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Danielle Quinn

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A FRACKING FRAGILE ISSUE: COURTS CONTINUE TO TIPTOE AROUND SUBSURFACE TRESPASS CLAIMS

DANIELLE QUINN†

I. INTRODUCTION

Hydraulic fracturing, also known as hydrofracking or fracking, is a stimulation process used to extract natural gas and oil from the earth by fracturing rock trapped deep underground.¹ Human-induced non-hydraulic fracking began in the mid-1860s when people began drilling wells to extract minerals, such as gas and oil, from the ground.² To extract these minerals, operators lowered explosives into the wells in order to blast fractures into the oil bearing sand.³ By the 1930s, drillers began “using acid rather than nitroglycerin as a non-explosive substitute” because “[t]he fractures caused by acid etching were more resistant to re-closing, thereby enhancing productivity.”⁴ Drillers then began using hydraulic fracturing in the 1940s, but it was not until 2003 that its use became widespread by energy companies searching for natural gas.⁵ Addi-

† J.D., 2015, Villanova University School of Law; B.S., 2012, High Point University.

1. *Shooters – A “Fracking” History*, AM. OIL & GAS HISTORICAL SOC’Y, <http://aoghs.org/technology/hydraulic-fracturing/> (last visited Dec. 22, 2014) (explaining fracking process).

2. *Id.* (providing short history of fracking technology). “Today’s hydraulic fracturing technologies can trace their roots to April 25, 1865, when Civil War veteran Col. Edward A. L. Roberts received the first of his many patents for an ‘exploding torpedo.’” *Id.*

3. *Id.* (detailing early drilling methods).

4. *A Look At What Hydraulic Fracking Is and Its History*, STI GROUP, <http://setxind.com/upstream/what-hydraulic-fracking-is-and-its-history/> (last visited Dec. 22, 2014) (describing benefits of acid etching).

5. *A Brief History of Hydraulic Fracturing*, EEC ENVTL., <http://www.eecworld.com/services/258-a-brief-history-of-hydraulic-fracturing> (last visited Dec. 22, 2014) (dating modern hydraulic fracturing practices). Texas, Pennsylvania, West Virginia, Wyoming, Utah and Maryland were among the first states to engage in widespread use of hydraulic fracturing in their shale formations. *Id.* In the 1940s,

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tionally, horizontal drilling began in the 1990s “when George P. Mitchell, considered by many to be the ‘father of modern fracking’ pioneered the technique . . . combined it with hydraulic fracking in the Barnett Shale of Texas.”⁶

Today, fracking typically occurs in three stages: primary recovery, secondary recovery, and enhanced recovery.⁷ During primary recovery, which occurs after the well is drilled, the contents of the well naturally rise to the surface due to gravity and the pressure inside the reservoir.⁸ This process continues until the pressure inside the reservoir is equalized and the well no longer produces oil.⁹ The secondary recovery process begins when a mixture of water and chemicals are pumped into the ground through a high pressure vertical well, which causes the rock to fracture.¹⁰ As the subsurface rock fractures, gas and oil flow from high-pressure areas to newly formed low-pressure areas.¹¹ After the fractures are created, the fracking fluid flows back into the well and up to the surface with the gas.¹² The primary drawback with this practice, however, is that only twenty to forty percent of the fluid returns to the surface, with

“Floyd Farris of Stanolind Oil and Gas Corporation began studying the relationship between a well’s performance and the treatment pressures on it.” *See A Look At What Hydraulic Fracking Is and Its History*, *supra* note 4. Farris’ “research led to the first experimental hydraulic fracturing which occurred in 1947 at the Hugoton gas field, located in Grant County, Kansas.” *Id.* Although his experiment was fairly unsuccessful, “[r]esearch continued and on March 17, 1949 the Halliburton Oil Well Cementing Company conducted two commercial hydraulic fracking treatments. One was performed in Stephens County, Oklahoma, and the other was performed in Archer County, Texas. These applications were much more successful and from there the technique took off.” *Id.*

6. *See A Look At What Hydraulic Fracking Is and Its History*, *supra* note 4 (noting emergence of horizontal drilling).

7. For further discussion of the recovery processes, see *infra* notes 8-17.

8. Lance Looper, *What is Primary Oil Recovery?*, HOW STUFF WORKS, <http://science.howstuffworks.com/environmental/energy/primary-oil-recovery.htm> (last visited Feb. 1, 2015) (explaining primary recovery process). “Primary recovery is an important step in the process because the natural pressure inside the underground reservoir must be equalized before any equipment can be installed.” *Id.*

9. *Id.* (noting duration of primary recovery and its importance). Only about ten percent of the reserve’s supply is captured through this method. *Id.*

10. *A Brief History of Hydraulic Fracturing*, *supra* note 5 (explaining secondary recovery process). “The chemicals used in this process include but are not limited to: benzene, gelling agents, crosslinkers, friction reducers, corrosion inhibitors, scale inhibitors, biocides and, in some cases, diesel fuel.” *Id.* Despite the fact that the fractures are “typically less than 1mm [wide, they] greatly increase the permeability of underground rock and allow larger volumes of oil or gas to be recovered.” *Id.*

11. *Id.* (explaining effect of pressure on gas and oil flow).

12. *Id.* (describing how fracture lines work to produce oil).

the rest remaining underground.¹³ This results in millions of gallons of water, as well as tens or hundreds of thousands of pounds of sand, remaining in the ground per well.¹⁴ After the primary and secondary recovery processes have been completed, many well operators will conduct an enhanced oil recovery.¹⁵ This is accomplished through thermal recovery, gas injection, or chemical injection.¹⁶ The enhanced recovery process has the potential to produce up to twice as much oil as the primary or secondary recovery processes.¹⁷

By 2010, “around sixty percent of all new crude oil and natural gas wells worldwide were using the process of hydraulic fracturing to increase production and efficiency.”¹⁸ Indeed, “[s]ince 2000, 649 wells have been drilled in Susquehanna County, Pennsylvania alone, 99.5% of which have been hydraulically fractured since 2009.”¹⁹ Not only has hydraulic fracturing played a vital role in increasing gas and oil production, it has also created approximately two and a half million jobs, over one million of which are in the United States.²⁰ The Marcellus Shale Education and Training Center report on drilling “found that each new well drilled in the

13. *Enhanced Oil Recovery*, DEPT. OF ENERGY, <http://energy.gov/fe/science-innovation/oil-gas-research/enhanced-oil-recovery> (last visited Jan. 31, 2015) (explaining drawbacks of secondary recovery process).

14. *Id.* (providing statistics regarding amount of water and sand injected per well and amount remaining below ground). “Initially, the technology used 20,000 to 80,000 gallons of water per well, but today’s advanced fracturing techniques can use up to 8 million gallons of water and 75,000 to 320,000 pounds of sand (proppant) per well.” *Id.*

15. *Id.* (explaining enhanced recovery process).

16. *Id.* (noting types of enhanced recovery).

17. *Id.* (describing increase in oil recovery during enhanced recovery process).

18. *A Look At What Hydraulic Fracking Is and Its History*, *supra* note 4 (noting amount of crude oil produced internationally using hydraulic fracturing). In the United States, approximately thirty percent of recoverable oil and natural gas reserves are accessible through the hydraulic fracturing process. *See Shooters – A “Fracking” History*, *supra* note 1 (providing statistics about gas and oil capture in United States). Thirty percent of recoverable oil and natural gas equates to “about seven billion barrels of oil and six hundred trillion cubic feet of natural gas.” *Id.*

19. *Ely v. Cabot Oil & Gas Corp.*, No. 3:09-cv-2284, 2014 WL 4071640, at *5 (M.D. Pa. 2014) (providing statistics concerning fracking in Susquehanna County, Pennsylvania). The Marcellus Shale in Pennsylvania could potentially contain enough gas to power all American homes for nearly 50 years at current residential use rates. *Id.*

20. *A Look At What Hydraulic Fracking Is and Its History*, *supra* note 4 (recognizing increase in job creation related to fracking). In addition to creating millions of jobs, hydraulic fracturing has greatly increased revenue in remote rural areas. *Id.*

Marcellus Shale [in Pennsylvania] generated 30 jobs and \$4 million in total output within Pennsylvania's economy."²¹

Despite its positive impact on gas and oil production and job creation, however, many oppose hydraulic fracturing citing its negative effects.²² Hydraulic fracturing can have a substantial negative impact on local, national, and global levels.²³ For example, methane gas has the potential to escape from the well and cause explosions such as the 2014 Chevron well explosion in Pennsylvania.²⁴ Further, when the injected water returns to the surface, it typically contains a high concentration of salt, along with a low, but measureable, concentration of radioactive elements.²⁵ If this water is not disposed of properly, it can have detrimental effects on the environment, and therefore, it is usually injected into deep disposal wells thousands of feet below the surface, which, in some instances, has triggered small earthquakes.²⁶ Moreover, when the fluids are injected into the ground, whether through the recovery or disposal process, fracture lines or waste plumes can travel hundreds of feet, potentially crossing over onto someone else's property.²⁷

This article discusses whether subsurface fracture lines, as well as fracking fluids seeping through the ground onto other properties, constitute trespass. Part II of this article provides the history of

21. *Ely*, 2014 WL 4071640, at *6 (providing statistics on financial impact of drilling in Pennsylvania).

22. Nick Cunningham, *As Fracking Expands, So Does Opposition – Even in Texas*, OIL PRICE (July 16, 2014) <http://oilprice.com/Energy/Energy-General/As-Fracking-Expands-So-Does-Opposition-Even-In-Texas.html> (discussing fracking opposition movement).

23. For further discussion of the negative impact of fracking, see *infra* notes 24-27 and accompanying text.

24. Molly Born & Sean Hamill, *Greene County Shale Well Continues Burning*, PITTSBURGH POST-GAZETTE (Feb. 12, 2014), <http://www.post-gazette.com/local/south/2014/02/11/Gas-well-explodes-in-southeastern-Greene-County/stories/201402110126> (discussing Chevron well blow out that burned for days). “The heat from the blaze—which caused a tanker truck on site that was full of propane gas to explode—was so intense that first responders from local fire departments had to pull back rather than risk injury.” *Id.* The explosion was so bad that a team of well fire experts had to be flown in from Texas to control the blaze. *Id.*

25. Susan Brantley & Anna Meyendorff, *The Facts on Fracking*, N.Y. TIMES (Mar. 13, 2013), http://www.nytimes.com/2013/03/14/opinion/global/the-facts-on-fracking.html?pagewanted=all&_r=0 (explaining opposition to fracking).

26. *Id.* (detailing water condition when it emerges from fracking wells). “Only about eight locations have experienced injection-induced earthquakes.” *Id.*

27. See *Coastal Oil & Gas Corp. v. Garza Energy Trust*, 268 S.W.3d 1, 7 (Tx. 2008) (noting how far fractures will travel depends on well design). “Engineers design a fracing operation for a particular well, selecting the injection pressure, volumes of material injected, and the type of proppant to achieve a desired result based on data regarding the porosity, permeability, and modulus of the rick, and the pressure and other aspects of the reservoir.” *Id.*

subsurface rights and the cases leading up to the conflicting decisions in *Coastal Oil* and *Stone*. Part III examines the three most recent cases involving subsurface trespass and the confusion that has resulted from their conflicting holdings. Part IV analyzes the courts' rationales behind the holdings in *Coastal Oil*, *Stone*, and *FPL*. Finally, Part V assesses the impact *Coastal Oil*, *Stone*, and *FPL* will have on the future of subsurface trespass law.

II. BACKGROUND

Due to rapid technological advances, courts, along with state and federal legislatures, have not been able to keep up with the oil and gas industry.²⁸ This has led to substantial environmental and property rights concerns and courts continue to struggle with what ownership theory should be applied to subsurface minerals and how to determine whether an actionable trespass has occurred.

A. Fracking Ahead of the Law

As a result of an Environmental Protection Agency (EPA) study, which found that fracking posed no threat to underground drinking water, the Bush Administration exempted hydraulic fracturing from the Safe Drinking Water Act in 2005.²⁹ The EPA study, however, "focused solely on the effect hydraulic fracturing has on drinking water in coal bed methane deposits, typically shallow formations where gas is embedded in coal," and failed to "consider the impact of above-ground drilling or of drilling in geologic formations deep underground, where many of the large new gas reserves are being developed."³⁰ As a result of continued concern, the EPA continues to research the relationship between hydraulic fracturing and ground water used for drinking, but as of 2012, the fracking process is still exempt from several major federal regulations, most notably, the Clean Water Act and Superfund.³¹

28. For further discussion of how fracking technology has outpaced laws and regulations, see *infra* notes 29-31 and accompanying text.

29. See *Coastal Oil*, 268 S.W.3d at 1 (discussing impact of EPA ground water study). Despite the study, however, controversy still surrounds the practice of fracking. *Id.* "Chief concerns include the high consumption of water resources, the generation of large volumes of wastewater, the irreversible injection of chemicals deep underground and their potential impact on drinking water and surface water resources." *Id.*

30. Abraham Lustgarten, *Buried Secrets: Is Natural Gas Drilling Endangering U.S. Water Supplies?*, PROPUBLICA (Nov. 13, 2008), <http://www.propublica.org/article/buried-secrets-is-natural-gas-drilling-endangering-us-water-supplies-1113> (detailing flaws in EPA study).

31. *A Brief History of Hydraulic Fracturing*, *supra* note 5 (stating growing concerns caused EPA to continue studying impact of fracking on drinking water).

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In addition to the lack of environmental regulations, subsurface property rights concerning hydraulic fracturing are also very blurred. The primary issue courts face is determining which ownership theory applies to oil, gas, and subsurface space located thousands of feet below the surface.³² Once the ownership theory is determined, courts can then address the issue of trespass and what, if any, rights the harmed landowner has.³³

Due to major scientific and technological advances, classic theories of property ownership have changed drastically over the years.³⁴ The ad coelum doctrine, one of the oldest property ownership theories, is now rarely used.³⁵ The courts have created new theories in an attempt to keep up with these ever-changing advances.³⁶ Such theories include the rule of capture and the correlative rights doctrine.³⁷ Changes in ownership theory did not end there, however, as these theories eventually gave way to ownership-in-place and non-ownership theories.³⁸

B. Ad Coelum Doctrine

The ad coelum doctrine provides that the owner of land owns not just the surface, but also the entire airspace above it and the entire subsurface below it, down to the earth's core.³⁹ The doctrine's name comes from the Latin phrase "cujus est solum ejus est usque ad coelum et ad inferos," which translates to "for whoever owns the soil, it is theirs up to Heaven and down to Hell."⁴⁰ This legal maxim ironically made its debut in English common law in 1587; today, however, the United Kingdom is in the process of passing a law that allows fracking companies to drill under people's

32. For further discussion of what ownership theory should be applied to subsurface property rights, see *infra* notes 36-95 and accompanying text.

33. For further discussion of property owners' subsurface rights see *infra* notes 96-133.

34. For further discussion of technological advances in fracking, see *supra* notes 4-12 and accompanying text.

35. For further discussion of the ad coelum doctrine, see *infra* notes 39-47 and accompanying text.

36. For further discussion of the various subsurface property rights theories, see *infra* notes 38-95 and accompanying text.

37. For further discussion of the rule of capture and correlative rights doctrine, see *infra* notes 48-92 and accompanying text.

38. For further discussion of ownership-in-place and non-ownership theories, see *infra* notes 93-95 and accompanying text.

39. Keith Hall, *Hydraulic Fracturing: If Fractures Cross Property Line, Is There An Actionable Subsurface Trespass?*, 54 NAT. RES. J. 361, 375 (Fall 2014) (providing history of ad coelum doctrine).

40. *Id.* (giving Latin translation).

land without first obtaining consent.⁴¹ Under the Petroleum (Production) Act of 1934, “ownership of all petrol and natural gas lying anywhere underground in the UK was ‘vested in His Majesty,’” which allowed the government to “grant licenses on the Crown’s behalf to companies wishing to exploit the resources on a case-by-case basis, with license-holders entitled to compulsory access powers if they cannot negotiate with the owners of land they needed to use to get at the petroleum.”⁴²

On numerous occasions in the United States, courts have held that airspace intrusions can constitute a trespass, such as when a roof hangs over a property line, but these trespass cases have all dealt with intrusions close to the surface.⁴³ In 1934, the Georgia Supreme Court in *Thrasher v. City of Atlanta* held that “[p]ossession is the basis of all ownership” and therefore title to land “can hardly extend above an altitude representing the reasonable possibility of man’s occupation and domain.”⁴⁴ The United States Supreme Court solidified this theory in *U.S. v. Causby* when it held that the “doctrine has no place in the modern world [because] [t]he air is a public highway.”⁴⁵ Sixty-two years later, the Texas Supreme Court applied the holding in *Causby* to *Coastal Oil*, a case dealing with sub-surface trespass, concluding that not only does the ad coelum doctrine have no place in the modern world, but the rule of capture bars any trespass claim in oil and gas cases.⁴⁶ Conversely, despite being considered an archaic application of the law, the Third Circuit in *Stone* applied *Causby* to reach a vastly different conclusion than the *Coastal* court.⁴⁷

C. The Rule of Capture

The rule of capture “encourage[s] the development and exploitation of natural resources in the U.S. by modifying the potential obstacles of the ad coelum doctrine and traditional trespass

41. Ed Lowther, *Location, Salvation, Damnation*, BBC NEWS (Jan. 29, 2014), <http://www.bbc.com/news/uk-politics-25742871> (discussing UK’s proposed law to allow drilling under anyone’s private property).

42. *Id.* (providing history of UK’s drilling laws).

43. For further discussion of cases discussing airspace rights, see *infra* notes 44-47 and accompanying text.

44. *Thrasher v. City of Atlanta*, 173 S.E. 817, 825 (Ga. 1934) (explaining limitation on ad coelum doctrine).

45. *United States v. Causby*, 328 U.S. 256, 260 (1946) (holding ad coelum doctrine does not apply to airspace used by airplanes).

46. *Coastal Oil*, 268 S.W.3d at 12 (holding rule of capture bars trespass claim and ad coelum doctrine does not apply).

47. For further discussion of *Stone*, see *infra* notes 147-151 and accompanying text.

liability.”⁴⁸ The United States Supreme Court first recognized the rule of capture in 1895 when it held:

[Petroleum oil and gas] belong to the owner of the land, and are part of it, so long as they are on it or in it subject to his control; but when they escape and go into other land, or come under another’s control, the title of the former owner is gone. If an adjoining owner drills his own land, and taps a deposit of oil or gas, extending under his neighbor’s field, so that it comes into his well, it becomes his property.⁴⁹

Before the discovery of hydraulic fracturing, this rule was applied to standard wells.⁵⁰ This meant that the oil, gas, or water flowed naturally into the well without artificial manipulation. Breakthroughs in science and technology, however, revealed that these substances are not migratory, but rather, they are “commonly found in underground reservoirs, [that] are securely entrapped in a static condition in the original pool, and, ordinarily, so remain until disturbed by penetrations from the surface.”⁵¹

1. Case Law

Two years after the Supreme Court established the rule of capture, the Ohio Supreme Court in *Kelly v. Ohio Oil* held “[w]hatever gets into the well belongs to the owner of the well, no matter where it came from.”⁵² In *Kelly*, the defendant drilled his wells within two hundred feet of the plaintiff’s property line.⁵³ The plaintiff sued for damages claiming that the defendant was taking his minerals via the wells.⁵⁴ In reaching its holding, the Ohio Supreme Court rec-

48. Aaron Stemplewicz, *The Known “Unknowns” of Hydraulic Fracturing: A Case for a Traditional Subsurface Trespass Regime in Pennsylvania*, 13 BUQ. BUS. L.J. 219, 226 (2011) (explaining effect of rule of capture on ad coelum doctrine).

49. *Brown v. Spilman*, 155 U.S. 670, 670 (1895) (applying rule of capture to oil and gas). The case dealt with an oil and gas lease that only covered a portion of the property and addressed whether the lessee was entitled to all the oil and gas under the property or just the specific area that was leased. *Id.*

50. *Id.* (applying rule of capture to standard well); *see also supra* note 46 an accompanying text (noting application of rule of capture before rise of hydraulic fracturing).

51. *Elliff v. Texon Drilling Co.*, 210 S.W.2d 558, 561 (Tex. 1948) (explaining how oil and gas are stored below surface).

52. *Kelly v. Ohio Oil Co.*, 57 Ohio St. 317, 327-28 (Ohio 1897) (holding well contents are property of well owner).

53. *Id.* at 329 (noting location of defendant’s wells).

54. *Id.* (stating facts of case). It was estimated that the oil drained from the wells would be drawn from a two hundred to two hundred and fifty foot radius. *Id.*

ognized it is impossible to tell where exactly the well contents came from.⁵⁵ The court explained that while petroleum is in the earth, it can move from place to place, and wherever it presently lies, it is part of that tract of land “until it reaches a well, and is raised to the surface, and then for the first time it becomes the subject of distinct ownership, separate from the realty, and becomes personal property, the property of the person in whose well it came.”⁵⁶

A decade later, in a factually similar case, the Pennsylvania Supreme Court held that the defendant could crowd the adjoining property with wells and the neighbor could do nothing but “go and do likewise.”⁵⁷ In other words, “[h]e must protect his own oil and gas [because] [h]e knows it is wild and will run away if it finds an opening and it is his business to keep it at home.”⁵⁸

As demonstrated by the cases above, the rule of capture limits the liability of landowners who drain oil and gas reservoirs below their property, and potentially below their neighbor’s property.⁵⁹ Additionally, it encourages excessive drilling by landowners in order to be the first to capture, and thus profit from the oil and gas located below their properties.⁶⁰ Excessive drilling, however, typically leads to waste because the fractures decrease the overall pressure which causes the gas to flow into the wells.⁶¹ In response to these concerns, courts developed the correlative rights doctrine.⁶²

2. *Correlative Rights Doctrine*

The correlative rights doctrine gives landowners sharing a common reservoir a fair chance to drill and produce oil.⁶³ In *Young v. Ethyl Corp.*, the Eighth Circuit asserted “[t]his doctrine allows owners of land to extract oil or gas from a common pool, but posits two duties which limit the right of a landowner to drain oil and gas

55. *Id.* (noting it is impossible to pinpoint where well contents came from).

56. *Id.* at 328 (explaining how petroleum moves from place to place and when it becomes someone’s personal property).

57. *Barnard v. Monongahela Natural Gas Co.*, 65 A. 801, 801 (Pa. 1907) (holding neighbor had no remedy against driller but to also drill wells to capture oil).

58. *Id.*

59. For further discussion of the liability limitations created by the rule of capture, see *supra* notes 52-58 and accompanying text.

60. For further discussion of the consequences of the rule of capture, see *supra* note 59 and accompanying text.

61. For further discussion of the waste that fracking causes, see *supra* notes 13-14 and accompanying text.

62. For further discussion of the correlative rights doctrine, see *infra* notes 63-92 and accompanying text.

63. For a history of the correlative rights doctrine, see *infra* notes 64-92 and accompanying text.

from beneath adjacent lands.”⁶⁴ First, the well operator cannot injure the source of supply of other owners.⁶⁵ Second, the operator cannot take an undue portion from the common pool.⁶⁶

The *Young* court suggested that the rule of capture “was adopted near the turn of the century primarily as a rule of necessity when courts concluded that the amount of oil and gas which drained toward a production well from neighboring tracts was incapable of measurement.”⁶⁷ In *Young*, the plaintiff owned approximately 180 acres of land.⁶⁸ The adjacent properties, controlled by the defendants, were used for the production of salt-water brine via injection wells.⁶⁹ The district court found that the high-pressure injection of salt water through one well was creating an artificially induced movement of the bromine rich salt-water from beneath the plaintiff’s property, forcing it into the defendant’s other wells.⁷⁰ On appeal, the Eighth Circuit held that “the rule of capture does not apply, and that the defendants’ actions in forcibly removing valuable minerals from beneath Young’s land constitute[d] an actionable trespass” because “the brine solution under his land would not migrate to the defendants’ production wells but for the force exerted by the injection wells.”⁷¹ The court noted that, as far as they knew, “the rule of capture has been applied exclusively . . . to the escape, seepage, or drainage of ‘fugacious’ minerals which occurs as an inevitable result of tapping a common reservoir.”⁷²

Some states also have statutes that prohibit the abuse of correlative rights.⁷³ Arkansas, for example, has a statute that prohibits

64. *Young v. Ethyl Corp.*, 521 F.2d 771, 774 (8th Cir. 1975) (explaining rule of capture doctrine).

65. *Id.* (stating first limitation on rule of capture).

66. *Id.* (stating second limitation on rule of capture). The court in *Young* supported their holding by noting “[i]f causing undue drainage is an abuse of correlative rights, then a fortiori forcing static minerals under one’s neighbor’s land to migrate amounts to an abuse of those rights.” *Id.*

67. *Id.* (explaining necessity of rule of capture). “The rule of capture has been applied exclusively, so far as we know, to the escape, seepage, or drainage of ‘fugacious’ minerals which occurs as an inevitable result of the tapping of a common reservoir.” *Id.*

68. *Id.* (stating case facts).

69. *Young*, 521 F.2d at 774 (stating location of defendants’ wells in relation to plaintiff’s property).

70. *Id.* at 771 (explaining process defendant used to extract bromine rich salt-water).

71. *Id.* at 774 (holding rule of capture does not apply to forcible movement as opposed to natural movement of subsurface salt-water).

72. *Id.* (noting application of rule of capture to natural subsurface movement).

73. For further discussion of states’ correlative rights doctrines, see *infra* notes 74-92 and accompanying text.

“withdrawals causing undue drainage between tracts of land.”⁷⁴ Relying on this statute, the court in *Young* reasoned “[i]f causing undue drainage is an abuse of correlative rights, then a fortiori forcing static minerals under one’s neighbor’s land to migrate amounts to an abuse of those rights.”⁷⁵

The Texas Supreme Court also recognized this doctrine in *Elliff v. Texon Drilling Co.*, a case in which the defendant allowed his well to blow out and burn.⁷⁶ The plaintiffs in *Elliff* owned a tract of land which they were using to produce oil.⁷⁷ It was estimated that their property overlaid almost half of the gas reservoir.⁷⁸ The defendants owned an adjacent tract of land on which they drilled a well tapping into the same reservoir.⁷⁹ While drilling their well, 446 feet from the plaintiffs’ property line, “the [defendants’] well blew out, caught fire, and cratered.”⁸⁰ As a result of the blowout, a fissure continued to slowly grow, and eventually, encased and destroyed the plaintiffs’ well, causing it to blow out.⁸¹ As the cratering process continued, “large quantities of gas and distillate were drained from under [plaintiffs’] land and escaped into the air.”⁸²

The *Elliff* court focused on “whether the law of capture absolve[d] [the defendants] of any liability for the negligent waste or destruction of [the plaintiffs’] gas and distillate, though substantially all of such waste or destruction occurred after the minerals had been drained from beneath [plaintiffs’] land.”⁸³ The court first noted that in general, courts recognize that while in the ground, oil and gas are trapped, and remain in a static condition until they are disturbed by an outside force.⁸⁴ Thus, “each landowner should be afforded the opportunity to produce his fair share

74. *Young*, 521 F.2d at 775 (stating Arkansas law); see also Ark. Stat. Ann. § 53-109(I)(3) (providing abuse of doctrine statute).

75. *Id.* (reasoning if excessive drainage of wells is abusing correlative rights doctrine, then so is forcing minerals to move to different wells).

76. *Elliff v. Texon Drilling Co.*, 210 S.W.2d 558, 559 (Tx. 1948) (recognizing correlative rights doctrine in Texas).

77. *Id.* (describing plaintiffs’ tract of land).

78. *Id.* (noting significance of plaintiffs’ property and amount of gas contained under it).

79. *Id.* (explaining defendants’ proximity to plaintiffs’ drilling activities).

80. *Id.* (stating well location).

81. *Elliff*, 210 S.W.2d at 559 (detailing consequences of initial well blowout). In addition to destroying the plaintiffs’ well, the blowout also caused two of the plaintiffs’ water wells to crater and blowout. *Id.* There was also significant surface damage to the plaintiffs’ property and cattle. *Id.*

82. *Id.* (explaining consequences of cratering process).

83. *Id.* at 560 (defining issue in case).

84. *Id.* at 561 (recognizing that courts understand oil and gas remain in place until disturbed).

of the recoverable oil and gas beneath his land” and may do so by “sink[ing] as many wells as he desires upon his tract of land and extract therefrom and appropriate all the oil and gas that he may produce”⁸⁵ This privilege, however, does not give landowners the right to waste the gas.⁸⁶ Ultimately, the court held that the defendants were not protected under the rule of capture, but rather, “[a]t the time of their removal [the oil and gas] belonged to [the plaintiffs], and their wrongful dissipation deprived [the plaintiffs] of the right and opportunity to produce them.”⁸⁷

Elliff demonstrates how the correlative rights doctrine places a limit on the rule of capture and helps to protect neighboring landowners.⁸⁸ Although landowners are entitled to capture the oil and gas that are accessible through their well, they are not permitted to waste what they produce.⁸⁹ States have also created statutory methods to prevent waste that would otherwise be allowed by the rule of capture.⁹⁰ Some states have enacted setback and well spacing rules which regulate how far wells must be from the property line, as well as the distance between each well.⁹¹ States also regulate forced pooling and the amount of oil and gas that may be produced by a well to ensure that the gas and oil are produced in the most effective manner.⁹²

3. *Ownership-in-Place vs. Non-Ownership Theory*

The ownership-in-place theory provides that “a landowner owns the oil and gas which was originally in place beneath his sur-

85. *Id.* at 562 (giving landowners ability to drill as many wells as they want to capture oil and gas from underneath their property).

86. *Elliff*, 210 S.W.2d at 562 (holding landowners have no right to waste gas and oil that is under their property).

87. *Id.* (holding plaintiffs could recover because defendants wasted gas and oil).

88. *See Elliff*, *supra* notes 76-87 and accompanying text (discussing correlative rights limitation on rule of capture).

89. C. Elaine Carleton & Lauren Matthews, *Everything You Wanted to Know About Oil & Gas Interests (But Were Afraid to Ask)*, CARLETON LAW FIRM LLC, <http://legis.sd.gov/interim/2012/documents/OGS6-12-12MineralInterest-SeveredAbandoned.pdf> (last visited Feb. 6, 2015) (discussing various gas rights scenarios).

90. *Id.* at 8-9 (explaining state laws preventing waste as result of fracking).

91. *See generally Five Facts About Pennsylvania’s Setback Requirements*, MARCELLUS SHALE COALITION (June 2, 2014), <http://marcelluscoalition.org/2014/06/five-facts-about-pennsylvanias-setback-requirements/> (comparing Pennsylvania setback laws with other states).

92. *See generally Compulsory Pooling Laws: Protecting the Conflicting Rights of Neighboring Landowners*, NATIONAL CONFERENCE OF STATE LEGISLATURES (October 24, 2014), <http://www.ncsl.org/research/energy/compulsory-pooling-laws-protecting-the-conflicting-rights-of-neighboring-landowners.aspx> (detailing states laws on forced pooling).

face acreage.”⁹³ Under this theory, the oil and gas is subject to real property laws even while it remains in the ground. A number of states including Pennsylvania, Texas, and West Virginia have adopted the ownership-in-place theory.⁹⁴ Conversely, the non-ownership theory states “that no person owns the minerals until produced, but that the right to produce is limited to those persons who own land upon which a well may be drilled.”⁹⁵

D. Subsurface Trespass

“Trespass is an invasion in to another’s exclusive right to possession of property.”⁹⁶ In order to sustain a trespass action, the plaintiff must show actual damages or an interference with some reasonably anticipated use of his property.⁹⁷ Although trespass is typically associated with a surface intrusion, the law also recognizes both airspace and subsurface intrusions.⁹⁸ Courts must recognize these intrusions because in order for the landowner to use and enjoy the property, the landowner “typically must have ownership rights and control with respect to some distance above and below the surface.”⁹⁹ For instance, a house will project into the airspace and the foundation will occupy the subsurface.¹⁰⁰ The homeowner will likely need to run sewer and water lines underground and electrical lines above or below ground.¹⁰¹

93. C. Elaine Carleton & Lauren Matthews, *Everything You Wanted to Know About Oil & Gas Interests (But Were Afraid to Ask)*, CARLETON LAW FIRM LLC, <http://legis.sd.gov/interim/2012/documents/OGS6-12-12MineralInterest-SeveredAbandoned.pdf> (last visited Feb. 6, 2015) (differentiating between ownership-in-place and non-ownership theories).

94. *Id.* at 8-9 (listing states that have adopted ownership-in-place). The states include Arkansas, Colorado, Kansas, Maryland, Michigan, Mississippi, Montana, New Mexico, North Dakota, Pennsylvania, Tennessee, Texas, Washington, and West Virginia. *Id.*

95. *Id.* at 9 (explaining non-ownership theory). States that have adopted this theory include Alabama, California, Illinois, Indiana, Kentucky, Louisiana, New York, Ohio, and Wyoming. *Id.*

96. *Elements of Trespass*, USLEGAL, INC. <http://trespass.uslegal.com/> (last visited Jan. 16, 2016) (providing trespass definition).

97. See *Chance v. BP Chemicals, Inc.*, 670 N.E.2d 985, 993-94 (Ohio 1996) (holding plaintiffs could not recover because they failed to prove “physical damage or actual interference with the reasonable and foreseeable use of the properties”); *Boudreaux v. Jefferson Island Storage & Hub, LLC*, 255 F.3d 271, 275 (5th Cir. 2001) (holding plaintiff failed to prove actual damage to property).

98. See generally *Hannabalsen v. Sessions*, 90 N.W. 93 (Iowa 1902) (recognizing airspace trespass); *Hastings Oil Co. v. Texas Co.*, 234 S.W.2d 389 (Tex. 1950) (recognizing subsurface trespass); see also Restatement (Second) of Torts § 159 (1965).

99. Hall, *supra* note 39 (explaining importance of ownership interest in air above and ground below for use and enjoyment of property).

100. *Id.* (providing example of airspace intrusion caused by structures).

101. *Id.* (analogizing subsurface and airspace intrusion).

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Drilling wells for oil and gas production can also result in subsurface trespass.¹⁰² There are two basic types of wells: horizontal and vertical.¹⁰³ Vertical wells travel directly from the surface down to the reservoir that is being tapped into.¹⁰⁴ Horizontal wells, on the other hand, travel vertically down before branching off at an angle or parallel to the ground.¹⁰⁵ Horizontal wells offer numerous advantages over vertical wells; for example, “[h]orizontal wells create maximum surface area contact between the gas-bearing rock formation and the well itself.”¹⁰⁶ Horizontal wells “[also] allow[] producers to reach target gas locations that could not be reached using traditional vertical drilling.”¹⁰⁷

There are three basic trespass scenarios that can occur as a result of drilling vertical or horizontal wells.¹⁰⁸ The most basic trespass occurs when a well is intentionally drilled at an angle and purposefully crosses a property line.¹⁰⁹ A trespass may also occur when artificial cracks caused by hydraulic fracturing extend from one property to another.¹¹⁰ Lastly, a trespass may occur from subsurface migration of fracking fluids or natural gas seeping onto a neighboring property from an injection or disposal well.¹¹¹ This last scenario has the potential to be the most problematic due to the lack of knowledge concerning the environmental and health consequences of fracking.¹¹²

102. For examples regarding how drilling can lead to subsurface trespass, see *infra* notes 108-112 and accompanying text.

103. For further discussion on the various types of wells, see *infra* notes 103-107 and accompanying text.

104. See *A Look At What Hydraulic Fracking Is and Its History*, *supra* note 4 (explaining what vertical wells are).

105. For further discussion of the advantages of horizontal wells, see *infra* notes 106-107.

106. *Stone v. Chesapeake Appalachia, LLC*, Civil Action No. 5:12-CV-102, 2013 WL 7863861 at *4 (N.D.W. Va. 2013) (citing Note, *The Legality of Drilling Sideways: Horizontal Drilling and Its Future in West Virginia*, 115 W.VA. L. REV. 491, 497 (2012) (discussing benefits of horizontal wells as compared to vertical wells)).

107. *Id.* (explaining that horizontal wells capture more gas than vertical wells). Due to the higher production rates, a higher return on the project itself is likely. *Id.*

108. For further explanation concerning different trespass scenarios, see *infra* notes 109-112 and accompanying text.

109. For further discussion of subsurface trespass resulting from intentional slant drilling, see *infra* notes 113-124 and accompanying text.

110. For further discussion of subsurface trespass resulting from artificial cracks, see *infra* notes 125-133 and accompanying text.

111. For further discussion of subsurface trespass resulting from subsurface migration, see *infra* notes 152-166 and accompanying text.

112. For further discussion on potential environmental and health risks caused by fracking, see *infra* notes 152-158 and accompanying text.

1. *Slant Drilling*

Out of all the potential well-drilling scenarios, slant drilling creates the most straight-forward case for subsurface trespass.¹¹³ Slant drilling is the process of drilling on one property and either intentionally or inadvertently bottoming on an adjacent property.¹¹⁴ When this type of drilling occurs without the consent of both landowners, courts have held that it constitutes an actionable trespass.¹¹⁵

In 1950, for example, the Texas Supreme Court heard *Hastings Oil Co. v. Tex. Co.*, a case dealing with three vertical wells that accidentally diverted from their vertical track, and as a result, bottomed on the adjacent property.¹¹⁶ The court held that although the defendant had not yet completed the well, the defendant was committing a continuing trespass.¹¹⁷ The court reasoned “[t]respases of this character are irreparable because they subtract from the very substance of the estate,” and thus the courts must be quick to act.¹¹⁸ The court also recognized “where the trespass is continuous in its nature, constantly adding to the injury, the legal remedy is inadequate because a jury cannot fix upon a time when the wrong may be said to be complete.”¹¹⁹

Due to the clear-cut nature of this type of claim, when the Texas Supreme Court first faced a trespass claim for hydraulic fracking in the 1961 case of *Gregg v. Delhi-Taylor Oil Corp.*, the court compared fracking to slant drilling or a deviated well.¹²⁰ In *Gregg*, an oil and gas lessee believed that hydraulic fracturing on an adjacent property would result in fracture lines crossing onto his property and thus sought an injunction.¹²¹ By the time the case reached

113. For further discussion on horizontal and slant drilling, see *infra* notes 114-124 and accompanying text.

114. Kate Mantle, *The Art of Controlling Wellbore Trajectory*, SCHUMBERGER LTD. (Winter 2013/2014), http://www.slb.com/resources/publications/oilfield_review/~//media/Files/resources/oilfield_review/ors13/win13/defining_dir_drill.ashx (explaining different types of directional wells).

115. See generally *Hastings Oil Co. v. Texas Co.*, 234 S.W.2d 389, 398 (Tex. 1950) (holding slant drilling constitutes trespass); see also *Gliptis v. Fifteen Oil Co.*, 16 So.2d 471, 474 (La. 1943) (holding slant drilling constitutes trespass).

116. *Hastings Oil Co.*, 234 S.W.2d at 391-92 (explaining drilling procedure and how vertical well deviated).

117. *Id.* at 398 (holding defendant was trespassing under plaintiff's property).

118. *Id.* (reasoning damages from subsurface trespass are irreparable).

119. *Id.* (recognizing harm caused by subsurface trespass cannot be adequately remedied).

120. *Gregg v. Delhi-Taylor Oil Corp.*, 344 S.W.2d 411, 418 (Tex. 1961) (comparing fracking to slant drilling).

121. *Id.* (giving facts of the case).

the Texas Supreme Court, the court determined that the only issue before it was whether the district court had the jurisdiction to hear the case, but the court nevertheless stated that “sand fracing under the surface of another’s land constitutes subsurface trespass.”¹²² The court noted that “[t]o constitute a trespass, ‘entry upon another’s land need not be in person, but may be made by causing or permitting a thing to cross the boundary of the premises.’”¹²³ While the court failed to “determine whether the alleged trespass constituted subsurface trespass, this case demonstrates the analytical and physical similarities between directional drilling and hydraulic fracturing.”¹²⁴

2. Hydraulic Fracturing

Just a year after the Texas Supreme Court ruled in *Gregg*, it addressed “whether a trespass is committed when secondary recovery waters from an authorized secondary recovery project cross lease lines” in *R.R. Comm’n of Tex. v. Manziel*.¹²⁵ The court ultimately held “a trespass does not occur when the injected, secondary recovery fluids move across lease lines” when the Railroad Commission has appropriately authorized the operation.¹²⁶ In reaching its conclusion, the court “emphasized the important policy considerations behind allowing water-flooding,” explaining that such operations “should be encouraged” in order to increase production levels, and that “secondary recovery programs could not and would not be conducted if any adjoining operator could stop the project on the grounds of subsurface trespass.”¹²⁷

Gregg and *Manziel* were the only cases to address subsurface trespass in the context of hydraulic fracking until the Texas Supreme Court heard *Geo Viking, Inc. v. Tex-Lee Operating Co.* in

122. *Id.* (discussing whether there is a trespass when subsurface fractures cross property lines).

123. *Id.* at 416 (citing *Glade v. Dietert*, 295 S.W. 2d 642, 645 (Tex. 1956)).

124. Colleen Lamarre, *Owning the Center of the Earth: Hydraulic Fracturing and Subsurface Trespass in the Marcellus Shale Region*, 21 CORNELL J.L. & PUB. POL’Y 457, 476 (Winter 2011) (noting importance of dicta in *Gregg* and how it could be applied to hydraulic drilling cases).

125. *R.R. Comm’n of Tex. v. Manziel*, 361 S.W.2d 560, 566-67 (Tex. 1962) (defining case issue).

126. *Id.* at 556-69 (holding authorized secondary recovery operations do not constitute trespass).

127. Brannon Robertson, *Important Case on Subsurface Trespass Pending before the Texas Supreme Court*, KING & SPALDING (May 2014), <http://www.kslaw.com/library/newsletters/EnergyNewsletter/2014/May/article1.html> (discussing three relevant Texas cases and their impact on each other).

1991.¹²⁸ In *Geo Viking*, the court noted that “[f]racing under the surface of another’s land constitutes a subsurface trespass.”¹²⁹ It therefore determined “the rule of capture would not permit Tex-Lee to recover for a loss of oil and gas that might have been produced as the result of fracing beyond the boundaries of its tract.”¹³⁰ It seemed Texas had finally reached a clear understanding of subsurface trespass:

If fractures crossed on to an unpermitted tract, this act would constitute a subsurface trespass. On the other hand, if fracing fluid was shown to have transgressed property lines and it was authorized by the RRC [Railroad Commission] then, this event was not actionable as a subsurface trespass due to the development of the negative rule of capture.¹³¹

Indeed, just a few months later in *Gifford Operating Co. v. Indrex, Inc.*, the United States District Court for the Northern District of Texas held it was “bound by Texas case law which clearly recognizes a subsurface trespass when a sand fracture not authorized by the Railroad Commission reaches across lease lines.”¹³²

This clarity, however, did not last long. Less than a year after its initial decision, the Texas Supreme Court withdrew its opinion in *Geo Viking* and stated that “[i]n denying petitioner’s application for writ of error, we should not be understood as approving or disapproving the opinions of the court of appeals analyzing the rule of capture or trespass as they apply to hydraulic fracturing.”¹³³ Through this statement, the Texas Supreme Court once again fractured the clarity regarding the liability of landowners and well operators in cases of subsurface trespass.

128. *Geo Viking, Inc. v. Tex-Lee Operating Co.*, No. D-1678, 1992 WL 80263, at *2 (Tex. 1992) (addressing subsurface trespass liability in hydraulic fracturing case).

129. *Id.* (holding fracture lines that cross lease lines constitute subsurface trespass).

130. *Id.* (explaining why rule of capture would not allow for recovery).

131. Chris Kulander and Robert Shaw, *Toward Uniformity in Subsurface Trespass Jurisprudence – Geophysical Techniques, Hydraulic Fracturing, Gas Storage, and Injection Well Disposal*, UNIV. TX., available at <https://kbhenergycenter.utexas.edu/wp-content/files/Hydraulic-Fracturing-and-the-Rule-of-Capture.pdf> (explaining where Texas courts stood on subsurface trespass at this point).

132. *Gifford Operating Co. v. Indrex, Inc.*, 2:89-CV-0189, 1992 U.S. Dist. LEXIS 22505, at *16-17 (N.D. Tex. 1992) (holding sand fractures that crossed property lines constituted trespass). In this case, a sand fracking operation crossed the neighboring property line and destroyed the integrity of the neighboring property’s well. *Id.*

133. *Geo Viking, Inc. v. Tex-Lee Operating Co.*, 839 S.W.2d 797, 798 (Tex. 1992) (withdrawing its initial per curiam decision).

III. CONFLICTING DECISIONS IN *COASTAL OIL*, *STONE*, AND *FPL*

With the courts avoiding the issue of subsurface trespass, well owners were left not knowing how far the limits of their drilling operations could extend. As fracking practices increased, however, courts in Texas and West Virginia were soon forced to come up with a solution to the trespass issue. Unfortunately, the two states reached opposite conclusions.¹³⁴ Texas continued to leave the question of trespass open, suggesting that no trespass occurs, while West Virginia concluded that taking oil from under another's property constituted an actionable trespass.¹³⁵

A. Subsurface Fracture Lines

Sixteen years after Texas Supreme Court withdrew its opinion in *Geo-Viking*, the court finally clarified the subsurface trespass issue. In *Coastal Oil*, the Texas Supreme Court addressed "whether subsurface hydraulic fracturing of a natural gas well that extends into another's property is a trespass for which the value of gas drained as a result may be recovered as damages."¹³⁶ The case involved two properties, both leased by Coastal Oil and located on the Vicksburg T, "a 'tight' sandstone formation, relatively imporous and impermeable, from which natural gas cannot be commercially produced without hydraulic fracturing stimulation."¹³⁷ Coastal Oil had drilled a well 467 feet from the property boundary of the plaintiff.¹³⁸ They intended the hydraulic length to "reach over 1,000 feet from the well," but "the furthest distance from the well to the [property] lease line was 660 feet."¹³⁹

The jury found that Coastal Oil's well had trespassed onto the plaintiff's property, "causing substantial drainage, which a reasonably prudent operator would have prevented, and \$1 million damages in lost royalties."¹⁴⁰ On appeal to the Texas Supreme Court, the court held "the rule of capture bars recovery of such dam-

134. For further discussion on the conclusions reached by the Texas and West Virginia courts, see *infra* notes 136-166 and accompanying text.

135. For an analysis of how the Texas and West Virginia courts reached their conclusions, see *infra* notes 167-229 and accompanying text.

136. *Coastal Oil*, 268 S.W.3d at 4 (defining case issue).

137. *Id.* (describing Coastal Oil's property locations).

138. *Id.* at 6 (noting location of disputed well).

139. *Id.* at 7 (explaining distances between property lines and well). Additionally, the amount of proppant injected into this well greatly exceeded that of any other well on the property. *Id.*

140. *Id.* at 8 (stating jury found trespass and damages). The trial court, however, reduced damages to \$543,776 and Coastal Oil appealed. *Id.*

ages.”¹⁴¹ In reaching its conclusion, the court offered four justifications for its decision.¹⁴² First, the landowner can drill his own well to offset the drainage from his property, and he can also offer to pool with the other driller.¹⁴³ Second, allowing the court to award damages for the value of drained oil and gas usurps to the courts the authority of the Railroad Commission to regulate oil and gas production.¹⁴⁴ Third, the courts cannot determine the material facts that are hidden below miles of rock such as where the oil or gas came from and how much came from certain areas.¹⁴⁵ Finally, the court relied on numerous amicus briefs to determine that no one in the oil and gas industry wants or needs to change the application of the rule of capture to hydraulic fracturing.¹⁴⁶

Shortly after the Texas Supreme Court ruled in *Coastal Oil*, however, the District Court for the Northern District of West Virginia came to a significantly different conclusion in *Stone*.¹⁴⁷ In *Stone*, the owners of the property adjacent to that of the plaintiffs drilled a horizontal well; the vertical well was approximately 200 feet from the property line, but the horizontal aspect was within ten feet.¹⁴⁸ Both properties were used for the production of oil and gas.¹⁴⁹ The plaintiffs alleged that the defendants had trespassed onto their property and failed to protect the plaintiffs’ property from drainage.¹⁵⁰ The court held “hydraulic fracturing under the land of a neighboring property without that party’s consent is not protected by the ‘rule of capture,’ but rather constitutes an actionable trespass.”¹⁵¹

141. *Coastal Oil*, 268 S.W.3d at 4 (holding rule of capture bars recovery of damages).

142. For a further discussion of the four justifications, see *infra* notes 143-146 and accompanying text.

143. *Coastal Oil*, 268 S.W.3d at 14 (reasoning adjacent owners can drill their own wells to prevent capture by neighbors).

144. *Id.* (ensuring Railroad Commission maintains well-drilling decision-making power).

145. *Id.* at 16 (recognizing courts are neither equipped nor knowledgeable enough about oil drilling to make these decisions).

146. *Id.* (reasoning rule of capture should not be changed because industry people do not want rule changed).

147. *Stone*, 2013 WL 2097397 at *8 (holding hydraulic fracturing under neighbor’s property without neighbor’s consent constitutes actionable trespass).

148. *Id.* at *1 (describing where vertical and horizontal wells were located in relation to Stone property).

149. *Id.* (noting use of both properties for oil and gas extraction).

150. *Id.* (stating plaintiff’s claims).

151. *Id.* at *8.

B. Subsurface Migration of Wastewater and Fracking Fluids

Although the Texas Supreme Court has determined that subsurface fracture lines do not constitute trespass, the court has not resolved the question of whether wastewater and injection fluids crossing property lines constitutes trespass.¹⁵² In *FPL Farming Ltd. v. Envtl. Processing Sys., L.C.*, the Texas Supreme Court addressed whether injected wastewater, which likely migrated across a property line and contaminated the adjacent property's water supply, constituted trespass.¹⁵³ FPL alleged EPS trespassed onto its property by causing subsurface wastewater to migrate into the subterranean level of FPL's tracts, which are located next to a tract on which EPS operates a non-hazardous waste injection well.¹⁵⁴ As a result of the alleged trespass, "the waste plume polluted the briny water found there."¹⁵⁵ Thus, the court had to determine "whether EPS [was] responsible for forcing the waste plume to travel to the subsurface of FPL's tracts."¹⁵⁶

The Texas Court of Appeals initially held "under common law, when a state agency has 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."¹⁵⁷ This holding, however, was reversed and remanded by the Texas Supreme Court, which held that "a person holding a permit issued by the TCEQ [is] not shielded 'from civil tort liability that may result from actions governed by the permit.'"¹⁵⁸

On remand, the court of appeals recognized the "Texas Legislature, by statute, acknowledge[s] the landowner's ownership interest in the groundwater beneath the surface."¹⁵⁹ It therefore concluded FPL had an actionable claim for trespass because FPL

152. For further discussion on Texas's subsurface migration case law, see *infra* notes 153-166 and accompanying text.

153. *FPL Farming Ltd. v. Envtl. Processing Sys., L.C.*, 383 S.W.3d 274, 280 (Tex. App. 2012). (stating issue court had to rule on).

154. *Id.* at 309 (stating FPL's claim).

155. *Id.* (claiming trespass caused subterranean briny water to become polluted).

156. *Id.* at 280 (detailing what must be determined by the court).

157. *FPL Farming Ltd. v. Envtl. Processing Sys., L.C.*, 305 S.W.3d 738, 744-45 (Tex. App. 2009) (holding trespass had occurred).

158. *FPL Farming Ltd.*, 351 S.W.3d at 308 (reversing court of appeals in holding permits do not shield defendant from tort liability).

159. *Id.* (recognizing ownership interest in subsurface drinking water as well as briny water).

has a legal interest in its property under Texas law.¹⁶⁰ The court also noted that “the fact that EPS is using the deep subsurface for commercial purposes indicates that the subsurface levels at issue have economic potential for storing waste, which otherwise, absent its safe storage, has the potential to adversely affect the environment.”¹⁶¹

This judgment, however, was ultimately reversed by the Texas Supreme Court.¹⁶² The court then “reinstat[e] the trial court’s judgment that the landowner take nothing, and declin[e] the invitation to address the remaining questions presented in [the] appeal—namely, whether deep subsurface wastewater migration is actionable as a common law trespass in Texas.”¹⁶³ Although the court did not address subsurface trespass, it did provide an extensive history and analysis of trespass causes of action.¹⁶⁴ In order to have a successful trespass cause of action in Texas, the Court stated that three elements must be present: “(1) entry (2) onto the property of another (3) without the property owner’s consent or authorization.”¹⁶⁵ The court concluded that it is the “plaintiff’s burden to prove that the entry was wrongful, and the plaintiff must do so by establishing that entry was unauthorized or without its consent.”¹⁶⁶

IV. ANALYSIS

Throughout the United States, and especially in Texas, courts have avoided ruling on whether hydraulic fracturing lines that cross property lines constitute a trespass.¹⁶⁷ Indeed, courts have made an effort to avoid discussing or giving any direction on this question. In *Coastal Oil*, for example, the court did so by relying solely on the rule of capture. Similarly, in *Stone*, the court relied on the archaic ad coelum doctrine, which no United States court has ever literally applied to the fullest extent possible. Additionally, the *FPL* opinion

160. *Id.* (concluding FPL had actionable claim for trespass). The appeals court remanded the case to the trial court after finding “the trial court improperly placed the burden of proving consent to entry on FPL when that burden should have been placed on EPS.” *Id.* at 309.

161. *Id.* (noting economic value of subsurface areas).

162. *Env’tl. Processing Sys., L.C. v. FPL Farming Ltd.*, 457 S.W.3d 414, 416 (Tex. 2015) (reversing court of appeals holding).

163. *Id.* at 416 (declining to address whether deep subsurface wastewater migration is actionable).

164. *Id.* at 418-25 (analyzing Texas trespass law).

165. *Id.* at 419 (providing elements for trespass cause of action).

166. *Id.* at 425 (stating plaintiff’s burden of proof in trespass actions).

167. For a further discussion on Texas case law, see *supra* notes 134-166 and accompanying text.

expressly stated that the court would not address the issue of subsurface trespass and, instead, focused solely on traditional trespass causes of action.

A. Coastal Oil

According to the Texas Supreme Court, “[t]he rule of capture is a cornerstone of the oil and gas industry and is fundamental both to property rights and to state regulations.”¹⁶⁸ The court explained that fracking, or forced stimulation, is the very basis of the rule and it is no more unnatural than the drilling of the well itself, “without which there would be no need for the rule at all.”¹⁶⁹ When the court discussed the term “unnatural,” however, it failed to consider the term to mean “the unnatural migration of gas caused by the insertion of an object into another’s property.”¹⁷⁰ In doing so, the court brushed over the holding in *Young*, which was based on the unnatural movement caused by fracking.¹⁷¹ As a result, the Texas Supreme Court then declared it would not be addressing the issue of trespass as it was precluded by the rule of capture.¹⁷² This rationale, however, is most likely the court’s biggest flaw.

As the *Coastal Oil* dissent noted, the Texas Supreme Court in *Peterson v. Grayce Oil Co.* held that “[t]he rule of capture precludes liability for capturing oil or gas drained from a neighboring property ‘whenever such flow occurs solely through the operation of natural agencies in a normal manner, as distinguished from artificial means applied to stimulate such a flow.’”¹⁷³ Moreover, the majority stated “[i]t should go without saying that the rule of capture cannot be used to shield misconduct that is illegal, malicious, reckless, or intended to harm another without commercial justification, should such a case ever arise.”¹⁷⁴ The court’s decision, however, “ignore[d] the fact the rule of capture does not necessarily apply if the

168. Compare *Coastal Oil*, 268 S.W.2d at 13 (emphasizing importance of rule of capture) with *Young*, 521 F.2d at 774 (concluding rule of capture does not apply to forced migration of minerals).

169. *Coastal Oil*, 268 S.W.2d at 13 (comparing fracking with actual well drilling).

170. See Aaron Stemplewicz, *supra* note 48, at 254 (analyzing court’s definition of unnatural and noting that it failed to consider it as intended by plaintiff).

171. *Young*, 521 F.2d at 774 (stating limitation on rule of capture).

172. See *Gregg v. Delhi-Taylor Oil Corp.*, 344 S.W.2d 411 (Tex. 1961) (failing to make ruling on subsurface trespass).

173. *Coastal Oil*, 268 S.W.2d at 42 (Johnson, J. dissenting) (quoting *Peterson v. Grayce Oil Co.*, 37 S.W.2d 367, 370-71 (Tex. App. 1931), *aff’d*, 98 S.W.2d 781 (Tex. 1936)).

174. *Id.* at 17 (recognizing that rule of capture cannot be applied to illegal activity).

capture of oil or gas is made possible by a trespass or other illegal activity.”¹⁷⁵ Thus, the court should have first addressed the trespass issue because if the gas was extracted illegally, the rule of capture would not have applied.¹⁷⁶ This highlights the major inconsistency in the majority’s opinion: it left open the possibility for trespass damages other than for drainage and thus “arguably [left] open the possibility of a subsurface entry caused by fracturing being deemed a trespass. . . .”¹⁷⁷

In a further effort to avoid the issue of trespass, the court was quick to distinguish surface trespass from subsurface trespass, and in doing so, emphasized that the ad coelum doctrine “has no place in the modern world.”¹⁷⁸ The court explained that “[h]ad Coastal [Oil] caused something like proppants to be deposited on the surface of [the adjacent property], it would be liable for trespass,” and due to the ad coelum doctrine, “one might extrapolate that the same rule should apply two miles below the surface.”¹⁷⁹ The court, however, refused to consider applying that maxim.¹⁸⁰ Instead, it discussed Texas’s subsurface trespass case law and noted that the issue has yet to be truly addressed by the court, as the opinion in *Geo-Viking*, the only case to squarely address the issue, had been withdrawn.¹⁸¹

The court also distinguished the application of the rule of capture to fracking from its application to slant drilling.¹⁸² It explained that the gas captured as a result of fracking migrates to the vertical well, whereas the gas does not migrate to the slant well.¹⁸³ Rather, the well goes to the gas, and potentially onto another’s

175. See Hall, *supra* note 39, at 395-96.

176. See Stemplewicz, *supra* note 48, at 253 (reasoning dissent proposed more logical way of approaching case).

177. Barclay Nicholson & Brian Albrecht, *Subsurface Trespass Emerging Issue*, THE AM, OIL & GAS REPORTER (Feb. 2012), available at <http://www.nortonrosefulbright.com/files/us/images/publications/20120201AOGSubsurfaceTrespassNicholson.pdf> (examining recent fracking cases and how they impact subsurface trespass issues).

178. *Coastal Oil*, 268 S.W.2d at 11 (explaining ad coelum doctrine has no place in today’s law). The court supported this by noting that Lord Coke, the creator of the doctrine, “did not consider the possibility of airplanes. But neither did he imagine oil wells. The law of trespass need no more be the same two miles below the surface than two miles above.” *Id.*

179. *Id.* at 11 (noting how application of ad coelum doctrine could effect trespass analysis).

180. *Id.* (failing to apply ad coelum doctrine).

181. *Id.* (discussing Texas case law addressing subsurface trespass).

182. *Id.* (distinguishing slant drilling from fracking).

183. *Coastal Oil*, 268 S.W.2d at 11 (contrasting how oil and gas travel to well during fracking versus during slant drilling).

property.¹⁸⁴ The court reasoned that “[o]ne cannot protect against drainage from a deviated well by drilling his own well; the deviated well will continue to produce his gas.”¹⁸⁵ In the case of fracking, however, the court reasoned that “[i]f the drained owner has no well, he can drill one to offset drainage from his property.”¹⁸⁶

There are minimal differences, however, between slant wells and hydraulic fractures.¹⁸⁷ For example, “[b]oth involve a lease operator’s intentional actions which result in inserting foreign materials without permission into a second lease, draining minerals by means of the foreign materials, and ‘capturing’ the minerals on the first lease.”¹⁸⁸ The majority also failed to recognize the financial stability and expertise needed to drill a well, resources which the average landowner does not possess.¹⁸⁹ The majority’s “holding [therefore] reduces incentives for operators to lease from small property owners because they can drill and hydraulically fracture to ‘capture’ minerals from unleased and unpooled properties that would otherwise not be captured.”¹⁹⁰

B. Stone

In *Stone*, despite the plaintiff bringing an action for trespass, the court avoided analyzing whether a trespass occurred by simply stating “hydraulic fracturing under the land of a neighboring property . . . constitutes an actionable trespass.”¹⁹¹ In making this assertion, the court explicitly rejected the majority opinion in *Coastal Oil* because it “gives oil and gas operators a blank check to steal from

184. *Id.*

185. *Id.* (explaining landowners cannot protect against drainage from deviated well).

186. *Id.* at 14 (reasoning landowners can drill their own wells to prevent neighbors from taking their oil and gas).

187. *Id.* at 44-45 (Johnson, J. dissenting) (arguing there are minimal differences between slant drilling and fracture lines).

188. *Coastal Oil*, 268 S.W.2d at 44 (Johnson, J. dissenting) (explaining why both types are drilling are similar and should not be treated differently).

189. *Id.* at 45 (Johnson, J. dissenting) (reasoning average landowner does not possess necessary resources to protect oil under their property).

190. *Id.* (Johnson, J. dissenting) (stating holding encourages oil companies not to lease from small property owners and instead to simply capture their gas). As the dissent noted, “[t]oday’s holding effectively allows a lessee to change and expand the boundary lines of its lease by unilateral decision and action—fracturing its wells—as opposed to contracting for new lease lines, offering to pool or utilizing forced pooling, or paying compensatory royalties.” *Id.*

191. *Stone*, 2013 WL 2097397 at *8 (noting court failed to answer question presented).

the small landowner.”¹⁹² The court instead relied on the dissent in *Coastal Oil* and the majority in *Young* to support its conclusion.¹⁹³ By avoiding an analysis and decision on the trespass issue, the court once again left open the potential for further litigation on the matter.

The district court in *Stone* applied West Virginia trespass law and stated it would not apply the *Coastal Oil* holding that the rule of capture insulates well operators from trespass liability in hydraulic fracturing operations.¹⁹⁴ West Virginia law provides that “trespass is ‘an entry on another man’s grounds without lawful authority, and doing some damage, however inconsiderable, to his real property.’”¹⁹⁵ The court began its trespass analysis by recognizing that West Virginia had adopted the rule of capture, but then noted that in *Trent v. Energy Dev. Corp.*, the “Fourth Circuit left open the issue of whether the rule of capture includes oil and gas recovered by hydraulic fracturing.”¹⁹⁶ In *Trent*, the Fourth Circuit stated “short of committing a trespass . . . the law of capture allows a landowner ‘to use artificial means of stimulating production even though the effect is to increase the drainage from the land of another.’”¹⁹⁷ As such, the defendants strongly urged the court to adopt the holding in *Coastal Oil* to bar the recovery of damages under the rule of cap-

192. *Id.* at *6 (rejecting holding in *Coastal Oil*). The court reasoned under *Coastal Oil*, oil “companies may tell a small landowner that either they sign a lease on the company’s terms or the company will just hydraulically fracture under the property and take the oil and gas without compensation.” *Id.*

193. See generally *Coastal Oil*, 268 S.W.3d at 42-51 (Johnson, J. dissenting) (explaining how court reached its conclusion).

194. *Stone*, 2013 WL 2097397 at *5-6 (explaining why *Coastal Oil* holding would not be applied).

195. *Id.* at *8 (quoting *Hagy v. Equitable Production Co.*, Civil Action No. 2:10-cv-01372, 2012 WL 1813066 at *4 (S.D.W.Va. May 2012) (citing West Virginia trespass law)). The court also cited the Restatement (Second) of Torts § 158: “[t]he actor, without himself entering the land, may invade another’s interest in its exclusive possession by throwing, propelling, or placing a thing either on or beneath the surface of the land or in the air space above it.” Restatement (Second) of Torts § 158, Comment i.

196. *Stone*, 2013 WL 2097397 at *2 (recognizing West Virginia adoption of rule of capture). West Virginia’s rule of capture states that “[oil and gas] belong to the owner of the land, and are part of it, so long as they are on it or in it subject to his control; but then they escape and go into other land, or come under another’s control, the title of the former owner is gone.” *Id.* (quoting *Energy Dev. Corp. v. Moss*, 591 S.E.2d 135, 147 (W. Va. 2003)).

197. *Stone*, 2013 WL 2097397 at *2 (quoting *Trent*, 902 F.2d at 1147, n.8) (explaining how rule of capture law in West Virginia)).

ture.¹⁹⁸ The court, however, declined to do so reasoning self-help remedies are inadequate to many landowners.¹⁹⁹

After a detailed discussion of the facts and holding in *Coastal Oil*, the court focused on the dissent's discussion of how the rule of capture should apply only to naturally flowing gas, and not gas that is forced to migrate due to hydrofracking.²⁰⁰ The court found the most influential argument to be the one discrediting the *Coastal Oil* majority's theory that landowners can drill their own well to prevent neighboring property owners from extracting gas from underneath their land.²⁰¹ According to the dissent, not only is this a very costly endeavor, but most property owners are not sophisticated enough to engage in such an activity.²⁰² Further, the Eighth Circuit's rationale in *Young* that "the common law rule of capture is not a license to plunder," a principle that the *Coastal Oil* majority seemingly ignored, heavily influenced the court's decision.²⁰³

The court also refuted the *Coastal Oil* majority's assertion that the ad coelum doctrine "ha[d] no place in the modern world."²⁰⁴ To counter this statement, the court relied on a 2003 West Virginia Supreme Court of Appeals case, *Energy Dev. Corp. v. Moss*, which reaffirmed the doctrine.²⁰⁵ In making this blanket assertion, "the [*Coastal Oil* majority] oversimplified the dispute it faced by casually dismissing the possibility that the ad coelum doctrine might [] apply at the depths at which the defendants were operating, and that the defendants' actions therefore might [] constitute a trespass."²⁰⁶ If the court applied this same rationale to airspace, however, then

198. *Id.* at *4 (outlining defendant's arguments concerning why court should adopt *Coastal Oil* holding); compare *Trent v. Energy Dev. Corp.*, 902 F.2d 1143, 1147 n.8 (4th Cir. 1990). In this case, the defendants argued that the rule of capture should not apply "because the flow of gas from the landowners' tract was unnaturally enhanced by hydrofracturing, a process whereby the producing strata is fractured to increase the strata's permeability and, as a consequence, the flow of gas into the well." *Id.*

199. *Stone*, 2013 WL 2097397 at *4 (finding self-help remedies insufficient).

200. For further discussion of the *Stone* Court's analysis of the *Coastal Oil* dissent, see *infra* notes 201-209 and accompanying text.

201. *Stone*, 2013 WL 2097397 at *4 (explaining what arguments were most influential).

202. *Id.* (noting most significant argument dissent made focused on property owners drilling their own wells).

203. *Id.* at *7 (citing *Young*, 521 F.2d at 774) (agreeing oil companies cannot take oil from whoever they want, whenever they want).

204. *Id.* (citing *Coastal Oil*, 268 S.W.2d at 12) (noting holding in *Coastal Oil* that ad coelum should not be applied).

205. *Id.* at *7 (citing *Energy Dev. Corp. v. Moss*, 591 S.E.2d 135, 143 n. 14 (W. Va. 2003) (recognizing West Virginia still uses ad coelum maxim)).

206. Hall, *supra* note 39 at 399 (providing criticisms of *Coastal Oil* and *Stone* holdings).

any low-flying aircraft or drone, which flew over another individual's property, would not constitute a trespass despite the invasion that occurred.²⁰⁷ This theory, however, does not follow the traditional trespass model which only allows for trespass at elevations that would reasonably interfere with a landowner's use and enjoyment of his property.²⁰⁸ Likewise, it has been suggested that this traditional model is also consistent with other court holdings that found no liability for injection disposal operations.²⁰⁹

C. FPL

During the initial appeal in *FPL*, the appeals court held that “under common law, when a state agency has 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.”²¹⁰ Upon further appeal to the Texas Supreme Court, however, the court held that a person holding a permit issued by the Texas Commission on Environmental Quality (TCEQ) was not shielded “from civil tort liability that may result from actions governed by the permit.”²¹¹ Consequently, the case was remanded to the appeals court to hear the parties' trespass claim arguments.²¹² In order to win on the trespass claim, FPL had the burden of proving that Environmental Processing Systems, L.C. (EPS) interfered with its right of possession.²¹³

On remand, EPS argued that “Texas case law does not recognize a claim for trespass to protect possessory rights at the depths that are at issue in this case.”²¹⁴ The court disagreed however, citing both *Gregg* and *Hastings Oil*, which recognized the possibility of

207. See *Thrasher v. City of Atlanta*, *supra* note 44 and accompanying text.

208. Hall, *supra* note 39 at 400 (explaining traditional trespass model and why *Stone's* interpretation was overly broad and unreasonable). “The Model would not impose trespass liability for high altitude flights because a landowner could not reasonably be expected to use such elevations in connection with his use and enjoyment of his land.” *Id.*

209. *Id.* at 400-01 (reasoning that application of ad coelum doctrine applies to injections wells as it does airspace).

210. *FPL Farming Ltd.*, 351 S.W.3d at 308 (stating holding on first appeal).

211. *Id.* (quoting *FPL Farming Ltd. v. Envtl. Processing Sys., L.C.*, 351 S.W.3d 306, 314 (Tex. 2011) (holding permits do not shield issuee from liability)).

212. *Id.* (explaining procedural background).

213. *Id.* (citing *Russell v. Am. Real Estate Corp.*, 89 S.W.3d 204, 208 (Tex. App. 2002) (providing burden of proof)).

214. *Id.* (arguing Texas case law does not support subsurface trespass claim).

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subsurface trespass at such depths.²¹⁵ The court further cited to another recent Texas Supreme Court decision that “clearly found that the ownership of groundwater is like the ownership of oil and gas, namely that the owner has a possessory interest in the water or oil and gas that is subject to the rule of capture and police power regulation.”²¹⁶ Thus, the court found no difference between diminishing the market value of oil and gas, and that of fresh or briny water.²¹⁷

This rationale brings into question the court’s prior decision in *Manziel*, which held that no trespass occurs when injection fluids move across property lines during the secondary recovery process as long as the Railroad Commission had authorized the action.²¹⁸ Indeed, the *FPL* court held that state-issued permits do not shield the well operator from trespass liability if the claimant can show that there was a cross-boundary migration of injection fluids.²¹⁹ While these cases deal with distinct permit issuing agencies, it is difficult to distinguish the two scenarios because both involve the invasion of the subsurface space below another individual’s property.

EPS went on to argue “it should have the right to use the storage potential of the unexploited space below FPL’s tracts.”²²⁰ The court reiterated the Texas Supreme Court’s holding that the TCEQ-granted permit merely gave EPS the authority to use the space below their property for injection purposes, and not the space below FPL’s tract.²²¹ Moreover, “the fact that EPS is using the deep subsurface for commercial purposes indicates that the subsurface levels at issue have economic potential for storing waste, which otherwise, absent its safe storage, has the potential to adversely affect the environment.”²²² Thus, the court reasoned without the possibility of a trespass remedy, FPL “does not have all of the legal

215. *FPL Farming Ltd.*, 351 S.W.3d at 309 (citing cases that counter EPS’s arguments). For further discussion of *Gregg* and *Hastings Oil*, see *supra* notes 116-124 and accompanying text.

216. *Horizontal Drilling and Trespass*, 25 COLO. NAT. RES., ENERGY & ENVTL. L. REV. 321 (2014) (citing *Edwards Aquifer Auth. v. Day*, 369 S.W.3d 814 (Tex. 2012) (explaining holding in *Day*)).

217. *FPL Farming Ltd.*, 351 S.W.3d at 281 (analogizing market value of oil and gas to that of groundwater).

218. For further discussion of the rationale in *Manziel*, see *supra* notes 125-127 and accompanying text.

219. *FPL Farming Ltd.*, 351 S.W.3d at 312 (holding state-issued permit does not shield well operator from tort liability).

220. *Id.* (stating EPS’s second argument).

221. *Id.* (explaining purpose of permit and its limitations).

222. *Id.* (noting subsurface space has economic potential because it is already being used for commercial purposes).

remedies typically available to owners to protect the owner's right to the exclusive use of its property."²²³

The economic potential argument can, and has been, made for gas and oil. Here, the court reasoned that EPS could not use the storage space below FPL's property because of the potential economic value, even though FPL was not presently using the space.²²⁴ Similarly, in both *Manziel* and *Coastal Oil*, the courts emphasized the social and economic importance of fracking and secondary recovery by stating that such activities should be encouraged.²²⁵ Despite the similarities in the circumstances surrounding these cases, the Texas courts managed to reach substantially different conclusions concerning subsurface space.

On a recent appeal back to the Texas Supreme Court for the second time, the court decided to take the case and make a final ruling.²²⁶ This ruling, however, did not help to clarify the issue of subsurface trespass as it simply reinstated the trial court's jury verdict that the landowner take nothing.²²⁷ After providing an extensive discussion of traditional trespass claims, the court declined to address the issue of deep subsurface wastewater migration.²²⁸ In its discussion, the court did however cite to *Coastal Oil* in stating "every *unauthorized* entry upon land of another is a trespass even if no damage is done or injury is slight, and gives a cause of action to the injured party."²²⁹ This would suggest that deep subsurface trespass is a viable cause of action, however, at this point, the court has not resolved this question.

V. IMPACT

At present, courts remain in disagreement as to whether the rule of capture includes the right to capture by artificial means. The *Coastal Oil* court suggested that it does include the right, but as

223. *Id.* (holding trespass remedy is necessary because otherwise landowner would be lacking all available remedies).

224. For further discussion of the economic potential argument in *FPL*, see *supra* notes 220-223 and accompanying text.

225. See *Coastal Oil*, 268 S.W.3d at 30-35 (Willett, J. concurring) (discussing economic importance of drilling).

226. *Env'tl. Processing Sys., L.C. v. FPL Farming Ltd.*, 457 S.W.3d 414, 416 (Tex. 2015) (noting court did not address subsurface trespass).

227. *Id.* at 416 (reinstating trial court's judgment which was decided by jury trial).

228. *Id.* at 416-25 (discussing traditional trespass causes of action).

229. *Id.* at 421 (citing *Coastal Oil*, 268 S.W.3d 1, 12 n. 36 (Tex. 2008) (emphasis added) (noting any entry onto land of another is trespass, even if no damage is done)).

the *Stone* court noted, the *Coastal Oil* opinion gives landowners only two options: (1) drill their own well; or (2) enter into a lease agreement on the company's terms allowing them to capture the oil.²³⁰ Both of these options place a large burden on small landowners, jeopardize the amount of oil that can be captured, and could potentially have catastrophic consequences on the environment.

The holdings in *Coastal Oil* and *Stone* have the potential to create a snowball effect in which landowners race to drill wells on their property in an effort to capture oil and gas before their neighbor can. When wells are drilled in close proximity to each other, their production levels decrease and they tend to produce oil at a slower rate.²³¹ While some states have enacted statutes regulating the spacing between wells, it remains to be seen whether such legislation will be enough to prevent the drilling of an excessive number of wells.²³² Furthermore, when oil production from a particular well begins to slow, drilling companies typically engage in secondary or enhanced recovery operations.²³³ This results in greater use of fracking fluids, thereby creating a need for more waste disposal wells.²³⁴

Additionally, in many states, it is nearly impossible to learn what chemicals are used during the fracking process, although it is known that many of them have adverse health consequences.²³⁵ These chemicals can be extremely dangerous if the fluids leak into ground water wells.²³⁶ In response to ground water well contamina-

230. *Stone*, 2013 WL 2097397 at *6 (examining flaws in *Coastal Oil* opinion). "Under such a rule, the companies may tell a small landowner that either they sign a lease on the company's terms or the company will just hydraulically fracture under the property and take the oil and gas without compensation." *Id.*

231. Kevin Thuot, *There Will Be Blood: Well Spacing & The Bakken Shale Oil Milkshake*, DRILLING INFO (Nov. 26, 2013), <http://info.drillinginfo.com/well-spacing-bakken-shale-oil/> (explaining how spacing between wells effects oil production).

232. Travis Brannon & Walton Shepherd, *Marcellus Shale Drilling Comparative White Paper*, W.VA. COLLEGE OF LAW (Spring 2012), available at <http://energy.law.wvu.edu/r/download/130703> (comparing drilling laws from New York, Ohio, Pennsylvania, and West Virginia).

233. For further discussion of oil recovery processes, see *supra* notes 7-12 and accompanying text.

234. For further discussion of the waste caused by fracking, see *supra* notes 22-27 and accompanying text.

235. Michael Kelley, *The 10 Scariest Chemicals Used in Hydraulic Fracking*, BUSINESS INSIDER (Mar. 16, 2012), <http://www.businessinsider.com/scary-chemicals-used-in-hydraulic-fracking-2012-3> (discussing chemicals used in fracking process and their harmful effects).

236. Andrew Nikiforuk, *Shale Gas: How Often Do Fracked Wells Leak?*, RESILIENCE.ORG (Jan. 10, 2013), <http://www.resilience.org/stories/2013-01-10/shale-gas-how-often-do-fracked-wells-leak> (discussing frequency of drinking well contamination and what effects it has).

tion concerns, scientists from universities around the country have studied the gas content of “113 drinking-water wells and one methane seep overlying the Marcellus shale in Pennsylvania, and [] 20 wells overlying the Barnett shale in Texas.”²³⁷ The study analyzed the “noble gases and their isotopes in groundwater near shale-gas wells.”²³⁸ The data ultimately “appeared to rule out gas contamination by upward migration” from where horizontal drilling or hydraulic fracturing occurred to the underground aquifer.²³⁹ Rather, the results showed that the gas contamination came from much shallower depths.²⁴⁰ Thus, the researchers concluded that hydraulic fracturing is not the cause of contamination, but instead “well-integrity problems such as poor casing and cementing” cause contamination.²⁴¹ Now that the source of contamination has been recognized, oil and gas companies will be able to focus on how to make safer wells moving forward knowing that the structural integrity is key to preventing groundwater contamination.

Despite this somewhat promising research, states should, at a minimum, follow the trespass model that has been used to address airspace trespass, at least until more is known about the effects of fracking. This model will allow drilling companies to continue extracting oil from deep subsurface reservoirs while working to protect groundwater. Although this model may ease the concerns of groundwater contamination, issues of disposal waste that is stored closer to the surface remain unresolved despite the holding in *FPL*.²⁴²

237. Duke University, *Contaminated Water in 2 States Linked to Faulty Shale Gas Wells*, EUREKALERT (Sept. 15, 2014), http://www.eurekaalert.org/pub_releases/2014-09/du-cwi091014.php (explaining study conducted by scientist on groundwater contamination near wells). The study examined “eight clusters of wells—seven in Pennsylvania and one in Texas—with contamination, including increased levels of natural gas from the Marcellus shale in Pennsylvania and from shallower, intermediate layers in both states.” *Id.*

238. *Id.* (explaining what gases were analyzed and their origin).

239. Thure Cerling, *Noble Gases Identify the Mechanisms of Fugitive Gas Contamination in Drinking-Water Wells Overlying the Marcellus and Barnett Shales*, PROCEEDINGS OF THE NAT'L ACAD. OF SCI. OF THE U.S.A. (Aug. 12, 2014), <http://www.pnas.org/content/111/39/14076>, (detailing study conducted on groundwater contamination of wells located in clusters around drilling sites).

240. *Id.* (concluding contamination source was not at depths where horizontal fracking occurred).

241. For further discussion on the results of the study, see Duke University, *supra* note 237.

242. Abraham Lustgarten, *Injection Wells: The Poison Beneath Us*, PROPUBLICA (June 21, 2012), <http://www.propublica.org/article/injection-wells-the-poison-beneath-us> (depicting depths that fracking and waste disposal occur at).

While landowners may be unable to bring a successful subsurface trespass claim, they may be able to succeed on other theories such as nuisance, negligence, or strict liability.²⁴³ To prove a nuisance claim, landowners “may be able to prove easily that their lawn used to be green but is now dead from fracing fluids or other fracing-related surface activities.”²⁴⁴ Similarly, landowners may have a fairly straightforward claim for negligence, especially if there is a well blowout situation like the one in *Elliff*.²⁴⁵ In order to bring a strict liability case, however, the state must recognize drilling as an ultra-hazardous activity.²⁴⁶ Unfortunately for landowners, “courts have uniformly refused to find that oil and natural gas drilling and related activities are ultra-hazardous or abnormally dangerous, and thus have found that such activities are not subject to strict liability under tort law.”²⁴⁷ In support of this, courts have typically cited to the social and economic benefit of fracking and reasoned that properly executed drilling operations, conducted in appropriate areas and coupled with the economic and community benefit, outweigh the risk involved with hydraulic fracturing.²⁴⁸ Despite the availability of these potential tort claims, it is unlikely that success under one of these tort theories would adequately remedy the ef-

243. Earl Hagstrom, *Hydraulic Fracturing Litigation is on the Rise*, HYDRAULIC FRACTURING DIGEST (Sept. 2011), <http://www.sedgwicklaw.com/hydraulic-fracturing-litigation-is-on-the-rise-09-19-2011/> (discussing types of claims landowners are bringing against drilling companies).

244. Hannah Wiseman, *Untested Waters: The Rise of Hydraulic Fracturing in Oil and Gas Production and the Need to Revisit Regulation*, 20 FORDHAM ENVTL. L. REV. 115 (2005) (proposing alternative theories to trespass claims).

245. For further discussion of the *Elliff* case, see *supra* notes 76-92 and accompanying text.

246. See generally Christopher Ball, *Marcellus Shale and the Ultrahazardous Activity Analysis*, THE LEGAL INTELLIGENCER (October 14, 2011) http://www.mankogold.com/media/publication/25_Ball_and_Marcellus_Shale_and_Ultrahazardous_Activity.pdf (discussing Pennsylvania case holding drilling is not abnormally dangerous); Joe Schremmer, *Avoidable “Fraccident”: An Argument Against Strict Liability for Hydraulic Fracturing*, 60 KANSAS L. REV. 1225-232 (2012) (explaining fracking strict liability claims).

247. *Ely v. Cabot Oil & Gas Corp.*, No. 3:09-cv-2284, 2014 WL 4071640, at *1 (W.D.Pa. 2014) (giving history of strict liability applied to fracking). On November 19, 2009, however, Pennsylvania was “invited to take a step which no court in the United States [had] chosen to take, and declare hydraulic fracturing to be an ultra-hazardous activity that gives rise to strict liability.” Ultimately, the court declined to do so. Gina Passarella, *Drilling Contamination Case Narrowed Against Cabot*, THE LEGAL INTELLIGENCER (January 14, 2015), <http://www.thelegalintelligencer.com/home/id=1202715050360?cn=20150113&pt=PM%20Legal%20Alert&src=EMC-E-mail&eteditorial&bu=the%20Legal%20Intelligencer&slreturn=20150016092034> (giving background of *Ely* case and how groundwater contamination effected them).

248. *Ely v. Cabot Oil & Gas Corp.*, 2014 WL 4071640 at *11-14 (applying Restatements six factor test to case facts).

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facts of fracking due to the damage that is caused by the act itself. Thus, until the courts take a stronger stance on fracking, or states enact stricter laws, it is unlikely that landowners will have a sufficient remedy for damage or losses caused by fracking.