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Agricultural Preferences in Eastern Water Allocation Statutes

ABSTRACT

The eastern United States generally lacks statutory limits on the use of water for agricultural uses, particularly irrigation. Commentators lament this deficit and advocate for statutory limits, citing certain problematic cases, such as Georgia's former exemption for agricultural water use. No research surveys the status of agricultural water use in the eastern United States under so-called "regulated riparian" statutes. This article examines water use and the statutory water allocation rules in 19 eastern states with regulated riparian statutes to determine the extent of agricultural water uses in the East, as well as whether adequate controls are in place for such uses. This article analyzes water use data for each state and summarizes and categorizes the water allocation statutes in each state. The article concludes that the controls on agricultural water use in the East present a more nuanced issue than previously forecast, with agricultural uses of water posing issues in some states and not others, and with some states imposing comprehensive controls while others lack such a holistic approach. In almost all cases, state legislatures fail to link usage data with regulation. The article concludes with a recommendation to use effective existing regulations as model rules.

I. INTRODUCTION

More frequent droughts and increasing demands for water have brought water scarcity issues to the eastern United States, a concern that rarely appeared before recent years.[1] About half of the eastern states now implement statutory water allocation schemes to supplement or supplant

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1. *See, e.g.*, Jonathan Chenoweth, *A Re-assessment of Indicators of National Water Scarcity*, 33 Water Int'l 5, 5 (2008).

common law rules.[2] Many of these schemes give preference to agricultural uses. According to one source, only the Alabama and Arkansas provisions do not give preference to agricultural uses.[3] Georgia's initial statutory provisions included an exemption for agriculture, but when agricultural uses overwhelmed the rule, the statute was amended in 1988, grandfathering then-existing agricultural uses.[4] As demands for water amongst scarcity increases, states will continue to face difficult choices.

Other eastern states, however, are beginning to regulate the increasing use of water by agriculture. Supplemental irrigation is one of the fastest growing water uses in the east, and it is very consumptive.[5] In light of these issues, some states are beginning to focus more attention on agricultural water uses. For example, in Wisconsin, agricultural irrigation is one of the few specifically listed uses requiring a permit.[6] Increased regulations require not only awareness of growing scarcity but also awareness of state priorities for water use. Value judgments also impact priority uses during droughts. Some states give agricultural uses priority during droughts. These priorities generally fail to include quantity limitations. For example, Maryland prioritizes only domestic and municipal uses for sanitation, drinking, and public health and safety, followed by agricultural uses, in a water supply emergency.[7] Some states prefer agricultural uses over others in their overall permitting scheme. Minnesota's preferences place "agricultural irrigation . . . and processing of agricultural products involving consumption in excess of 10,000 gallons per day" behind only domestic uses, contingency power production, and consumptive uses of less than 10,000 gallons per day.[8] Choices for water use during drought require careful balancing of state priorities that impact scarcity related losses.

Some existing provisions appear to provide perverse incentives to waste water by institutionalizing past uses and imposing rules that mir-

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2. 1 WATERS AND WATER RIGHTS § 9.01 (Amy E. Kelley ed., 3rd ed. LexisNexis/Matthew Bender 2015) ("[A]bout half of the eastern states have developed a new regulatory permit system based on riparian principles as their primary method for allocating the right to divert water from some or all sources.").

3. *Id.* § 9.03(a)(3) (citing ALA. CODE § 9-10B-20 (LexisNexis 2014); ARK. CODE ANN. § 15-22-217(c), (e) (2014)).

4. GA. CODE ANN. § 12-5-31(a)(3) (2014).

5. *See* Peter N. Davis, *Eastern Water Diversion Permit Statutes: Precedents for Missouri*, 47 MO. L. REV. 429, 449 (1982), *available at* http://scholarship.law.missouri.edu/cgi/viewcontent.cgi?article=1100&context=facpubs.

6. *See* WIS. STAT. § 30.18(2)(a)(2) (West 2013–14).

7. MD. CODE ANN., ENVIR. § 5-502(d) (West 2014).

8. MINN. STAT. § 103G.261(a)(1)–(3) (West 2014).

ror "use it or lose it"[9] provisions under the prior appropriation doctrine. The doctrine of prior appropriation, often referred to as "first in right, first in time," has aptly been defined as follows:

> A property right in the use of water is created by diversion of the water from a stream (or lake) and its application to a beneficial use. Water can be used at any location, without regard to the position of place of use in relation to the stream. In the event of a shortage of supply, water will be supplied up to a limit of the right in order of temporal priority: the last man to divert and make use of the stream is the first to have his supply cut off.[10]

Such restrictions, while arguably simpler, may not address the larger policy considerations identified in other regulations based on a riparian framework.

This article proposes policy changes that place agricultural uses on more equal footing with other uses under eastern statutory allocation schemes. Allocation preferences would be limited to specific quantities of consumptive use to encourage efficiency and prevent waste in agricultural water use. Proposed provisions would also carefully limit agricultural permitting exceptions to quantities necessary to allow plant and animal survival, while avoiding economic harm to the producer and the community.[11] States should also consider the reasonableness of continuing the agricultural activities, considering limited water supplies.[12]

First, the article provides a brief overview of agricultural water use in the United States. "Regulated riparianism" is then briefly discussed. The article then summarizes and categorizes the agricultural provisions (or lack thereof) among 20 states that have been identified as "regulated riparian" surface water states.[13] These states include Alabama, Arkansas, Connecticut, Delaware, Florida, Georgia, Hawaii, Illinois, Iowa, Kentucky, Maryland, Massachusetts, Minnesota, Mississippi, New

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9. A. Dan Tarlock, *The Future of Prior Appropriation in the New West*, 41 NAT. RESOURCES J. 769, 772 (2001).

10. CHARLES J. MEYERS, A HISTORICAL AND FUNCTIONAL ANALYSIS OF THE APPROPRIATION SYSTEM 4 (1971).

11. *See, e.g.*, WATER RES. PLANNING & MGMT DIV., AM. SOC'Y OF CIVIL ENG'RS, THE REGULATED RIPARIAN MODEL WATER CODE: FINAL REPORT OF THE WATER LAWS COMMITTEE OF THE WATER RESOURCES PLANNING AND MANAGEMENT DIVISION OF THE AMERICAN SOCIETY OF CIVIL ENGINEERS § 6R-3-04(1)(b) (Joseph W. Dellapenna ed., 1997) [hereinafter ASCE].

12. *See id.*

13. *See id.* at vi (identifying 18 states with a regulated riparian system for surface water rights in 1996 and two other states that apply regulated riparianism to groundwater). Fewer eastern states impose regulatory regimes on groundwater, but where groundwater provisions exist in these states, the provisions are discussed.

Jersey, New York, North Carolina, Virginia, South Carolina and Wisconsin.[14] Some of these states provide very limited regulation of water use, while others regulate water use with very detailed provisions. Therefore, some states receive limited attention in this review, while others are discussed in great detail. No significant regulation was found in Illinois, so that state is omitted from the analysis, leaving 19 states. The article then compares the exemptions and preferences in the Regulated Riparian Model Code[15] to existing state provisions. Finally, the article presents policy lessons and proposes model provisions.

II. AGRICULTURAL WATER USE IN THE UNITED STATES

Freshwater withdrawals in the United States totaled an estimated 306,000 million gallons per day in 2010.[16] 115,000 million of these gallons (37.6 percent) were withdrawn for irrigation, second only to the 117,000 million gallons (38.2 percent) per day withdrawn for thermoelectric power generation.[17] Livestock watering accounted for another 2,000 million gallons (0.65 percent) per day.[18] Agricultural water use, including crop irrigation and livestock watering, is one of the largest water uses in the United States.

Of the total freshwater withdrawals in 2010, 76,000 million gallons per day consisted of groundwater.[19] 49,500 million gallons (62.4 percent) of the total groundwater withdrawals were devoted to irrigation, and 1,200 million gallons (1.6 percent) to livestock watering.[20] Surface water withdrawals totaled 230,000 million gallons per day in 2010,[21] of which, 65,900 million gallons per day (28.7 percent) were withdrawn for irrigation and 797 million gallons (0.35 percent) per day for livestock watering.[22] The greatest portion of groundwater withdrawals go to agriculture, but a larger percentage of total agricultural water comes from surface water.

Most of the water used in agriculture is withdrawn in western states. Eighty-three percent of all fresh water irrigation withdrawals occurred in the 17 conterminous western states, none of which are included

14. *Id.* at vii.
15. *See id.* § 6R-3-04(1).
16. MOLLY A. MAUPIN ET AL., ESTIMATED USE OF WATER IN THE UNITED STATES IN 2010, at 10 (2014), *available at* http://pubs.usgs.gov/circ/1405/pdf/circ1405.pdf.
17. *Id.*
18. *Id.*
19. *Id.* at 9.
20. *Id.* at 14.
21. *Id.* at 12.
22. *Id.*

in this analysis.[23] Producers in eastern states, however, increasingly apply irrigation to supplement farming practices.[24] Iowa, which is considered in this article, has one of the highest withdrawal rates for livestock nationally. Iowa, along with Texas, California, Nebraska and Kansas each withdrew more than 100 million gallons per day for livestock watering, accounting for 41 percent of the total withdrawals for livestock watering nationally.[25] Agricultural water use is higher in the West, but it is increasingly significant in eastern states as well.

With respect to the states included in this analysis, irrigation ranks first amongst competing uses of freshwater withdrawals in Arkansas (77 percent), Florida (47 percent), Hawaii (48 percent) and Mississippi (54 percent).[26] These percentages would increase significantly if freshwater withdrawals for thermoelectric power generation, of which less than 3 percent is consumed,[27] were excluded.[28] In addition to the states where irrigation is the leading use of freshwater withdrawals, irrigation use exceeds public water supply uses in Delaware.[29] In Georgia and Wisconsin, freshwater withdrawals for irrigation amount to almost 80 percent of withdrawals for public water supply.[30] Even amongst other large water uses, agriculture remains a significant water use in eastern states.

Regulated Riparianism

Riparian water rights,[31] which applies in most eastern states and some western states, refers to a system that allocates the right to use water to the owners of land that abut a water body, or "riparian owners."[32] The current state of riparianism developed from two distinct theories of riparian rights. According to the original "natural flow" theory, riparian owners had the right to have the water stand on their property

23. *Id.* at 25.
24. Davis, *supra* note 5, at 449.
25. MAUPIN ET AL., *supra* note 16, at 28.
26. *See id.* at 10.
27. TIMOTHY H. DIEHL & MELISSA A. HARRIS, WITHDRAWAL AND CONSUMPTION OF WATER BY THERMOELECTRIC POWER PLANTS IN THE UNITED STATES, 2010, at 1 (2014), *available at* http://pubs.usgs.gov/sir/2014/5184/pdf/sir20145184.pdf.
28. *See* MAUPIN ET AL., *supra* note 16, at 10.
29. *See id.*
30. *See id.*
31. Note that the states considered in this article use a variety of common law groundwater rules, many resembling riparian surface water rights. Although some of the regulated riparian statutes considered herein cover groundwater as well as surface water, this article, for simplicity, omits any discussion of groundwater rules.
32. *See* Waters and Water Rights, *supra* note 2, § 7.01(a.01).

or flow across their property in its natural state.[33] Under this theory, others could not change the rate of flow, quantity, or quality of the water.[34] Furthermore, the "natural flow" theory also prohibited any consumptive use of the water "except by the last downstream riparian."[35] The second theory, "reasonable use," was adopted by many eastern state courts during the industrial revolution to allow reasonable consumptive uses by all riparian owners, regardless of whether the rate of flow, quality, or quantity of the water was reduced for other riparian owners.[36] This theory abandons the notion that riparian owners hold the right to natural flow.[37] Reasonable use cannot, however, abridge the equal rights of other riparian owners to use the water.[38]

Importantly, riparian rights differ from the prior appropriation water rights system administered in most western states.[39] Generally, under the prior appropriation system, a water right is created by diverting water from a stream (or lake) and applying it to a beneficial use.[40] "Water can be used at any location, without regard to the position of place of use in relation to the stream."[41] In a time of shortage, water is supplied up to the limit of the water right in order of temporal priority. In other words, the last person to divert and make use of the stream is the first to have supply cut off.[42] States allowed prior appropriation rights, unlike riparian rights, to maximize use instead of to maintain a natural flow or allow only reasonable use within the context of other, equal, users.[43]

The term "regulated riparianism" identifies the evolving system of statutory regimes supplementing or purporting to supplant common law riparian water rights in the eastern United States.[44] Regulated riparian-

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33. *Id.* § 7.02(c).
34. *Id.*
35. *Id.*
36. *Id.* § 7.02(d)(1.01).
37. *See id.*
38. *Id.*
39. *See* A. Dan Tarlock, *Prior Appropriation: Rule, Principle, or Rhetoric?*, 76 N.D. L. Rev. 881, 881 n.2 (2000).
40. MEYERS, *supra* note 10, at 4.
41. *Id.*
42. *Id.*
43. *See* WATERS AND WATER RIGHTS, *supra* note 2, § 11.01 (noting how certain states rejected the riparian doctrine because "[i]n the middle to late 1800s, riparian doctrine was focused more on natural flow than on diversion and consumptive use. Even as riparian doctrine developed into a reasonable use system, it would still substantially limit the withdrawal of water from the source, especially for use on nonriparian lands").
44. Joseph W. Dellapenna, *Owning Surface Water in the Eastern United States*, 6 E. MINERAL L. FOUND. § 1.03(3) (1985).

ism also implies comprehensive regulation of water allocation.[45] Statutory modifications of common law riparian water rights in the east began as early as the mill acts in colonial times.[46] Later, in the nineteenth century, preferences for agricultural uses of water began to emerge in state statutory schemes.[47] Some agricultural preferences fail to particularly mention agriculture, but may be implied from the provision, such as the exemption for small dams.[48] This article focuses on exemptions and preferences that explicitly address agriculture.

III. SUMMARY OF STATE REGULATED RIPARIAN AGRICULTURAL PREFERENCES

Of the 19 state riparian water allocation statutes examined infra, almost one-third make no explicit special provision for agriculture (Alabama, Connecticut, Florida, Hawaii, Massachusetts and Michigan). Six states give some type of preference for agricultural uses of water, ranging from a seemingly absolute exemption in Kentucky to minimal provisions in Virginia, to separate administrative structures in New Jersey, New York and South Carolina. Maryland's regulated riparian regime exempts withdrawals of water for agricultural purposes,[49] so long as the average annual water use for agricultural purposes is less than 10,000 gallons per day.[50] Permit applications for agricultural water uses in Maryland also appear to be exempt from some of the criteria and conditions governing approval of other water rights permits.[51] An additional state, Delaware, relaxes some application requirements for irrigation uses, but also imposes unique restrictions on the amount of water used, presumably to limit waste.[52]

Kentucky also gives a general preference for agricultural uses, as does Minnesota, Mississippi, and the Regulated Riparian Model Code. Mississippi gives the preference to water for livestock, poultry, and farm animals through the domestic use priority.[53] Minnesota's preference for

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45. *See* WATERS AND WATER RIGHTS, *supra* note 2, § 9.03(a.01).

46. Use of mills for power generation created conflicts with other riparian land owners, so states began passing mill acts to give special rights to mill owners in the use of water, even giving mill owners the right of condemnation. *Id.* § 9.02(a).

47. *Id.* § 9.02(b).

48. *Id.* § 9.02(b).

49. MD. CODE ANN., ENVIR. § 5-502(b)(2) (West 2014).

50. *Id.* (noting that pursuant to (c)(2) of this provision, a person has the option to apply for a permit to withdrawal water from the state for agricultural purposes).

51. *See* MD. CODE REGS. 26.17.06.05(B)(1), .06.06(C)(1), .06.06(D)(1) (West 2015).

52. *See* DEL. CODE ANN. tit. 7, §§ 6010(i), 6029 (2014); 7 DEL. ADMIN. CODE § 7303(5.5)(7), (5.6)(1) (1987).

53. *See* MISS. CODE §§ 51-3-7(1), -3(c) (West 2014).

agriculture, on the other hand, follows only domestic uses, power, and uses consuming less than 10,000 gallons per day.[54] The Regulated Riparian Model Code gives first preference to water needed for human consumption and sanitation, then agricultural uses, combining livestock and crop needs.[55]

Arkansas, Iowa and Maryland give priority to some agricultural uses during times of shortage. Arkansas' agricultural priority is third, behind only domestic and federal water rights, and covers agriculture broadly.[56] Iowa law contains an interesting set of priorities during shortages, allowing cataloged uses to be curtailed or suspended.[57] Somewhat mirroring the Regulated Riparian Model Water Code, domestic uses for human consumption and sanitation are the last uses to be impacted, with private supplies preferred over public water supplies.[58] Water for livestock production is next in priority, with irrigation uses curtailed prior to livestock use. Interestingly, "irrigation of hay, corn, soybeans, oats, grain sorghum or wheat" is of lower priority than irrigation of other crops.[59]

Maryland also provides special allocation rules during times of shortage. During a water supply emergency, domestic and municipal uses have first priority; second priority belongs to agricultural uses; and all other uses fall into the third priority.[60] "[W]ater supply emergency" is not defined, except as "available water supplies . . . inadequate in an area to meet the needs of all persons who have permits."[61]

The original total exemption of agricultural water use from Georgia's permitting requirements still shape Georgia's regulation to this day. Agricultural uses that existed before removal of the exemption are essentially grandfathered in and remain unregulated. In addition, agricultural uses still receive preferential treatment in Georgia. Existing agricultural use permits differ from other permits in that the agricultural use permits contain no expiration date. Therefore, no renewal is necessary. The surface water permits for agricultural use also cannot be revoked for non-use (due to extreme hardship) and are transferable.[62]

Wisconsin stands alone, singling out agricultural uses as requiring a permit. In addition to withdrawals for agriculture or irrigation, only

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54. MINN. STAT. § 103G.261(a) (2014).
55. ASCE, *supra* note 11, § 6R-3-04(1)(a)-(b).
56. ARK. CODE ANN. § 15-22-217(a)(2)(B)(i), (e) (West 2014).
57. *See* IOWA CODE ANN. § 455B.266(1)(a), (2) (West 2015).
58. *See id.*; ASCE, *supra* note 11 § 6R-3-04(1)(a).
59. IOWA CODE ANN. § 455B.266(2)(c)–(d) (West 2015).
60. MD. CODE ANN., ENVIR. § 5-502(d) (West 2014).
61. *Id.*
62. GA. CODE ANN. § 12-5-31(b)(3), (k)(4) (2014).

maintenance or restoration of normal levels of a navigable lake or normal flow of a navigable stream and withdrawals resulting in "a water loss averaging 2,000,000 gallons per day in any 30-day period" above an authorized base require a permit.[63] Withdrawals for agriculture or irrigation also entail additional application requirements, including detailed information on the withdrawal and the source[64] and "written statements of consent to the withdrawal from all riparian owners who are making beneficial use of the water proposed to be withdrawn."[65]

Finally, Delaware, while somewhat relaxing the application requirements for irrigation, limits the amount of water that can be used for that purpose, both in a year and within a particular month. Provisions are made for expedited replacement of irrigation wells.[66]

IV. STATE BY STATE ANALYSIS OF EXISTING AGRICULTURAL PROVISIONS IN REGULATED RIPARIAN STATES

A. States With No Special Provisions for Agriculture

Among states with regulated riparian statutes, seven contain no special provisions for agriculture. These states, Alabama, Connecticut, Florida, Hawaii, Massachusetts, Michigan, and North Carolina, regulate water withdrawals for agricultural purposes in the same way as other withdrawals. Interestingly, four of these seven states are among the 12 states that, together, accounted for more than 50 percent of the total water withdrawals in the United States in 2010: Florida (4th), North Carolina (6th), Michigan (9th), and Alabama (11th).[67]

Alabama's water code requires users of 100,000 gallons or more per day of water to file a "declaration of beneficial use,"[68] specifically including water used for irrigation.[69] Although the statute specifically includes agriculture, the declaration requirement depends on the amount of water withdrawn (100,000 gallons per day) rather than the type of use.

Connecticut requires a permit for all water withdrawals commencing after July 1, 1982;[70] whereas withdrawals commenced prior to

63. WIS. STAT. ANN. § 30.18(2) (2013–14) (noting that a person, who requires approval under WIS. STAT. ANN. § 281.41 (West 2014), does not need to retain a permit where the withdrawal results in a loss "averaging 2,000,000 gallons per day in any 30-day period above" the authorized base line).

64. *Id.* § 30.18(3)(a)(1).

65. *Id.* § 30.18(3)(a)(3).

66. *See* DEL. CODE ANN. tit. 7, § 6010(i)(2) (West 2015).

67. MAUPIN, ET AL., *supra* note 16, at 7.

68. ALA. CODE § 9-10B-20(a) (2014).

69. *See id.* § 9-10B-20(d).

70. CONN. GEN. STAT. § 22a-368(b) (West 2015).

that date require only registration.[71] The major exception to both the permitting and registration requirements applies to all withdrawals of less than 50,000 gallons within a 24-hour period.[72] Therefore, small farm operations likely will not need a permit or be required to register, while larger operations may withdraw quantities of water that will require a permit or registration.

In Florida, five water management districts collectively administer the water rights and permits of the entire state under the Florida Water Resources Act. Part II of this Act sets out requirements and procedures for consumptive use permitting[73] and states that the governing board of water management districts may condition the consumptive use of water on the acquisition of a consumptive use permit.[74] However, individual domestic water users are exempt from permitting requirements in all districts,[75] and only the South Florida Water Management District requires a permit for uses or withdrawals of less than 100,000 gallons per day.[76] None of the five water management districts allow for a permitting exemption for agricultural uses.[77] Since Florida imposes the same permitting requirements on agricultural uses as all other uses, domestic agriculture does not require a permit and agricultural withdrawals of less than 100,000 gallons per day only require a permit in South Florida Water Management District.

Other states provide permitting exceptions for smaller water withdrawals in different ways. Hawaii requires a permit to withdraw water in "any designated water management area,"[78] for any purpose except individual domestic uses and water catchment.[79] The statute defines "[d]omestic use" as "any use of water for individual personal needs and for household purposes such as drinking, bathing, heating, cooking, noncommercial gardening, and sanitation."[80] Michigan only requires a per-

71. *Id.* § 22a-368(a)
72. *Id.* § 22a-377(a).
73. FLA. STAT. ANN. §§ 373.203-373.250 (West 2014).
74. *Id.* §§ 373.216, 373.219(1).
75. *Id.* § 373.219(1).
76. *See* FLA. ADMIN. CODE ANN. r. 40E-2.031(1)(b), (2) (West 2015).
77. *Id.*; FLA. ADMIN. CODE ANN. r. 40A-2.051, r. 40B-2.051, r. 40C-2.051, r. 40D-2.051, r. 40E-2.051 (West 2015). Although another section of the code, titled "Exemptions," explicitly names agriculture, silviculture, floriculture, and horticulture, this provision merely provides a limited protection to allow these uses to change the topography of the land, which may divert water notwithstanding any other section of the code. FLA. STAT. § 373.406(2) (West 2014). This provision appears to parallel the agricultural exemption to discharge regulations under the Clean Water Act Section 404(f). *See* 33 U.S.C. § 1344(f) (2012).
78. HAW. REV. STAT. § 174C-48(a) (West 2014).
79. *Id.*
80. *Id.* § 174C-3.

mit for certain diversions of water above 100,000 gallons, 1,000,000 gallons, or 2,000,000 gallons per day.[81] In North Carolina, withdrawals of more than 100,000 gallons of surface water and/or groundwater per day within designated capacity use areas require a permit.[82] Massachusetts requires a registration statement for withdrawals of more than 100,000 gallons per day.[83] Extremely limited exemptions exist but essentially only for non-consumptive uses unrelated to agriculture.[84] Although agricultural withdrawals may be limited in these states, the regulations depend on the amount of water used, not the type of water use.

B. States with Specific Agricultural Exemptions for Permitting or Reporting

Only four states (Kentucky, New York, South Carolina, and Virginia) provide regulatory exemptions for at least some water withdrawals for agricultural purposes. Of these four states, only Kentucky exempts agriculture broadly. Kentucky withdraws relatively little freshwater (4,330 million gallons per day).[85] Of this amount only 0.67 percent (29 million gallons per day) is devoted to irrigation and 1 percent (43.8 million gallons per day) is used for livestock watering. South Carolina and Virginia exempt only very narrow categories of withdrawals, which likely total very small quantities of water. New York exempts agricultural uses from permitting, but requires detailed reporting and registration. These few states with agricultural preferences for permits withdraw relatively little water for agricultural purposes.

Kentucky's statute covers surface and ground water and requires a permit for diversion, withdrawal or transfer.[86] However, that statute also states that "no permit shall be required for and nothing herein shall interfere with the use of water for agricultural and domestic purposes including irrigation . . . ."[87] The term "agricultural purposes" is not defined. Kentucky also gives some priority for agricultural uses of water (see discussion in the next section).

Non-agricultural surface water withdrawals in South Carolina must be permitted unless specifically exempted.[88] Agricultural withdrawals must only be registered, unless exempted from the registration

81. MICH. COMP. LAWS ANN. § 324.32723(1) (West 2014).
82. N.C. GEN. STAT. ANN. § 143-215.15(a) (West 2014).
83. MASS. GEN. LAWS ANN. ch. 21G, §§ 4, 5 (West 2014).
84. *See* 310 MASS. CODE REGS. 36.05 (2015).
85. *See* MAUPIN ET AL., *supra* note 16, at 10.
86. *See* KY. REV. STAT. ANN. § 151.140 (West 2014).
87. *Id.*
88. S.C. CODE ANN. § 49-4-25 (2014).

system (discussed more fully infra).[89] Very few surface water withdrawals are exempt from regulation under South Carolina statute, and such exemptions are limited in scope. Hydropower generation (a non-consumptive use) is exempt from permits, but must comply with the reporting requirements.[90] With respect to agriculture, only water uses from farm ponds are exempt, and only where the pond is "owned or leased by the person making the withdrawal," or if each owner of property occupied by the pond agrees to the withdrawal.[91] In South Carolina agricultural use is broadly defined.[92]

Virginia regulates groundwater and surface water separately. Virginia does not require a permit in either instance, unless the withdrawal occurs within a designated "management area."[93] Additionally, within designated management areas, one may only withdraw less than 300,000 gallons of surface water or groundwater per month without a permit.[94] The only exception relating to agriculture exempts "any water withdrawal from a farm pond collecting diffuse surface water and not situated on a perennial stream as defined in the United States Geological Survey 7.5-minute series topographic maps. . . ."[95]

Until 2011 amendments that took effect in 2012, New York's regulated riparian regime shared Wisconsin's approach to agricultural withdrawals by including agricultural withdrawals in a short list of uses that required a permit.[96] After the 2011 amendment, all water withdrawals within the Great Lakes basin for agricultural purposes using more than an average of 100,000 gallons per day within a consecutive thirty-day period must be registered annually.[97] All other withdrawals for agricultural purposes of more than an average of 100,000 gallons per day within a consecutive thirty-day period within the state need only be reported.[98] The 2011 amendments included all agricultural withdrawals that have been registered or reported on or before February 15, 2012 (the effective date of the amendments).[99]

Registration must disclose (1) the place and source of the withdrawal; (2) location of any discharge or return flow; (3) location and na-

89. *See id.* §§ 49-4-20(23), 49-4-35(A), (F).
90. *Id.* § 49-4-30(B).
91. *Id.* § 49-4-30(A)(3).
92. *See id.* § 49-4-20(3).
93. VA. CODE ANN. §§ 62.1-243, 62.1-259 (West 2014).
94. *Id.* §§ 62.1-243(A), 62-1-259.
95. *Id.* § 62.1-243(A).
96. *See* 2011 N.Y. Laws 1250-51.
97. N.Y. ENVTL. Law § 15-1504(3)(a) (McKinney 2015).
98. *Id.* § 15-1504(4)(a).
99. *See* 2011 N.Y. Laws 1252.

ture of use; (4) actual or estimated average annual and monthly volumes and rates of withdrawals; and (5) actual or estimated average annual and monthly water loss from the withdrawal.[100] Reporting must include (1) source, and location and capacity of the water source; (2) amount of water withdrawn, including average or peak withdrawals; (3) description of use; and (4) estimated amounts, location and methods of any returns of water.[101] Certain withdrawals are exempted from reporting, including withdrawals that are permitted, reported or registered with other agencies, and reclaimed water and non-extractive geo-thermal heat pumps.[102]

These four states exempt all agricultural uses, in the case of Kentucky, or some agricultural uses, namely water from unconnected ponds or under a certain amount. These exemptions, however, have a marginal impact on the states' water budgets because the total water use exempted is relatively small.

C. Agricultural Uses Defined as Reasonable

Some state regulated riparian provisions address priority of uses by statutorily defining uses that are always considered reasonable. This section describes the preference given to agricultural uses in Kentucky, Minnesota and Mississippi. In both Kentucky and Mississippi, agricultural preferences apply only to poultry, livestock and, notably, domestic animals. The value of livestock produced in Kentucky and Mississippi exceeded that of crops produced in each state by about $500 million in 2012 (out of approximately $5 billion worth of agricultural products produced in Kentucky and $6 billion in Mississippi).[103] Minnesota's agricultural preference refers to irrigation and processing. The state produces approximately twice as much market value of crops as opposed to livestock.[104] Minnesota also produces approximately twice the market value of agricultural products as Kentucky and Mississippi combined,[105] and

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100. N.Y. ENVTL. Law § 15-1504(3)(b) (McKinney 2015).

101. *Id.* § 15-1504(4)(a).

102. *Id.* § 15-1504(4)(b).

103. *See* Nat'l Agric. Statistics Serv., U.S. Dep't of Agric., *2014 State Agriculture Overview: Kentucky*, QUICK STATS (Mar. 7, 2015), http://www.nass.usda.gov/Quick_Stats/Ag_Overview/stateOverview.php?state=KENTUCKY [hereinafter *Kentucky*]; Nat'l Agric. Statistics Serv., U.S. Dep't of Agric., *2014 State Agriculture Overview: Mississippi*, QUICK STATS (Mar. 7, 2015), http://www.nass.usda.gov/Quick_Stats/Ag_Overview/stateOverview.php?state=MISSISSIPPI [hereinafter *Mississippi*].

104. *See* Nat'l Agric. Statistics Serv., U.S. Dep't of Agric., *2014 State Agriculture Overview: Minnesota*, QUICK STATS (Mar. 7 2015), http://www.nass.usda.gov/Quick_Stats/Ag_Overview/stateOverview.php?state=MINNESOTA.

105. *See id.*; *Kentucky*, *supra* note 103; *Mississippi supra* note 103.

places limits on the agricultural preference to exclude large scale agriculture. The states identify these highly valuable agricultural economic sectors as necessarily reasonable water uses.

Kentucky and Mississippi give priority to livestock and poultry,[106] but these states are also the only states that explicitly give any priority or preference to other domestic animals. Kentucky gives some preference for agricultural uses of water under the definition of "domestic purposes." Owners of land "contiguous to public waters" (presumably ground water and surface water) hold the right to use the water from the water body for domestic purposes.[107] The term "domestic purposes" includes "drinking water for poultry, livestock and domestic animals."[108] Water used for domestic purposes has priority over "any and all other uses."[109] Mississippi also gives preference to some agricultural uses through the preference for "domestic use." "Domestic uses" in Mississippi include the "watering of farm livestock, poultry and domestic animals and the irrigation of home gardens and lawns."[110] Although the state requires a permit to use water for most purposes,[111] one exemption excludes domestic uses of water from the permit requirement.[112]

Minnesota established the following list of priority consumptive uses of water:

> (1) first priority, domestic water supply, excluding industrial and commercial uses of municipal water supply, and use for power production that meets the contingency planning provisions of section 103G.285, subdivision 6;
> (2) second priority, a use of water that involves consumption of less than 10,000 gallons of water per day;
> (3) third priority, agricultural irrigation, and processing of agricultural products involving consumption in excess of 10,000 gallons per day;
> (4) fourth priority, power production in excess of the use provided for in the contingency plan developed under section 103G.285, subdivision 6;
> (5) fifth priority, uses, other than agricultural irrigation, processing of agricultural products, and power production, involving consumption in excess of 10,000 gallons per day; and

106. *See* KY. REV. STAT. ANN. § 151.210(1) (West 2014); MISS. CODE ANN. § 51-3-3(c), -7(1) (West 2014).
107. KY. REV. STAT. ANN. § 151.210(1) (West 2014).
108. *Id.* §§ 151.210(1), 151.100(9).
109. *Id.* § 151.210(1).
110. MISS. CODE ANN. § 51-3-3(c) (West 2014).
111. *See id.* §§ 51-3-5(1); §§ 51-3-7(1).
112. *See id*. § 51-3-7(1).

(6) sixth priority, nonessential uses.[113]

Agricultural irrigation and agricultural processing, then, composes the third priority in Minnesota, behind only domestic water supply, contingent power supply, and consumption of less than 10,000 gallons per day. Other industrial and commercial uses, other than power production, receive no priority.

These definitions of reasonable use provide a default for allocations according to the reasonable use doctrine. When there are competing uses, livestock, poultry, and domestic animal uses will receive preference in Kentucky and Mississippi, while agricultural irrigation and processing in Minnesota will receive priority over everything but domestic use and consumption less than 10,000 gallons per day.

D. Other Means of Allocation During Shortages

States have other means of prioritizing agricultural water use in times of shortage. As described in detail below, two other states, Arkansas and Iowa, give priority to agricultural use of water during times of shortage. While Arkansas' priority applies to agriculture broadly, Iowa distinguishes between livestock watering and irrigation, giving priority to livestock watering. Within the category of irrigation, Iowa prioritizes certain crops over others. Neither of these states place agricultural uses above domestic uses. Iowa also prioritizes very specific types of crop production over other types of crops. Iowa's preferences, as well as those in other states, prioritize human life above animal life and animal life above plant life.

Arkansas statute provides for allocation of water during shortages. If a shortage ensues and insufficient water exists in a stream or portion of a stream to satisfy all water needs, then the Arkansas Natural Resources Commission "may allocate the available water from the stream among the uses of water affected by the shortage . . . in a manner that each of the needs affected by the shortage . . . may obtain an equitable portion of the available water."[114] The statute reserves two priorities before allocation: "(1) domestic and municipal domestic; and (2) federal water rights."[115] However, the allocation must then give preference to the following uses, in order of priority: (1) agriculture; (2) industry; (3) minimum streamflow; (4) hydropower; and (5) recreation.[116]

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113. MINN. STAT. § 103G.261(a) (2014).
114. ARK. CODE ANN. § 15-22-217(a)(1) (West 2014).
115. *Id.* § 15-22-217(e).
116. *Id.* § 15-22-217(a)(2)(B).

Iowa uses a different approach than most states with respect to priority of uses. Iowa requires a permit for most water withdrawals with very few exceptions, including "a nonregulated use."[117] "'Nonregulated use' means any beneficial use of water by any person of less than twenty-five thousand gallons per day."[118] If a water shortage, drought, disaster, or crisis occurs, water use may be curtailed or suspended[119] as provided for in the Iowa Code. Working in reverse order, the last use to be curtailed or suspended is water for human consumption and sanitation provided by private water supply.[120] Water for human consumption and sanitation supplied by public providers, is next to last to be curtailed.[121] "Uses of water for livestock production" makes up the next most protected use.[122] Lower in priority is water for irrigation, with water to irrigate hay, corn, soybeans, oats, grain sorghum or wheat occupying a lower priority than water for irrigation of other crops.[123] The only uses that may be suspended or restricted prior to irrigation are uses conveying water across state boundaries and water used primarily for recreational or aesthetic purposes.[124]

These two states include specific provisions to deal with water allocation in times of shortage. Neither Arkansas nor Iowa grant agricul-

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117. IOWA CODE ANN. § 455B.268(1) (West 2015).
118. *Id.* § 455B.261(11).
119. *Id.* § 455B.266(1), (2).
120. *Id.* § 455B.266(2)(i).
121. *Id.* § 455B.266(2)(h).
122. *Id.* § 455B.266(2)(g).
123. *Id.* § 455B.266(2)(c)–(d).
124. *Id.* § 455B.266(2)(a)–(b). IOWA CODE ANN. § 455B.266(2) (West 2015) reads as follows:

> 2. Notwithstanding a person's possession of a permit or the person's use of water being a nonregulated use, the department may suspend or restrict usage of water by category of use on a local or statewide basis in the following order:
> a. Water conveyed across state boundaries.
> b. Uses of water primarily for recreational or aesthetic purposes.
> c. Uses of water for the irrigation of hay, corn, soybeans, oats, grain sorghum or wheat.
> d. Uses of water for the irrigation of crops other than hay, corn, soybeans, oats, grain sorghum or wheat.
> e. Uses of water for manufacturing or other industrial processes.
> f. Uses of water for generation of electrical power for public consumption.
> g. Uses of water for livestock production.
> h. Uses of water for human consumption and sanitation supplied by rural water districts, municipal water systems, or other public water supplies as defined in section 455B.171.
> i. Uses of water for human consumption and sanitation supplied by a private water supply as defined in section 455B.171.

tural use the highest priority, but both states place agricultural use ahead of other uses including industry and hydropower.

E. Special Cases

1. Introduction

Six states, Delaware, Georgia, Maryland, New Jersey, South Carolina, and Wisconsin, provide detailed and unique provisions relating to agricultural water uses and therefore prove difficult to categorize. Additionally, the Regulated Riparian Model Water Code contains its own unique provisions with respect to agricultural water uses. These state and model provisions, and in some cases the history of the provisions, also provide valuable lessons to other states considering agricultural provisions for water permitting.

2. Delaware

Delaware requires a permit for the withdrawal of any ground or surface water.[125] Only three uses are exempt from this permit requirement: (1) the damming by a landowner of a gully on his or her land or a stream that originates on the landowner's property under certain conditions, (2) the damming of a stream or constructing a pond to divert water from a stream having "a minimum flow of not more than 1/2 million gallons of water per day" under certain conditions, and (3) the construction of ponds not larger than sixty thousand square feet for "conservation, recreation, propagation and protection of fish and wildlife, watering of stock, or fire protection."[126]

However, Delaware provides a detailed set of rules specific to agriculture,[127] which, when met, automatically grant water allocation permits for irrigation wells and surface water intakes for irrigation of farmland. These permits reserve up to 20 acre-inches per year, but not more than 10 acre-inches per month for the permittee.[128] Allocation permits for irrigation involve the same permit applications, procedures and conditions as other uses, with three exceptions.[129] First, "water level measurements from the supply source" are not required to be recorded or reported, unless specifically requested by the state.[130] Second, water needs are based on "best estimates of anticipated crop needs recognizing

125. *See* DEL. CODE ANN. tit. 7, § 6003(a)(3) (2014).
126. *See id.* § 6029.
127. *See id.* § 6010(h)(1); 7 DEL. ADMIN. CODE § 7303(5.6)(1) (1987).
128. DEL. CODE ANN. tit. 7, § 6010(h)(1) (2014).
129. 7 DEL. ADMIN. CODE § 7303(5.6)(1) (1987).
130. *Id.* § 7303(5.6)(1)(1).

natural variability in climate and precipitation."[131] This requirement prevents waste. Finally, water meters are recommended, but not required, and alternative methods may be used to measure water usage, such as time-lapse recorders.[132]

Other requirements for a water allocation permit may be waived in some limited circumstances for irrigation wells.[133] Namely, if the well is a replacement well, the existing well has a valid allocation permit, the replacement well will not exceed the permitted allocation, and the application is submitted during the growing season.[134] The Delaware code defines "irrigation well" as "an agricultural well which is used exclusively for the watering of lands or crops other than household lawns and gardens."[135] An advisory oversight committee has been designated for agricultural irrigation well procedures.[136]

Delaware is a small state with relatively little agricultural production, but ranks 11th in the nation in production of broilers and other poultry for meat.[137] Freshwater withdrawals for irrigation are also relatively small, comprising 101 million gallons per day, but amount to 34 percent of the total 300 million gallons per day of total freshwater withdrawals.[138] Delaware's comprehensive scheme for agricultural water use provides both control and flexibility for these significant withdrawals.

3. Georgia

Georgia's regulated riparian regime initially exempted agricultural uses from state regulation. Although Georgia amended its code to require water rights permits for agricultural uses, those agricultural uses existing at the time of the amendment were allowed to continue without restriction, so long as certain requirements were met. As a result, agricultural uses continue to form a large portion of water use in the state, with no statutory scheme to reduce such uses.

Georgia's Groundwater Use Act of 1972[139] requires a permit for withdrawals of more than 100,000 gallons of groundwater per day "for

131. *Id.* § 7303 (5.6)(1)(2).
132. *Id.* § 7303 (5.6)(1)(3).
133. DEL. CODE ANN. tit. 7, § 6010(i) (2014).
134. *Id.*
135. *Id.* § 6010(h)(2)(b).
136. *See id.* § 6010(l).
137. Nat'l Agric. Statistics Serv., U.S. Dep't of Agric., *2014 State Agricultural Overview: Delaware*, QUICK STATS (Mar. 7, 2015), http://www.nass.usda.gov/Quick_Stats/Ag_Overview/stateOverview.php?state=DELAWARE.
138. *See* MAUPIN, ET AL., *supra* note 16, at 10.
139. GA. CODE ANN. §§ 12-5-90 to -107 (2014); Groundwater Act of 1972, No. 1478, § 1972 Ga. Laws 976.

any purpose."[140] The Act previously required creation of "capacity use areas" before a permit was required for groundwater withdrawals of more than 100,000 gallons per day.[141] The capacity use area requirement was eliminated in 1973,[142] resulting in a permit requirement for all withdrawals of more than 100,000 gallons per day, statewide. The original Act also excluded agriculture and chicken processing from the definition of "any purpose."[143] Between 1975 and 1980, water withdrawals for agricultural irrigation increased significantly in the state.[144] Agricultural users constituted the largest use of groundwater in most parts of Georgia by 1986, withdrawing 720 million gallons of water per day (over half of the state's total consumption).[145]

In 1980, a bill was introduced that would have required a permit for agricultural irrigation withdrawals.[146] Although the 1980 bill failed, in 1982 the state passed a law that required the reporting of water withdrawals for agricultural irrigation[147] to study the extent of water use in agriculture.[148] However, the statute did not include effective enforcement mechanisms or penalties for failing to report, which caused a lack of usable water use data.[149] The statute was amended in 1988 to mandate that the state issue permits to applicants who established agricultural withdrawals of more than 100,000 gallons per day prior to July 1, 1988, and create a permitting system to issue permits for all agricultural uses in excess of 100,000 gallons per day initiated after that date.[150] The 1988 amendment addressed data concerns by requiring permits, but did nothing to limit agricultural use initiated prior to 1988.

Georgia requirements for surface water withdrawals[151] parallel the provisions for groundwater. In 1977, the Georgia Water Quality Control Act of 1964 was amended, *inter alia*, to require a permit to withdraw

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140. GA. CODE ANN. § 12-5-96(a)(1) (2014). While Georgia regulates groundwater and surface water separately, the separate provisions of the code are similar, particularly with respect to agricultural provisions. *Compare id.* § 12-5-96(a)(1), *with id.* § 12-5-31(b)(1).

141. Groundwater Act of 1972, No. 1478 § 6(a),1972 Ga. Laws 976, 982; James E. Kundell, *The Evolution of Georgia's Water Resources Policies*, 8 J. AGRIBUSINESS 53, 55 (1990), *available at* http://ageconsearch.umn.edu/bitstream/60341/2/JAB8oneA.pdf.

142. 1973 Ga. Laws 1273.

143. WATERS AND WATER RIGHTS, *supra* note 2, pt. XI, Georgia § IV, at 7.

144. *See* Kundell, *supra* note 141, at 56.

145. Waters and Water Rights, *supra* note 2, pt. XI, Georgia § IV, at 7.

146. *See* Kundell, *supra* note 141, at 56.

147. 1982 Ga. Laws. 2304, 2306–07.

148. *See* Kundell, *supra*, note 141, at 56.

149. *Id.*

150. 1988 Ga. Laws 1694.

151. GA. CODE ANN. § 12-5-31 (2014).

surface water in amounts over 10,000 gallons per day.[152] The Act exempts any surface water withdrawals that amount to no "more than 100,000 gallons per day on a monthly average. . . ."[153] Withdrawals of surface water for "farm uses" are treated separately under Georgia law. The state must issue a permit for farm use when the applicant submits reasonable proof that the use of surface waters for farming occurred prior to July 1, 1988.[154] The application must also have been submitted prior to July 1, 1991.[155] The act defines "[f]arm uses" as "irrigation of any land used for general farming, forage, aquaculture, pasture, turf production, orchards, or tree and ornamental nurseries; provisions of water supply for farm animals, poultry farming, or any other activity conducted in the course of a farming operation . . . includ[ing] the processing of perishable agricultural products and the irrigation of recreational turf [in some parts of the state]."[156] The statutory requirement that the state issue permits for use prior to 1988 achieves the same result as the statute regulating groundwater.

Georgia subsequently resorted to novel means to attempt to reduce water consumption in agriculture. In 2000, the state authorized the use of its tobacco settlement money to pay farmers in the Flint River Basin to stop using well water for irrigation during drought years.[157] However, in 2012, the head of Georgia's Environmental Protection Division reported that there was no money to make the payments and the program was not effective.[158]

In summary, withdrawals of ground and surface water for agricultural uses in Georgia receive different, and preferred, treatment. By exempting existing agricultural uses from any permitting requirements, Georgia allowed all early withdrawals, which occurred before the code eliminated exemptions, to be grandfathered in, and to continue unpermitted. Grandfathered agricultural use permits differ from other state water use permits. These permits for agriculture do not expire and therefore do not require renewal, cannot be revoked for nonuse, and are transferable.[159] Dellapenna claims that "[f]arm uses remain far and away the

152. 1977 Ga. Laws 370.

153. GA. CODE ANN. § 12-5-31(b)(1)(A) (2014).

154. *Id.* § 12-5-31(b)(3).

155. *Id.*

156. *Id.* § 12-5-31(a)(3).

157. Joseph W. Dellapenna, *The Law of Water Allocation in the Southeastern States at the Opening of the Twenty-First Century*, 25 U. ARK. LITTLE ROCK L. REV. 9, 70–71 (2002).

158. Brett Walton, *Lessons Learned? How Drought Has Shaped Water Policy in Georgia*, CIRCLE OF BLUE (July 2, 2012, 11:49 AM), http://www.circleofblue.org/waternews/2012/world/lessons-learned-how-drought-has-shaped-water-policy-in-georgia/.

159. *See* GA. CODE ANN. § 12-5-31(b)(3) (2014); *id.* § 12-5-105(a), (b)(1)–(2).

largest use of water in Georgia."[160] However, 2010 estimates place freshwater withdrawals for irrigation in the state at 839 million gallons per day, with 29.3 million gallons per day devoted to livestock watering.[161] The largest withdrawals actually come from thermoelectric power, at 1,770 million gallons of freshwater per day (but this use is largely nonconsumptive).[162] The second largest amount of water, 1,120 million gallons per day, or 25.2 percent, is withdrawn for public water supplies.[163] Given total fresh water withdrawals in the state of 4,440 million gallons per day, agricultural withdrawals amount to a 19.6 percent of the total.

The "virtual exclusion" of the almost 20 percent of water withdrawals in the state from regulation may prevent the state from properly allocating water supplies in a meaningful way,[164] especially when Georgia continues to struggle to maintain adequate water supplies.[165] The growth of Atlanta and extreme drought conditions in recent years have translated to water demands that exceed supply in the state.[166] In addition, Georgia is embroiled in a long-standing dispute with Alabama, Florida, and local governments within those states, over the use of transboundary surface waters.[167] Agricultural water withdrawals clearly play an important role in water supply management in Georgia, but other uses must be examined as well. Public water supplies generally receive preferential treatment under regulated riparian regimes, but substantial amounts of water from public water supplies go to industrial uses, not necessarily domestic uses.[168]

4. Maryland

Maryland's regulated riparian regime includes three exemptions from permitting: withdrawals of water for domestic purposes (other than heating and cooling), agricultural withdrawals, and the withdrawal of groundwater at an average annual rate of less than 5,000 gallons per day (in certain circumstances).[169] However, for an agricultural water user to

160. Dellapenna, *supra* note 157, at 72.
161. MAUPIN, ET AL., *supra* note 16, at 10.
162. *Id.*
163. *Id.*
164. Dellapenna, *supra* note 157, at 72.
165. Walton, *supra* note 158.
166. *See* Waters and Water Rights, *supra* note 2, pt. XI, Georgia § VII, at 12.
167. *See id.* at 12–13.
168. *See* WILLIAM E. TEMPLIN ET AL., U.S. GEOLOGICAL SURVEY, WATER USE: CHAPTER 11 OF NATIONAL HANDBOOK OF RECOMMENDED METHODS FOR WATER DATA ACQUISITION, at 11.C.1. (1997), *available at* http://pubs.usgs.gov/chapter11/chapter11C.html ("Public water suppliers provide water to domestic, commercial, and industrial users, to facilities generating thermoelectric power, for public use, and occasionally for mining and irrigation.").
169. *See* MD. CODE ANN., ENVIR. § 5-502(a), (b) (West 2014).

qualify for the agriculture exemption, the average annual water use for agricultural purposes must be less than 10,000 gallons per day.[170] A person that uses less than an annual average of 10,000 gallons per day for agricultural purposes may apply for a permit.[171] Applying for a permit may provide some extra protection to the water user by documenting the date and amount of use. Finally, the Maryland Department of Environment must grant a permit to any permit applicant who has been using water since before July 1, 1988 for agricultural purposes.[172] "Agricultural purposes" is defined as the "appropriation or use of water for the production, harvesting, or processing of crops, vegetation, or animals for human or animal consumption or use, including horticultural operations and land-based aquaculture."[173] Like Georgia, these uses are grandfathered into the system.

All water permit applications for agriculture in Maryland also appear to be exempt from some of the criteria and conditions governing approval of other permits. All permits must meet the criterion pertaining to the reasonableness of the appropriation, and no appropriation may have an unreasonable impact on waters of the state or other users of waters of the state.[174] However, the Department of Environment may not consider "[t]he protection of existing water uses, land values, investments, and enterprises" in determining reasonableness of agricultural use permits.[175] Additionally, a permit for agricultural use may not be conditioned upon payment by the permittee of the cost of improving neighboring facilities or mitigation of the impact on nearby users caused by withdrawals, such as lowering the water table below the level that would render some users' wells unusable.[176] Finally, with respect to surface water withdrawals, the Department of Environment may not condition agricultural use permits "on the permittee's provision of low flow augmentation to offset consumptive use during low flow periods" in order to protect other users and the water resource.[177]

Maryland water regulations also differentiate between permitting conditions that may be attached to agricultural water appropriation or use permits, and other permits. With non-agricultural water appropriation or use permits, the Department of Environment may adjust the quantity of water that a permittee may appropriate or use, either during

170. *Id.* § 5-502(b)(2).
171. *Id.* § 5-502(c)(2).
172. *Id.* § 5-502(c)(1).
173. MD. CODE REGS. 26.17.06.01(B)(1) (West 2015).
174. *See id.* at 26.17.06.06(A).
175. *Id.* at 26.17.06.06(B)(1)(a).
176. *Id.* at 26.17.06.06(D)(1).
177. *Id.* at 26.17.06.06(C)(1).

a drought period or emergency, or during a permit review, which occurs every three years.[178] No such provision exists for agricultural permits. In addition, a non-agricultural permit may include a provision requiring the permittee to stop or reduce water use when directed during a drought or emergency.[179] Non-agricultural use permittees, with some exceptions, must also report quantities of water appropriated semi-annually.[180] On the other hand, agricultural use permittees may be required to annually report only the "estimate" of total monthly water use for the preceding year.[181] The agricultural use permittee holds broad discretion in deciding the method by which these estimates may "reasonably reflect actual water use," including using acreage irrigated or pump operation time meters.[182]

Maryland also provides special allocation rules during times of shortage. During a water supply emergency, domestic and municipal uses have first priority; agricultural uses second; and all other uses third.[183] "Water supply emergency" is not defined, except as "available water supplies . . . inadequate in an area to meet the needs of all persons who have permits. . . ."[184] Maryland provides agricultural uses with preferential treatment in permitting, reporting, and allocation during shortage. These detailed provisions distinguish not only between agricultural uses and other types of uses, but also different amounts of water used for agricultural uses, agricultural uses initiated at different times, and different types of agricultural uses.

5. New Jersey

New Jersey's Water Supply Management Act ("NJWSMA") established a permit system for ground water and surface water diversions in the state.[185] A diversion of more than 100,000 gallons per day of surface water or groundwater in New Jersey requires a diversion permit or water usage certification.[186] Diversions for agricultural or horticultural purposes (including aquaculture) are exempt from permitting requirements, but must still obtain a five year water usage certification if the diversion is more than 100,000 gallons per day.[187] "'Agricultural,

178. *Id.* at 26.17.06.07(B)(2).
179. *Id.* at 26.17.06.07(B)(3).
180. *Id.* at 26.17.06.07(B)(4).
181. *Id.* at 26.17.06.07(C)(3)(a).
182. *Id.* at 26.17.06.07(C)(3)(c).
183. MD. CODE ANN., ENVIR. § 5-502(d) (West 2014).
184. *Id.*
185. N.J. STAT. ANN. §§ 58:1A-1 to -17 (West 2015).
186. *Id.* § 58:1A-7(a).
187. *See id.* § 58:1A-5.1, -6(a)(2).

aquacultural, or horticultural purposes' means the commercial activity of producing principally for sale aquatic organisms, crops, plants, animals or their products for the use or consumption by humans and/or animals including the growing, harvesting, storage and the on-farm preparation for use and marketing of aquatic organisms, crops, plants, animals or their products."[188] County agricultural agents issue the certifications based upon the standards and procedures established by the New Jersey Department of Environmental Protection ("NJDEP").[189] Emergency diversions and a limited number of other diversions are also subject to certification if they are expected to last 31 days or more.[190] In addition, "no tax, fee or other charge shall be imposed" on any such diversion.[191] However, a fee may be imposed "for the cost of processing, monitoring and administering a water usage certification program. . . ."[192]

In 2006, the NJDEP proposed significant amendments to the regulations governing agricultural and horticultural diversions (set forth at N.J. Admin. Code 7:20A-1.1 *et seq.*), and adopted the amended regulations in 2007.[193] The New Jersey Farm Bureau ("NJFB") challenged the regulations.[194] The NJDEP explained that the amendments were required to give "a higher level of scrutiny" to agricultural diversions of water due to "increased stress on the State's water resources from a growing population and associated development . . . and the need to conserve and protect valuable natural resources. . . ."[195]

The NJFB challenged several specific amendments, but generally argued that the amendments violated the New Jersey Right to Farm Act[196] and the New Jersey Retention and Development Act ("NJRDA")[197] by imposing overly burdensome requirements on farm operations.[198] The court found, reading the NJWSMA, NJRFA, and NJRDA together, that the legislature intended to "minimize regulatory burdens on agricultural endeavors where possible, but to exempt agricultural endeavors from specific regulations only where specifically stated in the statutory enact-

188. N.J. ADMIN. CODE § 7:20A-1.3 (2015), *invalidated on other grounds by* In re Agric., Aquacultural, & Horticultural Water Usage Certification, 410 N.J. Super. 209, 981 A.2d 99 (N.J. Super. Ct. App. Div. 2009).

189. *See* N.J. STAT. ANN. § 58:1A-6(a)(2) (West 2015).

190. N.J. ADMIN. CODE § 7:19-1.4(a) (2015).

191. N.J. STAT. ANN. § 58:1A-7.2 (West 2015).

192. *Id.*

193. *In re Agricultural*, 410 N.J. Super. at 219–221, 981 A.2d at 105–106.

194. *Id.* at 217, 981 A.2d at 103.

195. *Id.* (citing 38 N.J. Reg. 2947(a) (July 17, 2006); 39 N.J. Reg. 39(a) (Jan. 2, 2007)).

196. N.J. Stat. Ann. §§ 4:1C-1 to -10.4 (West 2015).

197. *Id.* §§ 4:1C-11 to -48.

198. *In re Agricultural*, 981 A.2d at 108–09.

ment."[199] To find that the NJWSMA accords "a favored position" with respect to agricultural water usage appeared "incongruous."[200] The court upheld all but four of the challenged provisions.[201] One of the provisions struck down by the court required certificate holders to mitigate all damages to other certificate holders resulting from the usage of water.[202] The NJDEP may, however, modify or revoke a certification to mitigate damages to other certification holders.[203]

New Jersey still prefers agricultural uses through special diversion provisions. The 2006 amendments, however, provide the NJDEP additional tools to manage agricultural uses in times of scarcity.

6. South Carolina

South Carolina maintains a separate registration and reporting system for agricultural water withdrawals, as opposed to a permitting system for other types of withdrawals. South Carolina separates the systems by defining a "[r]egistered surface water withdrawer" as "a person who makes surface water withdrawals for agricultural uses at an agricultural facility that is filing a report pursuant to [code provisions]."[204] The code defines "[a]gricultural use" broadly as:

> (a) plowing, tilling, or preparing the soil at an agricultural facility;
>
> (b) planting, growing, fertilizing, or harvesting crops, ornamental horticulture, floriculture, and turf grasses;
>
> (c) application of pesticides, herbicides, or other chemicals, compounds, or substances to crops, weeds, or soil in connection with the production of crops, livestock, animals, or poultry;
>
> (d) breeding, hatching, raising, producing, feeding, keeping, slaughtering, or processing livestock, hogs, aquatic animals, equines, chickens, turkeys, poultry, or other fowl normally

199. *Id.* at 111.

200. *Id.* at 111 (internal quotation omitted).

201. In addition to the provision discussed below, the NJDEP amended one provision in the regulations to change the role of the county agent from "decision maker" to someone who is consulted by the new decision maker, who would be appointed by the Department. *Id.* at 112. These amendments contradict the clear language of NJWSMA and are ultra vires. *See id.* The court also found that a new requirement regarding wetlands protection was ultra vires. *Id.* at 125.

202. *Id.* at 114, 115. The provision was struck down as ultra vires to the extent that the provision purported to give the NJDEP authority to require monetary payments for damages or "costly mitigation plans." *Id.* at 115.

203. *Id.*

204. S.C. Code Ann. § 49-4-20(23) (West 2015).

> raised for food, mules, cattle, sheep, goats, rabbits, or similar farm animals for commercial purposes;
> (e) producing and keeping honeybees, producing honeybee products, and honeybee processing facilities;
> (f) producing, processing, or packaging eggs or egg products;
> (g) manufacturing feed for poultry or livestock;
> (h) rotation of crops;
> (i) commercial aquaculture;
> (j) application of existing, changed, or new technology, practices, processes, or procedures to an agricultural use;
> (k) the operation of a roadside market; and
> (l) silviculture.[205]

Agricultural users must register and report under this statutory scheme, but a permit is not required. Applications for surface water use permits require public notice, whereas registration does not.[206] Permits are also time limited, while registrations last indefinitely.[207] Registered withdrawals are presumed to be reasonable, even though no public determination of reasonableness is made with respect to these types of withdrawals.[208] Moreover, no limit exists as to the quantity of water that may be withdrawn pursuant to registration.

The distinction between agricultural and non-agricultural withdrawals in South Carolina has spurred litigation twice since the adoption of the above provisions in 2010. First, Friends of the Edisto, a group of citizens advocating on behalf of the Edisto River, filed an administrative appeal from the registration of water withdrawals for Walther Farms, a large potato farm.[209] The registration listed withdrawals of 805 million gallons per month for irrigation.[210] The appeal questioned the science applied by the state water agency and alleged that the agency violated the constitutional rights of appellants and violated federal law, including the Clean Water Act, by granting the registration and withdraw authorization.[211] The parties settled the appeal in January, 2014,[212] whereby Walther Farms agreed to, *inter alia*, reduce the amount of water available

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205. *Id.* § 49-4-20(3).

206. *See id.* §§ 49-4-80(K)(1), -35(A), -50.

207. *See id.* §§ 49-4-35(A), (C), -100(B).

208. *Id.* § 49-4-110(B).

209. *See* Petition for Contested Case Hearing at 1–2, Friends of the Edisto v. S.C. Dep't of Health & Envtl. Control, No. 13-ALJ-07-0610-CC (S.C. Admin. Ct. Dec. 20, 2013), *available at* http://edistoconcerns.org/sites/edistoconcerns.org/files/13206_fred_notice_of_withdrawal-ex.a-settlementagreemt_pos_012814.pdf.

210. *Id.* ¶ 5

211. *See id.* ¶¶ 5, 6.

212. Notice of Withdrawal of Petition for Contested Case Hearing, Friends of the Edisto v. S.C. Dep't of Health & Envtl. Control, No. 13-ALJ-07-0610-CC (S.C. Admin. Ct. Jan. 28,

under its registration to 400 million gallons per month, install a stream gage on the river, withdraw a registration for another farm and instead use groundwater for irrigation of that farm, and develop a contingency plan for supplemental water supplies.[213]

Second, in September, 2014, a group of landowners filed suit against the South Carolina Department of Health and Environmental Control (DHEC), challenging the Surface Water Withdrawal Act.[214] This ongoing lawsuit seeks to have the separate rules for agricultural withdrawals struck from state statute and require agricultural users to acquire a permit on the same terms as other users.[215] The main concerns voiced in the suit include agricultural users' ability to withdraw the same amount of water during all times of the year (regardless of in-stream flows), the unlimited withdrawal quantities, and the lack of expiration dates for withdrawals.[216]

The complaint alleges a taking of private property for public use in violation of the South Carolina and United States Constitutions.[217] The complaint also includes causes of action for regulatory taking[218] and violation of due process.[219] Finally, the plaintiffs allege a violation of the public trust doctrine.[220]

South Carolina prefers agricultural water uses by providing agricultural users with a separate, less rigorous, process for registering withdrawals. This separate treatment, however, has recently come under legal challenge, the outcome of which remains uncertain.

7. Wisconsin

Wisconsin singles out agriculture and irrigation uses as requiring a permit under its statutory scheme, with additional application require-

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2014), *available at* http://edistoconcerns.org/sites/edistoconcerns.org/files/13206_fred_notice_of_withdrawal-ex.a-settlementagreemt_pos_012814.pdf.

213. Settlement Agreement §2(a)–(d), Friends of the Edisto v. S.C. Dep't of Health & Envtl. Control, No. 13-ALJ-07-0610-CC (S.C. Admin. Ct. Jan. 28, 2014), *available at* http://edistoconcerns.org/sites/edistoconcerns.org/files/13206_fred_notice_of_withdrawal-ex.a-settlementagreemt_pos_012814.pdf.

214. Complaint ¶¶ 1, 6, 22, 23, Jowers v. S.C. Dep't of Health & Envtl. Control, No. 14-CP-06-322 (S.C. Ct. Com Pl. September 4, 2014) (on file with author); *see* Gene Zaleski, *Lawsuit Seeks to Change Water Rules for Farms*, THE TIMES AND DEMOCRAT (Oct. 11, 2014, 2:17 AM), http://thetandd.com/news/lawsuit-seeks-to-change-water-rules-for-farms/article_380b52ca-510e-11e4-b34c-6f09c4be8b32.html.

215. *See* Zaleski, *supra* note 214.

216. *Id.*

217. Complaint, *supra* note 214, ¶¶ 22–24.

218. *See id.* ¶¶ 25–28.

219. *Id.* ¶ 39.

220. *Id.* ¶ 35.

ments above those required for other permitted uses. Agricultural users must provide detailed information on the withdrawal and the source[221] and "written statements of consent to the withdrawal from all riparian owners who are making beneficial use of the water proposed to be withdrawn."[222] Wisconsin appears unique in imposing these stricter requirements for agricultural use.

8. Regulated Riparian Model Water Code

The Regulated Riparian Model Water Code contains a set of ranked preferences in § 6R-3-04(1). First preference goes to water necessary for both direct human consumption and sanitation as necessary for health and survival.[223] The second priority includes water needed for the survival of livestock and preservation of crops.[224] This category also includes protecting businesses from damage to physical plants and equipment due to lack of water.[225] The final priority protects uses that maximize employment and economic benefits in the context of sustainable development.[226] All priorities are subject to ranking by the degree of reasonableness.[227] Temporal priority is addressed by giving the renewal of an existing permit preference over a new permit application so long as the public interest is served equally by both competing uses.[228] The Model Water Code most explicitly states a rationale for priority uses and creates a comprehensive system that protects those priorities.

V. RECOMMENDED MODELS

Water use regulation in the eastern United States, under both the common law and regulated riparian regimes, relies heavily on the "reasonable" use of the water. The determination of the reasonableness of a particular use inherently involves a subjective and difficult balancing of priorities.[229] Given that riparian water rights are based on reasonableness of use, regulated riparian regimes should also rely on reasonableness of use in fashioning rules to govern water allocation. The best of these rules

221. *See* WIS. STAT. ANN. § 30.18(2)(a)(2), (3)(a)(1) (2013–14).

222. *Id.* § 30.18(3)(a)(3).

223. ASCE, *supra* note 11, § 6R-3-04(1)(a).

224. *Id.* § 6R-3-04(1)(b).

225. *Id.* (explaining through the commentary of § 6R-3-04, inter alia, that the latter circumstance is more rare than loss of livestock or crops from lack of water).

226. *Id.* § 6R-3-04(1)(c).

227. *Id.* § 6R-3-04(3).

228. *Id.* § 6R-3-04(4).

229. *See, e.g.*, RESTATEMENT (SECOND) OF TORTS § 850A (2015) (providing a nonexclusive list of factors to consider when determining "reasonableness" of the use of water).

will provide specificity and greater certainty, while also allowing for flexibility.

When focusing on agricultural water use and how best to regulate this use, three considerations stand out. First, agriculture often ranks as the highest water use in most states, although irrigation is not as prominent in eastern riparian states.[230] Second, much of the water used in agriculture is consumptive.[231] Finally, agricultural activities provide food and fiber for humans. For this reason, few would question the importance of agriculture.

To address the first and second considerations, model provisions should also encourage efficiency in agricultural use of water and the prevention of waste. With increasing demands for water, climate change considerations and increasing drought, quantities of water may be limited at certain times and agricultural uses should not consume more water than necessary, particularly if preferences are given to agricultural uses.

Considering these issues, the Regulated Riparian Model Water Code and Delaware's water use regulations (with respect to agriculture) stand out. Both of these regulations appear to balance the above issues impacting reasonableness and lay out particular rules that reflect this balancing. Delaware also bears mention as having the only known state regulatory agency that limits the volume of water withdrawn for irrigation based on the calculated amount of water necessary to irrigate specific crops.[232] Most states however, prioritize irrigation broadly with no explicit limits on how much water can be used for this purpose.[233] The Delaware regulatory scheme encourages efficiency and conservation.

The Regulated Riparian Model Code fails to place quantitative limits on withdrawals for particular purposes, but provides a priority list for times of shortage that seems to comport with common sense notions of "reasonableness": first, water for human consumption or sanitation; second, water for livestock, crops, and industrial users where the lack of water could damage physical plants or equipment; and, finally, uses that "maximize employment and economic benefits within the overall goal of sustainable development. . . ."[234] However, with respect to prioritizing uses, other state regulated riparian regimes provide even more particular prioritization, providing additional models from which to design a better regulatory approach.

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230. *See supra* notes 16–30 and accompanying text.
231. *See* Davis, *supra* note 5, at 449.
232. 7 DEL. ADMIN. CODE § 7303(5.6)(1)(2) (1987).
233. *See supra* notes 103–113 and accompanying text.
234. ASCE, *supra* note 11, § 6R-3-04(1).

Iowa prioritizes livestock needs above irrigation, and splits the irrigation needs into two categories, reflecting a crop's drought tolerance as well as other factors.[235] Maryland places agricultural uses (broadly defined) behind only domestic and municipal uses, during times of shortage.[236] Prioritizing uses during times of shortage should be a feature of any regulated riparian statute since riparianism is based on sharing and does not provide for prioritization. Prioritizing human life, then animal life and then plant life, appears to comport with social mores that value human life over animal life, and animal life over plant life.

However, agricultural water uses should be specifically considered as part of a holistic approach to water allocation. For example, Georgia's history of water use regulation highlights the shortcomings of exempting agricultural uses from any examination at all within a statutory scheme.[237] Although agricultural uses are now subject to permitting requirements in Georgia, by grandfathering in existing agricultural uses, Georgia has effectively prevented any opportunity to manage this large quantity of use. In contrast, Wisconsin's approach, singling out agriculture for special scrutiny, may be reasonable in states where water supplies are short and agricultural withdrawals amount to a large percentage of total water use in the state.[238]

Finally, the recent and existing litigation in South Carolina,[239] serves as a cautionary tale for drafting regulated riparian codes with respect to agricultural withdrawals. If large agricultural withdrawals are allowed without public oversight or input, and with few restrictions, citizens may object and file suit. Effective regulations should give agricultural uses priority, but limit the extent of the use, as well as allow public input.

In summary, regulated riparian statutes should incorporate agricultural water withdrawals into a holistic model by: (1) including priority of uses, whether generally or only during shortages, that reflect the importance of agriculture in the state economy, and the maintenance of human, animal and plant life; (2) ensuring that data about agricultural withdrawals is collected and considered along with data about other withdrawals; (3) limiting agricultural water uses to reasonable amounts necessary to sustain certain crops; and, (4) providing the opportunity for public input.

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235. *See* IOWA CODE ANN. § 455B.266(2) (West 2015).
236. MD. CODE ANN., ENVIR. § 5-502(d)(1)–(2) (West 2014).
237. *See supra* notes 139–68 and accompanying text.
238. *See supra* notes 221–22 and accompanying text.
239. *See supra* notes 209–220 and accompanying text.

VI. CONCLUSION

Exemption of agricultural water uses under regulated riparian regimes in the eastern United States appear to be less of a problem than anticipated, with few states withdrawing significant amounts of water for irrigation, and few states actually exempting agricultural uses from their permitting regimes. After Georgia revoked its prior exemption for agricultural uses, only the state of Kentucky retains a total exemption. However, Georgia continues to feel the effects of its prior exemption through unregulated, grandfathered uses. Note that some states may give preference to agricultural uses within their common law, but this article does not address these issues.

A handful of eastern states give some sort of preference to agricultural uses, with some even giving priority to these uses during water shortages. However, all states that establish such preferences continue to place basic human needs above all other uses. With respect to agricultural preference or priority provisions, regulated riparian states are split on whether to aggregate irrigation and livestock watering uses. Interestingly, Iowa not only keeps these two uses separate but elevates the water needs of livestock over those of crops. This prioritization would seem appropriate, with human survival first, then animal survival, and finally, crops. Oddly, only two state statutes specifically address other domestic animals (pets).[240] Pets may be covered generally under "domestic uses," or considered a de minimis use.

Wisconsin's singling out of agricultural water uses for special scrutiny seems logical, since agriculture generally consumes large amounts of water in many eastern states. More importantly, agricultural uses of water compose a significant portion of consumptive uses in Wisconsin.[241] However, Delaware's provisions, which give some preference to agricultural irrigation uses but limit the quantities that can be used, may provide the best model for other states. Particularly during water shortages, giving preference to agricultural uses should be coupled with a requirement that those uses consume a "reasonable" amount of water under the circumstances. In this respect, the Model Regulated Riparian Code provides that constraint.

Water use preferences to allow the survival of livestock and other animals, after only the provision of water for human survival, seems appropriate given social norms that value human life over animal life and

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240. Kentucky and Mississippi specifically address pets with respect to water prioritization. *See* KY. REV. STAT. ANN. § 151.210(1) (West 2014); MISS. CODE ANN. § 51-3-3(c), -7(1) (West 2014).

241. *See* MAUPIN ET AL., *supra* note 16, at 10, 49.

value the prevention of suffering of animals. In addition, allocating water to livestock prevents economic losses to both the producers and to the consuming public. Maintenance of plant life to support human and animal life also seems appropriate to prevent suffering and economic loses. However, limits on the amounts used for these purposes based on the principles of reasonable use and prevention of waste also seem appropriate.