

In Texas The Surface Estate Owns the Produced Water

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Introduction

Certain parties in Texas seek to re-classify formation water a/k/a/ “produced water” as a “waste” that must somehow be part of the mineral estate.¹ Their position is legally unsustainable. The surface estate owns the formation water **regardless** of whether a court determines it to be groundwater under Texas law. We’ll argue both the subsurface corpus ownership-based and groundwater-based cases for Texas surface owners’ property rights in formation water.

Argument 1: Surface Owners Own All Subsurface Water Aside From Subterranean Rivers as a Matter of Law in Texas

In Texas, the surface owner “owns all non-mineral ‘molecules’ of the land, i.e., the mass that undergirds the surface.”² Naturally that “mass” encompasses the molecules of water residing in oil and gas-bearing geological formations. Water is not a mineral under Texas law and clearly belongs to the surface estate.³ It remains property of the surface estate regardless of depth or salinity. Indeed, the Texas Supreme Court specifically declined to classify salt water as a mineral.⁴

Certain supporters of mineral estate ownership of formation water premise their arguments on an incorrect presupposition that surface owners must affirmatively reserve the rights to formation water.⁵ The approach improperly transposes the surface and mineral estates and assumes that co-location implies co-conveyance of ownership. Texas law takes a very different view.

Surface owners own the formation water despite the close physical proximity of hydrocarbons to formation water in the oil & gas-bearing layers. In the 2013 *Springer* decision, the San Antonio Court of Appeals notes, “*the physical structures and subsurface substances that the surface estate and mineral estate owners possess are inherently intertwined, at least with respect to hydrocarbons.*”⁶ The *Springer* court acknowledges that in purely physical terms “*Some conflation is unavoidable*” but adds that “*...if there are no minerals beneath the surface, the mineral estate owner owns the legal fiction of an estate that is nothing.*”⁷ Furthering the point, the Texas Supreme Court takes the position that “*The minerals owner is entitled, not to the molecules actually residing below the surface, but to ‘a fair chance to recover the oil and gas in or under his land.’*”⁸

In this respect, the surface estate controls a robust and expansive set of property interests. The mineral owner only possesses the right to recover hydrocarbon and other selected molecules from the subsurface area it has leased. In contrast, the surface estate holds a true corporeal, tangible interest. If the minerals have not been severed, the surface owner owns everything from

¹ Disclosure Statement: Mr. Collins holds a membership interest in Cactus Water Services, LLC. This relationship is covered by a Rice University conflict of interest management and monitoring plan.

the surface to the center of the earth. And even if the minerals have been severed, the surface estate still owns the dirt, voids, H₂O molecules and every substance other than the ones explicitly named as “minerals” under Texas law.

In other words, a mineral owner (1) only owns hydrocarbons, salt, uranium, sulfur, metals, or another substance classified as a “mineral” under Texas law, and (2) has no ownership right to other non-mineral substances such as water, even if they are co-located with the minerals. Mineral owners operate within a limited scope of allowable activities congruent with their right to access and exploit the minerals.⁹

To be sure, the mineral estate is dominant over the surface estate in split estate situations. But this dominance aims only to facilitate the mineral owner’s right to access his/her property. It confers use rights, not ownership rights. Texas law is clear that “*The surface of the leased lands and everything in such lands, except the oil and gas deposits covered by the leases, were still the property of the respective landowners*” who owned the surface estate.¹⁰

Conveyances of “oil, gas, and other minerals” will in some circumstances bestow a limited set of use rights on oil & gas producers. For instance, a producer may recycle, reuse, and dispose of water from a given lease on that lease and in doing so, be protected by its common law rights to reasonably use the surface to develop the minerals. But those are use rights only. The conveyance of minerals clearly **does not** grant ownership rights of surface substances unless the surface estate owner specifically expressed its intent to convey them. As the Texas Supreme Court states in the *Robinson* decision, “*It has been decided that water is part of the surface estate according to the ordinary and normal use of the words conveying or reserving minerals...In either case the water itself is an incident of surface ownership in the absence of specific conveyancing language to the contrary.*”¹¹ [emphasis added]

Against this precedential backdrop, to claim that contractual silence in a **mineral** conveyance also transfers ownership of subsurface water that is **surface** property would twist Texas contract law beyond recognition. What if a surface owner claimed that because the surface lease taken 50 years ago was silent regarding lithium (then a waste product and now very valuable), the lithium entrained in the groundwater they are producing today pursuant to that lease is owned by the surface estate? A court would likely strike such a claim down with an iron hammer and there is no reason to believe that a contemporary claim that formation water was somehow silently conveyed alongside mineral molecules would be treated any differently. Co-location in the formation does not constitute conveyance, for the substances in question each belong to distinct ownership estates.

Argument 2: Produced water extracted from an oil & gas wellbore is groundwater.

There is also an alternative argument for surface estate ownership of formation water based on the fact that it is groundwater. Groundwater is a form of real property owned by the surface estate unless severed or otherwise reserved.¹² As such, the core question is whether the law also accords water from oil and gas-bearing formations the same status. A step-by-step analysis demonstrates the answer is “**yes.**”

The Texas Legislature defines groundwater as “water percolating below the surface of the earth.”¹³ Texas courts have long held that underground water capable of being obtained via a well is “percolating.”¹⁴ Produced water emanates from an underground formation and is obtained through a wellbore, thus meeting the definition of “percolating” endorsed by the Texas Supreme Court.

For nearly 100 years, Texas law has maintained a presumption that “all underground waters” are percolating.¹⁵ Courts strongly adhere to this presumption. For instance, the *Denis v. Kickapoo* decision by the Austin Court of Appeals in 1989 found that a borehole that bottomed within about 7 feet of a spring’s outflow opening was still extracting “percolating” water even though expert testimony showed that the well was drawing water from a subsurface cavity.¹⁶

While the *Kickapoo* court decided a case whose facts involved extreme subsurface permeability, its reasoning applies equally to groundwater owners with reservoirs at the tighter end of the permeability spectrum. Specifically, the court emphasized the importance of water being intercepted by a wellbore before reaching the surface.¹⁷ *Kickapoo’s facts* also suggest that the precise subsurface completion procedure used to access the water (whether a wellbore screen or hydraulic fracturing) is legally irrelevant and does not affect the surface estate’s legal ownership of that water.

The corollary of the subsurface interception requirement is that the permeability of the water-bearing layer is irrelevant so long as it is not a subterranean river. Indeed, when it comes to the ownership of groundwater, Texas law appears to primarily focus on ascertaining whether landowners are claiming subterranean river flows, which would be the property of the State of Texas. As stated in 30 Tex. Admin Code §297.1(21), which implements Texas’s water rights statute, “groundwater” means “*Water under the surface of the ground other than underflow of a stream and underground streams, whatever may be the geologic structure in which it is standing or moving.*” [emphasis added] Once it is clear that the landowner is not trying to backdoor appropriate an underground river flow, Texas law reverts to its presumption that the water in question is indeed “groundwater” owned by the surface owner unless proven otherwise.¹⁸

Scientific evidence further supports the claim that produced water is indeed percolating groundwater. A peer-reviewed 2016 analysis by researchers from the U.S. Geological Survey, the University of Texas at El Paso, and New Mexico State University concluded that the formation waters in the Permian Basin’s Cline and Wolfcamp intervals originated from ancient seawater diffusing its way into the rock layers after they had assumed a structural composition similar to what is found today.¹⁹ Other basins such as the Eagle Ford might have a different paleogeological profile, but the Permian is the center for much of the legal action that could unfold in coming years regarding ownership of formation water in unconventional oil and gas plays in Texas.

The paleogeological history advanced by the USGS/University research team matters greatly. It offers a highly plausible scientific account of how formation water came to reside in the Permian Basin’s most important oil & gas producing interval--the Wolfcamp--and very strongly suggests the water entered the layer via a diffusion process. This in turn provides empirical support to the legal presumption that formation waters qualify as “percolating.”

A. Groundwater is owned as real property in Texas.

In the Texas Water Code, the Legislature “recognizes that a landowner owns the groundwater below the surface of the landowner’s land as real property.”²⁰ Accordingly, groundwater owners in Texas enjoy a range of state and federal constitutional protections. No political entity—regardless of its intended objective--can take groundwater from a property owner in Texas without appropriately compensating them.²¹

B. Texas law does not distinguish between groundwater types based on salinity or depth.

Neither the Texas Courts nor the Texas Legislature make any ownership distinction based on the salinity or potability of groundwater under a tract of land. Moreover, none of the signature Texas groundwater cases leading up to *Day*—a case line more than 110 years old—distinguishes between “fresh” water and more saline waters. *Robinson*, the sole Texas Supreme Court case focused on water salinity as a potential determinant of groundwater ownership, delivered a clear message: salinity bears “no consequence upon ownership.”²² Despite the fact that the water was produced from a converted oil well, the Court determined that the water was “an incident of surface ownership in the absence of specific conveyancing language to the contrary.”²³ In its decision, the Court pointed out that, in essence, highly saline produced water from a deep layer was just another form of groundwater. Indeed, when the *Robinson* court affirmed that “*water is part of the surface estate*,” it did so citing *Sun Oil Company v. Whitaker*, a prior Texas Supreme Court decision entirely predicated on the surface and mineral estates’ respective property and use rights to groundwater.²⁴

C. Water contained in oil and gas-bearing formations is also clearly property of the surface owner.

The question that naturally follows is “what, then, qualifies as a mineral?” This is where the *Robinson* decision joins the debate. In that case, the plaintiff owned the surface estate of an 80 acre tract that sat atop a patchwork of three waterflood units.²⁵ The defendant oil producer used a converted oil well located on Robinson’s tract to produce salt water that was then carried by pipeline to injection wells located elsewhere among the waterflood units.²⁶ Robinson subsequently brought suit against the oil company claiming damages for saltwater taken to re-pressure the oil-bearing formation.²⁷ A key issue in the case was whether saltwater was part of the surface or mineral estate, an issue that at the time attracted sufficient legal attention to stimulate a 1972 article in the Texas Law Review arguing that saltwater should be considered a “mineral.”²⁸

The *Robinson* court rejected the article’s position and specifically stated that “*We are not attracted to a rule that would classify water according to a mineral contained in solution. Water is never absolutely pure unless it is treated in a laboratory. It is the water with which these parties are concerned and not the dissolved salt.*”²⁹ (emphasis added). Emphasizing the fact that water is what the parties really care about brought clarity for the justices in *Robinson* and would also serve as a focusing principle for a contemporary Texas court entrusted with deciding a produced water ownership or economic rent dispute.

D. Water contained in oil and gas-bearing formations can be bought, sold, or leased *in situ* just like any other species of groundwater

Texas landowners regularly sever groundwater rights and buy and sell them before physical extraction of the water ever takes place. Whether the water in question is 10 feet underground or 10,000 feet deep, the principle remains the same. Indeed, we possess a sheaf of water sales contracts executed by entities including University Lands and the City of Amarillo spanning nearly 70 years that involve severing, reserving, and trading the groundwater in specific geologic intervals years before it was actually tapped by wells.

Leasing water in place offers the added benefit of defeating claims that it is “fluid oil and gas waste.” Proponents of HB 3246 emphasized referring to produced water as “fluid oil and gas waste.” Indeed, a produced water white paper published in September 2019 by the Texas Alliance of Energy Producers notes that HB 3246 specifically seeks to frame produced water ownership in Texas as “... *an oil field waste issue and not a water ownership issue.*”³⁰ Any other construction of HB 3246 would necessarily result in a taking of groundwater by private parties for private purposes, a result contrary to the Texas Constitution and Tex. Gov’t Code 2206.001(b).

But a thoughtful lease structure can sidestep that whole debate. The legislation’s opening clause specifically states that “*Unless otherwise expressly provided by an oil or gas lease, a surface use agreement, a contract, a bill of sale, or another legally binding document...*” [Tex. Nat. Res. Code Ann. § 122.002 (West)]. **This contractual reservation clause poses an existential challenge for the “produced water as fluid oil and gas waste” theory because a water owner could structure an agreement that reserves the surface owner’s right to only the connate water (i.e. the H₂O molecule) while it is still in place in the oil and gas bearing formation.**

If there is a specific contractual agreement that addresses *only the water* in an oil and gas bearing formation, the matter is re-framed because rather than being claimed at the surface as part of a mixed stream alleged to be “waste,” the water is being claimed as “groundwater” owned *in situ*, per the *Day* and *Coyote Lake Ranch* Texas Supreme Court decisions and Chapter 36 of the Texas Water Code. A reservation of groundwater rights to water located inside the pore space of an oil and gas-bearing formation would in legal terms be no different than a reservation of less saline, shallower groundwater rights--an action taken on a virtually daily basis by surface estate owners all over Texas and whose legal validity is universally recognized by Texas courts.

Furthermore, the surface owner’s legal ownership rights to water reserved *in situ* would not be eliminated by a trip up an oil & gas wellbore, nor by the water mixing with hydrocarbons during its liberation from the formation and trip to the surface.

¹ Lyons et.al, “Sustainable Produced Water Policy, Regulatory Framework, and Management in the Texas Oil and Gas Industry,” September 2019, Pg.18, <https://texasalliance.org/executive-summary-sustainable-produced-water-policy-regulatory-framework-and-management-in-the-texas-oil-and-gas-industry-2019-and-beyond/>; See also presentation by Ben Sebree at PBWIEC 2020 conference in Midland on 21 February 2020.

² *Dunn-McCampbell Royalty Interest, Inc. v. Nat'l Park Serv.*, 630 F.3d 431, 442 (5th Cir. 2011) (applying Texas law)

³ Fleming Foundation v. Texaco, 337 S.W.2d 846 (Tex.Civ.App.—Amarillo 1960, writ ref'd n.r.e.); See also *Moser v. U.S. Steel Corp.*, 676 S.W.2d 99, 102 (Tex. 1984). See, e.g., *Heinatz v. Allen*, 147 Tex. 512, 217 S.W.2d 994 (1949) (building stone and limestone); *Atwood v. Rodman*, 355 S.W.2d 206 (Tex.Civ.App.—El Paso 1962, writ ref'd n.r.e.) (limestone, caliche, and surface shale); *Fleming Foundation v. Texaco*, 337 S.W.2d 846 (Tex.Civ.App.—Amarillo 1960, writ ref'd n.r.e.) (water); *Psencik v. Wessels*, 205 S.W.2d 658 (Tex.Civ.App.—Austin 1947, writ ref'd) (sand and gravel); *Reed v. Wylie*, 597 S.W.2d 743 (Tex.1980) (near surface lignite, iron and coal).

⁴ *Robinson v. Robbins Petroleum Corp.*, 501 S.W.2d 865, 867 (Tex. 1973) [“We are not attracted to a rule that would classify water according to a mineral contained in solution.”]

⁵ Sebree conference presentation, 21 February 2020

⁶ *Springer Ranch, Ltd. v. Jones*, 421 S.W.3d 273, 284 (Tex. App. 2013)

⁷ *Ibid.*

⁸ *Coastal Oil & Gas Corp. v. Garza Energy Tr.*, 268 S.W.3d 1, 15 (Tex. 2008)

⁹ *Dunn-McCampbell Royalty Interest, Inc. v. Nat'l Park Serv.*, 630 F.3d 431, 442 (5th Cir. 2011). [“Texas law establishes that the holder of a mineral estate has the right to exploit minerals, but does not own the subsurface mass.”]

¹⁰ *Emeny v. United States*, 412 F.2d 1319, 1323 (Ct. Cl. 1969)

¹¹ *Robinson v. Robbins Petroleum Corp.*, 501 S.W.2d 865, 867 (Tex. 1973), referencing *Sun Oil Co. v. Whitaker*, 483 S.W.2d 808, 811 (Tex. 1972)

¹² *Edwards Aquifer Auth. v. Day*, 369 S.W.3d 814, 832 (Tex. 2012); Tex. Water Code Ann. § 36.002.

¹³ Tex. Water Code Ann. § 36.001.

¹⁴ *Friendswood Dev. Co. v. Smith-Sw. Indus., Inc.*, 576 S.W.2d 21, 25 (Tex. 1978) [citing *Houston & T.C. Ry. Co. v. East*, 98 Tex. 146, 150, 81 S.W. 279, 281 (1904)]

¹⁵ *Texas Co. v. Burkett*, 117 Tex. 16, 29, 296 S.W. 273, 278 (1927); *Pecos Cty. Water Control & Imp. Dist. No. 1 v. Williams*, 271 S.W.2d 503, 506 (Tex. Civ. App. 1954), writ refused NRE

¹⁶ *Denis v. Kickapoo Land Co.*, 771 S.W.2d 235, 237 (Tex. App. 1989), writ denied (Oct. 25, 1989)

¹⁷ *Ibid.* 239

¹⁸ See, for instance the Texas Administrative Code provisions implementing the state’s water rights statute, which defines “groundwater” as “Water under the surface of the ground ***other than underflow of a stream and underground streams, whatever may be the geologic structure in which it is standing or moving.***” 30 Tex. Admin. Code § 297.1 (emphasis added)

¹⁹ Engle, M. A., Reyes, F.R., Varonka, M.S., Orem, W.H., Ma L., Ianno A.J., Schell, T.M., et al., *Geochemistry of formation waters from the Wolfcamp and “Cline” shales: Insights into brine origin, reservoir connectivity, and fluid flow in the Permian Basin, USA*, *Chemical Geology*, Volume 425, 2016, Pages 76-92, ISSN 0009-2541, <https://doi.org/10.1016/j.chemgeo.2016.01.025> ; For rock composition data, see Morgan Garner, “Clay Mineralogy and Porosity Estimates of the Lower Permian Wolfcamp Shale,” Masters Thesis in Geosciences, Georgia State University, August 2019 (copy on file with author).

²⁰ Water Code Ann. § 36.002 (West).

²¹ (“public use” does not include the taking of property under Subsection (a) of this section for transfer to a private entity for the primary purpose of economic development or enhancement of tax revenues.”) Tex. Const. art. I, § 17. Furthermore, even private property taken via eminent domain would be subject to Supreme Court precedent holding that “The taking by a state of the private property of one person or corporation, without the owner's consent, for the private use of another, is not due process of law, and is a violation of the fourteenth article of amendment of the constitution of the United States.” *Missouri Pac. Ry. Co. v. Nebraska*, 164 U.S. 403, 417, 17 S. Ct. 130, 135, 41 L. Ed. 489 (1896). For an item such as produced water that water owners already seek to make accessible through the market, it is difficult to imagine a “public purpose” capable of justifying a legislative taking of that water. For an in-depth discussion of how a court would likely analyze the “public purpose” requirement, see *Kelo v. City of New London, Conn.*, 545 U.S. 469, 480, 125 S. Ct. 2655, 2663, 162 L. Ed. 2d 439 (2005)

²² *Robinson v. Robbins Petroleum Corp., Inc.*, 501 S.W.2d 865, 867 (Tex. 1973).

²³ *Ibid.*

²⁴ *Robinson v. Robbins Petroleum Corp.*, 501 S.W.2d 865, 867 (Tex. 1973), referencing *Sun Oil Co. v. Whitaker*, 483 S.W.2d 808, 811 (Tex. 1972)

²⁵ *Robinson v. Robbins Petroleum Corp.*, 501 S.W.2d 865, 866 (Tex. 1973)

²⁶ *Ibid.* 866

²⁷ *Ibid.* 866

²⁸ *Ibid.* 866; See also Luther Hudson, "Salt Water Is A Mineral: Ownership of A Natural Resource of Increasing Importance in Oil-Producing States," 50 Tex. L. Rev. 448 (1972)

²⁹ *Ibid.* 867

³⁰ Lyons et.al, "Sustainable Produced Water Policy, Regulatory Framework, and Management in the Texas Oil and Gas Industry," September 2019, Pg.18, <https://texasalliance.org/executive-summary-sustainable-produced-water-policy-regulatory-framework-and-management-in-the-texas-oil-and-gas-industry-2019-and-beyond/>