



GEOTHERMAL RESOURCES: WHO OWNS WHAT?

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Introduction:

Questions of title to geothermal resources, and of the relative rights of owners of surface rights, geothermal rights and water rights can be surprisingly complex. Understanding how title issues arise and how they may be resolved can help ensure that the development of viable energy resources is not impeded or precluded by intractable questions of ownership. This article discusses the status of controlling law in Nevada, and where it provides answers to these questions and where ambiguities remain.

What is a geothermal resource?

To provide context, we begin with a brief overview of what we mean by a “geothermal resource,” and how these resources are used. No legal or scientific definition of geothermal resources is universally recognized, and different jurisdictions define the resource as water, in terms of temperature, or as mineral or as something *sui generis*. Fortunately, in Nevada, the relevant state and federal laws are very similar. Nevada state law defines a geothermal resource to mean “the natural heat of the earth and the energy associated with that natural heat, pressure and all dissolved or entrained minerals that may be obtained from the medium



used to transfer that heat, but excluding hydrocarbons and helium.”¹

As for federal law, the Geothermal Steam Act of 1970² defines geothermal resources to include “all products of geothermal processes embracing indigenous steam, hot water and hot brines,” and “heat or other associated energy found in geothermal formations.”³

The two primary means of exploiting a geothermal resource are direct use and production of electrical energy. In direct use, geothermal heat is used directly for purposes such as space heating or industrial applications such as drying onions or warming greenhouses. In electrical generation, the geothermal energy is used to turn turbines which produce electricity. Where a resource produces geothermal steam at surface conditions, the steam can be used directly to turn the turbines. In a “flash” plant, hot geothermal water is pumped into low pressure tanks where it “flashes” into steam which turns turbines. In a binary system, hot geothermal fluids are used to vaporize a substance with a lower boiling point than water, and this heated vapor is used to power the turbines.

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In binary systems, the secondary fluid vapors are condensed through air or water cooling and recycled. A third mechanism for utilizing geothermal energy involves injecting water into areas of known elevated subsurface temperature and then bringing the heated water to the surface for use. These enhanced geothermal systems are gaining in application as technologies improve, but require large volumes of water.

Ownership of geothermal resources:

So who owns a geothermal resource? Under Nevada law, the surface owner is the presumptive owner, but there is an important qualifier; the law states: "The owner of real property owns the rights to the underlying geothermal resources unless they have been reserved by or conveyed to another person."⁴

"...[U]nless they have been reserved by or conveyed to another person." Here is where the complexities begin. "Split" or "severed" estates in land are common in Nevada.

Frequently a grantor conveys surface rights to real estate but reserves or conveys to other parties various subsurface interests, such as rights to minerals, oil and gas, or geothermal resources. Many of these reservations arise from the initial patents from the United States.

Nevada was originally entirely public domain, acquired in the Mexican Cession through the 1848 Treaty of Guadalupe Hidalgo.⁵ Private ownership of these federal lands has been established through the application of federal land disposition acts, including railroad grants, mining laws and various homestead acts. During the initial phases of the disposition of public lands, the federal government attempted to segregate mineral lands from agricultural lands, allowing homesteading only on the latter. This distinction ignored geologic and geographic realities and was subject to widespread abuse.⁶ When the Stock-Raising Homestead Act (SRHA)⁷ was enacted in 1916, Congress opted to include a general mineral reservation in the patents, stating that the land patented under the act "shall be subject to and contain a reservation to the United States of all the coal and other minerals in the lands so entered and patented, together with the right to prospect for, mine and remove the same."⁸ Today, the United States Bureau of Land Management (the federal agency charged with managing federal minerals) manages about 58 million acres of split estate lands with private surface and federal minerals.⁹

The Geothermal Steam Act of 1970 provided that laws reserving any mineral to the United States shall "hereafter" be construed to embrace geothermal resources. Despite language in the act suggesting the law should be applied prospectively, the Ninth Circuit in *United States v. Union Oil Co. of Cal.* held that the act applied to mineral reservations in patents issued under the Stock-Raising Homestead Act, finding the clear intent of Congress was to reserve energy resources to the United States.¹⁰

The language of general mineral reservations in federal land dispositions laws varies greatly from one act to another and, if there is any uncertainty

as to federal geothermal resource ownership, the language of the original patent should be consulted and the law under which the patent was issued should be examined.

Private Mineral Reservations:

Even more complexities arise under private mineral reservations. Because Nevada has a long history of mineral development, landowners generally recognize the potential value of subsurface rights and the possibility of reserving or severing these rights. The variations in language used in mineral reservations or grants are as numerous as the authors. Even if reservation or conveyance language explicitly includes geothermal resources, the question must be asked whether the grantor's rights included these resources to begin with. Does a general mineral reservation or grant made by a private party in Nevada include geothermal resources? Nevada courts have not squarely addressed this question, but many factors suggest a general reservation would be so construed.

Although the state definition of geothermal resources does not use the term "mineral," the definition of mineral in NRS Chapter 362 (Taxes on Patented Mines and Proceeds of Minerals) includes "hot water or steam in an operation extracting geothermal resources for profit."¹¹ This chapter requires geothermal operators, like other mineral operators, to pay a tax based upon their net proceeds.¹² In addition,

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geothermal operations are regulated by the Commission on Mineral Resources.¹³

Like the majority of jurisdictions, Nevada courts attempt to determine the intent of the parties in construing an ambiguous mineral reservation.¹⁴ Given the treatment of geothermal resources as a mineral by the state, and given the construction of federal general mineral reservations, it could be argued that parties must have known that the term "mineral" included geothermal resources. On the other hand, where a mineral reservation predates the widespread exploitation of geothermal resources, this argument may not carry the day.

Fractional interests:

Multiple owners, or cotenants, may hold title to undivided fractional interests in geothermal resources. Generally, under Nevada law each cotenant has a non-exclusive right to use and possess the common property; however, there is an absence of Nevada law addressing the specific rights and obligations of cotenants holding geothermal resources.

Under the majority common law rule, each cotenant has the non-exclusive right to develop a mineral resource without the consent of other cotenants. If developing unilaterally, the developing cotenant will bear all costs in connection with the development and must account to the non-developing cotenant for its share of the profits. The developing cotenant is only entitled to reimbursement from the non-developing cotenant's pro rata share of subsequent revenue generated from the development. If the development does not result in production, or does not produce sufficient revenue to cover the non-developing cotenant's proportionate share of the costs, the non-developing cotenant has no reimbursement obligation. In jurisdictions where the majority rule is not followed, the cotenant developing the mineral may be liable for trespass and waste, sometimes carrying penalties of triple damages. Competing and incompatible mineral developments complicate the application of these rules. Given the absence of Nevada law on the rights of cotenants holding geothermal resources, developers should proceed with caution when consent of all owners is not obtained.

Conflicts between mineral owners:

Conflicts regarding ownership or possessory rights can also arise from ambiguous descriptions in mineral leases where, for example, a lease for precious metals may include an “all other minerals” clause. “Hard rock” leases may explicitly exclude oil and gas, but be silent as to geothermal resources. In the case of federal minerals, conflicts can also arise between competing mineral interests, as a geothermal lease does not preclude mineral locations, and the existence of mining claims does not preclude a geothermal lease. Federal regulations make an attempt to sort out priorities among these conflicting interests,¹⁵ but these rules will not be controlling in the case of conflicts over private minerals.

If geothermal rights are severed from the surface, what are the relative rights of the surface and mineral owner?

At common law, the mineral estate is the dominant estate, and ownership of this interest includes an implied right of access and reasonable use of the surface as necessary for operation. Federal laws explicitly recognize this right. For example the SRHA provides that any person who acquired from the United States the right to mine and remove the mineral deposits “may reenter and occupy so much of the surface thereof as may be required for all purposes reasonably incident to the mining or removal of the coal or other minerals ...” without the consent of the surface owner, upon the execution of a bond or undertaking to secure the payment of the amount of damages “to the crops or tangible improvements of the entryman or owner.”¹⁶

What is the reasonable use of the surface? In *Occidental Geothermal, Inc. v. Simmons*, the court determined that placing a geothermal power plant on the property was a reasonable use of the surface and was among the rights granted by a federal geothermal lease. The property in question was a split estate patented under the SRHA. The court reasoned that geothermal resources could not be transported long distances without losing their practical utility. The court stated, “To hold that geothermal lessees own the rights to geothermal resources and yet do not have the right to exploit those resources without the consent of the owners of surface interests would reduce the holding of Union Oil to an empty theoretical exercise.”¹⁷

In the last few years, the BLM has developed explicit policies to protect the relative rights of parties to split estate



lands, generally requiring the mineral developer to attempt, in good faith, to reach a surface use agreement with the surface owner as to access rights and compensation. If an agreement cannot be reached, the mineral owner can post a bond to protect the legitimate interests of the surface owner.

In determining relative rights between private parties to split estates, many jurisdictions have adopted the “accommodation doctrine,” which somewhat limits the historical common-law rights of the mineral owner by requiring due regard for the rights of the surface owner.¹⁸ In addition, many states have enacted surface damage acts, but these were developed to resolve conflicts between surface owners and oil and gas developers and do not explicitly apply to geothermal development.

Nevada has little law on this point. In *Christensen v. Chromalloy American Corp.*,¹⁹ the court was asked to determine the relative rights of the surface and mineral owner where a corporation seeking to strip-mine the property for barite contended its rights derived from a reservation

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that included a right to "other minerals of every kind and nature whatsoever...including so much of the surface as may be required in...developing, producing...said minerals...." The court cited, apparently with approval, several cases following a rationale that "title to surface or subsurface minerals vests in the surface estate owner unless the mineral estate owner can remove the minerals in question by methods of extraction which will not consume, deplete or destroy the surface estate." The court reversed the lower court and determined the reservation was ambiguous because it did not address the specific mining method. *Christensen* seems to conflate questions of title with questions of reasonable surface use. Whether future decisions will follow the odd dicta in *Christensen* remains to be seen. Exploitation of geothermal resources will present a more nuanced factual situation, where there may be considerable interference with the surface estate, but not actual destruction. The court's willingness to find the straightforward language of the reservation in this case

to be ambiguous should serve as a warning to those drafting these provisions.

Who owns geothermal waters?

As discussed above, water may be used consumptively during geothermal operations if it is lost as steam during electrical generation, or if it is not reinjected or recirculated. In addition, large volumes of non-geothermal water may be required for cooling geothermal fluids. Who owns this water? While the surface owner is the presumed owner of geothermal resources, he or she is not necessarily the owner of geothermal waters. Nevada applies its general water laws to water consumptively used in geothermal operations, as follows:

NRS 534A.040 Applicability of procedures for appropriation. A consumptive use of water brought to the surface outside of a geothermal well is subject to the appropriation procedures of chapters 533 and 534 of NRS, except for:



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1. Water that is removed from an aquifer or geothermal reservoir to develop and obtain geothermal resources if the water is returned to or reinjected into the same aquifer or reservoir; or
2. The reasonable loss of water:
 - (a) During a test of a geothermal well; or
 - (b) From the temporary failure of all or part of a system that removes water from an aquifer or geothermal reservoir, transfers the heat from that water and reinjects that water into the same aquifer or reservoir.

Thus water that is not reinjected or exempted pursuant to this statute is subject to the appropriations procedures set forth in NRS Chapter 533 and 534, which require application for a permit to appropriate be made to the state engineer. Nevada's appropriation system gives no particular deference or priority to a surface owner, and anyone may appropriate water subject to pre-existing rights and in compliance with the state water laws and procedures, including diligent development and ultimately a showing of beneficial use. If no unappropriated water remains in the area of the proposed development, the operator will be required to acquire existing water rights, such as irrigation rights, and file an application to change the point of diversion and manner of use.

Conclusion:

As Nevada continues to develop its considerable potential for geothermal energy, we inevitably will be confronted with complex legal questions concerning title and possessory rights to geothermal resources and the relative rights of parties in split estates. In the case of federal geothermal rights, a fairly well-developed statutory and judicial framework exists to help resolve these issues. For privately owned minerals, this framework is far more skeletal and many questions will turn on extrinsic evidence. Until Nevada's state laws and jurisprudence governing geothermal title questions are more fully developed, prudent practitioners will assume nothing and draft carefully. **NL**

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- 1 NRS 534A.010.
- 2 30 U.S.C. §§ 1001-1025.
- 3 30 U.S.C. § 1001(c).
- 4 NRS 534.050.
- 5 Treaty of Guadalupe Hidalgo, Feb. 2, 1848, United States-Mexico, 9 Stat. 922 T.S. 301.
- 6 See Sylvia L. Harrison, Disposition of the Mineral Estate on United States Public Lands: A Historical Perspective, 10 Pub. Land L.Rev. 131 (1989).
- 7 Stock-Raising Homestead Act, Dec. 29 1916, ch.9, 39 Stat. 862 (43 U.S.C. § 181 et seq.).
- 8 43 U.S.C. § 299.
- 9 See www.blm.gov/bmp/Split-Estate.htm.
- 10 549 F.2d 1271, 1274 (9th Cir. 1977).
- 11 NRS 362.010.
- 12 NRS 362.100-240.
- 13 NRS 534A.060.
- 14 *Christensen v. Chromalloy American Corp.*, 99 Nev. 34, 656 P.2d 844 (1983).
- 15 See, e.g., 43 CFR §§ 3207.11, 12; 43 CFR §§ 3802.4-3; 43 CFR §§ 3210.13, 16.
- 16 43 U.S.C. § 299.
- 17 543 F.Supp. 870, 877 (1983).
- 18 For an excellent discussion of this issue in the context of oil and gas operations, where the law is well developed, see Christopher M. Alspach, Surface Use by the Mineral Owner: How Much Accommodation is Required under Current Oil and Gas Law, 55 Okla L. Rev. 89 (2002).
- 19 99 Nev. 34, 656 p.2d 844 (1983).

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