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NOTES AND COMMENTS

OWNERSHIP RIGHTS IN SUBSURFACE NATURAL GAS STORAGE AREAS

I. INTRODUCTION

The recent shortage of natural gas, and the resultant loss of heat and power in homes and industrial plants, underscores the need to insure available supplies of natural gas.¹ To insure supply during periods of peak consumption, producers of gas have increasingly relied on gas tapped from subsurface storage areas.² These efforts have been hampered, however, by the uncertainty surrounding the ownership of underground storage areas.³ In practice, this uncertainty has usually prompted the users of underground storage areas to purchase under-

1. In January of 1981, shortages of natural gas in Massachusetts caused a statewide energy emergency and the closing of schools and some businesses. N.Y. Times, Jan. 13, 1981, at 1, col. 4; Christian Science Monitor, Jan. 15, 1981, at 1, col. 4. The gas shortages during the winter of 1977 were especially critical. Ten states declared a state of emergency, many schools were closed, and it was estimated that over 1.6 million workers were idle. NEWSWEEK, Feb. 14, 1977, at 23-24.

2. Underground gas storage provides the most efficient means of balancing relatively constant pipeline gas supplies with widely fluctuating seasonal, daily, and hourly market requirements. Gas is injected into storage during off-peak periods when market requirements are less than supply availability, and gas is withdrawn from storage when market demand exceeds available supplies from other sources. Storage reservoirs are usually replenished during the April through September period and drawn down between October and March.

During 1978, 2,151 billion cubic feet were withdrawn from storage and 2,271 billion cubic feet were injected. Withdrawals in 1978 were 415 billion cubic feet greater than in 1977.

The number of underground storage reservoirs in the United States rose to 388 in 1978, an increase of three from 1977. Total storage capacity at the end of 1978 was 7,330 billion cubic feet compared to 7,223 billion cubic feet at the end of 1977.

There were 17,297 active wells in underground storage fields at year-end 1978 as compared to 16,928 in 1977.

AMERICAN GAS ASS'N, GAS FACTS 45 (1978).

3. The courts that have decided this issue have reached conflicting results. Compare *Central Kentucky Nat. Gas Co. v. Smallwood*, 252 S.W.2d 866, 868 (Ky. 1952) (by implication) (gas storage areas belong to mineral owner) with *Ellis v. Louisiana Arkansas Gas Co.*, 450 F. Supp. 412 (E.D. Okla. 1978), *aff'd*, 609 F.2d 436 (10th Cir. 1979); *Emeny v. United States*, 412 F.2d 1319 (Ct. Cl. 1969); *Miles v. Home Gas Co.*, 35 A.D.2d 1042, 316 N.Y.S.2d 908 (1970); *Tate v. United Fuel Gas Co.*, 137 W. Va. 272, 71 S.E.2d 65 (1952). See generally 1 E. KUNTZ, A TREATISE ON THE LAW OF OIL AND GAS § 26 (1964); H. WILLIAMS & C. MEYERS, OIL AND GAS LAW § 222 (abr. ed. 1975).

ground storage rights from both the mineral and surface estate owners⁴ to insure against the risk of future lawsuits.⁵ The legal uncertainty regarding subsurface storage areas not only creates confusion and added

4. In situations where the consent of the mineral and surface owners is not forthcoming, underground gas storage users have resorted to condemnation proceedings to secure gas storage rights. See H. WILLIAMS & C. MEYERS, *supra* note 3, § 222, at 49; Erbebo, *Condemnation of Depleted Underground Gas Strata for Gas Storage Purposes*, 20 OKLA. B.A.J. 1186, 1187 (1949); Comment, *Condemnation of Depleted Underground Reservoirs for Gas Storage Areas*, 15 OHIO ST. L.J. 199, 199-200 (1954). Several states have statutory provisions for condemnation of underground storage areas. See, e.g., COLO. REV. STAT. §§ 34-64-101-07 (1973); KAN. STAT. §§ 55-1201-07 (Supp. 1979); MO. ANN. STAT. §§ 393.410-510 (Vernon Supp. 1980). The corresponding Oklahoma statute is OKLA. STAT. ANN. tit. 52, §§ 36.1-.7 (West 1969) which in part provides:

Any natural gas public utility may condemn for its use for the underground storage of natural gas any subsurface stratum or formation in any land which the commission shall have found to be suitable and in the public interest for the underground storage of natural gas, and in connection therewith may condemn such other interests in property as may be required adequately to examine, prepare, maintain and operate such underground natural gas storage facilities; provided, however, that the right of condemnation of underground sands, formations and strata, granted hereby, shall be limited as follows:

(a) *No sand, formation, or stratum which is producing or which is capable of producing oil in paying quantities, through any known recovery method, shall be subject to appropriation hereunder;*

(b) *No gas bearing sand, formation, or stratum shall be subject to appropriation hereunder, unless the volumes of native gas originally in place therein shall be shown to be substantially depleted, and that such sand, formation or stratum has a greater value or utility as a gas storage reservoir for the purpose of insuring an adequate supply of natural gas for any particular class or group of consumers of natural gas, or for the conservation of natural gas, than for the production of the relatively small volumes of native gas which remain therein, provided that no gas sand, formation or stratum shall be condemned under the terms of this Act when the gas therein is being used for the secondary recovery of oil, unless gas in necessary and required amounts is furnished to the operator or operators of the secondary recovery operations for as long as oil is produced in paying quantities in the secondary operations for the recovery of oil at the same cost as that at which the gas was being produced at the time of condemnation by the operator of the secondary recovery project or projects.*

(c) *Only such area of such underground sand, formation or stratum as may reasonably be expected to be penetrated by gas displaced or injected into such underground gas storage reservoir may be appropriated hereunder.*

(d) *No rights or interest in existing underground gas reservoirs, being used for the injection, storage and withdrawal of natural gas, owned or operated by others than the condemner, shall be subject to appropriation hereunder.*

The right of condemnation hereby granted shall be without prejudice to the rights of the owner of said lands or of other rights or interests therein to drill or bore through the underground stratum or formation so appropriated in such manner as shall comply with orders, rules and regulations of the commission issued for the purpose of protecting underground storage strata or formations against pollution and against the escape of natural gas therefrom and shall be without prejudice to the rights of the owner of said lands or other rights or interests therein as to all other uses thereof. The additional cost of complying with such regulations or orders in order to protect the storage shall be paid by the public utility.

Id. § 35.3 (footnote omitted) (emphasis added). Condemnation, however, does not solve the problem of the division of the award between the surface and mineral owners. E. KUNTZ, *supra* note 3, § 2.6, at 73.

5. See E. KUNTZ, *supra* note 3, § 2.6, at 73; H. WILLIAMS & C. MEYERS, *supra* note 3, § 222, at 49. The purchasing of underground storage rights from both mineral and surface estate owners is a prudent but expensive practice, which may account for the scarcity of cases in this area.

expense for gas producers, but impedes the use of underground storage areas and the maintenance of a stable supply of gas for consumers.

An analysis of the conflicting decisions in this area suggests that ownership rights in underground storage areas should belong to the surface estate owner. A prior severance of minerals or an oil and gas lease⁶ should not be construed to give the mineral estate or interest owner⁷ subsurface gas storage rights in the absence of language expressly granting such rights.

6. Oil and gas operators have recognized the value of subsurface storage rights. Lowe, *Representing the Landowner in Oil and Gas Leasing Transactions*, 31 OKLA. L. REV. 257, 285 (1978). Consequently, many operators have begun using lease clauses such as the following:

The Lessor, for and in consideration of the sum of One Dollar (\$1.00) in hand paid by the Lessee, the receipt whereof is hereby acknowledged, and of the covenants and agreements hereinafter contained, does hereby lease and let unto the Lessee for the purpose of drilling, operating for, producing and removing oil and gas and all the constituents thereof on, from and under the following described lands, *and for the further purpose of injecting, storing and holding in storage, and removing gas, including gas lying thereunder, by pumping through wells or other means, into, in and from any sands, strata or formations underlying said lands, regardless of the source of such gas or the location of the wells or other means of so doing:*

. . . .

In full compensation for the use of the leased premises for the purposes of injecting, storing or holding in storage, and removing gas into, in and from any sands, strata or formations underlying the leased premises Lessee shall pay Lessor each year, quarterly in advance, (1) a storage rental equivalent to \$200.00 for or on account of each well located on the leased premises and used for such purposes, or (2) if no wells shall be used on the leased premises for such purposes, a storage rental in the amount equivalent to the Delay Rental hereinbefore specified. The Lessee at any time may notify the Lessor in writing at the address of Lessor last known to Lessee, by registered or certified mail, of the Lessee's intention to use the leased premises, together with any well or wells located thereon, for any and all of the gas storage purposes hereinbefore specified of injecting, storing, or holding in storage, and removing gas into, in and from any sands, strata or formations underlying the leased premises, and upon the giving of such notice the Lessee may use the leased premises, together with any well or wells located thereon, for any or all of said gas storage purposes. Payment for storage use shall commence on the date such use begins, shall continue until the leased premises shall no longer be used for storage purposes, and shall be in lieu of all delay rentals or royalties for the right to produce and remove, and the production and removal of, gas from the sands, strata or formations in which gas is stored by the Lessee. The Lessee shall pay the Lessor for all damage to growing crops, trees and fences caused by the Lessee's operations under this lease, said damages, if not mutually agreed upon, to be ascertained and determined by three disinterested persons, one thereof to be appointed by the Lessor, one by the Lessee, and the third by the two so appointed, and the award of such three persons shall be final and conclusive.

Id. at n.113 (emphasis and omission made by Lowe).

7. Whether a severance of minerals creates a mineral interest or estate depends on the law of the state in which the severance takes place. If the state adheres to the ownership in place theory, the mineral owner obtains a present possessory right to the oil and gas in place. His mineral estate is subject to disfeasance, however, if the oil and gas is drained or migrates. If the state adheres to the non-ownership theory, the mineral owner receives a non-possessory right to explore for and produce the oil and gas. H. WILLIAMS & C. MEYERS, *supra* note 3, §§ 203.1-3.

II. THE SETTING

Ownership problems regarding underground storage areas do not usually arise until after the fee simple estate is divided into mineral and surface estates or interests.⁸ Once the estate is severed, however, the ownership of underground storage areas becomes uncertain unless the landowner's intent regarding underground storage rights is expressly articulated in the conveyance instrument.⁹ Given this premise, the determination of the ownership of underground storage areas should generally turn on the intent of the landowner when the mineral estate or interest is severed.¹⁰ Consequently, the problem is one of interpreting the conveyance instrument, especially when the instrument fails to address the subsurface storage issue. Professor Kuntz notes: "[b]ecause the ownership of or the right to use the subsurface area for storage may be granted or reserved, whether or not the owner of a granted or reserved mineral estate has such a right is properly a problem of construction of instruments."¹¹ The cases holding that underground storage areas belong to the surface estate owner have generally followed Kuntz's reasoning.¹²

In marked contrast, the case holding that underground storage areas belong to the mineral estate owner bases its decision upon the premise that stored gas is analogous to wild animals¹³ or animal *ferae*

8. If the fee owner owns both the surface and mineral estate, there is no question regarding his right to convey gas storage rights. See H. WILLIAMS AND C. MEYERS, *supra* note 3, § 222, at 49; McGinnis, *Some Legal Problems in Underground Gas Storage*, 17TH ANN. INST. ON OIL AND TAX, 23, 42 (1966); Stamm, *Legal Problems in Underground Storage of Natural Gas*, 36 TEX. L. REV. 161, 165 (1957).

9. The legal uncertainty in this area is reflected by case law and treatises in the field. Professors Williams and Meyers argue that a "mineral severance should be construed as granting exclusive rights to subterranean strata for all purposes relating to minerals, whether 'native' or 'injected,' absent contrary language in the instrument severing such minerals." H. WILLIAMS & C. MEYERS, *supra* note 3, § 222; *accord*, Stamm, *supra* note 8, at 171-72; Comment, *The Underground Natural Gas Shortage and Conservation Act of 1977: A Threshold Issue*, 29 BAYLOR L. REV. 1065, 1074-75 (1977). *Contra*, McGinnis, *supra* note 8; see Scott, *Underground Storage of Natural Gas: A Study of Legal Problems*, 19 OKLA. L. REV. 47 (1966); Comment, *Subsurface Storage of Gas*, 39 MISS. L.J. 81 (1967).

10. See *Ellis v. Arkansas Louisiana Gas Co.*, 450 F. Supp. 412, 420 (E.D.Okla. 1978), *aff'd*, 609 F.2d 436 (10th Cir. 1979); McGinnis, *supra* note 8, at 47-51. This position is the logical extension of the rule that the fee owner owns the land to an indefinite extent upward and downward. The landowner would be deemed to have retained everything not conveyed. 450 F. Supp. at 421.

11. E. KUNTZ, *supra* note 3, § 2.6, at 73.

12. See notes 58, 65, 69, & 72 *infra* and accompanying text.

13. The courts' recognition of the fugacious nature of oil and gas led to the adoption of the wild animal or animal *ferae naturae* analogy. At common law, courts analogized the landowner's interest in oil and gas to wild animals. The landowner's title vested only if the oil and gas, like a wild animal, was brought under his dominion and control. See R. HEMMINGWAY, *THE LAW OF OIL AND GAS*, 10-12 (1971); W. SUMMERS, 1 *THE LAW OF OIL AND GAS* § 11, at 20-22 (1954).

naturae.¹⁴ Once the gas is injected into the ground it returns to its natural state, similar to a wild animal, and either becomes part of the mineral estate or becomes subject to a mineral owner's exclusive right to explore and produce the oil and gas.¹⁵

III. THE *FERAE NATURAE* THEORY

The decision that most significantly advanced the application of the *ferae naturae* theory to ownership of underground storage areas is *Hammonds v. Central Kentucky Natural Gas Co.*¹⁶ In *Hammonds*, the plaintiff, owner of a fee estate within the defendant's property, sued the defendant gas company which was engaged in underground storage activities, for trespass.¹⁷ The plaintiff claimed that the defendant injected gas into her estate without her permission. From a judgment for the defendant, the plaintiff appealed and the Court of Appeals of Kentucky affirmed the lower court finding that the company lost the title to its gas when it injected the gas into the underground reservoir.¹⁸ Because the company lost its ownership rights in the gas, it could not be held liable for trespass. The court reasoned that the injection of gas into the underground storage area returned it, like a wild animal, to its natural state.¹⁹ "If one capture a fox in a forest and turn it loose in another, or if he catch a fish and put it in the stream at another point, has he not done with that migratory common property what the defendant has done with the gas in this case?"²⁰

The much criticized *Hammonds* approach²¹ gives rise to poten-

The animal *ferae naturae* analogy, however, has been subject to severe criticism. See note 21 *infra*.

14. See note 33 *infra* and accompanying text.

15. If the state adheres to the ownership in place theory, the injected gas would become part of the mineral estate; if, the state adheres to the non-ownership in place theory, the injected gas would be subjected to the mineral owner's exclusive right to explore and produce the oil and gas. See note 7 *supra*.

16. 255 Ky. 685, 75 S.W.2d 204 (1934).

17. Had the defendant retained title to the injected gas then it would appear that a technical trespass was committed since "[o]ne may commit a trespass upon the vertical surface of another's premises, as well as the horizontal. . . . [because] the landowner's interest in exclusive possession is not limited to the surfaces; it extends above and below." W. PROSSER, HANDBOOK OF THE LAW OF TORTS, § 13 at 69 (4th ed. 1971).

18. 255 Ky. 685, —, 75 S.W.2d 204, 206 (1934).

19. *Id.*

20. *Id.*

21. *E.g.*, Stamm, *supra* note 8, at 166. Accord 48 HARV. L. REV. 855 (1935); 19 MINN. L. REV. 483 (1935); 13 TEX. L. REV. 378 (1935). Summers, in his treatise states:

All of these analogies of oil and gas to solid minerals, to subterranean waters, and to animals *ferae naturae* are false, for the reason that the physical and economical facts of oil and gas from which the legal relations of the landowner respecting them are actually

tially awkward results. The decision appeared to enable persons in situations similar to the plaintiff's to produce gas stored underneath their land as though it were their own.²² Consequently, the gas storage user must obtain storage rights from all mineral estate or interest owners over the reservoir, regardless of whether oil or gas are present, to insure himself against the prospect of production of stored gas by such owners. The necessity of acquiring such rights not only greatly increases the cost of storing gas, but introduces an element of risk since the ownership of land may be found to lie with someone other than the person from whom the gas storage user received the right to store.²³

The *Hammonds* decision also conflicts with the notion that oil and gas, once extracted, assume the status of personal property.²⁴ Normally, to lose title to personal property, it is necessary to show an intent to abandon.²⁵ Abandonment requires a permanent intent to give up dominion and control.²⁶ Clearly, the defendant did not manifest a permanent intent to abandon by storing gas in the underground storage area.²⁷ In holding that title to gas is lost upon injection the court re-

determined, are different from the physical and economic facts of the substances with which they are compared.

W. SUMMERS, *supra* note 13, § 62 at 173.

22. One commentator notes:

The decision was against the plaintiff; but she might well have congratulated herself because she had won more than she lost. For now, she might return to her close, sink wells, and draw off as much as she could of the gas which the company had stored in the stratum, and all that she drew off would be her sole property since she had again reduced the wild mineral to possession.

Note, *The Ownership of Natural Gas and Some Real Property Concepts*, 36 VA. L. REV. 947, 947 (1950) (footnote omitted).

23. See 13 TEX. L. REV. 378, 378 (1935).

24. *E.g.*, State v. Alabama Gas Corp., 258 Ala. 356, —, 62 So. 2d 454, 457 (1952) (appliances in question use gas, which is personal property and thus fall within the tax exemption provided for machine used in processing of tangible personal property); Carpenter v. Shaw, 134 Okla. 29, 33, 272 P. 393, 398 (1928) (oil once extracted becomes personal property and is subject to tax); Chaffin v. Hall, 210 S.W.2d 191, 194 (Tex. Civ. App. 1948, writ ref. n.r.e) (royalty owner can not compel a partition of land because he holds a contingent interest in the oil and gas which becomes personal property upon production). See generally E. KUNTZ, *supra* note 3, § 2.5, at 68; H. WILLIAMS & C. MEYERS, *supra* note 3, § 212 at 23.

25. See Crosson v. Lion Oil & Ref. Co., 169 Ark. 561, —, 275 S.W. 899, 900-01 (1925) (title to oil which escaped due to break in pipeline was not lost because there was no intent to abandon); Standard Oil Co. of La. v. Kinnebrew, 155 La. 1009, —, 99 So. 802, 803 (1924) (party's actions did not indicate an intent to abandon and therefore title to the escaped oil was not lost). See generally R. BROWN, THE LAW OF PERSONAL PROPERTY § 1.6 (1975).

26. See Crosson v. Lion Oil and Ref. Co., 169 Ark. 561, —, 275 S.W. 899, 900-01 (1925); Hoff v. Girdler Corp., 104 Colo. 56, —, 88 P.2d 100, 102-03 (1939) (temporary failure to market gas did not show an intent to abandon the lease). "Abandonment occurs when there is 'a giving up, a total desertion, and absolute relinquishment' of private goods by the former owner." R. BROWN, *supra* note 25, § 1.6 (emphasis added).

27. See 41 W. VA. L.Q. 431, 432 (1935).

jected the traditional personal property classification as to the gas. Conversely, the court claimed that "when gas is thus severed and brought under dominion and actual possession at the surface, it, of course, becomes the personal property of the one who has extracted it under a right to do so."²⁸ The inconsistency in the court's opinion is evident.

The rule in *Hammonds* that causes the injector to lose title to the injected gas²⁹ has been rejected in some states.³⁰ Other states have adopted statutory provisions that enable the injector to retain title to the injected gas.³¹ Nevertheless, *Hammonds* remains significant because it serves, at least in Kentucky,³² as the basis for finding that underground gas storage areas belong to the mineral owner.

The case of *Central Kentucky Natural Gas Co. v. Smallwood*³³ concerned a gas company which had obtained an oil and gas storage lease to a tract of land from the surface estate owner who also owned an undivided one half interest in the mineral estate. After using the land for gas storage purposes, the company divided the rentals between the plaintiff and the other one half mineral estate owner.³⁴ The plaintiff

28. 255 Ky. 685, —, 75 S.W.2d 204, 206 (1934).

29. *Id.*

30. The holding of *Hammonds* has been rejected in Pennsylvania and Texas. In *White v. New York State Nat. Gas Corp.*, 190 F. Supp. 342 (W.D. Pa. 1960), the court held that title to natural gas, which has been reduced to possession, is not lost by injection into underground reservoirs for storage purposes. *Id.* at 349. The court rejected the wild animal analogy and underscored the differences between the physical characteristics of stored gas and native gas. *Id.* at 348. The same conclusion was reached by a Texas court in *Lone Star Gas Co. v. Murchison*, 353 S.W.2d 870, 879 (Tex. Civ. App. 1962, *writ ref. n.r.e.*). The court concluded that the injection of gas in underground storage areas did not constitute an abandonment of gas because there was no intent to abandon. *Id.* The court then rejected *Hammonds* noting that "[g]as has no similarities to wild animals. Gas is an inanimate, diminishing non-reproductive substance lacking any will of its own, and instead of running wild and roaming at large as animals do, is subject to be moved solely by pressure or mechanical means." *Id.*

31. See, COLO. REV. STAT. § 34-64-107 (1973); MO. ANN. STAT. § 393.500 (Vernon Supp. 1980). The corresponding Oklahoma statute provides:

All natural gas which has previously been reduced to possession, and which is subsequently injected into underground storage fields, sands, reservoirs and facilities, shall at all times be deemed the property of the injector, his heirs, successors or assigns; and in no event shall such gas be subject to the right of the owner of the surface of said lands or of any mineral interest therein, under which said gas storage fields, sands, reservoirs, and facilities lie, or of any person other than the injector, his heirs, successors and assigns, to produce, take, reduce to possession, waste, or otherwise interfere with or exercise any control thereover, provided that the injector, his heirs, successors and assigns, shall have no right to gas in any stratum, or portion thereof, which has not been condemned under the provisions of this Act, or otherwise purchased.

OKLA. STAT. ANN. tit. 52, § 36.6 (West 1969) (emphasis added).

32. See note 33 *infra* and accompanying text.

33. 252 S.W.2d 866 (Ky. 1952).

34. *Id.* at 866-67.

sued the defendant gas company claiming that he, as the surface estate owner, was entitled to all of the rentals. The court held for the defendant, reasoning that since gas, like a wild animal, returns to its natural state upon injection, "the mineral owner would have the exclusive right to explore for and produce gas released for storage as well as native gas."³⁵ Although the court stated that it was not "necessary to decide whether the cavity or stratum from which a mineral has been removed becomes the property of the mineral or surface estate owner,"³⁶ it in effect decided this question by holding that rentals should go to the mineral estate owner.³⁷

This case shares the shortcoming of *Hammonds* because it is similarly based on the *ferae naturae* theory. There are additional problems with this rationale though. If the *ferae naturae* reasoning is carried to its logical conclusion, the user of the storage area should make royalty payments to royalty owners on the stored gas when it is removed. If the ownership of gas is lost upon injection, and the gas returns to its natural state, it follows that a percentage of stored gas production, free of cost, goes to the royalty owner.³⁸ This implication, however, was rejected by the Texas Supreme Court in *Humble Oil and Refining Co. v. West*.³⁹ In *Humble*, the defendant fee owner, after producing eighty nine percent of the native gas, engaged in underground storage activities. The plaintiff-royalty interest owner sought to enjoin the defendant from storing gas and alternatively sought royalty payments on both the native and stored gas. The court decided plaintiff's first contention by balancing the plaintiff's interest in receiving royalties on the remaining native gas against defendant's interest in using the underground gas storage area.⁴⁰ Stressing the value of the stored gas to the nearby community and the fact that the depletion of native gas would destroy the reservoirs usefulness as a storage area, the court denied plaintiff's re-

35. *Id.* The court cited *Hammonds* with approval stating "under the analogy recognized in [*Hammonds*] it is apparent that there is no distinction in the title to gas once recovered and released for subterranean storage and native gas before its initial recovery." *Id.* at 867-88.

36. *Id.*

37. See Donely, *Use of the Containing Space After the Removal of Subsurface Minerals*, 55 W. VA. L. REV. 202, 212 (1953).

38. The royalty owner is "entitled to a share in such minerals as are severed, or the proceeds thereof." H. WILLIAMS & C. MEYERS, *supra* note 3, § 202.3. See E. KUNTZ, *supra* note 3, § 3.91.

39. 508 S.W.2d 812 (Tex. 1974), *cert. denied*, 434 U.S. 875 (1977). See generally Note, *Humble Oil & Refining Co. v. West: The Underground Storage of Natural Gas Causes Confusion*, 27 BAYLOR L. REV. 806 (1975)..

40. 508 S.W.2d at 816.

quest for an injunction.⁴¹

The court also rejected the plaintiff's second contention that the conveyance instrument which entitled him to "certain royalties on oil and gas and other minerals which may be produced and saved from the lands hereby conveyed" included royalties on both the native and stored gas.⁴² The court reasoned that the conveyance did not entitle the plaintiff to royalties on the stored gas because the stored gas "having assumed the character of personal property remained [defendant's] property" upon injection.⁴³ A contrary result, the court stated "would implicitly recognize the doctrine of minerals *ferae naturae*."⁴⁴

The plaintiff also argued that the defendant's injection of gas confused the native and non-native gas and resulted in the forfeiture of defendant's rights in the non-native gas. The court noted that the defendant was responsible for commingling the native and non-native gas and held that the defendant had the burden of determining the amount of the remaining native gas on which the plaintiff would receive royalties with reasonable certainty.⁴⁵ Thus, the court rejected the wild animal theory espoused in *Hammonds*.

Another necessary implication of the *ferae naturae* theory relates to its effect on the extension of the lease beyond the primary term.⁴⁶ If there is no difference between native and stored gas, then the later removal of stored gas should keep an oil and gas lease in force beyond the primary term. The court in *Smallwood v. Central Kentucky Natural Gas Co.*⁴⁷ addressed the issue of extending the lease beyond the pri-

41. Absent injection of extraneous gas, production of native gas to depletion will result in a watering out or total destruction of the storage capability of the reservoir. As a consequence, injunction against the injection of extraneous gas would render illusory Humble's ownership of the storage rights in the reservoir.

Moreover, our ruling will determine the continued existence of an important natural resource. The record reveals two significant features of the reservoir which vitally affect the public interest. First, the reservoir is well-suited as a "peaking" facility which can handle the seasonal fluctuations and rapidly increasing energy demands for the greater Houston area; secondly, it is a strategically located "emergency" facility, capable of providing a readily deliverable supply of gas at times when accidents, natural disasters or mechanical failures make continued delivery through normal channels impossible.

Id.

42. *Id.* at 817.

43. The court cited the *Murchison* and *White* cases, *supra* note 30, with approval. *Id.*

44. *Id.*

45. *Id.* at 819.

46. The typical oil and gas lease provides the lessee with a term of years, or a primary term, during which the lessee must either pay delay rentals or produce oil and gas. To keep the oil and gas lease in force, beyond the primary term, the lessee must produce oil and gas. H. WILLIAMS & C. MEYERS, *supra* note 3, § 603.

47. 308 S.W.2d 439 (Ky. 1957).

mary term due to subsequent removal of stored gas. In *Smallwood*, the plaintiff-lessor sued the defendant-lessee alleging that defendant's lease had expired because there had been no production beyond the primary term. The defendant maintained that his production of non-native stored gas had maintained the lease. The defendant cited both the *Hammonds* and *Central* cases, arguing that since injected gas returns to its natural state, there should be no distinction between native gas, and gas allocated for storage.⁴⁸ The court rejected its earlier reasoning and held that natural gas produced elsewhere, and stored in gas wells on the leased premises, was not gas "produced from" the leased premises when it was subsequently removed.⁴⁹ Since there was no production beyond the primary term under the provisions of the lease, the lease expired.

Smallwood was a marked departure from the *Hammonds* and *Central* cases because the court avoided the *ferae naturae* theory. Instead, the focus was on the parties' intent as evidenced in the conveyance instrument. In essence, the court stated that the parties did not intend for the term "production" to include the removal of stored gas.

The inherent weakness of the *ferae naturae* theory as a device to safeguard the storage users rights is that title to gas is lost by the underground storage user. The loss of title by the storage user not only discourages the use of underground storage but affects other considerations such as the need for royalty payments on the stored gas,⁵⁰ and the extension of the lease beyond the primary term upon removal of the stored gas.⁵¹ Furthermore, the *ferae naturae* rationale does not address the potential problem of interference with the landowner's surface estate which subsurface gas storage activities may entail.

IV. INTERPRETING THE CONVEYANCE INSTRUMENT

The cases holding that underground storage areas belong to the surface estate owner have focused on the intent of the parties when the mineral estate was severed or when the oil and gas lease was con-

48. *Id.* at 442.

49. *Id.* at 443. See W. SUMMERS, *supra* note 13, § 295. "Ordinarily, to extend a lease beyond the fixed term by production, the oil or gas must be produced from the demised land." *Id.* (footnote omitted).

50. See note 39 *supra* and accompanying text.

51. See note 47 *supra* and accompanying text.

veyed.⁵² The problem faced by courts in these cases is construing conveyance instruments which fail to address gas storage rights. Various rules of construction may apply to ascertaining the intention of the conveying parties.⁵³ Courts may focus on the particular words used in the instruments.⁵⁴ If the words are plain and unambiguous, they may be given their literal meaning.⁵⁵ If the words are unclear, they may be interpreted in light of the other parts of the instrument.⁵⁶ Perhaps the most important interpretative guide is provided when consideration is given to the purpose the instrument is intended to serve.⁵⁷

In *Tate v. United Fuel Gas Co.*,⁵⁸ the defendant conveyed a tract of land to the plaintiff, excepting and reserving "oil, gas and brine and all minerals . . . with the exclusive right to drill and mine thereon for the production and removal of the oil and gas and other minerals hereby excepted."⁵⁹ Based on this reservation of mineral rights, the defendant conveyed gas storage rights to a third party. The plaintiff, surface owner, sued seeking a cancellation of the gas storage agreement, alleging that there was no recoverable oil and gas in the storage area. The plain meaning rule was used by the court to ascertain the intent of the conveying parties.⁶⁰ The court interpreted the reservation as including rights for the purpose of mining and operating the land for the production of minerals, but not rights relating to the storage of gas produced off the premises.⁶¹

52. See notes 58, 65, 69, & 72 *infra* and accompanying text.

53. See 3 AMERICAN LAW OF PROPERTY §§ 12.89-92 (A.J. Casner ed. 1952); E. KUNTZ *supra* note 3, § 16.1.

54. 3 AMERICAN LAW OF PROPERTY § 12.89, at 380 (A.J. Casner ed. 1952); See *Gibson v. Watson*, 315 S.W.2d 48, 56 (Tex. Civ. App. 1958 *writ ref. n.r.e.*) (each deed must be construed from language used in the deed).

55. It has been stated that "where the meaning is plain as expressed in the instrument there is no room for construction." 3 AMERICAN LAW OF PROPERTY, *supra* note 54, § 12.89, at 381. See, e.g., *Wallace v. Bellamy*, 199 N.C. 759, —, 155 S.E. 856, 859 (1930) (when the parties intention is clear, the court will not resort to construction); *Halbert v. Green*, 156 Tex. 223, —, 293 S.W.2d 848, 852-53 (1956) (language of unambiguous instrument controls regardless of construction given the instrument by the parties).

56. In oil and gas transactions this approach is referred to as the "four corners" rule. See E. KUNTZ, *supra* note 3, at § 16.1. "Under the four corners rule, the court makes every effort to reconcile all provisions of the entire instrument and to arrive at the intention of the parties as deduced from all the language contained in the instrument." *Id.*

57. See, e.g., *Magnolia Petroleum Co. v. West*, 374 Ill. 514, —, 30 N.E.2d 24, 26 (1940) (dissenting opinion) (court will consider the objects to be attained); *Drucker v. Russel*, 279 Pa. 443, —, 124 A. 92, 93 (1924) (intent of parties should be considered).

58. 137 W. Va. 272, 71 S.E.2d 65 (1952).

59. *Id.* at —, 71 S.E.2d at 65.

60. *Id.* at —, 71 S.E.2d at 67.

61. The court also emphasized the fact that the exception of minerals did not include clay, sand, or stone. *Id.* at —, 71 S.E.2d at 69.

The *Tate* decision is consistent with the primary purpose behind the conveyance of an oil and gas lease, the extraction of native minerals.⁶² When the landowner conveys an oil and gas lease, he usually expects the lessee to explore for and produce the oil and gas in place. The lessors expectation is the receipt of royalty payments.⁶³ To interpret a conveyance of mineral rights to include a grant of storage rights is an unwarranted extension of the rights traditionally granted by an oil and gas lease and inconsistent with the landowner's expectations.⁶⁴

In 1969, the rationale of the *Tate* case was used by the Court of Claims in *Emery v. United States*⁶⁵ to find that underground storage rights were not conveyed by an oil and gas lease.⁶⁶ Here, landowners sued the United States, which was engaged in gas storage activities pursuant to leases acquired by means of a condemnation suit. The government's oil and gas leases stated that the grant was for "the sole and only purpose of mining and operating for oil and gas and of laying pipe lines and of building tanks, power stations and structures thereon, to produce, save and take care of said products."⁶⁷

On the basis of this language, the Court of Claims held for the landowners and interpreted the intent of the parties as granting "rights pertaining only to 'mining and operating for oil and gas' on the leased premises and taking the other steps necessary 'to produce, save and take care of said products, *i.e.*, the oil and gas produced from the leased premises.'" ⁶⁸

Similarly, in *Miles v. Home Gas Co.*⁶⁹ a New York court held that a quit claim deed conveying "all the oil, gas and minerals in said premises, together with the right at all times to enter upon said premises and to bore wells, make excavations, lay pipes and remove all oil, gas and

62. See H. WILLIAMS & C. MEYERS, *supra* note 3, § 601. "The outstanding purpose behind any grant of minerals or mineral rights is that the minerals which lie beneath the surface be released from their underground keepers and brought to the surface where they can be utilized by man." 21 U. KAN. CITY L. REV. 217, 221 (1953).

63. "The landowner has been interested primarily in obtaining royalties from the lease and therefore has pressed for immediate exploration and development operations." H. WILLIAMS & C. MEYERS, *supra* note 3, § 601.

64. See Lowe, *Representing the Landowner in Oil and Gas Leasing Transactions*, 31 OKLA. L. REV. 257, 287 (1978); McGinnis, *supra* note 8, at 42-52.

65. 412 F.2d 1319 (Ct. Cl. 1969).

66. *Id.* at 1325.

67. *Id.* at 1323.

68. *Id.* "There is no reasonable basis on which the rights granted to the lessee . . . could be construed gas including the right to bring to the premises and store there gas produced elsewhere." *Id.*

69. 35 A.D.2d 1042, 316 N.Y.S.2d 908 (1970).

minerals found thereon" did not convey gas storage rights.⁷⁰ The court distinguished the rights relating to the extraction of gas with the rights relating to the storage of non-native gas and held that the wording was clear and unambiguous in conveying rights solely relating to the production of native gas.⁷¹

A similar interpretation was given to an oil and gas lease in *Ellis v. Arkansas Louisiana Gas Co.*⁷² In *Ellis*, the surface estate owner sued the defendant gas company to recover damages for the unauthorized use of underground storage areas. While the case was ultimately decided in favor of the defendant upon a finding that the company had acquired gas storage rights by prescription,⁷³ the federal court, nevertheless, held that surface estate owners,⁷⁴ rather than the owners of mineral interests, had the right to convey gas storage rights.⁷⁵ The intent of the parties was determined by looking at the plain meaning of the mineral severance instruments which gave "the mineral interest owner all of the oil, gas and other minerals 'that may be produced'; this included

70. *Id.* at —, 316 N.Y.S.2d at 910.

71. *Id.* at —, 316 N.Y.S.2d at 910.

72. 450 F. Supp. 412 (E.D. Okla. 1978), *aff'd*, 609 F.2d 436 (10th Cir. 1979).

73. 450 F. Supp. at 425.

74. Under the mandate of *Erie R.R. v. Tompkins*, 304 U.S. 64, 78 (1938), and its progeny, the federal court was obligated to follow Oklahoma law. The *Ellis* court, while acknowledging that the Supreme Court of Oklahoma had not decided the question of the ownership of underground gas storage areas, found some support for its holding in the case of *Sunray Oil Co. v. Cortez Oil Co.*, 188 Okla. 690, 112 P.2d 792 (1941). In *Cortez*, the plaintiff owned one-fourth of the mineral interest in the land. A dry well had been drilled on the land by a lessee. The defendant, wanting to use the dry well to dispose of salt water from other oil and gas wells, secured an assignment of the lease from the lessee and also secured from the landowner, who owned part of the minerals, the right to use the well as a salt water disposal well. The plaintiff sued to enjoin the defendant from using the well for salt water disposal purposes, arguing that salt water disposal activities could impair her mineral interest. The Oklahoma Supreme Court denied the injunction, finding that the plaintiff's interest was merely speculative, since it was improbable that any producible oil and gas was in the land. 188 Okla. 690, —, 112 P.2d 794-95. The *Cortez* court then stated that the surface owner "has the right to so use the surface and substrata of her land as she sees fit, or permit others so to do, so long as such use does not injure or damage other persons." *Id.* at —, 112 P.2d at 795 (emphasis added). This language appears to support the view that gas storage areas belong to the surface estate owner. See McGinnis, *supra* note 8, at 51. The federal court in *Ellis* also distinguished the Oklahoma case of *West Edmond Salt Water Disposal Ass'n v. Rosecrans*, 204 Okla. 9, 226 P.2d 965 (1950). In *West Edmond*, the plaintiffs alleged that the defendant, by injecting salt water into an abandoned well on adjoining property, trespassed onto her property. The court rejected plaintiff's contention and endorsed *Hammonds*' reasoning that since the defendant lost title to the injected salt water upon injection, he could not be held liable for trespass. 204 Okla. —, 226 P.2d at 970-71. The court also noted that the reservoir under the injection well was undefined and that the injected salt water commingled with the salt water underneath plaintiff's property, without injury to the plaintiff. *Id.* at —, 226 P.2d at 968, 973. The court in *Ellis* distinguished *West Edmond* by noting that in *Ellis* the reservoir was well defined and that there was no commingling between economically producible native gas and the injected gas. For a discussion in *Ellis*, of the *West Edmond* and *Cortez* decisions, see 450 F. Supp. 412, 418-22.

75. 450 F. Supp. at 422.

the 'right of ingress and egress at all times for the purpose of mining, drilling and exploring said lands.'"⁷⁶ The court found this language to "denote exploration, production and development . . . [not] injection, storage or occupation."⁷⁷

As evidenced above, courts generally rely on the plain meaning rule of construction in reaching their decisions although many other bases could also have been used to reach the same conclusion.⁷⁸ Kuntz' "theory of enjoyment" supports the conclusion that underground storage areas belong to the surface estate owner.⁷⁹ This theory determines the general intention of the parties from the standpoint of enjoyment of the respective interests created. Professor Kuntz states:

The intention sought should be the general intent rather than any supposed but unexpressed specific intent, and further, that the general intent should be arrived at, not by defining and redefining the terms used, but by considering the *purposes of the grant or reservation* in terms of *manners of enjoyment* intended in the insuing interests.⁸⁰

The purpose of an oil and gas lease or grant of minerals is to con-

76. *Id.* at 420.

77. *Id.*

78. One such basis noted in *Ellis* was the cases in the hard mineral area which have generally found the cavity left in the land after the minerals are removed, to belong to the surface estate owner. *Id.* at 412. See, e.g., *Westerman v. Pennsylvania Salt Mfg. Co.*, 260 Pa. 140, —, 103 A. 539, 541 (1918) (mineral owners right to use space occupied by minerals ends when the minerals are extracted); *Chartiers Block Coal Co. v. Mellon*, 152 Pa. 286, —, 25 A. 597, 599 (1893) (concurring opinion) (the space occupied by the minerals reverts to the mineral owner once the minerals are removed). See generally 54 AM. JUR. 2d *Mines and Minerals* § 214 (1971); 58 C.J.S. *Mines and Minerals* § 162, at 338 (1948).

79. Professor Kuntz's theory of enjoyment has generally been used to determine whether a particular mineral falls within a general grant of minerals. There is no reason why Kuntz's theory cannot be applied to the instant situation. This theory determines the parties general intent by examining the purpose of the grant in light of the mode or manner of enjoyment of a particular interest.

The difficulty inherent in determining whether or not oil or gas or any other substance is included within the terms of a grant or reservation of 'minerals' lies in the traditional approach of attempting to find and give effect to an intention to include or to exclude specific substances, when, as a matter of fact, the parties had nothing specific in mind on the matter at all. It is submitted that the intention sought should be the general intention from the *standpoint of enjoyment of the respective interests created*. When a general grant or reservation is made of all minerals without qualifying language, it should be apparent that the parties intended to sever the entire mineral estate from the surface estate, leaving the respective owners of each estate with an estate which is enjoyable in a special manner. The *manner of enjoyment of the mineral estate is through extraction and removal of substances from the earth*, whereas the *enjoyment of the surface is through retention of such substances as are necessary for the use of the surface*, and these respective modes of enjoyment should be taken in account in arriving at the proper subject matter of each estate.

E. KUNTZ, *supra* note 3, § 13.3 (emphasis added).

80. E. Kuntz, *The Law Relating to Oil and Gas in Wyoming*, 3 WYO. L.J. 107, 112 (1949).

vey rights related to the exploration, development, and production of oil, gas, and minerals.⁸¹ The enjoyment of these rights in connection with gas produced on the leased premises is not related to the underground storage of gas. Underground storage areas are used for the storage of non-native gas. Accordingly, since underground storage rights are not related to the enjoyment of the mineral estate or interest, a rule that underground storage rights belong to the surface estate owner would be consistent with the general intent of enjoyment of the mineral estate or interest. Furthermore, the use of underground storage areas entails the use of the surface estate⁸² above what is reasonably necessary for the enjoyment of the mineral estate.⁸³ Since underground storage activities interfere with the enjoyment of the surface estate, it is unlikely that the grantor intended to convey gas storage rights.⁸⁴ This idea is illustrated by the case of *Carson v. Missouri Pacific Railway*⁸⁵ where the court found that bauxite was not included within a reservation of mineral rights because the mining of bauxite would entail an excess burden on the surface estate.⁸⁶ The use of the surface estate for underground storage, like the use of the surface for the mining of bauxite interferes with the enjoyment of the surface estate. This interference conflicts with the general intent of the enjoyment of the surface estate. Although Professors Williams and Meyers argue that a mineral severance should be construed to give the mineral estate owner subsurface storage rights,⁸⁷ they, nevertheless write:

[The surface owner] should be compensated if there is to be any use of the surface, whether for production of injection

81. See note 62 *supra* and accompanying text.

82. Before an area can be used for underground gas storage new wells may have to be drilled. In addition, some abandoned wells may have to be redrilled and then replugged if they are not used for gas injection and withdrawal purposes. Once the wells are conditioned, a compressor unit, trunk lines, dehydration plant, and meter stations are used in the injection and withdrawal operations. 10 INTERSTATE COMPACT Q. BULL. 37, 38 (Dec. 1951).

83. When the mineral estate is severed or when a mineral estate is conveyed, an easement for reasonable use of the surface is implied in law. Underground storage activities, often time, involve the use of the surface beyond what is reasonably necessary for the enjoyment of the mineral estate. H. WILLIAMS & C. MEYERS, *supra* note 3, § 222.

84. *Cf.* McGinnis, *supra* note 8, at 51 (the right to use the surface in connection with storage should not be implied in the absence of clear evidence of intent to grant such rights).

85. 212 Ark. 963, 209 S.W.2d 97 (1948) (dictum); *see* Holland v. Dolese Co., 540 P.2d 549, 552-53 (Okla. 1975) (limestone not included within a reservation of mineral rights because the quarry operation related to the extraction of limestone destroyed the surface for its normal use); Acker v. Guinn, 464 S.W.2d 348, 351-52 (Tex. 1971) (iron ore was not included within a conveyance of minerals because the mining of iron would interfere with the usual uses of the surface estate).

86. 212 Ark. —, 209 S.W.2d at 99.

87. H. WILLIAMS & C. MEYERS, *supra* note 3, § 222.

wells or for any other purpose since the severance of minerals should not be construed as authorizing the mineral owner without consent of the surface owner to use the surface for purposes other than exploration, development and production of native minerals.⁸⁸

The only complications with the finding that underground storage rights belong to the surface estate owner occur in situations where gas storage begins before a reservoir is totally depleted⁸⁹ and situations where a depleted cavity is refilled with migrating gas.⁹⁰ These situations should not present insurmountable obstacles, however, since it is possible to estimate the volume of any remaining gas⁹¹ and since the gas storage user will be aware of the amount of gas that has been stored. In the former situation the mineral owner should be compensated for the minerals remaining in the cavity.⁹² In the latter situation, if, during the removal of gas, more gas is extracted than was stored, the gas storage user would compensate the parties who have an interest in the mineral estate.

V. CONCLUSION

Given the public interest in insuring available supplies of natural gas, it is imperative that the suppliers of gas be encouraged to use underground storage areas.⁹³ It is difficult to see how a rule that ownership rights in subsurface gas storage areas belong to the mineral estate owners can encourage the use of underground gas storage areas. The *ferae naturae* theory was adopted by the courts in recognition of the fugacious nature of oil and gas.⁹⁴ The analogy between wild animals and oil and gas is imperfect, however, because oil and gas are not the

88. *Id.*

89. See note 39 *supra* and accompanying text.

90. See Donely, *Use of the Containing Space After the Removal of Subsurface Minerals*, 55 W. VA. L. REV. 202, 212-13 (1953).

91. In *Exxon Corp. v. West*, 543 S.W.2d 667 (Tex. 1976), *cert. denied*, 434 U.S. 875 (1977), the oil company met its burden of showing to a reasonable certainty, the maximum total volume of gas remaining in the reservoir at the time gas storage activities were begun by presenting expert testimony. 543 S.W.2d at 673. The royalty owners interest would be calculated based on this estimated volume. *Id.* at 674.

92. The mineral owner's compensation, similar to the royalty owner's compensation, would be calculated by subtracting the amount of gas produced from the amount of gas originally in the reservoir to get the amount of gas remaining in the reservoir. *Id.* at 670.

93. See note 1 *supra* and accompanying text; the public interest in encouraging underground gas storage areas is reflected in the adoption of underground gas storage area condemnation statutes. See note 4 *supra*.

94. See note 13 *supra*.

property of the public.⁹⁵ The right to extract and develop the oil and gas is limited to the mineral estate or interest owners.⁹⁶ Furthermore, the *ferae naturae* theory, with its resultant loss of title to the injected gas, is contrary to the objective of insuring a stable supply of gas because it discourages the use of underground storage areas.⁹⁷ This theory also conflicts with the personal property classification given extracted oil and gas because it results in loss of title without an intent to abandon the injected gas.⁹⁸ Additionally, this theory gives rise to problematic implications such as the need for royalty payments on the stored gas⁹⁹ and the extension of the lease beyond the primary term upon the later removal of stored gas.¹⁰⁰ Most significantly, such a holding requires the gas supplier not only to purchase gas storage rights from the mineral owners but also to obtain the necessary surface rights from the surface estate owners.¹⁰¹ Obtaining all the necessary rights would be costly and very burdensome because mineral estates are commonly fractionalized into a multitude of interests.¹⁰² Therefore, sub-surface gas storage users would have to contact, negotiate, and contract with the many mineral interest owners.

A finding that subsurface gas storage areas belong exclusively to the surface estate owners would facilitate the use of underground storage areas because the suppliers of gas could obtain all the necessary storage rights from the surface estate owners.¹⁰³ Obtaining the necessary storage rights would be more expedient and less expensive since gas storage users would have to contract with fewer parties.¹⁰⁴ Moreover, such a holding would be consistent with the general intent of the parties when the mineral estate or interest was created since gas storage rights are not related to the enjoyment of the mineral estate¹⁰⁵ and do

95. See 19 MINN. L. REV. 483, 484 (1935).

96. See note 7 *supra*.

97. In support of its holding that the title to gas is not lost upon injection, the court in *White v. New York State Nat. Gas. Corp.* examined the public interest in encouraging the use of subsurface storage areas. 190 F. Supp. 342, 349 (W.D. Pa. 1960).

98. See notes 25-27 *supra* and accompanying text.

99. See note 39 *supra* and accompanying text.

100. See note 40 *supra* and accompanying text.

101. See note 5 *supra* and accompanying text.

102. See note 72 *supra* at 422. The conveyance of fractional mineral interests has caused a host of construction problems. See E. KUNTZ, *supra* note 3, § 16.3.

103. See McGinnis, *supra* note 8. "Construing a mineral deed to preclude storage rights unless a contrary intent is shown would also reconcile the treatment of surface easements for storage with the result advocated as to the ownership of the storage space." *Id.* at 8.

104. Except in urban areas, the surface estate is generally owned by fewer parties. See note 72 *supra* note at 422. The surface owner, who lives on the land could be easily located.

105. See note 80 *supra* and accompanying text.

interfere with the enjoyment of the surface estate.¹⁰⁶ Finally, such a holding does not compromise the mineral owner's interest in the native gas. The gas storage user would compensate the mineral owner for any gas remaining in the cavity.¹⁰⁷ Likewise, the mineral owners would be compensated if any gas migrated into the depleted cavity.

The problems that arise in connection with the underground storage of gas stem from the failure of the original grantors to articulate their intent regarding these rights. This failure has forced the courts to determine the grantor's unexpressed intent. The preceding cases indicate that this intent may best be effectuated if the animal *ferae naturae* analogy is avoided, and subsurface gas storage rights are deemed to belong to the surface estate owner.

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106. See note 82 *supra* and accompanying text.

107. See note 91 *supra* and accompanying text.