

WATER LAW AND RIGHTS 101

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I. INTRODUCTION

This paper presents the fundamentals of Texas water law that every practitioner must consider in working on real estate or commercial transactions that, in some way, involve water. The paper begins with an overview of the law governing the three core classifications of water—groundwater, state surface water, and diffused surface water. As the reader will find, different laws apply depending on the type of water at issue. The paper then discusses due diligence in dealing with water issues one might see in practice, and the various pools, banks, and dams that must be navigated along the way.

II. WATER LAW FUNDAMENTALS

The first question to ask about water is what type of water is involved. In Texas there are three fundamental classifications of water: groundwater, state surface water, and diffused surface water. Groundwater—and the right to capture it—is the property of the owner of the surface of the land that sits over the groundwater, similar to oil, gas, and other minerals. A landowner's groundwater rights can be limited by local groundwater conservation districts, which have legislative authority to regulate the production and use of groundwater. State surface water is owned by the State and regulated on a statewide appropriation system. Diffused surface water is the property of the owner of the soil over which it runs until the water enters a watercourse and becomes state water. In all instances the Texas Water Code is the starting point, but various state and governmental agencies will also play a role.

A. Groundwater

1. Definition of Groundwater

Groundwater is water percolating below the surface of the earth.¹ The term includes artesian water, or water confined under pressure by an impermeable geological layer, although artesian water is subject to a few additional requirements in the Texas Water Code.² Groundwater does not include “underflow,” which is water that flows through the soil, sand, and gravel in the bed of a surface watercourse and is hydrologically connected to that surface watercourse.³ Groundwater also does not include water in confined subterranean channels and streams that have all the characteristics of a surface watercourse.⁴

¹ TEX. WATER CODE ANN. § 36.001(5) (Vernon 2008).

² *Id.* § 11.202 (prohibiting waste of artesian water and requiring approval from Texas Commission on Environmental Quality (TCEQ) for withdrawal in certain circumstances).

³ *Id.* § 11.021(a); 30 TEX. ADMIN. CODE § 297.1(55); *Tex. Co. v. Burkett*, 117 Tex. 16, 296 S.W. 273, 276 (1927); *Pecos County WCID No. 1 v. Williams*, 271 S.W.2d 503 (Tex. Civ. App.—El Paso 1954, writ ref'd n.r.e.).

⁴ *Denis v. Kickapoo Land Co.*, 771 S.W.2d 235 (Tex. App.—Austin 1989, writ denied).

2. The “Rule of Capture”

Projects involving groundwater typically involve landowners with property rights to that groundwater. “Historically, landowners have had property rights in the water beneath their land.”⁵ This history begins with the Texas Supreme Court’s annunciation of the absolute ownership rule in *Houston & Texas Central Railway Co. v. East*:

An owner of soil may divert percolating water, consume or cut it off, with impunity. It is the same as land, and cannot be distinguished in law from land. So the owner of land is the absolute owner of the soil and of percolating water, which is a part of, and not different from, the soil.⁶

As subsequently described by the Texas Supreme Court, “landowners have the right to take all the water they can capture under their land and do with it what they please, and they will not be liable to neighbors even if in doing so they deprive their neighbors of the water’s use.”⁷ The rule is essentially a right of no liability for capturing all the water you can from beneath your property. The rule has consistently been interpreted to provide landowners “absolute ownership” of the groundwater below their land.⁸ Once groundwater is withdrawn from its underground source it becomes “personal property subject to sale and commerce.”⁹

3. Limitations on the Absolute Ownership Rule

There are limitations on the absolute ownership rule. First, a landowner cannot capture and use groundwater to maliciously injure a neighbor or in a manner that constitutes wanton and willful waste.¹⁰ Second, an action for damages lies against a landowner whose negligent

⁵ *Barshop v. Medina County Underground Water Conserv. Dist.*, 925 S.W.2d 618, 623 (Tex. 1996).

⁶ 98 Tex. 146, 150, 81 S.W. 279, 281 (1904).

⁷ *Sipriano v. Great Spring Waters of Am., Inc.*, 1 S.W.3d 75, 83 (Tex. 1999).

⁸ See *City of Sherman v. Pub. Util. Comm’n*, 643 S.W.2d 681, 686 (Tex. 1983) (“The absolute ownership theory regarding groundwater was adopted by this Court in [*East*]. A corollary to absolute ownership of groundwater is the right of the landowner to capture such water.”); *Friendswood Dev. Co. v. Smith-Sw. Indus., Inc.*, 576 S.W.2d 21, 25 (Tex. 1978) (“[In *East*,] this Court adopted the absolute ownership doctrine of underground percolating waters.”); *id.* at 30 (“ownership of underground water comes with ownership of the surface; it is part of the soil”); *City of Corpus v. City of Pleasanton*, 154 Tex. 289, 276 S.W.2d 798, 800 (1955) (“percolating waters are regarded as the property of the owner of the surface”); *Corzelius v. Harrell*, 143 Tex. 509, 514, 186 S.W.2d 961, 964 (1945) (“the law of capture . . . is recognized as a property right”); *Evans v. Ropte*, 128 Tex. 75, 79, 96 S.W.2d 973, 974 (1936) (“It seems almost universally recognized that a right created by a grant to enter upon land and take and appropriate the waters of a spring or well thereon amounts to an interest in real estate In all events, it is an interest in land.”); *Tex. Co. v. Burkett*, 117 Tex. 16, 29, 296 S.W. 273, 278 (1927) (“In other words, in so far as this record discloses, they were neither surface water nor subsurface streams with defined channels, nor riparian water in any form, and therefore were the exclusive property of Burkett, who had all the rights incident to them one might have as to any other species of property.”); Op. Tex. Att’y Gen. No. JM-827 (1987) (“[U]nder Texas law, landowners have ‘absolute ownership’ of percolating groundwater beneath their lands.”); see generally Dylan O. Drummand, et. al., *The Rule of Capture in Texas—Still so Misunderstood After All These Years*, 37 TEX. TECH. L.R. 1 (2004) (tracing the history of the rule of capture and explaining that it confers a vested property right in the overlying landowner).

⁹ *City of Altus, Okla. v. Carr*, 255 F. Supp. 828, 840 (W.D. Tex. 1966), *aff’d* 385 U.S. 35 (1966).

¹⁰ *City of Corpus Christi v. City of Pleasanton*, 154 Tex. 289, 276 S.W.2d 798, 801 (1955).

pumping of groundwater causes subsidence of neighboring land.¹¹ Third, restrictive covenants or municipal ordinances may prohibit drilling of water wells and may limit a landowner's use of groundwater.¹² Finally, the landowner's right to produce groundwater is subject to the State's duty to protect the public health and welfare and to preserve natural resources under the Conservation Amendment, Section 59, Article XVI of the Texas Constitution,¹³ which duty the State satisfies through groundwater conservation districts.

4. The Major Limitation: Groundwater Conservation Districts

Nine major aquifers supply about 97 percent of the groundwater used in Texas, with 21 minor aquifers supplying the other three percent.¹⁴ These aquifers vary in volume of water stored and ability to recharge. Because each aquifer formation is unique, and because rainfall varies widely across the State from east to west, the State's preferred method of groundwater management is through local groundwater conservation districts and the rules promulgated by those districts in accordance with the provisions of Chapter 36 of the Texas Water Code.¹⁵ To date there are 98 confirmed and operating groundwater conservation districts in Texas. Most groundwater conservation district's powers are limited to those found in Chapter 36, although there are a few districts created by special legislation with powers different than or in addition to those contained in Chapter 36.¹⁶ If your project involves groundwater, the odds are your project will also involve a groundwater conservation district.

a. Creation of Groundwater Conservation District

Groundwater conservation districts (GCDs) can be created by (1) a special act of the Legislature or (2) the Texas Commission on Environmental Quality (TCEQ) upon petition by a majority of the landowners within the proposed district or through designation of a Priority Groundwater Management Area.¹⁷ Chapter 36 GCDs are funded either through user fees or *ad valorem* taxes at a maximum rate of 50 cents per \$100 assessed valuation.¹⁸ If voters reject an *ad valorem* tax, a GCD may set permit fees to pay for the regulation of groundwater in the

¹¹ *Friendswood Dev. Co. v. Smith-Sw. Indus., Inc.*, 576 S.W.2d 21, 30 (Tex. 1978).

¹² *See Dyegard Land P'Ship v. Hoover*, 39 S.W.3d 300 (Tex. App.—Fort Worth 2001, no pet.).

¹³ *See Sipriano*, 1 S.W.2d at 77-79.

¹⁴ *See Texas Water Development Board, Water for Texas—2007* (Nov. 14, 2006) available at <http://www.twdb.state.tx.us/wrpi/swp/swp.htm>.

¹⁵ TEX. WATER CODE § 36.0015.

¹⁶ The Edwards Aquifer Authority is one special law district, which has its own enabling legislation with provisions different from Chapter 36. *See Edwards Aquifer Authority Act*, Act of May 30, 1993, 73d Leg., R.S., ch. 626, 1993 Tex. Gen. Laws 2350 amended by Act of May 16, 1995, 74th Leg., R.S., ch. 524, 1995 Tex. Gen. Laws 3280; Act of May 29, 1995, 74th Leg., R.S., ch. 261, 1995 Tex. Gen. Laws 2505; Act of May 6, 1999, 76th Leg., R.S., ch. 163, 1999 Tex. Gen. Laws 634; Act of May 28, 2001, 77th Leg., R.S., ch. 966, §§ 2.60–2.62 and 6.01–6.05, 2001 Tex. Gen. Laws 1991, 2021–22 and 2075–76; and Act of June 1, 2003, 78th Leg., R.S., ch. 1112, § 6.014(4), 2003 Tex. Gen. Laws 3188, 3193.

¹⁷ TEX. WATER CODE § 36.011-.0151.

¹⁸ *Id.* § 36.0171.

district, including fees based on the amount of water to be withdrawn from a well.¹⁹ Voters may also authorize a GCD to issue tax supported bonds and revenue bonds.²⁰

b. Comprehensive Management Plan Required

A GCD must develop and adopt a comprehensive management plan in coordination with regional planning groups, state agencies (the TCEQ and Texas Water Development Board), and other GCDs.²¹ The management plan must address various management goals, including promoting the most efficient use of groundwater; controlling and preventing waste and subsidence; addressing conjunctive surface water management issues, natural resource issues, and drought conditions; addressing conservation, recharge enhancement, rainwater harvesting, precipitation enhancement, and brush control; and addressing quantitatively the “desired future conditions” of the groundwater resources.²² After a GCD or groundwater management area establishes desired future conditions (that is, an amount of modeled available groundwater), the GCD must adopt a regulatory framework that will achieve the established desired future conditions. This process of establishing desired future conditions has been completed throughout the groundwater management areas in Texas and the consequences could, and most probably will, substantially affect landowner’s rights to produce groundwater.

c. Rulemaking Authority

The GCD must adopt rules to implement its comprehensive management plan.²³ Specifically, the GCD may adopt rules “limiting groundwater production based on tract size or the spacing of wells, to provide for conserving, preserving, protecting, and recharging of the groundwater or of a groundwater reservoir or its subdivisions in order to control subsidence, prevent degradation of water quality, or prevent waste of groundwater and to carry out the powers and duties provided by [Chapter 36].”²⁴

To achieve these goals, a GCD may regulate the spacing of wells by: (A) requiring all water wells to be spaced a certain distance from property lines or adjoining wells; (B) requiring wells with a certain production capacity, pump size, or other characteristic related to the construction or operation of and production from a well to be spaced a certain distance from property lines or adjoining wells; or (C) imposing spacing requirements adopted by the board.²⁵

¹⁹ *Id.* § 36.0171(h).

²⁰ *Id.* § 36.020.

²¹ *Id.* § 36.1071.

²² *Id.* § 36.1071(a).

²³ *Id.* § 36.1071(f).

²⁴ *Id.* § 36.101(a).

²⁵ *Id.* § 36.116(a)(1).

A GCD may regulate production of groundwater by: (A) setting production limits on wells; (B) limiting the amount of water produced based on acreage or tract size; (C) limiting the amount of water that may be produced from a defined number of acres assigned to an authorized well site; (D) limiting the maximum amount of water that may be produced on the basis of acre-feet per acre or gallons per minute per well site per acre; (E) managed depletion; or (F) any combination of the methods listed above in paragraphs (A) through (E).²⁶ A GCD may establish production limits that preserve “historic or existing use” to the maximum extent practicable consistent with the district's comprehensive management plan and as provided by the well permitting provisions of Section 36.113 of the Texas Water Code. This means that a district can establish an historic period and adopt rules that favor the types of water use that occurred during that historic period.

d. Permitting Authority

A GCD must require a permit for the drilling, equipping, operating, or completing of wells or for substantially altering the size of wells or well pumps, and it may require permit amendments for changes in the withdrawal or use of groundwater during a permit term.²⁷ Typically, wells in existence prior to creation of a district are able to avoid certain well permit requirements. Permits are not required for exempt wells, which include wells used solely for domestic or livestock use on a tract of land of at least 10 acres if the well is not capable of producing more than 25,000 gallons of groundwater a day. Certain water wells related to oil and gas exploration and production are also exempt from permitting requirements.²⁸ While a GCD may impose additional fees for exporting water outside the GCD’s boundaries, it may not impose more restrictive permit conditions on transporters than it imposes on existing in-district users.²⁹ The permitting process generally requires an application, and public notice and hearing regarding the application.

e. Miscellaneous Authority

A GCD may also build, acquire, or obtain by any lawful means any property necessary for its purposes;³⁰ buy, sell, transport, and distribute surface water and groundwater;³¹ acquire land by purchase or eminent domain;³² perform surveys and research projects;³³ provide public

²⁶ *Id.* § 36.116(a)(2).

²⁷ *Id.* § 36.113.

²⁸ *Id.* § 36.117.

²⁹ *Id.* § 36.122

³⁰ *Id.* § 36.103.

³¹ *Id.* § 36.104.

³² *Id.* § 36.105.

education materials and programs,³⁴ and require that records be kept and reports be made of the drilling, equipping, and completing of water wells and of the production and use of groundwater.³⁵

f. Enforcement Authority

A GCD may enforce its rules by injunction or through reasonable civil penalties not to exceed \$10,000 per day per violation.³⁶ If a GCD prevails in any suit to enforce its rules, “the district may seek and the court shall grant, in the same action, recovery for attorney’s fees, costs for expert witnesses, and other costs incurred” before the court.³⁷

Given these broad powers, a person embarking on a project involving groundwater should first determine if a GCD has jurisdiction over the project. It is important to analyze the GCD’s rules and Chapter 36 of the Texas Water Code. Whether the goal is to produce water, sell water, change the use of water, or drill a well, the project will typically require an application to and hearing before a GCD.

5. H.B. 1763/Landowner Rights

With the adoption of H.B. 1763 in 2005, the Legislature made major changes in the way GCDs develop their management plans and the process to be undertaken to ensure some uniformity in the management plans of GCDs that share geographic portions of aquifers with other GCDs. In addition to these changes, H.B. 1763 requires regional water planning groups to use groundwater availability numbers developed from the process of coordination within groundwater management areas. Prior to H.B. 1763, GCDs’ management plans were required to determine the total useable amount of groundwater within their jurisdiction and to project future demand. With the passage of H.B. 1763, all requirements to include the total usable amount of groundwater in the management plan were eliminated and GCDs are now required to work together with other GCDs within groundwater management areas to develop “desired future conditions” for their groundwater resources. This process is well described in Section 36.1072 of the Texas Water Code.

Once the groundwater management areas, through the GCDs, have adopted “desired future conditions,” they are submitted to the Texas Water Development Board, which then uses existing and future groundwater availability models to estimate “modeled available groundwater.”³⁸ Districts are then required to include in their groundwater management plan the

³³ *Id.* §§ 36.106-.107.

³⁴ *Id.* § 36.110.

³⁵ *Id.* § 36.111-.112.

³⁶ *Id.* § 36.102.

³⁷ *Id.* § 36.102(d).

³⁸ *See* TEX. WATER CODE § 36.1072.

modeled available groundwater within their district and the district's plan for managing the groundwater resources to protect the resource. These "modeled available groundwater" numbers are then required to be included in the regional water planning groups' regional water plans in assessing available groundwater supply to meet future demand.³⁹

a. Groundwater Districts In Charge

With the passage of H.B. 1763, the Legislature has determined that groundwater district's determinations concerning groundwater availability will trump regional water planning groups. Regional water planning groups are now obligated to use groundwater district decisions with regard to available groundwater. In this manner, the Legislature has profoundly changed planning for groundwater use in the future. The consequence of this process is that the quantity of groundwater available for use by water users is uncertain, and the quantities now being used in regional planning will change. Therefore, as stated by the South Central Texas Regional Water Planning Group: "...water planning for water user groups whose future supplies are from groundwater should carefully consider broadening their strategies both in terms of quantities and sources to take this uncertainty into account."

b. Caps on Groundwater Production

Prior to the passage of H.B. 1763, Chapter 36 did not address the concept of available groundwater in other than planning terms. With the passage of H.B. 1763, the Legislature has directed that districts manage production and permitting to achieve the desired future condition, but gave little direction on what to do when production or permitted amounts exceed the calculated "modeled available groundwater."

Many districts have taken the approach that the "modeled available groundwater" amount represents a limit or cap on total production. Inherent in the decision to set or establish a cap on production is the decision of how to allocate that overall production among landowners throughout the district. This is the case because Chapter 36 provides limited guidance to GCDs on how to address the inherent allocation questions that must be answered. At a minimum, this valuable planning tool will be converted into a rigid set of rules which will inevitably create landowner winners and landowner losers.

Even more problematic is the ability of a groundwater district under Section 36.116(b) to "preserve historic or existing use before the effective date of the rules of the district."⁴⁰ GCDs will argue that they can create a special, priority permit system for historic users, and then determine how to divide the remaining "modeled available groundwater."

Districts will point to the requirements of Section 36.108(d)(2) as obligating GCDs to ensure that their groundwater plans contain goals and objectives consistent with achieving a desired future condition. In addition, regional water planning groups are now required to use the modeled available groundwater numbers in their regional water plans, placing off-limits

³⁹ See generally 31 TEX. ADMIN. CODE Ch. 356.

⁴⁰ *Id.* § 36.116(b).

production of groundwater over and above that amount determined to be the “modeled available groundwater.”

The Legislature’s experience with the Edwards Aquifer Authority is instructive. In the legislation originally adopted in 1993, the Legislature struck a balance between preserving springflows at San Marcos and Comal Springs and protecting landowner rights to produce groundwater. The Legislature chose to allow up to 450,000 acre-feet of groundwater to be permitted. Had it chosen to manage the aquifer to preserve minimum springflows of some amount at the two springs, this total amount would have shrunk to perhaps 150,000 acre-feet. The Legislature carefully considered all interests dependant on Edward’s groundwater and set limits it felt were necessary to protect all of those interests. But the Legislature also had to consider the overall interests of the state and every category of interest in the region. Local GCDs do not represent interests outside their district’s political boundaries.

c. A Perfect Storm

The potential for conflict between landowners and GCDs should be readily apparent. GCDs will inherently be inclined to be ultra conservative in their determination of “desired future conditions” and are not given any scientific or legislative direction in setting these conditions. The amount of “modeled available groundwater” is then determined, based on models, and a *de facto* limit is potentially set by the district. By being conservative, they will hasten litigation by landowner’s denied permits when no more “modeled available groundwater” can be permitted. The conflict will be further hastened by decisions to exempt historic use from groundwater production limitations.

Under these conditions, the actions of GCDs will have every indicia of adjudication of groundwater rights. This will place GCDs in the position of courts determining which landowners will have the right to use groundwater and which landowners will not. Unlike the surface water adjudication act, which required court review, Chapter 36 does not authorize and, in fact, makes very difficult an appeal of the decisions of the GCD. Plaintiffs are subject to a claim by the GCDs that they are entitled to their attorneys’ fees in the event of an unsuccessful appeal. The appeal is subject to the substantial evidence rule and there is no authorization for the court to review the basis upon which the decisions were made (e.g., desired future conditions, modeled available groundwater, and protection of historic use).

The practitioner should be aware of these activities in their geographic area of practice given the important outcome of these efforts by the state’s GCDs. Protecting existing use and the future right to produce groundwater may be an important issue in all non-urban real estate transactions.

6. Nature of the Groundwater Ownership Right

Although the rule of capture has been the law of the state of Texas since 1904 and has been consistently described as a property right incident to ownership, the courts have never been required to define the exact nature of the right until recently. Beginning with the *East* case, the courts have described it as a real property right but have never clearly defined when or if the

right is vested. This is particularly important in the context of regulation of the exercise of that right discussed later. In *East*, the Texas Supreme Court, citing New York authority, said:

An owner of soil may divert percolating water, consume or cut it off, with impunity. It is the same as land, and cannot be distinguished in law from land. So the owner of land is the absolute owner of the soil and of percolating water, which is a part of, and not different from, the soil.

Houston & T.C. Ry. Co. v. East, 81 S.W. 279, 281 (Tex. 1904) (quoting *Pixley v. Clark*, 35 N.Y. 520 (1866)). Similarly, in *Pecos County*, the court stated:

It seems clear to us that percolating or diffused and percolating waters belong to the landowner, and may be used by him at his will These cases seem to hold that the landowner owns the percolating water under his land and that he can make a non-wasteful use thereof, and such is based on a concept of property ownership.

Pecos County Water Control & Improvement District No. 1 v. Williams, 271 S.W.2d 503, 505 (Tex. Civ. App.—El Paso 1954, writ ref'd n.r.e.).

The Supreme Court in *Friendswood Development Co.* refused to abandon the rule, noting that it had become “an established rule of property law in this State, under which many citizens own land and water rights.” *Friendswood Development Co. v. Smith-Southwest Industries, Inc.*, 576 S.W.2d 21, 29 (Tex. 1978).

In spite of these statements that seem to conclude that groundwater is owned by the landowner, the courts have been reluctant to provide a description of the nature of the ownership right embraced by the absolute ownership rule. In *Sipriano v. Great Spring Waters of America, Inc.*, 1 S.W.3d 75 (Tex. 1999), the Supreme Court deftly avoided a discussion of the nature of the ownership right and instead held that it was inappropriate for the court, given the legislature’s efforts to expand the powers of groundwater conservation districts, to insert itself into the regulatory mix by substituting the rule of reasonable use for the rule of capture. *Sipriano*, 1 S.W.3d at 80.

In the one case where the issue was argued to be directly relevant, *Barshop v. Medina County Underground Water Conservation District*, 925 S.W.2d 618 (Tex. 1996), the Supreme Court avoided making a definitive decision on the issue. In *Barshop*, landowner plaintiffs claimed that the Edwards Aquifer Authority Act violated the Texas Constitution by taking their rights to use Edwards Aquifer groundwater governed by the rule of capture. The plaintiffs claimed that the act deprived the landowner of a vested property right in violation of the constitution. Plaintiffs conceded that the state has the right to regulate the use of groundwater, but maintained that they had a vested property right in the water, which the legislation took away. The state countered that the rule of capture, while an ownership right, was not vested until the water was actually reduced to possession and no taking occurs by virtue of regulation of use. *Barshop*, 925 S.W.2d at 625. The court held that the act was not unconstitutional on its face, ruling that the plaintiffs had failed to establish that, under all circumstances, the act would deprive landowners of their property rights. Therefore the court did not have to definitively

resolve the clash between property rights in water and regulation of water—that is, whether the act, as it might be applied, resulted in an unconstitutional taking.

The issue of the nature of the groundwater right was recently addressed by the Fourth Court of Appeals in two decisions. In both decisions, the court was confronted with questions of law requiring analysis of the ownership interest in groundwater and in both decisions concluded that the right was a part of the real property ownership.

In *City of Del Rio v. Clayton Sam Colt Hamilton Trust*, 269 S.W.3d 613, 614 (Tex. App.—San Antonio 2008, pet. denied), the issue before the court was whether a seller’s reservation in the conveyance of “all water rights associated with said tract” prevented the buyer from drilling a well and producing groundwater.

Litigation was initiated after the buyer, the City of Del Rio, drilled a water well on the purchased tract. The city argued that the trust’s reservation of water rights could not be effective, that under the rule of capture, the corpus of groundwater cannot be owned until it is reduced to possession. 269 S.W.3d at 616. The court reviewed supreme court authority holding that percolating water is part of and not different from the soil, that the landowner is the absolute owner of it, and that it is subject to barter and sales like any other species of property. 269 S.W.3d at 617. The court distinguished the absolute ownership rule from the rule of capture, holding that the rule of capture is a tort rule denying a landowner any judicial remedy and was developed as a doctrine of nonliability for damage, not a rule of property. 269 S.W.3d at 617-18. The court concluded that “under the absolute ownership theory, the Trust was entitled to sever the groundwater from the surface estate by reservation when it conveyed the surface estate to the City of Del Rio.” 269 S.W.3d at 617.

The court rejected the city’s argument that a specific relinquishment of all right to surface access by the seller did not render the reservation ineffective, since the seller owned adjacent property.

In *Edwards Aquifer Authority v. Day*, 274 S.W.3d at 742 (Tex. App.—San Antonio 2008), the Fourth Court of Appeals reviewed, among other issues, a summary judgment in favor of the Authority on Day and McDaniel’s claim that the operation of the Edwards Aquifer Authority legislation and the Authority’s decision to deny Day and McDaniel a permit to produce groundwater constituted a taking under Tex. Const. art. I, § 17.

Under the Edwards Aquifer Authority Act, landowners who had historically used Edwards Aquifer groundwater for irrigation purposes were assured by the legislation of a minimum permit amount of two acre-feet of production per year per acre irrigated. Mr. Day and Mr. McDaniel (“Day”) jointly owned a tract of land located within the Edwards Aquifer Authority jurisdiction that had an Edwards Aquifer well that flowed under artesian pressure. Day’s predecessor in title irrigated a portion of the property directly from the well, and a much larger portion of the property from an impoundment on a creek to which the artesian flow had been directed by a ditch constructed by the landowners. The Edwards Aquifer Authority granted Day a permit for 14 acre feet of groundwater based upon irrigation of land directly from the well, but denied the request for a permit for land irrigated from the impoundment. The Authority determined that the water pumped from the impoundment on the property was surface water and

therefore owned by the state and did not constitute historical use of groundwater from the Edwards Aquifer. Day appealed the decision to state district court.

Day claimed error by the Edwards Aquifer Authority. In the alternative, they argued that the actions of the Edwards Aquifer Authority constituted a constitutional taking and an inverse condemnation of their groundwater rights, and sought damages. The Authority interpleaded the State as a third-party defendant seeking contribution and indemnity from the State on the takings claims made by Day.

The district court held that Day was entitled to a permit. The court granted the Edwards Aquifer Authority and State's motions for summary judgment on the constitutional takings claims finding that the plaintiffs had no vested right to groundwater under their property, and granted a take nothing summary judgment on all of Day's constitutional claims.

Both parties appealed to the Fourth Court of Appeals in San Antonio. The Fourth Court agreed with the Authority's conclusion that the water used from lake was state water and not groundwater, and reversed the trial court's judgment granting a permit for acres irrigated with water from the impoundment. The Court affirmed the Edwards Aquifer Authority's decision granting plaintiffs' permit only for the seven acre tract which was irrigated with groundwater directly from the well. The Court of Appeals reversed the take nothing judgment granted on summary pleadings on the takings claim and remanded to the trial court for further proceedings on the constitutional claims. The Fourth Court of Appeals concluded that landowners have ownership rights in groundwater, that those rights are vested and are therefore constitutionally protected, and reversed the trial court's grant of summary judgment on these issues. The court held that the landowner's "vested right in the groundwater beneath their property is entitled to constitutional protection." *Day*, 274 S.W.3d at 756.

Both the State and the Authority filed petitions for review of the court of appeal's finding that plaintiffs have a vested and constitutionally protected interest in groundwater beneath their property. Day and McDaniel filed a petition for review claiming error by the court of appeals in denying a permit for acres irrigated with water from the impoundment.

While the case was still awaiting a decision, the 82nd Legislature passed legislation addressing the ownership issue. SB 332 substantially amended § 36.002 of the Water Code to clarify the Legislature's view of the nature of the ownership interest and rights of landowners while recognizing that regulation and management of groundwater resources under the Conservation Amendment is a matter of public interest. Section 36.002 now provides that landowners own the groundwater below the surface as real property which entitles the landowner to drill for and produce the groundwater below the surface, subject to the common law limitations against waste, malice or negligent subsidence and the regulatory authority outlined by the Legislature in Chapter 36, particularly new § 36.002(d). The statute also clarifies that ownership does not entitle a landowner to a specific amount of groundwater.

Subsection (c) provides that nothing in Chapter 36 should be construed as granting the authority to deprive or divest a landowner of the ownership and rights described by § 36.002. Subsection (d) follows by stating that the section does not prohibit a district from limiting or prohibiting the drilling of a well not in compliance with district rules for spacing or tract size or

affect the ability of a district to regulate groundwater production authorized by Chapter 36. Subsection (d)(3) clarifies that districts are not required to allocate to a landowner a proportionate share of available groundwater based on acreage owned, in effect stating that the ownership right is not a correlative right.

Subsection (e) then provides that the section does not affect the ability to regulate groundwater as authorized by Chapter 626, Acts of the 73rd Legislature, Regular Session 1993 (The Edwards Aquifer Authority Act), Chapter 8801, Special District Local Laws Code, (The Harris-Galveston Subsidence District) or Chapter 8834 Special District Local Laws Code (The Fort Bend Subsidence District).

7. Supreme Court Answers the Question of the Nature of Landowner Groundwater Rights

On February 24, 2012, the Texas Supreme Court issued a 50 page unanimous opinion in *Edwards Aquifer Authority v. Day and McDaniel* affirming the Fourth Court of Appeals after confronting and answering for the first time the question of whether a landowner's groundwater rights are a vested real property right protected by the Texas and U.S. Constitution prohibition against uncompensated taking. The opinion written by Justice Hecht begins with a succinct summary of the issue presented in the decision:

“We decide in this case whether landownership includes an interest in groundwater in place that cannot be taken for public use without adequate compensation guaranteed by Article 1, § 17(a) of the Texas Constitution. We hold that it does.”

The court's opinion carefully outlines the history of the Edwards Aquifer Authority legislation and its key provisions and summarizes the facts leading up to the Edwards Aquifer Authority's decision to deny Day and McDaniel a permit for groundwater use from an impoundment on a water course. The Edwards Aquifer Authority found that the water used from the impoundment had become surface waters of the state and that Day and McDaniel were therefore not entitled to a groundwater production permit for water withdrawn from the impoundment and used for irrigation.

The Supreme Court affirmed the Authority's decision, finding that Day and McDaniel had failed to prove that their use of water was groundwater and not state water. This statement of the law has profound implications for any landowner using groundwater to supplement water in an impoundment on a water course. As stated by the court:

“We do not suggest that a lake can never be used to store or transport groundwater for use by its owner. We conclude only that the Authority could find from the evidence before it that that was not what had occurred on Day's property.”

The court then launches into a detailed summary of the history of the rule of capture from its adoption in *East* to the decision in *Sipriano v. Great Spring Waters of America, Inc.*, 1 S.W.3d 75 (Tex. 1999) concluding that ownership of groundwater in place had never been decided by court. The court noted that while it had never addressed the issue with regard to groundwater, it

had, long ago done so with respect to oil and gas to which the rule of capture also applies. The court noted that while ownership of gas in place did not entitle the owner to specific molecules of gas which could be diminished through drainage, with proper diligence they could be replenished or obtained. The court stated that while they are in the ground, they constitute a property interest. The court, quoting its previous decisions, noted that the right to the oil and gas beneath a landowner's property is an exclusive and private property right inherent in land ownership, which may not be deprived without a taking of private property.

The court found that there was no basis in the differences cited between groundwater and oil and gas to conclude that the common law allows ownership of oil and gas in place but not groundwater. Specifically, the court held that:

“In our state the landowner is regarded as having absolute title and severalty to the oil and gas in place beneath his land. The only qualification of that rule of ownership is that it must be considered in connection with the law of capture and is subject to police regulations. The oil and gas beneath the soil are considered a part of the realty. Each owner of land owns separately, distinctly and exclusively all the oil and gas under his land and is accorded the usual remedies against trespassers who appropriate the minerals or destroy their market value.

We now hold that this correctly states the common law regarding the ownership of groundwater in place.”

The court then cited the legislative revisions to Section 36.002 noted above and showed the legislature's understanding of the interplay between groundwater ownership and groundwater regulation.

The court then analyzed whether Day has stated a viable takings claim. In so doing, in summary, the court rejected the argument that the EAA's regulatory action could be considered a *per se* taking for Fifth Amendment purposes and instead applied the regulatory takings analyses originally adopted by the U.S. Supreme Court in *Penn Central Transportation Co. v. New York City*, 438 US 104 (1978). In *Penn Central*, the court identified several factors that have particular significance in determining whether the regulation rises to the level of a taking under the Constitution. Primary among those factors are the economic impact of the regulation on the claimant and the extent to which the regulation has interfered with distinct investment-backed expectations. In addition, the character of the governmental action, in essence an analysis of the reasonableness of the regulation in light of the goals to be achieved and the impacts reasonably expected.

Because this factual inquiry was not developed in the summary judgment proceeding, the court agreed with the Court of Appeals that summary judgment against Day's taking claim should be reversed and the issue remanded to the trial court.

As a side note, the court rejected Day's complaint that Section 36.066(g) of the Water Code, which authorizes an award of attorneys' fees and expenses to a groundwater conservation district that prevails in a suit like the underlying action violated equal protection. The court

found the state has a legitimate interest in discouraging suits against groundwater districts to protect them from costs and burdens associated with such suits and that a cost-shifting statute is rationally related to advancing that interest. Landowners filing takings claims should be well aware of this provision.

8. Conclusion

The important questions of how far regulation can go before it is found to be a taking will remain unanswered for some number of years. Undoubtedly, there will cases filed and challenges to regulations limiting or, in some cases excluding groundwater use. Given the myriad factual inquiries required for a Penn Central regulatory takings analysis, no simple answer exists and no bright line can be created in determining how far groundwater conservation districts can go in limiting groundwater production. However, given the geographic extent of groundwater conservation districts, their legislative mandate to adopt rules designed to achieve their desired future conditions and the overall conservation ethic of groundwater conservation district boards, conflict can be anticipated.

B. Surface Water

1. State Owned Surface Water

Except for a few rare grants of water rights from pre-Texas sovereigns (e.g., Spain, Mexico, and the Republic of Texas), surface water is owned by the State and permitted for use pursuant to a statutory appropriation process. Section 11.021(a) of the Texas Water Code states:

The water of the ordinary flow, underflow, and tides of every flowing river, natural stream, and lake, and of every bay or arm of the Gulf of Mexico, and the storm water, floodwater, and rainwater of every river, natural stream, canyon, ravine, depression, and watershed in the state is the property of the state.

Identifying state-owned water is easier after understanding the definition of a watercourse in which state surface water may flow. A “watercourse” is a channel, with well-defined bed and banks, in which water flows as a stream and has a permanent source of supply.⁴¹ Water need not always be present in the watercourse, and can have only intermittent flows.⁴² A good rule of thumb is if the river, creek, or stream has a name on a map, it’s likely to be a watercourse in which state-owned water flows.

2. Exceptions From State-Owned Surface Water/Exemption from Permitting

The exceptions from state-owned surface water include developed water, water reuse, and diffused surface water. “Developed water” is water that is legally reduced to possession and under the control of the owner of an artificial conveyance system. So long as the owner

⁴¹ *Hoefs v. Short*, 114 Tex. 501, 273 S.W. 785 (1925).

⁴² *See id.*

maintains physical control of the developed water, he may sell or further use the water.⁴³ “Water reuse” refers to the withdrawal and use of water that is placed into a watercourse for delivery to another place of use, which is allowed by the Texas Water Code in certain situations subject to proper permitting, protection of existing water rights, and instream environmental flow requirements.⁴⁴

The domestic and livestock exemption allows a person, without obtaining a permit or going through the water rights adjudication process, to construct on her property a dam or reservoir up to 200 acre-feet in capacity for domestic and livestock purposes.⁴⁵ “Diffused surface water” is discussed below.

3. The Appropriation System

Texas regulates its surface water through the appropriation doctrine of water rights.⁴⁶ The appropriation system authorizes a person to use a specific amount of water, by diversion from a watercourse at a definite location, for a particular beneficial purpose, on a particular tract of land.⁴⁷ An appropriation of surface water does not grant that person ownership of the corpus of the water. A person may not willfully take, divert, or appropriate any state water for any purpose without first complying with Chapter 11 of the Texas Water Code.⁴⁸ Violations of Chapter 11 can result in civil and administrative penalties.⁴⁹

a. Seniority

Chapter 11 uses a seniority system to allocate water during times of shortage. Section 11.027 states “the first in time is the first in right.”⁵⁰ Thus, each water right is assigned a specific priority date, and more senior water rights holders (those who obtained their right at an earlier date) are entitled to fully exercise their water rights before junior rights holders.

b. Beneficial Use

⁴³ See *Guelker v. Hidalgo County WCID No. 6*, 269 S.W.2d 551 (Tex. Civ. App.—San Antonio 1954, writ ref’d n.r.e.); *South Tex. Water Co. v. Bieri*, 247 S.W.2d 268 (Tex. Civ. App.—Galveston 1952, writ ref’d n.r.e.).

⁴⁴ TEX. WATER CODE § 11.042.

⁴⁵ *Id.* §§ 11.142, .303(a)(2), .307(a); 30 TEX. ADMIN. CODE § 297.21.

⁴⁶ See TEX. WATER CODE § 11.022.

⁴⁷ See *Id.* §§ 11.023, .025.

⁴⁸ *Id.* § 11.081.

⁴⁹ *Id.* §§ 11.082, 11.0842-.0843.

⁵⁰ *Id.* § 11.027.

Chapter 11 lists the purposes for which water may be appropriated, and ranks these purposes in the following order of preference: domestic and municipal, agricultural and industrial, mining, hydroelectric power, navigation, recreation, and “other beneficial uses.”⁵¹ A person authorized to use surface water may only use that water for the beneficial purpose specified in the appropriation.⁵² The water right is not perfected unless the person actually puts the water to that beneficial use, at which point it becomes a vested property right.⁵³

c. Cancellation

A vested water right can be lost through nonuse over an extended period of time.⁵⁴ After notice and hearing, the TCEQ may cancel in whole or in part a water right that its holder has not put to beneficial use at any time for a ten-year period immediately prior to the cancellation proceeding.⁵⁵ The Texas Supreme Court has upheld the constitutionality of the State’s authority to cancel the vested property right on the theory that the property right contains an implied condition subsequent of continued beneficial use; failure to use the water is a violation of the condition subsequent allowing for divestiture of the right.⁵⁶ There are some exemptions from cancellation for water rights dedicated to certain conservation programs or plans.⁵⁷

4. Water Rights Adjudication

The Water Rights Adjudication Act, codified as subchapter G of Chapter 11,⁵⁸ provides the process for quantifying and reconciling the various types of water rights that were granted by the sovereigns existing before Texas became a state (e.g., civil law water rights, riparian water rights, certified filings and other permits). These water rights must be “adjudicated” to determine which of the various claimants to water in a given river segment has the right to use that water based on their previous use. The process allows for an evidentiary hearing and an opportunity to be heard before the TCEQ. The TCEQ makes findings and enters an

⁵¹ *Id.* §§ 11.023, .024.

⁵² TEX. WATER CODE § 11.025. The beneficial use will be set out in the permit, certified filing, declaration of intent to appropriate water, or certificate of adjudication.

⁵³ *Id.* §§ 11.025-.026, .029.

⁵⁴ *See id.* § 11.030 (abandonment of appropriation after successive three year period); *id.* § 11.171-.177 (cancellation of permit after 10 years of nonuse).

⁵⁵ *Id.* § 11.173(a).

⁵⁶ *Texas Water Rights Commission v. Wright*, 464 S.W.2d 642 (Tex. 1971).

⁵⁷ TEX. WATER CODE § 11.173(b).

⁵⁸ *Id.* §§ 11.301-.341; *In re Adjudication of the Water Rights of the Upper Guadalupe Segment of the Guadalupe River Basin*, 642 S.W.2d 438 (Tex. 1982) (upholding constitutionality of Water Rights Adjudication Act); *In re Adjudication of Water Rights of the Brazos III Segment*, 746 S.W.2d 207 (Tex. 1988) (establishing Water Rights Adjudication Act as the exclusive means for recognizing water rights).

administrative order defining all the water rights in a given segment of river or stream. The order states the nature of the authorized use, quantity of water, priority of use, authorized diversion point and diversion rate, and other conditions. The administrative order is then filed with a district court for final confirmation by the judiciary. In April 2006, the TCEQ entered an order in the final remaining adjudication, which related to the Upper Rio Grande River. Thus, almost all general stream adjudications for Texas have been completed.

To administer adjudicated water rights, the TCEQ divides the state into water divisions and appoints and supervises a watermaster and watermaster advisory committee for each division.⁵⁹ The watermaster regulates various aspects of the stream segments in the watermaster's division, protecting existing water rights in times of shortage, preventing waste, and preventing diversion, storage, or use in excess of adjudicated rights.⁶⁰

5. Obtaining a Surface Water Right Permit

Although one might think all state water has already been appropriated, unappropriated water is periodically available during times of abundance or flood and when a particular water right has been abandoned or cancelled. The following summarizes the process of obtaining or amending a permit.

To appropriate surface water a person must obtain a permit from the TCEQ.⁶¹ The TCEQ must give public notice of the water rights application,⁶² and in most cases must conduct a public hearing on the application.⁶³ The permit can be granted only after the person files a proper application and pays the required fees, and only if the applicant shows: (1) unappropriated water is available in the source of supply; (2) the proposed appropriation is intended for a beneficial use, does not impair existing water rights or vested riparian rights, is not detrimental to the public welfare, considers various environmental and water quality assessments, and addresses a water supply need in a manner consistent with the state water plan and the relevant approved regional plan(s); and (3) reasonable diligence will be used to avoid waste and achieve water conservation.⁶⁴ All applicants for new or amended water rights must develop and submit a water conservation plan and adopt reasonable conservation measures.⁶⁵

⁵⁹ TEX. WATER CODE §§ 11.325-.3261.

⁶⁰ *Id.* § 11.327.

⁶¹ *Id.* § 11.121.

⁶² *Id.* § 11.132; 30 TEX. ADMIN. CODE §§ 295.151-.153, 295.158.

⁶³ TEX. WATER CODE §§ 11.132(a), 11.133.

⁶⁴ *Id.* § 11.134(b); 30 TEX. ADMIN. CODE §§ 297.41-.50.

⁶⁵ TEX. WATER CODE § 11.1271; 30 TEX. ADMIN. CODE § 295.9.

In addition to regular appropriation permits issued under Section 11.121, the TCEQ is authorized to issue other more restrictive permits, such as seasonal permits;⁶⁶ temporary permits;⁶⁷ contractual permits or amendments under a base permit;⁶⁸ permits converting an exempt reservoir to other beneficial uses;⁶⁹ storage permits for reservoir development;⁷⁰ term permits;⁷¹ and emergency permits.⁷²

6. Interbasin Transfers

An interbasin transfer is when water is taken or diverted from one watershed or river basin to another. Section 11.085 of the Texas Water Code requires special TCEQ permits to make interbasin transfers.⁷³ Public notice and special notice to specific stakeholders is required.⁷⁴ A hearing is required on any application that is contested.⁷⁵ If your project is going to involve an interbasin transfer, you must consider Section 11.085 and the TCEQ rules.

Obviously projects involving surface water incorporate different rules and state agencies than projects involving groundwater. If your project involves surface water, look first to Chapter 11 of the Texas Water Code and the TCEQ website and rules.

C. Diffused Surface Water

1. Definition of Diffused Surface Water

Before surface water becomes state owned, it may spend some time as diffused surface water. Diffused surface water is water from falling rains or melting snows that flows in unpatterned ways across the land surface and has not yet entered a watercourse. Diffused surface

⁶⁶ TEX. WATER CODE § 11.137; 30 TEX. ADMIN. CODE § 297.12.

⁶⁷ TEX. WATER CODE § 11.138; 30 TEX. ADMIN. CODE § 297.13.

⁶⁸ 30 TEX. ADMIN. CODE §§ 297.14, 297.101 *et seq.*

⁶⁹ TEX. WATER CODE § 11.143; 30 TEX. ADMIN. CODE § 297.15.

⁷⁰ TEX. WATER CODE § 11.140.

⁷¹ TEX. WATER CODE § 11.381; 30 TEX. ADMIN. CODE § 297.19.

⁷² TEX. WATER CODE § 11.139; 30 TEX. ADMIN. CODE § 297.17.

⁷³ TEX. WATER CODE § 11.085(a); 30 TEX. ADMIN. CODE §§ 297.18, 295.13.

⁷⁴ TEX. WATER CODE §§ 11.085(f)-(h).

⁷⁵ *Id.* §§ 11.085(d)-(e).

water is the private property of the owner of the soil over which it runs until the water enters a watercourse and transforms legally into the public property of the state.⁷⁶

2. Why the Distinction is Important

Determining when surface water transitions from being diffused surface water to state water is important for a number of reasons, most notably ownership and damages caused by diversion or impoundment. Because the state does not own diffused surface water, the private landowner can use or divert or impound the diffused surface water without a permit. However, anyone diverting or impounding diffused surface water must be wary of damages that might be caused to other landowners as a result of that diversion or impoundment. Section 11.086 of the Texas Water Code provides that no person may divert or impound the natural flow of surface waters in this state, or permit a diversion or impounding by him to continue, in a manner that damages the property of another by the overflow of the water diverted or impounded.⁷⁷ A person injured by an overflow of water caused by an unlawful diversion or impounding may recover damages occasioned by the overflow.⁷⁸ This creates a non-delegable duty on the State to control floodwater and maintain the appurtenant instrumentalities used for flood control of state-owned waters. It also puts private landowners at risk when they do not divert or impound with care. So, if you are thinking about diverting or impounding surface water, you should make sure it truly is diffused surface water (and not stated-owned water) and consider the liability for damages that might be caused in the event of a flood.

III. WATER DUE DELIGENCE

A. Surface Water

1. Risks to Consider

As explained above, water found in every river, natural stream, canyon, ravine, depression and water shed in the state is the property of the state.⁷⁹ Pursuant to Section 11.081, it is unlawful to take, divert or appropriate any state water for any purpose without first complying with all applicable requirements of Chapter 11 of the Texas Water Code, including the requirement that a person own a permit authorizing the diversion.⁸⁰ Violation of this provision renders a landowner liable for a civil penalty of not more than \$5,000 for each day of continued diversion or use.⁸¹ The Water Code also provides for administrative penalties if

⁷⁶ *Turner v. Big Lake Oil Co.*, 128 Tex. 155, 96 S.W.2d 221 (1935); *Molt v. Boyd*, 116 Tex. 82, 286 S.W. 458 (1926).

⁷⁷ TEX. WATER CODE § 11.086.

⁷⁸ *Id.*

⁷⁹ TEX. WATER CODE § 11.021.

⁸⁰ *Id.* § 11.081.

⁸¹ *Id.* § 11.082(a).

appropriate.⁸² Section 11.142 authorizes the construction, on owned property, of a dam or reservoir with normal storage of not more than 200 acre-feet of water for domestic and livestock purposes.⁸³ The owner of such a facility exempted under Section 11.142(a) who desires to use the water from the dam or reservoir for purposes other than domestic or livestock use must obtain a permit as if it were a new diversion.⁸⁴

2. Real Estate Transactions

Real estate transactions involving real property with existing surface water use should include reference to the surface water right authorization owned by the real property owner and the regulatory history of that permit. Although seldom exercised, Section 11.173 allows for the cancellation of water rights for 10 years of consecutive non-use. Authorizations to divert state water pursuant to a state permit can be suspended or revoked for failure to comply with commission orders. Real estate that contains impoundments should be verified to be using the impounded water for domestic or livestock purposes, or that a surface water permit or authorization exists, or that the impoundment captures only diffused surface water.

Straightforward conveyance of real property including surface water rights for use on the property should reference the water rights conveyed and the intention that they be conveyed with the real property. Section 11.040 of the Texas Water Code provides that a permanent water right is an easement and passes with the title to the land and that a written instrument conveying a permanent water right may be recorded in the same manner as any other instrument relating to the conveyance of the land. Section 11.122 requires any permit holder who wishes to change the place of use, purpose of use, point of diversion, rate of diversion, acreage to be irrigated or otherwise alter a water right must obtain an amendment of the permit from the Commission. Thus, if a purchaser intends to put the water from the water right to use in a different place or for a different purpose of use or otherwise alter the diversion rate, a permit amendment will be required before such use will be authorized. The process of obtaining a permit amendment is potentially expensive, time-consuming and uncertain.

B. Groundwater

1. Existing Use

Transactions involving real property with existing groundwater use may require review of GCD rules and permits if the property is located within the jurisdiction of a GCD. Given that the state has at least 98 GCDs with different rules, and that most of the areas of the state with significant groundwater use are included within existing GCDs, it is very likely that GCD rules will affect existing groundwater use, much of which may predate the formation of the district.

⁸² *Id.* § 11.082(b).

⁸³ *Id.* § 11.142(a).

⁸⁴ *Id.* § 11.143.

Like surface water, GCD rules typically exempt small wells meeting certain criteria if used for domestic and livestock purposes or if drilled and producing solely for the exploration or production of oil and gas.⁸⁵ While these wells are typically exempt from the permitting requirements imposed on larger wells, the GCD rules may require the registration of exempt wells with the GCD and may, in some instances, require additional reporting. Groundwater wells used for other than domestic and livestock purposes are typically required to be permitted by the GCD as an existing or historic well (constructed and operated prior to the adoption of GCD rules) or subject to regulatory requirements for all new wells if drilled and operated after the adoption of GCD rules.⁸⁶

All property transactions involving land where groundwater use has been for other than domestic and livestock purposes should be thoroughly reviewed for compliance with district rules on permitting and operation to ensure no basis for future enforcement actions based upon failure to comply with district rules or failure to obtain the necessary permits.

In short, the presence of a well on a piece of property should trigger review of applicable regulatory requirements and compliance with those requirements in connection with the property transaction. Continued operation of the well after the transaction is completed could be jeopardized by failure to comply with regulatory requirements by the previous owner, requiring review prior to closing.

2. New Wells

If property is purchased with the intention of producing groundwater to satisfy contemplated activities, an analysis similar to that for surface water should take place. If the property is not located within the current jurisdiction of a GCD, there is no regulation of groundwater production and no regulatory authority to limit or prevent new groundwater use. If the property is located within the jurisdiction of a GCD, the GCD rules must be thoroughly scrutinized to determine if the required use will require permitting or a registration with the GCD before it can be accomplished. As previously explained, district rules may limit the location of new wells based upon spacing and set-back requirements and can limit groundwater production based upon tract size or other factors.⁸⁷ These limitations should be thoroughly examined to ensure that the contemplated use will be authorized under the GCD's rules. If a domestic use is contemplated, the rules should be reviewed for registration requirements and limitations applicable to the claimed exemption. If the purchaser intends to drill groundwater wells for a commercial, industrial or agricultural purpose, existing GCD rules should be reviewed to determine feasibility of such future use in light of permitting limitations. Similarly, a developer intending to create home sites supplied by small domestic and livestock wells must examine the GCD's rules authorizing the exempt status of such wells. Many districts limit domestic and livestock wells to tracts having a minimum size of at least some number of acres before a domestic and livestock well is authorized.

⁸⁵ TEX. WATER CODE § 36.117.

⁸⁶ *See Id.* § 36.113.

⁸⁷ *Id.* § 36.116.

In short, thorough review of existing wells and water use, GCD rules, and regulatory compliance should be a part of any review of any transaction involving property with groundwater wells located within the jurisdiction of a GCD. GCD rules are constantly changing and evolving, and landowner compliance has not always been vigorously pursued.

C. Water Deals

Landowners are increasingly asking questions related to reserving, leasing, selling or marketing water rights associated with their real property. Transactions involving water, whether surface water or groundwater, require careful attention to regulatory requirements and careful attention to what is and is not intended to be conveyed or transferred in the agreement.

1. Surface Water

Surface water transactions will almost necessarily involve an amendment to an existing permit to change the purpose or place of use or the place of diversion. The process requires the filing of an application to the Texas Commission on Environmental Quality, publication of notice, opportunity to protest, and a potential contested case hearing on the requested amendment to the permit. The applicant must satisfy a complicated set of requirements including demonstration that the proposed amendment will have no adverse affect on any other water permit holders, the environment and other subjective requirements before the amendment will be approved. The only exception to this general rule is the transfer of surface water rights in the Lower Rio Grande River Basin downstream of Amistad and Falcon reservoirs. Within this highly controlled water shed, an active market has existed for decades with predictable transferability of rights and appropriate adjustment of rights for conversion from one category of use (irrigation) to another (municipal, industrial). The transaction still requires amendments approved by the state.

2. Groundwater

Transactions in groundwater are far more diverse and complicated, depending upon the nature of the transaction. Many of the issues involved in purchasing or leasing groundwater are the same as those faced in the purchase of other real property interests. This means that the conveyance will generally be evidenced by documents that are similar to those used in a real estate transaction. Transactional documents will vary depending upon the regulatory environment and the existence or non-existence of a historical market in the area where the transaction is to occur. The first question that must be answered is whether the transaction is intended to be a permanent sale of the groundwater right or is intended to be a lease of the right to use the groundwater with the permanent ownership being retained by the surface estate.

Transactions contemplating the permanent sale of a groundwater right for use (production) on some other property require a regulatory framework which permits this type of transfer. For instance, transfers of permits within the Edwards Aquifer Authority region are readily accomplished with certain limited geographic restrictions, because transferring the location of production has little influence on the overall behavior of the Edwards Aquifer. This is not true in many other aquifers of the state, meaning that production of the groundwater right must occur in the area of the surface estate.

Many practitioners will be asked about “reservation” of groundwater rights and conveyances of the surface estate. This, too, is a trap for the unwary. Unlike mineral leases, groundwater reservations or leases do not automatically authorize the use of the appurtenant surface estate. For this reason, the best practice is for a purchaser to acquire specific rights of access to the groundwater from the surface of the real property to which it relates. These rights will include the right to explore and develop the groundwater estate on an exclusive or non-exclusive basis, the right to place wells, pipelines, utilities and other related facilities on the surface estate, and the right of ingress and egress. Both seller and buyer may each have a need to impose certain limitations upon the use of the real property to better protect their interests.

Lease of a groundwater right, likewise, may involve the need to use the appurtenant surface estate for all of the reasons outlined above. The lease agreement should thoroughly address use of the surface estate by the landowner and by the groundwater lessee. Addressing the many issues that could arise as the groundwater lessee exercises the right to produce the groundwater reduces conflict as the rights are exercised. From the landowner’s perspective, the groundwater developer should have a restricted use of the surface with limits on the location of facilities for the preservation of the surface owner’s right to develop for other use. The lessee will desire flexibility as to placement of facilities, restrictions on surface use (so as not to interfere with groundwater withdrawal), as well as reasonable access. All of these issues should be addressed in the groundwater lease agreement.

In addition, consideration for the groundwater agreement may be paid in one lump sum, as a fixed price over time in a set number of installments, as produced, or as if used even if it wasn’t. In addition to issues of what is being purchased and how to measure the amount to be paid, the seller should carefully consider a mechanism for price adjustment for any transaction of significant duration. The agreement should also address obligations upon termination of the lease, including ownership of facilities, removal of facilities, return of permits and condition of the surface estate after termination.

Transactions involving groundwater rights is an evolving area of practice with many future lessons to be learned by transaction documents not carefully drafted or failing to address issues which may arise in the future. Careful attention must be paid to changes both in the law authorizing regulation of groundwater withdrawals by GCDs, but also GCD rules and management plans affecting exercise of groundwater rights.

D. Water Utility Service

Real property transactions involving property to be developed for residential or commercial purposes should include a component of water utility service access and requirements. Most developing areas of the State of Texas are located within the certificate of convenience and necessity of a retail water utility. Retail water utility service providers include investor-owned utilities subject to regulatory review of rates and services by the TCEQ to water supply corporations, water control and improvement districts or municipally or publicly-owned water utilities. If the property is located within the certificate of convenience and necessity of one of these utilities, water utility service must be obtained from that utility and the utility must be prepared to provide that service to the property pursuant to its extension policies. It is the extension policies of the utility that should be examined thoroughly if water service will be

requested as part of the overall transaction. Conditions on extension, contributions and aide of capital construction, impact fees and other charges may be collected by the utility before service will be provided. Virtually all extension policies of water utilities impose the burden of the cost of the extension on the customer requesting the service, a factor that should be considered in analyzing the transaction.

IV. THE TEXAS WATER MARKET

There are several reasons why analysis of the water market is important. The TWDB has previously expressed the opinion that most (if not virtually all) of the state's major rivers are either fully appropriated or very nearly so. The 2012 state water plan predicts the state will need to increase its available water supplies by 8.8 million acre-feet by 2060 to meet expected demand. Thus, the market (or lack thereof) will play a major role in how this state's citizens and businesses meet their water needs in the future.

Unlike other commodities (oil, corn, wheat, metals, etc.) there exists no reliable and predictable method of conveyance or transfer of water and facilities do not exist to move water as a commodity from one location to another. As a consequence, water transactions and water values depend almost entirely on the local conditions and legal framework. An active market, with ascertainable prices and predictable transfers in surface water rights exists only in the Lower Rio Grande River and, in groundwater rights, in the Edwards Aquifer regulated by the Edwards Aquifer Authority. These markets, which exist in entirely different legal and regulatory frameworks, share the following fundamental features that allow an active market to exist:

1. certainty in the quantity or amount being transferred;
2. certainty in the transfer process (outcome, cost and time); and
3. the ability to freely move the point of diversion or withdrawal.

No other areas of the state share these three factors facilitating water transactions. Surface water and groundwater transactions and transfers are occurring in many other areas of the state, but each of those transactions is unique and tailored to the legal, regulatory and geographic conditions applicable to the source water.

V. MAJOR VARIABLES AFFECTING WATER TRANSACTIONS

The transferability of water rights is affected by a number of variables or conditions. Each of these factors can have a major effect on the nature of the transaction and the water's value.

The first major variable is the extent to which the water right is quantifiable, reliable and capable of being used for a substantial number of years. In other words, the buyer must be able to accurately determine how much water is producible, deliverable or transferable, for how long and whether potential conditions in the future could interfere with the production or delivery of the water. Surface water rights are easily quantified and conditions on diversion are part of the permit, but transferring to a new use or location is unpredictable. This factor more profoundly affects the market in groundwater. In the absence of a groundwater district, a rule of capture

right is theoretically unlimited. The right is also not quantifiable and worse, cannot be protected from actions by adjoining landowners. Indeed, until the last decade, transactions in groundwater rights have been tied to the real property from which the water will be produced and not traded as a right exercisable at some other location. The water rights themselves were always related to specific real property. Thus, the absence of regulation limits an active market, and encourages conflict and uncertainty. A predictable and protectable right has substantially greater marketability than an unlimited, unprotectable right. More importantly, the question of reliable, sustainable production must be examined aquifer by aquifer and location by location. Finding and producing groundwater does not ensure that the same amount can be produced year after year. Sustainability of proposed groundwater production is a major factor in determining the willingness of potential purchasers to invest in infrastructure to produce and deliver it.

The second factor which substantially affects the marketability of surface or groundwater rights is the legal and regulatory framework under which the transfers must occur. In other words, what is required to complete the transfer? In surface water this regulatory framework is established by the Water Code and is administered by the TCEQ. The uncertainty, time and cost of completing this process make every proposed transfer requiring an amendment unique and unpredictable. In contrast, the regulatory framework for groundwater transfers depends upon the existence, powers and rules of a groundwater district. There are now more than 98 groundwater conservation districts operating in Texas, most of them exercising the powers granted them by Chapter 36 of the Texas Water code. While § 36.122 gives these districts authority to require permits to transfer groundwater outside the district, the district cannot deny these permits based upon the proposed location or use. However, § 36.116 of the Code gives districts the power to regulate and limit production and many districts are considering or have placed an overall limit on total authorized use. Based upon “Modeled Available Groundwater” goals determined through a planning process outlined in §§ 36.1071, 36.1072, and 36.108. Each individual district has their own set of rules and limits and certainty in the process varies considerably. Transactions in groundwater in areas of the state not covered by a groundwater district are necessarily tied to the real property from which the water will be produced, with all the uncertainties inherent in an unquantifiable, unprotectable right. Given the capital cost associated with developing the delivery facilities, most of these transactions will likely involve large acreage and relatively short distances from place of production to place of use.

Third, a major impediment to the water market in Texas is the complete absence of conveyance or transmission facilities or mechanisms. Unlike electricity, natural gas and other commodities, no system exists for moving water from where it is to where it may be needed, other than the state’s rivers.

Fourth, regulation, restrictions and limits on transfers of surface and groundwater based on protection of “local” interests are a major obstacle to reaching solutions to water resource needs. Disputes over the purpose and place of use inevitably generate conflict between geographic areas and/or economic interests. Management and regulation to protect the resource and the rights of landowners should be blind to location or purpose of use and should instead be directed to accomplish protection of all rights and the resource itself.

Legal and regulatory policy applicable to transfers of water should be based upon objective goals which are balanced and are based upon well-established legal and market

principals. Markets themselves are neither inherently good or evil, but policies and principals which facilitate the ability to develop and transfer water will benefit the state and all of its citizens.

VI. SURFACE WATER MARKET FRAMEWORK

Surface water rights are always attached to specific real property. Sale of the real property for which a surface water permit has been granted includes the surface water right, absent express reservation. Transfers of real property including the "right" to divert and use surface water for the real property are common and easily completed. While these transactions involve surface water, they are largely unencumbered with any significant regulatory obstacle to completing the transaction, but do require the buyer to notify the TCEQ of change in ownership. Certainty in completing the transaction removes any significant risk that the regulatory framework will prevent, delay, increase the cost, affect the reliability or otherwise frustrate the transaction. The new owner of the real property can count on acquiring the permit rights of the previous owner, but must make the same use of the water as has been historically made.

Transactions involving the severance of the water right from the real property, or changes in the purpose or place of use are far more complicated. Texas law provides that any transfer of a water right which changes any one of four primary permit conditions (place of use, purpose of use, diversion point or amount) requires an amendment of the permit and the approval of the TCEQ. The transfer process involves filing an application with the TCEQ which contains sufficient information for the TCEQ to analyze the proposed transaction and give notice to all potentially affected interests (including other permit holders, the Texas Parks and Wildlife Department and various non-permitted interests). If any party with standing protests the proposed amendment, a contested case hearing is required with the consequent expense, time and uncertainty. For these reasons, transfers involving changes in any of these four permit conditions are not routine and the "market" is not well-defined or consistent. With the exception of transfers in the Lower Rio Grande Valley, the value of water in the river basins of Texas is affected by so many variables that no range of values can be assigned. The following sections summarize the regulatory requirements for surface water transactions requiring TCEQ approval.

The history of surface water rights transfer regulation begins with *Clark v. Briscoe Irrigation Co.*⁸⁸ In this case, the Court held that the holder of a state permit could not change the place or purpose of use specified in the permit without the approval of the Board of Water Engineers. The Court applied this holding to permits granted by the state after the 1917 Constitutional Amendment and passage by the Legislature of the Irrigation Act.

In *Nueces County Water Control & Improvement Dist. v. Texas Water Rights Comm'n*,⁸⁹ the Court held that the holder of a certified filing could change the purpose of use from irrigation to municipal and domestic purposes without Commission approval. The Texas Legislature, in response, adopted Section 11.122 of the Texas Water Code. Section 11.122 requires that all holders of permits, certified filings and certificates of adjudication obtain authority from the

⁸⁸ 200 S.W.2d 674 (Tex. Civ. App. -- Austin 1947, writ dismiss'd w.o.j.).

⁸⁹ 481 S.W.2d 924 (Tex. Civ. App. -- Austin, 1972, 154 Tex. 289, writ ref'd n.r.e.).

Commission to change the place of use, purpose of use, point of diversion, rate of diversion, acreage to be irrigated or to otherwise alter a water right. This section also authorized the Commission to adopt rules to implement the requirements of the amendments to the Texas Water Code.

Amendments to water rights are inherently uncertain. The practical experience of many seeking amendments to water rights has been that they were, in many cases, as difficult to obtain as a new appropriation. Many of the factors considered in a new appropriation are similarly considered by the Commission in determining whether to allow a proposed amendment. The TCEQ, while acknowledging that the four-corners doctrine (the Commission must assume no harm if the proposed amendment would cause no adverse effect, assuming the right has historically been exercised) is the correct legal principle to apply to an application to amend a permit in practice, places the burden on the applicant to prove that no material harm to an existing appropriator would result from the approval of the amendment and that there would be no other detrimental impacts. The Texas Supreme Court considered the direction of Section 11.134(b)(3)(C) of the Texas Water Code as sufficient justification for examination of all potential impacts of the proposed amendment beyond adverse impacts on existing water rights holders in *City of Marshall v. City of Uncertain*,⁹⁰ where the City of Marshall sought an amendment to their existing municipal permit to allow industrial use. The Commission must apply this broad scope to applications for an amended water right and grant these requests only if it is "not detrimental to the public welfare." This allows the Commission to consider the social, economic and environmental impacts of proposed amendments to water rights in addition to potential impacts on other permitted rights.

VII. HOW MUCH IS WATER WORTH?

The burning question on everyone's mind is: What is (my) water worth? While it seems a simple question, the answer depends on so many variables that it cannot be answered without a frame of reference. Examination of other areas of the country where a water market has historically operated provides little guidance in valuing water resources in Texas.

There are a myriad of ways of valuing water and treatises have been written on preferred models for determining how water as a commodity should be valued. Obviously, one can look at the economic benefit derived from the specific use or uses of the water, and place a value on the water based upon the net benefit to the user. This creates a wide disparity in the value of water used for commercial industrial or municipal purposes vs. domestic or agricultural uses. Indeed, this wide disparity raises concern among agricultural and rural interests, given the inevitable economics of commodities moving to the highest willing buyer price; substantially more in the case of industry or water purveyor use versus agricultural use. Given that more than 50% of the state's water use is devoted to agriculture, the lure of the value of water is viewed as a threat to current agricultural use.

Current Texas law prevents any kind of statewide analysis of the unit value of water. For instance, permits to withdraw water from the Lower Rio Grande have been transferred

⁹⁰ 206 S.W.3d 97 (Tex. 2006).

throughout the Lower Rio Grande Valley for the last thirty years, and prices are reasonably well-defined. Similarly, a market has emerged in transferred Edwards Aquifer permit rights which have been leased and purchased for the last several years. Cities in the Panhandle and West Texas have either purchased real estate or acquired the right to produce water from real property by payment of some unit price to the landowner. These prices have varied from very low numbers (\$7 per acre-foot) to numbers reportedly approaching \$100 per acre-foot. The City of El Paso has purchased real property, both ranch land and irrigated farmland, with the intention of producing and conveying the water to the City for municipal use.

Many variables affect the value of groundwater "owned" by the surface landowner. Obviously, the location of the land in relation to a potential demand or buyer plays a substantial role in the value of the water. The capital cost of facilities necessary to extract and deliver the water and the operating costs of those facilities also play a substantial role. The quality of the water and the need to treat the raw water likewise substantially affects its value. Nature and the extent of treatment required can radically alter the value of a water resource to a potential buyer. Sustainability of production is a factor in determining the value of a groundwater resource. Numerous other factors affect value, including the existence of a groundwater district and the nature of rules regulating production, historical vs. projected use, impact on the resource and sustainability of the production. Value of water will necessarily require a careful analysis of each situation considering all of these variables.

The value of water is directly related to the sustainability of the water supply, the cost of moving the water to the location of use, the quality of the water and the regulatory impediments to completing the transaction and delivering the water. For these reasons, water in a river or in the ground is less valuable than water in a pipeline available for delivery. Water requiring extensive treatment is clearly less valuable than water that is of potable water quality. Water can be incredibly pure and easily accessible, but if it is not sustainable over a substantial period of time, the capital cost to obtain the water may prohibit a transaction. Finally, uncertainty in terms of the regulatory environment has a negative influence on the value of water. In the limited instances where an active market has occurred in water in Texas (the Lower Rio Grande Valley and the Edwards Aquifer) a combination of hydrologic facts and a clean and clear regulatory environment facilitate the development of a market in the transfer of rights from one user to another. These markets are particularly facilitated by the ability to move the diversion point for the water right permit with predictable consequences. In most other water resources in the state, it will be difficult to develop new diversion points. Therefore, the ability to transport the water from the place of production or diversion will be critical. Transfers that involve using the rivers and streams of Texas as the conveyance mechanism to improve instream flows throughout Texas may play a large role in facilitating water transfers, and SB-1 provisions amending § 11.042 of the Water Code seem to anticipate this outcome.

Recognition by the state and its citizens of the value of water will propel and fuel an emerging market in water resources. Governmental limitations on this market generally will frustrate, impair or artificially inflate the cost or value of water and must, over time, be reduced or eliminated. Restrictions on movement of surface water through ridiculous requirements for approval of interbasin transfers devalues historical, senior surface water rights throughout the State of Texas. Landowners with these permits cannot obtain their real value in today's Texas water market.

Groundwater resources likewise can be devalued by governmental restrictions or regulations in the form of groundwater district rules limiting or prohibiting (or punishing through fees) export of water from the district. These types of rules are a direct threat to landowners realizing the true value of the water resources they own under Texas water law.

It is reasonable to assume that there will be a renewed focus on development of groundwater resources. We are beginning to see the development of landmen securing leases and promising landowners royalty payments when deals are struck. Real estate transactions are occurring that have more to do with water than with use of the surface estate. Landowners' ability to participate in the market will be highly variable depending upon numerous factors, including whether the water has been produced by the landowner historically, the size of the area, the productivity of the resource, and proximity to demand.

Texas is decades away from a commodity-priced water market. Transactions and projects will help alleviate future demands, but organized, centralized or commodity-based selling and buying of water is impossible to achieve in the current regulatory and legal environment.

VIII. WATER UNITS

Water is measured and billed or sold using units of measure that are often unfamiliar to those not in the water market. Although many water utilities bill their retail customers in units of cubic feet, those involved in the water market often quote prices or costs in units of 1,000 gallons or in units of acre-feet. An acre-foot of water is the amount of water necessary to cover 1 acre of land 12 inches deep in water. It equals 325,860 gallons. An average residential family of four uses between one-third to one-half of an acre-foot per year of water. Depending on the location and the amount of rainfall during the year, an irrigation farmer may use anywhere from a half an acre-foot per acre to up to four acre-feet per acre to raise crops. Residential retail rates for water utilities in Texas vary widely and many have inverted block rates to discourage excess consumption. Most retail water utilities deliver water to homes for between \$750 per acre-foot to approximately \$1,800 per acre-foot. At a price of approximately \$750 per acre-foot and \$1,000 per acre-foot, a residential retail customer is paying between \$2.50 and \$3 per thousand gallons of water.

Since this is a retail price, it includes the cost of acquiring the water, the cost of treating the water, the cost of storing the water and the cost of transmitting and delivering the water to the customer, as well as the operation and maintenance cost associated with a functioning utility. Often, the cost of the water itself is a minor component of this overall retail cost. As the price of water increases over time this will clearly change.

IX. ANNUAL VS. PERMANENT ACQUISITION COST

Great care should be taken when comparing reported prices for water. This is particularly true with regard to numbers reported in the press when comparing projects or proposals. The difference is analogous to leasing a home or purchasing a home. For instance, Edwards Aquifer permit rights in the San Antonio area can be either leased on an annual basis or permanently acquired. Depending on the term of the lease, Edwards' rights can be leased for an

annual cost of between \$100 and \$250 per year. At the end of the lease term, the water right continues to belong to the lessor and no permanent transfer has occurred. Permanent acquisitions of Edwards' rights have been reported with prices ranges from \$5,000 per acre-foot to in excess of \$6,000 per acre-foot. This involves a permanent conveyance of the water right from the owner to the buyer, entitling the buyer to make use of this water right year after year in perpetuity. Likewise, in the Lower Rio Grande Valley, permanent water rights are conveyed and transferred on a permanent basis for a one-time cost of between \$1,800 and \$2,500 per acre-foot.

Permanent acquisitions are separate and distinct from the delivered cost of water obtained by a purchaser through the construction of a project. For instance, the San Antonio Water System's contract with the Lower Colorado River Authority contemplates delivery of surface water to the San Antonio Water System Distribution System at an annual cost of approximately \$1,300 per acre-foot. The City of San Antonio has also entered into agreements with landowners over other aquifers to pay those landowners an annual price for each acre-foot of groundwater delivered to the City of San Antonio. The City then undertakes the capital cost of producing and transmitting this water to its distribution system for use by its customers. In the Carrizo-Wilcox aquifer east of San Antonio, water rights are being leased by the City for an initial price of approximately \$62.50 per acre-foot, with the price escalating over time. The City has also entered into contracts with landowners over the Trinity Glen Rose aquifer north and west of San Antonio for prices ranges between \$150 to \$450 per acre-foot for produced groundwater. The \$450 per acre-foot groundwater is actually delivered by the landowner to the San Antonio Water System where the \$150 per acre-foot water must be produced by the City from wells installed and maintained by the City itself.

X. RAW WATER COST

Raw water cost or value likewise varies depending upon a number of factors. Among the factors having a distinct influence on the value of raw water are:

1. Impediments to transfer;
2. Availability of supply;
3. Reliability of supply;
4. Distance of supply from demand;
5. Cost of production;
6. Quality;
7. Sustainability; and
8. Environmental/political issues.

XI. “RAW” WATER VALUES

The value of raw water (i.e. water in a river or a groundwater formation) is subject to the many variables affecting its marketability. The location of the water vs. the location of need has a profound affect on water values. The further away the water is the less valuable it is to a buyer given the cost of moving it to its needed location.

The quality of the water also has a profound affect on its value. Surface water must be treated before it can be used for potable purposes, but can often be used for industrial and irrigation purposes with no treatment. Many groundwater sources produce groundwater in near potable condition requiring only disinfection before delivery to customers while other groundwater must be treated at some additional cost in order to render it suitable for municipal use.

Reliability and sustainability also have a profound affect on the water value. Surface or groundwater which may not be available during drought is far less valuable than water which can be assured to be available under all weather conditions. Likewise, producing groundwater from an aquifer which does not recharge or recharges slowly, may not have as much value as water from an aquifer which is constantly replenished through recharge.

Many other factors affect the value of water or a water right, including increased demand, regulatory requirements, environmental considerations, political considerations, and third party impacts all can affect the value of a water right.

Many of the river authorities in the State of Texas own and manage water resources in their river basin. Many offer to provide water from these sources at a “raw water” cost.

The Lower Colorado River Authority offers raw water to customers for \$126 an acre-foot/year and requires anyone wishing to contract for this water to pay \$63 an acre-foot/year to reserve the water while efforts are undertaken to accept delivery of the water.

The Guadalupe Blanco River Authority established a rate of \$100 per acre-foot per year for committed firm yield water on October 1, 2007. One of GBRA’s customers has petitioned the TCEQ for review of the reasonableness of this rate. Other river authorities in Texas have similar raw water charges depending upon the cost of infrastructure necessary to deliver the committed water. All of these quoted costs are annual costs.

XII. GROUNDWATER LEASES OR SALES

There is a great deal of market activity involving long term leases or agreements to purchase produced water. In the Edwards Aquifer region, there are numerous short-term (one to 10 year) lease transfers calling for annual payments by the lessee to the owner of the Edwards’ permit. These transactions are facilitated by a predictable regulatory framework within which Edwards’ rights can be transferred from one user to another. Depending on term, circumstance and weather, annual payments can range from as low as \$100 per acre-foot per year to as high as \$250 per acre-foot per year.

Leases with landowners typically involve surface access and easements and the agreed upon price may reflect the effect on the landowner's property. Groundwater lease prices can range from as low as \$50 per acre-foot/year to as high as \$250 to \$300 per acre-foot/year. Raw water prices paid for leases of Carrizo Groundwater by various entities involved in Carrizo Groundwater projects have ranged between \$62.50 to as high as \$100 per acre-foot/year.

Brackish Groundwater requiring substantial treatment has a substantially discounted value from these numbers.

XIII. SURFACE WATER LEASES

Leases of surface water are highly location dependent and no average price can be reported. However, leases of this type typically are accomplished when additional water can be made available for a higher and more productive use with payment to the original owner.

XIV. PERMANENT GROUNDWATER ACQUISITIONS

Permitted groundwater rights within the jurisdiction of a groundwater conservation district, to the extent they are transferable, may be bought or sold on a permanent basis. Acquisitions conveyances and reservations of groundwater rights are common throughout Texas and the value of those rights is highly variable depending upon location, regulatory framework and the other factors listed above. The City of El Paso has acquired properties in other counties for a permanent acquisition cost and lease back to the original surface owner arrangement that reflects a value of the permanent right somewhere in the \$1,000 to \$1,500 per acre-foot range. Groundwater rights in the Panhandle are routinely bought and sold for amounts substantially less.

Transactions in Edwards Aquifer rights have been reported in the \$5,250 to \$5,700 range in the last 12 to 18 months. These rights are transferable with very little restriction. The Edwards' market has a limited number of potential sellers (less than 1,000) and an overall limit on permitted withdrawals. The effect of the Legislature's expansion of this limit from 450,000 acre-feet to 572,000 acre-feet remains to be determined. While it might be assumed that the value would decline, it should be noted that virtually all of the 572,000 acre-feet of permitted rights now authorized were previously required to be recognized by the EAA in its permitting process.

XV. PERMANENT SURFACE WATER ACQUISITIONS

The only functioning market in surface water rights is in the Lower Rio Grande Valley where water rights can be transferred from one diversion point to another with predictable and reliable consequence. Class B irrigation rights are convertible to municipal and industrial use with a reduction in amount and are routinely acquired by utilities seeking additional water supply. Reported permitted acquisition prices range from \$1,800 to \$2,500 per acre-foot. Municipal and industrial permits with greater reliability presumably have a greater value but are not routinely transferred from one user to another.

XVI. OIL AND GAS USE

The rise in oil and gas prices has invigorated drilling and production techniques to recover harder-to-recover oil and gas reserves using, among other things, high pressure fracturing of geologic formations with water. Barnett Shale area exploration and production companies and E&P companies in other parts of the state need bulk quantities of water for short periods of time to conduct these operations. Owners of water rights potentially available for this use have found these companies remarkably willing to pay much higher prices for water than would typically be obtained for longer term raw water sales or leases. While there is no benchmark or average available, often the only alternative available to the operator is water transported to the site by tanker truck. Any price paid less than the cost of delivering well water by tanker truck would be desirable to the oil and gas operator. Given the potentially remarkable returns from these investments, the price of raw water for completing production is a minor component of the cost equation.

XVII. CONCLUSION

Water values and prices are highly localized and variable, influenced by a number of factors. As in nearly all markets, fundamental principles of supply and demand have a predictable affect on water value. Less predictable are variables related to reliability, quantity, distance, quality, regulatory overlay, or other environmental or political considerations. The ability to deliver the water to the location of need reliably at the quality required can substantially increase the value of the water, as evidenced by bottle water sales in areas with available retail supplies. Evian and Perrier are the best examples of delivering water across vast distances at a predictable, reliable and consistent quality to retail shelves across the nation at the reasonable cost of approximately \$4,000,000 per acre-foot.