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Geothermal Resources--A Conveyance of the Mineral Estate Includes a Transfer of Geothermal Resources

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RECENT DEVELOPMENT

GEOHERMAL RESOURCES—A CONVEYANCE OF THE MINERAL ESTATE INCLUDES A TRANSFER OF GEOHERMAL RESOURCES. *Geothermal Kinetics v. Union Oil Co.*, 75 Cal. App. 3d 56, 141 Cal. Rptr. 879 (1977).

In recent years the United States has become increasingly aware of the diminishing availability of its fossil fuel resources. Much time and money has been expended in the research, development and exploitation of alternative energy resources. One alternative energy source which is becoming increasingly important is geothermal energy.¹ While the existence of geothermal resources has been recognized for many years,² it has not drawn attention as a potential energy source until recently.³ According to the Department of the Interior, exploration is being carried out mainly in the western states where there are 1,350,000 acres of known geothermal resources.⁴ While there is a vast potential for geothermal energy development in the United States, the amount of geothermal energy the entire earth is capable of generating is enormous. It has "been estimated that if the center of the earth could be cooled by one degree fahrenheit, enough energy would be released to

1. "Geothermal" literally means earth heat. Geothermal energy is energy produced by the earth's heat. One commentator has defined geothermal resources as "geothermal energy existing below the surface of the earth in such a condition that it is economically feasible to be developed for commercial purposes." Bjorge, *The Development of Geothermal Resources and the 1970 Geothermal Steam Act—Law in Search of Definition*, 46 U. COLO. L. REV. 1, 21 (1974).

2. Geothermal resources have been noted by man since the first century B.C. The first commercial use of geothermal energy was as a heat source in Larderello, Italy in 1818. Later, in 1904, this geothermal energy was used for the production of electricity. In 1950, a major project using geothermal energy was initiated at Wairakei, New Zealand. Brooks, *Legal Problems of the Geothermal Industry*, 6 NAT. RES. J. 512, 512-14 (1966). For further background on geothermal resources, see Aidlin, *Representing the Geothermal Resource Client*, 19 ROCKY MT. MIN. L. INST. 27, 27-31 (1974); Olpin, *The Law of Geothermal Resources*, 14 ROCKY MT. MIN. L. INST. 123, 125-29 (1968); P. Schlauch & T. Worchester, *Geothermal Resources: A Primer for the Practitioner*, 9 LAND & WATER L. REV. 327, 327-31 (1974) [hereinafter cited as Worchester].

3. H. R. REP. NO. 1544, 91st Cong., 2d Sess. reprinted in [1970] U.S. CODE CONG. & AD. NEWS 5113, 5115.

4. *Id.* at 5115.

run all existing power plants for 20 million years."⁵

Unfortunately, however, because of the lack of attention paid to geothermal energy as an energy source, many legal questions have been left unanswered.⁶ One such question concerns whether geothermal resources are implicitly transferred in a conveyance of the mineral estate. In *Geothermal Kinetics, Inc. v. Union Oil Co.*⁷ a California court addressed this question and held "that the grant of minerals in, on or under the property includes a grant of geothermal resources, including the steam therefrom."⁸

Geothermal Kinetics acquired its title to the mineral estate underlying 408 acres, in an area known as "The Geysers," from a 1951 deed conveying "all minerals in, on or under" the property to Geothermal Kinetics' predecessor in interest.⁹ In 1963 the successor to the surface estate leased to Magma Power Company and Thermal Power Company the right to utilize the steam from the geothermal resources.¹⁰ Union Oil subsequently acquired a portion of the lease from Magma and Thermal. The issue presented to the court was whether the geothermal resources belonged to the owner of the mineral estate or to the owner of the surface estate.¹¹

In deciding this issue, the court was presented with the problem of construing the 1951 deed. The court started with the premise that the specific intent of the parties should control over their general intent; and in the absence of any specific intent, the general intent must be ascertained.¹² The court found no express language in the deed indicating a specific intent to convey geothermal resources with the mineral estate. Left with the need to ascertain the general intent of the original parties to the deed, the court adopted a functional approach in construing their use of the words "all minerals."¹³

5. G. Vranish & J. Musich, *Geothermal Resources: Water and Other Conflicts Encountered by the Developer*, GEOTHERMAL RESOURCE DEVELOPMENT INSTITUTE 6-9 (1977).

6. Other unresolved legal questions include the applicability of state water law to geothermal water, the tax consequences of geothermal development, and the effect of federal and state legislation in the area. *Id.* at 6-40.

7. 75 Cal. App. 3d 56, 141 Cal. Rptr. 879 (1977).

8. *Id.* at 58, 141 Cal. Rptr. at 879.

9. *Id.*

10. Magma and Thermal acquired the right to "drill for, produce, extract, remove and sell all steam and steam power and extractable minerals from, and utilize, process, convert and otherwise treat such steam and steam power upon, said land, and to extract any extractable minerals." *Id.* at 58, 141 Cal. Rptr. at 879-80.

11. *Id.* at 58, 141 Cal. Rptr. at 879.

12. *Id.* at 60, 141 Cal. Rptr. at 881; see CAL. CIV. CODE §§ 1066, 1636 (West Supp. 1978); CAL. CIV. PROC. CODE § 1859 (West Supp. 1978).

13. 75 Cal. App. 3d at 60-61, 141 Cal. Rptr. at 881. This functional approach was first es-

In applying this approach, the court first looked to the expectations of the parties to the 1951 deed. It noted that as a general rule, a grant of "all minerals" includes all minerals found on the premises whether or not they are known to exist at the time of the transfer. Thus, lack of knowledge of the presence of geothermal resources presented no bar to conveying those resources with the mineral estate.¹⁴

The court also suggested that parties to a minimal conveyance generally expect the enjoyment of the mineral estate will not destroy the surface estate.¹⁵ The court concluded that the extraction of geothermal resources in this case did not substantially disrupt the enjoyment of the surface estate.¹⁶ The court then indicated that the wells used for extracting geothermal steam were similar to those used in oil and gas

poused by Professor Eugene O. Kuntz in 1949. Kuntz, *The Law Relating to Oil and Gas in Wyoming*, 3 Wyo. L. J. 107 (1949) [hereinafter cited as Kuntz]. Professor Kuntz was dissatisfied with previous judicial attempts to discover the general intent of the parties to a mineral grant or reservation and the arbitrary results to which these attempts often led. One line of cases, beginning with *Dunham & Shortt v. Kirkpatrick* 101 Pa. 36 (1882), holds that a reservation of minerals does not include petroleum. The court in *Dunham* believed the mass of mankind would not consider oil and gas a mineral. A second line of cases, following *Murry v. Allard*, 100 Tenn. 100, 43 S.W. 355 (1897), holds that oil and gas are included within a reservation of minerals. These divergent results led Professor Kuntz to devise a means of construing the general intent of the parties to a grant or reservation of minerals. He proposed a test where, "the general intent should be arrived at, not by defining and re-defining the terms used, but by considering the purpose of the grant or reservation in terms of manner of enjoyment intended in the ensuing interests." Kuntz, *supra* at 122.

14. 75 Cal. App. 3d at 61, 141 Cal. Rptr. at 881 (citing *Renshaw v. Happy Valley Water Co.*, 114 Cal. App. 2d 521, 526, 250 P.2d 612, 615 (1952). See also *New Mexico & Arizona Land Co. v. Elkins*, 137 F. Supp. 767, 771 (D.N.M. 1965); *Cain v. Newman*, 316 S.W.2d 915 (Tex. 1958).

In cases which do not follow the general rule, there generally is a qualifying factor involved. See *Kinder v. LaSalle County Carbon Coal Co.*, 310 Ill. 126, 141 N.E. 537 (1923); *Bessing v. Ohio Valley Coal Co.*, 155 Ind. App. 527, 293 N.E.2d 510 (1973); *Deer Lake Co. v. Michigan Land & Iron Co.*, 89 Mich. 180, 50 N.W. 807 (1891). In the *Kinder* case the removal of the minerals would have rendered the surface estate useless for agriculture. 310 Ill. 126, —, 141 N.E. 537, 540. See note 16 *infra*. The grant of "other minerals" in the *Bessing* case was qualified by the terms "oil and gas." 155 Ind. App. 527, —, 293 N.E.2d 510, 514. The court in the *Deer Lake* case found that the only mineral known in the area at the time of the reservation was iron. Because there were elaborate provisions in the deed for the delivery of iron ore, the court concluded that marble and serpentine were not reserved in the deed. 89 Mich. 180, —, 50 N.W. 807, 809.

15. 75 Cal. App. 3d at 61, 141 Cal. Rptr. at 881. For this proposition the court cited *Bambauer v. Menjoulet*, 214 Cal. App. 2d 871, 872-73, 29 Cal. Rptr. 874 (1963), and *Acker v. Guinn*, 464 S.W.2d 348, 351 (Tex. 1971). But see *Peabody Coal Co. v. Pasco*, 452 F.2d 1126 (6th Cir. 1971); *Croley v. Round Mountain Coal Co.*, 374 S.W.2d 852 (Ky. 1964); *Blue Diamond Coal Co. v. Neace*, 337 S.W.2d 725 (Ky. 1960).

16. 75 Cal. App. 3d at 61, 141 Cal. Rptr. at 881-82. At the Geysers, where electricity is currently being generated from geothermal steam, the land is still used for cattle grazing. At Larderello, Italy, orchards and vineyards coexist with the production of electricity from geothermal steam. While power production may require some modification of the land to accommodate wells, pipelines, access roads, and plant sites, the land is still usable. Kitchen, *Geothermal Leasing Practices*, in *GEOTHERMAL RESOURCE DEVELOPMENT INSTITUTE* 3-6 (1977).

See also Comment, *Acquisition of Geothermal Proposal Methods*, 1 IDAHO L. REV. 49, 58 (1964).

production. In addition, it determined that the method of producing energy from geothermal resources was analogous to methods of producing energy from other subsurface mineral resources, such as coal, oil, and natural gas. Production of these analogous energy sources involved little destruction of the surface estate, and was generally included in a conveyance of a mineral estate. Therefore, the court determined that the geothermal resources should be accorded the same treatment.¹⁷

Tying together the two expectations of the parties to the 1951 deed, the court in *Geothermal* believed the purpose of the deed was to convey all the commercially valuable underground resources which did not destroy the surface estate; thus geothermal resources were included in the 1951 conveyance of the mineral estate.¹⁸

Two recent federal cases have dealt with geothermal resources in a similar manner. In *Reich v. Commissioner*,¹⁹ the Tax Court found that geothermal steam, not heat, was the commercially valuable resource, since heat alone could not turn turbines for generation of electricity. The Tax Court also found that steam was a gas for purpose of the Internal Revenue Code.²⁰ Because steam was both a valuable resource and a gas, the Tax Court held that geothermal steam developers could use the depletion allowance provided by the Internal Revenue Code.²¹ In *United States v. Union Oil Co.*,²² the Ninth Circuit was required to interpret the mineral reservation in the Stock-Raising Homestead Act.²³ Applying the functional approach, the *Union Oil* court found that Congress intended to provide land for agriculture while reserving the energy resources for the United States. To fulfill the dual purpose of the reservation, the court concluded that geothermal resources were within the meaning of the mineral reservation in the Stock-Raising Homestead Act.²⁴

Although these two cases held contrary to their position, Union Oil Company argued in *Geothermal* that geothermal resources were not conveyed with the mineral estate. Union Oil relied on two other cases which allegedly involved the ownership of geological formations.

17. 75 Cal. App. 3d at 61-62, 141 Cal. Rptr. at 882.

18. *Id.* at 62, 141 Cal. Rptr. at 882.

19. 52 T.C. 700, *aff'd.*, 454 F.2d 1157 (9th Cir. 1972). *See also*, Comment, *Application of Depletion to Geothermal Resources*, 9 U. MICH. J. L. REF. 233 (1976).

20. 52 T.C. 700, 711, *aff'd.*, 454 F.2d 1157 (9th Cir. 1972).

21. I.R.C. §§ 263(c), 611(a), 613(b). *See* 52 T.C. at 715.

22. 549 F.2d 1271 (9th Cir. 1977).

23. 43 U.S.C. §§ 291-301 (1970) (repealed 1976).

24. 549 F.2d at 1274.

*Emeny v. United States*²⁵ involved the storage of helium gas, produced elsewhere, in a geologic formation. The *Emeny* court found that such storage was not within the rights of the oil and gas lessee.²⁶ The court in *Geothermal Kinetics* distinguished *Emeny* on the basis that it involved storage of gas rather than extraction of a valuable resource. The other case, *Edwards v. Sims*,²⁷ involved only the surface owner's right to the unfettered control of his land, not the ownership of geologic formations.²⁸ Therefore *Edwards* was not applicable in determining whether the geothermal resources passed with the mineral estate.²⁹

Union Oil also argued that a conveyance of the mineral estate does not sever the right of the surface estate owner to the subsurface water.³⁰ Therefore the water in the geothermal system remained with the surface estate and was not included in the grant of the mineral estate. In rejecting this argument, the court relied heavily on several factors relating to the nature of the particular geothermal system at the Geysers.³¹ First, because of the thick shell surrounding the water in the geothermal system at the Geysers, there is very little interchange between the surface and subsurface waters and the water in the geothermal system.³² Second, the water in the geothermal system is so toxic that not only is it unfit for surface or domestic use, but the Water Quality Control Board requires it to be reinjected deep into the earth after its heat

25. 412 F.2d 1319 (Ct. Cl. 1969).

26. *Id.* at 1323.

27. 232 Ky. 791, 24 S.W.2d 619 (1929).

28. *Id.* at —, 24 S.W.2d at 620.

29. 75 Cal. App. 3d at 62-63, 141 Cal. Rptr. at 882.

30. 75 Cal. App. 3d at 63, 141 Cal. Rptr. at 882. *See Mack Oil Co. v. Laurence*, 389 P.2d 955 (Okla. 1964); *Fleming Foundation v. Texaco*, 337 S.W.2d 846 (Tex. App. 1960).

31. There are four basic types of geothermal systems: the hydrothermal convective system, the hot dry rock system, the geopressure system and the magma system. At present the only type of system which is commercially feasible is the hydrothermal convective system which includes dry steam systems and hot water systems. In the hydrothermal convective system, water is warmed with the heat produced by the earth. This water is then extracted by means of wells and may be put to various uses.

The hot dry rock system consists of a rock structure heated by the earth. To be useful, this rock structure must be fractured. Fluid is then injected into the fractured rock structure, heated and withdrawn for use. The geopressure system is a low salinity, lithostatically pressured hot water aquifer. The magma system consists of molten rock. Kitchen, *Geothermal—The Resource, the Law and the Landman*, 22 ROCKY MT. MIN. L. INST. 821, 824-25 (1976).

The system at the Geysers is a hydrothermal system producing dry steam. Convection currents have caused the hot water to rise and cool, depositing silica and calcium carbonate, which has formed a shell approximately 1,000 feet thick. This shell seals off the geothermal water of this system from the surrounding groundwater, thus preventing any significant interchange of water between the geothermal system and the groundwater. In other hydrothermal systems, there may be an interchange with groundwater. *See note 35 infra.*

32. *See id.*

has been utilized.³³ Because these factors prevent the surface estate from ever enjoying the geothermal waters, the court concluded that the authority cited by Union Oil was inapplicable as it dealt solely with water which could be enjoyed by the surface estate.³⁴

In addition to the legal arguments put forth by the parties, a key factor in the court's decision appeared to be the purported need for simplification of geothermal resource development. It believed that by including geothermal water in the transfer of the mineral estate, conflicts between the surface and mineral estates could be avoided.³⁵ Circumvention of the inevitable confusion and complexity inherent in a different approach may well lead to more rapid development and exploitation of geothermal resources.

The *Geothermal* court's attempt to simplify the classification of geothermal resources by treating heated subsurface water as a mineral is appropriate because of the unique nature of the system at the Geysers.³⁶ The problems created by treating geothermal water as a mineral, however, may be far more troublesome when other types of geothermal systems are involved. For example in a hot water system there may be interchange between the geothermal and subsurface water. If the geothermal water is not sealed off from the subsurface water, as in the system at the Geysers, an increased withdrawal of geothermal water will increase the flow rate of subsurface water toward the geothermal reservoir.³⁷ This withdrawal of geothermal water could create two problems. First, it could increase the salinity of the subsurface water and second, it could interfere with existing water wells.³⁸ By requiring water rights to be conveyed separately from geothermal exploitation rights, some progress may be made toward the solution of these problems. At the least, such a separation will subject geothermal users

33. 75 Cal. App. 3d at 63, 141 Cal. Rptr. at 883.

34. *Id.*

35. Recognition of rights of the owner of the surface estate to geothermal water would mean that resources consisting of hot rock without any fluid system belong to the mineral estate while fluid geothermal systems, like that in the present case, would be subject to a divided ownership with the surface estate owner having an interest in the water, and the mineral estate owner having an interest in any commercially valuable dissolved minerals. The difficulties of determining the type of system or systems on a particular property, as well as the confusion and complexity attendant to such an approach are clear.

75 Cal. App. 3d at 64, 141 Cal. Rptr. at 883.

36. See note 31 *supra*.

37. G. Vranish & J. Musich, *Geothermal Resources: Water and Other Conflicts Encountered by the Developer*, 1977 GEOTHERMAL RESOURCE DEVELOPMENT INSTITUTE, at 6-22 to 6-29.

38. *Id.* at 6-28. This article also points out that geothermal tapping and utilization affects waters of underlying aquifers which are inseparable from other groundwater and which is already subject to regulation. The authors then argue for legislation which recognizes this fact, and which will provide protection for well owners in areas where geothermal exploitation is occurring. *Id.*

to the controls of the existing state water laws. Thus the state hopefully would be able to allocate the subsurface water between all users in such a manner as to prevent irreparable damage from increased salinity and to prevent interference with other wells.³⁹

Several commentators have taken a different approach and suggested that geothermal resources should be considered as a separate category of energy resources.⁴⁰ Several reasons support this view. First, the essence of a geothermal resource is energy and not the particular substance which conveys it. Second, separate treatment of the different types of geothermal systems may prove to be more economically and legally feasible.⁴¹ Finally, it is believed that creating a separate classification for geothermal energy resources may provide greater flexibility to meet the unforeseen, and possibly unique, needs of geothermal energy development.⁴²

Conversely, two factors support the position of including geothermal resources within the mineral estate. The primary reason many minerals, such as oil and gas, are developed is to extract the energy they contain, not to utilize their physical substance. Ownership of the physical substance includes ownership of the energy contained therein. The same could also be said for geothermal resources.⁴³

Additionally, alternative energy sources need to be developed immediately to meet the ever-increasing demand for energy. By conveying geothermal resources with the mineral estate, their development may be hastened by having an existing body of law with which to determine the rights of the parties. The predictability and certainty which this will add to the development of these resources is important,

39. There are other possible solutions to this problem. California issues certificates of primary purpose. These certificates create a rebuttable presumption that the use of geothermal water is not interfering with existing groundwater users on a showing that the primary purpose of the well is for development of geothermal resources. CAL. PUB. RES. CODE § 3742.2 (West Supp. 1978). Wyoming treats geothermal water as ground water. WYO. STAT. § 41-121(b) (Supp. 1975). Utah has put geothermal resources under the control of the Division of Water Rights. UTAH CODE ANN. § 73-1-20 (Supp. 1977).

40. See P. Schlauch & T. Worchester, *Geothermal Resources: A Primer for the Practitioner*, 9 LAND & WATER L. REV. 327, 330-31 (1974); Bjorge, *The Development of Geothermal Resources and the 1970 Geothermal Steam Act—Law in Search of Definition*, 46 U. COLO. L. REV. 1, 24 (1974). Several states, by statute, have declared geothermal resources to be sui generis. See e.g., IDAHO CODE § 42-4002(c) (Supp. 1977); MONT. REV. CODES ANN. § 81-2602(1) (Supp. 1977); WASH. REV. CODE ANN. §§ 79.76.030(1), 79.76.040 (Supp. 1976).

41. For example, hot water type systems would be treated as water and would therefore come under existing state water regulation. Steam systems would be treated as gas for the purposes of ownership, and hot rock systems would be classified as minerals. See Worchester, *supra* note 2, at 329-31.

42. *Id.*

43. *Id.*

especially when one considers the already high cost of geothermal development.⁴⁴

Notwithstanding the possible problems which may be created by treating geothermal water as a mineral, the holding in *Geothermal Kinetics* will permit a presently-existing body of legal principles to be drawn upon in the acquisition of geothermal resource development rights. It will also provide the certainty necessary to facilitate the immediate development of these resources, which is imperative in light of our current energy situation.

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44. One geothermal well drilled at the Geysers by Geothermal Kinetics cost approximately \$400,000. 75 Cal. App. 3d at 58, 141 S.W.2d at 880. It has been estimated that the total cost of a thorough geothermal exploration, including preliminary surveys and the drilling of six to eight exploratory wells is between \$872,000 and \$1,500,000. Brooks, *Legal Problems of the Geothermal Industry*, 6 NAT. RES. J. 512, 518 (1966).