

# Interactive Groundwater/Surface-Water Regulation in Arizona

Michael J. Pearce, Esq. – Fennemore Craig, P.C.

Arizona adopted the law of prior appropriation for surface water while still a territory, but, under territorial law, “percolating” underground water was an attribute of the overlying land, subject to capture and use by the landowner without regard to priority. Substantial water level declines in some populated groundwater basins, however, caused Arizona to re-evaluate the absolute right of capture. In the 1950s, the Arizona Supreme Court suggested that groundwater would be governed by the doctrine of prior appropriation. Almost immediately, the Court reversed itself and held that groundwater would instead be governed by the “American” rule of

reasonable use, allowing the landowner to capture and use groundwater from beneath the surface, but not to transport the groundwater away from the land from which it was withdrawn.

This modified reasonable use rule did little to limit use within the basin, and groundwater levels continued to decline in many areas. This led to the adoption of the Groundwater Management Act of 1980, a comprehensive groundwater management code that closed certain basins to new irrigated agriculture and instituted a series of permits and “grandfathered” groundwater rights to limit the development of groundwater in the depleted basins designated as Active Management Areas (AMAs). The Act also required a series of basin-wide management plans to be promulgated for the AMAs by the newly created Arizona Department of Water Resources (ADWR). These plans impose mandatory conservation measures on municipal, industrial and irrigation users of groundwater. In most AMAs, the plan is to reach “safe yield” or equilibrium conditions in the aquifer by 2025.

Throughout the state, surface water still is managed under the territorial doctrine of prior appropriation, with the early priority surface water rights being evidenced only by claims filed with ADWR. Most of these claims are subject to comprehensive McCarran Amendment stream adjudications that are mired in controversy and moving very slowly. Arizona has more

than 20 recognized Indian communities within the state, most of which claim federal reserved rights in the adjudication watersheds. The Arizona Supreme Court has ruled that federal reserved rights may also extend to the groundwater basins, adding another layer of complication to the adjudication proceedings. Although some of the Indian claims have been settled, the vast quantity of unresolved Indian claims provides little hope for rapid progress in the stream adjudications.

## Courts Wrestle with Several Issues

Meanwhile, the proliferation of wells located near streams has caused increasing concern over the interaction between surface water and groundwater and tension among users. The Arizona Supreme Court has wrestled with this problem as well, using the early precedent of *Southwest Cotton*<sup>1</sup> to conclude that there is an underground appropriable component of flowing streams. The first decision on the issue, known as *Gila I*<sup>2</sup> (or colloquially as the “flat earth” decision), tried to divine this zone as a physical component of the stream. After remand, the Court again addressed the issue in *Gila IV*<sup>3</sup>, approving the test of the “saturated floodplain Holocene alluvium” as the geologic formation holding appropriable water. The general stream adjudication courts are trying mightily to sort all this out in the context of the litigation among water users, but the technical and legal problems are legion.

Arizona continues to grow at an

## Gila IV and the Saturated Floodplain Holocene Alluvium

In *Gila IV* (198 Ariz. 330, 9 P.3d 1069) the Arizona Supreme Court declared that wells located in the saturated floodplain Holocene alluvium (SFHA) would be deemed to be withdrawing appropriable subsurface water. This SFHA was intended to be a distinct geologic unit, capable of ready delineation by the Arizona Department of Water Resources in any perennial or intermittent stream reach. Unfortunately, the test for appropriable underground water remains clouded by legal and technical issues. For example, should the determination of perennial or intermittent status be made today, or under predevelopment conditions? Can “saturation” be assumed or must it be proven? What about effluent-dominated streams? Are wells that penetrate confining layers included? How will the well’s cone of depression be interpreted? Will a THWELLS or MODFLOW model be used? These questions and more will be answered in legal proceedings currently underway in the ongoing *Gila* adjudication, where the elusive “subflow” zone in Arizona remains a technical question to be sorted by the unique hydrogeology of the individual stream reach.



unprecedented pace, relying mostly on groundwater and imported Colorado River water for new suburban development. In the rural areas, almost all growth is dependent on groundwater. Groundwater use is administered by ADWR under laws that simply do not recognize the possibility of “appropriable” underground water, while at the same time, the adjudication courts threaten to foreclose the use of underground water extracted from wells near the stream. The complexity of this issue, including the separation-of-powers issues between the judicial, legislative and executive branches of state government, plagues Arizona’s water management.

### **Some Progressive Programs in Place**

All is not lost in such management, however, as Arizona continues to lead the West in many progressive programs. A vitally important program is the Assured Water Supply requirement imposed within the AMAs. Before any proposed residential subdivision can be platted, the developer must demonstrate a 100-year supply of water that is physically and legally available to that subdivision. More importantly, the developer must show that the supply will be consistent with the management-plan goal for the AMA, meaning it will be something other than mined groundwater. This program has had a marked effect on municipal water planning. It has forced municipal providers to develop non-groundwater resources, such as effluent and imported Colorado River water, that otherwise would go unused if cost were the only consideration.

Outside the AMAs, however, the 100-year supply requirement is less rigorous. Developers need only obtain a determination from ADWR whether an “adequate” or “inadequate” 100 year water supply exists before a subdivision can be

platted. If the determination of inadequacy is contained in the public report on the subdivision, however, the subdivision can still be platted and constructed. In some areas of the state, all new subdivisions are being constructed based on “inadequate” water supplies.

On a more progressive note, Arizona is at the forefront of artificial groundwater recharge. The state has a comprehensive set of laws that provide significant incentive to store water underground for future use, while at the same time preserving a five percent “cut to the aquifer” on virtually all water stored. This program not only allows municipal providers to bank water for future use, but also provides a unique opportunity to transport water underground by storing the water in one location and removing it from another location in the same basin.

### **Looking Ahead**

Looking to the future, Arizona needs to focus on a few issues. First, the state must find a workable rule to preserve groundwater development while minimizing impacts on flowing streams. Second, the state should develop a better regimen for the recovery of stored underground water and begin to deal with the difficult issue of the relative rights of the water storer and the ambient-groundwater user. Finally, Arizona needs to re-examine the role of the private water company in water management. These private utilities are caught in a cross fire between ADWR, seeking to enforce water conservation and costly water management programs, and the Arizona Corporation Commission, seeking to enforce strict cost-cutting measures on all public utilities.

Overall, the citizens of Arizona are the beneficiaries of a century of good water management and planning. Although the issues of surface-water rights and wells near the stream are steeped in litigation at the present, those issues will be sorted out either judicially or legislatively within the next decade or two, long before the physical supply situation becomes critical. Meanwhile, ADWR and the Arizona water community continue to develop

### **Proving a 100 Year Water Supply**

*Developers and water providers seeking to prove a 100-year “assured water supply” in Arizona must meet relatively stringent requirements imposed by the Arizona Department of Water Resources (ADWR). For example, the applicant must show 100-year physical availability. Some supplies, like Central Arizona Project (CAP) water, are deemed to be continuously available. Groundwater is not. Through best available modeling techniques, ADWR attempts to determine the amount of groundwater in storage to a depth of not greater than 1,000 feet. ADWR reduces that amount by all known existing and “committed” residential demands (housing units authorized but not yet built) over the 100-year period. ADWR also attempts to predict future “residual pumping” by agriculture and other non-residential uses in the basin. Further, assuming a physically available supply, an applicant must also show that the use of groundwater will not deplete the basin over time. This is usually accomplished by a means of recharging the basin for the groundwater used. Arizona has created a Central Arizona Groundwater Replenishment District to facilitate this recharge using CAP water. These requirements have also provided a significant incentive for developers to capture, treat and reuse effluent within new master-planned communities.*

progressive ideas on water management, and continue to store water and plan for the future. Legislative leadership is already beginning to focus on our rural issues, and we anticipate that regional planning authorities will be implemented to restrain growth in areas that are simply too water-poor to support it. Finally, significant attention is being paid to settling the Indian water rights claims with real “wet” water and delivery infrastructure capable of supporting economic prosperity on the reservations. Our challenge, as water managers, is to uphold the tradition of our forebears, so that future generations will look back 100 years from now and recognize our contribution to their lives.

Contact Michael Pearce at [mpearce@fclaw.com](mailto:mpearce@fclaw.com)

### **References .....**

- 1 See 39 Ariz. 65, 4 P.2d 369 (1931).
- 2 See 175 Ariz. 382, 384-86, 857 P.2d 1236, 1238-40 (1993)
- 3 See 198 Ariz. 330, 9 P.3d 1069 (2000)



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