Unitization: A Partial Solution to the Issues Raised by Horizontal Well Development in Shale Plays

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I. INTRODUCTION

As we fly past the sesquicentennial of oil and gas production in the United States, which was accompanied by nearly as long a period of oil and gas regulation accomplished largely at the state level,[1] it is fitting that we recognize the seventy-fifth anniversary of the Arkansas Conservation Act.[2] This legislation modernized earlier oil and gas conservation statutes and created the Arkansas Oil and Gas Commission (AOGC). This article focuses on one of the many conservation tools of state oil and gas conservation agencies such as the AOGC—compulsory or statutory unitization. It does so in the

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1. While some claim that wells in Ohio and New York antedated the drilling of the Drake well in 1859, the Drake well is considered the "birth," or starting point, of the oil and gas industry in the United States. BRUCE M. KRAMER & PATRICK H. MARTIN, THE LAW OF POOLING AND UNITIZATION § 1.01 (3d ed. 2014). *See generally* LEGAL HISTORY OF CONSERVATION OF OIL AND GAS (1938) (exploring early state efforts to regulate the industry). For example, drillers first discovered gas in Arkansas in 1901, and a larger field was discovered in 1904. W. Henry Rector, *Legal History of Conservation of Oil and Gas in Arkansas*, *in id.* at 16, 16. By 1917, the Arkansas General Assembly had enacted its first conservation regulation. *Id.* at 17; *see also* Act 166, 1917 Ark. Acts 890 (relevant legislation). Similarly, in Kansas, the first commercial discovery of oil and gas took place in 1882, and the first conservation statute was enacted in 1889. *See* Innis D. Harris, *Legal History of Conservation of Oil and Gas in Kansas*, *in* LEGAL HISTORY OF CONSERVATION OF OIL AND GAS, *supra* note 1, at 37, 39. The first conservation statutes typically implemented well-plugging and casing requirements and were adopted as early as 1878 in Pennsylvania, 1879 in New York, and 1883 in Ohio. *See* Walter L. Summers, *The Modern Theory and Practical Application of Statutes for the Conservation of Oil and Gas*, *in* LEGAL HISTORY OF CONSERVATION OF OIL AND GAS, *supra* note 1, at 1, 1 n.1. The American Bar Association published two additional books documenting conservation regulation through 1958. *See generally* CONSERVATION OF OIL AND GAS: A LEGAL HISTORY, 1948 (Blakely M. Murphy ed., 1949); CONSERVATION OF OIL AND GAS: A LEGAL HISTORY, 1958 (Robert E. Sullivan ed., 1960).

2. *See* Act 105, 1939 Ark. Acts 219.

context of the universal adoption of the rule of capture as the ownership doctrine governing oil and gas, much of which the author has explored in previous writings.[3] This article builds on that scholarship.

Part II briefly addresses the development of regulation in the oil and gas industry. Part III explains how the rule of capture created substantial negative public policy ramifications, some of which have been overcome through the various conservation tools utilized by state oil and gas conservation agencies, including statutory pooling and statutory unitization. Part IV explores the meek attempts by courts to develop a common law doctrine of "correlative rights" as a means of ameliorating the negative impacts of the rule of capture. Part V looks at the history of statutory unitization, tracing its development in light of modern advances in drilling technologies that have allowed the industry to unlock shale-based oil and natural gas. Part VI explains how statutory unitization principles can encourage the exploitation of hydrocarbon resources in ways that prevent waste, conserve natural resources, and protect correlative rights.

II. THE DEVELOPMENT OF OIL AND GAS REGULATION

Today, it is widely accepted that public regulation of the oil and gas industry is based on three bedrock principles: (1) the prevention of waste; (2) the conservation of natural resources; and (3) the protection of correlative rights.[4] However, surface

3. *See* Bruce M. Kramer, *Principles and Historical Context of Pooling and Unitization*, *in* 1 ONSHORE POOLING AND UNITIZATION 1-1 (1997); Bruce M. Kramer & Owen L. Anderson, *The Rule of Capture—An Oil and Gas Perspective*, 35 ENVTL. L. 899 (2005).

4. In 1950, the Interstate Oil Compact promulgated a model conservation statute with the following preamble:

> It is hereby declared to be in the public interest to foster, to encourage, and to promote the development, production, and utilization of natural resources of oil and gas in the state in such a manner as will prevent waste; to authorize and to provide for the operation and development of oil and gas properties in such a manner that a greater ultimate recovery of oil and gas be had and that the correlative rights of all owners be fully protected . . . .

ROBERT E. SULLIVAN, HANDBOOK OF OIL AND GAS LAW 252-53 (1955) (quoting LEGAL COMM. OF INTERSTATE OIL COMPACT COMM'N, A FORM FOR AN OIL AND GAS CONSERVATION STATUTE 1 (1950)).

impacts, including environmental issues such as air and water pollution, have increasingly become factors considered by oil and gas conservation agencies in their regulatory programs.[5]

Early conservation regulation was principally concerned with the prevention of waste, in the physical sense of the term. For example, states regulated the plugging and casing of wells to avoid reservoir depletion as early as 1878.[6] Such regulation was designed to avoid the physical loss of hydrocarbons as well as to prevent the pollution of surface water and groundwater supplies that were often critical to the population living in the semi-arid, mid-continent area.[7] The focus on physical waste appears in a series of Indiana statutes that laid the groundwork for the upholding of such regulations against federal and state constitutional challenges.

An 1893 Indiana law that prohibited developers from allowing natural gas to escape into the open air for more than two days after discovery[8] led to the landmark United States Supreme Court opinion in *Ohio Oil Co. v. Indiana*.[9] The stated statutory purpose in prohibiting the dissipation of natural gas was that it would cause injury to others with interests in the common source of supply.[10] At this stage in American constitutional jurisprudence, there was only a limited "regulatory takings" doctrine because substantive due process principles dominated attacks on regulatory programs adopted by the states.[11] In *Ohio Oil Co.*, the Court rejected the substantive due process challenge after finding that the prevention of

5. *See, e.g.*, COLO. REV. STAT. ANN. § 34-60-106 (West 2014) ("The commission has the authority to regulate: Oil and gas operations so as to prevent and mitigate significant adverse environmental impacts on any air, water, soil, or biological resource resulting from oil and gas operations to the extent necessary to protect public health, safety, and welfare, including protection of the environment and wildlife resources, taking into consideration cost-effectiveness and technical feasibility.").

6. *See* Summers, *supra* note 1, at 1 n.1; *see also* SULLIVAN, *supra* note 4, at 257 ("Prior to 1915, all legislative restraint of the absolute right of a landowner to produce and use oil and gas as he pleased, as long as they were produced from his own land, was predicated on the prevention of waste.").

7. *See* Harris, *supra* note 1, at 39 (discussing regulatory efforts in Kansas).

8. *See* 1893 Ind. Acts 300.

9. 177 U.S. 190 (1900).

10. *See* 1893 Ind. Acts 300, 300.

11. *See* J. Peter Byrne, *Ten Arguments for the Abolition of the Regulatory Takings Doctrine*, 22 ECOLOGY L.Q. 89, 93-94 (1995) ("For more than one hundred years after the adoption of the Fifth Amendment, judicial interpretation of the Takings Clause confirmed the narrow, historically grounded interpretation.").

underground waste in the common source of supply was a valid objective pursuant to the state's police power.[12] The Court also observed that states were the source of property rules relating to the ownership of oil and gas, and as such they could define or refine their ownership definitions to deal with the unique challenges presented by a common source of supply owned by different parties.[13] The Indiana Supreme Court made similar findings when it upheld a statute prohibiting the burning of gas in flambeau lights[14] and a law barring the use of vacuum pumps to induce a greater flow of gas.[15] These early attempts at regulating not only the production of oil and gas, but what the owner could do with the oil and gas once produced, laid the foundation for the more pervasive regulation that took place during the middle of the twentieth century. They also laid the groundwork for the more recent wave of regulation governing the development of oil and gas resources from shale formations.

Arkansas experienced a similar history of oil and gas conservation regulation. Commercial production of dry natural gas began in the first decade of the twentieth century and continued for about twenty years with little state intervention.[16] Apparently as the result of some improper drilling, Arkansas adopted its first conservation act in 1917, which regulated drilling, the casing of wells, and the proper plugging and

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12. The Court supported this conclusion using the following statement:

> In view of the fact that regulations of natural deposits of oil and gas and the right of the owner to take them as an incident of title in fee to the surface of the earth, as said by the Supreme Court of Indiana, is ultimately but a regulation of real property, and they must hence be treated as relating to the preservation and protection of rights of an essentially local character. Considering this fact and the peculiar situation of the substances, as well as the character of the rights of the surface owners, we cannot say that the statute amounts to a taking of private property, when it is but a regulation by the State of Indiana of a subject which especially comes within its lawful authority.

Ohio Oil Co., 177 U.S. at 211-12; *see also* KRAMER & MARTIN, *supra* note 1, § 24.01[2] (discussing more recent jurisprudence in this field).

13. *Ohio Oil Co.*, 177 U.S. at 210 ("Hence it is that the legislative power, from the peculiar nature of the right and the objects upon which it is to be exerted, can be manifested for the purpose of protecting all the collective owners, by securing a just distribution, to arise from the enjoyment by them, of their privilege to reduce to possession, and to reach the like end by preventing waste.").

14. *See* Townsend v. State, 47 N.E. 19, 21-22 (Ind. 1897).

15. *See* Mfrs.' Gas & Oil Co. v. Ind. Natural Gas & Oil Co., 57 N.E. 912, 914-17 (Ind. 1900).

16. Rector, *supra* note 1, at 16-17.

abandonment of such wells.[17] But the 1917 law went beyond mere physical waste regulation by also prohibiting the withdrawal of more than 20% of the open flow capacity of any well.[18] This was followed by the adoption of a revised conservation statute in 1921.[19] These two laws, however, were deemed insufficient to deal with the discovery and rapid development of two oil fields in Arkansas during the early part of the 1920s, which prompted the passage of a more comprehensive statutory scheme in 1923.[20] For the first time, the statute defined "waste" and prohibited the production of hydrocarbons in a manner that would constitute "waste."[21] In many ways, early Arkansas conservation regulation mirrored what was going on in both the Appalachian and mid-continent regions, where oil and gas reservoirs had been discovered and rapidly developed.

This article uses the following definitions of basic terms commonly seen in the context of conservation regulation. First, "unitization" or "unit operations" describe "the consolidation of mineral or leasehold interests covering all or part of a common source of supply."[22] This is often confused with the terms "pooling" or a "pooled unit," which refer to "the joining together of small tracts or portions of tracts for the purpose of having sufficient acreage to receive a well drilling permit under the relevant state or local spacing [or drilling] laws and regulations."[23] Well-spacing regulations, which created the need for pooling, usually involve either or both: (1) lineal spacing rules; or (2) density spacing rules.[24]

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17. *See* Act 166, 1917 Ark. Acts 890.

18. *See* § 18, 1917 Ark. Acts at 900.

19. *See* Act 144, 1921 Ark. Acts 216.

20. *See* Act 664, 1923 Ark. Acts 555. For a discussion on the severe pollution of Smackover Creek, one of the events that inspired Act 664, see Rector, *supra* note 1, at 19.

21. *See* Act 664, § 2, 1923 Ark. Acts 555, 557. Unhappiness with these early conservation statutes triggered the efforts that led to the adoption of the 1939 Act, which created the AOGC. *See* Rector, *supra* note 1, at 23-27.

22. *See* KRAMER & MARTIN, *supra* note 1, § 1.02; *see also* 8 PATRICK H. MARTIN & BRUCE M. KRAMER, WILLIAMS & MEYERS OIL AND GAS LAW 1109-10 (rev. ed. 2008) (describing unitization).

23. *See* KRAMER & MARTIN, *supra* note 1, § 1.02; *see also* 8 MARTIN & KRAMER, *supra* note 22, at 779-80 (describing pooled units and pooling).

24. KRAMER & MARTIN, *supra* note 1, § 5.02.

Arkansas's General Rule B-43 provides one example of both types.[25] General Rule B-43 governs development in the Fayetteville Shale play by mandating 640-acre units.[26] This regulation, however, limits the number of wells on an individual unit to sixteen, and each unconventional well is prohibited from being located any closer than 560 feet from a unit boundary or another well.[27] Louisiana Statewide Order 29-E serves as a good example of a lineal spacing regulation. The rule provides that wells cannot be closer than 330 feet from any property line or 900 feet from any completed well in the same common source of supply.[28] Wyoming uses a density spacing rule that limits every forty-acre tract in the state to a single oil well.[29] Recently, state oil and gas conservation agencies and local governments have used "setbacks" as the principal tool to restrict the location of surface oil and gas facilities.[30] These setbacks are obviously not concerned with drainage issues, but rather with impacts on incompatible surface uses.[31]

Pooling or unitization may be accomplished through voluntary action or through a compulsory or statutory pooling procedure that involves the use of the state's police power to compel non-consenting mineral owners, royalty owners, and/or working-interest owners to be pooled or unitized.[32] While most producing states have compulsory pooling laws, Kansas—home of the first municipal pooling ordinance—does not.[33] There is, however, widespread diversity in the type of pooling procedures utilized by the various states. A number of states, such as Oklahoma, treat a spacing order as a pooling of the royalty owners' interests within the spacing unit.[34] Ohio limits the number of statutory pooling orders a single operator may seek

25. In this issue of the *Arkansas Law Review*, Thomas Daily gives detailed treatment to General Rule B-43. *See* Thomas A. Daily, *Rules Done Right: How Arkansas Brought Its Oil and Gas Law into a Horizontal World*, 68 ARK. L. REV. 259 (2015).

26. 178-00-001 ARK. CODE R. B-43(f) (LexisNexis 2014).

27. 178-00-001 ARK. CODE R. B-43(i).

28. LA. ADMIN. CODE tit. 43, § 1905(A)(2) (2013).

29. *See* 55-3 WYO. CODE R. § 2 (LexisNexis 2012).

30. Bruce M. Kramer, *The State of State and Local Governmental Relations as It Impacts the Regulation of Oil and Gas Operations: Has the Shale Revolution Really Changed the Rules of the Game?*, 29 J. LAND USE & ENVTL. L. 69, 80 (2013).

31. *See id.* at 79-84.

32. *See* KRAMER & MARTIN, *supra* note 1, § 10.01.

33. *See id.* § 10.01 n.1.

34. *See* OKLA. STAT. ANN. tit. 52, § 87.1 (West 2014).

annually to five.[35] Until recently, the Texas Mineral Interest Pooling Act,[36] which was not enacted until 1965, was rarely used. Arkansas, on the other hand, utilizes integration orders that effectively eliminate the need for leasehold pooling clauses and voluntary pooling.[37]

Likewise, every major producing state, except Pennsylvania and Texas, has a compulsory unitization procedure.[38] Greater uniformity exists in compulsory unitization laws than in their pooling counterparts, although there exists some discrepancy in the minimum voluntary consent requirements that must be achieved before a compulsory unitization order can be issued.[39]

III. THE RULE OF CAPTURE

The rule of capture ownership regime for oil and gas is the catalyst for well-spacing, pooling, and unitization regulations.[40] The need for a predictable rule of law, as well as a lack of geologic knowledge concerning the fugacious nature of oil and gas, led courts to adopt the rule.[41] The Pennsylvania Supreme Court was one of the first, likening the ownership of oil and gas to the ownership of *ferae naturae*.[42] In adopting the rule, the court stated as follows:

> Water and oil, and still more strongly gas, may be classed by themselves, if the analogy be not too fanciful, as minerals *ferae naturae*. In common with animals, and unlike other minerals, they have the power and the tendency to escape without the volition of the owner. . . . They belong to the owner of the land, and are part of it, so long as they are on or in it, and are subject to his control;

35. OHIO REV. CODE ANN. § 1509.27 (West 2014).

36. *See* TEX. NAT. RES. CODE ANN. §§ 102.001–102.112 (West 2013).

37. *See* Thomas A. Daily & W. Christopher Barrier, *Well, Now, Ain't That Just Fugacious!: A Basic Primer on Arkansas Oil and Gas Law*, 29 U. ARK. LITTLE ROCK L. REV. 211, 242-43 (2007) (discussing the "Rule of One").

38. KRAMER & MARTIN, *supra* note 1, § 18.01.

39. *See id.* (describing the features of various state unitization laws).

40. *See generally* Kramer & Anderson, *supra* note 3 (exploring the rule's role in the development of the oil and gas industry in the United States).

41. *See* KRAMER & MARTIN, *supra* note 1, § 2.01.

42. Westmoreland & Cambria Natural Gas Co. v. De Witt, 18 A. 724, 725 (Pa. 1889). *See generally* Rance L. Craft, Comment, *Of Reservoir Hogs and Pelt Fiction: Defending the* Ferae Naturae *Analogy Between Petroleum and Wildlife*, 44 EMORY L.J. 697 (1995) (offering a modern defense of the analogy).

> but when they escape, and go into other land, or come under another's control, the title of the former owner is gone. Possession of the land, therefore, is not necessarily possession of the gas. If an adjoining, or even a distant, owner, drills his own land, and taps your gas, so that it comes into his well and under his control, it is no longer yours, but his.[43]

Courts in other jurisdictions subsequently endorsed the rule of capture, applying it without regard to the state's prevailing ownership theory.[44]

The definition of the rule of capture is "deceptively simple."[45] Robert E. Hardwicke, a prominent early oil and gas attorney from Texas, offered a straightforward formulation of the rule in 1935: "The owner of a tract of land acquires title to the oil or gas which he produces from wells drilled thereon, though it may be proved that part of such oil or gas migrated from adjoining lands."[46] Others, however, observed the possible consequences the rule could have on conservation efforts.[47]

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43. *Westmoreland & Cambria Natural Gas Co.*, 18 A. at 725.

44. *See* 1 MARTIN & KRAMER, *supra* note 22, at 53-59.

45. Kramer & Anderson, *supra* note 3, at 900.

46. Robert E. Hardwicke, *The Rule of Capture and Its Implications as Applied to Oil and Gas*, 13 TEX. L. REV. 391, 393 (1935). In *Elliff v. Texon Drilling Co.*, the Texas Supreme Court used the Hardwicke definition and added some additional language:

> He may thus appropriate the oil and gas that have flowed from adjacent lands without the consent of the owner of those lands, and without incurring liability to him for drainage. The non-liability is based upon the theory that after the drainage the title or property interest of the former owner is gone.

210 S.W.2d 558, 562 (Tex. 1948).

47. STEPHEN L. MCDONALD, PETROLEUM CONSERVATION IN THE UNITED STATES: AN ECONOMIC ANALYSIS 31-32 (1971) ("The results [of the rule of capture] are dense drilling, especially along property lines; capacity production of both oil and associated gas; rapid dissipation of reservoir pressure; irregular advance of displacing fluids through the reservoir oil zone; and, therefore, loss of ultimate recovery."); *see also* STUART E. BUCKLEY, PETROLEUM CONSERVATION 249 (1951) ("The inevitable result is obvious. There was a tendency to deplete each pool as fast as it was physically possible for the wells to produce the oil."); Northcutt Ely, *The Conservation of Oil*, 51 HARV. L. REV. 1209, 1209 (1938) ("Through all the law governing petroleum production there runs this twofold problem: a very large potential production, or 'presently producible surplus,' must be restricted in order to avoid physical waste of the commodity and the demoralization of markets, yet the total known domestic supply is adequate for only a few years' demand, and the continuity of that supply is dependent upon continuing success in finding new oil pools."); Hardwicke, *supra* note 46, at 111 ("At least two unfortunate consequences have resulted from the wholesale granting of exceptions: (1) the drilling of unnecessary wells; and (2) excessive allowables to wells drilled under exceptions."). Although Dr. Stephen L. McDonald described the negative ramifications of an unregulated rule of capture system in

The so-called "offset drilling rule" is a corollary of the rule of capture. Under this rule, the only remedy a landowner has against a neighbor who extracts oil and/or gas from beneath his land from a well located close to a property line is to drill himself.[48] In other words, a mineral owner must drill and produce, or he risks losing the minerals to his neighbors' wells located on adjacent lands.

Courts can apply the rule of capture quite easily in its "pure" form.[49] The aforementioned offset drilling situation illustrates this fairly straightforward concept. Application becomes more complex, however, when advanced methods and technologies are used, when the hydrocarbons are put to different uses, or when the common source of supply is threatened.

The pure form of the rule of capture, which speaks little to the concept of "correlative rights" or the nature of a common source of supply, received support in the United States Supreme Court in *Brown v. Spilman*,[50] a case decided in 1895. In *Spilman*, the Court embraced the rule of capture in dicta:

> Petroleum gas and oil are substances of a peculiar character, and decisions in ordinary cases of mining, for coal and other minerals which have a fixed *situs*, cannot be applied to contracts concerning them without some qualifications. They belong to the owner of the land, and are part of it, so long as they are on it or in it, or subject to his control, but when they escape and go into other land, or

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1971, many of the problems he discussed are present with the current development of oil and natural gas from shale formations, including the lack of pipelines and gas-processing facilities needed to avoid the shut-in of wells or the flaring of natural gas. *See* ROBERT E. HARDWICKE, ANTITRUST LAWS, ET AL. V. UNIT OPERATION OF OIL OR GAS POOLS 1-13 (rev. ed. 1961); KRAMER & MARTIN, *supra* note 1, § 3.02[2].

48. *See* Barnard v. Monongahela Natural Gas Co., 65 A. 801, 802 (Pa. 1907) ("What then can the neighbor do? Nothing; only go and do likewise. He must protect his own oil and gas. He knows it is wild and will run away if it finds an opening and it is his business to keep it at home. This may not be the best rule; but neither the Legislature nor our highest court has given us any better.").

49. Early treatise writers focused not on the rule of capture, per se, but rather on ownership concepts. *See, e.g.*, V.B. ARCHER, ARCHER'S LAW AND PRACTICE IN OIL AND GAS CASES 2-42, 558-601 (1911) (analyzing oil and gas by focusing on the significance and ramifications of oil and gas leases and licenses); GEORGE BRYAN, THE LAW OF PETROLEUM AND NATURAL GAS 59 (Philadelphia, George T. Bisel Law Publisher & Bookseller 1898) (discussing the ability of landowners to allow gas to escape from their land and the effects on the landowner's neighbors); *see also* Kramer & Anderson, *supra* note 3, at 906-11 (tracing the rule's development through early judicial decisions).

50. 155 U.S. 665 (1895).

> 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.[51]

Hague v. Wheeler,[52] a case decided by the Pennsylvania Supreme Court in 1893, illustrates the pure form of the rule at its apex. In the case, three mineral owners each drilled wells and extracted natural gas from a common source of supply.[53] Only two of the three individuals, however, had a market for the gas produced.[54] The owner without a market did not plug his well, allowing the gas to escape.[55] After the other owners sued, the court held that, once captured, a mineral owner has a property interest in the gas which allows him to do with it as he pleases, even if he wastes the gas and diminishes the common source of supply.[56] Unlike the law of groundwater,[57] the pure rule of

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51. *Id.* at 669-70. The Court cited *Brown v. Vandergrift*, 80 Pa. 142 (1875), to support its application of the rule of capture. *Id.* at 670. While *Spilman* arose in West Virginia, federal common law existed at the time of the decision, so the reliance on *Vandergrift*, a Pennsylvania case, was not unusual. The Arkansas Supreme Court relied on *Spilman* when it adopted the rule of capture ownership doctrine in *Osborn v. Arkansas Territorial Oil & Gas Co.*, 103 Ark. 175, 179, 146 S.W. 122, 124 (1912). *See* Young v. Ethyl Corp., 521 F.2d 771, 772-73 (8th Cir. 1975) (noting the Arkansas Supreme Court's reliance on *Spilman*).

52. 27 A. 714 (Pa. 1893).

53. *See id.* at 718.

54. *Id.*

55. *Id.*

56. *See id.* at 719-20. An analogous situation arises when a hunter kills a wild animal on his own land and leaves it to rot or be eaten by other wild animals. Having captured the wild animal, the capturer is free to use or not use it. Of course, where you have a difference is that with oil or natural gas, the commodity is part of a common reservoir that underlies a number of tracts owned by different parties, while in the wild animal scenario, there is no common source of supply unless you look at the entire population of wild animals.

57. Early English common law embraced an absolute ownership doctrine with respect to groundwater, and courts rejected arguments involving damage to a common source of supply. *See* Acton v. Blundell, (1843) 152 Eng. Rep. 1223 (Exch.); 12 M. & W. 324. Many jurisdictions in the United States, however, modified the common law rule of groundwater in order to protect the "correlative rights" of landowners. *See* Hardwicke, *supra* note 46, at 409 n.24; *see also* Summers, *supra* note 1, at 8 ("The term correlative rights is merely a simple way of stating that the privileges of each landowner in a common source of supply of oil and gas are limited by duties to other landowners not to injure the oil or gas reservoir, or to take an undue proportion of the oil or gas obtainable therefrom."). Texas continues to follow the absolute ownership doctrine for groundwater along with a pure rule of capture doctrine which nonetheless still allows for state regulation pursuant to its valid police power. *See* Edwards Aquifer Auth. v. Day, 369 S.W.3d 814, 823 (Tex. 2012). The Texas case setting forth this rule relied on many of the early oil and gas

capture remained largely unfettered as the American common law developed.

There were a few attempts to modify the pure rule of capture regime. In *Manufacturers' Gas & Oil Co. v. Indiana Natural Gas & Oil Co.*,[58] the Indiana Supreme Court modified the pure rule of capture by using a combination of common law and statutory factors to limit an operator's ability to use a vacuum pump in order to enhance a well's productive capability.[59] This same distinction between "natural" and "artificial" means by which a producer could enhance a well's productive capability was rejected in *Coastal Oil & Gas Corp. v. Garza Energy Trust*,[60] a case decided by the Texas Supreme Court in 2008. *Coastal Oil* arose in the context of a hydraulic fracturing operation, and the party asserting a trespass by the cross-boundary migration of frac fluids argued that hydraulic fracturing was an artificial means of production beyond the parameters of the rule of capture.[61] The majority rejected that distinction,[62] although it was raised and analyzed in a dissenting opinion.[63] The real issues should not be whether the production technology is natural or artificial, but whether or not it is legal and whether or not it causes harm to the common source of supply.

The pure rule of capture has only been actively modified through judicial decision in Kentucky, where the leading case is

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decisions that defined the rule of capture to support its conclusions related to the ownership and use of groundwater. *See id.* at 824 (citing *Acton*).

58. 57 N.E. 912 (Ind. 1900).

59. *Id.* at 916-17. Simultaneously, the Indiana General Assembly was adopting various conservation statutes designed to deal with the fact that production by one owner clearly impacted other owners in the common source of supply. *See id.* at 913-14, 917. Cases from other jurisdictions demonstrate the receptiveness of courts to limitations on the pure form of the rule. *See* Ohio Oil Co. v. Indiana, 177 U.S. 190 (1900); Townsend v. State, 47 N.E. 19 (Ind. 1897); People's Gas Co. v. Tyner, 31 N.E. 59 (Ind. 1892). Language in *People's Gas Co. v. Tyner* suggested that the capture of oil and gas had to be accomplished with "due regard for the rights of others." 31 N.E. at 60. The ultimate holding, however, was that an owner may not be enjoined from using artificial means—the use of nitroglycerin in the case—to increase the flow of natural gas into one's well. *Id.* There is obviously some tension between *Manufacturers' Gas* and *Tyner* on that issue.

60. 268 S.W.3d 1 (Tex. 2008).

61. *See id.* at 13.

62. *See id.*

63. *See id.* at 42-44 (Johnson, J., concurring in part and dissenting in part). Language in other cases supports this distinction. *See* Peterson v. Grayce Oil Co. 37 S.W.2d 367, 370-71 (Tex. Civ. App. 1931), *aff'd*, 98 S.W.2d 781 (Tex. 1936).

Louisville Gas Co. v. Kentucky Heating Co.[64] In this case, the Kentucky Court of Appeals heard a dispute between two competing natural gas companies,[65] one of which used 90 million cubic feet of gas to make lampblack.[66] The lampblack produced from this enormous amount of gas, however, was worth only $12, and such massive consumption of natural gas resulted in reduced pressure in other wells producing from the common source of supply.[67] This would have been permissible under the pure rule of capture, but the court found differently: "[T]he owner of the soil must, in dealing with it, use his own property with due regard to the rights of his neighbor. He cannot be allowed deliberately to waste the supply for the purpose of injuring his neighbor."[68]

While state courts were generally reluctant to modify the rule of capture through the adoption of some type of correlative rights theory that would account for the existence of a common source of supply, courts recognized that the rule of capture needed to be modified in one particular scenario—where a developer negligently injures the common source of supply. The leading case is *Elliff v. Texon Drilling Co.*,[69] where the defendant's negligent drilling techniques caused a well to blow out and large quantities of natural gas to be lost.[70] The facts necessitated a modification of the rule of capture, which the court did so using the following language:

> [T]he negligent waste and destruction of petitioners' gas and distillate was neither a legitimate drainage of the minerals from beneath their lands nor a lawful or reasonable appropriation of them. Consequently, the

64. 77 S.W. 368 (Ky. 1903).

65. The litigation between these two competitors spanned over a decade. *See* Louisville Gas Co. v. Ky. Heating Co., 134 S.W. 205 (Ky. 1911); Louisville Gas Co. v. Ky. Heating Co., 111 S.W. 374 (Ky. 1908); Ky. Heating Co. v. Louisville Gas Co., 59 S.W. 1090 (Ky. 1900).

66. *Louisville Gas Co.*, 77 S.W. at 369.

67. *See id.*

68. *Id.* Even in Kentucky, however, the courts refused to apply this modified rule of capture to restrict an owner's ability to use artificial means to enhance the recovery of natural gas. *See* United Carbon Co. v. Campbellsville Gas Co., 18 S.W.2d 1110, 1113 (Ky. 1929).

69. 210 S.W.2d 558 (Tex. 1948). An earlier decision suggested that a negligent injury to the common source of supply would be compensable. *See* Comanche Duke Oil Co. v. Tex. Pac. Coal & Oil Co., 298 S.W. 554, 563 (Tex. Comm'n App. 1927).

70. *Elliff*, 210 S.W.2d at 559-60.

> petitioners did not lose their right, title and interest in them under the law of capture. At the time of their removal they belonged to petitioners, and their wrongful dissipation deprived these owners of the right and opportunity to produce them. . . . [U]nder the common law, and independent of the conservation statutes, the respondents were legally bound to use due care to avoid the negligent waste or destruction of the minerals imbedded in petitioners' oil and gas-bearing strata. This common-law duty the respondents failed to discharge. For that omission they should be required to respond in such damages as will reasonably compensate the injured parties for the loss sustained as the proximate result of the negligent conduct.[71]

While some of the court's analysis was based on a misinterpretation of *Hague v. Wheeler*, this rationale is consistent with the Kentucky approach that uses a type of correlative rights or due regard standard to modify the rule of capture in its pure form.[72]

IV. THE CORRELATIVE RIGHTS DOCTRINE

With the exception of the Indiana and Kentucky cases discussed in Part III, most courts in producing states judicially adopted the rule of capture without modification. This, however, failed to account for a reality in the oil and gas industry—each owner's actions concerning a common source of supply affect all other owners of that common source of supply.

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71. *Id.* at 563.

72. The only other state that has had substantial litigation on this issue is Louisiana, where decisions both support and reject the *Elliff* holding. *Compare* Mobil Exploration & Producing U.S., Inc. v. Certain Underwriters, 837 So. 2d 11, 38 (La. Ct. App. 2002) (allowing claims for negligent injury to the common source of supply) *and* Breaux v. Pan Am. Petroleum Corp., 163 So. 2d 406, 412 (La. Ct. App. 1964) (appearing to allow liability for the negligent or wasteful extraction of minerals), *with* McCoy v. Ark. Natural Gas Co., 143 So. 383, 385 (La. 1932) (holding a landowner cannot recover against a neighbor "for negligently permitting a well near the line to blow out and allowing the gas to escape; the only remedy being an action to enjoin the waste") *and* La. Gas & Fuel Co. v. White Bros., 103 So. 23, 24 (La. 1925) (ruling damages not recoverable against a party causing negligent injury to the common source of supply but noting injunctive relief may be available). Other jurisdictions seem to follow *Elliff*. *See, e.g.*, Atkinson v. Va. Oil & Gas Co., 79 S.E. 647, 648 (W. Va. 1913) ("An owner may improve his real property in such manner as he may see fit, and if, in consequence thereof, the surface water flows from his premises onto the grounds of his neighbor, he is not liable for any resulting injury. But, if, through negligence or design, he collects the surface water on his premises and casts it in a body onto the lands of his neighbor, he is liable for such injury as may result.").

Most of these early cases illustrate the courts' lack of concern for negative externalities, including the wasteful dissipation of natural gas that was condoned by the Pennsylvania Supreme Court in *Hague*.[73]

In response to the judicial adoption of the rule of capture, state legislators began to embrace the idea that limits were needed on the pure rule of capture ownership regime. In *Ohio Oil Co. v. Indiana*,[74] the United States Supreme Court interpreted and validated a conservation statute that sought to protect the correlative rights of the many owners in a common source of supply.[75] The Court then added language which implied that the common law rule of capture should consider the rights of all owners in a common source of supply:

> It follows from the essence of their right and from the situation of the things, as to which it can be exerted, that the use by one of his power to seek to convert a part of the common fund to actual possession may result in an undue proportion being attributed to one of the possessors of the right, to the detriment of the others, or by waste by one or more, to the annihilation of the rights of the remainder. . . . If, on the other hand, there be, as a consequence of the right of the surface owners to reduce to possession, a right of property in them, in and to the substances contained in the common reservoir of supply, then as a necessary result of the right of property, its indivisible quality and the peculiar position of the things to which it relates, there must arise the legislative power to protect the right of property from destruction.[76]

During the twentieth century, states began incorporating the concept of "correlative rights" into their oil and gas regulatory schemes. For example, Wyoming defines the phrase by statute: "'Correlative rights' shall mean the opportunity afforded the owner of each property in a pool to produce, so far as it is reasonably practicable to do so without waste, his just and

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73. *See* Hague v. Wheeler, 27 A. 714, 719-20 (Pa. 1893).

74. 177 U.S. 190 (1900).

75. *See id.* at 210.

76. *Id.* at 210-11. One commentator, discussing the legislative adoption of a correlative rights theory, extolled the virtues of *Ohio Oil* and its recognition of either a statutory prerogative to protect correlative rights or a modification of the common law rule of capture to achieve the same result. *See* Summers, *supra* note 1, at 7-8.

equitable share of the oil or gas, or both, in the pool."[77] The most important feature of this definition is that the owner is entitled only to the *opportunity* to produce "his just and equitable share" and thus does not have a *guarantee* to receive "his just and equitable share."

Most states address the correlative rights doctrine through conservation regulation.[78] These regulatory programs—pooling, unitization, spacing, and proration among them—alter the rule of capture's prevailing ownership regime. Courts have recognized this modification in order to further underlying policy concerns.

Three cases illustrate this legislative modification of the rule of capture.[79] In *Schrimsher Oil & Gas Exploration v. Stoll*,[80] the court created a new tort to protect the correlative rights of an owner who lacked a regulatory remedy.[81] This tort allowed the owner to recover damages for violations of state laws and regulations governing the spacing and operation of oil and gas wells, thereby affording him the opportunity to recover his fair and equitable share in the common source of supply.[82]

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77. WYO. STAT. ANN. § 30-5-101(a)(ix) (West 2014); *see also* 1 EUGENE KUNTZ, A TREATISE ON THE LAW OF OIL AND GAS § 4.7 (1987) (describing the concept).

78. *See, e.g.*, UTAH CODE ANN. § 40-6-2(2) (West 2014) (defining correlative rights as "the opportunity of each owner in a pool to produce his just and equitable share of the oil and gas in the pool without waste"); *see also* UTAH CODE ANN. § 40-6-1 (West 2014) (requiring the state's oil and gas conservation agency to protect the correlative rights of mineral owners). The Utah Supreme Court applied the state's statutory definition in *Adkins v. Board of Oil, Gas & Mining*, 926 P.2d 880 (Utah 1996). Colorado uses similar language in its oil and gas conservation laws. *See* COLO. REV. STAT. ANN. § 34-60-103(4) (West 2014) (defining correlative rights as the principle "that each owner and producer in a common pool or source of supply of oil and gas shall have an equal opportunity to obtain and produce his just and equitable share of the oil and gas underlying such pool or source of supply"); *see also* COLO. REV. STAT. ANN. § 34-60-102(1)(a)(III) (West 2014) (directing the state's oil and gas conservation agency to "[s]afeguard, protect, and enforce" correlative rights).

79. The author extensively analyzed two of these decisions in a prior article. *See* Kramer, *supra* note 3, at 1-6 to 1-7.

80. 484 N.E.2d 166 (Ohio Ct. App. 1984).

81. *Id.* at 168-69.

82. *See id.* Clearly, a state conservation agency may consider the protection of correlative rights when issuing various orders or rules, so long as the enabling law authorizes it to do so. *See* Texaco, Inc. v. R.R. Comm'n of Tex., 583 S.W.2d 307, 310 (Tex. 1979); Big Piney Oil & Gas Co. v. Wyo. Oil & Gas Conservation Comm'n, 715 P.2d 557, 562-63 (Wyo. 1986). Failure to comply with agency orders or rules can trigger a negligence per se cause of action. *See* KRAMER & MARTIN, *supra* note 1, § 22.02. It should also be noted that in most circumstances, the issuance of a state permit does not insulate the permit holder from common law liability. *See id.* § 22.01.

In *Russell v. City of Bryan*,[83] the court rejected a municipality's claim that the rule of capture prevented a donor of ten acres of land, which the municipality had leased and pooled, from claiming either a trespass or a conversion.[84] Instead, the court held that the issue of whether the leasing and pooling deprived the donor of the opportunity to either voluntarily pool his mineral estate or statutorily pool under the Mineral Interest Pooling Act should survive summary judgment.[85] In *Fransen v. Conoco, Inc.*,[86] lessors alleged that their lessee violated the implied covenant to prevent drainage when the lessee opposed a request to drill an additional well on a unit governed by the Oklahoma Corporation Commission.[87] The court rejected this argument, which had its "theoretical underpinning" in the rule of capture, and held that a Commission regulation entitled the mineral owners to only their "fair share" of oil as determined by the Commission, not all of the oil and gas in the common source of supply.[88] Although these cases demonstrate the willingness of courts to accept modifications to the common law rule of capture, some jurisdictions are less receptive.[89]

V. STATUTORY UNITIZATION

Given the problems with the rule of capture, some began to pressure the federal government to adopt some form of compulsory unitization and/or pooling regulation. Henry L. Doherty, a prominent figure in America's early oil and gas

83. 846 S.W.2d 389 (Tex. App. 1992).

84. *See id.* at 391-92. After an initial decision denying the City's motion for summary judgment, the court determined that the dedication was of both the surface and mineral estates. *See* Russell v. City of Bryan, 919 S.W.2d 698, 704-06 (Tex. App. 1996).

85. *See Russell*, 846 S.W.2d at 391-92.

86. 64 F.3d 1481 (10th Cir. 1995).

87. *Id.* at 1484-85.

88. *Id.* at 1491 ("Where the state, through the OCC, undertakes to protect the correlative rights of owners in a common source of supply, the law of capture—the theoretical underpinning for the plaintiffs' proposed rule—does not apply. Where, as here, the OCC has established spacing and drilling units for a common source of supply, a lessee or operator is not free to take more than its fair share of oil and gas.").

89. For example, the rule adopted by the Tenth Circuit Court of Appeals in *Fransen* appears to run contrary to the approach used by the Oklahoma Supreme Court, at least in terms of any broad modification to the rule of capture. *See* Atl. Richfield Co. v. Tomlinson, 859 P.2d 1088, 1096 (Okla. 1993) (holding state proration and spacing requirements did not abrogate the rule in its entirety). West Virginia courts approach this issue similarly. *See* Powers v. Union Drilling, Inc., 461 S.E.2d 844, 848 (W. Va. 1995) (holding that any statutory modification to the rule must be clear).

industry, spearheaded this effort.[90] Substantial opposition arose to the general concept of compulsory unitization, as well as to giving the federal government this power.[91] Nonetheless, the American Bar Association's Section of Mineral Law drafted a policy statement endorsing unitization and model statutes dealing with both voluntary and compulsory unitization.[92] Two states, California and New Mexico, concurrently adopted their own voluntary unitization laws in 1929.[93] The creation of the Interstate Oil Compact Commission in 1935 was a critical step in advancing the cause of those who were calling for compulsory unitization statutes.[94]

Compulsory unitization was slow to take root, at least in the beginning. Louisiana passed a limited compulsory unitization statute in 1940 that applied only to secondary recovery projects that recycled gas in order to prevent waste and the drilling of unnecessary wells.[95] The law also required the state's Commissioner of Conservation to follow a certain procedure before issuing a compulsory unitization order.[96] The statute, however, did not allow the Commissioner to unitize non-consenting mineral owners for operations that did not involve the recycling of gas, which undermined the law's ability to prevent waste, conserve natural resources, and protect correlative rights.[97]

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90. The efforts of Mr. Doherty are well documented in HARDWICKE, *supra* note 47.

91. *See id.* at 50-52.

92. *See* KRAMER & MARTIN, *supra* note 1, § 3.02; *see also* Maurice H. Merrill, *Stabilization of the Oil Industry and Due Process of Law*, 3 S. CAL. L. REV. 396, 398 (1930) (noting the drafting of the ABA's model legislation). It is interesting to note that the voluntary unitization statute enacted in California was not discussed at all in LEGAL HISTORY OF CONSERVATION OF OIL AND GAS, *supra* note 1.

93. *See* KRAMER & MARTIN, *supra* note 1, § 3.02; *see also* 1929 Cal. Stat. 923 (relevant legislation); 1929 N.M. Laws 132 (same).

94. *See* HARDWICKE, *supra* note 47, at 96-102.

95. *See* E. Leland Richardson, *Louisiana, 1938-1948*, *in* CONSERVATION OF OIL AND GAS: A LEGAL HISTORY, 1948, *supra* note 1, at 198, 201-11 (discussing the legislation).

96. *Id.* at 202-04 (describing this procedure).

97. In *Hunter v. Hussey*, the court concluded that a Commissioner's order relating to a proposed unitization could not compel non-consenting owners to join merely to prevent waste because it would be *ultra vires*. *See* 90 So. 2d 429, 438-40 (La. Ct. App. 1956). It was not until 1960 that Louisiana broadened the purposes for which a developer could seek a compulsory unitization order. R. M. Williams, *Compulsory Pooling and Unitization (of Oil and Gas Rights)*, 15 INST. ON OIL & GAS L. & TAX'N 223, 254 (1964).

In 1945, Oklahoma passed the first comprehensive compulsory unitization act.[98] Under the law, the Oklahoma Corporation Commission could unitize a common source of supply if petitioned by working-interest owners representing 50% or more of the proposed unit area.[99] The Commission began to issue unitization orders shortly thereafter, and the Oklahoma Supreme Court analyzed the law in *Palmer Oil Corp. v. Phillips Petroleum Co.*,[100] where the constitutionality of the act was challenged and upheld.[101] The success of Oklahoma's compulsory unitization scheme, along with the efforts of the Interstate Oil and Gas Compact Commission, prompted other states to pass compulsory unitization laws during the 1950s.

There have been relatively few direct challenges to the constitutionality or validity of state compulsory unitization statutes. *Palmer Oil* offered the most comprehensive discussion of the constitutional issues, although much of the Oklahoma Supreme Court's analysis related to an argument involving an improper delegation of legislative authority. The court's regulatory takings analysis was quite basic, and there was almost no discussion of the impairment of obligation of contracts theory.

In *Crichton v. Lee*,[102] the plaintiffs challenged the continued validity of their leases that had been committed to the Cotton Valley Unitization and Pressure Maintenance Agreement.[103] The Commissioner of Conservation had issued an order unitizing the Cotton Valley Field pursuant to

98. KRAMER & MARTIN, *supra* note 1, § 3.02. The original unitization statute was repealed and later reenacted in part. *See id.* § 3.02 n.53; *see also* OKLA. STAT. ANN. tit. 52, §§ 287.1–.15 (West 2014) (current version). *See id.* The original compulsory unitization statute was defeated in the first two attempts to have it enacted in 1941 and 1943. T. Murray Robinson, *Oklahoma, 1938-1948*, *in* CONSERVATION OF OIL AND GAS: A LEGAL HISTORY, 1948, *supra* note 1, at 369, 395-97.

99. KRAMER & MARTIN, *supra* note 1, § 3.02. The law also included a limited veto provision under which 15% of owners could object to a proposed unit. *Id.*

100. 231 P.2d 997 (Okla. 1951).

101. *See id.* at 1001-05. Although decided by a five-to-four vote, the Oklahoma Supreme Court reaffirmed its conclusions regarding the constitutionality of the compulsory unitization statute shortly thereafter. *See* Spiers v. Magnolia Petroleum Co., 244 P.2d 843, 850 (Okla. 1951).

102. 25 So. 2d 229 (La. 1946).

103. *Id.* at 230.

Louisiana's statutory unitization act.[104] This was not a direct challenge to the unitization order and probably should have been dismissed as an improper collateral attack. The court, however, nonetheless went ahead and analyzed the constitutional challenges, which included regulatory takings, due process, and impairment of contractual rights arguments.[105] The court relied on *Hunter Co. v. McHugh*,[106] which involved Louisiana's compulsory pooling statute, to reject the constitutional attacks.[107] The court noted that private property and contract rights are subject to the state's police power.[108] The statutory unitization order for the Cotton Valley Field served important public interests relating to the exploitation of natural resources, and therefore the conversion of the lessors' royalty interests from an interest in a single parcel to an undivided interest in the unit area did not constitute a violation of the plaintiffs' constitutional rights.

Arkansas adopted a statutory unitization provision in 1951.[109] A principal impetus to the adoption of the statute was the Arkansas Supreme Court's decision in *Dobson v. Arkansas Oil & Gas Commission*.[110] In the case, a lessor refused to join a voluntary unitization agreement that would have covered his interest in a 160-acre drilling unit.[111] The fieldwide unit included some 5000 acres.[112] After 97% of the working-interest owners and 75% of the royalty interest owners ratified the unit agreement, the AOGC issued an order unitizing the plaintiff's royalty interest under its general waste-prevention powers.[113] The Arkansas Supreme Court treated the AOGC order as *ultra vires* because the conservation act did not specifically authorize the AOGC to issue statutory unitization orders.[114] Given the gap

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104. *Id.* Louisiana's statutory unitization law authorized unitization orders only for the purposes of pressure-maintenance operations. *See* Richardson, *supra* note 95, at 201-04.

105. *See Crichton*, 25 So. 2d at 231-36.

106. 11 So. 2d 495 (La. 1942).

107. *See Crichton*, 25 So. 2d at 232, 235.

108. *See id.* at 235.

109. *See* Act 134, 1951 Ark. Acts 286.

110. 218 Ark. 160, 235 S.W.2d 33 (1950).

111. *Id.* at 163, 235 S.W.2d at 35.

112. *Id.* at 161, 235 S.W.2d at 34.

113. *Id.* at 163, 235 S.W.2d at 35.

114. *See id.* at 164-65, 235 S.W.2d at 36. This is consistent with general administrative law principles that deal with the scope and extent of powers delegated to a

in regulatory authority, the Arkansas General Assembly enacted a statutory unitization provision in 1951 which authorized the AOGC to issue the type of order invalidated in *Dobson*.[115]

With the exception of Pennsylvania and Texas, nearly every major producing state has a compulsory unitization statute today.[116] While these statutes vary substantially as to their length, their description of the unitization process and/or procedure, and their mandatory findings, they share many common features.[117] Most compulsory unitization statutes authorize working-interest owners to petition the state oil and gas conservation agency for an order.[118] Some states expanded the potential pool of applicants for a statutory unitization order to the state oil and gas conservation agency or "any interested person."[119] In general, the procedures required before issuing a statutory unitization order are similar to procedures required to issue a statutory pooling and/or spacing order, although the information required for a statutory unitization order is usually broader.[120] The additional information is triggered by the existence of statutorily mandated findings that must be made by the state oil and gas conservation agency before it can issue a unitization order.[121]

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state administrative agency. *See* KRAMER & MARTIN, *supra* note 1, § 24.02[2]. In *Dobson*, however, the court was sensitive to the negative ramifications of allowing hold-outs from unit operations and thus restricted the remedy awarded to the plaintiff. *Dobson*, 218 Ark. at 166-67, 235 S.W.2d at 36-37. These negative ramifications are explored in a series of cases involving brine fields in Arkansas, where there is no statutory unitization authority. *See, e.g.*, Richardson v. Phillips Petroleum Co., 791 F.2d 641 (8th Cir. 1986) (discussing the legality of a secondary recovery operation); Jameson v. Ethyl Corp., 271 Ark. 621, 609 S.W.2d 346 (1980) (same).

115. *See* Act 134, § 1, 1951 Ark. Acts. 286, 287-88.

116. *See* KRAMER & MARTIN, *supra* note 1, § 18.01 (citing the relevant statutes); *see also* William F. Carr, *Compulsory Fieldwide Unitization*, 49 ROCKY MTN. MIN. L. INST. 21-1, 21-2 (2003) ("All major producing states, except Texas, have adopted some form of a compulsory unitization statute.").

117. KRAMER & MARTIN, *supra* note 1, § 18.01. *See generally* Owen L. Anderson & Ernest E. Smith, *Exploratory Unitization Under the 2004 Model Oil and Gas Conservation Act: Leveling the Playing Field*, 24 J. LAND RESOURCES & ENVTL. L. 277 (2004) (discussing the 2004 changes to the IOGCC Model Oil and Gas Conservation Act involving unitization).

118. *See* Carr, *supra* note 116, at 21-27 app. A (providing a useful chart showing who may apply for a statutory unitization order on a state-by-state basis).

119. *Id.*

120. *See* KRAMER & MARTIN, *supra* note 1, § 18.02.

121. *See id.* § 18.02[1].

There are two near-universal requirements for a statutory unitization order that are different than those for a statutory pooling and/or spacing order. For statutory unitization, most statutes impose a minimum consent percentage requirement on an applicant before the state oil and gas conservation agency will even entertain an application.[122] Whether the consent must be given by working-interest owners, royalty owners, or a combination of the two varies by state. For example, Montana has a requirement that the applicant show consent from 70% of the cost-bearing interest owners and from 60% of the non-cost-bearing interest owners.[123] Obviously, the higher the consent requirement, the more difficult it is to employ the statutory unitization process. There is also a timing element to the consent requirement in states such as Arkansas.[124] Some states require the application to show that the minimum consent requirement has been met, while others allow an applicant to satisfy the consent requirement within a specified period after an order is issued.[125]

Most states, either by statute or administrative rule, allocate production within a compulsory pooled unit based on surface acreage.[126] This makes sense because the pooled unit would typically only have a single well and it was presumed that the formation was reasonably uniform within the acreage encompassed within the pooled unit. With unitization, industry practices typically attempt to avoid employing a surface acreage allocation formula for most fieldwide or partial fieldwide units.[127] In voluntary unit agreements, it is common for there to be a negotiated, multi-factor formula that will allocate

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122. *Id.* § 18.02[4][b]. The two exceptions are Alaska and Washington. *See* ALASKA STAT. ANN. § 31.05.110 (West 2014); WASH. REV. CODE ANN. § 78.52.330 (West 2014).

123. MONT. CODE ANN. § 82-11-207 (West 2014).

124. *See* ARK. CODE ANN. § 15-72-309(a)(1) (Repl. 2009).

125. *See, e.g.*, WYO. STAT. ANN. § 30-5-110(f) (West 2014) (providing for a six-month period).

126. *See, e.g.*, ARK. CODE ANN. § 15-72-305(a)(2) (Supp. 2013); OHIO REV. CODE ANN. § 1509.27 (West 2015).

127. The author is aware of one large, million-acre carbon-dioxide unit that employed a surface acreage allocation formula. The Bravo Dome Unit Agreement has been the subject of substantial litigation, but not on the issue of the use of the surface allocation formula. *See* Feerer v. Amoco Prod. Co., 242 F.3d 1259 (10th Cir. 2001); Amoco Prod. Co. v. Heimann, 904 F.2d 1405 (10th Cir. 1990); Creson v. Amoco Prod. Co., 10 P.3d 853 (N.M. Ct. App. 2000).

production and costs throughout the unit area.[128] Where a compulsory unitization order is involved, the state oil and gas conservation commission will usually accept the voluntarily negotiated allocation formula consented to by the required percentage of owners. In *Gilmore v. Oil & Gas Conservation Commission*,[129] the court approved the Commission's decision to adopt a multi-factor allocation formula that had been negotiated between the working-interest owners for over three years before the required consent had been achieved.[130]

One issue that arises with some compulsory unitization statutes is whether or not the listed factors for allocating production and costs are mandatory or merely hortatory. In *Eason Oil Co. v. Corporation Commission*,[131] the Commission issued a statutory unitization order that employed a five-factor allocation formula.[132] The relevant statute instructed the Commission to look at a number of factors, only some of which were included in the order.[133] The Oklahoma Supreme Court treated the statutory factors as guidelines rather than mandates, with the result being that the Commission has substantial discretion in finding that the allocation formula is protective of a non-consenting owner's correlative rights.[134]

There has been one case where the courts have overturned a state oil and gas conservation agency's statutory unitization order on the basis that the allocation formula was unfair. In *Williams v. Arkansas Oil & Gas Commission*,[135] the AOGC approved a unit agreement's allocation formula which created

128. *See* KRAMER & MARTIN, *supra* note 1, § 17.02[5][a].

129. 642 P.2d 773 (Wyo. 1982).

130. *Id.* at 781. The court listed ten factors and their relative weight, which did not add up to 100%. *Id.* at 775. It may be presumed that there is an additional factor which may be used or considered—surface acreage. *See* KRAMER & MARTIN, *supra* note 1, § 17.02[5][a].

131. 535 P.2d 283 (Okla. 1975).

132. *Id.* at 287.

133. *See id.*; *see also* OKLA. STAT. ANN. tit. 52, § 287.4 (West 2014) (relevant statute). Many state unitization laws only have a general requirement that the allocation formula give each tract owner his fair and equitable share of unit production.

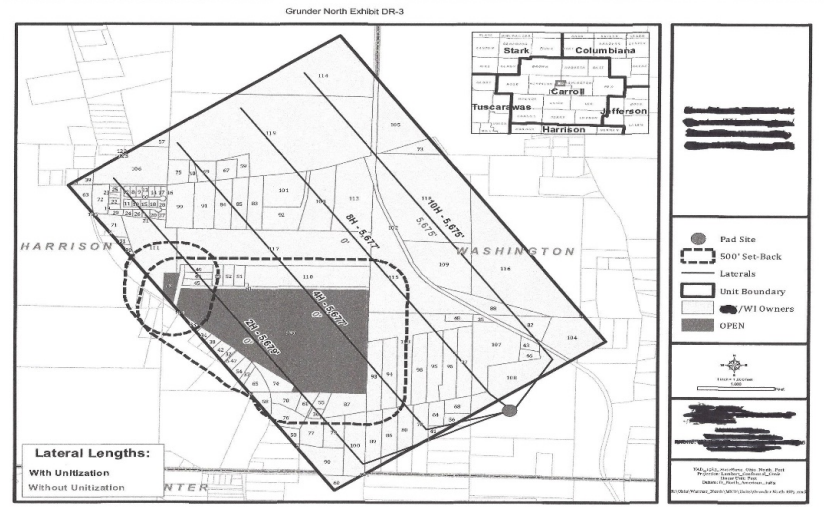
134. *Eason Oil Co.*, 535 P.2d at 287-88. Other courts have also upheld multi-factor allocation formulae. *See* Trees Oil Co. v. State Corp. Comm'n, 105 P.3d 1269 (Kan. 2005); Hatlestad v. Petrocorp, Inc., 928 P.2d 295 (Okla. 1996); Bingaman v. Corp. Comm'n, 421 P.2d 635 (Okla. 1966); Trout v. Wyo. Oil & Gas Conservation Comm'n, 721 P.2d 1047 (Wyo. 1986).

135. 307 Ark. 99, 817 S.W.2d 863 (1991), *overruled on other grounds*, Great Lakes Chem. Corp. v. Bruner, 368 Ark. 74, 243 S.W.3d 285 (2006).

two separate formulae, one addressing primary recovery and the other dealing with secondary recovery.[136] While it is not unusual to either have a reconsideration of the allocation formula over time, the court in *Williams* agreed with the non-consenting owner who argued that the formula was ambiguous as to when certain expenses would be treated as primary or secondary recovery expenses.[137] Under the relevant Arkansas statute, the allocation formula must be "fair and reasonable."[138] Due to the ambiguity in the two different formulae and when each would apply, the court determined that the order did not satisfy this statutory requirement.[139]

VI. A HYPOTHETICAL EXAMPLE OF HOW UNITIZATION CAN BENEFIT OIL AND GAS PRODUCTION FROM SHALE PLAYS

Figure 1



136. *Id.* at 107-08, 817 S.W.2d at 867-68.
137. *See id.* at 107-09, 817 S.W.2d at 868-69.
138. ARK. CODE ANN. § 15-72-310 (Repl. 2009).
139. *See Williams*, 307 Ark. at 107, 817 S.W.2d at 867.

Figure 1 illustrates the type of development pattern typically seen in United States shale plays.[140] In the figure, an oil and gas operator is going to use a single, off-unit surface location as the basis for drilling four horizontal laterals, each approximately one mile in length, in order to produce hydrocarbons from a shale formation. As is typical for this kind of multi-well (horizontal lateral) development, the operator will drill the first lateral and then determine the productive capability and drainage pattern after the first lateral has been hydraulically fractured. If the first lateral produces at the expected rate and drains the expected distance, the second, third, and fourth laterals will be drilled seriatim. The shaded tracts within the unit boundary have not consented to the voluntary agreement. The proposed unit area is slightly less than 600 acres. As shown in Figure 1, the dotted lines reflect a 500-foot setback from lease lines required for wells. It is apparent that three of the four laterals may not be drilled without the issuance of a compulsory unitization order.[141] The existence of a statutory unitization procedure, however, allows the state oil and gas conservation agency to prevent waste, conserve natural resources, and protect the correlative rights of both the consenting and non-consenting parties.

In our hypothetical, there are over 100 owners of mineral, leasehold, or royalty interests who would be served by the issuance of a statutory unitization order. Under the applicable Ohio statute, the applicant must show "that such operation is reasonably necessary to increase substantially the ultimate recovery of oil and gas, and the value of the estimated additional recovery of oil or gas exceeds the estimated additional cost incident to conducting the operation."[142] Thus, the state's oil and gas conservation agency cannot issue an order unless it prevents waste and conserves natural resources. Additionally,

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140. This hypothetical is taken from a development pattern actually applied by the Ohio Department of Natural Resources, Division of Oil and Gas Resources Management. The author thanks Jon Airey of the Columbus office of Vorys, Sater, Seymour & Pease, L.L.P. for allowing him to use the plat.

141. *See* OHIO REV. CODE ANN. § 1509.28 (West 2015) (containing the compulsory unitization provisions and representing the typical compulsory unitization statute). Because of the setback requirement, it might be technologically possible for a lateral to be moved outside of the setback area, but there would be limited options as to what the operator could do as to the two laterals which bisect the tracts of non-consenting owners.

142. OHIO REV. CODE ANN. § 1509.28(A).

the consenting and non-consenting owners' correlative rights are protected because the order must contain "terms and conditions that are just and reasonable."[143]

While most statutory unitization orders do not use a surface allocation formula because they typically involve large areas where the mineral deposits may not be uniformly located throughout the unit, units such as those proposed in this hypothetical are more likely to allocate based on surface acreage. There are a number of reasons for this, including the smaller size of the unit involved and the fact that many shales in the United States are resource plays, meaning that they are reasonably uniform as to porosity and permeability over large areas. Regardless of whether or not the allocation formula is based on surface acreage or a multi-factor formula, the applicant will need to present geological testimony about the nature of the underground formation that will support the agency's conclusion that the allocation will be "just and reasonable."[144]

While most unit agreements and unit operating agreements do not contain provisions for working-interest owners and/or unleased mineral owners—so-called cost-bearing interests—to go non-consent or be carried, the type of units envisioned by the hypothetical will more likely be governed by a model form joint operating agreement that allows a cost-bearing interest owner to go non-consent.[145] In fact, the Ohio unitization statute has a specific reference to the possible need for the statutory unit order to provide for a "carry," or financing mechanism, for non-consenting owners who choose, or who are unable, to pay their pro rata share of unit costs.[146]

Statutory unitization orders are not a panacea for all problems facing operators attempting to utilize horizontal wells and hydraulic fracturing operations in order to produce from shale formations. Nonetheless, such orders give operators, consistent with the relevant statutory provisions, the power to efficiently and effectively develop shale resources where not all of the mineral owners agree to such development.

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143. OHIO REV. CODE ANN. § 1509.28(A).

144. *See* OHIO REV. CODE ANN. § 1509.28(A); *see also Williams*, 307 Ark. at 107, 817 S.W.2d at 867 (providing an example of a court holding that an agency determination on the fairness of an allocation formula should be overturned).

145. *See* KRAMER & MARTIN, *supra* note 1, § 17.02[8].

146. *See* OHIO REV. CODE ANN. § 1509.28(A)(6) (West 2015).

VII. CONCLUSION

While the notion that the United States has attained a "peak oil" status is no longer valid, the underlying reasons for both encouraging and mandating the unit operation of common sources of supply are still compelling. While it cannot be expected that unitization orders will be issued covering the Marcellus Shale or the Eagle Ford Shale, partial fieldwide unitizations will allow for development in such formations in a way that prevents waste, conserves natural resources, and protects the correlative rights of the owners within that common source of supply. It is one of the many tools available to state oil and gas conservation agencies to achieve the important public policy objectives which led to their creation. As the AOGC moves into its second seventy-five years, statutory unitization orders should become more prevalent as Arkansas's shale resources are developed.