude "the underground injection of fluids or propping agents (other than diesel fuels) pursuant to hydraulic fracturing operations related to oil, gas, or geothermal production activities" from regulation under the UIC program.[24]

2. Clean Water Act

The Clean Water Act ("CWA") is the primary federal law governing pollution of surface water.[25] It was established to protect water quality, and includes regulation of pollutant limits on the discharge of oil and gas related produced water.[26] This is conducted through the National Pollutant Discharge Elimination System permitting process.[27] The CWA made it unlawful to discharge any pollutant from a point source into the navigable waters of the U.S., unless done in accordance with a specific approved permit.[28] Shale gas extraction produces large volumes of wastewater from hydraulic fracturing in addition to relatively small volumes of produced water from the formation.[29] According to the EPA, the CWA applies to both direct discharges as well as indirect discharges of wastewaters into waters of the U.S. through sewer systems connected to publicly owned treatment works.[30]

In addition, Congress passed the Oil Pollution Act ("OPA") in 1990 which added Section 311 to the CWA which provides for spill prevention requirements, spill reporting obligations, and spill response planning.[31] Section 311 regulates the prevention of and response to accidental releases of oil and hazardous substances into navigable waters, on adjoining shorelines, or affecting natural resources belonging to or managed by the United States.[32] This authority is primarily carried out through the creation and implementation of response plans.[33] These plans are intended to establish measures that will prevent discharge of oil into navigable waters of the U.S. or adjoining shore-lines as opposed to response and cleanup after a spill occurs.[34]

A cornerstone of the strategy to prevent oil spills from reaching the nation's waters is the oil Spill Prevention, Control and Countermeasure ("SPCC") plan.[35] EPA promulgated regulations to implement this part of the OPA of 1990.[36] These regulations specify that: (1) SPCC Plans must be prepared, certified (by a professional engineer) and implemented by facilities that store, process, transfer, distribute, use, drill for, produce, or refine oil; (2) facilities must establish procedures and methods and install proper equipment to prevent an oil release; (3) facilities must train personnel to properly respond to an oil spill by conducting drills and training sessions; and, (4) facilities must also have a plan that outlines steps to contain, clean up and mitigate any effects that an oil spill may have on waterways.[37] Before a facility is subject to the SPCC rule, it must meet three criteria: (a) it must be non-transportation-related; (b) it must have an aggregate aboveground storage capacity greater than 1,320 gallons (31.4 bbls) or a completely buried storage capacity greater than 42,000 gallons (1,000 bbls); and (c) there must be a reasonable expectation of a discharge into or upon navigable waters of the U.S. or adjoining shorelines.[38]

3. Clean Air Act

The Clean Air Act ("CAA") is the primary means by which EPA regulates potential emissions that could affect air quality.[39] The CAA requires EPA to set national standards to limit levels of certain pollutants.[40] EPA regulates those pollutants by developing human health-based and/or environmentally and scientifically based criteria for setting permissible levels.[41] Air regulations do not normally include exceptions for a company's size, the age of a field, or the type of operation.[42] Geographic areas that do not meet EPA's standards for a given pollutant are designated as "nonattainment areas."[43] This is the case for the Barnett Shale, much of which is located in or near the Dallas-Fort Worth ozone nonattainment area.[44] As a result, Barnett Shale production activities must comply with much more stringent regulations than similar operations proposed outside of a nonattainment area.[45]

On July 28, 2011, the EPA proposed new air pollution standards to reduce the emissions of methane and volatile organic compounds from the oil and gas industry.[46] The EPA released a "Fact Sheet" which states that the proposal will require VOC reductions for: (1) completions of new hydraulically fractured natural gas wells and re-completions of existing natural gas wells that are fractured or re-fractured; (2) compressors; (3) pneumatic controllers; (4) condensate and crude oil storage tanks; and (5) natural gas processing plants.[47] According to the EPA, in January 2009, WildEarth Guardians and the San Juan Citizens Alliance sued EPA, alleging that the Agency had failed to review the new source performance standards and air toxic standards for the oil and natural gas industry. In February 2010, the U.S. Court of Appeals for the D.C. Circuit entered a

consent decree that requires EPA to sign proposals related to the review of these standards. EPA must issue final standards by Feb. 28, 2012.

4. Miscellaneous Other Federal Statutes and Regulations

In addition, the following environmental statutes may also apply to hydraulic fracturing operations. Congress enacted the Emergency Planning and Community Right-to-Know Act ("EPCRA") in 1986 to establish requirements for federal, state and local governments, and industry regarding emergency planning and "community right-to-know" reporting on hazardous and toxic chemicals.[48] Section 304 of EPCRA requires reporting of releases to the environment of certain materials that are subject to this law.[49] This requirement would apply to any releases of petroleum products that exceed reporting thresholds, even if those products are exempt from CERCLA reporting.[50]

The Endangered Species Act ("ESA") was enacted in 1973 and protects plants and animals that are listed by the federal government as "endangered" or "threatened."[51] Sections 7 and 9 apply to oil and gas activities.[52] Section 7 concerns not to private parties, but to federal agencies.[53] This section covers not only federal activities but also the issuance of federal permits for private activities, such as Section 404 permits issued by the Corps of Engineers, to people who want to do construction work in waters or Wetlands.[54] Section 7 imposes an affirmative duty on federal agencies to ensure that their actions (including permitting) are not likely to jeopardize the continued existence of a listed species (plant or animal) or result in the destruction or modification of critical habitat.[55] Section 9 makes it unlawful for anyone to "take" a listed animal, and this includes significantly modifying its habitat.[56] This applies to private parties and private land; a landowner is not allowed to harm an endangered animal or its habitat on his or her property.[57] Both Sections 7 and 9 allow "incidental takes" of threatened or endangered species, but only with a permit.[58]

The Toxic Substance Control Act ("TSCA") of 1976 provides EPA with authority to require reporting, record-keeping and testing requirements, and restrictions relating to chemical substances and/or mixtures.[59] The TSCA complements other federal environmental statutes that regulate pollution by controlling chemical products prior to entering the environment. The core of the TSCA is informational: chemical manufacturers must provide EPA with information on the chemicals they produce. On August 4, 2011, Earth Justice sent a petition to EPA entitled "Citizen Petition under Toxic Substances Control Act Regarding the Chemical Substances and Mixtures Used in Oil and Gas Exploration or Production."[60] In the letter, Earth Justice petitioned EPA to promulgate rules pursuant to: (1) TSCA section 4 to require manufacturers and processors of E&P chemicals to develop test data sufficient to evaluate the toxicity and potential for health and environmental impacts of all substances and mixtures that they manufacture and process; and (2) TSCA section 8(a) requiring manufacturers and processors of E&P Chemicals to maintain various records related to E&P chemicals including data on potential or demonstrated environmental and health effects of E&P chemicals. EPA has November 4, 2011 to respond to the petition.

The Resource Conservation and Recovery Act ("RCRA") was passed in 1976 to address the growing problems of the increasing volume of municipal and industrial waste.[61] RCRA Subtitle C established a federal program to manage hazardous wastes from cradle to grave to

ensure that hazardous waste is handled in a manner that protects human health and the environment.[62] However, in 1980, the Solid Waste Disposal Act amended RCRA to exempt drilling fluids, produced waters, and other wastes associated with exploration, development, and production of crude oil, or natural gas.[63] Although they are relieved from regulation as hazardous wastes, the exemption does not mean these wastes could not present a hazard to human health and the environment if improperly managed.[64]

The Comprehensive Environmental Response, Compensation, and Liability Act ("CERCLA") commonly known as "Superfund," was enacted by Congress on December 11, 1980.[65] The law provides a broad legal framework that creates potential liability for the cost of cleaning up property contaminated with hazardous substances. However, Section 101(14) of CERCLA (a/k/a "the petroleum exclusion") excludes certain substances from the definition of hazardous substance, thus exempting them from CERCLA regulation.[66] These substances include petroleum, meaning crude oil or any fraction thereof that is not specifically listed as a hazardous substance, natural gas, natural gas liquids, liquefied natural gas, and synthetic gas usable for fuel.[67]

B. Proposed Federal Laws

1. Fracturing Responsibility and Awareness of Chemicals Act

On March 15, 2011, the Fracturing Responsibility and Awareness of Chemicals Act ("FRAC Act") was re-introduced in both the U.S. Senate and House of Representatives.[68] The Energy Policy Act of 2005 amended the SWDA to preclude EPA from regulating the underground injection of fluids by hydraulic fracturing. The FRAC Act amends the SDWA to repeal the 2005 restriction on EPA and would require oil and gas companies to disclose the chemicals used in hydraulic fracturing operations. The bill also notes that in case of a medical emergency the chemicals and formulas must be immediately disclosed to the state oversight agency or the treating physician regardless of confidentiality agreement.

2. Bringing Reductions to Energy's Airborne Toxic Health Effects Act

On March 17, 2011, the Bringing Reductions to Energy's Airborne Toxic Health Effects Act ("BREATHE Act") was introduced in the U.S. House of Representatives.[69] The BREATHE Act Amends the Clean Air Act to: (1) include hydrogen sulfide in the list of hazardous air pollutants; (2) repeal the prohibition on aggregating emissions from any oil or gas exploration or production well and emissions from any pipeline compressor or pump station with emissions from other similar units to determine whether such units or stations are major sources of hazardous air pollutants; (3) repeal the prohibition on aggregating emissions from any oil or gas exploration or production well for any purpose relating to hazardous air pollutant emission standards; and (4) repeal the prohibition against the EPA listing oil and gas production wells as an area source category of hazardous air pollutants.

C. EPA's Draft Hydraulic Fracturing Study Plan

In 2010, the U.S. House of Representatives Appropriation Conference Committee directed EPA to conduct research to examine the relationship between hydraulic fracturing and drinking

water resources. The scope of the study includes the full lifespan of water in hydraulic fracturing, from acquisition of the water, through the mixing of chemicals and actual fracturing, to the post-fracturing stage, including the management of flowback and produced water and its ultimate treatment and disposal.[70] The EPA has identified the following fundamental questions for each stage of the hydraulic fracturing lifecycle.

- *Water acquisition*: How might large volume water withdrawals from ground and surface water impact drinking water resources?
- *Chemical mixing*: What are the possible impacts of releases of hydraulic fracturing fluids on drinking water resources?
- *Well injection*: What are the possible impacts of the injection and fracturing process on drinking water resources?
- *Flowback and produced water*: What are the possible impacts of releases of flowback and produced water on drinking water resources?
- *Wastewater treatment and waste disposal*: What are the possible impacts of inadequate treatment of hydraulic fracturing wastewaters on drinking water resources?[71]

The study will involve retrospective case studies which will focus on investigating reported instances of drinking water resource contamination or other impacts in areas where hydraulic fracturing has already occurred as well as prospective case studies which will involve sites where hydraulic fracturing will occur after the research is initiated.[72]

EPA submitted its draft study plan for review to the agency's Science Advisory Board ("SAB"). On August 4, 2011, the SAB provided comments to EPA. The EPA is to revise the study plan in response to the SAB's comments and promptly begin the study. Initial research results are expected by the end of 2012 with a goal for a report in 2014.

EPA has selected seven case studies located in various formations locations across the country that the Agency believes will provide the most useful information about the potential impacts of hydraulic fracturing on drinking water resources under a variety of circumstances. Two prospective case studies, where EPA will monitor key aspects of the hydraulic fracturing process at future hydraulic fracturing sites, are located in: (1) Haynesville Shale - DeSoto Parish, LA, and (2) Marcellus Shale - Washington County, PA. Five retrospective case studies, which will investigate reported drinking water contamination due to hydraulic fracturing operations at existing sites, are located in: (1) Bakken Shale—Killdeer and Dunn Counties, ND, (2) Barnett Shale—Wise and Denton Counties, TX, (3) Marcellus Shale—Bradford and Susquehanna Counties, PA, (4) Marcellus Shale—Washington County, PA, and (5) Raton Basin—Los Animas County, CO. Recently, Texas Railroad Commissioner David Porter expressed his concerns about the scope, methodology, and science of the EPA's study.[73]

On August 11, 2011 EPA sent letters to nine oil and gas companies requesting their voluntary participation in the study.[74] EPA is requesting data on well construction, design, and well operation practices for 350 oil and gas wells that were hydraulically fractured from 2009-2010. EPA made this request as part of its national study to examine the potential impacts of hydraulic fracturing on drinking water resources. The letter appears to focus on water acquisition,

well integrity and produced waster and flowback from hydraulic fracturing which is elevating industry concerns that the EPA's focus in those areas is a prelude to EPA issuing strict wastewater rules for the industry.[75]

D. EPA Proposes Guidance on Diesel Use in Hydraulic Fracturing

On April 27, 2011, EPA's Administrator, Lisa Jackson, stated that EPA will soon issue guidance on the use of diesel fuel as a chemical additive in hydraulic fracturing fluids for oil and natural gas production. Soon thereafter, EPA detailed the anticipated scope of the guidance in a series of presentations to stakeholders in May 2011.[76] The proposed guidance is drawing objections from industry officials that fear the guidance is predicate to target other aspects of hydraulic fracturing in the future beyond the use of diesel fuel.[77]

E. The SEAB Shale Gas Production Subcommittee Ninety-Day Report

The Shale Gas Subcommittee of the Secretary of Energy Advisory Board ("SEAB") has been charged with identifying measures that can be taken to reduce the environmental impact and improve the safety of shale gas production. On August 11, 2011, the Subcommittee produced its first ninety day report.[78] The report includes numerous findings and recommendations including the need to: (1) improve public information about shale gas operations; (2) improve communication among state and federal regulators; (3) improve air quality; (4) protect water quality; (5) disclose fracturing fluid composition; (6) reduce use of diesel fuel; (7) manage short-term and cumulative impacts on communities, land use, wildlife, and ecologies; (8) organize for best practices; (9) increase research and development.[79]

The report also identified four major areas of concern: (a) possible pollution of drinking water from methane and chemicals used in fracturing fluids; (b) air pollution; (c) community disruption during shale gas production; and (d) cumulative adverse impacts that intensive shale production can have on communities and ecosystems. A second report due in November 2011 which is to provide "consensus recommended advice to the agencies on practices for shale extraction to ensure the protection of public health and the environment."[80]

F. Enforcement Actions

1. EPA v. Range Resources (Region 6)

a. Factual and Procedural Background

Range Production Company and Range Resources Corporation (collectively "Range") are involved in drilling gas wells in the area of Fort Worth, Texas.[81] In 2009, Range drilled two such wells, which were drilled vertically several thousand feet below the surface before the drill bore horizontally to finish the drilling of the well.[82] The horizontal bores of the wells at issue are approximately one mile below the surface.[83] These gas wells attempt to draw gas from the Barnett Shale Formation.[84]

On December 7, 2010, the EPA Region 6 issued an Emergency Administrative Order ("the Emergency Order") against Range pursuant to its claimed authority under Section 1431 of the SDWA.[85] In the Emergency Order, the EPA alleges that Range's activities had affected the water within two domestic water wells in Hood County, Texas which may create "an imminent and substantial endangerment to the health of persons," noting that the level of methane found in the wells could be flammable, and consumption of the benzene present in the wells could contribute to various health problems.[86]

In a section entitled "Conclusions of Law," the Emergency Order concluded that contaminants were present in an underground source of drinking water, that Range had caused or contributed to the endangerment of persons through such contaminants, and that action taken by the EPA as proscribed in the Emergency Order was necessary to protect the health of persons.[87] Range was directed in the Emergency Order to: (1) notify the EPA of whether it intended to comply with the Emergency Order within 24 hours; (2) provide re-placement water supplies to the recipients of water from the affected water wells within 48 hours; (3) install explosivity meters at the affected dwellings within 48 hours; (4) submit a survey listing water wells within 3,000 feet of the gas wells at issue with a plan for EPA approval to sample those wells to see if they have been contaminated, including a air and water samplings; (5) submit a plan for EPA approval to conduct soil gas surveys and indoor air concentration analysis of the dwellings served by the affected water wells within 14 days; and (6) submit a plan for EPA approval to identify gas flow pathways to the Trinity Aquifer, eliminate gas flow to the Trinity Aquifer if possible, and remediate areas of the Trinity Aquifer that have been impacted.[88] The Emergency Order notified Range that violation of the Emergency Order could subject it to a civil penalty of up to $16,500 per day of violation. Range contended that the Emergency Order, in only providing for an informal conference with no evidentiary hearing or opportunity to challenge the Emergency Order, does not provide Range with any process to challenge the EPA's findings.[89]

On December 8, 2010, one day after the Emergency Order was issued, the Railroad Commission called a hearing to consider whether Range's operation of the gas wells caused or contributed to the contamination of the water wells.[90] As this proceeding continued, Range informed the EPA that it disputed the validity of the Emergency Order and would not abide by some of its terms.[91] The EPA brought a civil enforcement action on January 18, 2011, seeking injunctive relief and civil penalties against Range for its failure to comply with three of the six requirements of the Emergency Order.[92] Range filed a petition for review of the Emergency Order with the Fifth Circuit Court of Appeals on January 20, 2011 pursuant to 42 U.S.C. § 300j–7(a)(2).[93] Range argued to the Fifth Circuit that Section 1431 would be unconstitutional if it were construed to be a final agency action in this context, and contended that enforcement of the Emergency Order would violate Range's due process rights.[94] The Fifth Circuit's decision is pending.[95]

Despite its objections to the Emergency Order, Range consulted with the EPA and provided the homes whose water wells were contaminated with alternative water and installed explosivity meters, complying with the first three requirements of the Emergency Order.[96] Range claims that this was done at the request of the Railroad Commission.[97] Range also hired experts to perform gas, water, soil-gas, and geologic tests, and Range contends that the tests demonstrate that Range is not responsible for the contamination of the water wells.[98] Range also deposed John

Blevins of the EPA on January 25, 2011, and provided his testimony in which he notes that the EPA could not be certain of Range's role in the contamination of the water wells, and that the EPA did not investigate other possible causes of the contamination.[99] Range alleges that this deposition reveals various ways in which Range was not afforded due process.[100] On January 19 and 20, 2011, the Railroad Commission held its hearings concerning Range's possible role in the contamination of the water wells.[101] On March 22, 2011, the Railroad Commission issued an order in which it determined that Range had not caused and is not causing or contributing to the contamination of the water wells at issue.[102] The Railroad Commission determined that the gas in the water wells was from the Strawn formation, a different source than the source that the Range gas wells were tapping that is closer in depth underground to the water wells.[103] Range claims that the Railroad Commission's preliminary findings are accurate, and that the contamination is due to the Strawn formation, not Range's wells attempting to tap into the Barnett formation.[104]

b. District Court Stays EPA's Lawsuit Against Range Resources

On January 18, 2011, the EPA filed an action in district court for the Northern District of Texas seeking to obtain an injunction forcing Range to comply with the terms of the Emergency Order.[105] Noting that Range had not complied with the fourth, fifth, and sixth requirements of the Emergency Order, the EPA sought penalties adding up to $16,500 per day that Range has failed to comply with these terms of the Order under 42 U.S.C. § 300i(b).[106]

On March 21, 2011, Range filed a motion to dismiss the EPA's action under Federal Rule of Civil Procedure 12(b)(1) or, alternatively, Rule 12(b)(6).[107] A hearing regarding this Motion was held on June 14, 2011.[108] Although the district court denied Range's motion, it made several positive findings for the company. With respect to causation, the court stated:

> "[T]he Court is struggling with the concept that the EPA can enforce the Emergency Order and obtain civil penalties from Range without ever having to prove to this Court, or another neutral arbiter, that Range ***actually caused*** the contamination of the [private drinking wells], or without ever giving Range the opportunity to contest the EPA's conclusions.[109]

The court then noted that this difficult issue, important though it is, need not be resolved at this time because the Fifth Circuit is presently considering whether the Emergency Order was issued arbitrarily or capriciously.[110] The court reasoned that while Range may be correct that this review is insufficient to satisfy due process, and that compelling the EPA to plead and prove that Range caused or contributed to the contamination of the water wells would satisfy due process, the Fifth Circuit's pending decision may either (1) moot this action by invalidating the Emergency Order, or (2) at least provide the Court with guidance and a framework with which to proceed in this case, as it could provide the Court and the parties with the answer to whether the Fifth Circuit's review sufficiently satisfies due process.[111] On this basis, the district court *sua sponte* stayed this district court action pending the Fifth Circuit's opinion on whether the Emergency Order was issued arbitrarily or capriciously.[112] The court further ordered that there will be no daily civil penalties sought by the EPA for continuing violation of the Emergency Order for any day in which this litigation is subject to the stay.[113]

c. Fifth Circuit

As stated above, the Fifth Circuit's decision is pending. Oral argument occurred on October 3, 2011. In its brief, Range has asked the Fifth Circuit to resolve whether: (1) the Emergency Order is a "Final Agency Action" under the SDWA where the Order is an administrative order issued unilaterally by EPA, based upon the Agency's mere receipt of information, without notice or an opportunity for hearing; (2) whether the arbitrary and capricious standard of review provides Range with a sufficient amount of due process to contest EPA's actions, and if so, whether EPA acted arbitrarily and capriciously in issuing the Emergency Order; and (3) if the arbitrary and capricious standard of review is not sufficient to provide due process, what is the proper standard of review.

Range has also provided supplemental authority to the Fifth Circuit which referenced that on June 28, 2011, the U.S. Supreme Court had granted certiorari in *Sackett v. EPA*.[114] In *Sackett*, the U.S. Supreme Court will address whether delaying judicial review while waiting for EPA to bring an enforcement action violates due process in light of the CWA's penalty scheme for non-compliance. Range has made a similar due process claim under the SDWA arguing that its judicial review scheme is unconstitutional if EPA is not required to prove causation prior to seeking enforcement. Accordingly, the outcome of the *Sackett* case could have serious ramifications as to EPA's future authority to regulate hydraulic fracturing under the SDWA.

2. EPA v. Murphy Exploration & Production Co., et al. (Region 8)

On December 16, 2010, EPA Region 8 similarly issued an "Emergency Administrative Order" under Section 1431(a) of the SWDA against Murphy Exploration & Production Co., Pioneer Natural Resources USA, Inc., and Samson Hydrocarbons Co. in response to alleged oil production-related contaminants in the public water supply that serves the city of Poplar, Montana, and the Fort Peck Indian Reservation.[115] The order requires the companies to monitor Poplar's municipal water supply wells and also the private wells of residents in the potentially affected area, upon resident request.[116] The order also requires the companies to provide additional water treatment and/or alternate supplies if EPA determines the groundwater in wells is becoming a public health risk.[117] All three of the parties have filed a petition for review in the Third Circuit for which the matter is still pending.[118]

III. TEXAS

A. RRC v. TCEQ

Hydraulic fracturing is overseen by two primary entities in the Texas government that assert jurisdiction over oil and gas activities the: (1) Texas Railroad Commission ("RRC"); and (2) Texas Commission on Environmental Quality ("TCEQ"). For instance, the TCEQ is charged with the principal responsibility of implementing the state's policy of maintaining the quality of water in the state, except the RRC is expressly declared to be "solely responsible for the control and disposition of waste and the abatement and prevention of pollution of surface and subsurface water resulting from . . . activities associated with the exploration, development, and production of oil or gas."[119] The Water Code then grants the RRC authority to issue permits for discharge of oil

and gas wastes into the waters of the state, but the discharges must meet the water quality standards set forth by the TCEQ.[120] Similarly, while the TCEQ has jurisdiction over the Injection Well Act in Chapter 27 of the Water Code, the RRC is granted specific authority over injection wells that dispose of oil and gas wastes.[121]

The two agencies have adopted a Memorandum of Understanding ("MOU") which seeks to clarify the respective jurisdictions of the two agencies.[122] The MOU provides a very detailed listing and description of the types of waste, both hazardous and nonhazardous, under each agency's jurisdiction.[123] Under the MOU, the RRC regulates oil and gas wastes, including oilfield pits, discharges into surface waters, injections wells, and saltwater haulers and the TCEQ regulates solid, municipal, and hazardous wastes, water quality standards, and waste discharge permits and injection wells, except for permits and wells involving oil and gas wastes.[124]

B. Texas Statutes and Regulations

1. Section 91.851 of the Texas Natural Resources Code

In 2011, Texas passed H.B. 3328 which added Section 91.851 to the Natural Resource Code which requires operators involved with hydraulic fracturing to disclose, among other things, the total amount of water used as wells as the chemical ingredients of the fracturing fluids subject to the requirements of 29 C.F.R. Section 1910.1200(g)(2).[125] The bill also requests the RRC to establish a process for operators to assert trade secret privilege for chemical ingredients of hydraulic fracturing fluids, and a process for providing notice of challenges to the assertion of the trade secret privilege.[126]

The legislation gave the Railroad Commission until July 1, 2013 to finalize regulations, but Commission members have stated that they will begin the process of developing regulations soon, and one Commissioner has said he will push to finalize regulations a year early, by July 1, 2012.[127] In this regard, on August 22, 2011, the RRC issued a memorandum with proposed rules (16 TEX. ADMIN. CODE § 3.29) to implement Section 91.851.[128] The Commission accepted comments on the proposed rules through October 11, 2011.[129]

The proposed rules would require, that within 30 days following a completion of a hydraulic fracturing of a well, the supplier or the service company to provide the operator of the well each chemical ingredient intentionally added to the hydraulic fracturing fluid. Additionally, operators of wells must disclose: (1) the operators name; (2) the date of hydraulic fracturing; (3) the county in which the well is located; (3) the API number for the well; (4) the well name and number; (5) the longitude and latitude of the wellhead; (5) the total vertical depth of the well; (6) the total volume of water used in hydraulic fracturing; (6) each additive used in the hydraulic fracturing fluid, as well as the trade name of the chemical, and the supplier; (7) the intended function of the chemical; and (8) the concentration of each chemical.[130] The information is to be disclosed on the FracFocus website.[131]

If a supplier, service company, or operator claims that the specific identity or amount of any chemical ingredient is entitled to protection as a trade secret, it need not disclose it.[132] The proposed rules provide for the opportunity for certain persons to challenge a claim of entitlement

to trade secret protection.[133] Should the RRC receive such a request, the owner of the trade secret will be required to provide certain information to the Office of the Attorney General, Open Records Division, to substantiate its claim of entitlement in accordance with Texas Government Code, Chapter 552.[134]

The owner of the trade secret must make a factual showing that the information meets the following factors, in accordance with the definition of "trade secret" in the Restatement of Torts, Comment B to Section 757(1939), as adopted by the Texas Supreme Court in *Hyde Corp. v. Huffines*, 314 S.W.2d 763, 776 (Tex. 1958): (1) the extent to which information alleged to be a trade secret is known outside the company; (2) the extent to which the information is known by employees and others involved in the company's business; (3) the extent of the measures the company has taken to protect the secrecy of the information; (4) the value of the information to the company and its competitors; (5) the amount of effort or money expended by the company to develop the information; and (6) the ease or difficulty with which a person could properly acquire and develop the same information.[135] The rule also states that only the following persons may challenge a claim of entitlement to trade secret protection: (a) the landowner on whose land the well-head is located; (b) the adjacent landowner; and (c) an agency with jurisdiction over a matter to which a claimed trade secret is relevant.[136] However, the rule also provides for disclosure to health professionals and emergency providers under certain circumstance even though a trade secret might be involved.[137]

2. Section 91.101 of the Texas Natural Resources Code and Statewide Rules 8, 9, 13 and 46

There are several other Texas statutes and regulations which apply to all oil and gas operations in Texas and therefore will likewise apply to hydraulic fracturing operations. Section 91.101 of the Texas Natural Resources Code gives the RRC broad powers to "to prevent pollution of surface water or subsurface water in the state" by regulating (1) the drilling of oil and gas wells; (2) the production of oil and gas, (3) the operation, abandonment, and proper plugging of wells; and (4) the discharge, storage, handling, transportation, reclamation, or disposal of oil and gas waste associated with any operation or activity regulated in the previous three categories.[138] The RRC regulates such activities primarily through various "statewide rules."

Statewide Rules 8, 13 and 46 should apply to hydraulic fracturing. With respect to Statewide Rule 8, according to the RRC, it states that one of its greatest responsibilities is the protection of fresh water resources.[139] Water protection is a major consideration in many of the Commission's Statewide Rules and is the sole purpose of Statewide Rule 8. Rule 8(b) states that "no person conducting activities subject to regulation by the commission may cause or allow pollution of surface or subsurface water of the state."[140] However, some practitioners have argued that the rule only prohibits present actions, not historical conditions and that it does not address soil contamination unless it poses a threat to groundwater or surface water.[141] In addition, if past operations have resulted in extensive soil and groundwater contamination, but those operations have ceased, then arguably no violation of Statewide Rule 8 exists.[142]

Statewide Rule 13 regulates casing, cementing, drilling and completion requirements to ensure that "all usable-quality water zones [are] isolated and sealed off to effectively prevent contamination or harm, and all potentially productive zones [are] isolated and sealed off to prevent

vertical migration of fluids and gases behind the casing."[143] The casing rules are lengthy with many technical requirements that implement Section 91.011 of the Texas Natural Resource Code which requires operators to encase wells to exclude freshwater contamination.[144]

Under the federal underground injection control regulations, wells used in oil and gas operations are classified as Class II injection wells.[145] The RRC asserts its jurisdiction over Class II injection wells through Statewide Rules 9 and 46. Statewide Rule 9 regulates "disposal wells" that inject salt water and other oil and gas wastes into zones not productive of oil, gas, or geothermal resources.[146] Statewide Rule 46, on the other hand, regulates "fluid injection wells" that inject water (salt or fresh), steam, gas, or other energy sources into zones that are productive of oil and gas.[147] Rule 46 wells are often used for pressure maintenance, secondary and tertiary recovery, or cycling.[148] The RRC does not currently regulate hydraulic fracturing largely because the federal regulations for UIC do not include hydraulic fracturing within its definition of Class II underground injection.[149] However, if the federal law changes in this area in the future, Texas would likely regulate hydraulic fracturing operations through Statewide Rule 46.

3. Section 106.352 of the Texas Administrative Code

On January 26, 2011, the TCEQ repealed the existing Permit by Rule ("PBR") provisions for oil and gas handling facilities in the Barnett Shale area and adopted a new PBR and a new standard permit for oil and gas production facilities in that area.[150] The new PBR and standard permit include operating specifications and emissions limitations for typical equipment (facilities) during normal operation, which includes production and planned maintenance, start-up and shutdown.[151] The PBR and standard permit both include a list of best management practices and requires all oil and gas facilities at a site to be permitted under one authorization. The PBR and standard permit became effective on April 1, 2011.

4. Water Use Issues

Hydraulic fracturing consists of pumping into the formation very large volumes of fresh water that generally has been treated with a friction reducer, biocides, scale inhibitor, and surfactants, and contains sand as the propping agent.[152] The water treating fluid maximizes the horizontal length of the fracture while minimizing the vertical fracture height.[153] The fractures, which are held open by the sand, result in increased surface area, which further results in increases in the desorption of the gas from the shale and increases in the mobility of the gas.[154] The result is more efficient recovery of a larger volume of the gas-in-place.[155]

a. Texas Water Development Board Study

The RRC estimates that hydraulic fracturing of a typical well in the Barnett Shale can use over 3.5 million gallons (over 83,000 barrels) of water.[156] In addition, the wells may be refractured multiple times after producing for several years.[157] Increasing water use due to growing population, drought, and Barnett Shale development has heightened concerns about water availability in North-Central Texas.[158] In January of 2007, the Texas Water Development Board published a study of a 19-county area in North Texas that includes the Barnett Shale development area.[159] The report, "Northern Trinity/Woodbine Aquifer Groundwater Availability Model,

Assessment of Groundwater Use in the Northern Trinity Aquifer Due to Urban Growth and Barnett Shale Development," includes estimates of water used in Barnett Shale development. [160]

b. Regulation of Surface Water

In Texas, water flowing in Texas creeks, rivers, and bays is owned and managed by the State.[161] Anyone who diverts such surface water must have authorization – or a water right -- from the State of Texas through the TCEQ.[162] Therefore, a person who withdraws surface waters for hydraulic fracturing activities must obtain a water rights permit from TCEQ.[163]

c. Regulation of Groundwater

In Texas, groundwater ownership rights are subject to regulation and control by the courts and the State Legislature.[164] Groundwater may be managed individually by landowners under the rule of capture, or collectively by landowners and groundwater conservation districts ("GCDs").[165] Under the "Rule of Capture," landowners may pump as much water as they choose, without liability to surrounding landowners who might claim that the pumping is depleting their wells.[166] There are very few restrictions to the rule of capture.[167]

The Texas Legislature has authorized the creation of GCDs as the State's preferred method of groundwater management.[168] These districts are empowered and charged to conserve, preserve, protect, recharge, and prevent waste of groundwater resources within their boundaries.[169] GCDs may be created through a special legislative act, a landowner petition process to the TCEQ, a landowner petition process to join an existing GCD, or TCEQ initiative in a priority groundwater management area.[170]

In addition, the RRC regulates groundwater in Texas. According to the RRC, much of the water used in association with hydraulic fracturing activities is saline or brackish water produced from the same formations where the oil fields are located.[171] A very small percentage of the water used for enhanced recovery is fresh water or slightly saline water produced from outside sources as needed to replace the volume of oil removed.[172] Saline or brackish water is drawn from underground reservoirs that are below the base of usable quality water.[173] The RRC requires a permit for wells associated with oil and gas activities that draw such water from formations below the base of usable quality water.[174]

C. TCEQ Barnett Shale Air Studies

Since 2002, gas production activity in the Barnett Shale area has experienced significant growth and the TCEQ has been improving emissions data from oil and gas production and is conducting in-depth measurements to fully evaluate potential health effects.[175] The TCEQ is using state-of-the-art technology to address emissions from Barnett Shale activities and overall oil and gas operations.[176] In particular, the TCEQ has used infrared gas-imaging camera to study emissions from individual tanks or tank batteries associated with upstream oil and gas production in various counties with the Barnett Shale.[177] Information and results from such studies as well as of other activities are detailed on the TCEQ's website.[178]

D. RRC Appoints Eagle Ford Task Force

The Eagle Ford Shale is rapidly becoming one of Texas' largest domestic crude oil and natural gas discoveries in more than 40 years.[179] Roughly 50 miles wide and 400 miles long, the Eagle Ford spreads across Texas from the Mexican border covering 24 Texas counties.[180] The RRC recently announced that it has appointed the Eagle Ford Task Force .[181] Its main purpose is to serve as a forum for dialogue, so that task force members can bring issues and concerns from their constituents to the table and work toward solutions.[182] Over the next year, the task force will discuss the following: (1) water usage as it relates to hydraulic fracturing; (2) the impact of oil and gas production on community infrastructure; (3) the need for public education regarding oil and gas production; and (4) promoting economic development stemming from oil and gas production.[183]

E. Surface Casing Program Transferred From TCEQ to RRC

On September 1, 2011, Article 2 of House Bill 2694 was passed which transferred from the TCEQ to the RRC duties relating to the protection of groundwater resources from oil and gas associated activities.[184] Specifically, the law transfers duties pertaining to the responsibility of preparing groundwater protection advisory/recommendation letters.[185] After the transfer, the RRC will be responsible for providing surface casing and/or groundwater protection recommendations for the following activities: (1) exploration, development, or production of oil and gas resources—new drilling, other drilling activities including, but not limited to, enhanced recovery injection wells, injection wells for brine mining, injection wells for underground storage of hydrocarbons, seismic exploration and cathodic protection wells, well integrity tests, plugging of abandoned wells, core holes, and microseismic boreholes; (2) subsurface disposal and injection of oil and gas waste—saltwater disposal wells; and (3) anthropogenic carbon dioxide injection wells and geologic storage facilities under the RRC's jurisdiction.[186]

IV. LOCAL

A. Ordinances

The RRC does not have jurisdiction over, and exercises no regulatory authority with respect to, private or public roads or road use. [187] Permits issued by the RRC for oil and gas exploration, production, and waste disposal do not limit any independent authority of a municipality, county or other state agencies with respect to road use.[188] The RRC also no statutory authority over noise or nuisance related issues.[189] Noise and nuisance related issues would be governed by local ordinances.[190] In addition, The RRC does not have regulatory authority over odors or air contaminants.[191] However, for a well within the city limits, the city may enact ordinances regarding odors or other nuisances.[192]

Due to the increase in oil and gas activity, several cities in the Barnett Shale area have passed natural gas well ordinances to regulate issues such as distance requirements, sound level, water usage and permitting processes.[193] Setback distances (the minimum length between a dwelling and a gas well that is required by a city) and limits on noise levels that may be generated in both daytime and nighttime operations are the most common municipal regulation.[194] However,

these requirements may vary from city to city.[195] For example, the Southlake ordinance provides that a well must be at least 1,000 feet from any habitable structure, or from the property line of any occupied public or private school or hospital whereas the City of Fort Worth ordinance only requires that the well be 600 feet away from such structures.[196]

B. Moratoriums

Several cities in the Barnett Shale are have also requested moratoriums on drilling permits in their area in to provide them with time to consider whether to adopt regulations. For instance, on January 18, 2011 Southlake City Council passed a resolution to place a 180 day moratorium on oil and gas permits to determine whether to amend its current regulations.[197] On June 10, 2008, the City of Flower Mound adopted a six month moratorium for new permits for certain pipelines and centralized collection facilities.[198] Chapter 212 of the Local Government Code governs moratoriums in Texas.

C. Limitations

The Texas Constitution requires that adequate compensation be paid when private property is taken for public use.[199] However, all property is held subject to the valid exercise of the police power.[200] A municipality is not required to make compensation for losses occasioned by the proper and reasonable exercise of its police power.[201] Municipalities in Texas have, under the police power, authority to regulate the drilling for and production of oil and gas within their corporate limits, when acting for the protection of their citizens and the property within their limits, looking to the preservation of good government, peace, and order therein.[202] However, if a municipality goes too far in the regulation of oil and gas activities, the municipality may be held to have taken property, thus requiring it to pay just compensation to the owner.[203] The question of whether a police power regulation is proper or whether it constitutes a compensable taking is a question of law.[204]

Although there is no bright line for distinguishing between an exercise of the police power which does constitute a taking and one which does not, there are two related requirements taken into consideration when assessing validity of an exercise of police power.[205] First, the regulation must be adopted to accomplish a legitimate goal; it must be "substantially related" to the health, safety, or general welfare of the people.[206] Second, the regulation must be reasonable; it cannot be arbitrary.[207] In other words, it must "substantially" advance the legitimate goals of the city.[208]

V. LITIGATION TRENDS

A. Recent lawsuits

Although civil lawsuits against oil and gas operators for alleged pollution are not new in Texas, there has been a significant increase in recent litigation that relates to hydraulic fracturing operations. For instance, the following lawsuits have recently been filed:

1. *Scoma v. Chesapeake Energy Corp., et al*.

On August 11, 2011, Jim and Linda Scoma filed suit against Chesapeake Energy Corporation in the Northern District of Texas.[209] According to their Complaint, the Scomas' house is near a Chesapeake oil and gas well in Johnson County which is within the Barnett Shale. The Scomas' claim that Chesapeake's activities (including hydraulic fracturing) contaminated their water well which has now turned an orange/yellow color, tastes bad, and gives off a foul odor. Testing results performed on the well water in 2008 and again in 2009 show an increased concentration of harmful petroleum constituents, such as benzene, toluene, ethylbenzene, xylene, barium, and iron. The plaintiffs asserted causes of action for nuisance, trespass and negligence and seek exemplary damages as well as a permanent injunction "precluding future drilling and fracking activities near Plaintiffs' land." The plaintiffs also claim that the continuing tort doctrine tolls their statute of limitations.

2. *Brock v. Jack Grace Production*

On September 15, 2011, Charles and Sharee Brock filed suit against Jack Grace Production in Montague County.[210] The plaintiffs' house is allegedly near oil and gas operations of the defendant. According to the petition, after watching the 2010 Gasland documentary, the plaintiff lit his tap water on fire which he attributes to defendants' operations. Plaintiffs' water allegedly contained various pollutants as well as dissolved methane. Plaintiffs asserted claims for nuisance, trespass, and negligence and seek various damages including exemplary damages. The plaintiffs also claim that the continuing tort doctrine tolls their statute of limitations.

3. *Mitchell v. Encana Oil & Gas (USA), Inc., et al*.

On December 15, 2010 Grace Mitchell filed suit against Encana Oil & Gas and Chesapeake in the Northern District of Texas.[211] According to the Complaint, Ms. Mitchell's house is near to the defendants' oil and gas wells located in Johnson County, Texas which is within the Barnett Shale. Ms. Mitchell claims that soon after the Defendants commenced their drilling and hydraulic fracturing operations her groundwater, which was her primary source of water, became contaminated. Plaintiff claims that she can no longer use the water from her own well for consumption, bathing, or washing clothes because in May 2010, the well water started to feel slick to the touch and gave off an oily, gasoline-like odor. Testing results performed on the groundwater well confirmed it was contaminated with various chemicals, including various hydrocarbons, similar to diesel fuel. Ms. Mitchell has asserted claims for nuisance, trespass, fraud/fraudulent concealment and strict liability for ultra-hazardous and abnormally dangerous activities. Ms. Mitchell also seeks various damages including exemplary damages and damages for future medical monitoring.

4. *Harris v. Devon Energy Production Company, L.P*.

On December 15, 2010, Doug and Diana Harris filed suit against Devon Energy Production Company, L.P. in the Northern District of Texas.[212] According to the Complaint, the Harris' house is near to the defendants' oil and gas wells located in Denton County, Texas which is within the Barnett Shale. According to the plaintiffs, soon after defendant commenced drilling

and hydraulic fracturing operations, plaintiffs' groundwater became contaminated. Plaintiffs also claim that they can no longer use the water from their well for consumption, bathing, or washing clothes. In April 2008, their groundwater became polluted with a gray sediment. Plaintiffs claim that testing results performed on the groundwater well showed water contamination with high levels of metals: aluminum, arsenic, barium, beryllium, calcium, chromium, cobalt, copper, iron, lead, lithium, magnesium, manganese, nickel, potassium, sodium, strontium, titanium, vanadium, and zinc, some of which upon information and belief, are contained in a commercial compound called "bentonite" used in drilling mud. The plaintiffs have similarly asserted claims for nuisance, trespass, fraud/fraudulent concealment and strict liability for ultra-hazardous and abnormally dangerous activities. Plaintiffs also seek various damages including exemplary damages and damages for future medical monitoring.

5. *Town of Dish v. Atmos Energy Corp., et al.*

On February 28, 2011, The Town of Dish filed suit against Atmos Energy Corp., Crosstex North Texas Gathering LP, Enbridge Gathering LP, Energy Transfer Fuel LP, Texas Midstream Gas Services LLC and Enterprise Texas Pipeline LLC in the 362nd District Court in Denton, County, Texas.[213] Two other suits were also filed by Dish property owners — one by town Commissioner William Sciscoe and his wife, Denise, and another by the owners of nearby properties.[214] In the petition, the plaintiff claim that excessive emissions, noise and light from the defendants' compressor station facilities amount to a public nuisance. They also accuse the companies of trespassing for allowing emissions to pollute the town's air.

6. *Parr v. Aruba Petroleum, Inc., et al.*

On March 8, 2011, Lisa Parr filed suit against Aruba Petroleum, Inc., Ash Grove Resources, LLC, Encana Oil & Gas (USA), Inc., Halliburton Company, Republic Energy, Inc., Ryder Scott Company, L.P., Ryder Scott Oil Company, Tejas Production Services, Inc. and Tejas Western Corp. in County Court at Law No. 5 in Dallas County, Texas.[215] The plaintiff claims defendants natural gas exploration and development activities occurred close to her home that is located in Decatur, Texas which is within the Barnett Shale. Plaintiff claims that defendants have caused releases, spills, emissions, and discharges which have exposed Plaintiffs and their property to hazardous gases, chemical and industrial wastes. Plaintiffs have asserted causes of action for assault, intentional infliction of emotional distress, negligence, gross negligence, negligence per se, nuisance, trespass, and strict liability for abnormally dangerous activity. Plaintiff also seeks various damages including exemplary damages and damages for future medical monitoring.

7. *Lipsky v. Range Production Co., et al.*

On June 20, 2011, Steven and Shyla Lipsky filed suit against Durant, Carter, Coleman, LLC, Silverado on the Brazos Development Company #1 Ltd., Jerry V. Durrant, James T. Coleman, Estate of Preston Carter, Range Production Company, and Range Resources Corporation in Parker County, Texas.[216] The Lipskys' property is the subject of the EPA vs. Range enforcement matter referenced above. In this matter, the Lipskys assert private causes of action against the various developers for breach of contract, violation of the Texas Deceptive Trade Practices Act and tortuous interference with contract, as well for negligence, gross negligence,

malice, and nuisance. The plaintiffs seek 4.5 million dollars in actual damages and 2 million dollars in mental anguish.

B. Typical Claims

As referenced above, the typical causes of action asserted by the plaintiffs are nuisance, trespass and negligence. Some of the plaintiffs have also asserted claims for breach of contract, fraud/fraudulent concealment and strict liability for ultra-hazardous and abnormally dangerous activities. The plaintiffs seek various damages including exemplary damages and damages for future medical monitoring as well as injunctive relief. The following section describes each of these causes of action under Texas law.

1. Nuisance

A nuisance is a condition that substantially interferes with the use and enjoyment of land by causing unreasonable discomfort or annoyance to persons of ordinary sensibilities attempting to use or enjoy it.[217] A condition that causes aesthetic changes to the view, scenery, landscape, or beauty of an area is not a nuisance.[218]A nuisance may arise by causing: (a) physical harm to property, such as by the encroachment of a damaging substance or by the property's destruction; (b) physical harm to a person on his property from an assault on his senses or by other personal injury; and (c) emotional harm to a person from the deprivation of the enjoyment of his property through fear, apprehension, or loss of peace of mind.[219]

For an actionable nuisance, a defendant must generally engage in one of three kinds of activity: (1) intentional invasion of another's interests; (2) negligent invasion of another's interests; or (3) other culpable conduct that is abnormal and out of place in its surroundings.[220] Accordingly, proof of negligence is not essential to imposition of liability for the creation and maintenance of a nuisance.[221] This makes this cause of action very attractive for plaintiffs as nuisance can have the same practical effect as strict liability.[222] Several Texas courts have held that "one may create a private nuisance by using property in a way that causes reasonable fear in those who own, lease, or occupy property nearby."[223] Generally, proof of due care is not a defense because nuisance looks only to effect, not the culpable conduct of the defendant.[224]

The appropriate measure of damages depends on whether the nuisance causing the injury is permanent or temporary.[225] The differences between permanent and temporary injury is discussed in greater detail below. Nuisance claims also permit injunctive relief and recovery for punitive damages.[226] Nuisance claims also permit recovery of damages for sickness, annoyance, discomfort or other substantial bodily harm caused by a nuisance that impairs the comfortable enjoyment of real property.[227]

2. Trespass

Trespass is defined as the intentional physical interference with the exclusive possession of property.[228] To establish a trespass requires proving some actual physical invasion of the right of possession.[229] "Physical invasion" means that a party enters another's property without a legal right of possession.[230] Trespass can also result from a party causing or allowing an object to cross

onto another's land.[231] Since possession is the protected right, a trespass can occur whether or not actual damage occurs to the invaded property.[232] This cause of action can afford injunctive relief, as well as recovery for actual and punitive damages.[233]

Several types of oil and gas operations can result in the unauthorized invasion of the property of another without any entry onto the surface of that land.[234] These types of invasions are often referred to as "subsurface trespass."[235] The issue of whether such invasions caused by hydraulic fracturing operations constitute a trespass was recently addressed by the Texas Supreme Court in *Coastal Oil & Gas Corp. v. Garza Energy Trust*.[236] Although declining to rule on the broad issue of whether such intrusions constitute a trespass in general, the court held that the rule of capture precludes trespass claims that assert drainage of the natural gas as the only injury.[237]

The Texas Supreme Court has recently spoken on waste water injection wells as well.[238] In *FPL Farming Ltd. v. Environmental Processing Systems, L.C.,* a landowner that owned tracts of land near nonhazardous wastewater injection well sued the operator for trespass.[239] The court of appeals (relying on the Garza opinion) held that a party was shielded from civil tort liability merely because it received a permit to operate a deep subsurface wastewater injection well.[240] The court reasoned that "[w]hen a state agency authorized deep subsurface injections, no trespass occurs when fluids that were injected at deep levels are then alleged to have later migrated at those deep levels into the deep subsurface of nearby tracts."[241] The Texas Supreme Court disagreed and held that as a general rule, a permit granted by an agency does not act to immunize the permit holder from civil tort liability for actions arising out of the use of the permit.[242] The Supreme Court also distinguished a wastewater injection from hydraulic fracturing as one deals with the extraction of minerals and therefore the rule of capture applies which negates the element of injury to a trespass claim.[243]

3. Negligence and Negligence Per Se

As in any other negligence case, the plaintiff must show that the defendant owed the plaintiff a duty, the defendant breached that duty, that the plaintiff was injured, and that the plaintiff's injury was proximately caused by the defendant's breach.[244] Although the plaintiff need not prove negligence under a nuisance theory, negligence is typically included in the laundry list of theories of recovery.[245] In this context, the plaintiff generally claims that the defendant owed a duty to conduct operations so as not to pollute the plaintiff's property.[246]

However, the standard of care used in determining the presence of negligence in these cases can be a moving target.[247] Although plaintiffs may argue that the appropriate standard of care should be to conduct operations in a nonpolluting manner, it is clear that some pollution, technically speaking, is unavoidable in activities associated with the exploration, production, transportation, and refining of oil and gas.[248] Spills will occur, lines and tanks will leak, and equipment malfunctions will happen because human action is involved.[249] One additional difficulty associated with identifying the appropriate standard of care is determining at what point in time a defendant's duty should be measured.[250] In other words, should a defendant's past conduct be analyzed according to the standards of the past or present?[251]

If establishing a standard of care proves to be difficult in an ordinary negligence case, the theory of negligence per se might be a viable option.[252] Negligence per se is a concept in which a legislatively imposed standard of conduct is adopted by the civil courts as defining the conduct of a reasonable and prudent person.[253] In such a case, the jury is not asked to decide whether the defendant acted as a reasonable, prudent person would have acted under the same or similar circumstances.[254] The statute itself states what a reasonable, prudent person would have done.[255] If an excuse is not raised, the only inquiry for the jury is whether the defendant violated the statute or regulation and, if so, whether the violation was a proximate cause of the accident.[256] In Texas, Statewide Rule 8 could potentially serve as the basis for a negligence per se claim related to oilfield contamination.[257]

4. Miscellaneous Other Claims and Issues

Breach of contract claims usually relates to breach of a mineral lease agreement between the mineral interest owner and the operator or breach of a surface use agreement between the operator and the surface estate owner. Such agreements might contain clauses that require the operator to restore the property to pre-drilling condition following operations.[258] Contamination might be a breach of such agreements as well as a breach of an implied covenant to manage and administer the lease as a reasonable prudent operator.[259]

With regard to strict liability, the Texas Supreme Court has held that it is not a basis for recovery in water pollution cases.[260] Texas also does not recognize a cause of action of strict liability for "ultrahazardous" or "abnormally dangerous" activities.[261] Texas case law also supports that medical monitoring is not a recognized cause of action in Texas.[262] Intentional infliction of emotional distress is a "gap-filler" tort, created to permit recovery in "those rare instances in which a defendant intentionally inflicts severe emotional distress in a manner so unusual that the victim has no other recognized theory of redress."[263] "Where the gravamen of a plaintiff's complaint is really another tort, intentional infliction of emotional distress should not be available."[264] Accordingly, this theory should rarely apply to the claims asserted above.

Fraud by nondisclosure, or fraudulent concealment, is a subcategory of common-law fraud.[265] Fraud based on nondisclosure requires a threshold showing of grounds giving rise to a duty to speak on the part of the silent party, such as the existence of a confidential or fiduciary relationship.[266] In federal court, to plead fraud with particularity a plaintiff must include the time, place and contents of the false representations, as well as the identity of the person making the misrepresentation and what that person obtained thereby.[267]

C. Key Defenses

There are several key defenses available in response to claims of alleged contamination caused by hydraulic fracturing activities. For the most part, these are the same defenses that have historically been utilized in environmental pollution cases in Texas which are described below.

1. Surface Estate Owner and Neighboring Property Owner

The duties owed by an oil and gas operator to the surface estate owner are much narrower than those owed to a neighboring property owner. When the mineral and surface estates are severed, the mineral estate is the dominant estate.[268] The execution of a mineral lease typically not only severs the minerals from the surface but also creates dominant and servient estates.[269] The entity that owns the minerals enjoys the dominant estate.[270] Ownership of the dominant estate carries with it the right to enter and extract the minerals and "all other such incidents thereto as are necessary to be used for getting and enjoying" the minerals.[271] Incident to the right to extract is the right to explore.[272] If in pursuing these rights, the servient estate is susceptible to use in only one manner, then the owner of the dominant estate may pursue that use irrespective of whether it results in damage to the surface.[273] In other words, if particular damage to the surface estate cannot reasonably be avoided in legitimately pursuing the rights of the dominant estate, the owner of the dominant estate is not liable for the damage.[274]

Thus, the mere fact of damage to the surface does not evince unreasonable conduct.[275] Instead, it is incumbent upon the surface owner to establish that the dominant estate owner failed to use reasonable care in pursuing its rights or that the rights could have been pursued through reasonable alternate means sufficient to achieve the goal desired but without the damage.[276] Accordingly, the servient estate owner must prove that its opponent failed to act reasonably given the correlative rights and liabilities involved.[277] However, these same standards are not applicable to neighboring property owners who also claim that their property has been impacted by an oil and gas operator. Accordingly, the status of the plaintiff could widely determine the duties owed to them.

2. Temporary and Permanent Injury

Temporary versus permanent injury is always one of the more significant issues in oilfield pollution cases.[278] In addition to actually trying to determine the nature of the injury complained of, there are strategic considerations associated with choosing whether the injury is temporary, permanent, or both.[279] The difference between temporary and permanent injury is significant, primarily as it relates to the appropriate measure of damages as well as the affirmative defense of the statute of limitations.[280]

a. Measure of Damages

Permanent damage results from activity that is of such a character and that exists under such circumstances "that it will be presumed to continue indefinitely."[281] Permanent injuries are those that are "constant and continuous, not intermittent or recurrent."[282] The proper measure of damages for permanent injury to the land is the diminution in the value of the land.[283] Temporary injuries are intermittent, sporadic, or recurrent injuries to land that are contingent upon some irregular force, such as rain.[284] When an injury to land is temporary and can be remediated at reasonable expense, the proper measure of damages is the cost of restoration to its condition immediately preceding the injury.[285] However, when the cost of restoration exceeds the diminution in fair market value, the diminution in fair market value is the cap on the measure of damages.[286]

b. Statute of Limitations

The statute of limitations for trespass, nuisance, and negligence for damages to land are governed by the two-year statute of limitations and are required to be brought within two years from the date of accrual.[287] An action for permanent damages to land accrues, for limitations purposes, upon the date of discovery of the first actionable injury, not on the date the damages to the land are fully ascertainable.[288] Thus, an action to recover damages for permanent injury accrues when injury first occurs or is discovered. On the other hand, a temporary injury claim accrues anew upon each injury.[289] Accrual of limitations is a question of law for the court.[290] The continuing tort doctrine which is an exception to the statute of limitations does not apply to claims where the damages arise from permanent injury to the land.[291]

c. Application

Texas courts have generally considered contamination from oil and gas operations to be permanent injuries to the land. For instance, in *Mieth v. Ranchquest, Inc*., the Houston Court of Appeals held that the damage to property caused by discharge of drilling fluids, diesel fuel, oil, and saltwater during operations at oil and gas wells was permanent.[292] In *Hues v. Warren Petroleum Co*., the same court determined that landowners sued an oil and gas company for permanent damages to their property based upon gas leaks and the disposal of brine which began several years earlier.[293] In *Walton v. Phillips Petroleum Co*., the El Paso Court of Appeals held that a landowner's complaint that oil company's salt-water pits caused migration of pollutants into his groundwater alleged permanent injuries where water was presently contaminated and had been for several years and there was never a time where contamination was non-existent or significantly diminished due to changing conditions.[294] Finally, in *Mitchell Energy Corp. v. Bartlett*, the Fort Worth Court of Appeals determined that the injuries to the landowners' property were permanent based upon claims of groundwater contamination from the defendant's historic oil and gas operations.[295]

3. Standing

Only the person whose primary legal right has been breached has standing to seek redress for an injury.[296] In other words, a person has standing to sue only when he or she is personally aggrieved by an alleged wrong.[297] "Without a breach of a legal right belonging to a plaintiff, that plaintiff has no standing to litigate."[298] A plaintiff must have a cause of action for injury to the property in order to have standing.[299] The cause of action for an injury to property belongs to the person owning the property at the time of the injury.[300] Without an express assignment, the cause of action does not pass to a subsequent purchaser of the property, so he or she cannot recover for an injury committed before his or her purchase.[301]

In *Senn v. Texaco, Inc*., the Eastland Court of Appeals regarded the distinction between temporary and permanent injuries as meaningless with respect to the issue of standing.[302] The court found that "any injury to the land that the defendants might have caused, whether temporary or permanent, occurred prior to the Senns' purchase of the land," and the Senns, therefore, did not own any causes of action for either type of injury that may have been caused by the defendants.[303]

Adopting the reasoning of the Eastland Court of Appeals decision in *Senn*, the Tyler Court of Appeals held that, when the undisputed evidence "showed a continuing condition that already existed on the date of purchase" and no new injuries occurred after purchase of the property or an assignment of a cause of action for the prior injury, "the [plaintiff] had not been aggrieved and therefore had no standing."[304]

In *West v. Brenntag Southwest, Inc*., the court ruled that it had to determine whether there was evidence of a new and distinct injury that occurred after the plaintiff acquired the property.[305] The plaintiff argued that the contamination's gradual leaking into the soil continued while he owned the property and that this fact was sufficient to show a new injury to support standing.[306] The court disagreed, holding that the fact that the injury existed throughout the plaintiff's ownership did not create a new injury to the land.[307] The court found that the injury was continuous and lingering and, without an assignment, would not support standing to bring suit for negligence or nuisance.[308]

4. Causation

With respect to water pollution claims, plaintiffs will be required to show that contaminants from defendants' hydraulic fracturing activities migrated into plaintiffs' water wells and caused their injuries.[309] Causation cannot be established by mere guess or conjecture; it must be established by evidence of probative value.[310] In *Mitchell Energy Corp. v. Bartlett*, the plaintiff relied on testimony from a geochemist that specialized in "isotopic geochemistry" to establish that the contaminants in the plaintiff's water wells came from the defendants' oil and gas operations.[311] However, the court held that the geochemist's testimony provided no evidence of causation in light of fact that expert did not gather any evidence from other gas wells in area and did not rule out other possibilities of the alleged contamination.[312]In *FPL Farming, Ltd. v. Environmental Processing Systems*, the Beaumont Court of Appeals held that there was no evidence that the plaintiff suffered any injury caused by the defendant's injections of waste into a wastewater injection well on its property as there was no evidence that the wastewater had migrated to the surface of the property or that the injection well was a danger to the drinking water.[313]

In addition, plaintiffs might not be able to prove causation if contaminants are not present in concentrations above certain levels. In *Taco Cabana Inc. v. Exxon Corporation*, the purchaser of commercial property sued the former lessee of the prior owner for trespass, negligence per se, and other claims, alleging that lessee failed to remediate property it previously subleased as gasoline station.[314] The San Antonio Court of Appeals held that the plaintiff failed to establish causation as the evidence did not establish that the soil contained contaminants that exceeded state levels which would have triggered a duty to take corrective action.[315] The court reasoned that to the extent that any common law duties regarding removal of contamination existed, such duties have been displaced by the Texas Water Code, because the legislature has delegated to the State of Texas the task of determining appropriate cleanup standards.[316] Both the Texas Administrative Code as well that RRC's Field Guide provides guidance on maximum contaminant levels in drinking water resulting from for oil and gas spills.[317] Accordingly, this same argument could be made in the context of a claim of water pollution allegedly caused by hydraulic fracturing operations.

VI. CLOSING

Due to the size of the potential natural gas reserves available, shale gas development utilizing hydraulic fracturing provides this nation with a realistic opportunity to finally reduce its dependence on foreign oil. However, to meet this nation's future demands, the scale of exploration and production will have to drastically increase over the coming years. Such activities will undoubtedly impact the environment. Due to pressure from both environmental groups as well as the industry, current and future regulation on the federal, state and local level will continue to play a key role in this area. However, it is important that all interested parties work together to solve the environmental concerns so that the benefits of shale gas development can be fully realized for generations to come.

This paper was prepared in October 2011 as a general discussion of the issues presented and is not to serve as, or to be relied upon as, legal advice. This paper would not have been completed without the assistance of Jean Flores and John Slavich, shareholders at Guida, Slavich & Flores, P.C. The views expressed in the paper are mine, and not of my law firm or its clients.

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[3] *Id.*
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[5] *Id*. (*citing* Annual Energy Outlook 2009) (http://www.eia.gov/oiaf/archive/aeo09/pdf/0383(2009).pdf) (accessed September 22, 2011).
[6] *Id.*
[7] U.S. Dept. of Energy, Office of Fossil Energy, *Modern Shale Gas Development in the United States: A Primer*. (Oklahoma, April 2009) at 25. http://www.netl.doe.gov/technologies/oil-gas/publications/epreports/shale_gas_primer_2009.pdf (accessed September 22, 2011).
[8] *Id*.
[9] *Id*.
[10] *Id*.
[11] *Id*.
[12] *Id*. at 32; *see also* 42 U.S.C. §300f *et seq*. (1974); U.S. Envt'l Prot. Agency, *Summary of the Safe Drinking Water Act*, http://www.epa.gov/lawsregs/laws/sdwa.html (accessed September 22, 2011).
[13] *Id*.
[14] *Id*.
[15] *Id*.
[16] *Id*.
[17] *Id*.
[18] *Id*. (*citing Legal Environmental Assistance Foundation, Inc. v. United States Environmental Protection Agency*, 118 F.3d 1467 (11th Cir. 1997)).
[19] *Id*.
[20] *Id*.
[21] U.S. Envt'l Prot. Agency, *Evaluation of Impacts to Underground Sources of Drinking Water by Hydraulic Fracturing of Coalbed Methane Reservoirs, Final Report* (2004)

http://water.epa.gov/type/groundwater/uic/class2/hydraulicfracturing/wells_coalbedmethanestudy.cfm (accessed September 22, 2011).
[22] In particular EPA stated that "Based on the information collected and reviewed, EPA has determined that the injection of hydraulic fracturing fluids into CBM wells poses little or no threat to USDWs." *See Executive Summary at ES-16*, http://www.epa.gov/ogwdw/uic/pdfs/cbmstudy_attach_uic_exec_summ.pdf (accessed September 22, 2011).
[23] *Id*. (*citing* Memorandum of Agreement between EPA and BJ Services Company, Halliburton Energy Services, Inc., and Schlumberger Technology Corporation) http://www.epa.gov/safewater/uic/pdfs/moa_uic_hyd-fract.pdf (accessed September 22, 2011).
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[25] *See Modern Shale Gas Development in the United States: A Primer* at 29; *see also* 33 U.S.C. §1251 *et seq*. (1972); U.S. Envt'l Prot. Agency, *Summary of the Clean Water Act*, http://www.epa.gov/lawsregs/laws/cwa.html (accessed September 22, 2011).
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[27] *Id*.
[28] *Id*.
[29] U.S. Envt'l Prot. Agency, *Treatment and Disposal of Wastewater from Shale Gas Extraction* http://cfpub.epa.gov/npdes/hydrofracturing.cfm (accessed September 22, 2011).
[30] Memorandum from James Hanlon, Director of EPA's Office of Wastewater Management to the EPA Regions titled, "*Natural Gas Drilling in the Marcellus Shale under the NPDES Program Frequently Asked Questions*" Question No. 6 (March 16, 2011) http://www.epa.gov/npdes/pubs/hydrofracturing_faq.pdf
[31] *See Modern Shale Gas Development in the United States: A Primer* at 34.
[32] *Id*.
[33] *Id*.
[34] *Id*.
[35] *Id*.
[36] *Id*.
[37] *Id*.
[38] *Id*.
[39] *Id*. at 35; *see also* 42 U.S.C. §7401 *et seq*. (1970); U.S. Envt'l Prot. Agency, *Summary of the Clean Air Act*, http://www.epa.gov/lawsregs/laws/caa.html (accessed September 22, 2011).
[40] *Id*.
[41] *Id*.
[42] *Id*.
[43] *Id*.
[44] *Id*.
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[46] *EPA Proposes Air Pollution Standards for Oil and Gas Production/Cost-effective, flexible standards rely on operators' ability to capture and sell natural gas that currently escapes, threatens air quality*, July 28, 2011 http://yosemite.epa.gov/opa/admpress.nsf/d0cf6618525a9efb85257359003fb69d/8688682fbbb1ac65852578db00690ec5!OpenDocument
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[50] *Id*.
[51] *See Modern Shale Gas Development in the United States: A Primer* at 38; *see also* 16 U.S.C. §1531 *et seq*. (1973); U.S. Envt'l Prot. Agency, *Summary of the Endangered Species Act*, http://www.epa.gov/lawsregs/laws/esa.html (accessed September 22, 2011).
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[53] *Id.*
[54] *Id.*
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[61] *Id*. at 37; *see also* 42 U.S.C. §6901 *et seq*. (1976); U.S. Envt'l Prot. Agency, *Summary of the Resource Conservation and Recovery Act*, http://www.epa.gov/lawsregs/laws/rcra.html. (accessed September 22, 2011).
[62] *Id*.
[63] *Id*. (*citing* Public Law 96-482, Sec. 1, Oct. 21, 1980, 94 Stat. 2334); *see also* U.S. Envt'l Prot. Agency, *Exemption of Oil and Gas Exploration and Production Wastes from Federal Hazardous Waste Regulations*, at page 55 http://www.epa.gov/osw/nonhaz/industrial/special/oil/oil-gas.pdf (accessed September 27, 2011).
[64] *Id*.
[65] 42 U.S.C. § 9601 *et seq*. (2006); U.S. Envt'l Prot. Agency, *Summary of the Comprehensive Environmental Response, Compensation, and Liability Act (Superfund*), http://www.epa.gov/lawsregs/laws/cercla.html (accessed September 22, 2011).
[66] *See Modern Shale Gas Development in the United States: A Primer* at 40.
[67] *Id*.
[68] FRAC Act, H.R. 1084, 112th Cong. (2011); FRAC Act, S. 587, 112th Cong. (2011).
[69] BREATHE Act, H.R. 1204, 112th Cong. (2011).
[70] U.S. Envt'l Prot. Agency, *Draft Plan to Study the Potential Impacts of Hydraulic Fracturing on Drinking Water Resources*, page vii http://water.epa.gov/type/groundwater/uic/class2/hydraulicfracturing/upload/HFStudyPlanDraft_SAB_020711-08.pdf (accessed September 26, 2011).
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[81] *U.S. v. Range Production Co., et al*., 2011 WL 2469731 at *2 (N.D. Tex. June 20, 2011).
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[83] *Id.*
[84] *Id.*
[85] *U.S. v. Range Production Co., et al*., 2011 WL 2469731 at *3 (N.D. Tex. June 20, 2011) (*citing* 42 U.S.C. § 300i).
[86] *Id*. at *2-3 (*citing* Emergency Order, Docket No. 7–1, at ¶ 41).
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[88] *Id*.
[89] *Id.*
[90] *Id.*
[91] *Id*.
[92] *Id*.
[93] *Id*.
[94] *Id*.
[95] *Range Resources Corp., et al. v. United States Environmental Protection Agency*, No. 11-60040 (5th Cir. 2011).
[96] *Id*.
[97] *Id*.
[98] *Id*.
[99] *Id.*
[100] *Id*.
[101] *Id*.
[102] *Id*.
[103] *Id*.
[104] *Id*.
[105] *Id*.
[106] *Id*.
[107] *Id*. at *1.
[108] *Id*.
[109] *Id*. at *9 (emphasis added).
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[111] *Id*.
[112] *Id*.
[113] *Id*. at *10.
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[115] U.S. Envt'l Prot. Agency: Region 8 Press Release, *EPA orders oil companies to monitor public water supply and private wells in Poplar, Montana* (December 16, 2010) http://yosemite.epa.gov/opa/admpress.nsf/0/c8029d6c7f6f0b4e852577fb00784b34?OpenDocument (accessed on September 27, 2011).
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[117] *Id.*
[118] *See Murphy Exploration & Production Company, USA, et al. v. United States Environmental Protection Agency*, Cause 11-1042 (3d Cir. 2011).
[119] *See* ERNEST E. SMITH & JACQUELINE LANGE WEAVER, 3 TEXAS LAW OF OIL AND GAS, § 14.3[B][5] at 14-55 (2d. Ed. 2009) (*citing* TEX. WATER CODE ANN. §§ 26.003, 26.011, 26.023, 26.027, 26.131(a)).
[120] *Id*. (*citing* TEX. WATER CODE ANN. § 26.131(b)).
[121] *Id*. (*citing* TEX. WATER CODE ANN. § 27.031).
[122] *Id.* (*citing* TEX. ADMIN. CODE. § 3.30)
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[124] *Id*. at page 14-58.
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[126] *Id*.
[127] *See* Texas Railroad Commission News Release- June 3, 2011: http://www.rrc.state.tx.us/commissioners/porter/press/060311.php (accessed September 27, 2011).
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[132] *Id*.
[133] *Id.* at page 7.
[134] *Id*.
[135] *Id*.
[136] *Id*. (16 TEX. ADMIN. CODE. § 3.29(f)).
[137] *Id*. (16 TEX. ADMIN. CODE § 3.29(c)(4).
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[146] *Id*. (*citing* 16 TEX. ADMIN. CODE § 3.9).
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[148] *Id*.
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[150] 30 TEX. ADMIN. CODE. § 106.352.
[151] *See* Texas Commission on Environmental Quality, *Background Memorandum* (Jan. 7, 2011), available at: http://www.tceq.texas.gov/assets/public/legal/rules/rule_lib/adoptions/10018106_aex_REVISED%20BU.pdf (accessed September 27, 2010).
[152] *See* Texas Railroad Commission: *Water Use in the Barnett Shale* (1/24/11) http://www.rrc.state.tx.us/barnettshale/wateruse_barnettshale.php (accessed September 27, 2010).
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[155] *Id*.
[156] *Id*.
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[158] *Id*.
[159] *Id*.
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[161] *See* Texas Railroad Commission, *Water Use in Association with Oil and Gas Activities Regulated by the Railroad Commission of Texas* http://www.rrc.state.tx.us/barnettshale/wateruse.php (accessed September 27, 2010).
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[163] *Id*.
[164] *Id*.
[165] *Id*.
[166] *Id*.
[167] *Id*.
[168] *Id*. (*citing* TEXAS WATER CODE, Chapter 36).
[169] *Id*.
[170] *Id*.
[171] *Id*.
[172] *Id*.
[173] *Id*.
[174] *Id*. (For instance The Commission's Statewide Rule 5 (16 TEX. ADMIN. CODE §3.5) requires a Commission drilling permit to drill an injection water supply well that penetrates the base of usable quality water. Statewide Rule 13 (16

TEX. ADMIN. CODE §3.13) requires that an injection supply water well that penetrates the base of usable quality water be completed in accordance with the criteria in the rule, and the injection supply water well must be plugged in accordance with Statewide Rule 14 (16 TEX. ADMIN. CODE §3.14).

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[176] *Id*.

[177] *See Barnett Shale: Technical Questions Answered*; http://www.tceq.texas.gov/airquality/barnettshale/bshale-faq (accessed September 27, 2011).

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[179] *See* Texas Railroad Commissioner David Porter, RRC News Release (July 27, 2011) available at: http://www.rrc.state.tx.us/commissioners/porter/press/072711.php (accessed September 27, 2011).

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[186] *Id*.

[187] *See* Texas Railroad Commission: *Barnett Shale Information* (August 4, 2011) http://www.rrc.state.tx.us/barnettshale/#water (accessed September 27, 2010).

[188] *Id.*

[189] *Id.*

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[191] *Id*.

[192] *Id.*

[193] *See* Barnett Shale Energy Education Council, http://www.bseec.org/stories/legislation; *see e.g.*, Southlake, Texas, Gas Well Ordinance. Article IV. Gas and Oil Well Drilling and Production; Richard Hills, Texas, Gas Well Ordinance. Ordinance No. 996-04. September 14, 2004; Haltom City Ordinance No. 0-2004-026-15. November 22, 2004; Fort Worth, Texas, Ordinance No. 18449-02-2009. February 10, 2009.

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[195] *Id*.

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[197] The City of Southlake: *Oil & Gas Well Drilling in Southlake* http://www.ci.southlake.tx.us/southlakegovernment/city_departments/planning_and_development_services/FAQ_gas_drilling.htm

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[201] *Id*. (*citing Lombardo*, 73 S.W.2d at 479; *Edge v. City of Bellaire*, 200 S.W.2d 224, 226 (Tex. Civ. App.—Galveston 1947, writ ref'd)).

[202] *Klepak v. Humble Oil & Ref. Co.*, 177 S.W.2d 215, 218 (Tex. Civ. App.—Galveston 1944, writ ref'd).

[203] *Vulcan Materials Co. v. City of Tehuacana*, 369 F.3d 882, 887 (5th Cir. 2004).

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[207] *Id*.

[208] *Mayhew v. Town of Sunnyvale*, 964 S.W.2d 922, 933-34 (Tex.1998).

[209] *See* Complaint in *Scoma v. Chesapeake Energy Corp., et al.*, Civil Action No. 3:10-CV-1385-N, in the Northern District of Texas.
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[211] *See* Complaint in *Mitchell v. Encana Oil & Gas (USA), Inc., et al*, Civil Action No. 3:10-CV-02555-L, in the Northern District of Texas.
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[213] *See* Original Petition in *Town of Dish v. Atmos Energy Corp*., Civil Action No. 2011-40097-362, in the 362nd District Court of Denton County, Texas.
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[216] *See* Original Petition in *Lipsky v. Range Production Company, et al*., Cause No. CV-11-0798, in the 43rd Judicial District Court, Parker County, Texas.
[217] *Holubec v. Brandenberger*, 111 S.W.3d 32, 36 (Tex. 2003); *Walton v. Phillips Petroleum Co*., 65 S.W.3d 262, 270 (Tex. App.—El Paso 2001, no pet.).
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[220] *Z.A.O., Inc. f/k/a Bell Thunderbird Oil Co., Inc. v. Yarbrough Drive Center Joint Venture*, 50 S.W.3d 531, 532 (Tex. App.—El Paso 2001, no pet.); *Hicks v. Humble Oil & Refining Co.*, 970 S.W.2d 90, 96 (Tex. App.—Houston [14th Dist.] 1998, pet. denied).
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[225] *Schneider Nat'l Carriers, Inc. v. Bates*, 147 S.W.3d 264, 276 (Tex. 2004).
[226] *Holubec v. Brandenberger*, 214 S.W.3d at 659-59.
[227] *Vestal v. Gulf Oil Corp*., 235 S.W.2d 440, 441-42 (Tex. 1951).
[228] *See Pentagon Enterprises v. Southwestern Bell Tel. Co*., 540 S.W.2d 477 (Tex. Civ. App.—Houston [14th Dist.] 1976, writ ref'd n.r.e.); *Pioneer Finance & Thrift Corp. v. Adams*, 426 S.W.2d 317 (Tex. Civ. App.—Eastland 1968, writ ref'd n.r.e.); *Garland v. White*, 368 S.W.2d 12 (Tex. Civ. App.—Eastland 1963, writ ref'd n.r.e.*); Crawford v. Thomas*, 229 S.W.2d 80 (Tex. Civ. App.—Waco 1950, writ ref'd).
[229] *Schronk v. Gilliam*, 380 S.W.2d 743 (Tex. Civ. App.—Waco 1964, no writ); *Johnson v. Phillips Petroleum Co*., 93 S.W.2d 556 (Tex. Civ. App.—Amarillo 1936, no writ).
[230] *Id.*
[231] *See Gregg v. Delhi–Taylor*, 162 Tex. 26, 344 S.W.2d 411 (1961).
[232] *See Texas Elec. Service Co. v. Linebery*, 333 S.W.2d 596 (Tex. Civ. App.—El Paso 1960, no writ).
[233] *Beathard Jt. V. v. West Houston Airport Corp*., 72 S.W.3d 426, 432 (Tex. App.—Texarkana 2002, no pet.); *Cargal v. Cargal*, 750 S.W.2d 382, 385 (Tex. App.—Fort Worth 1988, no writ).
[234] *See* SMITH & WEAVER at § 7.2[A][2] at 7-18.
[235] *Id*.
[236] *Coastal Oil & Gas Corp. v. Garza Energy Trust*, 268 S.W. 3d 1, 11-12 (Tex. 2008).
[237] *Id*. at 12-13.
[238] *FPL Farming v. Environmental Processing*, 2011 WL 3796612 (Tex. 2011)
[239] *FPL Farming Ltd. v. Environmental Processing Systems, L.C.*, 305 S.W.3d 739, 741 (Tex. App.—Beaumont 2009), *rev'd*, 2011 WL 3796612 (Tex. 2011).
[240] *Id*. at 744.

[241] *Id*.
[242] *FPL Farming*, 2011 WL 3796612 at *5-6.
[243] *Id.*
[244] WILLIAM R. KEFFER, *Drilling for Damages: Common Law Relief in Oilfield Pollution Cases*, 47 SMU L. REV. 523, 527 (1994).
[245] *Id.*
[246] *Id*.
[247] *Id*.
[248] *Id*.
[249] *Id*.
[250] *Id.*
[251] *Id.*
[252] *Id*.
[253] *Mieth v. Ranchquest, Inc*., 177 S.W.3d 296, 300 (Tex. App.—Houston [1st Dist.] 2005, no pet.).
[254] *Id*.
[255] *Id*.
[256] *Id*.
[257] *Id.*
[258] *Corbello v. Iowa Production*, 850 So.2d 686 (La. 2003).
[259] *In re ExxonMobil Production Co*., 340 S.W.3d 852, 855 (Tex. App.—San Antonio 2011, no pet.)
[260] *Turner v. Big Lake Oil Company*, 128 Tex. 155, 96 S.W.2d 221 (1936); *Atlas Chemical Industries, Inc. v. Anderson*, 514 S.W.2d 309, 313 (Tex. Civ. App.—Texarkana 1974), *aff'd*, 524 S.W.2d 681 (Tex. 1975).
[261] *Prather v. Brandt*, 981 S.W.2d 801, 804 (Tex. App.—Houston [1st Dist.] 1998, pet. denied).
[262] *Norwood v. Raytheon Co*., 414 F.Supp.2d 659, 668 (W.D. Tex. 2006).
[263] *Hoffmann–La Roche, Inc. v. Zeltwanger*, 144 S.W.3d 438, 447 (Tex. 2004).
[264] *Id.*
[265] *Schlumberger Tech. Corp. v. Swanson*, 959 S.W.2d 171, 181 (Tex. 1997).
[266] *Cronus Offshore, Inc. v. Kerr McGee Oil & Gas Corp*., 369 F.Supp.2d 848, 858 (E.D. Tex. 2004).
[267] *United States ex rel. Russell v. Epic Healthcare Mgmt. Group*, 193 F.3d 304, 308 (5th Cir.1999); *United States ex rel. Thompson v. Columbia Healthcare Corp.*, 125 F.3d 899, 903 (5th Cir.1997).
[268] *Acker v. Guinn*, 464 S.W.2d 348, 352 (Tex.1971).
[269] *H.B. Taylor v. Brigham Oil & Gas, L.P*., 2002 WL 58423 at *2 (Tex. App.—Amarillo 2002, no pet.)
[270] *Tarrant County Water Control & Improv. Dist. v. Haupt, Inc*., 854 S.W.2d 909, 911 (Tex.1993).
[271] *Id*.
[272] *Id*.
[273] *Id*.; *Getty Oil Co. v. Jones*, 470 S.W.2d 618, 622 (Tex.1971).
[274] *Id*.
[275] *See Ball v. Dillard*, 602 S.W.2d 521, 523 (Tex.1980).
[276] *Tarrant County Water Control & Improv. Dist. v. Haupt, Inc*., 854 S.W.2d at 91.
[277] *Id*.
[278] KEFFER, 47 SMU L. REV. at 532.
[279] *Id.*
[280] *Id.*
[281] *Schneider Nat'l Carriers, Inc.*, 147 S.W.3d at 272; *Bayouth v. Lion Oil Co*., 671 S.W.2d 867, 868 (Tex.1984).
[282] *Id.*
[283] *Kraft v. Langford*, 565 S.W.2d 223, 227 (Tex.1978).
[284] *Bayouth*, 671 S.W.2d at 868.
[285] *Kraft*, 565 S.W.2d at 227.
[286] *North Ridge Corp. v. Walraven*, 957 S.W.2d 116, 119 (Tex. App.—Eastland 1997, pet. denied) (*citing Atlas Chem. Indus., Inc. v. Anderson*, 514 S.W.2d 309 (Tex. Civ. App.—Texarkana 1974), *aff'd*, 524 S.W.2d 681 (Tex.1975)).
[287] *See* TEX. CIV. PRAC. & REM. CODE ANN. § 16.003(a); *Mitchell Energy Corporation v. Bartlett*, 958 S.W.2d 430, 435 (Tex. App.—Fort Worth 1997, pet. denied).

[288] *Corley v. Exxon Pipeline Co*., 821 S.W.2d 435, 437 (Tex. App.—Houston [14th Dist.] 1991, writ denied).
[289] *Id*.
[290] *Id*. at 274–75
[291] *Mitchell Energy Corp.*, 958 S.W.2d at 443.
[292] *Mieth v. Ranchquest, Inc*.,177 S.W.3d 296, 299 (Tex. App.—Houston [14th Dist.] 2005, no pet.).
[293] *Hues v. Warren Petroleum Co*., 814 S.W.2d 526, 529 (Tex. App.—Houston [14th Dist.] 1991, writ denied).
[294] *Walton v. Phillips Petroleum Co.*, 65 S.W.3d 262, 274 (Tex. App.—El Paso 2001, pet. denied), *abrogated on other grounds by In re Estate of Swanson*, 130 S.W.3d 144 (Tex. App.—El Paso 2003, no pet.).
[295] *Mitchell Energy Corp*., 958 S.W.2d at 436.
[296] *Nobles v. Marcus*, 533 S.W.2d 923, 927 (Tex. 1976).
[297] *Nootsie, Ltd. v. Williamson County Appraisal Dist*., 925 S.W.2d 659, 661 (Tex. 1996).
[298] *Denman*, 123 S.W.3d at 732; *Brunson v. Woolsey*, 63 S.W.3d 583, 587 (Tex. App.— Fort Worth 2001, no pet.).
[299] *Denman*, 123 S.W.3d at 732; *see Nobles*, 533 S.W.2d at 927.
[300] *Lay v. Aetna Ins. Co*., 599 S.W.2d 684, 686 (Tex. Civ. App.—Austin 1980, writ ref'd n.r.e.).
[301] *Id*.
[302] *Senn v. Texaco, Inc*., 55 S.W.3d 222, 226 (Tex. App.—Eastland 2001, pet. denied).
[303] *Id*.
[304] *Exxon Corp. v. Pluff*, 94 S.W.3d 22, 28 (Tex. App.—Tyler 2002, pet. denied).
[305] *West v. Brenntag Southwest, Inc*., 168 S.W.3d 327, 332-33 (Tex. App.—Texarkana 2005, pet. denied).
[306] *Id*. at 335.
[307] *Id*. at 335-36.
[308] *Id.*
[309] *Mitchell Energy Corp.*, 958 S.W.2d at 446 (*citing Morgan v. Compugraphic Corp*., 675 S.W.2d 729, 731 (Tex.1984)).
[310] *Id*. (*citing McClure v. Allied Stores of Texas, Inc*., 608 S.W.2d 901, 903 (Tex.1980)).
[311] *Id*.
[312] *Id.*
[313] *FPL Farming Ltd.*, 305 S.W.3d at 741.
314. *Taco Cabana Inc. v. Exxon Corporation*, 5 S.W.3d 773, 779-780 (Tex. App.–San Antonio 1999, pet. denied).
[315] *Id*. at 780.
[316] *Id.*
[317] 30 TEX. ADMIN. CODE. 290, Subchapter R; *see also RRC: Field Guide for the Assessment and Cleanup of Soil and Groundwater Contaminated with Condensate From a Spill Incident* http://www.rrc.state.tx.us/environmental/spills/spillcleanup.php (accessed September 27, 2011).