ABA Section of Environment, Energy, and Resources
AMERICAN BAR ASSOCIATION

Water Resources Committee Newsletter

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FROM THE CHAIRS

David Johnson and Sorell Negro

Water Resources is proud to present its second newsletter of the 2015-2016 bar year with thanks to our hard-working newsletter vice-chair Jeff Kray of Marten Law (jkray@martenlaw.com). In soliciting articles for this newsletter, the committee chose a broad theme. It paid off with six well-researched and written articles—perhaps the most robust edition of the newsletter in the past few years.

In our first article, Sean Hood discusses current developments in the Arizona general stream adjudications, which date back to 1974. In that time, repeated fights over procedure and years of tribal water rights negotiations had slowed down the court's ability to adjudicate any contested water rights. 2015 saw a major shift as the court heard arguments over water to one of Arizona's lesser-known gems, the Aravaipa Canyon Wilderness Area, and specifically about the extent of the federal government's reserved rights claims to water in that watershed.

The second article, by Christine M. Reed and Tarik Abdel-Monem, traces Nebraska's implementation of Integrated Management Planning (IMP) to its bifurcated surface water and groundwater management systems. Despite tension and some criticism, the authors believe that the IMP is more flexible and adaptable for resolving future water conflicts and has the potential to react effectively to uncertain climactic stressors.

Professor James O'Reilly illustrates a scary scenario in today's fracking industry: abandoned wells, dissolved LLCs, and surface water ponds containing many millions of gallons of thorium, radium, and other elements. Professor O'Reilly recounts a number of the legal impacts of those legacy fracking sites and provides counsel to attorneys who may find themselves representing the successor-in-interest, the insurer to those sites, or the public group trying to force a cleanup.

Nitrates discharged from Iowa's subsurface drainage systems are blamed by many for high nitrate concentrations in Iowa's rivers, writes Thomas Dutton of Greenburg Traurig. Ending this problem won't be easy—tile drainage from Iowa's corn and soybean fields is promoted by Iowa law, protected by Iowa courts, and not currently regulated by the Clean Water Act permitting system. Without any other recourse, the Iowa water supply industry has resorted to an age-old resolution strategy: litigation. And in January 2016, this case was certified to Iowa's Supreme Court to determine whether Iowa's agricultural interests will be forced to share the increasingly expensive burden of supplying clean drinking water.

Authors Timothy J. Perry and Chad D. Drummond set the stage for the Florida Springs and Aquifer Protection Act, which goes into effect on July 1, 2016. The new law responds to a number of water-

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Jeff Kray, Editor

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related challenges facing the State of Florida, including protecting Florida's world-famous springs and surface waters; funding and promoting alternative water supply projects, watershed protection programs for Lake Okeechobee, the Calooshahatchee River, and the St. Lucie River; and the expanding the Central Florida Water Initiative where the limits of sustainable groundwater use have been reached.

Finally, Derek Seal writes about Texas cities' increasing use of groundwater for water supply needs and public and private opposition to such plans. Mr. Seal's article provides an overview of four intertwined issues that attorneys may encounter if involved in developing a groundwater supply project in Texas or beyond: (1) ownership of groundwater, (2) regulation of groundwater, (3) production limits of groundwater, and (4) transportation of groundwater.

David Johnson *and* **Sorell Negro** *are co-chairs of the Water Resources Committee.*

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ARIZONA'S GENERAL STREAM ADJUDICATIONS: AFTER MORE THAN 40 YEARS, CONTESTED WATER RIGHT CLAIMS ARE FINALLY BEING LITIGATED

Sean T. Hood
Fennemore Craig, P.C.

2015 was a benchmark year in the long history of Arizona's general stream adjudications, which dates back to 1974. After decades spent focused on Indian water right settlements, briefing and conducting appeals concerning various legal issues, and other delays, a set of contested water rights were finally litigated in *In re Aravaipa Canyon Wilderness Area*, a contested case to resolve reserved water right claims asserted by the federal government for the Aravaipa Canyon Wilderness Area (Aravaipa).

Indications are that *In re Aravaipa Canyon Wilderness Area* is not an anomaly. Rather, it foreshadows a fundamental shift in priorities towards posturing water right claims for discovery and trial. The adjudications are lawsuits, after all, and getting down to the business of litigating these claims is of paramount importance if real progress is to be made toward resolving the roughly 100,000 individual water right claims that have been filed.

Background on Arizona's General Stream Adjudications

Arizona's general stream adjudications are lawsuits established by statute for purposes of resolving competing claims to water sources that are appropriable under Arizona law or are subject to claims under federal law. Under Arizona law, only surface water is appropriable. A.R.S. § 45-141(A). Groundwater is not appropriable, but is instead available for use pursuant to the doctrine of reasonable use. *In re Gen. Adjudication of All Rights to Use Water in Gila River Sys. & Source* ("*Gila III*"), 195 Ariz. 411, 421 (1999). Therefore, with respect to Arizona state law water right claims, the adjudication only resolves claims to surface water. In contrast, federal claims to groundwater are subject to the jurisdiction of the adjudications. A.R.S. § 45-251(2) and (7); A.R.S. § 45-252(A).

Water right claimants must submit statements of claimant (SOCs) describing their water right claims to be adjudicated. This process involves determining the validity of each water right claim, quantifying each valid claim, and establishing a priority date, place of use, and other legal attributes for each water right.

The adjudications trace their beginnings back to 1974, when the Salt River Project (SRP) filed a petition to adjudicate competing claims to the Salt River. Additional petitions were filed over the next several years to adjudicate competing claims to the Verde River, the San Pedro River, the Santa Cruz River, the Gila River, and the Little Colorado River.

There are two general stream adjudications currently pending in Arizona. The Salt River, the Verde River, the San Pedro River, and the Santa Cruz River are all tributary to the Gila River, and the adjudications of competing claims to these waters have been consolidated into a single proceeding, *In re the General Adjudication of All Rights to Use Water in the Gila River System and Source,* Nos. W-1, W-2, W-3, and W-4 (Consolidated) (the "Gila River Adjudication"). Competing claims to the Little Colorado River remain subject to a separate proceeding, *In re the General Adjudication of All Rights to Use Water in the Little Colorado River System and Source*, No. 6417 (the "Little Colorado River Adjudication"). The adjudications extend to claims not only to the mainstem of each river, but also to other surface waters that are considered part of "the river system and source," A.R.S. § 45-252(A), e.g., waters flowing in tributaries.

The Honorable Mark H. Brain presides over both adjudications with the assistance of Special Master Susan Ward Harris.

The Federal Government Maintains More Than 15,000 SOCs Claiming Water for Non-Indian Federal Lands in Arizona

When Congress enacts legislation creating a federal reservation, appurtenant water is reserved to support the reservation if "previously unappropriated waters are necessary to accomplish the purposes for which the reservation was created." *Cappaert v. United States*, 426 U.S. 128, 139 (1976). These federal reserved rights are the source of great conflict between federal interests and state law water users, and this conflict is intensified in the arid Southwest, where water resources are particularly scarce.

Federal reserved rights are generally superior to state law rights for several reasons. For instance, in contrast to appropriative rights under Arizona law, federal reserved rights are not subject to forfeiture or abandonment, their quantification is not restricted by the doctrine of beneficial use, and they enjoy some measure of enforcement against junior groundwater uses. Moreover, it is likely that a junior federal reserved right holder will eventually attempt to enforce its right against preexisting state law groundwater uses. During trial in *In re Aravaipa Canyon Wilderness Area*, counsel for the federal government asserted that such enforcement would be "completely violative of water law." However, the federal reserved right claimants refused to renounce the argument.

Arizona's state law water users must compete with the federal government for the right to use the same Arizona water supplies, and, therefore, the many thousands of federal reserved right claims to Arizona's water supplies have the potential to result in serious negative impacts on Arizona state law water users.

Recognizing the significant impacts that federal reserved rights can impose upon Arizona's water resources, the Arizona legislature provided for an "early" adjudication of federal claims "in order to plan for the impacts that the federal water rights may have on the welfare of this state." 1995 Ariz. Sess. Laws, ch. 9, § 25(C) (1st Reg. Sess.). Accordingly, the adjudications are currently focused on resolving federal claims before addressing claims under state law.

The federal claims to be adjudicated first include federal reserved right claims asserted by Indian tribes, as well as claims asserted by the federal government for various non-Indian federal reservations, such as wilderness areas, national monuments, national conservation areas, national forests, and various military installations.

This is an enormous undertaking. According to the Arizona Department of Water Resources (ADWR), the federal government has submitted more than 15,000 SOCs claiming water for non-Indian federal lands in Arizona. These claims are in addition to the numerous water right claims for Indian reservations throughout the state, and they are in addition to the many claims that the federal government has not yet asserted for additional non-Indian federal reservations. Not only does the federal government assert a vast number of claims to Arizona's water resources, the quantities claimed by the government are staggering.

The federal government is not the only claimant that asserts federal reserved right claims in the adjudications. For instance, SRP, which is a federal reclamation project, claims that it is entitled to federal reserved water rights to store and use approximately 1.7 million acre-feet water from the Salt River and 236,000 acre-feet from the Verde River. SRP's federal reserved right claims are in addition to SRP's state law claims to the same water.

The United States Supreme Court has recognized that, in matters of water law, Congress has almost uniformly deferred to state law. *United States v. New Mexico*, 438 U.S. 696, 701–02 (1978). Accordingly, a reservation only receives a federal reserved right if water is necessary to fulfill the primary purposes of the reservation. *Id* at 702. Put another way, the federal government

may not obtain a federal reserved right unless it demonstrates "that without the water the purposes of the reservation would be entirely defeated." *Id.* at 700. The federal government must resort to state law for water to support secondary purposes of a reservation. *Id.* at 717.

In quantifying a federal reserved right, it should not be inferred that Congress intended to reserve all appurtenant unappropriated water. The United States Supreme Court has recognized that, when Congress has intended to reserve the entirety of a water source, it does so expressly, such as by directing that "'no further alteration of the natural water level of any lake or stream . . . shall be authorized.'" *Id.* at 710. If water is necessary to fulfill the primary purposes of the reservation, and Congress did not specify a quantity in the reserving legislation, the federal government is limited to the "minimal" amount of water needed to satisfy these purposes. *Cappaert*, 426 U.S. at 141. In construing the minimal need doctrine, the Arizona Supreme Court has held that a "precise quantity of water" must be determined for each federal reserved water right claim. *In re Gen. Adjudication of All Rights to Use Water in Gila River Sys. & Source* (*Gila V*), 201 Ariz. 307, 313, ¶ 14 (2001).

In many circumstances, the federal government's federal reserved right claims appear unhinged from the minimal needs of the particular reservation. For instance, the federal government claims 7,549 acre-feet of groundwater per year for Fort Huachuca, an Army installation in Sierra Vista, Arizona. This claim exceeds actual on-base groundwater use by more than 700 percent. The 7,549 acre-feet quantity claimed in the government's SOC No. 39-10774 does not match the groundwater quantities calculated in an expert report submitted by the government in *In re Fort Huachuca*. Current and historical water use, along with practical constraints arising in connection with the federal government's obligations under the Endangered Species Act, would indicate that the federal government will never pump any quantity remotely approaching 7,549 acre-feet in a year. The federal government's expansive claim appears to be motivated, not by a desire to secure additional water supplies, but by a desire to wield significant enforcement capabilities within the watershed, i.e., the ability to shut down other groundwater users. This conclusion is supported by the deposition testimony of the former Chief of the Environmental and Natural Resources Division at Fort Huachuca and by the testimony of the witness designated by the federal government to quantify its groundwater claim.

Discovery on the federal government's federal reserved right claims for Fort Huachuca is ongoing as of the date of this publication, and *In re Fort Huachuca* is scheduled for trial in the fall of 2016. Two other federal reserved right cases, *In re San Pedro Riparian National Conservation Area* and *In re Redfield Canyon Wilderness Area*, are in active discovery and are expected to proceed to trial within the next couple of years.

The federal government's claims for Aravaipa were the first to be subjected to full discovery and to be readied for trial. At long last, litigation of water claims in Arizona is under way.

In re Aravaipa Canyon Wilderness Area

Aravaipa Creek is a tributary of the lower San Pedro River. Throughout this article, "Aravaipa" is used to refer to the wilderness area, while "Aravaipa Creek" is used to refer to the creek that originates upstream of Aravaipa, passes through Aravaipa, and continues downstream to its confluence with the San Pedro River. A portion of Aravaipa Creek runs through Aravaipa, which was first established in 1984 and was later expanded by Congress in 1990 to include additional acreage. Upstream and downstream of Aravaipa, Aravaipa Creek passes through lands used currently and historically for ranching and agriculture, as well as lands owned by The Nature Conservancy (TNC).

The federal government asserted a variety of federal reserved water right claims for Aravaipa. The federal government also maintains a variety of state law claims to Aravaipa Creek flows and

waters from springs and captured in stock tanks. These state law claims will be resolved in a future contested case. The federal reserved water right claims for Aravaipa include claims for monthly median flows in Aravaipa Creek, flood flows in Aravaipa Creek, water discharged from springs, and water captured in stock tank impoundments. The federal government also asserts a claim to any other unidentified waters occurring within Aravaipa ("Unidentified Water Sources"). Judge Brain entered summary judgment denying the federal government's stock tank claims, finding that they are not necessary to fulfill the primary purposes of the reservation.

As its representatives testified at trial, the federal government's claims to these various water sources represent the government's attempt to quantify the entirety of the natural hydrograph. In a prior phase of the case, the federal government had unsuccessfully requested a ruling that it is entitled to all water within Aravaipa as a matter of law.

The federal government was supported in the litigation by SRP, and by the San Carlos Apache Tribe and the Tonto Apache Tribe (the Tribes). The federal government, SRP, and the Tribes (collectively, the "Federal Parties") each asserts federal reserved right claims to various water sources in Arizona, and they each contended generally at trial that Aravaipa's minimal water needs are all of the water, all of the time.

For instance, SRP's position is that the federal government's decree, rather than identifying any specific amount of water for the reserved right, should "state that the United States is entitled to all of the remaining flow, after senior rights are satisfied." SRP acknowledges that its proposal contemplates a decree that "would not specify a 'precise quantity'" of water. This would be inconsistent with binding case law requiring precise quantification when decreeing non-Indian federal reserved rights. *Gila V*, 201 Ariz. at 313, ¶ 14.

The federal government's claims to the entirety of the natural hydrograph were opposed by Freeport Minerals Corporation (Freeport), the Arizona State Land Department, and a *pro se* water right claimant named Kathy Sergent. These parties (the State Parties) rely on Arizona state law to support their respective uses of surface water and groundwater. They are concerned that awarding the federal government expansive federal reserved water rights in excess of the minimal needs of each respective federal reservation will have significant negative implications for water users relying exclusively on state law access to surface water and groundwater.

The federal government supported its claims for Aravaipa with testimony from the hydrologist who quantified the government's claims, as well as the testimony of two ecologists who described the native fish and riparian vegetation within Aravaipa.

SRP retained three experts of its own—a hydrologist, an aquatics ecologist, and a riparian ecologist—to testify in support of the government's claims.

The testimony of the federal ecologists generally consisted of the assertion that there is no circumstance under which it would be acceptable to remove any water from Aravaipa Creek. For example, SRP's aquatics expert testified that he would even disapprove of the extraction of a five-gallon bucket of water from Aravaipa Creek, because, "if you remove a five-gallon bucket, I think it would have potentially a negative effect." The federal ecologists maintained this inflexible position even though they agreed that Aravaipa's riparian and aquatic ecosystem remains well functioning despite a long history of upstream agricultural diversions and other anthropogenic impacts on Aravaipa.

Freeport presented the testimony of a hydrologist who reviewed and critiqued the federal government's approach to quantifying its claims. Freeport also presented testimony from a terrestrial and aquatic ecological expert who evaluated the federal ecologists' claims that the native fish and riparian vegetation require "all of the water, all of the time." Freeport's expert opined that, in

this ecosystem, the base flow of Aravaipa Creek is important for supporting the ecology within Aravaipa. He also acknowledged that flood flows perform a number of functions that are beneficial to the ecology. However, he also explained that some flood events include water that is excess to Aravaipa's ecosystem and is not required to support the ecology. Freeport's expert developed a set of criteria for identifying the circumstances in which extractions can safely be made without any risk to the ecosystem. Freeport requested that these scientific criteria be incorporated into the decree for Aravaipa.

Freeport's expert also testified that these extractions would be subsumed in the significant seasonal and annual variability exhibited by this dynamic ecosystem. SRP's riparian ecologist agreed that he would be unable to determine whether a change within the dynamic ecosystem that occurs in the future is attributable to extraction of a portion of flood flow or from the variation in flows that exists naturally.

On this basis, the court's technical advisor is in accord with Freeport's expert's recognition that some flows can be extracted without impairment to the ecosystem. ADWR does not represent the interests of the State of Arizona in the litigation, but is designated as the court's technical advisor in the adjudications. A.R.S. § 45-256(A). In that role, ADWR prepared a report concerning the federal government's claims, and ADWR "concluded that it is not correct that *any* human-induced alterations would have negative effects as is self-evident by the degree of natural variability shown in the precipitation and streamflow records for Aravaipa Creek." See ADWR Report, available at www.azwater.gov/azdwr/SurfaceWater/Adjudications/documents/CHAPTERS_000.pdf, p. 3–18 (emphasis in original).

The State Parties also presented testimony about the potential ramifications of granting the federal government an overly expansive water right. For instance, Ms. Sergent testified about her water uses on her ranch located within and adjacent to Aravaipa, and the impacts to her livelihood and business if an overly expansive water right is awarded to the federal government. The State Parties expressed concern that, if the federal government receives a blank check right to "all of the water, all of the time" within Aravaipa, Ms. Sergent may be precluded from ever developing a new stock tank or using a new well, even if her uses will never impact monthly median stream flows in Aravaipa Creek. Moreover, if the government is ultimately successful in enforcing its federal reserved rights against existing groundwater uses, Ms. Sergent's entire operation could be placed in jeopardy. The State Parties explained that these potential outcomes extend to the other members of the traditional ranching and farming community that neighbors Aravaipa.

The State Parties also articulated why Ms. Sergent's concerns resonate for state law water users across Arizona. Over ninety federal wilderness areas have been established by the federal government throughout the state of Arizona. The federal government's claims for Aravaipa are just the first set of claims that the government will eventually bring forward seeking "all of the water, all of the time" for these wilderness areas. This will call into question the ability of state law water users to initiate new water uses, or to even continue existing water uses across the state.

On February 5, 2016, the parties submitted written closing statements and proposed findings of fact and conclusions of law. Also pending is Freeport's motion for judgment as a matter of law pursuant to Rule 52(c), Arizona Rules of Civil Procedure, concerning the federal government's claims to waters from springs and Unidentified Water Sources. The case is now fully submitted and is under advisement with the court.

Water Right Claimants Bear the Burden of Proving Each Element of their Claims

One theme in the *In re Aravaipa Canyon Wilderness Area* trial was the State Parties' position that the federal government failed to

bring forward adequate evidence to support its claims. As claimant, the federal government bore the burden to prove each element of its claims to stream flow, flood flow, and waters from springs. *See, e.g., Arizona v. California*, 460 U.S. 605, 637 (1983). However, the government in its case failed to quantify the amount of water needed to support the native fish populations or the riparian vegetation within Aravaipa. Documents obtained through discovery demonstrate that the federal government's "all of the water, all of the time" approach was developed as a surrogate for performing the work necessary to establish the minimal needs of the reservation.

For instance, the federal government's consultant prepared a report outlining the types of analyses that could be implemented to scientifically evaluate and quantify the water needs of Aravaipa. The report outlines how the water needs of the native fish and the riparian vegetation could be separately evaluated and quantified, including modeling to assess the need for various magnitudes of flood flows. However, the federal government elected not to perform any of this work and did not bring forward such scientific evidence at trial.

With respect to its claims to water from several springs and Unidentified Water Sources, the federal government claimed "the measured flow and corresponding volume per annum." However, at trial the government conceded that it had not collected enough spring discharge data in order to characterize the natural discharge of any of the springs. In fact, the government had zero discharge measurements for several of the springs, including, of course, any Unidentified Water Sources. In its Rule 52(c) motion, joined by the Arizona State Land Department, Freeport contends that the government failed to adequately quantify these claims and also failed to demonstrate that, without these waters, the primary purposes of the reservation would be entirely defeated.

Continued Progress in Arizona's General Stream Adjudications

Arizona's water users collectively suffer from more than forty years of adjudication fatigue and understandably so. All who have been involved can agree that the adjudications have experienced too much delay and too little progress for several decades. It is remarkable that, after over forty years of pending litigation, *In re Aravaipa Canyon Wilderness Area* was the first case involving contested water right claims to proceed through discovery and trial in the adjudications. Fortunately, these recent developments appear to represent a fundamental shift towards litigating contested water right claims. Arizona's water users can take comfort that, while there remains a tremendous amount of work to be completed, claims will eventually be resolved. Of course, in order to process the roughly 100,000 pending SOCs, claimants must be prepared to meet their burdens of proof to support their claims. Accordingly, diligence is required, now more than ever.

Sean Hood *is a litigator and water lawyer at Fennemore Craig, P.C. in Phoenix, Arizona. Sean devotes a substantial portion of his practice to representing clients in general stream adjudications and other complex water rights litigation, and he served as Freeport's lead trial counsel in In re Aravaipa Canyon Wilderness Area. Sean can be reached at shood@fclaw.com.*

INTEGRATED SURFACE AND GROUNDWATER MANAGEMENT IN NEBRASKA: RECONCILING SYSTEMS OF PRIOR APPROPRIATION AND CORRELATIVE RIGHTS

Christine M. Reed, Ph.D. and
Tarik Abdel-Monem, J.D., M.P.H.
University of Nebraska

Observers of Nebraska water law have long commented on the tension the state faces between the need to adapt to uncertain and changing environmental conditions and the need to maintain stability provided by legal frameworks. Christina Hoffman and Sandra Zellmer. *Assessing Institutional Ability to Support Adaptive, Integrated Water Resources Management*, 91 Nebraska Law Review, 805, 810 (2013). This tension is reflected in recent developments in the state's experiences with integrated water management. This article first describes the bifurcated legal framework governing water resource management in Nebraska and the state Supreme Court's recent rulings on the conflict between prior appropriation of surface water and correlative rights to groundwater. This article then describes the Integrated Management Planning (IMP) process and discusses its potential in resolving such disputes.

A Bifurcated System of Water Laws

Integrated Management Planning is an approach to water resource management that recognizes the hydrological connection between surface and groundwater. Since acknowledgement of this connection came late in the history of many western states, including Nebraska, water law evolved as separate legal frameworks. The prior appropriation doctrine governing access to surface water protects the user with the most seniority. The state's Department of Natural Resources (DNR) regulates permits for beneficial use of surface water based on available supply in the state's river basins and determines priority of use based on the "first in time first in right" principle of seniority.

On the other hand, the doctrines of reasonable use and correlative rights govern access to groundwater supplies in the state. The 1975 Groundwater Management Act codified those doctrines and delegated regulatory authority over wells and pumping to the twenty-three local Natural Resource Districts (NRDs)—locally elected jurisdictions based around the state's river basins; however, the law failed to encourage integrated management of surface and groundwater resources having a hydrological connection. *Ibid*. Thus, Nebraska has two separate approaches to managing water: one for surface water and another for groundwater. In 2004, the state legislature passed amendments to the groundwater law, establishing a process for integrated water management when the DNR has designated a basin as fully or over-appropriated. This approach attempted to facilitate better integration of water management, reflecting awareness of how technological advances, such as center pivot irrigation, and uncertainty about the future contribution to river flows from snowmelt in the Rocky Mountains to the west, create the need to manage surface and groundwater as an interconnected resource. Neb. Rev. Stat. §46-715 to §45-719.

While the IMP process seeks to better address hydrologically connected water and prevent conflicts between users, its impact is limited, because a fully appropriated status triggers a moratorium only on new surface and groundwater uses; while an over-appropriated designation only requires offsets to depletions dating back to 1997. Critics have argued that these goals are not aggressive enough to equitably preserve and allocate Nebraska's water among all users, in addition to satisfying interstate and federal water obligations. The courts are also constrained, as shown by the decision in *Spear T Ranch*, 269 Neb. 177 (2005) handed down immediately after the 2004 amendments became law:

> Nebraska employs a dual water management system that applies one rule to surface water and another rule to ground water. This water law system has traditionally ignored the fact that the two resources are inextricably linked. In fact no allocation system has yet been

> devised by the Nebraska state legislature to resolve this precise conflict. In Spear T Ranch, Inc. v. Knaub, the long-approaching clash between surface and ground water users of a hydrologically connected, shared water system finally came before the Nebraska Supreme Court.

Matthew Miller. Spear T Ranch v. Knaub *and the Pitfalls of Litigious Water Management*, 60 Arkansas Law Review 591, 593 (2007). *Spear T Ranch* involved a dispute between a surface water irrigator in the Pumpkin Creek basin in northwest Nebraska who alleged that a groundwater irrigator had converted its surface water rights without compensation by pumping groundwater that was hydrologically connected to Pumpkin Creek. After reviewing the two separate systems of water law, the Nebraska Supreme Court noted that "the lack of an integrated system is reinforced by the fact that different agencies regulate ground water and surface water." 269 Neb. 177, 183. The court declined to apply the prior appropriation rule to groundwater because it "would have the effect of shutting down the irrigation wells of all later-in-time ground water users," *Ibid*, 185. It also held that the appellant could not state a claim for conversion of trespass against the appellee.

The court then pointed to the "Restatement (Second) of Torts §§858 and 850A" (1979) as a potential option for relief and remanded the case to allow the surface water user an opportunity to amend its complaint. The court further encouraged the state legislature to develop "a comprehensive administrative appropriation system, including procedures and remedies, to adjudicate direct conflicts between groundwater and surface water users in Nebraska. This would be consistent with how most legislatures in western states have addressed conflicts between water users." *Ibid*, 201. Thus, the Nebraska Supreme Court's ruling in *Spear T Ranch* indicated an unwillingness to create a broad judicial solution to surface/ground water conflicts, instead deferring to a legislative approach.

The Nebraska Integrated Management Planning Process

The 2004 amendments requiring IMPs in fully and over-appropriated river basins established a process for coordinated planning between the DNR and NRDs; however, the impact of individual and basinwide plans will be future oriented, because the role of the DNR is to facilitate plans and administrative rules to implement them, not to adjudicate previous disputes between surface and groundwater management decisions. Thus the IMP process can address only future impacts of groundwater use on the status of river basins and sub-basins.

Direct conflicts arising under the state's bifurcated system of water laws will end up in the courts; however, the impact of the *Spear T Ranch* decision is uncertain. A subsequent state Supreme Court case suggests that surface water providers and users may not be able to state a claim even under the Restatement of Torts. In *Central Nebraska Public Power and Irrigation District v. North Platte Natural Resource District,* 280 Neb. 533 (2010), the court dismissed a surface water provider's challenge to the NRD's groundwater appropriation for lack of standing, reasoning that its "purported water use interests are actually public interests, and they are attenuated from the NRD's regulation." *Ibid*, 547.

> Harm to surface water irrigators on Pumpkin Creek could, potentially, be—fairly—traced to the NRD's regulation. Central's purported injury, however, is remote. There is no limiting principle on Central's expansive theory of causation of an injury in fact, which could conceivably involve the entire water cycle from the Continental Divide to the Gulf of Mexico. *Ibid*, 545.

The Implications of Nebraska's IMP Process

Case law, as well as legislation, appear to have limited the opportunities for surface water users and other stakeholders, such as environmental

organizations, to contest the historical effects of groundwater pumping on stream flows. The question, however, is whether Nebraska's water management resource institutions have joined others in the United States and throughout the world in becoming "prisoners of history which embody past rather than present, much less future, knowledge and necessity." Hoffman and Zellmer, opt cit., 806.

Perhaps the IMP process can facilitate a more flexible approach that can adapt to weather extremes and other stressors on the hydrological cycle. A comprehensive administrative appropriation system for adjudication of direct conflicts between surface and groundwater users might offer economic certainty, but at the same time limit flexibility and innovation. Resilient social-ecological systems depend on adaptive governance, and the Nebraska IMP process to date provides a platform for doing so, if both local and state decision makers, as well as surface and groundwater providers and users, take up the challenge.

Christine M. Reed *may be contacted at creed@unomaha.edu. Tarik Abdel-Monem may be contacted at tarik@unl.edu. Dr. Reed is a professor in the School of Public Administration at the University of Nebraska Omaha. She is an associate member of the ABA and teaches graduate courses in environmental and natural resource policy and in administrative law. She has also published extensively in those areas.*

Mr. Abdel-Monem *is a research specialist at the University of Nebraska Public Policy Center. His research and publications focus on state and national policy and community engagement.*

REVERSE ALCHEMY: LEGACY EFFECTS OF WATER SUPPLIES TRANSFORMED BY FRACKING

Prof. James O'Reilly
University of Cincinnati

The water cycle of evaporation and precipitation of moisture is well understood and commonly taught in elementary and middle school science classes. Like the clouds that carry moisture to areas needing agricultural productivity, SEER members carry the rational awareness of legal consequences to those who regulate water and those who profit from water uses today. We are legal wizards, but we cannot create water from arid land. The medieval alchemists claimed a mystical ability to make gold out of ordinary metals, but we lawyers cannot claim that we can legally return billions of gallons water into that water cycle after its mingling with radioactive wastes at gas drilling sites. This article explores the legal challenges we face in dealing with man-caused contamination of water used in gas extraction drilling.

First, we recall another lesson from earth science: deep underground, the earth has thorium, radium, and other elements with measureable radioactivity in mixtures with methane in shale and other types of deep rock layers. Gas bubbles rest within that shale from millennia long past; the Halliburton Co. discovery of special gas drilling techniques in mile-long lateral drill pipes led to patented technologies for explosive shattering of shale rock, and for the flooding of that shattered shale under massive quantities of high pressure water, accompanied by sand particles, lubricants, biocides, rust inhibitors, and the like.

The extraction of shale gas through high-volume, high-pressure fractionation is a recent development, which had great economic benefit for the limited liability companies (LLC) which operate the fracking well sites. Though flooding of vertical wells to force out oil and gas has been known for decades, fracking with explosives in lateral pipes has been touted as a remarkable

advancement in patented technology. In my 2015 West textbook, *The Law of Fracking*, I have extensively analyzed the massive intake, use, and discard cycle of water in shale gas "plays."

The difficulties that geologists have faced in discerning the optimal way for flooding deep shale are not entirely solved, but the common theme is the "waste pond" approach. This uses an adjacent large surface pond receiving the liquid wastes, as the methane gas bubbles are extracted, cleaned, and sold into pipelines for export or for domestic use. The pond concentrates in sludge both the deep radioactive rock and the chemicals forced down into the well to speed extraction of methane. After the gas commodity sale price declines below costs of continuing operations, or after exhaustion of shale gas volumes for the profitable removal of more gas, a common pattern is that the well is abandoned, the LLC that drilled the site is dissolved, and the surface water pond remains in place, until and unless a fiscally viable entity pays for site remediation and liquids removal. Multiple states have many thousands of these pond sites; Delaware has no shale gas but has housed many of the dissolved LLCs and shields their past beneficial owners.

The key to today's "reverse alchemy" is what is in the pond liquid and how will its water reenter the water cycle? A residue of radium-226, thorium, and radium-228 sludge and liquid biocides in the surface ponds pervades its water. U.S. Fish & Wildlife Service studies show that the ponds are fatal attractions for birds and waterfowl who cannot survive immersion in the toxic soup. Draining the radioactive and chemical waste liquid into a nearby river would pose a threat to downstream water consumer intakes. Sucking the pond water into a truck, driving it to a local river, and dumping it onto unsuspecting downstream riparian users is a federal crime; Ben Lupo did just that in Ohio and may be released from federal prison in 2017. And Texas hauler Jason Halek was indicted in North Dakota on August 24, 2015, for thirteen counts of illegally disposing of loads of toxic fracking brine water; others in his group had already pleaded guilty of the same crime.

Reentry of this toxic fracking liquid waste into the earth's surface water and groundwater is a delicate challenge for engineers. Some advocate large waste wells that take pumped-out pond waste and force it down into deep sandstone layers. The author, a longtime Ohio city councilman, was shocked in 2011 to learn that truckloads and rail tanker loads would be coming to our area for disposal of the radioactive wastes. Radium and thorium-laced chemical sludge is a volatile form of toxic waste. The Greeley, Colorado *Tribune* published a dramatic 2015 news photo of a deep red conflagration, as its photographer captured the exploding truck of shale gas wastes when lightning struck, and the fracking waste truck was blown a hundred feet in the air . . . a colorful waste challenge indeed. Cincinnati adopted a "no injection well" law, and other communities are likewise fighting the waste hauler lobbyists over local control of the delivery of waste and its 24/7 diesel injection pumps.

SEER members working for local communities face a difficulty. While you were unaware of radioactive waste issues coming to a town near you, the gas driller and waste hauler companies had won legislation protecting them from long-tail liability. The RCRA "Halliburton amendment" of 2005 and the Superfund definitional exclusion of gas wastes will blow up any city's hopes to collect cleanup costs from the ultimate buyers of the extracted gas who carefully avoided owning the drilling sites. In Ohio, years before the risk was known, gas lobbyists won a ban on local controls of gas wastes. Nuisance ordinances don't mean much to an LLC that has dissolved in Delaware or a mega-corporate gas marketing firm that isolated itself from wrongdoing by thousands of LLC gas suppliers.

SEER members working with large insurers face a separate set of questions about the terms of their pollution insurance contracts. Who owns the problem of ponds full of post-driller, untouchable wastewater after the LLC who had operated the well has dissolved? Did the client's underwriters properly price their risks? How will the large

legacy costs of literally billions of gallons of "formerly fresh" groundwater be dealt with, e.g., in earthquake-prone Oklahoma disposal wells, or in drier states with a need for water recharging in the semi-arid ground around shale gas pond areas? West Virginia's Antero Resources announced plans to make what it called "food grade" salt from fracking waste in a disposal plant to open in 2016: would you underwrite the coverage of that food against consumer-warnings claims?

Pollution liability insurance contracts contain some tightly written exclusions. Ohio waste handlers reported about 840 million gallons of fracking waste liquids and sludges produced in, or imported into the state just in the first 9 months of 2015. This chemical "brine," with extremely concentrated chemical and radioactive issues, poses a problem in our area, as it may for your region as well. If coverage denial is litigated, will Ohio jurors side with London insurers or leave the cost of cleanup to their county's local taxpayers? Skilled lobbyists who detached gas wastes from mandatory federal cleanup requirements shifted the burdens away from profitable well drillers, onto the locals who fear pond walls will leak or injection tanks will spill under the cold cycle of freeze and thaw in northeastern U.S. shale areas.

And SEER members who counseled the Master Limited Partnerships who had overseen gas extraction may have overlooked the pond radioactivity. Natural gas bubbles of methane offered a financial lifeline for drillers. Many of the speculative investors in LLC drillers in shale "plays" are retreating under mounds of debt, yet they need to continue drilling for as long as their outflow of marketable methane is greater than their costs. Waste on a shale fracking site is a cost that a driller seeks to avoid by dissolving the LLCs when the well is plugged. Is that enough?

Finally, SEER members who specialize in liquid waste companies may fight a rear-guard action defending the "pierce the corporate veil" cases that will follow the trail of dissolved LLCs. Locally elected judges are likely to have little sympathy for London or Houston or New York investors. Already, locals are urging that state laws should be revised to compel the LLCs which are involved in gas waste and gas drilling to carry liability insurance and to name the community as additional insured for the new state-mandated postclosure cleanup bond. A waste company lawyer is already dealing with large DOT and state placarding disputes for trucks. Police and highway safety regulators can match the mandated disclosure of frack waste disposal reports with the currently used truck placards and warnings, to see if the volatility and radioactivity of fracking waste is concealed by use of placards describing the radium-laced liquids as "brine" or "saltwater." Looking for long-term clients? The liquid waste companies will need expert counselors about OSHA, FHWA, EPA Office of Criminal Investigations, FBI, DOT, and many state regulatory agencies. Glowing reports of radioactive waste sludge capabilities will flow into firms' websites as liquid waste companies search for defense counsel.

So if your client's portion of the global water cycle has involved billions of gallons of freshwater pumped down into a deep gas well, start to educate your legal team and educate the client's corporate compliance manager. Urge that financial responsibility measures should be taken by your clients before the accidents occur. Best practices for spills and pond wall liners should be followed. Urge the client to budget for and negotiate for purchase of casualty and liability coverages that will be sufficient to remediate the foreseeable worst cases. And urge the client to train, practice, demonstrate, and equip the on-site company responders, so that the waste problem of your corner of the water cycle does not explode out of control.

University of Cincinnati **Prof. Jim O'Reilly** *is author of West's "Law of Fracking" (2015), james.oreilly@uc.edu.*

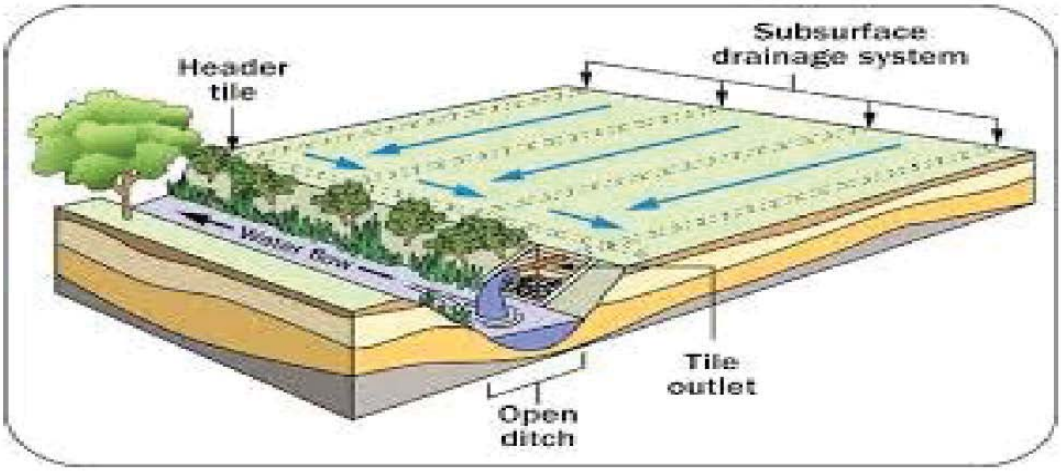
UNREGULATED POINT SOURCE DISCHARGES FROM IOWA'S FARMLAND

Thomas E. Dutton
Greenberg Traurig

Nitrates in water discharged from subsurface tile drainage systems installed under Iowa's corn and soybean fields pose a serious issue in how the Clean Water Act will be applied to long-standing agricultural practices. Under laws enacted in the 1800's to promote draining of wet, marshy lands to turn them into corn and soybean fields, farmers have installed these tile drainage systems throughout Iowa. They typically discharge the drained groundwater to a ditch, stream or river. In recent years, Des Moines has experienced increasing nitrate concentrations in one of its primary drinking water sources, the Raccoon River. Des Moines attributes increasing nitrate concentrations to agricultural tile drainage in the Raccoon River watershed. However, both federal and state regulators have taken the position that tile drainage discharges are not "point source" discharges that can or should be regulated under the Clean Water Act.

Tile drainage is a land management practice where a network of underground pipes or "tiles" is installed that allow groundwater to move out from the soil, into the tile lines, and ultimately into ditches, streams and rivers. Tile drainage created much of Iowa's fertile, highly productive corn and bean fields by removing groundwater from the poorly-draining soil deposited by glaciers that once covered much of the State. By draining saturated soil, tile drainage lowers the groundwater table, allows crops to develop healthy roots, and thereby promotes higher yields. The same principle is used in containers that hold house plants: they have drain holes in the bottom to prevent soil saturation and allow oxygen to the roots. Application of this principle to a large field is depicted in the illustration below. According to Neil Hamilton, Director of the Agricultural Law Center at Drake University, 10 million of Iowa's 25 million acres of cropland benefits from subsurface tile drainage systems.

For the past 25 years, however, tile drainage discharges have been increasingly blamed for high nitrate concentrations in Iowa's rivers. High nitrate concentrations threaten drinking water supplies in Iowa towns and cities, including Iowa's capital and largest city, Des Moines. Drainage tile discharges are also responsible for nitrates flowing out of Iowa's rivers into the Mississippi, contributing to the growing hypoxic "dead zone" in the Gulf of Mexico. Ending this problem will not be easy: tile drainage from Iowa's corn and soybean fields is promoted by Iowa law, protected by Iowa Courts, and federal and state regulators have not required permits for tile drainage discharges under the Clean Water Act.



In 2015, after three years of record nitrate concentrations in the Raccoon River, the Des Moines Waterworks Board of Trustees (abbreviated as DMWW), armed with scientific and empirical evidence linking high nitrate concentrations to drainage tile discharges into the Raccoon River watershed, concluded that it had no alternative other than to file suit. In March 2015, DMWW filed a federal lawsuit against several "drainage districts" in three rural Iowa counties within the Raccoon River watershed. *Board of Water Works v. Sac County Board of Supervisors*, Case No. 5:15-cv-04120 (N.D. Iowa) (Strand L., Judge). Counts I and II of the Complaint seek a declaration that the Drainage Districts are in violation of the Clean Water Act (or Iowa Code Ch. 455B), an injunction ordering compliance with the Clean Water Act, compliance with the National Pollution Discharge Elimination System permit program (or a state operating permit), civil penalties, and attorneys' fees. Counts III – VII allege tort claims (public nuisance, statutory nuisance, private nuisance, trespass and negligence). Counts VIII and IX allege constitutional claims (taking and equal protection).

The DMWW's lawsuit sets the stage for a classic battle between the interests of Iowa's largest metropolitan area and the agricultural interests that dominate Iowa's economy. As explained below, suing Iowa drainage districts for damages is a legal longshot. Over one hundred years of legal precedent in Iowa holds that drainage districts have unqualified immunity from suits for damages. Furthermore, while DMWW's claims under the Clean Water Act appear to have merit, the claims fly in the face of over forty years of regulatory acquiescence to the belief that discharges from agricultural sources are not "point source" discharges and therefore not subject to NPDES permitting requirements. Yet DMWW believes and argues forcefully that the special facts and circumstances of its case will: 1) convince the Iowa Supreme Court to change Iowa law and allow DMWW's damages claims, and 2) convince a federal judge that there is no exemption under the Clean Water Act that allows the Drainage Districts to discharge pollutants into the Raccoon River without a permit.

The Rising Cost of Removing Nitrates from Des Moines' Drinking Water Source Compels the City to File a Federal Lawsuit Against Several Iowa Drainage Districts

As alleged, DMWW has a strong case that tile drainage systems are to blame for its nitrate problems. The Raccoon River is a primary source of water for the DMWW and its 500,000 customers (almost 1/6th of Iowa's three million residents). Under the Safe Drinking Water Act, the maximum contaminant level for nitrates is ten milligrams per liter (10 mg/L). DMWW's ability to meet the MCL for nitrates has become increasingly difficult and expensive over the past forty-five years, as nitrate concentrations in the Raccoon River at DMWW's intake points have steadily increased since 1970. Between 1995 and 2014, DMWW alleges, Raccoon River nitrate concentrations at the DMWW intake points exceeded the 10 mg/L standard for drinking water at least 1,636 days, or approximately 24 percent of the time.

Increasing nitrate concentrations in the Raccoon River force DMWW to monitor constantly and invest heavily in advanced treatment technologies. In 1991, DMWW constructed the world's largest ion exchange facility to remove nitrates from finished water. The ion exchange facility cost $4.1 million to construct and became operational in 1992. The nitrate removal facility is designed to operate on an as-needed basis. It has a maximum capacity of 10 million gallons per day and costs up to $7,000 per day to operate. Between 1995 and 2015, the nitrate removal facility operated on 673 days.

Record high nitrate concentrations in 2013, 2014, and 2015 stretched the DMWW nitrate removal facility to its capacity. In 2013 and 2014, nitrate concentrations in the Raccoon River reached 24 mg/L. In 2013, the nitrate load in the DMWW raw water supply in one week exceeded the entire nitrate load from all of 2012. In order to comply with the Safe Drinking Water Act, DMWW used its nitrate removal facility for seventy-four days during the peak demand in summer, when customer demands average 80 million gallons daily. This caused DMWW to issue a voluntary conservation request in the summer of 2013. During that summer

alone, DMWW expended over $500,000 to treat source water burdened by excessive nitrate levels.

After nitrate concentrations continued to break records in 2014 and 2015, DMWW concluded that it will be necessary to design and construct a new nitrate removal facility with a 50 million gallon-per-day capacity before 2020. Estimates are that the initial capital cost of this facility will be between $76 and $183.5 million. Operation and maintenance costs will be incurred *in addition to* the initial capital outlays.

DMWW alleges that scientific and empirical evidence demonstrates that tile drainage causes high nitrate concentrations. In addition to studies performed by scientists at Iowa State University and the University of Iowa, perhaps the most powerful allegations are based on water samples taken by DMWW employees between March 28, 2014, and December 30, 2014. Prior to 2014, scientists had observed that unregulated, "nonpoint" sources were responsible for 92 percent of the nitrate pollution entering Iowa's waterways. Further, scientists theorized that drainage of agricultural land by tile drains can result in very high nitrate concentrations in tile drainage water. DMWW's sampling appears to confirm the scientists' theories. On forty separate occasions in 2014, DMWW staff drew water samples from seventy-two drainage locations. Testing of these samples shows that groundwater containing nitrate in excess of 10 mg/L was discharged from pipes or ditches on dozens of occasions.

In summary, the DMWW's allegations, if true, show that tile drainage systems installed by the Defendant Drainage Districts are a substantial contributing factor for high nitrate concentrations in the Raccoon River. High nitrate concentrations, in turn, have caused the city to spend millions of dollars to supply safe drinking water to over 500,000 Iowans in the past and will cause the City of Des Moines to spend tens of millions of dollars in the future.

The Drainage Districts Invoke Unqualified Immunity and Move For Summary Judgment

After answering the Complaint, the Drainage Districts quickly moved for summary judgment on the Des Moines Water Works' common law and constitutional damages claims. The summary judgment motion is based on the special status held by Iowa's drainage districts. Over a century ago, the Iowa legislature declared that draining wet, swampy lands to create more farmland was good and allowed Iowa's landowners to create drainage districts to accomplish this good:

> The drainage of surface waters from agricultural lands and all other lands, including state-owned lakes and wetlands, or the protection of such lands from overflow shall be presumed to be a public benefit and conducive to the public health, convenience, and welfare.
>
> The provisions of this subchapter and all other laws for the drainage and protection from overflow of agricultural or overflow lands shall be liberally construed to promote leveeing, ditching, draining and reclamation of wet, swampy, and overflow lands.

Iowa Code § 468(1) and (2). Under Iowa law, drainage districts have a limited existence and powers. Simply put, they are legislative entities that allow property owners to join together to make land productive through drainage. For over one hundred years, the Iowa Supreme Court has reasoned that the limited existence and functions of drainage districts entitled them to unqualified immunity from suits for damages. Iowa courts have used unqualified immunity to protect the "right" of landowners to "place tiles in swales and ditches" and have held that such a right "is necessary, in this country, in order that low and swampy lands may be reclaimed, and a denial thereof would be productive of incalculable mischief." *Dorr v. Simmerson*, 103 N.W. 806, 807 (1905). Thus, Iowa courts "have consistently held that a drainage district is not susceptible to suit for money damages." *Chicago Cent. & Pacific R. Co., v. Calhoun Cty Bd. of Super.*, 816 N.W. 2d 367, 474 (Iowa 2012).DMWW's response to the drainage districts' motion for summary judgment argues that the Iowa Supreme Court, under the special facts and circumstances of this case, would and should deny the Drainage

Districts' assertion of unqualified immunity. As the district court summarized, DMWW's reasoning consists of three main arguments: "(1) unqualified immunity for drainage districts is no longer good law and should be changed because the enactment of the county home rule undermines the rationale for unqualified immunity, which is based on limited powers; (2) unqualified immunity is not applicable here because (a) equitable remedies may be obtained against drainage districts beyond a mandamus action, or (b) the statutory presumption that drainage districts are for public benefit may be rebutted here, thereby piercing unqualified immunity in tort; and (3) it would be unconstitutional to apply unqualified immunity." *Board of Water Works v. Sac County Bd. of Super, et al.,* Order Certifying Questions for Iowa Supreme Court, Jan. 11, 2016, at 14.

In January 2016, Judge Bennett of the United States District Court for the Northern District of Iowa decided to certify the questions raised in the DMWW's brief to the Iowa Supreme Court, as follows:

> **Question 1**
> As a matter of Iowa law, does the doctrine of implied immunity of drainage districts as applied in cases such as Fisher v. Dallas Country, 369 N.W.2d 426 (Iowa 1985), grant drainage districts unqualified immunity from all of the drainage claims set forth in the Complaint (docket no. 2)?
>
> **Question 2**
> As a matter of Iowa law, does the doctrine of implied immunity grant drainage districts unqualified immunity from equitable remedies and claims, other than mandamus?
>
> **Question 3**
> As a matter of Iowa law, can the plaintiff assert protections afforded by the Iowa Constitution's Inalienable Rights, Due Process, Equal Protection, and Taking Clauses against drainage districts as alleged in the Complaint?
>
> **Question 4**
> As a matter of Iowa law, does the plaintiff have a property interest that may be the subject of a claim under the Iowa Constitution's Takings Clause as alleged in the Complaint?

Id. at 3.

DMWW's arguments have a common sense appeal. It is probably no longer necessary to promote drainage to create additional corn and soybean fields in Iowa—most of the land that can be used to grow corn and soybeans is probably being put to such use. Further, modern science has weakened the argument that draining wetlands, along with the unregulated discharge of drainage water to rivers and streams, is presumptively a public good. Finally, with Iowa's growing urban population, much of which relies on surface water for drinking water, if Des Moines can prove that the Drainage Districts are responsible for rising nitrate concentrations, it seems doubtful that Iowa's lawmakers and Courts will continue to protect farmers, drainage districts, and other agricultural interests from shouldering any of the costs from this unregulated pollution.

Tile Drainage Systems Are "Point Source" Discharges Under the Original Clean Water Act

The Drainage Districts' summary judgment motion does not reach Counts I and II of DMWW's complaint. These Counts seek a declaration that the Drainage Districts' discharges into the Raccoon River and its tributaries are unpermitted "point source" discharges in violation of the Clean Water Act. This issue will be decided in a bench trial this summer.

The Clean Water Act is designed to "restore and maintain the chemical, physical and biologic integrity of the Nation's Waters." 33 U.S.C.§125 (a). The Act prohibits the "discharge of a pollutant" by "any person" from any "point source" to navigable waters except when authorized by a permit issued

under the National Pollutant Discharge Elimination System (NPDES). 33 U.S.C. §§ 1311(a), 1342. NPDES permits are issued either by EPA or by the states in a federally approved permitting system.

The Act originally defined "point source" as "any discernible, confined, discrete conveyance, including but not limited to any pipe, ditch, channel, tunnel, [or] conduit . . . from which pollutants are or may be discharged." 33 U.S.C. §1362 (14) (Supp. III, 1973). Tile drainage systems utilized by Iowa's drainage districts appear to fall within this definition. Perforated underground pipes that are "discernible, confined and discrete," "convey" water from poorly draining soil to "pipes" or "ditches" that discharge the water into streams and rivers. Yet notwithstanding the original definition of "point source," no permits have either been applied for or issued to drainage districts. As one environmental scholar has noted, there seems to be "general acquiescence" to the idea that water channeled into the pipes and ditches of an organized drainage district retains its exempted status as unregulated nonpoint runoff. *See* Davidson, J. *Factory Fields: Agricultural Practices, Polluted Waters and Hypoxic Oceans* 9 Great Plains Nat. Resources J., 1 at p.22 (2004). In addition, there appears to be a regulatory presumption that discharges from agriculture, and in particular from cultivated crops, are not "point source" discharges.

Although the CWA does not define a nonpoint source, it appears that lawmakers and EPA regulators believed that most agricultural discharges occur naturally into streams and rivers and are nonpoint source discharges. As Senator Dole remarked in 1971, "Most of the problems of agricultural pollution deal with nonpoint sources. Very simply, a non-point source of pollution is one that does not confine its pollution discharge to one fairly specific outlet, such as a sewer pipe, a drainage ditch or a conduit; thus, a feed-lot would be considered a non-point source as would pesticides and fertilizers." S. Rep. No. 92-444, at 98–99 (1971).
Senator Dole's remarks, however, were not made with subsurface tile drainage systems in mind. As the Ninth Circuit noted in the context of stormwater runoff, a "source is a nonpoint or point source under [section 1362(14)] depending on whether it is allowed to run off naturally (and is thus a nonpoint source) or is collected, channeled, and discharged through a system of ditches, culverts, channels and similar conveyances (and is thus a point source discharge)." *Northwest Environmental Defense Center v. Brown*, 640 F.3d 1063, 1071 (9th Cir. 2011), *reversed on other grounds*, *Decker v. Northwest Environmental Defense Center*, 133 S. Ct. 1326 (2013). Under this logic, drainage of groundwater from cultivated croplands, without more, would be a nonpoint source, while drainage of groundwater from cultivated croplands into a series of subsurface, perforated pipes channeling groundwater to an outlet or ditch and then into streams or rivers would be "point sources" under the Act's original definition.

The language and legislative history of the original Clean Water Act does not support a blanket exemption of all agricultural discharges as "nonpoint" discharges. Indeed, after the Act's passage in 1972, the EPA administrator proposed regulations that would have excluded "discharges of pollutants from agricultural . . . activities, including irrigation return flow and runoff from . . . cultivated crops" from the permit requirements of Section 402. 40 CFR § 125.4 (1975). Facing a legal challenge to these regulatory exemptions, EPA argued that "the exempted categories of sources are ones *which fall within the definition of point source* but which are ill-suited for inclusion in a permit program." *Natural Resources Defense Council v. Train*, 396 F. Supp. 1393, 1395 (D.D.C. 1975) (emphasis added). EPA maintained that pollutants were best eliminated from agricultural discharges by 'process changes' which prevent pollutants from entering rainwater runoff rather than by treatment of discharges by the 'end-of-pipe' method. Further, EPA believed that without the regulatory exemptions, the tremendous number of sources would make the permit process unworkable. Finding that Congress "gave no indication that it approved exemptions for other categories of point sources," the Court in *Natural Resources Defense Council, Inc. v. Train*, held that the EPA administrator "cannot lawfully exempt point sources discharging pollution from regulation under NPDES." 396 F. Supp. at 402.

Tile Drainage Systems Do Not Fall Within Legislative Exceptions to NPDES Permits

After EPA's failed attempt to exempt from permitting under NPDES all point source discharges from agricultural activities, Congress has amended the definition of point source on two occasions. The first amendment, in 1977, changed the definition of point source to specifically exclude "return flows from irrigated agriculture." This statutory exemption, however, does not appear to apply to farms in Iowa, as most of the Iowa farms rely on rainfall, not irrigation. Indeed, the farms that use tile drainage in Iowa are concerned about removing water from corn and soybean fields and lowering the groundwater table. These farms do not need or use "irrigation."

Congress again amended the definition of point source in 1987, this time to exclude "agricultural stormwater discharges." It does not appear that discharges from tile drainage tile systems on Iowa farms fits within this statutory exemption either. First, Iowa's tile drainage systems do not handle and were not designed to handle stormwater *runoff*. Iowa's tile drainage systems are several feet below ground. The drainage systems are intended to remove water from saturated soil—draining *groundwater*—and thereby lowering the groundwater table. Discharges from these subsurface tile drainage systems occur constantly and not only during periods of precipitation. Further, stormwater "runoff" as the DMWW alleges, does not really result in the discharge of nitrates into streams and rivers. Runoff, because it does not have time to leach through the soil, into the groundwater, before flowing into streams and rivers, does not pick up the nitrates that exist in Iowa's nutrient-rich soil.

There is some indication that federal courts may be willing to interpret "agricultural stormwater discharge" as exempting *any* agricultural discharge that results from "rainfall" or "precipitation." *See Fishermen Against Destruction of the Environment, Inc. v. Closter Farms, Inc.*, 300 F.3d 1294, 1297 (11th Cir. 2002). By using "agricultural stormwater" to define the exemption, however, Congress seems to be describing unexpected or uncontrollable discharges caused by runoff from significant precipitation events. Subsurface tile drainage discharges, which *remove* groundwater that has seeped into poorly draining soil, are not stormwater discharges. Further, the Eleventh Circuit's decision in *Closter Farms* appears to misstate the holding in *Concerned Area Residents v. Southview Farms*, 34 F.3d 114 (2d Cir. 1994). In *Southview Farms*, the Second Circuit *reversed* a district court's decision setting aside a jury's finding of liability. The Second Circuit upheld the jury's finding that the discharges "were *not the result of rain*, but rather simply occurred on days when it rained." 34 F.3d at 121 (emphasis added). Tile drainage discharges are likewise not the result of rain; rather, tile drainage results in the discharge of nitrates because enhancing drainage prevents the process of denitrification that occurs in the anaerobic conditions of saturated soil.

Conclusion

In a state like Iowa, there are many reasons why, even though tile drainage may qualify as a "point source" under the Clean Water Act, federal and state regulators have not required permits for tile drainage discharges. Many of the same reasons probably caused the Des Moines Water Works Board of Trustees (and perhaps other cities that rely on surface water for drinking water) to wait over forty years before raising this issue in federal courts. For the last forty years, however, Des Moines has absorbed the entire financial burden of rising nitrate concentrations in the Raccoon River. The DMWW's lawsuit will determine whether Iowa's agricultural interests will be forced to share the increasingly expensive burden of supplying safe, clean drinking water to the DMWW's 500,000 customers and whether the federal and state governments have the political will to address the issue of nitrate pollution now, before it gets worse.

Thomas E. Dutton *is a shareholder in Greenberg Traurig's Chicago office and is a member of GT's Environmental Practice Group. He can be reached at duttont@gtlaw.com or 312.476.5057.*

FLORIDA'S NEW WATER LEGISLATION

Timothy J. Perry, Esq.
Oertel, Fernandez, Bryant & Atkinson, P.A

Chad D. Drummond, P.E., D.WRE, BCEE
Drummond Carpenter, PLLC

In response to a number of water-related challenges facing the state of Florida, the Florida legislature passed new legislation at the start of the 2016 legislative session in January (CS/CS/SB 552, Chapter 2016-1, HYPERLINK "http://laws.flrules.org/2016/1"Laws HYPERLINK "http://laws.flrules.org/2016/1" of Florida). The 134-page bill, referred to as the Florida Springs and Aquifer Protection Act, was quickly signed into law by Florida's governor and is set to take effect on July 1, 2016. The legislation will have wide-ranging impacts on how water is used and regulated in Florida, as well as how Florida's many water resources—not just springs and aquifers—are restored and protected. Everyone from homeowners, agricultural users, water utilities, land development interests, and local governments will experience its effects.

Florida has a wealth of water resources and is, of course, surrounded by water on three sides. It has productive aquifers below ground that feed numerous springs that give rise to the flow of streams and rivers. Furthermore, its landscape is dotted with lakes and wetlands both large and small. Florida's water issues are not driven by an absolute lack of water, as they may be in western states. Rather, Florida's issues arise from the way Florida's water resources are being used, and how those uses interact with Florida's natural environment. The two main issues that the new legislation addresses are stresses on the state's springs and aquifers as a result of groundwater withdrawals, and the need to reduce nutrient levels in several of the state's waterbodies. The legislation's main topics, and some other topics of note are discussed below with reference given to the specific sections of the legislation.

New Measures for the Protection of Florida's Larger Springs

Florida's springs serve as a tremendous resource for the state. Their scenic beauty is rivaled only by Florida's world-class beaches. They provide a refuge for the endangered Florida manatee and many other wildlife. They provide many recreational opportunities including swimming, tubing, and paddling. However, water quality in Florida's springs has been on the decline and flows in Florida's springs have also been on the wane due to increased groundwater pumping. Action to address these changes was urgently needed. The legislation takes a three-pronged approach to tackle the issues facing Florida's springs.

In recognition of the importance of Florida's springs, the legislature created a new Outstanding Florida Springs (OFS) designation in section 373.802, Florida Statutes (Section 24). The designation brings with it increased protection for larger springs and springsheds. In order to quantify baseline OFS water quality, the Florida Department of Environmental Protection (FDEP) is required to initiate an assessment of water quality in OFS and spring systems, to the extent the OFS has not already been assessed and designated impaired (Section 27).

To address issues related to declining spring flows, the legislation provides for the use of the minimum flows and minimum water levels (MFL) regulatory program pursuant to section 373.042, Florida Statutes (Sections 5 and 6). The MFL for a given watercourse or the aquifer is the limit at which further withdrawals would be significantly harmful to the water resources or ecology of the area. If an MFL has not been adopted for an OFS, a water management district (WMD) or the FDEP must use emergency rulemaking authority to adopt an MFL no later than July 1, 2017, except for the Northwest Florida Water Management District (NWFWMD), which must adopt MFLs for OFSs no later than July 1, 2026. When an MFL is adopted for an OFS, a recovery or prevention strategy must be adopted concurrently with the MFLs if the MFL are

not projected to be met over the next twenty years. In addition, the legislation requires FDEP to adopt uniform, statewide rules to apply to the issuance of permits to prevent groundwater withdrawals that are harmful to OFSs (Section 9).

Pollution of OFSs is addressed by creating new "Priority Focus Areas" around OFSs (Section 24). The legislation defines Priority Focus Areas in Section 373.802, Florida Statutes, as where the aquifer is generally most vulnerable to pollutant inputs due to a known connectivity between groundwater pathways and an OFS. Prohibited activities in a Priority Focus Area are detailed in a new Section 373.811, Florida Statutes (Section 28). Prohibited activities include limits on construction of domestic wastewater systems with capacities of 100,000 gallons per day or greater unless the system meets a treatment standard of three (3) mg/L total nitrogen, expressed as N, or less if needed to meet a TMDL for an OFS; limits on construction of onsite sewage treatment and disposal systems (i.e., septic systems) on lots less than one acre in certain cases; construction of hazardous waste disposal facilities; limits on the application of domestic waste biosolids; and requirements for new agricultural operations to implement best management practices (BMPs), measures necessary to achieve pollution reduction levels established by FDEP, or groundwater monitoring.

Revised Minimum Flow and Levels (MFL) Program

Florida's minimum flows and levels regulatory program protects surface waterbodies and the aquifer from significantly harmful water withdrawals. The new legislation harmonizes the language of the minimum flows program for surface water bodies and the minimum levels program for aquifers (Section 5). The current language of section 373.042, Florida Statutes (2015) provides that the minimum flows program protects against withdrawals that would be significantly harmful to the water resources or ecology of the area, while the minimum levels program only protects against withdrawals that would be significantly harmful to the water resources of the area. The new legislation makes the language of the two programs consistent so that they both protect against withdrawals that are significantly harmful to the "ecology" of an area (Section 5). The new legislation also exempts future MFLs from needing legislative ratification, which is required by section 120.541(3), Florida Statutes for rules with economic impacts that exceed $1 million dollars.

The legislation also emphasizes expeditiously developing solutions to address unmet MFLs that strive to meet both the demands of water users and the needs of the environment. Section 373.0421, Florida Statutes is amended to require the FDEP or a WMD adopt or modify a recovery or prevention strategy concurrently with the initial adoption or modification of an MFL if the existing flow or water level is below, or is projected to fall within twenty years below, the applicable MFL (Section 6). The recovery or prevention strategy may not rely solely on water use restrictions. Rather, in order to ensure that there is sufficient water for both water users and natural systems, the bill requires applicable WMD regional water-supply plans to be amended to include any water supply and resource development projects identified in a recovery or prevention strategy. The amendment to the water-supply plan must be approved concurrently with the relevant portions of the recovery or prevention strategy.

The legislation requires a WMD to notify the FDEP if an application for a water use permit is denied based upon the impact that the use will have on an adopted MFL (Section 6). Such a denial would indicate that there is a lack of adequate water supplies available to meet the needs of water users and the environment. Therefore, in the event of such a denial, the bill would require the FDEP, in cooperation with the WMD, to conduct a review of the regional water-supply plan to determine the plan's adequacy to provide sufficient water for all current and future users and natural systems and to avoid competition. If the regional water-supply plan does not adequately address the legislative intent regarding water resource and supply development

found in section 373.705, Florida Statutes, then the WMD must immediately initiate an update of the water-supply plan to ensure that there is adequate water available for future users.

Pilot Alternative Water-Supply Projects

The overuse of the traditional groundwater aquifer in certain areas of the state has led to the need for the development of alternative water supplies, such as salt water, brackish water, stormwater, and reclaimed water. The bill creates a new section 373.037, Florida Statutes to promote pilot alternative water-supply projects to augment or replace reliance on Florida's traditional groundwater resources in areas where water resources are restricted (Section 4). The legislature recognizes that there are significant challenges to securing funds for implementing large-scale alternative water-supply projects including the magnitude of the water resource challenges; the large number of water users; the difficulty of developing multijurisdictional solutions across district, county, or municipal boundaries; and the expense of developing large-scale alternative water-supply projects identified in the regional water-supply plans. The legislation provides for three WMDs—the South Florida Water Management District (SFWMD), the Southwest Florida Water Management District (SWFWMD), and the St. Johns River Water Management District (SJRWMD)—to each be able to take the lead in developing and implementing one alternative water-supply project within a restricted allocation area as a pilot alternative water-supply development project.

Each pilot project must provide water-supply and environmental benefits. Consideration should be given to projects that are part of a recovery or prevention strategy for MFLs, or that provide reductions in damaging discharges to tide. In Florida, discharges to tide have caused detrimental environmental impacts by increasing the amount of freshwater flowing to estuaries, and upsetting the natural water balance. These discharges to tide also have resulted in flows of nutrient rich stormwater causing eutrophication to downstream water bodies, such as rivers and estuaries.

When implementing the pilot projects, the WMDs may not engage in local water-supply distribution or sell water to the pilot project participants. However, they may partner with public and private entities in developing the projects. In doing so, the bill allows a WMD to provide up to 50 percent funding assistance for a pilot project. The WMDs have until July 1, 2017, to designate a pilot project. The designation of the pilot projects is not subject to rulemaking or subject to legal challenge under Florida's Administrative Procedures Act.

Central Florida Water Initiative

The bill also provides a statutory framework to support the implementation of the already ongoing Central Florida Water Initiative (CFWI) process by adopting a new section 373.0465, Florida Statutes (Section 7). The CFWI is a collaborative effort among regulatory agencies and water users to develop water resources to meet the long-term needs of Central Florida, which is approaching the sustainable limits of groundwater use. The bill provides for the development and implementation of the CFWI regional water-supply plan as well as a regional hydrologic planning model to assess groundwater availability in the CFWI. Within the CFWI area, the legislation provides that the FDEP, in consultation with the three CFWI area WMDs, initiate rulemaking by December 31, 2016, to adopt a uniform definition of "harmful to the water resources" to be used in permitting groundwater withdrawals; develop a single method for calculating residential per capita water use; enact a single process for permit reviews; provide a single, consistent process, as appropriate, to set MFLs and water reservations; develop a goal for residential per capita water use for each consumptive use permit; and provide an annual conservation goal for each consumptive use permit.

Watershed Protection Programs for Lake Okeechobee, the Caloosahatchee River and the St. Lucie River

The new water legislation reorganizes and revises the watershed protection plans in place to reduce nutrient loading and achieve total maximum

daily loads (TMDLs) for the Lake Okeechobee, the Caloosahatchee River, and the St. Lucie River watersheds (Section 15). The legislation replaces the existing pollutant control process with the Basin Management Action Plan (BMAP) process. Under the BMAP process, FDEP will have the primary responsibility for implementing water quality protection, while the SFWMD is responsible for hydrologic improvements, and the Florida Department of Agriculture and Consumer Services (FDACS) is the lead agency for the implementation of agricultural best management practices (BMPs) to reduce nutrient pollution.

In the bill, the legislature expresses its intent that the programs should be expeditiously implemented. Accordingly, the legislation requires five-year progress assessments to be submitted to the governor and the legislature. The FDEP must also develop five-, ten-, and fifteen-year measurable milestones and targets designed to meet the TMDL no more than twenty years after adoption of the plan. If it is not practicable to meet the TMDL in twenty years, the FDEP must provide an explanation of the constraints that prevent achievement of the TMDL within twenty years, an estimate of the time needed to achieve the TMDL, and additional five year milestones, as necessary, to meet the TMDL.

The bill also makes revisions related to nonpoint sources of pollution. While the FDACS has already implemented BMPs for agricultural nonpoint sources, the legislation provides that the FDEP, in consultation with the SFWMD and affected parties, shall develop and adopt rules for nonagricultural nonpoint source interim measures, BMPs, or other measures necessary for meeting the Lake Okeechobee Watershed TMDL. When water-quality problems are detected despite the appropriate implementation of agricultural or nonagricultural BMPs, the BMPs must be reevaluated and revised if the reevaluation determines that the BMPs require modification. The bill provides that the revised BMPs must be implemented within a reasonable amount of time.

Changes to the Enforcement of Basin Management Action Plans (BMAPs) to Achieve Total Maximum Daily Loads (TMDLs)

BMAPs are plans for restoring impaired water bodies in order to achieve TMDLs. The bill contains a new provision that allows FDEP to use its enforcement powers to enforce the provisions of the BMAPs throughout the state (Section 33). The enforcement provision is aimed at enforcing the BMPs and water quality monitoring strategies adopted by BMAPs.

Miscellaneous

The legislation allows for changes to Florida's surface water classification system to allow Class II and III surface waters to be used for public supply, so long as it does not require significant alteration of permitted treatment processes or prevent compliance with applicable state drinking water standards (Section 30). Previously, Class II and III waters were not designated for use as public supply. As a result, the use of these waters for public supply could have led to the reclassification of the waters to Class I for potable water supply, which would lead to more stringent water quality standards. The legislation allows for more flexible use of Class II and III waters for public supply without the need for reclassification. However, the legislation does not prevent a surface water used for treated potable water supply from being reclassified as water designated for potable water supply (Class I). In addition, the FDEP shall add potable water supply as a designated use for all water bodies that are being used for potable water supply, or for which a permit is issued to construct a potable water facility that will withdraw from surface water that has not previously been used for public water supply (Section 35).

In an effort to increase the amount of data on water withdrawals, the legislation requires select Consumptive Use Permits (CUPs) with pumpage of more than 100,000 gallons per day of groundwater or a well diameter of 8 inches or more to be

monitored by the permit holder as a condition for issuance of a permit under section 373.223, Florida Statutes (Section 10). The WMDs may still adopt or enforce rules that provide for more stringent monitoring.

The bill also expands existing provisions in section 373.4591, Florida Statutes, for public-private partnerships on agricultural lands (Section 14). The new language provides that priority consideration should be given to projects that store or treat water on private lands for purposes of enhancing hydrologic improvement, improving water quality, or assisting in water supply; provide critical groundwater recharge; or provide for changes in land use to activities that minimize nutrient loads and maximize water conservation. The new language should help to promote "dispersed water storage" or "water farming" projects similar to those projects implemented by the SFWMD. The types of projects contemplated by the law can be used to convert agricultural lands to less intensive use, treat and store excess stormwater, provide for aquifer recharge, and serve as a source of potable or reclaimed water.

Conclusion

Florida's new water legislation offers several much needed improvements to Florida water law to address some unique challenges that Florida is facing. The new legislation should help to put Florida on a path to restoring its valuable spring resources. It also makes improvements to the programs adopted to restore the nutrient-impaired Lake Okeechobee, Caloosahatchee, and St. Lucie watersheds. And the legislation will go a long way towards further encouraging Florida to develop alternatives to traditional groundwater supplies in order to ensure that there is adequate water of sufficient quality to meet the needs of the environment and water users. While knowledge of these changes is essential for Florida practitioners, they serve as a useful guide to practitioners in other states facing similar problems.

Timothy J. Perry *is an environmental attorney with Oertel, Fernandez, Bryant & Atkinson, P.A. in Tallahassee, Florida. He regularly assists clients across Florida with water-related issues, including permitting and water-supply project development and funding. He can be contacted at tperry@ohfc.com.*

Chad D. Drummond, *P.E., D.WRE, BCEE is a principal engineer with Drummond Carpenter, PLLC in Orlando, Florida. Mr. Drummond's professional practice focuses on environmental and water resources engineering including hydrologic and water-quality modeling, water-supply development, and springs protection. More information is available at www.drummondcarpenter.com, and Chad's email address is cdrummond@drummondcarpenter.com.*

FIGHTING FOR A FAIR SHARE OF TEXAS GROUNDWATER

Derek Seal
Winstead PC

Against the backdrop of population growth, the recent Texas droughts in 2011 and 2013, and a healthy state economy, Texans are increasingly turning to groundwater in central and western parts of the state to address existing and future water-supply needs. As recently as December 2015, many of the state's sixteen regional water planning groups identified and included dozens of groundwater projects in their wish lists of prioritized water-supply projects designed to meet future needs over the next fifty years.

Groundwater already plays a prominent role in addressing long-term water-supply needs for several Texas cities. For example, the City of Midland completed a $200 million groundwater project in 2013 involving a 67-mile pipeline to supply 30 to 40 million gallons of water daily to meet the local needs. *See* Anum Valliani, *T-Bar Ranch Pipeline to Provide Water to Midland for Decades*, NewsWest9 (Jan. 9, 2014). According to the Canadian River Municipal Water Authority, it supplies raw water to eleven member cities (over ½ million people) in the Texas Panhandle and South Plains via a 358-mile aqueduct system. A series of well fields in the Texas Panhandle serves as a significant source of the raw water provided. San Antonio Water Systems recently entered into an agreement to transport 16.3 billion gallons of groundwater annually via a 142-mile pipeline to serve the needs of the City of San Antonio. Project costs are estimated to be $3.4 billion. *See* Brendan Gibbons, *SAWS Says Abengoa Troubles Will Not Affect Vista Ridge Pipeline*, San Antonio Express News (Nov. 25, 2015).

However, groundwater supply projects can create controversy. Several Texas groundwater supply projects capturing recent headlines provide insights into some of the issues that must be navigated in a groundwater supply project. For example, plans by Electro Purification to produce up to 5.3 million gallons of water per day from an unregulated well field south of Austin in Hays County was met with local public and political opposition in 2015. The Texas legislature reacted by incorporating Electro Purification's well field, which was developed to supply growth in nearby communities, under the jurisdiction of a nearby groundwater conservation district. *See* Sean Collins Walsh, Asher Price, *Controversial Hays County Water Project Might Be Unraveling*, Austin American Statesman (Oct. 27, 2015). After a years-long legal battle focused on whether enough groundwater is available, Forestar Real Estate Group obtained permits in late 2015 from the Lost Pines Groundwater Conservation District authorizing the production of up to 28,000 acre-feet of water per year from the Simsboro Aquifer in Lee County in Central Texas for use in five neighboring counties in Central Texas. *See* Andy Sevilla, *Lost Pines Groundwater District Approves Forestar Water Permit*, Austin American Statesman (Dec. 23, 2015).

This article provides an overview of four intertwined issues that may be involved in a groundwater supply project: (1) the legal right to produce groundwater, (2) the general extent of local groundwater district authority to regulate production, (3) how much can be produced and for how long, and (4) transporting the groundwater from where it is located to the place of need.

Ownership of Groundwater

The Texas Supreme Court as far back as 1904 recognized that groundwater is owned by the owner of the surface. *See Houston & T.C. Ry. Co. v. East*, 81 S.W. 279, 281–82 (Tex. 1904). The Texas legislature recognized private ownership of groundwater as far back as 1949. *See* Groundwater Conservation District Act of 1949, Act of May 23, 1949, 51st Leg., R.S., ch. 306, § 1, 1949 Tex. Gen. Laws 559, 562. Most recently, the Texas legislature provided that

> [A] landowner owns the groundwater below the surface of the landowner's land as real property . . . [and may] drill for and produce

> the groundwater below the surface of real property, subject to [certain groundwater district regulations], without causing waste or malicious drainage of other property or negligently causing subsidence [but does not] entitle a landowner . . . to the right to capture a specific amount of groundwater below the surface of that landowner's land. *See* Tex. Water Code § 36.002.

The Texas legislature has expressly acted on four separate occasions since 1995 to reiterate the ownership rights of landowners in the groundwater beneath the surface. Thus, under both common law and under the statues enacted by the Texas legislature, groundwater is real property and can be leased, inherited, assigned, or sold. *See Edwards Aquifer Authority v. Day*, 369 W.W.3d 814, at 832 (Tex. 2012) and Tex. Water Code § 36.002(b). It follows that a property right in groundwater must be acquired in order to produce it.

However, ownership of groundwater does not include an unfettered right to produce the groundwater. The common law "Rule of Capture" established in Texas in 1904 allows an owner of groundwater rights to produce all the groundwater water they can capture under the land and do with it as they please without liability, even if doing so deprives their neighbors of the water's use—only as long as there is no malice or willful waste. *See Sipriano v. Great Spring Waters of America, Inc.*, 1 S.W.3d 75, at 76 (Tex. 1999). Further, the Texas legislature added a limitation on the Rule of Capture to expressly disallow a holder of groundwater rights to produce to the point of negligently causing subsidence. *See* Tex. Water Code § 36.002(b)(1).

Regulation of Groundwater

Although the Texas legislature and the Texas Supreme Court have historically and consistently dictated that groundwater is a private property right, groundwater is subject to police power and regulation just like all other property rights. *See Day* at 831–32 and Tex. Water Code § 36.002(d).

Groundwater conservation districts are Texas' preferred regulator of groundwater and are charged by the Texas legislature protect property rights, balance the conservation and development of groundwater to meet the needs of the state, and use the best available science in doing so. *See* Tex. Water Code § 36.0015(b).

According to the Texas Water Development Board (TWDB), 100 Texas groundwater conservation districts create a patchwork of regulatory authority over groundwater in 177 of Texas' 254 counties. Locally elected boards of directors govern each groundwater district, which can be created by legislative enactment or based on a landowner petition filed with the Texas Commission on Environmental Quality. *See* Tex. Water Code, Chapter 36, Subchapter B and C.

Texas law further expressly charges groundwater districts to require permits for drilling, equipping, operating, and completing groundwater wells. *See* Tex. Water Code § 36.113(a). Permits can include a variety of provisions designed to protect the aquifer, control subsidence, protect other wells, protect water quality, and prevent waste. *See* Tex. Water Code § 36.116. In particular, permits can include spacing requirements from property lines or other wells and can set limits on groundwater production based on acreage or tract size or gallons per minute per well site per acre. *Id.* In practice, many groundwater districts by rule limit production based on an acre-foot per acre production limit in permits. For example, the Colorado County Groundwater Conservation District's rules limit average total production, over a three-year period, to 10 ½ acre-feet of water per contiguous acre owned or operated. *See* Colorado County Groundwater Conservation District Rule 4.4.1.

The private nature of groundwater ownership, however, tempers a groundwater district's regulatory authority. In making it clear in 2012 that land ownership includes a property interest in groundwater in place, the Texas Supreme Court also made it clear that groundwater cannot be "taken" for public use via regulation

without just compensation as provided for in the Texas Constitution. *See Day*, at 817, 838. In adopting principles of federal regulatory takings jurisprudence, the Texas Supreme Court established that while property such as groundwater "may be regulated to a certain extent, if regulation goes too far it will be recognized as a taking" which requires a "fact-sensitive test of reasonableness . . . but in the end, whether the facts are sufficient to constitute a taking is a question of law." *See Day* at 838–39.

Based on the 2012 Texas Supreme Court's decision in the *Day* case, in February 2016, a jury found for the first time in Texas history that a groundwater district's decision to deny a landowner a permit for the amount of water requested constituted a regulatory taking and awarded the plaintiff's over $2.5 million in compensation. *See* Jess Davis, *Texas Jury Awards Pecan Farmers $2.5 Million in Water Takings Suit*, Law360 (Feb. 23, 2016), referencing *Bragg v. Edwards Aquifer Authority*, No. 06-11-18170 (District Court of Medina County). It remains to be seen whether, and if so how, the first takings case will impact the future of groundwater regulation in Texas.

Lastly, with regard to groundwater regulation, groundwater permits are not required if a proposed well field is within one of the areas in Texas without a groundwater district. However, although it is untested and unclear, groundwater production from an unregulated area may nevertheless be subject to "Desired Future Conditions" established by neighboring groundwater districts, which are described below.

The Allowable Amount of Groundwater That Can Be Produced

A key consideration in developing a groundwater supply project is to determine whether sufficient groundwater exists, and, if so, to what extent a groundwater district will allow it to be produced. Subject to an intricate process with oversight by and assistance from the TWDB, state law requires each groundwater district to develop a "groundwater management plan" to serve as the basis for local regulatory requirements over groundwater. *See* Tex. Water Code § 36.1071–72. The groundwater management plan for a groundwater district drives permitting decisions and groundwater production limits set in permits issued by groundwater districts.

A groundwater management plan must take into account a variety of factors, including the amount of groundwater annually used and the amount recharged, but most importantly the amount of groundwater available (i.e., the "Modeled Available Groundwater" (MAG)), which is based on the "Desired Future Conditions" (DFCs) of each aquifer. *See* Tex. Water Code § 36.1071(e). The MAGs are provided by the TWDB. *See* Tex. Water Code § 36.1084.

The sixteen "Groundwater Management Areas" (GMAs), which the TWDB established as areas suitable for management of groundwater and are led by representatives from the groundwater districts within the GMA, set the DFCs as part of a joint groundwater planning effort. *See* Tex. Water Code § 36.108(b)–(d). The DFCs must provide a balance between the highest practicable level of groundwater production and the conservation, preservation, protection, recharge, waste prevention and subsidence control of groundwater. *See* Tex. Water Code § 36.108(d-2). In establishing DFCs, the districts within each GMA must collect and consider a litany of information, including groundwater availability models; aquifer uses; hydrological conditions for each aquifer in the GMA; the total estimated recoverable storage of groundwater (provided by the TWDB); average annual recharge; impacts on spring flow and other interactions between groundwater and surface water; the impact on subsidence, socioeconomic impacts, interests and rights in private property, including ownership and the rights of landowners and their lessees and assigns in groundwater; and the feasibility of achieving the DFCs. *See* Tex. Water Code § 36.108(d).

After documenting the factors considered and after a public comment period, the groundwater districts

within a GMA must finally adopt the DFCs for the GMA. *See* Tex. Water Code § 36.108(d-3). Each groundwater district must also adopt the DFCs for the groundwater district. *See* Tex. Water Code § 36.108(d-4).

For example, the DFC for the Ogallala Aquifer adopted by the Panhandle Groundwater Conservation District within the boundaries of the groundwater district is at least 50 percent of the volume in storage remaining in fifty years. For the Evergreen Underground Water Conservation District, the DFC for the Yegua-Jackson Aquifer is an average drawdown of 2 feet.

Thus, the exhaustive process of establishing DFCs upon which a groundwater district's groundwater management plan is based is designed to set the benchmark by which groundwater districts issue permits, driven by protecting the aquifer and future production of groundwater. Based on its groundwater management plan and a variety of other factors, a groundwater district may issue permits to produce groundwater up to the point that the total volume of groundwater production will achieve the DFCs. *See* Tex. Water Code § 36.1132.

Since GMAs and groundwater districts must revisit and reevaluate DFCs every five years, the basis for permit limits that are directly wired to the DFCs and the groundwater management plans may also change. *See* Tex. Water Code § 36.108(d). If aquifer conditions or other factors result in modified DFCs, a groundwater district has the authority to change any permit if it is necessary to achieve the groundwater district's statutory purposes, including to achieve DFCs for the relevant aquifers. *See* Acts 2015, 84th Leg., R.S., Ch. 308 (S.B. 854), Sec. 4, eff. Sept. 1, 2015, implementing Tex. Water Code § 36.1146. Thus, a groundwater district has the authority to reduce production limits of any permit in order to maintain the approved DFCs.

Lastly, with regard to the amount of water that can be produced, even if groundwater district permits are secured to authorize sufficient groundwater production to fully support a water-supply project, the permits are subject to renewal at varying intervals between one and thirty years. The Texas legislature in 2015 recognized the concern about certainty needed for a groundwater supply project that requires substantial investments financed over long periods of time. The Texas legislature responded by requiring a groundwater district to automatically renew a permit if the permit holder is not, among other things, requesting a change that would increase permitted groundwater production. *Id.*, implementing Tex. Water Code § 36.1145. However, a groundwater district is not required to renew a permit if there are delinquent fees, or compliance issues. *Id.*

Transportation of Groundwater to the Place of Need

In providing authority for a groundwater district to regulate the production of privately owned groundwater, the Texas legislature also expressly contemplated that groundwater projects would involve the export of groundwater outside of the boundaries of the groundwater district. For such a project transporting groundwater out-of-district, the district can require an "export permit" and an export fee, but cannot impose more restrictive permit conditions on transporters than the district imposes on existing in-district users. *See generally* Tex. Water Code § 36.122. Even though a groundwater district's evaluation of an export permit must include consideration of a variety of factors and include limitations based on the availability of water in the district and in the area outside of the district where the groundwater would be used, the groundwater district may not deny a permit based only on the fact that the applicant seeks to transfer groundwater outside of the district. Further, a groundwater district must process, evaluate and make decisions regarding export permits on the same bases used for an application that does not propose to export water. *Id.* In its consideration of an export permit, a groundwater district must be fair, impartial, and nondiscriminatory. *See* Tex. Water Code § 36.122(q).

In recognizing that groundwater projects may involve significant investment in infrastructure, the Texas legislature provided that the term of an export permit must be at least thirty years if construction of a conveyance system has been initiated prior to the issuance of the permit, but at least three years if construction of a conveyance system has not been initiated prior to the issuance of the permit. *See* Tex. Water Code § 36.122(i).

Groundwater supply projects necessarily include transport of the water via pipeline from the well field to the place of use, which may be a substantial distance from the well field. Various local governmental entities involved with water-supply projects may have eminent domain authority to facilitate the acquisition of easements to support the construction of a groundwater supply pipeline, which is typical of a groundwater project in Texas. Without eminent domain authority, however, a project sponsor should be prepared to either rely on private negotiations to acquire a pipeline easement, or to utilize an existing pipeline.

Conclusion

According to the Texas Comptroller, as of February 1, 2016, every 66.92 seconds another Texan is added to the population. *See* www.thetexaseconomy.org/people-places/population.

Further, according to the TWDB, Texas' population will increase by 73 percent, from 29.5 million in 2020 to over 51 million in 2070. Along with the TWDB's expectations for population to increases, the TWDB also expects annual demand for water in Texas during the same timeframe to increase by 17 percent, from almost 18.5 million acre-feet to almost 21.6 million acre-feet. The increased water demand expected in Texas by 2070 equates to 3.1 million acre-feet of water. *See 2016 Regional Water Plan – Population/Water Demand Projections for 2020–2017*, Texas Water Development Board (Jan. 2015).

Historical and recent action by the Texas legislature and historical and recent decisions from the Texas Supreme Court provide a firm legal foundation for groundwater supply projects, even though such projects are not insulated from regulation, controversy, and other challenges. The utilization of groundwater supply projects to meet the water-supply needs is not new to Texas. Water suppliers have historically relied upon groundwater. Recent projects indicate that water suppliers will continue to look to groundwater to meet future needs.

Derek Seal *is a shareholder at Winstead PC in Austin, Texas. He can be contacted at dseal@winstead.com.*