BETWEEN A ROCK AND A DRY PLACE: THE RURAL WATER SUPPLY CHALLENGE FOR ARIZONA

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Arizona's water problem is grave. The beautiful scenery, fine climate and fertile soil, like those of other southwestern states, have combined to entice an even larger number of people to settle there, and water demands have grown accordingly.[1]

Introduction

As the quote above demonstrates, concerns about water supply in Arizona are not new. In fact, throughout reported history, Arizona has been a desert where water is a precious and limited resource. More recently, the other half of the water equation—demand—has increased dramatically along with Arizona's rapidly growing population. Even this growth in demand, however, is not an entirely new phenomenon. The Groundwater Management Act of 1980 ("GMA")[2] was adopted partly to address a large and growing demand for groundwater in parts of Arizona. Those locations were incorporated within Active Management Areas ("AMAs") where groundwater rights and uses are strictly regulated. The GMA created four initial AMAs surrounding the major urban population centers of Phoenix and

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1. C.L. MCGUINNESS, GEOLOGICAL SURVEY, U.S. DEP'T OF THE INTERIOR, GEOLOGICAL SURVEY WATER-SUPPLY PAPER 1800, THE ROLE OF GROUND WATER IN THE NATIONAL WATER SITUATION 162 (1963).

2. Groundwater Management Act, 1980 Ariz. Sess. Laws 4th Spec. Sess., ch. 1, § 86 (codified at ARIZ. REV. STAT. ANN. §§ 45-401 to -704 (2006)).

Tucson, the large-scale agricultural region in Pinal County between Phoenix and Tucson, and the water-limited groundwater basins surrounding Prescott.[3]

Shortly after its adoption by the Legislature, the GMA was justifiably called "the most comprehensive groundwater code in the country and perhaps the most important law in the history of the state."[4] More recently, it has been lauded as a model for water use regulation "because of its aggressive regulatory approach to mandating conservation and efficiency."[5] This intensive regulatory program does not, however, apply uniformly throughout the state. Rather, most of the GMA, codified in title 45 of the Arizona Revised Statutes as the Arizona Groundwater Code, applies only within AMAs. The rest of the state is subject to much less rigorous water use regulation.

In 1980, when the GMA was adopted, this was a logical approach to water management issues in the state. At that time, the state's initial AMAs were the location of the vast majority of both the state's population and its water demand. Although the population has continued to grow rapidly within AMAs, the water supply situation in most of these areas is considerably better than it was in 1980—primarily because of the construction of the Central Arizona Project ("CAP"), which has made a large supply of renewable Colorado River surface water available to this growing population.[6] Unfortunately, the same cannot be said for many areas outside the state's AMAs.

Water supply concerns in these areas are well documented. For example, questions have been raised in the media regarding water availability and demand in the Kingman area in northwestern Arizona, the Payson–Pine–Strawberry area in central Arizona, municipalities on the Colorado Plateau such as Williams and Flagstaff, and the Sierra Vista area in southeastern Arizona.[7] Although the particulars in these locations vary, there is one common theme: They are all outside the state's current AMAs.

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3. *See* ARIZ. REV. STAT. ANN. § 45-411. In 1994, the Arizona Legislature created the state's fifth AMA by carving the Santa Cruz AMA out of a portion of the preexisting Tucson AMA. *See id.* §§ 45-411.02 to -411.04.

4. Jon L. Kyl, *The Arizona Groundwater Management Act: From Inception to Current Constitutional Challenge*, 53 U. COLO. L. REV. 471, 472 (1982).

5. Janet C. Neuman, *Beneficial Use, Waste, and Forfeiture: The Inefficient Search for Efficiency in Western Water Use*, 28 ENVTL. L. 919, 952 (1998).

6. One exception is the Prescott AMA. Because of its location many miles north and uphill from the CAP canal, the Prescott AMA does not have physical access to the CAP water supply. Nevertheless, the City of Prescott was assigned a CAP water allocation of 14,000 acre-feet. After exploring options for using this water, Prescott ultimately relinquished the allocation in return for adoption of a statutory provision authorizing the importation of up to 14,000 acre-feet of groundwater withdrawn from the Big Chino sub-basin located north of the Prescott AMA. *See* ARIZ. REV. STAT. ANN. § 45-555(E).

7. *See, e.g.*, Shaun McKinnon, *State's Rural Growth Taxing Water Supplies*, ARIZ. REPUBLIC, June 26, 2005, at A1, *available at* http://www.azcentral.com/arizonarepublic/news/articles/0626rwater-main26.html; Steve Yozwiak, *Water Future Gloomy for State's Rural Areas*, ARIZ. REPUBLIC, Oct. 26, 1997, at A1.

The Arizona Department of Water Resources ("ADWR") defines "rural Arizona" as the "area outside of the state's five active management areas."[8] The Department based this definition on the fact that while the non-AMA portions of the state encompass 87% of Arizona's land area, only approximately 18% of the state's population resides there.[9] Nevertheless, the rural parts of Arizona are now facing many of the same growth pressures that have been felt in the state's AMAs for many years. Again, these growth pressures are well-documented. For example, developments have been proposed that might add more than 200,000 new homes in rural Mohave County—potentially making parts of that county a bedroom community for the equally rapidly growing Las Vegas area.[10] At the same time, limited resources have hampered ADWR's ability to quickly collect and analyze hydrogeologic information concerning the quantity and quality of groundwater available in this area.[11]

Similarly, the Sierra Vista and Benson areas in southern Arizona are experiencing rapid growth, with large master-planned communities proposed for both areas.[12] The Sierra Vista area also faces concerns regarding the fate of the San Pedro River—often identified as the last free-flowing perennial river in Arizona. As growth continues in the area, residents and regulators worry that increased water use will dry up the river.[13]

Yet Arizona's rural water issues are not uniform throughout the state. Some parts of the state are blessed with abundant supplies of groundwater. For example, the northeastern quadrant of the state encompasses a large regional groundwater basin—the Little Colorado River Plateau Groundwater Basin—that has been estimated to hold more than 500 million acre-feet of groundwater in storage.[14] This basin receives approximately 500,000 acre-feet of recharge annually, and current groundwater demand in the basin is approximately 150,000

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8. LINDA STITZER, ARIZ. DEP'T OF WATER RES., RURAL WATER RESOURCES STUDY: RURAL WATER RESOURCES 2003 QUESTIONNAIRE REPORT (2004), *available at* http://www.azwater.gov/dwr/content/Find_by_Program/Rural_Programs/content/news/files/Rural_Water_Resources_2003_Questionaire_Report.pdf.

9. *Id.* at 5.

10. *See, e.g.*, David Bell, *Water Worries Addressed*, TODAY'S NEWS–HERALD, June 3, 2006, News, at 1, *available at* http//:www.havasunews.com/articles/2006/06/04/news/news01.txt (citing a total of 225,000 homes planned in multiple master-planned communities in unincorporated Mohave County).

11. Shaun McKinnon, *Water Study in Rural Area a Step Behind Developers*, ARIZ. REPUBLIC, Mar. 22, 2006, at A1, *available at* http://www.azcentral.com/arizonarepublic/news/articles/0322ruralwater0322.html.

12. *See, e.g.*, Editorial, *Quench Our Thirst for Real Water Data*, SAN PEDRO VALLEY NEWS–SUN, July 14, 2006, *available at* http://www.bensonnews-sun.com/articles/2006/07/11/news/editorial_opinion/edit1.txt; McKinnon, *supra* note 7.

13. McKinnon, *supra* note 7.

14. *See* 2 ARIZ. DEP'T OF WATER RES., ARIZONA WATER ATLAS 4 (2006), *available at* http://www.azwater.gov/dwr/Content/Find_by_Program/Rural_Programs/content/water_atlas/ArizonaWaterAtlas_Vol2_EasternPlateau_Draft_June2006.pdf.

acre-feet.[15] At this time, water supplies in this basin significantly exceed foreseeable demand.

Increased attention to these issues has led some to question whether both the water laws and water policies for rural Arizona should be changed.[16] To answer that question in an informed manner, however, requires a more complete understanding of what those current laws and policies are and a reasoned discourse regarding practical alternatives. The balance of this Article is intended to foster the necessary understanding of current laws and policies and to offer some modest recommendations for how the state might proceed down the path towards change.

I. HISTORY OF ARIZONA WATER LAW IN A NUTSHELL[17]

A. Arizona's Bifurcated Water Laws

Arizona has separate legal regimes for surface water and groundwater. Surface water is subject to the doctrine of prior appropriation, under which the first person to divert and apply water to a beneficial use earns the senior right to continue doing so, regardless of how many future users may later seek to appropriate water from the same source. This "first in time, first in right" system has governed the use of surface water in Arizona since at least 1864, and the courts have stated that prior appropriation "has been recognized longer than history, and since earlier than tradition."[18]

In contrast, percolating groundwater is not subject to the doctrine of prior appropriation. Instead, it is subject to the doctrine of reasonable use, which is described in detail below. Arizona adopted this bifurcated system of water law prior to statehood, when the Territorial Supreme Court decided *Howard v. Perrin*.[19] In that case, the court stated as follows:

> [F]iltrating or percolating water oozing through the soil beneath the surface in undefined and unknown channels, and therefore a component part of the earth, [has] no characteristic of ownership

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15. ARIZ. DEP'T OF WATER RES., LITTLE COLORADO RIVER PLATEAU BASIN, *available at* http://www.azwater.gov/dwr/Content/Find_by_Program/Rural_Programs/OutsideAMAs_PDFs_for_web/Plateau_Planning_Area/Little_Colorado_River_Plateau_Basin.pdf (last visited Dec. 1, 2006).

16. *See, e.g.*, Shaun McKinnon, *Developers Cashing in on Weak Water Laws*, ARIZ. REPUBLIC, June 27, 2005, at A1, *available at* http://www.azcentral.com/specials/special26/articles/0627rwater-main27.html.

17. Most of this discussion will focus on groundwater because it is the only significant water supply practically available to most of rural Arizona. The only locations where surface water is available in meaningful quantities in rural Arizona are the Verde River Basin, the Salt River Basin, the San Pedro River Basin, and the Upper Gila River Basin. Even in these locations, however, most of the reasonably available surface water has long since been appropriated, and the only water supply available to meet growing demand is groundwater.

18. Clough v. Wing, 17 P. 453, 455–56 (Ariz. 1888) (noting that the first session of the Arizona Territorial Legislature, in 1864, enacted a water code confirming the right to appropriate water for irrigation and mining purposes).

19. 76 P. 460 (Ariz. 1904), *aff'd*, 200 U.S. 71 (1906).

> distinct from the land itself, and therefore [is] not the subject of appropriation by another, but belong[s] to the owner of the soil.[20]

In 1931, the Arizona Supreme Court reaffirmed *Howard v. Perrin*'s conclusion that "percolating subterranean waters [are] not subject to appropriation."[21] The court also noted that "the presumption is that underground waters are percolating in their nature. He who asserts that they are not must prove his assertion affirmatively by clear and convincing evidence."[22] The court then went on to discuss the legal boundary between percolating groundwater and waters that are so closely associated with surface streams that they are considered "a part of the surface stream itself, and are simply incidental thereto."[23] The court identified this latter category of underground water as "subflow."[24] More than seventy years after the court decided *Maricopa County Municipal Water Conservation District Number 1 v. Southwest Cotton Co.*, the legal issues associated with the boundary between non-appropriable percolating groundwater and appropriable subflow are still the subject of active litigation. The details of this litigation are beyond the scope of this Article, but it is sufficient to note that subflow makes some rural water supply issues substantially more difficult to resolve.[25]

B. The Doctrine of Reasonable Use

The doctrine of reasonable use was formally adopted by the Arizona Supreme Court in *Bristor v. Cheatham*.[26] The court compared the doctrine of reasonable use to the doctrine of correlative rights and concluded the doctrine of reasonable use provided the better basis for governing disputes over access to groundwater among neighboring landowners.[27] The court then stated that the doctrine of reasonable use

> does not prevent the extraction of ground water subjacent to the soil so long as it is taken in connection with a beneficial enjoyment of the land from which it is taken. If it is diverted for the purpose of making reasonable use of the land from which it is taken, there is no liability incurred to an adjoining owner for a resulting damage.[28]

This is the essential concept of the doctrine of reasonable use as originally applied in Arizona. So long as a landowner withdraws groundwater in order to make reasonable use of the landowner's property, neighboring landowners have no

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20. *Id.* at 462.

21. Maricopa County Mun. Water Conservation Dist. No. 1 v. Sw. Cotton Co., 4 P.2d 369, 376 (Ariz. 1931).

22. *Id.*

23. *Id.* at 380.

24. *Id.*

25. For example, subflow is a major issue in the San Pedro River Basin, where many have argued that increasing growth-related water demand is affecting streamflows. *See In re* Gen. Adjudication of All Rights to Use Water in the Gila River Sys. & Source, 9 P.3d 1069, 1075 (Ariz. 2000); *see also* McKinnon, *supra* note 7.

26. 255 P.2d 173 (Ariz. 1953).

27. *Id.* at 178.

28. *Id.* at 180.

claim for damages even if the groundwater withdrawals adversely affect water levels under the neighbor's property. The court placed an important limitation on the doctrine, however, by concluding that the defendants in the case were not protected against the claims of their neighbors because the defendants were withdrawing groundwater from one parcel of land and transporting it approximately three miles away to be used on other land. Because this withdrawal of groundwater did not benefit the property from which it was withdrawn, the property owners were not immune from suit.[29]

In the years after *Bristor* was decided, the Arizona Supreme Court decided a series of cases that sometimes strictly interpreted the limitation on transportation of groundwater away from the site of pumping, and at other times invoked equitable principles to allow limited transportation. The culmination of this line of cases came in 1976, when the Arizona Supreme Court decided *Farmers Investment Co. v. Bettwy* ("*FICO*").[30] In *FICO*, the court imposed a strict interpretation of the transportation rule and issued injunctions against several mining companies and the City of Tucson, all of which were engaged in transportation of groundwater away from the site of pumping. The court held that "[w]ater may not be pumped from one parcel and transported to another just because both overlie the common source of supply if the plaintiff's lands or wells upon his lands thereby suffer injury or damage."[31]

Because the court's decision threatened to disrupt both economically important mining operations in the state and municipal deliveries of water to many thousands of residential and commercial water users, the *FICO* opinion created enormous controversy. This controversy ultimately led to adoption of the GMA in 1980 after several years of intense negotiations among competing water interests.

C. Constitutional Challenges to the Groundwater Management Act

Following adoption of the GMA, several parties challenged the constitutionality of the Act.[32] These parties asserted that the Act's limitations on a landowner's right to pump and use groundwater constituted a taking of private property without compensation. The plaintiffs relied on language in many of the cases previously decided by the Arizona Supreme Court stating that groundwater belonged to the owner of the overlying land.

Despite these numerous prior statements suggesting that landowners owned the water underlying their lands, the Arizona Supreme Court nevertheless held in *Chino Valley* that the GMA is constitutional. In doing so, the court rejected the plaintiffs' reliance on *Howard v. Perrin*, *Southwest Cotton*, and other cases, declaring that:

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29. *Id.*

30. 558 P.2d 14 (Ariz. 1976).

31. *Id.* at 21.

32. Challenges were raised in both state court and federal court. The Arizona Supreme Court resolved the state court challenges in *Town of Chino Valley v. City of Prescott*, 638 P.2d 1324 (Ariz. 1981), while the federal court challenges were resolved in *Cherry v. Steiner*, 543 F. Supp. 1270 (D. Ariz. 1982), *aff'd*, 716 F.2d 687 (9th Cir. 1983)

> Dictum thrice repeated is still dictum . . . . We therefore hold that the statement first made in *Howard v. Perrin* and reiterated under circumstances where the exact nature of the overlying owner's rights to the water beneath his property were not in question is not precedent for the decision in this case.[33]

After thus reducing the status of its prior pronouncements on this issue to mere dictum, the court then said:

> The statements in *Bristor* and *Jarvis* do not mean that rights to the use of groundwaters cannot be modified prospectively by the Legislature. They only mean that courts will adhere to an announced rule to protect rights acquired under it and that if any change in the law is necessary, it should be made by the Legislature. . . .
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> We therefore hold that since the Act of 1980 is prospective in application, it is not a legislative encroachment on judicial powers.[34]

The court continued by explaining the nature of a landowner's right to percolating groundwater under the landowner's property. The court stated that:

> In the absolute sense, there can be no ownership in seeping and percolating waters until they are reduced to actual possession and control by the person claiming them because of their migratory character. Like wild animals free to roam as they please, they are the property of no one.[35]

The court then quoted a case decided by the Florida Supreme Court for this proposition:

> The common-law concept of absolute ownership of percolating water while it is in one's land gave him the right to abstract from his land all the water he could find there. On the other hand, it afforded him no protection against the acts of his neighbors who, by pumping on their own land, managed to draw out of his land all the water it contained. Thus the term "ownership" as applied to percolating water never meant that the overlying owner had a property or proprietary interest in the corpus of the water itself.
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> The right of the owner to ground water underlying his land is to the usufruct of the water and not to the water itself.[36]

Based on this statement of the law, the court then held "that there is no right of ownership of groundwater in Arizona prior to its capture and withdrawal from the common supply and that the right of the owner of the overlying land is simply to the usufruct of the water."[37] Finally, the court concluded that the GMA

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33. *Chino Valley*, 638 P.2d at 1327.
34. *Id.*
35. *Id.* at 1328.
36. *Id.* (quoting Village of Tequesta v. Jupiter Inlet Corp., 371 So. 2d 663, 667 (Fla. 1979)).
37. *Id.*

did not violate the constitutional prohibitions on taking of private property without due process and just compensation.[38]

Water users in the state have been operating under the requirements of the GMA ever since. As noted above, however, the GMA does not apply uniformly across the state. Because most of the Act does not apply in rural Arizona, the basic concept of the doctrine of reasonable use, with one important change from the common law (discussed below), prevails outside the state's AMAs. In fact, the doctrine of reasonable use has been legislatively confirmed for areas outside AMAs.[39] As explained by the Arizona Supreme Court in *Chino Valley*, the doctrine is essentially a rule of capture under which landowners are allowed to withdraw as much water as desired in conjunction with the reasonable use of the landowner's property, regardless of the consequences to neighboring landowners.[40] Furthermore, even the limitation on transportation away from the land being benefited (as imposed by the *FICO* court) has been removed by provisions of the GMA that are discussed below.

II. THE CURRENT STATE OF WATER LAW IN RURAL ARIZONA

A. Groundwater Transportation and the Doctrine of Reasonable Use

The original doctrine of reasonable use has been modified in one very significant respect since the Arizona Supreme Court decided the *FICO* case. Specifically, one of the compromises struck among competing water users during negotiations that led to adoption of the GMA was a substantial liberalization of the *FICO* court's strict interpretation of the prohibition on transporting groundwater away from the site of pumping.

Under current law, groundwater may be transported "[w]ithin a subbasin of a groundwater basin or within a groundwater basin, if there are no subbasins, without payment of damages" and "[b]etween subbasins of a groundwater basin, subject to payment of damages."[41] Even when groundwater is transported across a subbasin boundary, "neither injury to nor impairment of the water supply of any landowner shall be presumed from the fact of transportation."[42] Furthermore, when determining whether damages have been incurred by a landowner, a reviewing court must consider "all acts of the person transporting groundwater toward the mitigation of injury."[43] The only remaining restriction on groundwater transportation in areas outside of AMAs is that "[g]roundwater may not be

38. *Id.*

39. ARIZ. REV. STAT. ANN. § 45-453 (2006) (providing that outside AMAs, a person may "[w]ithdraw and use groundwater for reasonable and beneficial use" subject only to certain restrictions on transportation of groundwater).

40. *See supra* text accompanying notes 35–37.

41. ARIZ. REV. STAT. ANN. § 45-544(A)(1). These rules, along with similarly liberalized rules for transportation of groundwater within an AMA, *see id.* §§ 45-541 to -543, effectively overruled the strict prohibition on groundwater transportation imposed by the *FICO* court.

42. *Id.* § 45-545(A).

43. *Id.* § 45-545(B).

transported away from a groundwater basin,"[44] and in most cases groundwater may not be transported into an AMA from outside an AMA.[45]

These greatly liberalized rules for transportation of groundwater have effectively removed most of the limitations on groundwater pumping under the doctrine of reasonable use. For example, under these rules, the City of Flagstaff was able to acquire a ranch approximately forty miles east of the city and announce plans to withdraw groundwater from the ranch and transport it to the city for future municipal and industrial use.[46] Similar examples of groundwater being transported significant distances from the point of withdrawal to the point of use can be expected to increase as municipal areas in rural Arizona look to distant locations for water supplies necessary to meet growing demand.

B. The Adequate Water Supply Program

In 1973, the Arizona Legislature enacted a statewide water adequacy statute as a consumer protection measure in response to marketing of residential lots without available water supplies.[47] This statute and the regulations promulgated by ADWR to enforce the statute are collectively referred to as the "Adequate Water Supply Program." This program is structured in a manner similar to, but materially less restrictive than, the "Assured Water Supply Program" mandated by the Legislature for subdivisions within AMAs.[48]

The Adequate Water Supply Program requires subdivision developers to obtain a determination from the state regarding the availability of water supplies prior to marketing lots.[49] Specifically, the statute provides:

> In areas outside of active management areas . . . , the developer of a proposed subdivision including dry lot subdivisions, regardless of subdivided lot size, prior to recordation of the plat, shall submit plans for the water supply for the subdivision and demonstrate the

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44. *Id.* § 45-544(A)(2).

45. There are limited exceptions to this rule against transportation of groundwater into an AMA. *Id.* §§ 45-551 to -559.

46. 2 ARIZ. DEP'T OF WATER RES., *supra* note 14, at 16.

47. ARIZ. REV. STAT. ANN. § 45-108; *see also* ARIZ. DEP'T OF WATER RES., WATER ADEQUACY PROGRAM SUMMARY (2001), *available at* http://www.azwater.gov/WaterManagement_2005/Content/Forms/WADSumm.pdf.

48. *See* ARIZ. REV. STAT. ANN. §§ 45-576, -576.03. *See generally* Ariz. Dep't of Water Res., Water Management, http://www.azwater.gov/WaterManagement_2005 (last visited Mar. 30, 2007).

49. The scope of the Adequate Water Supply Program is limited by the definition of "subdivision," which applies to any "improved or unimproved land or lands divided or proposed to be divided for the purpose of sale or lease, whether immediate or future, into six or more lots, parcels or fractional interests." ARIZ. REV. STAT. ANN. § 32-2101(55)(a). Short-term leases (those for 12 months or less) and splitting of land ownership in which all parcels are greater than 36 acres do not fall within this definition. *Id.* § 32-2101(55)(c)(i), (ii). Neither the Adequate Water Supply Program nor the Assured Water Supply program applies to a proposed development if it does not meet the definition of a subdivision. *See* Ariz. Dep't of Water Res., Assured/Adequate Water, http://www.azwater.gov/WaterManagement_2005/Content/OAAWS/default.asp (last visited Mar. 30, 2007).

> adequacy of the water supply to meet the needs projected by the developer to the director. The director shall evaluate the plans and issue a report on the plans.[50]

This statutory requirement is implemented by ADWR through detailed regulations addressing what an applicant must demonstrate to secure a finding of adequate water supply. In short, an applicant must show that water is physically, legally, and continuously available in sufficient quantity and quality to serve all needs of the subdivision for a 100-year period.[51] This can be demonstrated in either of two ways. First, the applicant may submit an application pursuant to section R12-15-713 of the Arizona Administrative Code for a "water report" to confirm an adequate water supply for a particular subdivision. Alternatively, a city, town or private water company may apply for a "designation of adequate water supply" pursuant to section R12-15-714 of the Arizona Administrative Code. A designated provider may, in turn, commit to serve a proposed subdivision and thereby relieve individual developers of the burden of applying for a water report.[52]

In these aspects, the Adequate Water Supply Program is similar to the Assured Water Supply Program, which requires similar demonstrations of physical, legal, and continuous water availability. The Assured Water Supply Program also allows for issuance of "certificates of assured water supply" for individual developments and "designations of assured water supply" for cities, towns, and private water companies. In other respects, however, the Adequate Water Supply Program differs dramatically from the Assured Water Supply Program.

The first significant difference between the Adequate Water Supply Program and the Assured Water Supply Program is the fact that an applicant for a Water Report or Designation of Adequate Water Supply may rely entirely on groundwater as the source of supply. In contrast, within an AMA, an applicant for a Certificate of Assured Water Supply or Designation of Assured Water Supply must demonstrate the availability of water supplies that are consistent with the management goal and management plan for the AMA in which the application is submitted. In most cases, this precludes reliance on more than a small percentage of groundwater to satisfy water demand within the subdivision. In lieu of groundwater, an Assured Water Supply applicant must demonstrate the availability of renewable water supplies such as CAP, in-state surface water, or effluent. In areas outside AMAs, however, there are no management goals or management plans that mandate use of renewable water supplies. As a result, there is no limit to the amount of groundwater an applicant may use to satisfy water demand in a subdivision outside an AMA.

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50. ARIZ. REV. STAT. ANN. § 45-108(A). A number of bills have been introduced in the current session of the Arizona Legislature that may have the effect of substantially strengthening the requirements of section 45-108, as well as adding additional restrictions on recordation of plats for subdivisions that are determined by ADWR to have an inadequate water supply. *See* H.B. 2693, 48th Leg., 1st Sess. (Ariz. 2007); S.B. 1575, 48th Leg., 1st Sess. (Ariz. 2007).

51. ARIZ. ADMIN. CODE §§ R12-15-713, -714 (2006).

52. ARIZ. REV. STAT. ANN. § 45-108(E).

The second significant difference between the Assured Water Supply Program and the Adequate Water Supply Program is that a developer of a subdivision outside an AMA may record a plat and sell lots in the subdivision even if ADWR determines that the subdivision does not have an adequate water supply.[53] In fact, Arizona's real estate statutes expressly provide that:

> In areas outside of groundwater active management areas established pursuant to title 45, chapter 2, article 2, if the director of water resources, pursuant to § 45-108, reports an inadequate on-site supply of water to meet the needs projected by the developer or if no water is available, the state real estate commissioner shall require that all promotional material and contracts for the sale of lots in subdivisions approved by the commissioner adequately display the director of water resources' report or the developer's brief summary of the report as approved by the commissioner on the proposed water supply for the subdivision.[54]

The fact that a developer may sell lots for subdivisions that are determined by ADWR to lack an adequate water supply has caused increasing controversy in recent years. In 2005, the *Arizona Republic* reviewed ADWR records and reported that 60 of 171 applications for adequate water supply determinations submitted to ADWR from 2001 to 2005 "were returned to the applicant with an 'inadequate water supply' finding."[55] This report described a specific instance in which a subdivision developer submitted an application with a note stating, "I am applying for the letter to show the water supply to be 'inadequate.' I am advising all purchasers that this is a water-haul area, that the water for wells is too deep to even consider digging."[56]

This example is not unique. In fact, ADWR's website lists a significant number of subdivisions for which the Department has issued a water report determining that the water supply for the planned development is "inadequate."[57] Many of these determinations indicate that the developer chose not to provide information regarding water availability, leaving ADWR no choice but to determine the water supply is inadequate.[58] In such situations, ADWR proposes

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53. A subdivision developer is required to obtain a water report, but there is no requirement that the report determine that the water supply is adequate. *Id.* § 45-108. Substantial additional restrictions may be imposed on recordation of plats for subdivisions that ADWR determines do not have an adequate water supply if bills currently pending before the Arizona Legislature are enacted. *See supra* note 48.

54. ARIZ. REV. STAT. ANN. § 32-2181(F).

55. McKinnon, *supra* note 16.

56. *Id.*

57. *See* Ariz. Dep't of Water Res., *supra* note 49. This web page lists more than a dozen separate subdivisions for which ADWR determined the water supply to be inadequate.

58. Typical language used by ADWR to describe this situation is: "The developer has chosen not to demonstrate that a 100-year adequate water supply exists and therefore the Department of Water Resources must find the water supply to be ***inadequate***." *See, e.g.*, Letter from Frank Putman, Acting Chief Hydrologist, Ariz. Dep't of Water Res., to Roy Tanney, Dep't of Real Estate (Sept. 3, 2003), *available at*

language to be used to notify prospective buyers of the inadequate water supply, but the Department lacks authority to prohibit sales of lots.

C. Existing Authorities for Creating New AMAs

Although many questions have been raised regarding the minimal regulatory requirements that apply outside the state's current AMAs, little attention has been paid to the fact that current state statutes provide a number of mechanisms for creation of additional AMAs. These mechanisms offer two distinct ways to address water supply and water management concerns in areas of the state not currently subject to the active management provisions of the Groundwater Code.

The first mechanism for creation of additional AMAs is found in several statutes that authorize ADWR to designate new AMAs under specific circumstances.[59] These statutes authorize the Director of ADWR to:

> [D]esignate an area which is not within an initial active management area . . . as a subsequent active management area if the director determines that any of the following exists:
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> 1. Active management practices are necessary to preserve the existing supply of groundwater for future needs.
> 2. Land subsidence or fissuring is endangering property or potential groundwater storage capacity.
> 3. Use of groundwater is resulting in actual or threatened water quality degradation.[60]

An AMA designated by the Director pursuant to this statute may include more than one groundwater basin, but may not include only a portion of a groundwater basin, except within the "regional aquifer systems of northern Arizona."[61] If ADWR proposes to designate a groundwater basin or basins as a subsequent AMA, the Director must hold a public hearing.[62] The hearing must be held at a location within the proposed AMA, and "[i]n making his determination, the director shall give full consideration to public comment and to recommendations made by local political subdivisions."[63]

The second method by which a subsequent AMA may be created is by local initiation.[64] This method is triggered "upon petition by ten per cent of the registered voters residing within the boundaries of the proposed active management area . . . and a subsequent election held pursuant to the general election laws of this state."[65] This provision applies to any groundwater basin that

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http://www.azwater.gov/WaterManagement_2005/Content/OAAWS/Inadequate/22401022_paradiseheights.pdf.

59. *See* ARIZ. REV. STAT. ANN. §§ 45-412 to -414 (2006).
60. *Id.* § 45-412(A).
61. *Id.* § 45-412(B).
62. *Id.* § 45-413 (A).
63. *Id.* § 45-413(C).
64. *Id.* § 45-415.
65. *Id.* § 45-415(A).

is not currently within an AMA. If a petition is properly filed containing the signatures of at least ten percent of the registered voters living within the groundwater basin, a proposition will be added to the ballot at a subsequent election.[66] Under this "local initiation" method of creating a new AMA, there are no legal or technical standards that must be met to create the AMA. It is simply put to a vote of the registered voters within the groundwater basin, and the majority vote prevails.

Despite the fact that these two provisions have been a part of the GMA since its inception in 1980, they have never been used to create a new AMA.[67] Nevertheless, the extent to which these statutes provide an effective means to improve groundwater management in water-short areas of the state should be a part of the ongoing debate concerning rural water supply issues.

III. CURRENT EFFORTS TO ADDRESS RURAL WATER SUPPLY ISSUES

At least partly because of the rising controversy concerning water supply issues in rural Arizona, a number of initiatives are currently under way to gather information and evaluate alternatives to current water laws and policies outside the state's AMAs. These initiatives include ongoing efforts by ADWR to gather and publish water supply and demand data,[68] creation of a Rural Arizona Watershed Alliance Initiative,[69] the convening of a "Statewide Water Advisory Group" by the Director of ADWR,[70] and a Rural Water Legislative Study Committee authorized by the Arizona Legislature in 2005.[71]

Of these initiatives, perhaps the most important as well as longstanding is ADWR's ongoing effort to gather water supply and demand data throughout Arizona. These efforts date back to at least 1994 when ADWR published the *Arizona Statewide Water Resources Assessment* ("1994 Assessment"), which discussed "water supply, demand and management issues for six planning areas"

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66. *Id.* The ballot is to be worded: "'Should the (insert name of basin) groundwater basin be designated an active management area?' followed by the words 'yes' and 'no.'" *Id.* § 45-415(F).

67. The only existing subsequent AMA was created by the Legislature in 1994. *Id.* §§ 45-411.02 to -411.04; *see also supra* note 3.

68. *See, e.g.*, STITZER, *supra* note 8; 2 ARIZ. DEP'T OF WATER RES., *supra* note 14.

69. *See* Ariz. Dep't of Water Res., Rural Programs, http://www.azwater.gov/dwr/Content/Find_by_Program/Rural_Programs/default.htm (last visited Dec. 1, 2006). ADWR initiated the Alliance in 2000, and, to date, 17 individual watershed alliances have been created and have received funding to study water supply issues within each watershed. *Id.*

70. *See* Ariz. Dep't of Water Res., Statewide Water Advisory Group, http://www.azwater.gov/dwr/Content/Hot_Topics/SWAG/default.htm (last visited Dec. 1, 2006).

71. An Act Establishing the Rural Water Legislative Committee, 2005 Ariz. Sess. Laws ch. 281, § 1.

across the state.[72] Because the information contained in the 1994 Assessment was more than a decade old, ADWR undertook a study to obtain updated information beginning in 2003. This study involved sending detailed questionnaires to nearly 600 municipal and private water suppliers, Indian tribes, and counties throughout rural Arizona.[73] The information gleaned from these questionnaires was compiled in the Rural Water Study and published by ADWR in October 2004.

Following publication of the Rural Water Study, ADWR began work on the Arizona Water Atlas. Although the Atlas is still a work in progress, eventually ADWR intends to publish nine volumes of the Atlas to address water supply and demand information for each of the six water-planning regions the Department has established for the state, as well as for the state's existing AMAs. Currently, three volumes of the Atlas are available in draft form on the Department's website. The first volume is an introduction to the Atlas, and the second volume provides detailed information regarding the "Eastern Plateau Planning Area" (which coincides with the Little Colorado River Plateau Groundwater Basin). The introductory volume describes ADWR's purpose in publishing the Atlas as follows:

> 1. Provide a comprehensive overview of regional water supply and demand conditions that has not been available on a statewide basis for over ten years;
> 2. Identify water resource issues facing Arizona communities;
> 3. Identify missing information and how it could be improved; and
> 4. Initiate a renewed and more systematic effort by the Department to assist Arizona water planning efforts and the development of solutions.[74]

ADWR has published the first three volumes of the Water Atlas in draft form specifically to solicit comments from the public and water professionals. A comment form is available on the Department's website.[75]

Collectively, these efforts by ADWR and others are likely to continue as the state determines how to address water supply and demand issues in rural Arizona.

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72. STITZER, *supra* note 8, at 3. The 1994 Assessment was a "continuation of the State Water Plan published in 1975 by the Arizona Water Commission, the predecessor to ADWR." *Id.*

73. *Id.* at 1.

74. *See* 1 ARIZ. DEP'T OF WATER RES., *supra* note 14, at 1, *available at* http://www.azwater.gov/dwr/Content/Find_by_Program/Rural_Programs/content/water_atlas/ArizonaWaterAtlas_Vol1_Introduction_Draft_June2006.pdf (last visited Dec. 1, 2006).

75. Ariz. Dep't of Water Res., Atlas Feedback Form 1, http://www.azwater.gov/dwr/Content/Find_by_Program/Rural_Programs/content/water_atlas/default.htm (last visited Dec. 1, 2006).

IV. WHERE DO WE GO FROM HERE? A MODEST PROPOSAL FOR THE FUTURE

As Arizona's population continues to grow, concerns about water supply undoubtedly will grow as well. To adequately address these concerns, several steps should be taken. First, the state must devote sufficient resources to identify and implement appropriate solutions. Second, the potential need for more extensive regulation must be separately addressed in each water-planning area of the state to ensure that excessive regulation is not imposed on communities where there is no current need. Finally, the state must engage local stakeholders in any discussion regarding changes in the law that will affect communities in rural Arizona. Only by achieving each of these objectives will Arizona be able to resolve its growing water concerns. Accordingly, adequate resources, basin-by-basin evaluation, and involvement of local stakeholders are the cornerstones of a successful strategy to address these issues.

A. Adequate Resources

The first of these steps is the most pressing. Neither the state nor local authorities will be able to make sound decisions regarding water management and regulatory requirements in rural Arizona until ADWR is able to collect and accurately analyze existing water supply and demand information. Arizona's current budget for statewide water resource investigations and planning is very modest in comparison to other western states.[76] To avoid situations where ADWR's understanding of water supply conditions is a "step behind developers,"[77] the Department's funding should be significantly increased and earmarked for timely completion of ongoing efforts to develop accurate information regarding our water supplies and both current and future water demand.

It is equally urgent that the state provide adequate resources for local authorities in rural communities to construct necessary water supply infrastructure and to fund water conservation initiatives. ADWR's Rural Water Study identified both infrastructure and conservation efforts as serious needs in many rural communities. Infrastructure concerns are particularly urgent. In fact, ADWR concluded that "if all infrastructure related issues are grouped together, including inadequate storage and pumping capacity, then infrastructure issues are clearly the most critical."[78] ADWR also noted the desire by many rural communities to see an "[i]nvestment of effort and funds by the state to develop water supplies for rural communities proportionate to decades of investment in ensuring adequate supplies for major metropolitan areas."[79] As for conservation initiatives, ADWR noted that relatively few rural communities "had a water conservation program and of those that did, most programs consisted of water conservation materials. This likely

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76. *See* Western States Water Council, Minutes of the Water Resources Committee Meeting in Sheridan, Wyoming, at 4–8 (Oct. 5, 2006) (on file with Western States Water Council and author).

77. *See supra* text accompanying note 11.

78. STITZER, *supra* note 8, at 24.

79. *Id.* at 17.

reflects a lack of resources for anything more extensive since many respondents did mention the desire to expand their programs."[80] If the state is to resolve its rural water concerns, it must provide appropriate funding to make a resolution possible.

B. Evaluate Regulatory Needs Basin-by-Basin

As noted above, water availability (and demand) varies considerably from basin to basin throughout the state. Where circumstances in one groundwater basin may justify stricter regulatory standards under current conditions, other basins are likely to have abundant supplies for the indefinite future.[81] The state must avoid "one size fits all" regulatory programs. Similarly, the state must be sensitive to the reality that issues of concern in some jurisdictions many not be a source of problems in other locations. For example, ADWR's Rural Water Study noted that every county in the state that responded to the Department's survey indicated that "lot splits" and the resulting proliferation of exempt wells are serious problems.[82] On the other hand, very few municipalities and private water providers indicated that lot splits or exempt wells were a problem.[83] Furthermore, as ADWR also noted in the Rural Water Study, "[w]ater resource situations may vary dramatically between areas and even between nearby providers . . . ."[84]

This variability across the 87% of Arizona classified as rural confirms the need to individually analyze groundwater basins to determine how much regulation may be necessary. Perhaps the best tool for this purpose is ADWR's ongoing State Water Atlas project. By design, the Atlas will assess water supply and demand information in six separate water planning regions across rural Arizona. As discussed above, however, adequate funding must be secured to ensure that ADWR is able to complete this project in a timely manner and with sufficient technical detail to make the Atlas useful as a planning and regulatory evaluation tool.

C. Local Involvement in Planning and Decision-making

Once the necessary water supply and demand information is assembled, local stakeholders must be consulted to ensure that locally appropriate decisions about future regulatory programs are made. For example, in some areas municipal representatives or local residents may wish to evaluate the viability of creating a new AMA to address water resource concerns. The local initiative provisions of Arizona Revised Statutes section 45-415 might be ideal in such situations. Even the process by which ADWR's Director evaluates whether groundwater conditions may justify creation of an AMA requires the director to give "full consideration" to recommendations made by municipal representatives.[85]

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80. *Id.* at 28.
81. *See supra* text accompanying notes 14–15.
82. STITZER, *supra* note 8, at 12.
83. *Id.* at 15.
84. *Id.* at 8.
85. ARIZ. REV. STAT. ANN. § 45-413(C) (2006).

In other parts of the state, however, local residents and municipal representatives are likely to find the prospect of a new AMA to be a poor fit for resolving water concerns. In such locations alternative solutions must be explored with local stakeholders. Once appropriate solutions are identified through this process, the adequate funding discussed above will be essential to ensure success.

The importance of local involvement in these types of decisions cannot be overstated. If local stakeholders believe they have been cut out of the decision-making process, there will be resistance to and resentment of the "top-down" solution imposed on them. They may even suspect that centralized decisions are driven not by a desire to protect the water resources of rural Arizona, but instead by an interest in securing those resources for the existing urban centers of the state.[86] Even when such sinister motives are not suspected, many rural representatives will note with pride their long history of wisely using water, and contrast that history with the substantially higher water use figures typical in the lower desert urban centers of Arizona. For example, an Op-Ed piece published in the *Arizona Republic* in 2001 noted that communities in the Prescott area used an average of 147 gallons per person per day, while average use in the Phoenix AMA was 282 gallons per person per day.[87] More recently, the water resources staff in Payson reported that overall per capita water use in Payson has dropped to just 87 gallons per person per day.[88]

With such enviable water conservation statistics as this, rural Arizona could provide valuable lessons to urban Arizona concerning how to manage water supplies responsibly. If such facts are not taken into account when deciding how to address rural water supply issues, the resulting decisions will be doomed to failure.

CONCLUSION

Arizona faces significant water resource challenges resulting from the state's record growth in recent years. Increasingly, that growth is affecting not just the state's AMAs, but also parts of rural Arizona. Unlike the state's AMAs, however, many parts of rural Arizona do not have access to significant quantities

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86. *See, e.g.*, Pete Byers, *Big Cities Look to Tap County Water*, KINGMAN DAILY MINER, Sept. 1, 2006, *available at* http://www.kingmandailyminer.com/main.asp?SectionID=4&SubSectionID=4&ArticleID=10171&TM=81000.35 (asserting that proposed restrictions on planned developments in Mohave County may be a result of "some of the larger cities in the southern part of this state taking a long look at our water resources and thinking of ways to move water from up north down to their metro area").

87. N. Carl Tenney, *Pumping Water to Supply North-Central Arizona Won't Hurt Valley*, ARIZ. REPUBLIC, Jan. 24, 2001, at B9. The water use statistics in this Article were from the mid-1990s. Current water use statistics for the Prescott AMA are even more impressive, particularly for new subdivisions. In early 2006, ADWR issued a certificate of assured water supply for a development in the Prescott AMA that was based on a calculated *annual* water use per housing unit of just 0.21 acre-feet (approximately 68,000 gallons), with an estimated population of 2.4 persons per household. *See* Ariz. Dep't of Water Res., Certificate of Assured Water Supply for Highlands Ranch Subdivision (Jan. 26, 2006).

88. Felicia Medgal, *Payson Leaders Meet to Review Town Goals*, PAYSON ROUNDUP, Oct. 17, 2006, *available at* http://www.paysonroundup.com/section/localnews/story/25688.

of renewable water supplies such as the CAP. As a result, rural areas are largely dependent on groundwater to supply current and future water resource needs.

Because the regulatory requirements of Arizona's water laws are minimal outside the state's AMAs, the question arises whether those requirements should be made more stringent to protect groundwater resources. This question must be answered, and soon. The state will find a suitable answer, however, only if it is willing to devote the necessary resources to gather accurate data, along with the necessary resources to implement solutions. Furthermore, potential solutions must be evaluated in a basin-by-basin manner to adequately account for the wide divergence of conditions throughout rural Arizona. Finally, any proposed solutions must be discussed with, and accepted by, local stakeholders. If we cannot or will not collectively take these steps, our water resource problems will simply continue to grow right along with our population.