A Critique of the Student Note Entitled "The Battle to Save the Verde: How Arizona's Water Law Could Destroy One of Its Last Free-Flowing Rivers"

by Colleen M. Auer

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Editors' Summary

Effective management of scarce water resources is one of the most critical issues facing western states like Arizona. Extensive regulations designed to address groundwater overdraft in parts of the state strike a delicate balance between competing groundwater and surface water users. That balance is now under attack in a high stakes controversy over a groundwater importation project that pits two northern Arizona communities against the third largest public power utility in the country and other interests who claim their water rights (including surface water rights in the upper Verde River) will be adversely impacted by the project.

"[I]t's better to be polite and impersonal in your criticisms of your adversaries, and to be candid, fair, and thorough in responding to their arguments. It's the right thing to do. It makes your article more persuasive. It makes you look better. And it avoids turning your adversaries into your enemies."

—Eugene Volokh[1]

It is undoubtedly a rare thing for a Student Note to evoke such a visceral reaction that it prompts a detailed critique on its merits and underlying bias. The Note entitled, "*The Battle to Save the Verde: How Arizona's Water Law Could Destroy One of Its Last Free-Flowing Rivers,*" published by the *Arizona Law Review* in Spring 2009, is such a Note. Like other published Notes, it is offered as an objective work of legal scholarship designed to influence the bar, the bench and other readers on the relative merits of an existing legal controversy—in this case, the Big Chino Water Ranch Project (Project).

But, in fact, as this critique will demonstrate, the Note is an advocacy piece for opponents of the Project that is both inaccurate and incomplete, thereby failing to fairly and objectively evaluate the legal validity of the issues presented. Each of these flaws alone is sufficient to mar the credibility of the Note but, in concert, render the Note wholly unreliable.

I. The Controversy

The subject of the Note is a pending legal controversy over whether the city of Prescott, Arizona, can withdraw and transport groundwater from the neighboring Big Chino Sub-basin into the Prescott Active Management Area (PRAMA) pursuant to the authority granted in Ariz. Rev. Stat. Ann. (A.R.S.) §45-555(E); and, if so, how much water can be legally imported by Prescott into the PRAMA and subsequently shared with the town of Prescott Valley (Prescott Valley), also located in the PRAMA.

Rich in history and genial in nature, Prescott sits in Arizona's central mountains, 86 miles northwest of Phoenix

Author's Note: Thanks to Carol Cornell for her thoughtful review, meticulous editing, and research assistance throughout the drafting process; and to Ivan Legler and John Munderloh for their insightful comments and suggestions on earlier drafts.

Publisher's Note: ELR would not normally publish a critique of a student note. This critique, however, was refused publication in the law review that published the original note. It also raises several issues about the standards to which legal publishers hold authors.

1. Eugene Volokh, Academic Legal Writing: Law Review Articles, Student Notes, Seminar Papers, and Getting on Law Review 256 (3d ed. 2007) (Eugene Volokh is a UCLA Professor of Law and noted authority in academic legal writing).

and 90 miles southwest of Flagstaff. Arizona's First Territorial Capital and "Everybody's Hometown," Prescott is a popular destination for retirees and vacationers.

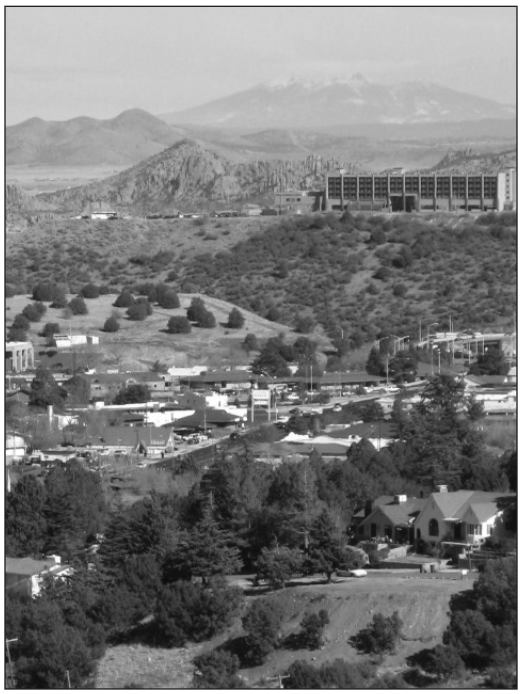

Photo courtesy of Ivan Legler.

This historic gem and its relatively young neighbor to the east, Prescott Valley, are at serious risk of significant destabilization and economic decline if opponents succeed in stopping Prescott from accessing Big Chino groundwater that was allocated to it by the legislature 19 years ago.

Prescott and Prescott Valley (collectively, Communities) are part of the PRAMA, one of five active management areas (AMAs) in Arizona where groundwater overdraft is most severe.[2] Within these AMAs, strict regulations apply to the withdrawal, transportation, use, conservation, and conveyance of rights to use groundwater.[3] The management goal for the PRAMA is a balance between the amount of groundwater withdrawn and the amount naturally and artificially replenished, known as Safe Yield, by 2025.[4] The management plan for the PRAMA requires new subdivisions to be supported by an alternative Assured Water Supply (AWS) that is legally, physically, and continuously available for 100 years.[5]

The Arizona Department of Water Resources (ADWR) has exclusive and sweeping "general control and supervision" over groundwater in this state.[6] On January 12, 1999, ADWR declared the PRAMA out of Safe Yield.[7] ADWR's most recent report indicates that twice as much groundwater is being withdrawn from the PRAMA each year than is naturally or artificially recharged.[8] ADWR's Third Management Plan for the PRAMA identifies groundwater imported from the Big Chino Sub-basin under A.R.S. §45-555(E) as an alternative water supply available to the PRAMA.[9]

A.R.S. §45-555(E) is one of a very few exceptions to the general prohibition in Arizona of inter-basin transportation of groundwater.[10] A.R.S. §45-555(E) authorizes Prescott, or the United States in cooperation with Prescott, to transport up to 14,000 acre-feet per year (AFY) of groundwater from the Big Chino Sub-basin of the Verde River groundwater basin if the groundwater is withdrawn and transported either:

1. In exchange for or replacement or substitution of supplies of water from the Central Arizona Project allocated to Indian tribes, cities, towns, or private water companies in the Prescott active management area or in the Verde River groundwater basin.

2. For the purpose of directly or indirectly facilitating the settlement of the water rights claims of the Yavapai-Prescott Indian Tribe and the Camp Verde Yavapai-Apache Indian community.[11]

At the time A.R.S. §45-555(E) was written, the federal government, the state of Arizona, key stakeholders, and the Yavapai-Prescott Indian Tribe (YPIT) were in negotiations to settle the YPIT's claims, which were ultimately settled by the Yavapai-Prescott Indian Water Rights Settlement Act passed by Congress in 1994.[12] For many reasons, Prescott was uniquely situated to facilitate settlement of the YPIT's claims. Both Prescott and the YPIT held Central Arizona Project (CAP) water allocations that could be relinquished to facilitate a settlement.[13] As the sole municipal water provider in the PRAMA at the time, Prescott alone was able to provide water and sewer service on the reservation, a driving concern for the YPIT in its settlement negotiations.

2. The state's five AMAs are Phoenix, Pinal, Prescott, Santa Cruz, and Tucson. Ariz. Rev. Stat. Ann. §§45-411, 45-411.04 (2009).
3. Ariz. Rev. Stat. Ann. tit. 45, ch. 2, arts. 4-5 (2009).
4. Ariz. Rev. Stat. Ann. §45-562(A) (2009).
5. Third Management Plan 2000-2010, dated October 1999, §§2.7.2.2, 2.7.2.3, 2.7.2.4, 8.3.1, 8.3.3, 11.4.3, 11.4.4, 12.2, and 12.2.1.
6. Ariz. Rev. Stat. Ann. §45-103(B) (2009).
7. Final ADWR Determination That Prescott AMA Is Out of Safe Yield, January 12, 1999.
8. 2003-2004 Prescott Active Management Hydrologic Monitoring Report, 23-24.
9. Third Management Plan 2000-2010, dated October 1999, §8.3.3.
10. Ariz. Rev. Stat. Ann. §§45-551 through 557 (2009).
11. Ariz. Rev. Stat. Ann. §45-555(E) (2009).
12. Pub. L. No. 103-434, 108 Stat. 4526, Oct. 31, 1994.
13. The CAP was formed to administer and deliver Arizona's allocation of Colorado River water. *See* Central Arizona Project, http://www.cap-az.com/about-cap/history (last visited Jan. 7, 2010). At the time A.R.S. §45-555(E) was passed, Prescott held a CAP contract entitlement in the amount of 7,127 AFY, and YPIT held a CAP contract entitlement in the amount of 500 AFY. Prescott and YPIT were the only entities in the PRAMA to receive a CAP contract entitlement. *See* 48 Fed. Reg. 12446 (Mar. 24, 1983).

But Prescott was concerned that the PRAMA lacked sufficient water resources to allow the city to meet the Tribe's needs in perpetuity. Thus, the legislature enacted A.R.S. §45-555(E) to assure Prescott that it would have an alternative water supply available to it to replace the relinquished CAP water from the PRAMA and also to meet the expanding water needs of the YPIT in perpetuity.

As part of the YPIT settlement, both Prescott and the YPIT sold their CAP allocations to the city of Scottsdale in the Phoenix AMA, located within the Salt and Verde River system. In addition, Prescott acknowledged the YPIT claims to Granite Creek surface water rights, agreed to hold certain non-irrigation groundwater rights in trust for the benefit of the Tribe, agreed to meet the YPIT's water needs in perpetuity with priority status given to the first 550 AFY of water delivered to the reservation, and agreed to use funds generated from the relinquishment of its CAP allocation to develop alternative water supplies, including groundwater resources from the Verde River Basin outside the PRAMA.[14] Prescott did so in reliance on the provisions of A.R.S. §45-555(E).

Prescott has since acted to exercise its rights under A.R.S. §45-555(E) by, among other things: (1) entering into an Intergovernmental Agreement (IGA) with Prescott Valley to share the costs of the Project and the imported water supplies; (2) purchasing a site for the Project wellfield in the Big Chino Sub-basin; and (3) pursuing a modification of its Designation of Assured Water Supply (DAWS) to include groundwater from the Big Chino Sub-basin.

A. The Prescott/Prescott Valley IGA

Prescott soon recognized that rapid growth in Prescott Valley necessitated sharing the imported water supplies with that community. Accordingly, on December 7, 2004, the Communities entered into an IGA wherein they agreed to share both the Project costs and imported water.[15]

B. The Big Chino Water Ranch

After a comprehensive study of available lands within the Big Chino Sub-basin, Prescott purchased the JWK Ranch (now known as the Big Chino Water Ranch) in 2004 for approximately $23.5 million as the future site of the Project well-field. Prescott specifically analyzed the hydrogeologic characteristics of the ranch and determined it to be an ideal location from which to transport groundwater from the sub-basin because, among other things:

1. The ranch and neighboring properties had been irrigated since the 1940s without causing any demonstrated impacts to the upper Verde River (or even causing notable declines in monitoring wells in the area).[16] Thus, there is significant historical evidence of the aquifer's resilience to groundwater pumping.[17]
2. The proposed well field at the ranch is 20 miles away from the upper Verde River springs that help sustain the flows in the upper reaches of the Verde River.[18]
3. Water tables on the ranch are 275 feet higher in elevation than water tables adjacent to the upper Verde River springs.[19]
4. The ranch is located up gradient of a significant geologic barrier known as the "playa intrusion" or "clay plug" that constrains groundwater under the ranch from the rest of the Big Chino Sub-basin. Groundwater levels mapped by hydrologists clearly demonstrate this fact.[20]
5. The ranch overlays the deepest portion of the aquifer in the sub-basin. Estimates by the U.S. Geological Survey place the total saturated depth of groundwater ranging from near the surface to over 2,500 feet below land surface.[21] The occurrence of deep groundwater provides opportunities to direct the removal of groundwater from upper zones with little or no impact.[22]

The ranch's remote location significantly increased the cost of the Project (an estimated 40%) due to the additional distance water would have to be piped to reach its final destination in the PRAMA.[23] The Communities willingly assumed these added costs to ensure that their pumping would not cause a demonstrable impact to upper Verde River flows. In fact, the Communities took extraordinary measures to protect the flows at the upper Verde springs. Specifically, the Communities committed to: (1) retiring the historically-irrigated acreage at the ranch, accounting for more than 3,300 AFY of groundwater consumption in the sub-basin; (2) placing the ranch and the remaining portion of an adjoining ranch (totaling approximately 10,000 acres) into a conservation easement to prevent further development once Project pumping commences; (3) monitoring the aquifer in the area of pumping for potential impacts; and (4) responding appropriately to any associated demonstrable, adverse impacts to the upper Verde River.[24]

14. Water Services Agreement Between Yavapai-Prescott Indian Tribe and City of Prescott, §§4, 5, and 8; YPIT Settlement Act, Pub. L. No. 103-434, 108 Stat. 4526, Oct. 31, 1994, §107.
15. Intergovernmental Agreement for the Sale of Water and Cost Participation dated December 7, 2004 Between City of Prescott and Town of Prescott Valley. The IGA includes an option for the town of Chino Valley (another community located in the PRAMA) to share in the Project's costs in exchange for a share in the water supply. IGA §8.
16. *See* Yavapai County Water Advisory Committee, Big Chino Subbasin Historical and Current Water Uses And Water Use Projections (2004).
17. U.S. Dep't of the Interior, U.S. Geological Survey (USGS), Scientific Investigations Report 2005-5198, Hydrogeology of the Upper and Middle Verde River Watersheds, Central Arizona.
18. *Id.*
19. *Id.*
20. *Id.*
21. *Id.*
22. *Id.*
23. In 1990, Prescott purchased a ranch near Paulden for the purpose of importing water. Though using this location for the project well-field would have reduced the length of the pipeline by over two-thirds, Prescott rejected the site because of its proximity to the upper Verde River springs.
24. *See generally* Apr. 8, 2004, Prescott Valley Town Council Minutes; Apr. 15, 2004 Prescott Valley Town Council Minutes; Apr. 15, 2004, Prescott-Prescott Valley Memorandum of Understanding; Nov. 15, 2004, Prescott Agreement

The current estimated cost of the Project is $200 million. As of August 2009, the Communities had spent approximately $36 million in land acquisition, design, and pursuit of a modification of Prescott's DAWS to include the Big Chino groundwater. Modification of Prescott's DAWS was a necessary step to ensure that the groundwater imported from the Big Chino Sub-basin would qualify as an alternative AWS for the Communities.[25]

C. *Modification of Prescott's Assured Water Supply Designation*

On October 12, 2007, Prescott filed its application with ADWR to modify its existing DAWS to include the Big Chino groundwater. Prescott sought to add 7,627 AFY under subsection (1) of A.R.S. §45-555(E) and 1,948.7 AFY under subsection (2) of A.R.S. §45-555(E) for a total of 9,575.7 AFY of Big Chino groundwater to its AWS.

Several residents and nonresidents of the PRAMA, including the Salt River Project (SRP), a Phoenix-based water utility, the Yavapai-Apache Nation, and the Fort McDowell Yavapai Nation (collectively, Nations) filed objections to Prescott's DAWS application claiming potentially adverse impacts to their water rights and other interests from Prescott's proposed pumping. SRP also challenged the constitutionality of A.R.S. §45-555(E).

After extensive review of Prescott's DAWS application, the hydrologic studies submitted in support of the application, the analyses and findings of ADWR's Hydrology Division, and the written objections to the proposed modification, ADWR's Director issued a draft Decision and Order on November 12, 2008, approving a modification of Prescott's DAWS to include 6,885.7 AFY under subsection (1) and 1,181.7 AFY under subsection (2) for a total of 8,067.4 AFY of Big Chino groundwater as an AWS.[26] The Director's letter included with the draft Decision and Order also responded to each written objection received.

The subject Note was published several months *after* ADWR's draft Decision and Order was issued.[27] Since the Note's publication, an administrative law judge (ALJ) affirmed ADWR's draft Decision and Order following eight days of evidentiary hearings at which 22 witnesses testified and over 600 exhibits were entered into evidence.[28] Every issue raised by the objectors and by the Note was addressed and dismissed by the ALJ.[29] In fact, the ALJ concluded that the draft Decision and Order should have given Prescott an additional 500 AFY of importable supply, for a total of 8,567.4 AFY for 100 years.[30]

On December 28, 2009, ADWR issued its final Decision and Order, more than two years after Prescott submitted its original application to modify its DAWS.[31]

Opponents of the Project, including SRP and the Center for Biological Diversity continue to challenge Prescott's importation rights under A.R.S. §45-555(E) in the state's superior and appellate courts.[32] The continuing nature of this high stakes controversy only adds to the importance of ensuring that information published about the Project is accurate and complete. Unfortunately for the Communities and the citizens they serve, the Note fails to meet these requirements in all respects.

II. The Critique

A. *The Note Is Inaccurate*

1. At Least Three "Facts" Critical to the Note's Analysis Are Wrong

The first erroneous fact in the Note is the proximity of the Communities' well-field in the Big Chino Sub-basin to the Verde River. The Note places the well-field anywhere from at "the river's headwaters"[33] to "between fifteen and twenty miles from the river."[34] In fact, the well-field is located 20 miles northwest of the upper Verde Springs.[35] Unquestionably, the well's proximity to the river has a significant bearing on the viability of the thesis; it forms the basis for the Note's thesis that pumping from this well-field will deplete flows in the Verde River. Practically speaking, the well-field's location determines if, and when, there is an impact on the river's flows. The legal implications of this "fact" are even more acute. Under Arizona law, water withdrawn from a well is presumed to be groundwater, and the burden is on those claiming otherwise to prove differently by clear and convincing evidence.[36] Given the implications of the

for Sale of Real Property; IGA; July 12, 2005, Prescott City Council Resolution No. 3688; June 8, 2006, Prescott Valley Town Council Minutes; June 8, 2006, Prescott-Prescott Valley-Chino Valley-Dewey/Humboldt Intergovernmental Agreement; Sept. 20, 2006, Prescott Peer Review Group Groundwater Monitoring Plan; Oct. 11, 2007, Prescott Application to Modify Designation of Assured Water Supply; Nov. 19, 2008, Prescott Monitor Wells Report.

25. A DAWS is an official determination by ADWR that the designated provider has a quantity or quantities of water that meet the AWS requirements under *Ariz. Admin. Code* R12-15-710 (2009). Only an AWS may be used to support new subdivision plats within the AMA. ADWR monitors the recording of such plats against the designated provider's AWS portfolio, and the designated provider must maintain a sufficient quantity of water in that portfolio to support all current and committed demands within the provider's service area, plus at least two years' of projected demand, to maintain the designation.
26. *See* http://www.adwr.state.az.us/AzDWR/Watermanagement/AMAs/PrescottAMA/documents/Prescott_modification_081112.pdf.
27. Meredith K. Marder, *The Battle to Save the Verde: How Arizona's Water Law Could Destroy One of Its Last Free-Flowing Rivers*, 51 Ariz. L. Rev. 175, 175 (2009).
28. *See* https://portal.azoah.com/oedf/documents/08A-AWS001-DWR/, click on "Administrative Law Judge Decision."
29. *Id.*
30. *Id.* at 5.
31. In re City of Prescott's Application for a Modification, Decision, and Order (Dec. 28, 2009), http://www.azwater.gov/AzDWR/Watermanagement/AMAs/PrescottAMA/documents/091120_Prescott_D&O.pdf. ADWR's final Decision and Order affirmed its previous draft Decision and Order granting Prescott 8,067.4 AFY of Big Chino groundwater as an AWS.
32. *See* CV2009-000947, CA-CV09-0357, CA-SA 09-0182, LC2009-000897, LC2009-000833, and LC 2009-000799.
33. *See* Marder, *supra* note 27, at 175.
34. *Id.* at 186 n.70.
35. The Big Chino Water Ranch is located in the upper portion of the Big Chino Valley, in portions of Townships 19 and 20 North-Range 4 West and Township 20 North-Range 5 West, G&SRB&M in Yavapai County, Arizona.
36. Maricopa County Municipal Water Conservation District No. 1 v. Southwest Cotton Co., 4 P.2d 369, 376 (1931).

well-field's location, the Note's inconsistent use of this fact is indicative of the quality of the legal analysis.

Second, the Note misstates the Communities' water rights claims under A.R.S. §45-555. The Note incorrectly claims that the Communities seek to pump water from the Verde River.[37] In fact, the Communities are asserting rights to withdraw *groundwater* for importation into the PRAMA as expressly provided in the statute.[38] This distinction was not lost on the legislature when it included the statute as part of the 1991 Groundwater Transportation Act.[39] The purpose of this landmark legislation was to prohibit, with limited exception (including A.R.S. §45-555(E)), the interbasin transportation of *groundwater* in the state. Given the importance of both the physical and legal distinctions between "groundwater" and "surface water," the accurate use of these terms is essential to a sound legal analysis.

Third, the Note misstates the Communities' position relative to habitat conservation plans (HCP) established under §10 of the federal Endangered Species Act (ESA).[40] According to the Note, the Communities have been unwilling to develop an HCP to address potential adverse impacts to endangered species and habitat associated with the groundwater pumping from the Big Chino Water Ranch.[41] However, the only provision of the ESA that could possibly apply to Prescott's groundwater withdrawals is §9 of the ESA, which prohibits activities by "any person" that "take" a listed species.[42] Courts have construed this take prohibition strictly, and have found a violation only where there is credible evidence establishing that members of a listed species are actually present and have been, or are reasonably certain to be, killed or injured by the challenged activity.[43] Mere speculation has been found to be insufficient to meet this evidentiary standard.[44] According to the best available evidence, no endangered species inhabit the upper Verde River.[45] Even if an endangered species was determined to inhabit this stretch of the Verde River, §9 does not apply unless there is *credible evidence* that the Project *is reasonably certain* to cause a "take."[46] The Note acknowledges that this would be "difficult" for Project opponents to prove.[47] In fact, the Project is specifically designed not to cause a take. In the absence of a take, the ESA and related HCP requirements do not apply to the Project.

The Note likewise incorrectly states that the concept of subflow is "unique" to Arizona water law.[48] Actually, California, Maryland, Missouri, Montana, and North Carolina also recognize two distinct classes of subterranean water: (1) percolating waters; and (2) underground streams, i.e., variously defined as water that: (i) flows in subterranean streams; (ii) definite channels, and/or (iii) joins a stream.[49] Like Arizona, California, Maryland, Missouri, Montana, and North Carolina all have a bifurcated system of water law in which separate legal regimes apply to percolating groundwater and surface water (which includes underground streams).[50]

2. The Analysis Is Based Heavily on Information From Unreliable Sources

Newspaper articles constitute 44% of the Note's sources of information and data.[51] But "[n]ewspaper articles often omit

37. Marder, *supra* note 3, at 176, 208, 210.
38. A.R.S. §45-555(A) (2009) grants cities or towns that own Historically Irrigated Acres, or have the consent of the landowner, to pump groundwater from within the Big Chino Sub-basin for importation into the PRAMA. Subsection (E) of the statute allows Prescott to import groundwater from the Big Chino Sub-basin into the PRAMA pursuant to two separate provisions of that subsection.
39. 1991 Ariz. Sess. Laws, ch. 212.
40. 16 U.S.C. §§1539(a)(2)(A).
41. Marder, *supra* note 27, at 200, 205, 210.
42. *See* 16 U.S.C. §1538(a)(1)(B) (2009). The term "take" means "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct." 16 U.S.C. §1532(19).
43. *See*, *e.g.*, Ariz. Cattle Growers' Ass'n v. U.S. Fish & Wildlife Serv. (FWS), 273 F.3d 1229, 1243-48, 32 ELR 20392 (9th Cir. 2001) (rejecting FWS' findings that livestock grazing would take various listed species, including spikedace and razorback suckers).
44. *Id.*
45. In an administrative hearing reviewing ADWR's preliminary ruling on Prescott's application to modify its Designation of Assured Water Supply, Ms. Brenda Smith testified on behalf of the FWS that only one endangered species—the spikedace—was found in the upper Verde River since 1997. That observation occurred 11 years ago, in 1999, which is outside the time frame for application of the ESA. It is also well documented that the upper Verde River contains a variety of predatory, non-native species (including smallmouth bass, several catfish species, red shiner, and green sunfish) at levels that would not allow the persistence of spikedace. *See, e.g.*, Prescott National Forest, *TE&S Fish Resources Report for the Chino Livestock Grazing Project Environmental Assessment* (Dec. 2003). As the U.S. Court of Appeals for the Ninth Circuit held in *Arizona Cattle Growers*, speculative evidence that a species might be present and could be taken is insufficient to establish a violation of §9 of the ESA. *Id.* at 1237-39.
46. *Arizona Cattle Growers*, *supra* note 43, at 1243-48 (emphasis supplied).
47. Marder, *supra* note 27, at 200-01.
48. *Id.* at 175, 176, 189, 191.
49. *See generally* Finley v. Teeter Stone, Inc., 251 Md. 428, 248 A.2d 106 (App. 1968) (recognizing two distinct classes of subterranean water: (1) underground streams; and (2) percolating waters, and noting that underground streams are governed by the same law that applies to surface streams, whereas percolating groundwater is governed by the doctrine of reasonable use); North Gualala Water Co. v. State Water Resources Control Bd., 139 Cal. App. 4th 1577, 1590 (2006) (recognizing two distinct classes of groundwater: (1) groundwater flowing in subterranean streams; and (2) groundwater percolating through the soil, and noting that the two are treated under "separate and distinct legal regimes"); Rock Creek Ditch & Flume Co. v. Miller, 17 P.2d 1074 (1933) (recognizing two distinct classes of underground water: (1) percolating groundwater; and (2) groundwater that joins a natural stream, and noting that the two are governed by different laws); McGowan v. United States, 206 F. Supp. 439 (D. Mo. 1962) (same); Jones v. Home Bldg. & Loan Ass'n of Thomasville, 114 S.E.2d 638 (1960) (recognizing two distinct classes of subterranean water: (1) streams or water flowing in definite channels that are discernable without excavation; or (2) percolating water, and noting that subterranean water flowing in definite channels or streams is governed by the same law that applies to surface streams, whereas percolating groundwater is governed by the doctrine of reasonable use); *see also* 78 Am. Jur. 2d *Waters* §212 (2008) ("Percolating waters may be defined generally as those which ooze, seep, filter, or percolate through the ground under the surface without a definite channel, or in a course that is uncertain or unknown and not discoverable from the surface without excavation for that purpose.").
50. *Id.*
51. *See* Marder, *supra* note 27, at 177 nn.1, 5, 8; 178 n.13; 180 nn.19, 20, 21, 22, 23, 24, 25, 28, 29, 30; 181 nn.31, 32, 33, 34, 35, 36, 37; 182 nn.38, 39, 41, 42, 43, 44, 45, 46,;185 n.65; 186 nn.70, 72, 74, 77, 78; 187 nn.79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89; 188 nn.90, 91, 93, 94, 95, 97, 98, 99, 100, 101, 102; 189 nn.103, 104; 191 n.125; 193 nn.148, 149; 194 nn.150, 151, 152, 153, 154; 195 nn.158, 159; 196 n.172; 197 nn.179, 180, 181; 198 nn.182, 183, 184, 185; 199 n.198; 200 nn.199, 200, 201, 202, 203, 204; 201 nn.210, 211, 212, 214, 215; 202 nn.216, 218, 219, 220, 221, 222, 223; 203 nn.224, 225, 226, 227, 228, 229, 230, 231; 204 nn.232, 233, 234, 235, 236, 237, 238, 239, 240; 205 nn.242, 243, 244, 245, 246, 247; 206 nn.248, 252, 253,

critical details, or err in the details they do include" making it "risky to rely on them."[52] For this reason, law students are discouraged from relying on newspaper articles as support for law review articles, student notes, and other papers, except as a last resort and with full disclosure of the source of information and the fact that it is not highly reliable.[53]

Advocacy websites make up another 6% of the Note's information sources.[54] Because "[i]nformation . . . on a site run by an advocacy group is more likely to be unreliable or incomplete than information in a more objective news story or treatise," law students are encouraged to "avoid cutting corners with sources like these" and, instead, encouraged to "[t]rack down the original study [or source]."[55] For example, the Note cites a website maintained by the environmental group American Rivers for the proposition that the Verde River is the "tenth most endangered river in the United States due to threats posed by groundwater pumping and rapid development."[56] But, in 1987, that same website claimed the Verde River was among the 10 most endangered rivers in the United States because of "proposed dams," not groundwater pumping.[57] And even though groundwater pumping—the circumstance that purportedly warranted the river's "endangered" designation in 2006—still exists, as of 2009, American Rivers no longer lists the Verde River as one of the 10 most endangered rivers in the United States.[58]

Approximately 7% of the Note's sources are documents created by the Project's opponents, i.e., demand letters, a Notice of Intent to Sue, and a press release, including information obtained from an environmental advocacy group,[59] while another 10% of the sources come from articles written by the Note advisor advocating the general theory of hydrological connectivity.[60] Like the other sources of information and data heavily cited in the Note, "[i]nformation . . . written by an advocate for a particular position . . . is more likely to be unreliable or incomplete than information in a more objective news story or treatise."[61]

When the vast majority of the sources (some 67%) relied upon to form the basis of the Note's thesis are newspaper articles and advocacy pieces, the accuracy and quality of the Note must be questioned.[62]

3. The Core of the Legal Analysis Is Outside the Scope of the Author's Expertise

The Note involves the application of hydrology principles to Arizona water law. Specifically, the Note relies upon a single, highly controversial hydrologic study of a portion of the Verde River watershed to draw the conclusion that the state's entire legal structure governing water rights and uses must be overhauled.[63]

However, neither the author (a law student) nor her Note advisor (a law professor) is trained in the field of hydrology. This is the type of interdisciplinary "evolution" of law review articles that U.S. Court of Appeals Judge Richard Posner criticizes in his article titled "Against the Law Reviews."

> The system of student-edited law reviews, with all its built-in weaknesses, has persisted despite a change in the character of legal scholarship that has made those weaknesses both more conspicuous and more harmful to legal scholarship. Most articles by law professors today are still, as they were a century ago, rather narrowly, conventionally doctrinal. Typically, they criticize a key case or lines of cases as inconsistent with doctrine emerging from other cases. Good law students can evaluate and improve such articles today as always. But—and this is true not only at the leading law schools—many law faculty today have, for good or ill, broken the doctrinal mold.
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> Their work now draws very heavily on sources other than legal doctrine, whether it is economics, history, political or moral philosophy, psychology, statistics, epistemology, anthropology, linguistics—even literary theory. The use of insights from these fields in analyzing law has given rise in recent decades to a cornucopia of interdisciplinary fields of legal studies ("law and . . ." fields), ranging from law and economics (the largest and most influential) to feminist jurisprudence and critical race theory. Except for the rarefied set of Ph.D.s who go to law school for a J.D., the disciplines on which these fields draw are generally not ones about which a law review editor will be knowledgeable, except by accident. This might not matter much if the analytical core of such fields were legal, but it is not. "Law and economics," for example, is the application of economic theory to law, not the application of legal reasoning to economics. So the law review editor cannot get much mileage from what he or she has learned about legal reasoning.
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> . . .
>
> THE RESULT OF THE SYSTEM OF SCHOLARLY PUBLICATION IN LAW is that . . . many interdisciplin-

254, 255, 256, 257; 207 nn.258, 259, 260, 261, 262, 263; 208 nn.267, 268, 269, 270.

52. Volokh, *supra* note 1, at 138.
53. *Id.* at 139-40.
54. *See* Marder, *supra* note 27, at 176 n.1; 177 nn.3-8; 178 nn.9-12, 14, 16; 179 n.17; 182 nn.39, 46; 198 nn.186, 188; 202 n.217.
55. Volokh, *supra* note 1, at 146.
56. Marder, *supra* note 27, at 178 n.14.
57. American Rivers, America's Most Endangered Rivers of 1987, at http://www.americanrivers.org/our-work/protecting-rivers/endangered-rivers/background/past-reports-1.html (select "1987") (last visited Jan. 7, 2010).
58. American Rivers, America's Most Endangered Rivers: 2009 Edition (2009), *available at* http://act.americanrivers.org/site/DocServer/FinalMERBrochure09.pdf?docID=9701 (last visited Jan. 7, 2010).
59. *See* Marder, *supra* note 27, at 176 n.1; 177 n.7,;178 nn.13, 15,;180 n.18; 188 n.92; 191 n.125; 196 nn.169-73; 197 nn.174-75, 177-78; 198 n.188; 199 nn.189-91,;200 n.203, 208.
60. *See id.* at 182 nn.44, 46; 183 n.50; 189 nn.108, 109; 190 nn.110-18; 191 n.121, 123-24, 128-30; 192 nn.131-32, 134-35, 137-38, 141; 194 n.155; 195 nn.160-61, 163-65.
61. Volokh, *supra* note 1, at 146.
62. *"An author's effective use of footnotes . . . is a very important factor in evaluating the quality of a Note,"* Colum. L. Rev., Publishable Notes Manual 19 (2009-2010), *available at* http://www.columbialawreview.org/assets/pdfs/Publishable_Notes_Manual_2009-2010.pdf. (last visited Jan. 7, 2010).
63. Marder, *supra* note 27, at 187-88.

> ary articles are published that have no merit at all. Worse is the effect of these characteristics of law reviews in marginalizing the kind of legal scholarship that student editors can handle well—articles that criticize judicial decisions or, more constructively, discern new directions in law by careful analysis of decisions. Such articles are of great value to the profession, including its judicial branch, but they are becoming rare. . . .[64]

The Note represents another instance where an author has made the "analytical core" of her article a discipline other than law in which she has no expertise, making it particularly prone to error and of dubious merit as legal scholarship.

B. The Note Is Incomplete

1. The Note Singles Out the Project Over Other Groundwater Pumping in the Big Chino Sub-basin in Closer Proximity to the Verde River

The Note focuses on the Project's potential pumping effects on the Verde River to the exclusion of wells throughout the Verde Valley that in the aggregate pump much larger quantities of groundwater in much closer proximity to the river. While the author admits that the impact of these other wells "pose[s] a significant threat to the Verde River," there is no attempt to justify the Note's narrow focus on the Project, only the curt statement that these other wells are "beyond the scope of this Note."[65]

> The municipalities east of [Mingus] mountain include Clarkdale, Cottonwood, and Camp Verde. Together, they use nearly twice as much water as the Prescott area, and reside outside of the heavily restricted Prescott Active Management Area (AMA). Much of that water is used to irrigate alfalfa fields but, even without agricultural uses, domestic and municipal water uses in the Verde Valley rival the amount of water currently pumped from the Big and Little Chino Sub-Basins to serve the Prescott area each year.
>
> The Verde Valley communities pose a significant threat to the Verde River because their water use is virtually unregulated. The number of private wells in the region increased from 500 in 1964 to 5,600 in 2004; SRP estimated in April 2008 that there are now more than 7,000 wells in the area. Many of these wells are close enough to the river that landowners are actually pumping river water, or subflow, instead of groundwater. SRP is attempting to work with local residents to assure that their water needs can be met without detrimentally impacting the river, though it has filed lawsuits against some of the larger well owners. While the problem posed by exempt wells is significant, it is beyond the scope of this Note. Groundwater pumping in the Verde Valley threatens a different portion of the river and can be distinguished from the groundwater pumping planned by Prescott and its neighbors.[66]

ADWR estimates that there are over 7,800 "exempt wells"[67] along the approximately 190-mile stretch of the Verde River that pump water within five miles of the river.[68] As exempt wells, each may pump up to 35 gallons per minute or 56 AFY for a cumulative potential volume of over 436,800 AFY. While it is unlikely that any of these wells is pumping the maximum legally permitted volume each year, the sheer number of exempt wells suggests a much greater immediate threat to the river than any possible threat posed by the Project's future pumping. Had the focus of the Note been to objectively evaluate the legal implications of the state's bifurcated treatment of groundwater and surface water rights, it would have included an analysis of the impacts of exempting certain wells from all state regulation.

2. The Note Does Not Objectively Address All Sides of the Issues Discussed

A Note is not an advocate's brief; it is an academic contribution.[69] "[S]o, like scholarly work in most fields, [it] must recognize all sides of the issue[s] discussed and be as objective as possible."[70] The subject Note fails to satisfy these criteria.

a. The Analysis of the Issues Discussed Is One-Sided

To provide support for the theory that "ground and surface water are not separate entities," but rather are "hydrologically connected,"[71] the Note states:

> Evidence of the effects of groundwater pumping can already be seen in the decreasing height of the water table. The water table adjacent to the headwaters of the Verde River has dropped by as much as eighty feet since 1947 and, according to Wirt's study, the river actually begins flowing several miles further downstream than it once did. Of course, the decreasing water table shows the impacts of *current* groundwater pumping; the effects of the proposed pumping have yet to be seen.[72]

However, the Note does not disclose that ADWR and others concluded that the Wirt study's finding "*is not supported by any actual data*."[73] The Note also fails to disclose

64. Richard A. Posner, *Against the Law Reviews*, Legal Affairs Mag. Nov./Dec. 2004, 1 (2004), *available at* http://www.legalaffairs.org/issues/November-December-2004/review_posner_novdec04.msp (last visited Jan. 7, 2010).
65. Marder, *supra* note 27, at 182.
66. *See id.*
67. An "exempt well" is a "well having a pump with a maximum capacity of not more than thirty-five gallons per minute which is used to withdraw groundwater [for nonirrigation uses] pursuant to §45-454." A.R.S. §45-402(8) (2009).
68. ADWR Well Registration Database (2006) excerpted from ADWR's "Wells 55 Data" on DVD-Rom available through ADWR's eBookstore.
69. Colum. L. Rev., *supra* note 62, at 4.
70. *Id.*; Volokh, *supra* note 1, at 72.
71. Marder, *supra* note 27, at 191.
72. *Id.* at 188.
73. In re Decision of the Director to Grant the City of Prescott's Application for Modification of Its Assured Water Supply Designation No. 86-401501.0001, Case No. 08A-AWS001-DWR (Errol L. Montgomery & Associates, Inc.,

the existence of conflicting scientific data demonstrating that over the past 70 years the water table has *not* materially decreased.[74] Finally, the Note assumes that any purported decline in the water table is due to groundwater pumping without considering whether other variables, such as drought or surface water diversions, could account for the purported decline.

Likewise, to prove the theory that "pumping of groundwater can affect surface water and vice versa, as is the case with Prescott's plans to pump from the Big Chino Aquifer, *thereby negatively impacting flows of the hydrologically connected Verde River*,"[75] the Note claims: "[t]hose who worry that groundwater pumping threatens the river rely heavily on a 2004 report published by USGS scientists Laurie Wirt and Winn Hjarlmarson, which found that as much as 86% of the Upper Verde River's flows come directly from the Big Chino Aquifer."[76] No one is debating that some component of groundwater in the Big Chino Aquifer finds its way to the upper Verde River, although hydrologists disagree on the amount.[77] But the existence of a hydraulic relationship between certain underground water and surface water does not necessarily lead to the conclusion that all groundwater pumped in the Big Chino Sub-basin depletes surface flows in the Verde River. In fact, the Note ultimately concedes that proving such "hydrological connectivity" given the ranch's distant location from the Verde River will be an "uphill battle."[78] Water management issues, like most public policy issues, are inherently complex and answers are rarely black and white. For this reason, careful consideration of all sides of a water problem is vital to effectively navigate the risks of imposing crippling, unfounded limitations that prevent the development of a workable solution.

b. The Note's Content and Tone Are Not Objective

The Note purports to document Prescott and Prescott Valley's "official" position with respect to legal challenges and concerns about the Project based, almost exclusively, on information gleaned from newspaper articles.[79] There is no indication that there was an attempt to confirm the accuracy of the reported information by talking with the Communities directly.[80]

By contrast, the Note makes clear that Project opponents, the SRP, and the Center for Biological Diversity (CBD), were contacted directly to obtain their "official" positions on the issues addressed in the Note: ". . . I am indebted to Dave Roberts of Salt River Project and Michelle Harrington of the Center for Biological Diversity for their willingness to speak with me about these sensitive and complex issues."[81] The foregoing acknowledgement speaks volumes about the Note's lack of objectivity toward its subject. Not surprisingly, the Communities dispute the Note's depiction of their "official" positions on the Project.[82]

Finally, word choices are an important indicator of the Note's neutrality. The language in this Note is not neutral. Rather, it uses emotionally charged, impression-creating words like "aggressive posturing" and "cavalier attitude" to describe the Communities' conduct related to the Project.[83] By comparison, no such language is associated with the actions of Project opponents SRP and CBD.

3. The Note Includes a Gratuitous "Plug" of SRP's Pending Constitutional Challenge of A.R.S. §45-555(E)

Two sections of the Note are devoted to discussions of SRP's constitutional challenge of A.R.S. §45-555(E) for no apparent reason, other than to advocate SRP's legal position.[84] The discussion does not advance the Note's thesis that Arizona water law wrongly fails to take into account the hydrological connectivity between groundwater and surface water. Furthermore, the Note's discussion is entirely one-sided, devoid of any reference to the counterarguments in support of the statute's constitutionality.

While superfluous, the one-sided presentation is not harmless. It is, after all, included in a piece of "legal scholarship" designed to influence the bar, the bench, and other readers on its subject matter. This scholarly purpose, together with the fact that SRP's challenge to A.R.S. §45-555(E) is part of an active legal controversy,[85] warranted greater care to ensure that the Note was fair and even-handed with respect to the facts and arguments surrounding the controversy.

Draft Review of 2005 and 2006 USGS Reports on Verde River Watershed, at 7-8, Prescott Exhibit 510) (emphasis supplied).

74. *See* https://gisweb.azwater.gov/gwsi/SearchGWSI.aspx (Arizona Groundwater Monitoring Site Hydrograph Well B-19-04 04BDB) (select "next;" enter Well Id "B-19-04 04BDB" and select "View Results;" select "Water Level Export.") (last visited Jan. 7, 2010).
75. Marder, *supra* note 27, at 191 (emphasis supplied).
76. *Id.* at 187-88.
77. *Compare* U.S. Dep't of the Interior, U.S. Geological Survey (USGS), Open-File Report 00403, Preliminary Report on Geophysics of the Verde River Headwaters Region, Arizona (2000), *available at* http://geopubs.wr.usgs.gov/open-file/of00-403 (USGS scientists Laurie Wirt and Winn Hjarlmarson found that up to 86% of the upper Verde River's flows originate from the Big Chino Aquifer) (last visited Jan. 7, 2010), *with Draft Review of 2005 and 2006 USGS Reports on Verde River Watershed*, *supra* note 73 (challenging the validity of the procedure used to determine the relative contribution of the Big Chino Aquifer to the flows of the upper Verde River).
78. Marder, *supra* note 27, at 209.
79. *Id.* at 203-08.
80. *See generally* Marder, *supra* note 27.
81. *Id.* at 175 n.*.
82. For the Communities' official position on the legal controversy, see their pleadings and briefs filed in *Salt River Valley Water Users' Association et al. v. Herb Guenther et. al.*, CV 2009-000947.
83. Marder, *supra* note 27, at 208.
84. *Id.* at 196-98.
85. Salt River Valley Water Users' Association et al. v. Herb Guenther et al., CV 2009-000947.

4. The Note Is Riddled With Unsupported Assumptions Couched as Statements of Fact

The Note contains numerous unsupported assumptions including[86]:

1. Groundwater pumped 20 miles from the headwaters of the upper Verde River is hydrologically connected to the Verde River's surface flows.
2. Eliminating the bifurcated system of water law in Arizona will "save" the Verde River.
3. Eliminating the bifurcated system of water law in Arizona is good water policy and management for this state.
4. SRP and other surface water right holders should own and control all of the water supplies in the state.
5. Current groundwater users should not continue to exist unless they can acquire an alternative water supply from outside of the state and build the necessary infrastructure to import and use it within the state.
6. Groundwater pumping 20 miles from the headwaters of the upper Verde River will adversely impact endangered species and their habitats.
7. If the Project goes forward it will:
   a. deplete the Verde River;
   b. destroy endangered species and habitat;
   c. deprive SRP of its surface water rights in the Verde River; and/or
   d. deprive metropolitan Phoenix of its water supply.

For example, the Note's thesis assumes that eliminating the bifurcated system of water law in Arizona to make all water in the state appropriable surface water is good water policy and management for this state. Like the other assumptions listed above, the Note does not expressly acknowledge this assumption and fails to fully explore the ramifications of changing the state's legal system to favor the interests of surface water right holders over the interests of all other groundwater users in the state (including municipalities, agriculture, domestic well owners, mines, cattle operations, developers, etc.).

The most significant effects of this proposed change would be that: (1) surface water right holders would control all of the state's scarce water resources; (2) only communities served by surface water appropriators would have secure water rights in this state; (3) SRP and other surface water appropriators would acquire de facto regulatory control over the state's water resources; and (4) rural communities and exempt well owners dependent on groundwater supplies would have to find and fund alternative water supplies or hope to negotiate a reliable right to pump groundwater from surface water right holders in the watershed.

In short, the management of the state's water supplies would rest in the hands of private water interests rather than the general public via the legislative and executive branches of the state. This proposed change in Arizona water law and policy to benefit the interests of few at the expense of many would be devastating to Arizona's economy and the general welfare of its citizens.

Unsupported assumptions such as these have no place in a scholarly work and should be avoided, or kept to a minimum, wherever possible.[87] To the extent certain assumptions were necessary to facilitate the Note's legal analyses, they should have been explicitly acknowledged, and the Note should have explained why the assumptions were sound.[88]

5. The Note Fails to Propose a Solution to the Asserted Defects in Arizona Water Law

The Note asserts that Arizona water law is solely responsible for the potential destruction of the Verde River arguing that Arizona law is: (1) inconsistent with "scientific reality"; (2) "unique" to Arizona; and (3) prejudicial to the interests of surface water right holders and downstream users.[89] Yet, the reader is left to speculate about how these conclusions were reached, and the Note leaves it to the state legislature and the courts to find an acceptable solution.

> This controversy brings into sharp focus the need for reconciliation of ground and surface water laws in Arizona, both to protect surface water users from groundwater pumping threats that fall outside the current definition of subflow and to protect groundwater users from uncertain rights and threats of litigation. It also foreshadows the difficult choices about water allocation that must be made as new development and growth throughout the region pit rural interests against urban. While the municipalities and their opponents have understandably myopic views of the water issue—debating factual questions such as the parameters of the subflow zone and what percentage of the river's flows are supplied by the aquifer—any resolution of this battle will have far-reaching consequences for water use throughout the state and region. With so much at stake, Arizona's courts and legislature must display clear vision and a strong countenance as they are forced to apportion of [sic] one of the state's last free-flowing rivers.[90]

Since the very purpose of a Note is to "identif[y] a specific, unresolved legal problem and offer[ ] a solution,"[91] the Note fails to satisfy its fundamental objective.

86. *See generally* Marder, *supra* note 27.

87. Volokh, *supra* note 1, at 162.
88. *Id.*
89. *See generally* Marder, *supra* note 27.
90. *Id.* at 210.
91. Colum. L. Rev., *supra* note 62, at 4; Volokh, *supra* note 1, at 34-35 (topics and structures to "generally avoid" include "[a]rticles that show there's a problem but don't give a solution").

III. Conclusion

Arizona's system of water laws has evolved over more than 80 years of jurisprudence. It strikes a delicate balance between competing water interests across an arid state. The Note's proposal to summarily discount that evolution in favor of a new, and as yet, undefined legal standard that benefits surface water right holders above all other interests has potentially dangerous consequences. Aside from the directly adverse impact on the Project and the Communities, it risks the well-being of the entire state. All the more reason to ensure that the Note's discussion of the topic is fair, accurate, complete, and otherwise in keeping with recognized publication standards.