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Leah Catherine Voth

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Why So Salty? A Comment Addressing Louisiana's Attitude Toward Saltwater Pollution of an Aquifer

INTRODUCTION

Imagine filling a glass with water from the kitchen sink and taking a big gulp of salt water. This could be the reality for residents of Southern Louisiana in a matter of decades.¹ Ironically, the area this problem will most likely affect currently receives tap water considered 99% pure.² Baton Rouge, Louisiana, and the surrounding area have access to pure and delicious water, straight from the faucet. Drawn from the “1,500-foot” sand and “2,000-foot” sand areas of the Southern Hills Aquifer (SHA),³ rainwater from around 1 BCE is pumped from the ground, hit with a small amount of chlorine, and sent directly into the homes of the Capital Area.⁴

While many locals do not realize how invaluable the resource is, experts predict a wake-up call when saltwater pollution compromises the pure resource within the next fifty to seventy-five years.⁵ The public drinking supply will have to switch over to Mississippi River water, which as one expert claims, “will cost three times as much and taste one third as good.”⁶ Overuse of the aquifer causes the saltwater pollution and stems from industrial facilities drawing as much water from the aquifer as

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1. LA. GROUND WATER RES. COMM'N, *Managing Louisiana's Groundwater Resources: An Interim Report to the Louisiana Legislature*, at 73, DEPT. OF NATURAL RESOURCES (Mar. 15, 2012), <https://perma.cc/A6ZE-43MA>.

2. Steve Hardy, *Why The Sale Of Water From Baton Rouge Aquifer Outside Parish Boundaries Is Stirring Debate*, ADVOCATE (Nov. 1, 2017), <https://perma.cc/GK23-PJQY>.

3. In this Comment, “SHA” refers specifically to the affected “1,500 to 2,000-foot” sand areas of the Southern Hills Aquifer.

4. C.E. HEYWOOD ET AL., *Simulation of groundwater flow in the “1,500-foot” sand and “2,000-foot” sand, with scenarios to mitigate saltwater migration in the “2,000-foot” sand of the Baton Rouge area, Louisiana*, U.S. GEOLOGICAL SURVEY SCIENTIFIC INVESTIGATIONS REPORT 2013-5227, <https://perma.cc/3YPJ-LQJJ>; Emily Lane, *Why is Baton Rouge drinking water so good? And why are we in danger of losing it?* TIMES-PICAYUNE (Jan. 26, 2015), <https://perma.cc/3LQB-TR5B>.

5. Steve Hardy, *Baton Rouge Water Company says industry needs to stop drawing water from aquifer*, ADVOCATE (July 1, 2017), <https://perma.cc/B5JK-X86U>.

6. *Id.*

government entities, businesses, and residences combined.⁷ While the Baton Rouge Water Company transports the Baton Rouge public water supply into homes and businesses for a fee, those that dig their own wells, including industrial users, pay no fee, regardless of the amount of water they pull from the aquifer.⁸

It seems illogical for this precious natural resource to be at such risk in the water-rich “Sportsman’s Paradise,” but that exact perception allows the problem to persist. Louisiana’s water laws are as ancient as the state itself and thus reflect the idea that groundwater is of “perpetual availability.”⁹ Modern scientific discoveries that are now common knowledge reveal the absurdity of this principle, but state law has yet to catch up. A core example of this lies in groundwater’s classification: The Civil Code does not cover groundwater, and the jurisprudence classifies it as belonging to whoever draws it.¹⁰ As such, conflicting laws and state policy concerns have created a cyclical pollution problem regarding the SHA’s use. Judicial remedies are not readily apparent, and administrative oversight allows “big industry”¹¹ users to continue drawing from the aquifer in amounts that will result in the water being unfit for drinking in a matter of decades.¹²

Absent any direct statutory guidance or an administrative system capable of remedying this issue effectively, Louisiana should consider classifying “areas of groundwater concern” as public things belonging to the state.¹³ Without the classification, the current gaps in legislation allow industrial users to take a disproportionate and unnecessary amount of

7. See HEYWOOD ET AL., *supra* note 4; see Lane, *supra* note 4.

8. VINCENT E. WHITE & LAWRENCE B. PRAKKEN, *Water Resources of East Baton Rouge Parish, Louisiana*, U.S. GEOLOGICAL SURVEY, LA. DEP’T OF TRANSP. & DEV. (May 2015), <https://perma.cc/KG9N-S8JN>; BATON ROUGE WATER COMPANY, *Baton Rouge Water Company History*, <https://perma.cc/6HXR-JHV4> (last visited 2017).

9. Joseph W. Dellapenna, *The Law Of Water Allocation In The Southeastern States At The Opening Of The Twenty-First Century*, 25 UALR L. REV. 9, 73-74 (2002).

10. *H2Woe: Louisiana’s Water Worries*, LOUISIANA PUBLIC SQUARE (July 2012), <https://perma.cc/MPS5-GW9H>.

11. Big Industry is a term used by journalists to describe industrial facilities pulling from the aquifer, such as Exxon Mobil and Georgia Pacific. See Mark Armstrong, *Attempts to force big industry off Baton Rouge water*, WBRZ (Apr. 27, 2017), <https://perma.cc/S4WG-C7F2>.

12. Lane, *supra*, note 4.

13. LA. CIV. CODE art. 450 (2018); see *infra* Section I(B).

water from the SHA.¹⁴ If the abuse of the SHA continues, the state will lose an invaluable resource.¹⁵

In order to understand the seriousness of this issue and the obstacles allowing the pollution to progress, Part I explains the affected area of the aquifer and the current regulations of the SHA. Part II discusses how the current legislative structure allows the problem to persist. Finally, Part III provides a solution requiring minimal legislative changes, and depending on the desired result, sets out varying levels of alternative administrative action.

I. THE PURITY OF THE SOUTHERN HILLS AQUIFER AND THE CONTAMINATION CAUSED BY ITS USERS

Most of Louisiana's fresh water aquifers run only as deep as 900 or 1,000 feet, with some pockets as shallow as 200 feet.¹⁶ The SHA supplies multiple parishes with groundwater and reaches depths of 2,000 feet in the Capital Area of Baton Rouge.¹⁷ The city and surrounding area are fortunate to have some of the cleanest drinking water in the nation, a factor that attracts industrial users needing purified water for plant processes to the region.¹⁸ Credit for the purity of the SHA's drinking water belongs to the natural filtration system. Thousands of feet below the surface, sand from the Pleistocene era, which occurred between 5.4 million and 2.6 million years ago, and the Miocene era, which occurred between 2.6 million and 12,000 years ago, filters the groundwater.¹⁹ Due to the sand's low mineral content, the Capital Area's groundwater contains less iron, magnesium, and hydrogen sulfide than most of the nation's groundwater sources.²⁰ Evidence of the SHA's quality appears when comparing its filtration process to the processes required in other parts of Louisiana. Many areas rely on Mississippi River water, which requires an extensive treatment process to eliminate pesticide runoff, cow manure, and other

14. LA. REV. STAT § 38:3097.3 (2017).

15. See Lane, *supra* note 4.

16. A. Buono, *The Southern Hills regional aquifer system of southeastern Louisiana and southwestern Mississippi*, *Water-Resources Investigations Report 83-4189*, U.S. GEOLOGICAL SURVEY, (Feb. 2, 2012), <https://perma.cc/7BGX-5DCH>; See Lane, *supra* note 4.

17. See Buono, *supra* note 16; See Lane, *supra* note 4.

18. LA. GROUND WATER RES. COMM'N, *supra* note 1.

19. See Lane, *supra* note 4.

20. *Id.*

contaminates.²¹ If overuse of the aquifer continues, the area's only option will be to convert to water gathered from the Mississippi River.

A. Ground-Fault and Industry Fault

While Baton Rouge and its large industrial facilities sit on the Mississippi River, both industry and private residents rely primarily on fresh water from the aquifer rather than surface water from the river.²² On an average day in 2013, the Baton Rouge public water supply used 71.16 million gallons of the aquifer's water for domestic purposes; industrial facilities used 72.60 million gallons per day.²³ While most businesses and private residents pay a monthly fee to a water company for providing water for domestic purposes, industrial wells go unchecked. A study conducted by the United States Geological Survey in 1955 estimated that if charged, the SHA's industrial well users would typically pay an industrial rate of \$.08 per thousand gallons of water.²⁴ Roughly converting this figure to account for inflation, today, the SHA's industrial well users would pay \$.74 per thousand gallons of water.²⁵ Applied to the combined industrial use of 72.60 million gallons per day, if charged, the SHA's industrial well users would owe \$53,724 per day. As the law currently stands, no such fees are enforced.

The consequence of industry pulling a large amount of water from the aquifer is dire saltwater intrusion into the "1,500-foot" sand to "2,000-foot" sand aquifers below the Baton Rouge area.²⁶ A ground-fault that runs across the city bisects the SHA.²⁷ The area on the north side of the fault

21. *Id.*

22. *Baton Rouge Drinking Water in Peril*, LA. ENVTL. ACTION NETWORK (Feb. 21, 2014), <https://perma.cc/VP35-BUGQ>.

23. Examples of industrial facilities include ExxonMobil, which uses water to cool equipment at its refineries, and Georgia Pacific, which turns wood pulp into paper. *See* Lane, *supra* note 4; U.S. GEOLOGICAL SURVEY, *Louisiana Water Use*, https://la.water.usgs.gov/WaterUse/data_table/parishTable.asp (last visited Sept. 28, 2018).

24. R.R. Meyer, A.N. Turcan Jr., *Geology and Groundwater Resources of the Baton Rouge Area Louisiana*, GEOLOGICAL SURVEY WATER SUPPLY PAPER 1296 (1955), <https://perma.cc/T24E-JYDN>.

25. Converted using CPI Inflation calculator. U.S. DEP'T OF LABOR, BUREAU OF LABOR STATISTICS, *Databases, Tables & Calculators by Subject*, https://www.bls.gov/data/inflation_calculator.htm (last visited Sept. 28, 2018).

26. LA. GROUND WATER RES. COMM'N, *supra* note 1.

27. Faults are breaks in the earth's crust where adjacent sections, or plates, have moved relative to each other. A. Hays Town, Jr., *A Case History of Use and Management of the Baton Rouge Fresh Water Aquifer System* (May 2013)

contains fresh water, while the south side is mostly salt water.²⁸ Only a fraction of groundwater is pumped from the south side as compared to the north side. The extreme contrast in water pumped from the two sides of the fault results in a higher water table in the south, which “pushes the salt water across the fault into the fresh water side.”²⁹ This saltwater intrusion diminishes the quality of the groundwater and will eventually compromise its use.³⁰ Experts predict the SHA’s saltwater contamination will render it unsafe for drinking within fifty to seventy-five years.³¹

B. Enough to Make Your Head Swim: Louisiana’s Conflicting Water Laws

Louisiana’s original water laws emerged from the now outdated idea that usable water is infinite.³² After Louisiana’s founding in 1812, over 160 years passed without any groundwater management.³³ Any conservation efforts appearing in legislation can be credited to the 1974 State Constitution art. IX, § 1, which states: “The natural resources of the state, including air and water, shall be protected, conserved, and replenished insofar as possible and consistent with the health, safety, and welfare of the people. The legislature shall enact laws to implement this policy.”³⁴ Although charged with the responsibility to protect groundwater and other invaluable resources, the legislature has developed a “hodgepodge” of legislation resulting in inadequate regulation on local and state levels.³⁵ This is evidenced by the fact that although the salinification³⁶ of the SHA was discovered in the 1970s, the state has yet to adequately address the issue.³⁷

(unpublished M.S. thesis, Louisiana State University), <https://perma.cc/4RBG-HCK9>.

28. *Id.*

29. *Id.*

30. Hardy, *supra* note 5.

31. *Id.*

32. LA. GROUND WATER RES. COMM’N, *supra* note 1, at 24.

33. *Id.* at 14.

34. LA. CONST. ART. IX, § 1.

35. LA. GROUND WATER RES. COMM’N, *supra* note 1, at 1.

36. Salinification refers to the act or process of becoming or causing to become saline. “Salinification,” *Merriam Webster Online Dictionary*, <https://perma.cc/66PD-HGT8> (last visited Sept. 28, 2018).

37. Steve Hardy, *New member ‘stunned’ groundwater commission not further along in fight against saltwater intrusion*, *ADVOCATE* (July 3, 2017), <https://perma.cc/5E9B-S9AQ>.

The Louisiana Civil Code classifies running waters, the waters and bottoms of natural navigable water bodies, the territorial sea, and the seashore as “public things” belonging to the state.³⁸ Private entities cannot own surface water resources that are classified as “public things.” However, the owner of land next to a stream, lake, or river may have a riparian right³⁹ to use the surface water for certain domestic purposes without ever holding a legal title to the resource.⁴⁰ Conversely, the lack of classification of subterranean or groundwater resources as a public thing leads to the logical conclusion that non-running water, such as that of the SHA, is subject to private ownership. Louisiana Civil Code article 490 provides that the owner of a tract of land has ownership rights to the area above and below the property.⁴¹ Louisiana traditionally relied on the “absolute ownership theory” of groundwater, which recognizes a landowner’s right to “everything on his property up to heaven and down to hell.”⁴² However, in regard to subterranean liquid minerals such as oil, gas, and groundwater, the absolute ownership theory was jurisprudentially modified in 1963 by the court’s adoption of the “rule of capture” in *Adams v. Grigsby*.⁴³ The rule of capture provides that, instead of automatically owning the resources beneath their land, landowners must capture or obtain possession of the resource in order to claim it.⁴⁴

1. Thirsty for a New Classification: Adams v. Grigsby

In the rule of capture case, the defendant oil driller withdrew groundwater from the same aquifer residents relied on for drinking water.⁴⁵ The defendant’s use of 2,800 barrels per day over a seven-month period caused the aquifer to run dry.⁴⁶ The Second Circuit Court of Appeal rejected any reliance on statutes that governed surface waters and instead analogized subsurface water to fugitive substances such as oil and gas.⁴⁷

38. LA. CIV. CODE art. 450 (2018).

39. The right to access and use water is a function of owning land adjacent to the waterbody. *See* LA. CIV. CODE art. 658 (2018).

40. *See* LA. CIV. CODE art. 657-58 (2018); LA. CIV. CODE art. 667 (2018).

41. LA. CIV. CODE art. 490 (2018).

42. LOUISIANA PUBLIC SQUARE, *supra* note 10.

43. 152 So. 2d 619 (La. Ct. App. 1963); LA. GROUND WATER RES. COMM’N, *supra* note 1, at 25.

44. *Id.*

45. *Adams v. Grigsby*, 152 So. 2d 619, 620 (La. Ct. App. 1963).

46. *Id.*

47. *Id.* at 622. The court provided:

The thirteen landowners seeking injunctive relief and damages conceded the oil driller's right to withdraw water from a well on his property, but they denied that he had the right to use the common subsurface reservoir in quantities that would limit other users.⁴⁸ The court acknowledged the plaintiffs might be entitled to damages if the defendant acted intentionally; unreasonably and unnecessarily; or, in the alternative, negligently or ultra-hazardously; however, the plaintiffs' complaint contained no factual allegations to support these theories.⁴⁹ As to the excessive amount of water drawn from the aquifer, the court stated that only the legislature could regulate ownership and withdrawals.⁵⁰ Without any statutory limit on the amount of water captured, the defendant's unlimited and unregulated use of the aquifer was proper.⁵¹

2. *Watering Down Absolute Control*

In spite of the traditions of "absolute ownership" and the "rule of capture," the legislature recognized that varying degrees of management and regulation are necessary to protect sustainability of water sources in fulfillment of Article IX, Section 1 of the Louisiana Constitution.⁵² As such, Louisiana Revised Statutes title 38, sections 3091-94 give the Commissioner of the Office of Conservation state-wide authority to require water well registration; establish "Areas of Ground Water Concern;" "Critical Areas of Ground Water Concern;" and respond to sustainability challenges.⁵³ Relevant to the discussion, the Ground Water

Water and oil, and still more strongly gas, may be classed by themselves . . . as minerals *ferae naturae*. In common with animals, and unlike other minerals, they have the power and tendency to escape without the volition of the owner. Their "fugitive and wandering existence within the limits of a particular tract is uncertain." They belong to the owner of the land, and are a part of it, and are subject to his control; but when they escape, and go into other land, or come under another's control, the title of the former owner is gone. Possession of the land, therefore, is not necessarily possession of the gas.

(quoting *Rives, et al. v. Gulf Refining Company of Louisiana*, 133 La. 178, 62 So. 623 (La. 1913), and *Brown v. Vandergrift*, 80 Pa. 142, 147 (Pa. 1875)).

48. *Adams v. Grigsby*, 152 So. 2d at 621.

49. *Id.*

50. *Id.* at 623-24.

51. *Id.* at 624.

52. LA. GROUND WATER RES. COMM'N, *supra* note 1, at 27; LA. CONST. ART. IX, § 1.

53. LA. REV. STAT. §§ 38:3091-94; An "Area of Ground Water Concern" is defined as:

Resource Commission carries out these tasks, and, in specific regard to the SHA, the Capital Area Ground Water Conservation Commission (Capital Area Commission) provides assistance.⁵⁴

In attempting to balance riparian rights and state ownership of surface water, in 2010, the Louisiana legislature adopted a Surface Water Management plan. Found at Louisiana Revised Statutes title 30, sections 961-63, it directs the Department of Natural Resources to enter into cooperative endeavor agreements that include a usage fee for the withdrawal of running surface water, classified as a public thing, from bodies of water in the state.⁵⁵ This successfully established a procedure for the sale of running surface waters; however, the procedure produced unintended consequences. Because withdrawals of groundwater do not incur any usage fees under the rule of capture, commercial users place a greater reliance on this “free” source.⁵⁶ Although the option of purchasing surface water exists, nothing incentivizes users to convert to an option bearing a price tag when their current method of pulling groundwater is free of charge. Adding to industrial users’ lack of motivation to switch to surface water, pulling water from the Mississippi River requires the added expense of filtration processes before the water can be used.⁵⁷

II. IN DEEP WATER: CONFLICTING LAWS AND POLICY CONCERNS PRECLUDE A REMEDY

The current legislation regarding groundwater resources allows for the salinification of the SHA to continue with no end in sight. While studies show that industrial facilities are largely responsible for the aquifer’s pollution, judicial remedies are difficult to find because both a right of action and potential plaintiffs are virtually unidentifiable.⁵⁸ Even reining

an area in which, under current usage and normal environmental conditions, sustainability of an aquifer is not being maintained due to either movement of a salt water front, water level decline, or subsidence, resulting in unacceptable environmental, economic, social, or health impacts, or causing a serious adverse impact to an aquifer, considering the areal and temporal extent of all such impacts.

A “Critical Area of Ground Water Concern” is an “Area of Ground Water Concern,” in which the Commissioner of Conservation “finds that the sustainability of the aquifer cannot be maintained without withdrawal restrictions.” § 38:3097.2.

54. LA. GROUND WATER RES. COMM’N, *supra* note 1, at 29.

55. LA. REV. STAT. §§ 30:961-63.

56. LA. GROUND WATER RES. COMM’N, *supra* note 1, at 28.

57. Susan Buchanan, *Threats to Southern Hills Aquifer Grow in Louisiana*, LOUISIANA WEEKLY (May 19, 2014), <https://perma.cc/U478-7L6L>.

58. *See infra*, Section II(A)-(B); Town, Jr., *supra* note 27; Hardy, *supra* note 5.

in industrial use by administrative action proves futile due to the regulating authorities and policy considerations supporting industrial facilities.⁵⁹

*A. Is the Harm a Judicially Recognized Source of Pollution? Na*⁶⁰

When looking to tort theories, Louisiana courts have imposed damages, addressed remediation, and granted injunctive relief in cases involving saltwater pollution of groundwater.⁶¹ Key to this Comment's analysis, adjudication has been limited to cases involving *unnatural* pollution of salt water on property or into natural resources. Examples in the relevant jurisprudence include: seepage of underground oil storage pits;⁶² unauthorized or negligent disposal of salt water on property;⁶³ purposefully discharging vast amounts of salt water into a freshwater canal;⁶⁴ and mishandling an oilfield drill pipe resulting in saltwater ground contamination.⁶⁵

Distinct from the previous cases, the SHA involves a *natural* form of saltwater pollution exacerbated by decades of overuse.⁶⁶ A close, yet ultimately insufficient comparison to the harm is found in the *Adams* case.⁶⁷ When the defendant oil driller's excessive use of water naturally dried the community's well, the court addressed (but did not apply) Civil Code art. 667, which states:

Although a proprietor may do with his estate whatever he pleases, still he cannot make any work on it, which may deprive his neighbor of the liberty of enjoying his own, or which may be the cause of any damage to him. However, if the work he makes on his estate deprives his neighbor of enjoyment or causes damage to him, he is answerable for damages only upon a showing that he knew or, in the exercise of reasonable care, should have known

59. "Authorities" refers to the Capital Area Groundwater Conservation Commission. *See infra* Section II(B).

60. "Na" is the symbol for sodium on the Periodic Table of Elements.

61. *Andrepoint v. Chevron USA, Inc.*, 13 So. 3d 421 (La. App. 3d Cir. 2013); *Simoneaux v. Amoco Prod. Co.*, 860 So. 2d 560 (La. App. 1 Cir. 2003); *Corbello v. Iowa Prod.*, 50 So. 2d 686 (La. 2003); *Broussard v. Hilcorp Energy Co.*, 24 So. 3d 813 (La. 2009); *Marin v. Exxon Mobil Corp.*, 48 So. 3d 234 (La. 2010); *Grefer v. Travelers Ins. Co.*, 919 So. 2d 758 (La. App. 5 Cir. 2005).

62. *Andrepoint*, 113 So. 3d 421; *Simoneaux*, 860 So. 2d 560.

63. *Corbello*, 850 So. 2d 686; *Broussard*, 24 So. 3d 813.

64. *Marin*, 48 So. 3d 234.

65. *Grefer*, 919 So. 2d 758.

66. Hardy, *supra* note 37.

67. 152 So. 2d at 624.

that his works would cause damage, that the damage could have been prevented by the exercise of reasonable care, and that he failed to exercise such reasonable care.⁶⁸

The court in *Adams* reasoned that the plaintiffs' assertions regarding the amount of water used by the defendant, no matter what harm resulted, did not prove intent or negligence on behalf of the defendant because his "ownership, acquired upon reducing the water to his possession, [was] unrestricted and unregulated."⁶⁹

Like the defendant's unrestricted use in *Adams*, Louisiana's current legislation allows for industrial facilities in the Capital Area to freely capture groundwater from the aquifer, yet the current use otherwise appears to meet the elements of art. 667. When industry pulls more water from the resource than the rest of Baton Rouge combined, the unrestricted use damages groundwater through saline pollution and deprives the general population of fresh drinking water.⁷⁰ Industrial companies are certainly aware of the consequences of their enjoyment and consciously choose to use the aquifer rather than a less convenient, alternative source, such as surface water.⁷¹

If an application of art. 667 would allow plaintiffs to bring an action against negligent industrial users, another issue appears: Who exactly are the potential plaintiffs? In *Adams*, thirteen landowners who relied on the reservoir in question brought claims against the defendant.⁷² When looking to the SHA, approximately 527,000 people live in the area affected by the saltwater intrusion.⁷³ Identifying the plaintiffs with a right of action and quantifying the specific harm suffered under art. 667 is quite challenging. This is further complicated by the fact that the state's statutes and jurisprudence do not specifically recognize the long-term, natural pollution from overuse.

B. Conservation of Groundwater versus Conservation of Industry

As Louisiana began to understand groundwater as a limited resource, agencies were set in place to preserve drinking water, but efforts have not yet substantially impacted the pollution of the "1,500-foot" sand to "2,000-

68. LA. CIV. CODE art. 667 (2018).

69. 152 So. 2d at 624.

70. LA. ENVTL. ACTION NETWORK, *supra* note 22.

71. Hardy, *supra* note 5.

72. 152 So. 2d at 620.

73. Buono, *supra* note 16.

foot” sand areas of the SHA.⁷⁴ In 1974, the state passed legislation creating the Capital Area Commission in order to monitor an area that includes the SHA, and it enacted specific provisions to address the saltwater intrusion.⁷⁵

The Capital Area Commission, a permanent task force, has yet to adequately remedy the salinification.⁷⁶ The Capital Area Commission has broad regulatory authority to manage groundwater resource sustainability, including specific provisions to address saltwater intrusion.⁷⁷ Past initiatives include projects implemented in cooperation with the U.S. Geological Survey to create a model of the “1,500-2,000-foot” sand areas in order to plan for mitigation of saltwater encroachment.⁷⁸ The Capital Area Commission adopted aquifer-specific groundwater production limits to slow saltwater encroachment and also embraced a “scavenger well” concept as a means to protect groundwater production.⁷⁹

A “scavenger well” is a pair of wells that work together to separately remove deeper brackish water and shallower fresh water from the aquifer.⁸⁰ In particular, the 1500-foot scavenger well currently operates in order to shield the Baton Rouge Water Company, a major public supply production center.⁸¹ Still in the planning stages, the Commission intends for a 2000-foot scavenger well to eventually shield an industrial production center north of the State Capitol.⁸² The Department of Natural Resources believes several more years of observation are required to prove the effectiveness of these plans and acknowledges that “scavenger wells” do not halt the continued flow of saltwater into an aquifer, but serve only

74. OFFICE OF CONSERVATION, *Report On The Effects Of Groundwater Withdrawals On The Sustainability Of The Southern Hills Aquifer System And The Water Supplies Of Parishes Within The Region Dependent Upon Groundwater Resources*, at 9, LA. DEPT. OF NATURAL RESOURCES (Feb. 27, 2017), <https://perma.cc/Y5XS-GVA2>.

75. LA. GROUND WATER RES. COMM’N, *supra* note 1, at 73.

76. *Id.*; Town, Jr., *supra* note 27.

77. LA. REV. STAT. §§ 38:3071-84 (2018); LA. GROUND WATER RES. COMM’N, *supra* note 1, at 73.

78. CAPITAL AREA GROUND WATER CONSERVATION COMM’N, *Capital Area Ground Water Conservation Commission Actions*, at 3, LA. DEPT. OF NATURAL RESOURCES (Dec. 13, 2011), <https://perma.cc/DLS2-85FP>.

79. OFFICE OF CONSERVATION, *supra* note 74.

80. LAYNE WATER MANAGEMENT, *Scavenger Well Couple* (2014), <https://perma.cc/569B-JVT2>.

81. OFFICE OF CONSERVATION, *supra* note 74.

82. *Id.*

to temporarily remediate encroachment within their immediate capture area.”⁸³

Per the latest report by the Department of Natural Resources, there are currently no publicly released plans by the Capital Area Commission for major groundwater withdrawal reductions.⁸⁴ As such, “aggressive, deep contingency planning and reporting to the Legislature . . . on alternative source use,” among other initiatives, is necessary.⁸⁵ Along with aggressive planning for alternative source use, immediate remediation needs to begin. Waiting on years of more research while the current usage rates of the aquifer continue may result in a pollution problem too large to remedy.⁸⁶

The Capital Area Commission sets out to preserve, protect, and prevent waste of the groundwater resources over which it has jurisdictional authority; however, the composition of the regulatory board thwarts efforts to complete a long-term sustainability plan.⁸⁷ This may be in part because the Commission does not unanimously recognize a singular objective. The sixteen appointed board members seem to be at odds with one another. While part of the water protection board seeks change, other members defend the use of clean drinking water by industrial facilities.⁸⁸ Perhaps problematically, three of the board members are industry representatives employed by the very companies they are appointed to regulate.⁸⁹

Formed under Louisiana Revised Statutes title 38, sections 3071-84, “[t]hree members shall be appointed from nominations by the industrial users in the district.”⁹⁰ While the legality of the state agency’s composition is not at issue, conflicting interests and ethical issues among members of the board may exist. At least one commentator suggests that board members’ competing interests stall the implementation of solutions targeting industrial users.⁹¹ A member of the Capital Area Commission chosen to represent ExxonMobil stated, “To cut off the company from the groundwater supply would be a considerable burden . . . It’s not as simple as, ‘Oh, just go stick a hose in the river and suck up all your water.’”⁹² The

83. *Id.* at 10.

84. *Id.* at 13.

85. *Id.* at 13.

86. *See See* HEYWOOD ET AL., *supra* note 4, at 63.

87. CAPITAL AREA GROUND WATER CONSERVATION COMM’N, *Mission Statement*, <https://perma.cc/P4P6-FMXD> (last visited Sep. 24, 2018).

88. Armstrong, *supra* note 11.

89. *Id.*

90. LA. REV. STAT. § 38:3074(A)(2) (2018).

91. Hardy, *supra* note 5.

92. *Id.* (quoting Todd Talbot, ExxonMobil’s representative on the Capital Area Commission).

fear that a burdensome transition to surface water may strain relations with industrial users contributes to the lack of action.

Maintaining a positive relationship with industrial facilities is a key policy concern of the state in general. Louisiana's oil refineries represent over 18% of America's refining capacity and almost 4% of the world's refining capacity.⁹³ Policymakers realize "water is a key driver of sustainable growth and poverty alleviation."⁹⁴ Many key industry sectors in Louisiana, including traditional and emerging industries such as agriculture, oil and gas, chemical manufacturing, and power generation, "are especially sensitive to water supply."⁹⁵

Even if a general consensus existed among the Capital Area Commission regarding a solution, these decision makers only hold their political administration positions for a few years, making it difficult to implement long-term plans, the results of which may not be apparent for decades.⁹⁶ Although the Capital Area Commission board members are able to reveal their opinions on the salinification issue, the board's high turnover rate prevents ideas from being followed with action. For example, joining the commission in the summer of 2017, one board member brought extensive publicity to the issue but stepped down to work in another parish by the fall of 2017.⁹⁷ The nature of the Commission's composition has resulted in almost fifty years of circular issues: While implemented strategies aim to protect the aquifer, no current law directly targets industrial use of the aquifer.⁹⁸ As a result of this inaction, the aquifer continues to weaken.⁹⁹

C. *A Head in the Clouds*

In 2003, after Louisiana granted the Office of Conservation state-wide governing authority over groundwater resource management, a change in legislation stated that the Capital Area Commission and Office of Conservation "shall work together," in providing the necessary guidance,

93. LA. GROUND WATER RES. COMM'N, *supra* note 1, at 10.

94. *Id.*

95. *Id.*

96. Town, Jr., *supra* note 27.

97. Hardy, *supra* note 37; Andrea Gallo, *William Daniel, longtime Baton Rouge City Hall fixture, stepping down, headed to Ascension*, ADVOCATE (Oct. 10, 2017), <https://perma.cc/TCA9-49GA>.

98. Steve Hardy, *Deadline Nears for Report on how Groundwater Commission is addressing threat to Baton Rouge Aquifer*, ADVOCATE (Sept. 19, 2017), <https://perma.cc/UDD8-9KPK>.

99. *Id.*

governance, and action, within statutory authority, to manage the sustainability of aquifers in the Baton Rouge area.¹⁰⁰ While agency regulation of groundwater resources does not align with the overriding rule of capture for the purposes of groundwater conservation, it shows the legislature is comfortable with the conflict in order to protect the state's resources.¹⁰¹

If a well is "significantly and adversely affected by the movement of a saltwater front [or] water level decline" from an aquifer, an application can be filed requesting that the Office of Conservation's Commissioner (Commissioner) deem the affected area an "area of groundwater concern."¹⁰² Upon further inspection, the Commissioner may declare the area of groundwater concern a "*critical* area of groundwater concern" and issue an order against any well in the area "fixing allowable production, spacing, and metering necessary to properly manage the state's ground water resources."¹⁰³ In determining restrictions on withdrawals for "*critical* areas of groundwater concern," the relevant statute provides that "[g]round water needed for human consumption and public health and safety shall have the highest priority," but also that "historical use" and "ability, including *economic ability, of a particular user to relocate to an alternative source of water*" should be considered.¹⁰⁴ As previously noted, accommodating industry needs is a priority of Louisiana policymakers, and forcing industry to use alternative sources of water is controversial.

Although the Capital Area Commission's research and long-term monitoring of 1,500-foot to 2,000-foot sand areas of the SHA led to the Commissioner classifying the area as an "area of groundwater concern," the aquifer has yet to be considered unsustainable enough to warrant a "*critical*" classification and subsequent withdrawal restrictions.¹⁰⁵

100. LA. GROUND WATER RES. COMM'N, *supra* note 1, at 74.

101. Roderic Fleming, *Hydraulic Fracturing, Louisiana Water Law, and Act 955: An Irresistible Economic Force Meets an Immovable Legal Object*, 24 TUL. ENVTL. L.J. 363 (2011).

102. LA. REV. STAT § 38:3097.6 (2018).

103. LA. REV. STAT § 38:3097.6 (2018) (emphasis added); LA. REV. STAT § 38:3097.3 (2017).

104. LA. REV. STAT § 38:3097.6 (2018) (emphasis added). The Commissioner may use his discretion in regulating use of the resource per § 38:3097.1, which states, "any . . . order of the commissioner . . . *may* incorporate the use of appropriate incentives to encourage conservation of ground water resources and the appropriate utilization of alternate water supplies where appropriate." (emphasis added).

105. LA. GROUND WATER RES. COMM'N, *supra* note 1, at 22.

Without the “*critical*” classification, the Commissioner may only order proper spacing of the wells because the classification is reserved for situations in which the sustainability cannot be maintained without withdrawal restrictions.¹⁰⁶ The statute states that the Commissioner *may* address incentives to reduce groundwater use; however, no meaningful action has been implemented to force big industry off of the aquifer.¹⁰⁷ Engineers and environmental activists have commented on these misaligned incentives by stating, “They’ve known for a long time we’re in crisis. The people should come first and industrial profits should come second.”¹⁰⁸ This assertion reflects the fundamental tenet of Article IX, § 1 of the Louisiana Constitution, which demands natural resources be conserved for the health, safety, and welfare of the people.¹⁰⁹

III. CURING SALT

While a framework for regulating an aquifer’s use exists in legislation, the implementation of any solution encouraging big industry users of the SHA to switch to alternative water sources remains elusive. For purposes of this Comment, a solution curing the issue of saltwater pollution will not focus on classifying the area as a “*critical* area of groundwater concern” and simply restricting withdrawals. Therefore, effective change in this context must start with the general classification of groundwater ownership. Instead of relying on the theories of absolute ownership or the rule of capture, the legislature should classify groundwater in “areas of groundwater concern” as a “public thing” belonging to the state under Civil Code art. 450.¹¹⁰ Moving forward, if legislation recognizes threatened groundwater as belonging to the state, unlimited and unnecessary drawing of water from the SHA will be unauthorized, which can ultimately put an end to the salinification of the aquifer.

In response to potential concerns that classifying the affected groundwater as a public thing will infringe on traditional theories of ownership, it is important to recognize that untouched or uncaptured groundwater currently belongs to no one. Therefore, asserting that uncaptured groundwater in areas of concern belongs to the state will not deprive anyone of a vested ownership right, because no such individual

106. LA. REV. STAT. § 38:3097.3(C)(4)(b)(ii) (2017); LA. REV. STAT. § 38:3097.1 (2018).

107. LA. REV. STAT § 38:3097.6 (2018); LA. GROUND WATER RES. COMM’N, *supra* note 1.

108. Hardy, *supra* note 5.

109. LA. CONST. ART. IX § 1.

110. LA. CIV. CODE art. 450 (2018).

ownership right of untouched groundwater exists. Labeling groundwater in areas of groundwater concern a public thing is a necessary step in achieving sustainability of what we now recognize as a limited resource, and it is supported by Article IX, § 1 of the Louisiana Constitution, which promotes legislation protecting natural resources. Furthermore, state ownership need not be permanent: Due to the constant monitoring of areas of groundwater concern, the state receives notification if the aquifer replenishes itself to the point of “sustainability” and the Commissioner can respond by lifting the classification, allowing the traditional theories of capture to resume.¹¹¹ Additionally, the classification will not affect owners of smaller or domestic wells not belonging to areas of groundwater concern.

Just as the Commissioner receives the authority to classify “areas of groundwater concern” and impose regulations on the area reflecting a denial of absolute ownership,¹¹² only a focused legislative provision, not affecting anything broader than “areas of groundwater concern,” would be necessary to take a further step and officially classify the threatened groundwater as a public thing.¹¹³ The results of this classification open the door to an easily attainable solution to the specific problem of industry refusing to convert to nearby surface-water resources. Using the current legislation, there are three levels of groundwater management that could produce the desired result, each appearing more influential than the last.

A. A Glass Half Empty and A Glass Half Full: Amending Surface Water Management Statutes

Under Revised Statutes title 30, sections 961-63, “Surface Water Management,” the Secretary of the Department of Natural Resources may enter into cooperative agreements with private water users by which users can purchase set amounts of running water from the state.¹¹⁴ Because surface water must be purchased from the state, this provision discourages industrial users from relying on surface water when groundwater is essentially “free of charge.” If, as this Comment suggests, areas of groundwater concern are treated as waters of the state, the Surface Water Management Act could apply to the industrial use of the endangered 1,500-foot sand to 2,000-foot sand areas of the SHA as well.¹¹⁵ It must be

111. See LA. REV. STAT. § 38:3097.6 (2018).

112. See *supra* note 101 and accompanying text.

113. LA. REV. STAT. § 38:3097.3 (2018).

114. LA. REV. STAT. §§ 30:961-63 (2017).

115. All users of groundwater within the state are required to register their wells with the Commissioner and are given a classification such as “domestic” or

noted that the language of the statute currently addresses “running surface waters of the state,” and would likely require an amendment to include areas of groundwater concern.¹¹⁶ The Surface Water Management Act has numerous environmental protections, a statutorily imposed priority for domestic and agricultural uses, and an agency-reserved right to alter or terminate any agreement.¹¹⁷ By applying this provision to areas of groundwater concern, industrial users will be able to consider their two main options for water use on an equal playing field, combating the once obvious choice to use “free,” fresh groundwater for industrial plant processing.¹¹⁸ Under this proposed application of the Surface Water Management Act, both groundwater and surface water drawn by industrial users will bear a price tag, making them equally reasonable choices.

As for the additional filtration requirements needed to convert water from the Mississippi River for industrial purposes, the expense is inevitable. The continued use of the aquifer as it stands is said to unavoidably result in complete saltwater pollution, forcing both industrial well users and the public water supply to convert to Mississippi River water within the next fifty to seventy-five years.¹¹⁹

B. A Tall Drink of Water: The Threat of Tort Action as an Incentive to Switch Sources

Reclassifying ownership of areas of groundwater concern and amending the Surface Water Management Act to essentially charge industrial users for their use of areas of groundwater concern may help deter groundwater use. But if incentives are needed to further encourage the surface water choice, negligent use of the aquifer can now result in a tort action based on art. 667 of the Civil Code for two reasons. First,

“industrial,” per LA. REV. STAT. § 38:3094. Thus, there should be no concern over charging domestic well owners via this Comment’s proposal.

116. LA. REV. STAT. §§ 30:961-63 (2017).

117. LA. REV. STAT. § 30:961(D) (2017).

The secretary shall evaluate each application for a cooperative endeavor agreement to withdraw running surface water and each such cooperative endeavor that he may enter to ensure that each is in the public interest. The secretary shall ensure the proposed agreement is based on best management practices and sound science, and is consistent with the required balancing of environmental and ecological impacts with the economic and social benefits found in Article IX, Section 1 of the Constitution of Louisiana.

118. See discussion *supra* Section I(B)(2).

119. HEYWOOD ET AL., *supra* note 4; Lane, *supra* note 4.

instead of unidentifiable plaintiffs,¹²⁰ the State of Louisiana or its agencies could bring an action against any industrial user polluting waters of the state, which, under this Comment's proposal, includes areas of groundwater concern such as the SHA. Second, the natural pollution process that has not yet been jurisprudentially recognized as a harm¹²¹ may now serve as an injury because "the damage [from salinification] could have been prevented by the exercise of *reasonable care*."¹²² When comparing the reasonableness of using threatened groundwater versus surface water, not only would industrial users be required to pay for both sources under the proposed amendment to the Surface Water Management Act, but using surface water is the only option that will not result in harm to the fresh drinking water of citizens.

By requiring payment for both water sources per this Comment's proposed amendment to the Surface Water Management Act, but also being cautious of abusing the groundwater system for fear of litigation, choosing the alternative surface water option seems logical.

C. The Cup Runneth Over: An Added Option Makes Surface Water the Obvious Choice

In order to substantially encourage big industry to choose surface water, the legislature could extend to industrial users an existing statute that relates to the Surface Water Management Act by providing enumerated users access to the state's running surface waters free of charge. Following the adoption of Revised Statutes title 30, sections 961-63, the Louisiana Legislature approved Act 994 of the 2010 legislative session because it recognized the beneficial use of surface water for agricultural and aquacultural¹²³ purposes by riparian owners.¹²⁴ The legislature stated that "waters used in agricultural or aquacultural pursuits are not consumed, rather they are merely used" and that allowing surface water to be used for these purposes *free of charge* is not a prohibited donation.¹²⁵ This provision allows for the enumerated users to rely on

120. See discussion *supra* Section II(A).

121. See discussion *supra* Section II(A).

122. LA. CIV. CODE art. 667 (2018).

123. Aquaculture, also known as fish or shellfish farming, refers to the breeding, rearing, and harvesting of plants and animals in all types of water environments including ponds, rivers, lakes, and the ocean. *Aquaculture*, NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION, <https://perma.cc/6P8X-YS3G> (last visited Sept. 27, 2018).

124. LA. REV. STAT. § 9:1104 (2017).

125. LA. GROUND WATER RES. COMM'N, *supra* note 1, at 28.

surface water without compensation to the state, yet the absence of payment is not considered a donation by the state.

Similar to agricultural or aquacultural users, industrial users are not *consuming* water; they are merely using it for industrial processes. By extending this provision to industrial users relying on surface water as an alternative to areas of groundwater concern, no substantial reason for choosing the aquifer over a surface water resource exists because the running surface water would be free of charge, and, per this Comment's proposal, the threatened groundwater would be the option bearing a price tag.

The statute provides that a riparian owner may assign his rights to a non-riparian owner, but he must first ensure that the withdrawal will be environmentally and ecologically sound and balanced with economic and social benefits as required by art. IX, §1 of the Louisiana Constitution.¹²⁶ The intent of this provision supports extending the statute to industrial users; when looking to the implications of drawing surface water versus groundwater from the SHA, the most environmentally and ecologically beneficial option for industrial users is switching to surface water. Furthermore, this option is in balance with economic benefits because it protects the policy interest of keeping industrial facilities in Louisiana by providing a "free" alternative to groundwater. This reverses the desire to use threatened groundwater that, under this proposed scheme: (1) will have to be paid for due to its classification as a public thing belonging to the state, and (2) incurs the possibility of liability for further damage to the aquifer.

CONCLUSION: ALL'S WELL THAT ENDS WELL

Without immediate action, those relying on the SHA for all purposes, whether domestic, agricultural, or industrial use, will have no choice but to convert to drawing water from the Mississippi River within a matter of decades. Transferring to surface water sources from groundwater sources may require adjustments by industrial users, but an immediate change is necessary, as tinkering with administrative review of the salinification problem has yet to result in any improvement. The state is no longer blissfully unaware that water is a limited resource and must take action to protect and preserve the dwindling, pure groundwater. The Commissioner of Conservation's classification of an "area of groundwater concern" should invoke a treatment similar to waters of the state so that an amended Surface Water Management plan can be used to charge industrial users for

126. LA. REV. STAT. § 9:1104(B) (2017).

water drawn from the SHA.¹²⁷ From that point, existing Civil Code articles such as art. 667 should apply to those who abuse the aquifer in order to effectively invoke a switch to surface water resources.¹²⁸ Incentivizing the change even more, industrial users should not be required to compensate the state for surface water as the water is “used” and not “consumed.”¹²⁹ The design of this plan makes the transformative process as painless as possible for industry users while still resolving fifty years of ineffective problem solving.¹³⁰

*Leah Catherine Voth**

127. LA. REV. STAT § 38:3097.6 (2008); LA. CIV. CODE art. 450 (2018); LA. REV. STAT. §§ 30:961-63 (2017); Fleming, *supra* note 101.

128. LA. CIV. CODE art. 667.

129. LA. GROUND WATER RES. COMM’N, *supra* note 1, at 28.

130. *Id.* at 73.

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