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IMPLEMENTING NATURE’S RIGHTS THROUGH REGULATORY STANDARDS

*Linda Sheehan**

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INTRODUCTION

At Vermont Law School’s (“VLS”) 2018 Symposium, “Rights of Nature: Shifting Paradigms and Grounding in the Law” (“Symposium”), numerous experts shared insights on the evolution of nature’s rights movement and offered projections for its future. The speakers’ presentations illustrated that an increasing number of statutes, cases, constitutional law provisions, treaties, and other forms of law now

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recognize nature's rights.¹ At the Symposium, however, topics such as the implementation of nature's rights laws and the potential impacts of a nature's rights regime—as opposed to current environmental law systems—were under-represented. Recognizing nature's inherent rights is an important first step towards establishing a mutually healthy relationship with the natural world; however, merely recognizing nature's rights is insufficient to ensuring actual change. A healthy relationship with the natural world also demands changing current laws and enforcement systems. This essay examines the limits of current environmental statutes and regulations in protecting nature's right to exist, thrive, and evolve.² This essay then offers alternative regulatory approaches towards better achieving this goal, using the Clean Water Act (CWA) as illustration.

I. STRATEGIES FOR IMPLEMENTING NATURE'S RIGHTS LAWS

Enforcing nature's rights laws through court action is one strategy to engender specific, meaningful change. Court action can help recognize nature's rights, define the parameters of a nature's rights law, and provide specific guidance to decision makers and stakeholders. Among other approaches, judicial education can advance judicial action. The International Union for Conservation of Nature's [IUCN] World Commission on Environmental Law has prioritized judicial education.³ The IUCN further has recognized nature's inherent right to exist, thrive, and evolve in its Declaration on an Environmental Rule of Law.⁴ Through education, judges worldwide are becoming more aware of rights of nature

1. See generally Oliver Houck, *Noah's Second Voyage: The Rights of Nature as Law*, 31 TULANE ENV'L L.J. 1, 15–21 (2017) (highlighting key instances of nature's rights being codified into law).

2. REPÚBLICA DEL ECUADOR CONSTITUCION DE 2008 [CONSTITUTION] Oct. 20, 2008, Off. Reg., tit. II, ch. 7, art. 71 (Ecuador), <http://pdba.georgetown.edu/Constitutions/Ecuador/ecuador08.html> (last visited Mar. 3 2020), translated in Georgetown University's Edmund A. Walsh School of Foreign Service, Center for Latin American Studies Program, <http://pdba.georgetown.edu/Constitutions/Ecuador/english08.html> (last visited Mar. 3 2020) (providing that “Nature or Pachamama, where life is reproduced and exists, has the right to exist, persist, maintain itself and regenerate its own vital cycles, structure, functions and its evolutionary processes”).

3. World Comm. on Env't'l Law, *Second International Meeting of the Global Judicial Institute on Environment*, INT'L UNION FOR CONSERVATION OF NATURE (May 19–21, 2017), <https://www.iucn.org/commissions/world-commission-environmental-law/events-wcel/past-events-wcel/second-international-meeting-global-judicial-institute-environment>.

4. See Int'l Union for Conservation of Nature [IUCN], *IUCN World Declaration on the Environmental Rule of Law* (February 12, 2017), https://www.iucn.org/sites/dev/files/content/documents/english_world_declaration_on_the_environmental_rule_of_law_final.pdf (“[N]ature has the inherent right to exist, thrive, and evolve”).

and broader environmental justice concepts.⁵ Academic discussions, such as the VLS Symposium and materials following, contribute to this global legal scholarship and may assume a noteworthy role in court decisions.⁶

A second strategy to impact meaningful change is to adopt follow-up laws that advance specific elements of broader, rights-based legislation. One example of this strategy recently occurred in Santa Monica, California. In 2013, the Santa Monica City Council adopted the Santa Monica Sustainability Rights Ordinance.⁷ This ordinance recognizes the “fundamental and inalienable rights” of “natural communities and ecosystems” in the City to “exist and flourish.”⁸ The Sustainability Rights Ordinance specifically defines “natural communities and ecosystems” to include “groundwater aquifers, atmospheric systems, marine waters, and native species.”⁹ As with rights of nature laws generally,¹⁰ the Sustainability Rights Ordinance’s impact is proceeding relatively slowly as local decision makers consider how to best translate the Sustainability Rights Ordinance’s language into practice.

The Santa Monica City Council had its first implementation success in August 2018, when it adopted the Santa Monica Sustainable Groundwater Management Ordinance. This Ordinance addresses the local aquifer—the source of most of the City’s water supply—and its inherent rights.¹¹ The Ordinance bans construction of new, private water wells and expansion of

5. *Judges from Around the World Debate the Challenges of Environmental Justice at the OAS*, OF AM. STATES (Aug. 28, 2018), http://www.oas.org/en/media_center/photonews.asp?sCodigo=FNE-94826.

6. *Sierra Club v. Morton*, 405 U.S. 727, 743 (1972) (discussing Justice William O. Douglas’ dissent, which referenced Christopher Stone’s essay “Should Trees Have Standing” and questioned the reasons for limiting standing to humans when the ecosystem itself was the injured party. Justice Douglas suggested that the “river as plaintiff speaks for the ecological unit of life that is part of it,” and offered that those closest to the rivers and forests could speak on their behalf) [hereinafter *Morton*]; *See generally* Christopher Stone, *Should Trees Have Standing – Toward Legal Rights for Natural Objects*, 45 SOUTHERN CAL. L. REV. 450, 450–458 (1972) (explaining the legal evolution from rights of man to rights of nature).

7. SANTA MONICA, CAL., MUN. CODE art. 12, ch. 12.02 (added by Ord. No. 2421 CCS § 1, adopted 4/9/13; amended by Ord. No. 2611 CCS § 10, adopted 6/25/19).

8. SANTA MONICA, CAL. MUNICIPAL CODE, art. 12, ch. 12.03, § 12.02.030(b) (adopted 2013, amended 2019).

9. *Id.*

10. *See, e.g.*, Craig M. Kauffman and Pamela L. Martin, *Can Rights of Nature Make Development More Sustainable? Why Some Ecuadorian Lawsuits Succeed and Others Fail*, 92 WORLD DEVELOPMENT 130, 131–32 (2017).

11. SANTA MONICA, CAL. MUN. CODE ch. 7.18.040 (2018); *see also* CITY OF SANTA MONICA OFFICE OF SUSTAINABILITY & THE ENV’T, INTRODUCTION AND FIRST READING OF AN ORDINANCE ADDING CHAPTER 7.18 TO THE SANTA MONICA MUNICIPAL CODE RELATING TO SUSTAINABLE GROUNDWATER MANAGEMENT AND PROHIBITING NEW PRIVATE WELLS AND EXPANSION OF PRIVATE WELLS UNLESS AND UNTIL PERMITTED BY A GROUNDWATER SUSTAINABILITY PLAN 656–666 (2018), <http://santamoniacityca.iqm2.com/Citizens/FileOpen.aspx?Type=1&ID=1156&Inline=True>.

existing wells, citing the city aquifer's inherent right to flourish.¹² This Ordinance is significantly more protective than existing California groundwater management law.¹³ Santa Monica is currently developing a Groundwater Sustainability Plan that may allow private wells in the future, but only if the private wells do not disturb the aquifer's right to flourish.¹⁴ A variety of factors will help shape the Groundwater Sustainability Plan and will include, among other things: studies assessing different models of projected aquifer use; scientific and rights-grounded policies supportive of a "flourishing" system over a degraded one; and subsequent controls regulating aquifer usage.¹⁵

A third strategy to implement rights of nature law is through administrative law. This strategy involves developing and adopting regulations that recognize nature's rights. Regulations help resolve legal gaps, imprecision, and inconsistencies.¹⁶ By developing rights-based regulations, society further defines nature's rights.

12. *Id.*

13. CAL. WATER CODE §§ 10720 et seq. (2014), the "Sustainable Groundwater Management Act" (SGMA) (codifying, in § 10723, guidelines to establish local groundwater sustainability agencies to manage each water basin). *But see* CAL. WATER CODE § 10721(v)–(x) (2019) (supporting the argument that the guidelines fall short of efficacy because the SGMA sets a low threshold requirement for basin protection). The SGMA defines "sustainable groundwater management" as "management and use of groundwater in a manner that can be maintained ... without causing undesirable results." CAL. WATER CODE § 10721(v). It then defines such "undesirable results" as including "one or more of the following...:

- (1) Chronic lowering of groundwater levels indicating a significant and unreasonable depletion of supply if continued...
- (2) Significant and unreasonable reduction of groundwater storage.
- (3) Significant and unreasonable seawater intrusion.
- (4) Significant and unreasonable degraded water quality...
- (5) Significant and unreasonable land subsidence that substantially interferes with surface land uses.
- (6) Depletions of interconnected surface water that have significant and unreasonable adverse impacts on beneficial uses of the surface water.", which generally means that rather than ensuring healthy basins, SGMA plans only require that California's aquifers are not significantly and unreasonably drawn down or polluted."

CAL. WATER CODE § 10721(x).

14. CITY OF SANTA MONICA, Department of Public Works, SUSTAINABLE GROUNDWATER MANAGEMENT ACT SUMMARY 6 (Feb. 22, 2017).

15. CITY OF SANTA MONICA, SANTA MONICA BASIN GROUNDWATER SUSTAINABILITY AGENCY MEMORANDUM OF UNDERSTANDING 2 (2017).

16. Matthew C. Stephenson, *Statutory Interpretation by Agencies*, RESEARCH HANDBOOK ON PUBLIC CHOICE AND PUBLIC LAW 285 (Daniel A. Farber & Anne Joseph O'Connell eds., Edward Elgar Pub. 2010).

II. LIMITS OF CURRENT ENVIRONMENTAL STATUTES AND IMPLEMENTING REGULATIONS

The stated purpose of many current environmental laws and their implementing regulations is to achieve “healthy” systems.¹⁷ For example, the Marine Mammal Protection Act (MMPA) states that the primary objective of marine mammal management “should be to maintain the health and stability of the marine ecosystem.”¹⁸ Similarly, the National Environmental Policy Act (NEPA) “recognizes that each person should enjoy a healthful environment”¹⁹ and “encourage[s] productive and enjoyable harmony” with the environment.²⁰ It further encourages each person to exercise their “responsibility to contribute to the preservation and enhancement of the environment.”²¹ Similar language is found at the state level.²² For example, the California Coastal Act states that “[u]ses of the marine environment shall...maintain healthy populations of all species of marine organisms.”²³

The desired “healthy” environment, however, has failed to materialize because, as written, the laws cannot structurally achieve these goals.²⁴ Environmental laws have addressed some acute issues, such as large sewage and industrial pollution releases, but have failed to prevent long-term, devastating harm, such as climate change and species extinctions.²⁵ Lack of funding, political backtracking, understaffing, weak enforcement, and other challenges certainly have created obstacles for success.²⁶ A lack of understanding of systems science when the laws were adopted exacerbates such struggles.²⁷ Our single-stressor laws simply did not envision systemic shifts such as pollution-caused, runaway climate change.

17. See e.g. 33 U.S.C. § 3601 (2012) (identifying purpose of “conserv[ing] healthy . . . ecosystems”).

18. 16 U.S.C. § 1361(6) (1994).

19. 42 U.S.C. § 4331(c) (1970).

20. 42 U.S.C. § 4321 (1970).

21. *Id.* § 4331(c).

22. See generally Cal. Pub. Res. Code § 30230 (2000) (demonstrating similar language between the National Environmental Policy Act and the California Coastal Act).

23. *Id.*

24. THOMAS BERRY, *THE GREAT WORK: OUR WAY INTO THE FUTURE* 107-116 (Bell Tower 1999) [hereinafter *THE GREAT WORK: OUR WAY INTO THE FUTURE*].

25. *Id.*; see also CORMAC CULLINAN, *WILD LAW: A MANIFESTO FOR EARTH JUSTICE* 36-44 (Chelsea Green Publishing 2d ed. 2011).

26. See generally Brandy Dennis & Juliet Eilperin, *EPA Remains Top Target with Trump Administration Proposing 31 Percent Budget Cut*, WASH. POST, (May 23, 2017), https://www.washingtonpost.com/news/energy-environment/wp/2017/05/22/epa-remains-top-target-with-trump-administration-proposing-31-percent-budget-cut/?noredirect=on&utm_term=.a442a3f4fe8c (explaining the implications of cutting federal government funding to environmental protection).

27. Cullinan, *supra* note 26, 47-48.

However, fully implementing existing environmental laws and associated regulations would still fail to ensure a thriving planet because the laws themselves are fundamentally flawed.²⁸ Rather than recognize that nature and humans are interconnected, these laws assume that we can isolate and control elements of the natural world as we choose. Most federal U.S. environmental laws were developed over 45 years ago as reactions to human-caused tragedies such as long-term DDT contamination, dead Great Lakes, and regular river fires.²⁹ The shared intent of these laws was to set goals that would sustainably protect ecosystems and species and hold users of the environment to those goals.³⁰ Despite this benevolent intent, however, the structure of these laws reflects a societal perspective that the natural world is in essence a resource to be manipulated for profit and other human desires. The ideology behind these laws, in other words, is not far detached from the ideology that generated the environmental harm the laws were designed to prevent.

Consistent with a frame of nature as economic resource, our environmental laws legalize and externalize the impacts of pollution, rather than more generally apply bans.³¹ The laws further place the burden of proof on those impacted to show pollution is harmful, rather than on pollution dischargers to show it is not.³² They fail to include provisions to pay back our collective debt to nature through affirmative, sweeping restoration activities or broad establishment of habitat reserves.³³ An economic system that treats nature as capital pushes back on such approaches, which are inconsistent with natural systems' perceived role as primarily an economic good.

The U.S. Endangered Species Act (ESA) is a prime example. Often viewed as the closest approximation to a rights of nature statute, the ESA operates from a basic premise that species as a whole have some right to exist, independent of their direct benefit to people.³⁴ However, the "God

28. *Id.*; see also Berry, *supra* note 25.

29. See generally Keith Schneider, *New View Calls Environmental Policy Misguided*, Mar. 21, 1993, <https://www.nytimes.com/1993/03/21/us/new-view-calls-environmental-policy-misguided.html> (discussing scientist's dissatisfaction with U.S. environmental policy).

30. See Richard J. Lazarus, *The Greening of America and the Graying of United States Environmental Law: Reflections on Environmental Law's First Three Decades in the United States*, 20 Va. Env'tl. L. J. 75, 76–77 (2001).

31. Jan G. Laitos, Lauren Joseph Wolongevicz, *Why Environmental Laws Fail*, 39 WM. & MARY ENVTL. L. & POL'Y REV. no. 1 at 36 (2014).

32. Katie Steele, *The Precautionary Principle: A New Approach to Public Decision Making*, 5 LAW, PROBABILITY AND RISK 19, 26 (Aug. 8, 2006).

33. See, e.g., George Monbiot, *FERAL: REWILDING THE LAND, THE SEA, AND HUMAN LIFE* (Univ. of Chicago Press 2017).

34. 16 U.S.C. § 1531 (1988).

Squad” loophole³⁵ and species-targeted attacks on the Act³⁶ demonstrate the law’s limits in protecting the most fundamental of nature’s rights when faced with conflicting human economic desires.³⁷ Indeed, even the basic premise of the Act—to intervene only when species are poised to vanish—demonstrates the law’s adherence to the current, primarily economic understanding of nature.³⁸ A law that recognized species’ own, inherent rights to exist, thrive, and evolve might be called the “Healthy Species Act,” rather than the “Endangered Species Act.”³⁹

Other examples include:

The U.S. National Environmental Policy Act (NEPA), which allows public environmental review of projects subject to government approval, but fails to require that negative environmental impacts be avoided or mitigated to insignificance.⁴⁰ It further fails to effectively consider cumulative impacts, opening the door to environmental “death by a thousand cuts.”⁴¹

The U.S. Marine Mammal Protection Act (MMPA), which places a “[m]oratorium on the taking and importation of marine mammals and marine mammal products,” but fails to maintain the Act’s intent by issuing permits when economic interests arise.⁴² For example, marine mammal “take” permits were issued to aging California coastal power plants, which kill and injure marine mammals on seawater intake pipes.⁴³ Unpermitted

35. Endangered Species Act, 16 U.S.C. §§ 1536(a)(2), (c), (h) (1988) (detailing conditions in which the Endangered Species Committee may grant an exemption from federal action that would otherwise trigger species protection requirements under the Act).

36. See generally *Tennessee Valley Authority v. Hill*, 437 U.S. 153, 195 (1978) (indicating Congress created a “God Squad” that decides whether to grant exemptions for federal agency actions, which would otherwise trigger species protection requirements under the ESA); Western Water and American Food Security Act of 2015, H.R. 2898, 114th Cong. (1st Sess. 2015); Doug LaMalfa, Rep. *LaMalfa, California Republicans Introduce Legislation to Improve Western Water Reliability* (June 25, 2015), <https://lamalfa.house.gov/media-center/press-releases/rep-lamalfa-california-republicans-introduce-legislation-to-improve>.

37. ELLEN HANAK ET AL., *MANAGING CALIFORNIA’S WATER: FROM CONFLICT TO RECONCILIATION* 241 (Pub. Policy Inst. of Cal. Ed., 2011) (arguing the Endangered Species Act is structurally limited in that it fails to allow for “endangered species triage” when competing economic uses – here, involving water – push multiple species towards extinction).

38. See generally Christian Langpap et al. *The Economics of the U.S. Endangered Species Act: A Review of Recent Developments*, 12 REV. ENVTL. ECON. & POL’Y 69, 70 (2018).

39. David U. Hooper et al., *A Global Synthesis Reveals Biodiversity Loss as a Major Driver of Ecosystem Change*, 486 NATURE 105 (June 7, 2012) (noting that species diversity is critical to the overall well-being of ecosystems).

40. See 42 U.S.C. § 4331(b) (encouraging environmental consideration, but only to a practical point; the law does not require mitigation).

41. U.S. E.P.A., EPA 315-R-99-002, *CONSIDERATION OF CUMULATIVE IMPACTS IN EPA REVIEW OF NEPA DOCUMENTS* 1 (1999).

42. 16 U.S.C. § 1371 (2018).

43. 16 U.S.C. § 1374 (2003); Calif. State Water Resources Control Board, “Water Quality Control Policy on the Use of Coastal and Estuarine Waters for Power Plant Cooling: Final Substitute

takings further occur regularly through destruction of habitats critical to threatened and endangered marine mammals; for example, in California, the disappearance of once-abundant Chinook salmon and steelhead resulting from drained rivers endangers the existence of their marine predators, including the mighty Southern Resident killer whale.⁴⁴

The U.S. Clean Water Act (CWA) calls in Section 101 for the “elimination by 1985” of the “discharge of pollutants,” but has clearly not achieved that objective well over two decades later.⁴⁵ The Act’s regulations in fact allow continued pollutant discharges through permits, notably limiting the discharges only if they have a “reasonable potential” to violate individual standards.⁴⁶ In other words, the “no pollution” in effect has been interpreted as “no pollution that violates negotiated water quality standards” — a far weaker mandate that often not met.⁴⁷

Our system of law is nested within a larger context of societal attitudes and assumptions that impact both the law’s development and implementation.⁴⁸ There is a critical ideological bias with regard to natural systems, which “treat[s] the human will and its wants as the center around which” implementation of environmental laws must revolve.⁴⁹ Faced with this bias, the environment will lose—and, since we are connected, so will we.

Because our societal and economic framework treats the natural world as a resource for humans first and foremost, our environmental laws and the regulations implementing them fall short of achieving the “healthy” result they state they seek.⁵⁰ In practice, they pursue at best an environmental status of “not too degraded,” and at worst, not irreversibly so.⁵¹

What, then, would science-based environmental laws and regulations that implement the inherent rights of nature look like? How would we

Environmental Document,” p. 36 (May 4, 2010), https://www.waterboards.ca.gov/water_issues/programs/ocean/cwa316/docs/final_sed_otc.pdf.

44. NAT’L MARINE FISHERIES SERV., SW. REGION, BIOLOGICAL OPINION AND CONFERENCE OPINION ON THE LONG-TERM OPERATIONS OF THE CENTRAL VALLEY PROJECT AND STATE WATER PROJECT 51, 54 (2009).

45. Federal Water Pollution Control Act, 33 U.S.C. § 1251 (1972).

46. 40 C.F.R. § 122.44(d)(1)(i) (2000).

47. See, e.g., U.S. EPA, NATIONAL WATER QUALITY INVENTORY REPORT TO CONGRESS (2017), <https://www.epa.gov/waterdata/2017-national-water-quality-inventory-report-congress> (finding that 46% of U.S. river and stream miles and 32% of wetland areas “are in poor biological condition”) [hereinafter NATIONAL WATER QUALITY INVENTORY REPORT TO CONGRESS (2017)].

48. Laurence H. Tribe, *Ways Not to Think about Plastic Trees: New Foundations for Environmental Law*, 83 YALE L. J. 1315, 1317-1319 (1974) (describing societal considerations that affect law development); 40 C.F.R. § 122.44.

49. Tribe, *supra* note 55, at 1315, 1332.

50. *Id.* at 1317.

51. See U.S. EPA, *supra* note 49.

define an end result that respects nature's rights? And how do we engage scientists in defining "healthy ecosystems and species," towards protecting nature's own right to flourish?

Science has already guided the development of regulatory standards under current environmental laws.⁵² These standards helped clean up serious pollution and rescue near-extinct species.⁵³ Lessons learned from the development of these standards can guide the development of a new system of regulatory standards that recognizes nature's inherent rights to exist, thrive, and evolve.

III. CLEAN WATER ACT REGULATIONS VS. REGULATIONS THAT PROTECT WATERWAYS' INHERENT RIGHTS

To understand more deeply the concept of nature's rights-based regulations, we will deconstruct key assumptions in CWA regulatory standards and illustrate how those assumptions perpetuate harm. We will then demonstrate how to build standards that advance nature's inherent rights.

The CWA establishes a national objective to "restore and maintain the chemical, physical, and biological integrity of the Nation's waters."⁵⁴ Regulations, including water quality standards, set goals for our relationship with a water body consistent with the overarching statutory framework.⁵⁵ They further drive management action, including setting boundaries for enforcement.⁵⁶

The CWA's water quality standards contain three basic elements: the designated uses of each water body or its portion, water quality criteria to protect designated uses, and anti-degradation policies and implementation procedures, which maintain and protect existing uses and higher quality waters.⁵⁷ Examining the assumptions behind each of these elements, and

52. See Alan D. Hecht & Joseph Fiskel, *Solving the Problems We Face: The United States Environmental Protection Agency, Sustainability, and the Challenges of the Twenty-First Century*, 11 SUSTAINABILITY: SCI., PRACTICE AND POL'Y 75, 79 (Oct. 5, 2017) (describing the influence of science on environmental laws and regulations over time).

53. See Brian Clark Howard, *48 Environmental Victories Since the First Earth Day*, Nat. Geographic (Apr. 18, 2018), <https://news.Nationalgeographic.com/2016/04/160422-earth-day-46-facts-environment/> (describing several of the EPA's most notable accomplishments, including significant strides in the areas of pollution control and endangered species protection).

54. 33 U.S.C. § 1251(a).

55. See U.S. E.P.A., *What are Water Quality Standards?*, EPA (last visited Mar. 3 2020), <https://www.epa.gov/standards-water-body-health/what-are-water-quality-standards> (demonstrating how EPA regulations set goals for our relationship with a waterbody by describing the role of "designated uses" in the Clean Water Act's regulatory scheme).

56. 33 U.S.C. § 1319 (1990).

57. 40 CFR § 131.3(i) (2000).

their integration into overall water quality standards, uncovers opportunities to better protect waterways through a rights-based approach.

A. Laundry List of “Designated Uses” vs. Prioritization of Water System Integrity

The first element of CWA water quality standards is the “designated uses” of the protected waterways.⁵⁸ A waterbody’s “designated uses” include a laundry list of extractive and discharge activities, including industrial, municipal, and agricultural uses.⁵⁹ The list also includes protection of the waterway for fish and other species.⁶⁰ The list itself generally fails to prioritize certain uses over others, though some states do prioritize designated uses by statute.⁶¹ Importantly, these lists legalize continued contamination and extraction of the waters of the United States and exempt key sources of pollution,⁶² despite mounting harm from exempt sources⁶³ and the CWA’s lofty goals.⁶⁴ By failing to eliminate the discharge of pollutants 25 years past the original deadline, the CWA prioritizes existing human waterway uses over the well-being of waterways and nature’s needs.⁶⁵ Human pressure will increasingly marginalize waterways’ needs.

By contrast, a nature’s rights-based approach to regulation would recognize that we must protect the well-being of waterways, both from a moral and a utilitarian perspective. The “moral test of government, and the measure of its strength, is how it treats its most vulnerable members—

58. 40 C.F.R. § 131.10; *see also* U.S. EPA, Key Concepts Module 2: Use, EPA (2018), <https://www.epa.gov/wqs-tech/key-concepts-module-2-use>. *See generally* U.S. EPA, EPA-832-B-12-002, WATER QUALITY HANDBOOK, DESIGNATION OF USES 2.1 (2012) (describing the structure of “use classification systems”).

59. *Id.*

60. 40 C.F.R. § 131.2.

61. *See, e.g.*, CAL. WATER CODE § 106.3(a) (2013) (“It is hereby declared to be the established policy of this State that the use of water for domestic purposes is the highest use of water and that the next highest use is for irrigation.”)

62. *See, e.g.*, 33 U.S.C. § 1342(l)(1), 1362(12), 1362(14) (exempting most agricultural operations from the federal permitting program and defining “discharge” and “point source.”); N.O.A.A., *Gulf of Mexico ‘dead zone’ is the largest ever measured* (Aug. 2, 2017), <https://www.noaa.gov/media-release/gulf-of-mexico-dead-zone-is-largest-ever-measured>.

63. *See, e.g.*, USGS, AGRICULTURE—A RIVER RUNS THROUGH IT—THE CONNECTIONS BETWEEN AGRICULTURE AND WATER QUALITY, Circular 1433, <https://pubs.usgs.gov/circ/1433/cir1433.pdf>.

64. *See generally* 33 U.S.C. § 1251(a) (listing the goals of the Clean Water Act).

65. *See* NATIONAL WATER QUALITY INVENTORY REPORT TO CONGRESS (2017), *supra* note 49.

particularly with respect to meeting their most basic needs.”⁶⁶ From a utilitarian perspective as well, sound waterways are critical not only to human health, but to life itself.⁶⁷

Rather than formulating a laundry list of individual designated uses that focus on human extraction, a rights-based regulatory approach would prioritize protection of natural water systems systemically and for basic needs first, through strategies such as significantly enhanced pollution controls, mandatory groundwater use regulations, flow assurances, and restoration projects. Prioritization of a rights-based approach for waterways’ basic needs extends as well to protection of the human right to water for basic needs, such as drinking, personal sanitation, and cooking – again, above the use of water simply for profit.⁶⁸ Only by ensuring the integrity of water systems for fundamental environmental and human needs can we ensure that human use beyond such needs is healthy.

B. Criteria to Support “Designated Uses” vs. Criteria to Protect Rights

The second element the CWA water quality standards is science-based water quality criteria to support the specific designated uses of each water body.⁶⁹ Criteria can be defined as either numeric limits or narrative statements.⁷⁰ The U.S. EPA publishes recommended science-based criteria for particular uses, but states and tribes can adopt more stringent criteria.⁷¹ These criteria are intended to regulate waterway uses, such as the amount and type of contamination that can be released, thereby ostensibly

66. DEBORAH A. SIVAS ET AL., CALIFORNIA WATER GOVERNANCE FOR THE 21ST CENTURY 4 (Stanford Law Sch. Envtl & Nat. Res. Law and Policy Program, 2017), <https://law.stanford.edu/publications/california-water-governance-for-the-21st-century/>.

67. *Id.*

68. United Nations General Assembly, Resolution A/RES/64/292, “The Human Right to Water and Sanitation” (July 28, 2010), http://www.un.org/ga/search/view_doc.asp?symbol=A/RES/64/292; U.N., Comm. On Econ., Cultural and Soc. Rights, *Substantive Issues Arising in the Implementation of the International Covenant on Economic, Social and Cultural Rights*, ¶ 1 (Jan. 20, 2003), https://www2.ohchr.org/english/issues/water/docs/CESCR_GC_15.pdf (stating that the “[t]he human right to water... is a prerequisite for the realization of other human rights”). *But see* SIVAS ET AL., *supra* note 72 at 4 (stating that California’s “human right to water” law remains voluntary. As such, there has been a growing call for stronger mandates around the right to water for fundamental needs. “Water is a public and environmental good, of a critical, life-sustaining nature. As such, the basic water needs of both humans and natural systems must be prioritized over other water uses”).

69. 40 C.F.R. § 131.11.

70. 40 C.F.R. § 131.11(b); 40 C.F.R. § 131.3(b), (i).

71. 40 CFR § 131.4(a); U.S. E.P.A., Key Concepts Module 3: Criteria, EPA (2018), <https://www.epa.gov/wqs-tech/key-concepts-module-3-criteria>.

protecting the “chemical, physical, and biological integrity” of the water body.⁷²

The CWA’s outdated, reductionist system of isolating scientific analysis by species and media, rather than engaging in modern, systems-based science, inhibits the effectiveness of its standards.⁷³ More broadly, water law and science should consider all sources of pollution in all bodies of water, including groundwater, as well as other elements of waterway integrity, such as flow and native species and habitats. As applied today, CWA science assesses natural systems as an aggregation of elements, rather than a system of inter-relationships.⁷⁴ Modern science articulates these interconnected systems, and the regulatory standards must change to reflect this in order to advance the rights of natural systems to well-being.⁷⁵

C. “Antidegradation” v. Restoration

The third leg of the CWA standards stool, the “antidegradation policy,” protects existing uses of waterways and exceptionally healthy waterways.⁷⁶ In practice, however, the policy is implemented sporadically and inadequately.⁷⁷ This practice reinforces the concept that prioritizes human economic use over waterway integrity.⁷⁸

A rights-based approach would set a higher bar not only for minimally protecting, but also for continuously improving, waterway health and well-being. Existing environmental laws, including the CWA, generally ignore a broad duty to continually improve existing waterway health.⁷⁹ Future, rights-based environmental laws and regulations, however, could

72. See generally 33 U.S.C. § 1251(a).

73. Aron J., et. al., *Using Ecosystem Function in the Clean Water Act*, EPA/600/R-17/138 (2017) (describing how new ecosystem science could help reform the CWA).

74. For example, the California State Water Resources Control Board recently fought a lawsuit to compel it to regulate waterway flow under the Clean Water Act as needed to ensure waterway health. Env’l Law Network, “Environmental Groups Sue State Water Resources Control Board Over Listing Impaired Water Bodies Under the Clean Water Act” (November 8, 2017).

75. See generally Carol M. Rose, *Environmental Law Grows Up (More or Less), and What Science Can Do to Help*, 9 LEWIS & CLARK L. REV. 273, 288 (2005).

76. 40 C.F.R. § 131.12; see also U.S. EPA, Water Quality Standards Academy, “Key Concepts Module 4: Antidegradation”; at: <https://www.epa.gov/wqs-tech/key-concepts-module-4-antidegradation>.

77. Sandra B. Zellmer & Robert L. Glicksman, *Improving Water Quality Antidegradation Policies*, 4 GEO. WASH. J. ENERGY & ENVTL. L. 1, 7, 9 (2013) (noting the “empty shell” of state antidegradation programs, lacking in substance, “at best, obscure,” and vulnerable to judicial challenges).

78. *Id.* at 13.

79. See Laitos, *supra* note 32 (describing the lack of affirmative action required by environmental laws).

effectively recognize this duty. For example, new laws and regulations could require restoration of natural systems that go beyond making the ecosystem whole, remediating increasingly more of the long-term, anthropogenic damage done. Standards assessing and measuring ecosystem health would increase accountability in such efforts to repair anthropogenic damage to the natural world.⁸⁰

IV. DEVELOPING REGULATORY STANDARDS CONSISTENT WITH THE RIGHTS OF NATURE

As various Symposium speakers emphasized, individuals cannot assert fundamental human rights in isolation.⁸¹ “The natural world on the planet Earth gets its rights from the same source that humans get their rights, from the universe that brought them into being.”⁸² The rights of nature framework is essential to understanding and implementing individuals’ fundamental duties to one another and the natural environment. Similarly, elements of the natural world can exercise their rights only if they are healthy.

A growing number of statutes, constitutional provisions, and court decisions worldwide recognize the inherent rights of ecosystems and species to exist, thrive, and evolve.⁸³ Within this expanding rights of nature framework, how could U.S. laws and regulations accurately capture standards of “healthy” ecosystems and species populations?⁸⁴

One approach is to describe “healthy” systems as essentially pristine, or unaffected by humans. This approach could be useful for comparison purposes and arguably could act as a policy goal. However, this approach is not broadly applicable as a management tool. Moreover, the definition of the term “pristine” today is elusive⁸⁵ and prevents options for respectful human-nature interactions.

80. John Cairns, Jr., GOALS AND CONDITIONS FOR A SUSTAINABLE WORLD 27 (2002).

81. *Vermont Journal of Environmental Law 2019 Symposium*, VIMEO, <https://livestream.com/vermontlawschool/VJEL2018> (last visited Mar. 3 2020).

82. THOMAS BERRY, EVENING THOUGHTS: REFLECTING ON EARTH AS A SACRED COMMUNITY 149 (Mary Evelyn Tucker ed. 2006) [hereinafter EVENING THOUGHTS: REFLECTING ON EARTH AS A SACRED COMMUNITY].

83. Houck, *supra* note 2 at 3–6.

84. *See generally* Craig M. Kauffman and Linda Sheehan, “The Rights of Nature: Guiding Our Responsibilities through Standards,” in ENVIRONMENTAL RIGHTS – THE DEVELOPMENT OF STANDARDS (Cambridge Univ. Press 2019).

85. *See* Rachel Nuwer, *There's No Such Thing as Truly 'Pristine' Nature Anymore*, BRIT. BROADCASTING CORP. FUTURE (Feb. 8, 2016), <http://www.bbc.com/future/story/20160208-theres-no-such-thing-as-truly-pristine-nature-anymore>.

Examining the human right to health is another approach for defining “healthy” ecosystems. The World Health Organization emphasizes that “health” is not simply the “absence of disease or infirmity.”⁸⁶ Unfortunately, “absence of disease or infirmity” is how “healthy” ecosystems are often defined.⁸⁷ For example, the CWA’s backstop provision to protect waterways triggers when waterway pollution violates standards or is just about to violate standards.⁸⁸ Waterways above the threshold standards are deemed “clean.”⁸⁹ Most U.S. environmental laws and regulations, such as the Wild and Scenic Rivers Act⁹⁰ and the Outstanding National Resource Waters protections⁹¹ presume that flourishing ecosystems occur only in special circumstances. The overwhelming default in U.S. environmental laws allows for degradation up to a certain point. This approach injures both environmental and human health.⁹²

Since the enactment of U.S. environmental laws in the early 1970s, major advances in disciplines, such as systems science, modeling, and machine learning, have allowed scientists to approach definitions of natural system health,⁹³ beyond the mere “absence of disease or infirmity.”⁹⁴ For example, some marine scientists have proposed that a “healthy ecosystem” is one that evolves and perpetuates itself within the context of its expected natural lifespan in the face of external stress.⁹⁵ Scientists thus can look for variations in the expected natural rate of change, such as acceleration or deceleration of extinction rates, as indicators of health.⁹⁶ This “healthy

86. Constitution of the WORLD HEALTH ORGANIZATION [WHO], <https://www.who.int/about/mission/en/> (last visited Mar. 3 2020).

87. Robert Costanza & Michael Mageau, *What is a healthy ecosystem?* 33 AQUATIC ECOLOGY 105, 106 (1999).

88. See generally 33 U.S.C. § 1313(d), 40 CFR § 122.44.

89. 40 C.F.R. § 122.44(d).

90. Wild and Scenic Rivers Act, 16 U.S.C. §§ 1271-1287 (1968).

91. 40 CFR § 131.12(a)(3).

92. *Id.*

93. See, e.g., Peter H. Verburg et al., *Land System Science: Between Global Challenges and Local Realities*, 5 CURRENT OPINION IN ENV'T'L SUSTAINABILITY, 433, 433-34 (2015) (describing the evolution of Land System Science) and Camille v. Otero-Phillips, Comment, *What's in the Forecast? A Look at the EPA's Use of Computer Models in Emissions Trading*, 24 RUTGERS COMPUTER & TECH L.J. 187, 204-12 (1998) (detailing the EPA's computerized air pollution models and their uses).

94. Costanza & Mageau, *supra* note 100, at 106.

95. DAVID RAPPORT ET AL., ECOSYSTEM HEALTH 232 (Blackwell Sci., Inc. eds. 1998) [*LINDA TO FIND ALTERNATIVE*]

96. See, e.g., Gerardo Ceballos et al., *Accelerated Modern Human-Induced Species Losses: Entering the Sixth Mass Extinction*, SCIENCE ADVANCES (June 2015), <https://www.ncbi.nlm.nih.gov/books/NBK219273>.

ecosystem” definition recognizes not only that every natural system will continually flourish, but that healthy natural systems will change.⁹⁷

New research has deconstructed “natural systems” into measurable elements.⁹⁸ Each of these elements, both individually and combined, are important indicators of ecosystem health.⁹⁹ For example, new studies propose that a healthy ecosystem is one that maintains its structure (organization)¹⁰⁰ and function (vigor)¹⁰¹ over time, in the face of external stress (resilience).¹⁰² Such scientific advancements are critical for U.S. environmental regulatory standards to transition and reflect nature’s right to health.

Finally, a successful regulatory system includes not only substance but also procedure. That is, waterways themselves should have a voice in policy deliberations. For example, a nation or state could appoint independent expert “guardians” to speak for the natural systems and represent their interests during the regulatory process and public comment.¹⁰³ This would improve regulations to meet natural systems’ needs, despite prevailing economic biases and forces.¹⁰⁴

CONCLUSION

Ethical considerations always underlie law and policy decisions.¹⁰⁵ Ignoring the role of ethics and values does not necessarily make policymaking objective, scientifically or otherwise.¹⁰⁶ On the contrary, decision-making which ignores ethical considerations simply reflects dominant ethics and values, whether held consciously or unconsciously.¹⁰⁷

97. Costanza & Mageau, *supra* note 100, at 112.

98. See, e.g., D.J. Rapport et al., *Assessing Ecosystem Health*, 13 TREE 397, 397, 399 (Oct. 1998), <https://www.pdx.edu/sites/www.pdx.edu.sustainability/files/Rapport%20et%20al.%201998.pdf> (explaining different approaches to assess ecosystem health).

99. *Id.* at 397.

100. RAPPORT ET AL., *supra* note 110 at 26, 29 (noting the increasingly prevalent use of “organization” as a measure of ecosystem complexity and interdependence, and one criterion for ecosystem health).

101. *Id.* at 28 (defining “vigor” as a measure of nutrient cycling and productivity, and another criterion for ecosystem health).

102. *Id.*

103. CHRISTOPHER D. STONE, *SHOULD TREES HAVE STANDING? LAW, MORALITY, AND THE ENVIRONMENT* 165–66 (3rd ed. 2010).

104. Morton, 405 U.S. at 743–45 (Douglas, J., dissenting) (arguing that, under certain circumstances, the natural environment should have judicial standing via “spokesmen” or guardians).

105. RAPPORT ET AL., *supra* note 110, at 93.

106. Detlof von Winterfeldt, *Bridging the Gap Between Science and Decision Making*, 110 PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA 14055, 14055 (Aug. 20, 2013), https://www.pnas.org/content/110/Supplement_3/14055.

107. *Id.* at 14056.

Careful examination of values and goals creates clear policy messages that foster the science needed to achieve desired results, such as healthy ecosystems and species populations. Today, the dominant—often unexamined—societal goal is infinite economic growth, fueled in large part by consuming nature as an economic “resource.”¹⁰⁸ Given that the earth is finite, this economic goal will continue to degrade natural systems, which is simply “not sustainable.”¹⁰⁹ However, current environmental laws implicitly accept this goal,¹¹⁰ and so at best can only slow degradation, rather than achieve healthy ecosystems.¹¹¹

Implementing the ethics and values of “nature as a rights-holder,” rather than “nature as property,” will yield new results. For example, a water allocation system that recognizes both inherent human and nature rights will first allocate water to sustain the fundamental needs of ecological and human populations, and only then serve privatization and profit with the remainder.

Realizing “nature as a rights-holder” in law and policy requires a new narrative, one that seeks for us a goal of becoming a “mutually-enhancing human presence” that gives back more than we take.¹¹² Faced with decisions, we can ask whether an “action enhances the integrity, health, and functioning of the whole Earth Community.”¹¹³ When we critically examine our choices in this way and continually act to improve, we and the earth benefit.

108. See, e.g., Peter Brown and Geoffrey Garver, *RIGHT RELATIONSHIP: BUILDING A WHOLE EARTH ECONOMY* (Berrett-Koehler Publishers 2009).

109. United Nations, “UN Report: Nature’s Dangerous Decline ‘Unprecedented’; Species Extinction Rates ‘Accelerating’,” (May 6, 2019), <https://www.un.org/sustainabledevelopment/blog/2019/05/nature-decline-unprecedented-report/>.

110. See *THE GREAT WORK: OUR WAY INTO THE FUTURE*, *supra* note 25.

111. *Id.*

112. *EVENING THOUGHTS: REFLECTING ON EARTH AS A SACRED COMMUNITY*, *supra* note 84, at 150.

113. GLOBAL ALLIANCE FOR THE RIGHTS OF NATURE, *People’s Convention for the Establishment of the International Rights of Nature Tribunal*, <http://therightsofnature.org/convention-rights-of-nature-tribunal/> (last visited Mar. 3, 2020).

**THE COMMON LAW AS A CRITICAL LEVER IN EXPANDING
RIGHTS BEYOND THE HUMAN: REFLECTIONS ON THE
VERMONT JOURNAL OF ENVIRONMENTAL LAW’S 2018
“RIGHTS OF NATURE SYMPOSIUM”**

*Kevin Schneider, Esq.**

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INTRODUCTION

This Article was inspired by observations and reflections gained from participating in the “Rights of Nature Symposium”, arranged by the Vermont Journal of Environmental Law and held on October 19, 2018. This Article is meant to help integrate the work of the Nonhuman Rights Project (NhRP) into rights of nature discourse.¹ This Article will focus primarily on the work of the NhRP and the role of the common law in changing the legal status of at least some nonhuman animals from “things,” which lack the capacity for any rights, to “persons” who possess the capacity for at least a single right.²

The threats to nonhuman animals are enormous, growing, and well-documented elsewhere.³ While “economically useful” or “necessary” animals proliferate in factory farms, the world is replete with “new dodos”: Even iconic large mammals like the Northern White Rhino will soon go extinct before our eyes (there are now just two females left in the world).⁴ As humanity continues “developing” the planet, the idea of the “wild” increasingly becomes a distant memory. In industrial settings around the world, the number of animals killed and exploited continues to rise, while in the wild countless species face extinction, all notwithstanding that numerous “animal protection” laws of various stripes have proliferated over

1. *See Who We Are, NONHUMAN RIGHTS PROJECT*, <https://www.nonhumanrights.org/who-we-are/> (last visited Feb. 25, 2019) (explaining that the mission of the NhRP is “to change the common law status” of at least some nonhuman animals “from mere ‘things,’ which lack the capacity to possess any legal right, to ‘legal persons,’ who possess such fundamental rights as bodily integrity and bodily liberty” and those other legal rights to which “evolving standards of morality, scientific discovery, and human experience” entitle them.).

2. International Convention on Civil and Political Rights, Mar. 23, 1976 14468 U.N.T.S. 177. G.A. Res. 217 (III) A (Dec. 10, 1948) (declaring personhood is universally regarded as a fundamental basis for human rights). That is why Article 6 of the Universal Declaration of Human Rights and Article 16 of the International Convention on Social and Political Rights guarantee that every human shall be a “person.” The reason is that only “persons” have the capacity for those legal rights that protect their fundamental interests. The only alternative is to be a “thing.” This crude dichotomy, while it does not comport with most worldviews, is nonetheless the system we have inherited. Unless and until there is some third category of “nonhuman legal persons” enshrined in the law, the only way for a nonhuman animal or natural space (river, mountain, etc.) to have even a single right is if they are a “person.” A person, like a cup, is merely a “container” for rights.

3. *Confronting The Core Issue of Nonhuman Animals’ Legal Thinghood*, NONHUMAN RIGHTS PROJECT <https://www.nonhumanrights.org/litigation/> (last visited Mar. 1, 2019).

4. *See Alejandro E. Camacho, Going the Way of the Dodo: De-Extinction, Dualisms, and Reframing Conservation*, 92 Wash. U. L. Rev. 849, 852 (2015) (describing the Dodo as a symbol as nature separated from the relationship of humans); *see also Sarah Gibbons, After Last Male’s Death, Is The Northern White Rhino Doomed?*, *National Geographic*, <https://news.nationalgeographic.com/2018/03/northern-white-rhino-male-sudan-death-extinction-spd/> (last visited Feb. 13, 2019) (describing the last two female rhinos).

the past 40 years, especially since the dawn of the environmental age in the 1970s.⁵

In response to this widespread devastation there is an emerging global awareness—armed with stronger science, more accessible research, and easy communication tools—pushing for bolder action on the protection of nonhuman animals and the natural world.⁶ Like a cancer, entrenched ideas must give way to more embracing visions of justice, and reforms to our legal systems must be a part of the discussion. But in the urgency to preserve what we have left, we should be careful not to “throw the baby out with the bathwater.”

As explored *infra*, there remains unique force and persuasive power in premising “radical” ideas of nonhuman animal rights on “conservative” and classically liberal values, including autonomy and liberty. In this way, and as used before, the common law can act as a lever to pry open the calcified walls of the law and allow some nonhuman animal “things” to cross the threshold into “persons.”⁷ As with prior new entrants to the class of persons, the larger society can then begin assigning appropriate rights to the newly-recognized rights-holders and set them loose about the task of existing in the world. And when disputes arise between humans’ interests and nonhuman animals’ interests, those claims can be heard in courts and other forums as would any otherwise normal dispute between legal persons. This process, familiar to our legal system, will continue to shape the future path of the law in a way that is more protective of the natural world, as the interests of nonhuman animals begin to be more fully reflected in decisions concerning development and harmonious coexistence.

The arguments described in this Article, in particular those to do with common law, equality, liberty, personhood, and habeas corpus, share the same foundation as our modern liberal democracies, and so courts must seriously confront them. The goal of this Article is to highlight some areas

5. NATIONAL INSTITUTES OF HEALTH, TIMELINE: HISTORY OF ANIMAL WELFARE OVERSIGHT, available at <https://olaw.nih.gov/sites/default/files/ICARE-Timeline.pdf> (last visited Feb. 28, 2019).

6. See generally *Help Raise Awareness of The World’s First Elephant Rights Lawsuit*, NONHUMAN RIGHTS PROJECT <https://www.nonhumanrights.org/join-rumble-for-rights/> (last visited Mar. 1, 2019) (providing activists with materials to easily communicate information about nonhuman right cases).

7. See e.g., *Somerset v. Stewart* 98 ER 499 (1772) as described in Steven M. Wise, *Though the Heavens May Fall: The Landmark Trial That Led to the End of Human Slavery* (2005) (“James Somerset’s legal transubstantiation from thing to person at the hands of Lord Mansfield in 1772 marked the beginning of the end of human slavery.”); *United States ex rel. Standing Bear v. Crook*, 25 F. Cas. 695, 697 (D. Neb. 1879) (recognizing the Native American chief Standing Bear as a legal person entitled to release under habeas corpus over the objections of the U.S. government that he was a “thing”). See also, the Emancipation Proclamation and 13th and 14th Amendments to the U.S. Constitution, and the U.N. Declaration of Human Rights.

of convergence and difference between nonhuman animal rights and environmental rights-of-nature work. The hope is to form an instructive part of evolving nature rights jurisprudence in the United States and throughout the world, which embraces natural spaces and the inhabitants who call them home. While important differences exist and challenges remain, the common law arguments advanced in favor of nonhuman animal rights can and should benefit the evolving rights of nature.

I. WHO “COUNTS” UNDER THE COMMON LAW IS A DYNAMIC CONCEPT

Among seminal works in the still-nascent canon of nature rights jurisprudence, the 1972 law review article “Should Trees Have Standing?—Toward Legal Rights for Natural Objects,” by Professor Christopher Stone is often cited as one of the cornerstones, and for good reason.⁸ Professor Stone’s article took on immediate significance when it was cited by Justice Douglas in dissent in the landmark environmental law case, *Sierra Club v. Morton*.⁹

But, Professor Stone (and Justice Douglas) was arguably somewhat off the mark; the real foundational legal question—for a mountain, or an elephant, or a human for that matter—has always been *personhood* (the capacity for rights), *not* standing. If one does not have the capacity for a right, i.e. is not a person, it will always be premature to wonder about whether there is standing to vindicate such right (assuming it does indeed exist and is enforceable by private right of action or otherwise).¹⁰ In the eyes of the law, it is like arguing about whether my cellphone or chair has standing to sue me for abuse. Even those judges who want to see nonhuman animals or nature possess rights are cabined in by the existing legal structure and legislative intent, unless they have access to the common law—the law that judges themselves make.¹¹

8. See generally Christopher D. Stone, *Should Trees Have Standing?—Toward Legal Rights for Natural Objects*, 45 S. CAL. L. REV. 450 (1972) (arguing for nature to have rights, fundamental elements of the legal system would need to be rewritten).

9. *Sierra Club v. Morton*, 405 U.S. 727, 741-42 (1972) (Douglas, J., dissenting) (“The critical question of ‘standing’ would be simplified and also put neatly in focus if we fashioned a federal rule that allowed environmental issues to be litigated before federal agencies or federal courts in the name of the inanimate object about to be despoiled, defaced, or invaded by roads and bulldozers, and where injury is the subject of public outrage. Contemporary public concern for protecting nature’s ecological equilibrium should lead to the conferral of standing upon environmental objects to sue for their own preservation.”).

10. See Steven M. Wise, *Nonhuman Rights to Personhood*, 30 PACE ENVTL. L. REV. 1278, 1280-81 (2013) (arguing that without legal personhood there can be no rights for animals because without rights there is no standing question).

11. See *Litigation*, NONHUMAN RIGHTS PROJECT, <https://www.nonhumanrights.org/litigation/> (last visited Mar. 1, 2019).

Once personhood is established, however, and the capacity for a right to liberty or other right is recognized, then standing becomes in many cases a simple proposition indeed, especially in a habeas corpus context. The chimpanzee or elephant held alone in “welfare-compliant” caging suddenly becomes a wrongfully detained prisoner entitled to immediate release, once personhood and a right to fundamental liberty is recognized.¹² Some harms are so fundamental, so obvious, that once put under the magnifying glass for even a second, the issue of standing melts away almost entirely.

The common law and its derived legal traditions, as well as civil law systems, have long crudely divided the world in two—“persons” and “things”—also comprehended at times as “subject” and “object.”¹³ Legal personhood has never been a biological concept, which is why humanity’s sordid history of treating vast classes of humans as “things,” often brutally so in the case of chattel slavery, made “sense” in the amoral logic of the law. Those classes of humans were treated as “things” or “property” incapable of possessing legal rights, with their personhood only being secured after fierce battles in the courts, in legislatures, and on the streets. Meanwhile, corporations and other associations have been persons under the common law for hundreds of years and have continued to gain rights and even constitutional protections over the past century.¹⁴

In short, the “parameters of legal personhood” are not “focused on semantics or biology, or even philosophy, but on the proper allocation of rights under the law, asking, in effect, who counts under our law.”¹⁵ The “significant feature of legal personality is the capacity for rights.”¹⁶ “Legal persons” possess inherent value; “legal things,” possessing merely

12. See Lauren Choplin, *Habeas Corpus Experts Offer Support for Chimpanzee Rights Cases*, NONHUMAN RIGHTS PROJECT (Mar. 8, 2018), <https://www.nonhumanrights.org/blog/habeas-corpus-experts/> (last visited Mar. 1, 2019) (summarizing amicus briefs arguing for the right of captive chimpanzees to have a legal right against being held in captivity).

13. But see Visa Kurki, *Why Things Can Hold Rights: Reconceptualizing the Legal Person*, U. OF CAMBRIDGE FAC. OF L. RES. PAPER NO. 7/2015, 1, 2 (2015), available at <https://ssrn.com/abstract=2563683>.

14. See, e.g., *Santa Clara County v. Southern Pacific R.R. Co.*, 118 U.S. 394 (1886) (in a headnote and with no analysis, the Supreme Court ruled for the first time that a corporation is a “person” for purposes of the 14th Amendment to the U.S. Constitution and thereby entitled to due process. This was a radical departure from the common law personhood of corporations, which had long been recognized). See also, *Citizens United v. Federal Election Comm’n*, 558 U.S. 310 (2010) (recognizing a First Amendment right to free speech protecting political campaign donations made by political action committees); *Burwell v. Hobby Lobby Stores, Inc.*, 573 U.S. 682 (2014) (recognizing a First Amendment right for corporations to deny reproductive health benefits to employees on religious belief grounds).

15. Nonhuman Rights Project, Inc. v. Stanley, 16 N.Y.S.3d 898, 912 (2015).

16. 4 ROSCOE POUND, JURISPRUDENCE 197 (1959).

instrumental value, exist for the sake of legal persons.¹⁷ Sometimes, though, the law gets the allocation dreadfully wrong, and needs correcting.

A. The common law definition of “person” is rapidly evolving

Legal personhood has never been synonymous with membership in the human species.¹⁸ Personhood is not a biological concept, and it does not “necessarily correspond” to the “natural order.”¹⁹ “Person” is a legal term of art.²⁰ Corporations and ships are but two oft-cited examples of nonhuman persons, and there are many more.

Outside the United States, courts are rapidly designating an expanding number of nonhuman entities as “persons,” including a number of environmental features. For example, in 2018 the Colombian Supreme Court designated its part of the Amazon rainforest “as an entity subject of rights,” in other words, a person.²¹ And in 2017, New Zealand’s Parliament designated the Whanganui River Iwi a person that owns its own riverbed.²² This followed its 2014 designation of a national park—Te Urewara—as a “legal entity, having all the rights, powers, duties, and liabilities of a person.”²³

Courts outside the United States are embracing the personhood of nonhuman animals, as well. For example, in 2016 a court in Mendoza, Argentina ruled that a captive chimpanzee was a “nonhuman legal person”

17. See *What We Talk About When We Talk About Persons: The Language of a Legal Fiction*, 114 Harv. L. Rev. 1745, 1746-47 (2001) (theorizing the idea of legal “personhood” to both “persons” and “objects”); accord *Stanley*, 16 N.Y.S.3d at 912 (citing Note).

18. *Byrn v. N.Y.C. Health & Hosps. Corp.*, 286 N.E.2d 887, 889 (1972) (Upon “according legal personality to a thing the law affords it the rights and privileges of a legal person[.]”) (citing JOHN CHIPMAN GRAY, *THE NATURE AND SOURCES OF THE LAW* 28 (2nd ed. 1909)); See also JOHN W. SALMOND, *SALMOND ON JURISPRUDENCE* 279 (5th ed. 1916) (“[T]his recognition of persons who are not men—is one of the most noteworthy feats of the legal imagination.”); See also 4 ROSCOE POUND, *JURISPRUDENCE* 192-93 (1959) (providing modern examples contrary to the notion that human beings and legal persons are analogous); 1 HANS Kelsen, *GENERAL THEORY OF LAW AND STATE* 93-109 (ANDERS WEDBERG trans., 1961); GEORGE WHITECROSS PATON, *A TEXTBOOK OF JURISPRUDENCE* 349-52 (G. W. PATON & DAVID DERHAM eds., 4th ed. 1972); W. FRIEDMANN, *LEGAL THEORY* 521-23 (5th ed. 1967) (describing the distinction of personhood given to corporations and animals).

19. *Stanley*, 16 N.Y.S.3d at 912 (quoting *Byrn*, 286 N.E.2d at 889).

20. *Wartelle v. Women’s and Children’s Hosp., Inc.*, 704 So. 2d 778, 780 (1997).

21. Corte Suprema de Justicia [C.S.J.] [Supreme Court], Sala. Civ. Abril 5, 2018, M.P: L. Villabona, Expediente 2018-0031901, Dejusticia (<https://www.dejusticia.org/wp-content/uploads/2018/04/Tutela-English-Excerpts-1.pdf?x54537>) (p. 45) (Colom.).

22. See *Innovative Bill Protects Whanganui River With Legal Personhood*, NEW ZEALAND PARLIAMENT, <https://www.parliament.nz/en/get-involved/features/innovative-bill-protects-whanganui-river-with-legal-personhood/> (last visited Mar. 1, 2019) (reporting New Zealand recognizes the river as a whole in all its elements).

23. Te Urewara Act 2014, subs 3, s 11(1) (N.Z.).

entitled to a writ of habeas corpus.²⁴ In 2014, the Indian Supreme Court held that nonhuman animals in general possess constitutional and statutory rights.²⁵

While some of the above examples, including the Whanganui River Iwi, reflect human power struggles and essentially reparations for past colonial injustices, they also help add credence to property-by-proxy struggles.²⁶ The underlying mechanics at work—the “useful fiction” of legal personhood—can and must be worked to expand rights to nonhuman animals and, directly or indirectly, the natural systems upon which they depend. This may also reflect fundamental truths that the fates of all beings are indeed intertwined on a fundamental level.²⁷ The Colombia Amazon decision appears the clearest landmark yet, as the decision came in response to citizen suit by youth²⁸ and seems wholly premised on preserving the forest for both its own sake and for the sake of future human generations. This gives the NhRP great hope that soon the ideas sweeping Latin America and elsewhere will make their way to the United States. In the meantime, we continue to cite every instance of an environmental feature or nonhuman animal winning legal recognition of any sort as we continue to fight to persuade the American courts to accept the first nonhuman animal as a legal person. That day is rapidly approaching. As might be said, if Jeff Bezos’ “Amazon” can exist and thrive as a legal person, certainly the original (and infinitely more valuable) Amazon deserves the same.²⁹

24. Tercer Juzgado de Garantías [Third Court of Guarantees] 3/11/2016, “Acción de hábeas corpus presentada por la Asociación de Funcionarios y Abogados por los Derechos de los Animales,” (Mendoza, Argentina) File No. P-72.254/15 (a court-certified English translation is available at https://www.nonhumanrights.org/content/uploads/2016/12/Chimpanzee-Cecilia_translation-FINAL-for-website.pdf (last visited Sept. 27, 2018)).

25. Animal Welfare Brd. v. Nagaraja & Ors. (2014) 7 SCC 547 (2014) <https://www.supremecourtindia.nic.in/judgments> (2014).

26. See, e.g., CATHERINE IORNS MAGALLANES, FROM RIGHTS TO RESPONSIBILITIES USING LEGAL PERSONHOOD AND GUARDIANSHIP FOR RIVERS, REPRINTED IN RESPONSIBILITY: LAW AND GOVERNANCE FOR LIVING WELL WITH THE EARTH 217, (Betsan Martin & Linda Te Aho & Maria Humphries-Kil eds., 2019) (assuming that “by enumerating the relevant rights [to nature], those rights can thereby be protected by humans on nature’s behalf.” This assumption requires that an individual will step in to protect these rights given to nature “in the face of any threat.”).

27. Cf. Reed Elizabeth Loder, *Mining Asteroids: Ecological Jurisprudence Beyond Earth*, 36 VIRGINIA ENVTL. L. J. 275, 287 (2018) (there is another strain of opposition that deserves discussion: we are challenged to ensure that—like by applying property law to comets—we are not simply repeating the sin by multiplying destructive property-driven models into nonhuman animals).

28. See Jose Felix Pinto-Bazurco, *Colombian Youth Sue for Recognition of the Rights of Future Generations*, COLUM. U. STATE OF THE PLANET (Mar. 21, 2018), <https://blogs.ei.columbia.edu/2018/03/21/colombian-youth-lawsuit-climate-rainforest/> (arguing that climate change is denying people of their constitutional rights to health, food, water, and healthy environment).

29. See *Charlotte C. & A.R., Co. v. Gibbs*, 142 U.S. 386, 391 (1892) (stating corporations, which are legal constructs, are nonetheless considered legal persons). It is nonsense to argue, as some do, that corporations are merely amalgamations of human interests. See Meir Dan-Cohen, *Rights*,

B. Autonomy as a basis for personhood: Progress in moving the common law towards recognition of fundamental rights for nonhuman animals

Within the million or more animal species on the planet (about half of which are beetles), the NhRP focuses from the outset on those species which science has shown to be autonomous.³⁰ This is not a statement on the moral worth of autonomy or a celebration of high-functioning, complex animal cognition and behavior. Rather, the focus on autonomy at the outset is strategic: Courts have long held the protection of autonomy to be among the most sacred objects of the law.³¹ While it has been the autonomy of human beings they are concerned with, that need not remain exclusively so. Armed with modern science on animal cognition and behavior, the NhRP argues in its habeas corpus petitions on behalf of chimpanzees and elephants that they too are autonomous and that the “container,” or species, through which that autonomy is exercised is irrelevant.³² So, in this way, the courts are not being asked to invent a new value, but rather to find it exists in animals beyond the human being, in accord with modern scientific understanding of animal cognition and behavior.

African and Asian elephants are examples of nonhuman animals regarded as autonomous. Uncontroverted scientific evidence reveals them to share numerous complex cognitive abilities with humans, such as self-awareness, empathy, awareness of death, intentional communication, learning, memory, and categorization abilities.³³ Many of these autonomy components have been considered—erroneously—as uniquely human.³⁴ African and Asian elephants are autonomous, as they exhibit “self-

Persons, and Organizations: A Legal Theory for Bureaucratic Society (2nd ed. 2016) (thoroughly invalidating the notion that a corporation or other large entity is merely an amalgamation of the rights and duties of its constituent human owners); Shawn J. Bayern, *Of Bitcoins, Independently Wealthy Software, and the Zero-Member LLC*, 108 Nw. U.L. Rev. 1485 (2014) (describing rapid growth of nontraditional corporate forms including zero-owner LLC’s, cryptocurrency-enabled autonomous entities, and other human-free corporate persons).

30. See Brief for Nonhuman Rights Project, Inc., as Amici Curiae supporting Appellant at 2, 5-6, *Nonhuman Rights Project, Inc., v. Lavery*, 152 A.D.3d 73 (N.Y. App Div. 2017) (No. 150149/16) (a group of 17 North American philosophers submitted an amicus curiae brief in support of chimpanzee personhood, making reference to autonomy and the philosophical bases for personhood throughout the western tradition and beyond).

31. See Robert C. Post, *Equality and Autonomy in First Amendment Jurisprudence*, 95 MICH. L. REV. 1517, 1518 (1997); see also *Planned Parenthood v. Casey*, 112 S.Ct. 2791, 2809 (1992) (discussing constitutional developments to a women’s right to reproductive health has yet to be disturbed since the days of *Griswold v. Connecticut*).

32. Brief for Nonhuman Rights Project, Inc., *supra* note 34, at 13, 21.

33. Lucy A. Bates, et. al, *Quick Guide: Elephant Cognition*, 18 CURRENT BIOLOGY 544, [https://www.cell.com/current-biology/pdf/S0960-9822\(08\)00503-4.pdf](https://www.cell.com/current-biology/pdf/S0960-9822(08)00503-4.pdf) (last visited Feb. 13, 2019).

34. *Id.*

determined behavior that is based on freedom of choice.³⁵ As a psychological concept, autonomy implies that the individual is directing their behavior based on some non-observable, internal cognitive process, rather than simply responding reflexively.”³⁶

The only opinion to date from an American high court judge on the question of the rights and personhood of autonomous nonhuman animals is that of New York Court of Appeals Judge Eugene Fahey, in his 2018 concurrence in *Nonhuman Rights Project, Inc., on Behalf of Tommy v. Lavery*, in a case involving two captive chimpanzees.³⁷ There, Judge Fahey concluded that “[t]he issue whether a nonhuman animal has a fundamental right to liberty protected by the writ of habeas corpus is profound and far-reaching While it may be arguable that a chimpanzee is not a ‘person,’ there is no doubt that it is not merely a thing.”³⁸ According to Judge Fahey, autonomous nonhuman animals should have “the right to liberty protected by habeas corpus.”³⁹

To treat a chimpanzee as if he or she had no right to liberty protected by habeas corpus is to regard the chimpanzee as entirely lacking independent worth, as a mere resource for human use, a thing the value of which consists exclusively in its usefulness to others. Instead, we should consider whether a chimpanzee is an individual with inherent value who has the right to be treated with respect[.]⁴⁰

Also of significance, a New York State Supreme Court has already issued an order to show cause pursuant to the New York Civil Practice Law and Rules (“CPLR”) Article 70 that required the State to justify its detention of two chimpanzees.⁴¹ Another New York State Supreme Court

35. Joyce Poole Aff. ¶ 22 <https://www.nonhumanrights.org/content/uploads/Aff.-Joyce-Poole-1.pdf> (last visited Mar. 1 2019).

36. *Id.* See also, Tom L. Beauchamp, Victoria Wobber, *Autonomy in Chimpanzees*, 35 *Theoretical Med & Bioethics* 117 (2014).

37. *Nonhuman Rights Project, Inc. v Lavery*, 100 N.E.3d 846 (2018) (Fahey, J., concurring) (underscoring that the questions of “can a nonhuman animal be entitled to release from confinement through the writ of habeas corpus” or “should such a being be treated as a person or as property, in essence a thing” will have to be addressed eventually).

38. *Nonhuman Rights Project, Inc.*, 100 N.E.3d at 849.

39. See *Id.* at 847-49 (describing Judge Fahey’s questioning whether the court was right to deny habeas corpus to chimpanzees).

40. *Id.* at 848.

41. See NY CPLP § 7003(a) (2012) (explaining that a state must justify detentions when “there is no disputable issue of fact.”).

did the same for an Asian elephant held in a private zoo.⁴² On the heels of these legal developments and other shifts in thinking, the legal status of nonhuman animals has been rapidly evolving from right-less things to rights-bearing persons in New York State and throughout the world.⁴³ New York's Appellate Division, Fourth Judicial Department ("Fourth Department"), recently declared that it is now "*common knowledge* that personhood can and sometimes does attach to nonhuman entities like . . . animals."⁴⁴ While it remains unclear exactly what the Court meant, it cited in support of that conclusion, *inter alia*, *Nonhuman Rights Project, Inc., ex rel. Kiko v Presti*, another Fourth Department case in which it had prior twice assumed, without deciding, that a chimpanzee (Kiko) could be a person for habeas corpus purposes.⁴⁵

Outside the United States, courts have already begun to acknowledge not just the personhood of nonhuman animals, but also their specific right to habeas corpus relief. A petition for a writ of habeas corpus was filed on behalf of a chimpanzee, Cecilia, in an Argentine court to free her from the Mendoza Zoo.⁴⁶ In November 2016, the Argentine Court granted the writ, declared Cecilia a "non-human legal person" with "nonhuman rights," and ordered her immediate release from the zoo and subsequent transfer to a sanctuary.⁴⁷ Rejecting the claim that Cecilia could not avail herself of habeas corpus because she was not a human, the Argentine Court recognized that "societies evolve in their moral conduct, thought, and values" and concluded that classifying autonomous "animals as things is not a correct standard."⁴⁸ It is not clear to what extent Cecilia's autonomy was a factor in the decision and, most importantly for present purposes, whether autonomy was the basis for her legal personhood, as the NhRP

42. *Nonhuman Rights Project, Inc. on behalf of Happy v. Wildlife Conservation Society, et al.*, Index No. 18-45164 (Orleans County, Nov. 16, 2018) (New York) (granting an order to show cause brought pursuant to the state's habeas corpus law requiring respondent zoo to appear and defend its keeping an Asian elephant in captivity).

43. Steven Wise, *That's One Small Step for a Judge, One Giant Leap for the Nonhuman Rights Project*, NONHUMAN RIGHT BLOG (Aug. 4, 2015) <https://www.nonhumanrights.org/blog/thats-one-small-step-for-a-judge-one-giant-leap-for-the-nonhuman-rights-project/>.

44. *People v. Graves*, 163 A.D.3d 16, 21 (N.Y. App. Div. 2018) (emphasis added, citations omitted).

45. *See generally Nonhuman Rights Project, Inc., ex rel. Kiko v. Presti*, 124 A.D.3d 1334, 1335 (2015) (alluding to, without deciding, that a chimpanzee "Kiko" could be a "person" for habeas corpus purposes).

46. Tercer Juzgado de Garantías [Third Court of Guarantees] 3/11/2016, "Acción de hábeas corpus presentada por la Asociación de Funcionarios y Abogados por los Derechos de los Animales," (Mendoza, Argentina) File No. P-72.254/15 (a court-certified English translation is available at https://www.nonhumanrights.org/content/uploads/2016/12/Chimpanzee-Cecilia_translation-FINAL-for-website.pdf (last visited Sept. 27, 2018)).

47. *Id.* at 32.

48. *Id.* at 5, 19-20, 23-24.

argues under the United States common law of habeas corpus. Hopefully, the spirit can be replicated elsewhere in the world and magnified everywhere in advancement of the protection of nonhuman animals and natural environments.

II. POTENTIAL CLASHES BETWEEN “ANIMAL” AND “ENVIRONMENTAL” RIGHTS AND PATHS FORWARD

Speakers at the Symposium addressed several potential tension points that could arise in seeking to vindicate both the rights of the environment as well as the rights of animals. For purposes of further conversation, offered here is merely a cursory review of some of those points. I use quotes here because, as I think is too often the case, that the two “sides” have become stubborn in their views of the other. They devolve at times into the cliché of the “anthropomorphic” or “overly emotional” “animal rights activist” people, on the one hand, or the clinical “environmentalists” deaf to the suffering of individual animals in deference to the greater ecosystem, on the other.

I contend that this perceived chasm, to the extent it is real, is largely the product of faulty assumptions and a misplaced focus. The autonomy-based species-by-species approach advanced by the NhRP, along with other novel approaches in the animal and environmental spaces, may help to bridge the “gap” between “environmental” and “animal” approaches. This can be done, in part, by forcing several convergent but distinct issues through a single prism—the autonomous, subjective experience of a nonhuman animal. While there are untold billions of animals suffering in a multitude of ways, it appears there is some value at this stage in pursuing cases that are narrow but deep, rather than broad but shallow.

A. The Guardian Problem

[T]he ancestors of the Oneida once grew in population so much that some of them had to go look for a new place to live. They found a wonderful place, and the people moved there. After moving, they found that they had ‘chosen the Center Place for a great community of Wolf.’ But the people did not wish to leave. After a while, the people decided that there was not room enough in this place for both them and Wolf. They held a council and decided that they could hunt all the wolves down so there would be no more. But when they thought of what kind of people they

would then be, ‘it did not seem to them that they wanted to become such a people.’

So the people devised a way of limiting their impact: In all of their decisions, they would ask, ‘Who speaks for Wolf?’ and the interests of the non-human world would be considered.

“Who Speaks for Wolf,” Paula Underwood Spencer
(Austin: Tribe of Two Press, 1983.)

To many, the deprivation of an orca’s life in a tank, an elephant on a small patch of land without a herd, or a chimpanzee alone in a barren cage for decades, is so self-evidently wrong that it boggles the mind it is legal.⁴⁹ Others argue that we cannot fairly know what “they” want.⁵⁰

In any event, present “animal welfare” laws still regard all nonhuman animals categorically as “things.”⁵¹ While protecting them from outright abuse and neglect, the laws only look to the surface of nonhuman animals’ existence in captivity or otherwise in interaction with humans.⁵² So, as long as the cage is the bare minimum size, adequate food and water is provided, and blatant abuse is non-existent, the law is essentially silent to even the most fundamental interest of any of those beings. Meanwhile, the science appears unassailable: many nonhuman animals suffer immensely, in ways much like any normal human would in solitary confinement or in prison.⁵³ Yet still, it is common for even the best of welfare laws to prohibit merely “unnecessary” cruelty and killing.⁵⁴ This of course begs the question: what

49. The Conversation, News Partner, *There is Broad Public Support for Animal Rights*, ACROSS AMERICA, (Mar. 22, 2018) <https://patch.com/us/across-america/there-broad-public-support-animal-rights> (public opinion research suggests strongly that a majority of Americans support basic legal rights for at least some species of nonhuman animals).

50. Juan Carlos Marvizon, *Not Just Intelligence: Why Humans Deserve to Be Treated Better Than Animals*, SPEAKING OF RESEARCH (Dec. 6, 2016) <https://speakingofresearch.com/2016/12/06/not-just-intelligence-why-humans-deserve-to-be-treated-better-than-animals/>.

51. See, e.g., Richard A. Posner, *Animal Rights*, 110 YALE L.J. 527, 539–40 (2000); Richard Epstein, *Animals as Objects, or Subjects, of Rights* (Univ. Chi. Olin Law & Econ., Working Paper No. 171, 2002).

52. Animal Welfare Act of 1966, Pub. L. No. 89-543, § 89, 80 Stat. 350 (1966).

53. See e.g. The Cambridge Declaration on Consciousness, <http://femconference.org/img/CambridgeDeclarationOnConsciousness.pdf> (last visited Feb. 15, 2019) (declaring non-humans have the capacity for consciousness and intentional behaviors).

54. Animal Welfare Brd. v. Nagaraja (2014) 7 SCC 547 (2014) <https://www.supremecourtindia.nic.in/judgments> (The Indian Supreme Court ruled in 2014 that all nonhuman animals in the country are “persons” (i.e., that they have the *capacity* for rights), but it did

is “necessary” suffering? Likewise, the current mode of “sentient being” laws sweeping European cities and elsewhere is arguably itself not the answer, to the extent it does just change the thing status of animals (though it may indeed be relevant to judges in animal cases in the future).⁵⁵

As some Symposium participants suggest, present threats to wildlife and environments may eventually compel a drastic new approach to rights in the law, or perhaps even a system not based on rights as we know it, but there still remains much to be done with the tools we already have.⁵⁶ Throughout history, rights have always been wrenched out, often by creative and persistent means, and have rarely—if ever—been gifted like manna to the masses. Judge Fahey, in the same concurring opinion referenced *supra*, called the question of nonhuman animal rights “a deep dilemma of ethics and policy that demands our attention[,]” and stated “[t]he evolving nature of life makes clear that chimpanzees and humans exist on a continuum of living beings To solve this dilemma, we have to recognize its complexity and confront it.”⁵⁷ On this front, and in light of the vast diversity and complexity of nonhuman life, it seems logical to eschew overly broad declarations of rights for all creation and instead focus on a narrow class of species and for those species, a single right. This process—litigating a case that is “narrow but deep”—helps illuminate the vast recesses of the law created by centuries’ ceaseless accretion of precedents, like interlocking stalactites and stalagmites in a cave, and forces a reasoned and informed reexamination of the shared pillars which underpin our laws and economies, including the assumption that the natural world and all its nonhuman inhabitants, while they may be entitled to our respect and dominion, are nonetheless things and property to be used for the advancement of human wants and desires. There is also great appeal to utilizing what has worked before, by basing rights for nonhuman animals on those fundamental human rights relevant to them, namely, bodily liberty and bodily integrity.

There are shared issues here between environmental and animal discourses, and some important differences too. Professor Stone focused on

not recognize any specific rights, and made frequent reference to the “doctrine of necessity,” whereby, regrettable as it may be, some animals simply must be killed for the greater good of humanity.).

55. Suzanne Monyak, *When the Law Recognizes Animals as People*, THE NEW REPUBLIC (Feb. 2, 2018), <https://newrepublic.com/article/146870/law-recognizes-animals-people>.

56. Panelists, Remarks at the Vermont Journal of Environmental Law Symposium: Rights of Nature (Oct. 19, 2018).

57. *Id.* at 846 (Fahey, J., concurring) (“[T]hat denial of leave to appeal is not a decision on the merits of petitioner’s [NHRP’s] claims.”).

environmental standing for good reason (although arguably the more fundamental question of personhood must be addressed first).⁵⁸

B. Can we rely on the courts alone? Moving beyond litigation into legislation

It is important to stress from the outset of this subsection that while there exist hundreds, if not thousands, of laws, statutes, ordinances, rules, regulations, and other objects of legislation which impact or seek to protect nonhuman animals in the United States alone, none of these create rights, because none of them recognize the personhood of any nonhuman animal.⁵⁹ It is akin to arguing that because it is a crime to smash someone's car window, the car window itself has rights. Of course, this is not the case; the owner of the car enjoys the right, not the car itself.

This does not mean legislation cannot be part of the answer, especially where it grants rights to nonhuman animals and either implicitly or explicitly extends personhood to them. In preparation for legislative campaigns seeking rights for designated species of nonhuman animals within target municipalities, the NhRP prepared a law review article⁶⁰ which seeks to act as a "defensive memo" for an anticipated challenge to the passage of such a law by impacted industries (like zoos or marine amusement parks) or those which perceive themselves to be impacted (like biomedical research and industrial agriculture).⁶¹ Many of the arguments that likely will arise—preemption, legislative takings, judicial takings, and others—are likely to also impact rights-of-nature practitioners for the foreseeable future, especially as impacted industries ramp up the fight in the face of increasing pressure.

While it may be argued that we cannot hope to discern the wishes and desires of a species other than our own, let alone a river, and thus any effort to effectuate those alleged desires is doomed, we do have tools at our disposal. For animals, one such tool is cognitive science; for environments, it includes ecosystem benefits, cost-benefit analysis, and other emerging disciplines that allow us to truly appreciate the value they create. The same kinds of legal and ethical tools used to help us understand what children want or what those suffering dementia or Alzheimer's want will in time

58. Stone, *supra* note 9.

59. Steven M. Wise, et al., *The Power of Municipalities to Enact Legislation Granting Legal Rights to Nonhuman Animals Pursuant to Home Rule*, 67 Syracuse L. Rev. 31, 69 (2017).

60. *Id.* at 32.

61. *See generally, Id.*

help us understand what an elephant wants, what a river wants, or what an ecosystem wants.⁶²

One clear advantage of recognizing and truly respecting the personhood of nonhuman animals is that it forces into motion many other gears to effectuate those rights. While rights alone are not enough to secure any given outcome, and can indeed be violated, the expansion of rights could help marshal beneficial development for natural systems and humans alike. At the end of the day, if we cannot maintain a planet on which other species can thrive, what hope do we have of a sustained tolerable existence?

C. The Potential For “Keystone Species” to Act as “Rights Umbrellas”

The vehicle of common law personhood and rights described above is not just beneficial for autonomous species; it could also help protect others. As a thought experiment, assume that orcas (“killer whales”) are granted legal persons in the territorial waters of the United States and that their fundamental rights to bodily liberty and bodily integrity are recognized and protected there. This may include areas where they live naturally, and especially areas of high orca-human conflict like coastal regions. It would seem the true recognition and enforcement of those rights would require both prohibitions and appropriate interventions to ensure basic living conditions for the orcas. This should include water free of dangerous levels of contaminants, especially human-made chemicals, plastics, and other refuse, along with sufficient amounts of appropriate fish and other sources of nutrition. These bedrock necessities for orca flourishing, if recognized and enforced as rights, could, for example, compel the opening of dams, decreased catch allowances, or outright bans on fishing, especially commercial fishing. As such, it becomes possible to imagine the orca, as keystone species, acting as the lynchpin of a protective penumbra—or “rights umbrella”—that would in turn protect the wider ecosystem and the many species and individuals living within it. This in turn furthers a range of important environmental and species protection goals.⁶³ And while the fish who live to be eaten by more prolific orca numbers may protest, nonhuman animals living in the wild are not living in “conditions of

62. See, e.g., J. B. Ruhl et al., *The Law and Policy of Ecosystem Services* 6, 13, 15, 252 (2007) (describing the use of ecosystem service tool in helping to shape law and policy). See also, Waal, F. B. M., *Are we smart enough to know how smart animals are?* (Norton, 2017) (summarizing recent scientific discovery about the remarkable intelligence and capacities of various nonhuman animals and drawing lessons that humans can learn from them).

63. Jenna Bardroff, *If These 8 Species Go Extinct, Entire Ecosystems Will Disappear*, ONE GREEN PLANET, <http://www.onegreenplanet.org/animalsandnature/if-these-species-go-entire-ecosystems-will-disappear/> (last visited Feb. 13, 2019).

justice” with one another as we humans understand it.⁶⁴ In other words, we cannot legislate that orcas become vegan, and for present purposes that is fine.⁶⁵ Focusing on protecting autonomy has many positive side effects in humans and nonhumans alike, and leaves room for natural processes to help dictate policy, rather than vice versa. It also provides a clear and compelling “narrative” for both litigation and legislation. This forces the courts to focus on the very narrow, but deep, question of whether a nonhuman animal can ever enjoy even a single legal right.⁶⁶

CONCLUSION

The rights of nonhuman animals fits the story of the common law, at least one telling of it, in which society steadily grows outward to recognize and protect a wider swath of existence as worthy of protection under the law (“the moral arc of the universe is long but it bends towards justice”). Understood in these sweep-of-history terms, the common law also, in many ways, gives life to “natural law.” Natural law (broadly, the idea that judges in some cases must consult philosophical and moral sources beyond the bare letter of the law in reaching judgments) is, however, a controversial premise in many legal circles and an active fault-line of debate, including among prominent conservative jurists.⁶⁷ The natural law is in many important ways the antithesis of Justice Oliver Wendell Holmes’ still-influential view of the law as a positivist, “might makes right” system of assigning rights and duties, and by extension, who counts in the law.⁶⁸ Among contemporary jurists, Justice Gorsuch embraces a natural law approach and has focused special attention on doctor-assisted and other

64. Sue Donaldson and Will Kymlicka, *Zoopolis: A Political Theory of Animal Rights* (Oxford University Press 2011) (drawing on political theory to imagine systems that differentiate among “domestic,” “liminal,” and “wild” animals and which assign appropriate rights to each, and describing wild animals as not living in “conditions of justice” with one another that would, for example, make predation wrong).

65. Tatjana Visak, *The Philosophical Quarterly*, 62 Oxford University Press 654 (2012) (reviewing Donaldson & Kymlicka, *Zoopolis: A Political Theory of Animal Rights* (2011)).

66. See OXFORD ESSENTIAL QUOTATIONS (2016), <http://www.oxfordreference.com/view/10.1093/acref/9780191826719.001.0001/q-oro-ed4-00010383> (last visited Feb. 13, 2019) (“A single death is a tragedy – a million deaths is a statistic,” is a quote attributed to Josef Stalin. It is chilling to read but few can deny the psychological truth of the statement, at least on some level. It seems to speak, in part, to the inability of our brains to process such a large amount of suffering, and/or our tendency to sympathize more closely with the suffering of an individual rather than that of an entire group).

67. See generally Richard O’Sullivan, *Natural Law and Common Law*, 11 U. Pittsburg L. Rev. 538, 157-158, 165 (1950) (describing the theory of how the common law evolved from natural law and the traditions of U.S. use of common and natural law) (compare, for example, Justice Neil Gorsuch, a staunch natural law proponent, with a positivist-originalist in the mold of Justice Antonin Scalia).

68. Oliver Wendell Holmes, Jr., *The Path of the Law*, 10 HARV. L. REV. 457 (1897).

legal suicide, and “death with dignity” laws in particular.⁶⁹ Justice Gorsuch argues that these laws are void because they violate the natural law principle of the “inviolability” of human life.⁷⁰ He further argues that the intentional taking of human life is always wrong, and that state laws allowing doctor-assisted suicide should presumably be overturned.⁷¹ Of course, Justice Gorsuch’s position raises policy issues that are arguably best resolved elsewhere, and there are powerful countervailing arguments (e.g., the right to refuse life-saving treatment or to choose to end one’s own life) which Justice Gorsuch himself acknowledges must sometimes take precedence pursuant to common law autonomy.⁷² All this to say, while there will always will (and should be) much latitude for debate within the boundaries of the “natural” and “common” law, the fundamental premise appears sound: the common law, informed by natural law principles including respect for life and dignity, is a potent vehicle for advancing the shared interests of life on planet Earth.

Even the best legal arguments and comprehensive science, standing alone, will not win the day for nature or any of its nonhuman inhabitants. Rather, it seems that in order to cross the finish line we need to also marshal the forces of justice, harmony, ethics, and compassion. These values have always been at the heart of the common law and natural law, and reverberate deeper still in cultural traditions throughout the world. We have the tools and the cultural momentum to win legal personhood in the foreseeable for at least some nonhuman animals, including those who are demonstrably autonomous. To the extent human self-interest is divined as a positive side-effect of expanding rights to nature and nonhuman animals, all the better, so long as that self-interest is disallowed to hijack the interests of those newly recognized nonhuman rights-holders. While hubris can temporarily blind us to the truth (even where temporary is lifelong), eventually all must agree that slave and master alike are served better by doing away with chains for all, forever.

69. See Neil M. Gorsuch, *The Future of Assisted Suicide and Euthanasia* (2009).

70. See *id.* at 157-158, 165 (describing life as a basic good that might be referred to as the inviolability-of-life principle).

71. See *id.* at 157 (arguing the law should not allow the intentional taking of human life by private person ever).

72. Neil M. Gorsuch, *The Future of Assisted Suicide and Euthanasia* (2009).

**HOW COURTS ARE DEVELOPING RIVER RIGHTS
JURISPRUDENCE:
COMPARING GUARDIANSHIP IN NEW ZEALAND,
COLOMBIA, AND INDIA**

Craig M. Kauffman and Pamela L. Martin

This article examines recent court rulings recognizing the rights of rivers in Colombia and India, and the unique institutional structures created to protect those rights. The following cases illustrate how court rulings have institutionalized Rights of Nature (RoN) norms that are circulating globally, even in countries that lack law explicitly recognizing RoN. While citing international precedent, judges strategically interpreted existing laws to uphold RoN norms circulating globally. Consequently, the cases show an evolution in the legal doctrines invoked to justify RoN. Judges in both cases based their ruling on New Zealand's model for institutionalizing RoN. This model recognizes an ecosystem as a legal person, establishes a guardian body, and embeds this guardian body within a multi-stakeholder integrated ecosystem management institution. That institution then manages the ecosystem in a way that is consistent with RoN principles. However, the Indian and Colombian cases adapted the New Zealand model to different degrees, partly due to the distinct legal doctrines invoked. This article analyzes the impact of invoking different legal doctrines to establish distinct guardianship arrangements and offers several lessons.

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INTRODUCTION

The world is undergoing a normative shift in thinking about how we legally define our natural world. Since 2006, governments around the world have adopted legal provisions recognizing Nature as a subject with inalienable rights. Rights of Nature (RoN) legal provisions now exist in Bolivia, Brazil, Colombia, Ecuador, India, Mexico, New Zealand, and the United States (U.S.).¹ International initiatives also exist, including the UN Harmony with Nature Programme,² the Universal Declaration of the Rights of Mother Earth,³ and the proposed International Environment Court.⁴

A desire to protect rivers, seen as the planet's lifeblood, drives many of these initiatives. In Ecuador, the Vilcabamba River became the world's first ecosystem to have its rights defended and recognized by a court.⁵ New

1. Craig M. Kauffman & Pamela L. Martin, *Constructing Rights of Nature Norms in the US, Ecuador, and New Zealand*, 18 GLOBAL ENVTL POL. 43, 43 (2018).

2. *Harmony with Nature*, UNITED NATIONS, <http://harmonywithnatureun.org> (last visited Apr. 22, 2019).

3. *See generally* Universal Declaration of Rights of Mother Earth, World People's Conference on Climate Change and the Rights of Mother Earth, Apr. 22, 2010 (declaring Mother Earth as a living being with rights).

4. Ole W. Pedersen, *An International Environmental Court and International Legalism*, 24 J. ENVTL. L. 547, 547–48 (2012).

5. Craig M. Kauffman & Pamela L. Martin, Can Rights of Nature Make Development More Sustainable? Why Some Ecuadorian Lawsuits Succeed and Others Fail, 92 WORLD DEV. 130, 136 (2017).

Zealand's Whanganui River (Te Awa Tupua) also has legal rights.⁶ More recently, court rulings recognized the rights of Colombia's Atrato River in 2016 and of India's Ganga and Yamuna Rivers in 2017.⁷ Internationally, a network of lawyers and activists—coordinated by the Earth Law Center—have drafted a Universal Declaration of the Rights of Rivers.⁸

Much attention has been focused on the laws recognizing the rights of rivers in Ecuador and New Zealand. This paper examines the most recent court rulings recognizing the rights of rivers in Colombia and India and specifically the unique institutional structures created to protect those rights. Colombia's and India's RoN legal provisions are distinct from those in countries like Ecuador, Bolivia, New Zealand, Mexico, Brazil, and the U.S. In contrast, Colombia and India do not recognize RoN in their constitutions, national laws, or subnational laws. Rather, judges in Colombia and India issued rulings recognizing the Atrato, Ganga, and Yamuna rivers as legal persons, moving these rivers from "right-less" to "rights-bearing" entities.⁹

The Colombian and Indian cases detailed below illustrate how court rulings have institutionalized RoN norms circulating globally even in countries that lack laws explicitly recognizing RoN. Moreover, our case comparisons illustrate the domestic effects of the transnational diffusion of RoN laws. Specifically, the cases show how judges strategically interpret existing constitutional provisions and laws that do not explicitly recognize RoN to justify court orders that establish natural ecosystems, like rivers, as legal persons with rights.¹⁰ Consequently, this article highlights both the key role of judges in strengthening RoN jurisprudence and the expanding set of legal doctrines used to support RoN worldwide.

The Colombian and Indian judges justified their extraordinary actions by noting the need to address serious threats to important river ecosystems, and the communities that depend on them, in the face of government inaction. The judges also cited RoN laws in other countries as precedent.¹¹ Our case analyses also show how legislatures and judges combined RoN legal provisions with new governance structures designed to implement more eco-

6. Te Awa Tupua (Whanganui River Claims Settlement) Act 2017, pt 2, s 14 (N.Z.).

7. Corte Constitucional [C.C.] [Constitutional Court], Sala Sexta de Revisión de la Corte Constitucional, noviembre 10, 2016, Expediente T-5.016.242, Sentencia T-622/16, Gaceta de la Corte Constitucional [G.C.C.] (p. 140, 158) (Colom.) [hereinafter *Sentencia T-622/16*]; Mohd. Salim v. State of Uttarakhand, 2017 PIL No. 126 of 2014, 10–11 (India) [hereinafter *Salim 2017*].

8. *Universal Declaration of River Rights*, EARTH LAW CTR., <https://www.earthlawcenter.org/river-rights/> (last visited June 23, 2019).

9. Mari Margil, *Court Decisions Advance Legal Rights of Nature Globally*, in *RIGHTS OF NATURE & MOTHER EARTH: RIGHTS-BASED LAW FOR SYSTEMIC CHANGE* 27, 27–28 (Shannon Biggs et al. eds., 2017).

10. See generally *Salim 2017*, *supra* note 7, at 7–9 (showing how to interpret constitutional provisions).

11. *Sentencia T-622/16*, *supra* note 7, at 42, n.87.

centric approaches to solving the challenges of sustainable development in the face of extractive industries.¹² At the center of these new governance structures are guardianship bodies charged with representing rivers and promoting their rights and well-being.¹³

The institutionalization of RoN in Colombia and India is largely based on New Zealand's pioneering model.¹⁴ In addition to establishing the Whanganui River as a legal person, New Zealand's 2017 Te Awa Tupua Act established guardians charged with representing the river's interests.¹⁵ The Act embedded this guardian body within a larger integrated watershed management body charged with sustainably handling the river's resources consistent with the river's status as an integrated, living spiritual being.¹⁶

While both Colombia's and India's court rulings mimic New Zealand's pioneering model, Colombia follows the New Zealand model more closely than India, in part due to the distinct legal doctrines invoked.¹⁷ Colombia's court ruling created a guardian body comprised of state and civil society representatives.¹⁸ The ruling also restructured government entities and created a new oversight commission to protect and preserve the Atrato River.¹⁹ By contrast, India's court ruling did not incorporate civil society representatives into the guardian body and did not restructure government agencies to manage the river basins in a more integrated way.²⁰ These differences undermined implementation efforts and revealed challenges that have not been adequately addressed by RoN scholars.²¹ Our case comparisons highlight how judges' strategic use of existing legal doctrines to justify RoN can produce unintended complications during implementation. We address this phenomenon and offer some initial lessons learned in the article's final section.

The Colombian and Indian judges used normative arguments circulating globally through networks of environmental lawyers, activists, and social movements to justify their recognition of rivers as rights-bearing legal

12. See Te Awa Tupua Act 2017, *supra* note 6, at pt 2, ss 19–20 (establishing Te Pou Tupua to speak for Te Awa Tupua); *Salim* 2017, *supra* note 7, at 2 (establishing Ganga Management Board); *Sentencia* T-622/16, *supra* note 7, at 153 (establishing a governing body).

13. *Salim* 2017, *supra* note 7, at 11–12; *Sentencia* T-622/16, *supra* note 7, at 140.

14. See generally Te Awa Tupua Act 2017, *supra* note 6, at pt 2, ss 14, 18 (granting the river legal personhood to allow guardians to protect the river's interests in court); *Sentencia* T-622/16, *supra* note 7, at 140–42 (using the same principles to declare the Atrato River a legal person); *Salim* 2017, *supra* note 7, at 5–12 (using the same principles to declare the Ganga and Yamuna Rivers as legal persons).

15. Te Awa Tupua Act 2017, *supra* note 6, at pt 2, s 18.

16. *Id.* at pt 2, ss 20, 27–28.

17. See *Sentencia* T-622/16, *supra* note 7, at 153–57 (describing the court's order and reasoning).

18. *Id.* at 140, 153–54.

19. *Id.* at 138–39.

20. See *Salim* 2017, *supra* note 7, at 11–12 (declaring persons *in loco parentis*).

21. *Id.* at 5–12; *Sentencia* T-622/16, *supra* note 7, at 153–57.

persons.²² Consequently, their rulings can be considered a result of transnational efforts to strengthen RoN norms internationally.²³ To spur normative and legal change, transnational networks have created new global organizations like the Global Alliance for the Rights of Nature; hosted International RoN Tribunals in Australia, Ecuador, Peru, and Germany; advocated adoption of the Universal Declaration of Rights of Mother Earth in the United Nations; convened global symposia on RoN in Australia, New Zealand, Ecuador, the United States, and elsewhere; developed curricula for teaching RoN in law schools; and established the United Nations Harmony with Nature Programme.²⁴

Additionally, the proliferation of domestic RoN legal provisions worldwide has created a diffusion effect, much like the “justice cascade” of prosecutions at domestic levels for violations against the International Declaration of Human Rights.²⁵ RoN court documents in Pennsylvania, for example, cite the Ecuadorian constitution,²⁶ while the Indian and Colombian court rulings detailed below cite New Zealand’s RoN law as precedent.

22. *Sentencia T-622/16*, *supra* note 7, at 46–47; *Salim* 2017, *supra* note 7, at 7–10.

23. *See Salim* 2017, *supra* note 7, at 11–12 (granting the Ganga and Yamuna rivers legal personhood); *Sentencia T-622/16*, *supra* note 7, at 42 n.87 (citing to RoN movements in Ecuador, Bolivia, and New Zealand for support).

24. *See About Us*, THE RTS. OF NATURE, <http://therightsofnature.org/get-to-know-us/> (last visited Apr. 24, 2019) (describing the Global Alliance for the Rights of Nature); *2nd International Rights of Nature Tribunal–Lima*, THE RTS. OF NATURE, <http://therightsofnature.org/lima-2014-tribunal/> (last visited Apr. 24, 2019) (describing the Rights of Nature Tribunal’s meeting in Lima, Peru); *1st International Rights of Nature Tribunal–Quito*, THE RTS. OF NATURE, <http://therightsofnature.org/rights-of-nature-tribunal-quito/> (last visited Apr. 24, 2019) (describing the Rights of Nature Tribunal’s meeting in Quito, Ecuador); *Rights of Nature Australia 2018*, THE RTS. OF NATURE, <http://therightsofnature.org/various-events-going-on-in-australia-for-the-rights-of-nature/> (last visited Apr. 24, 2019) (describing a Rights of Nature conference in Australia); *4th International Rights of Nature Tribunal–Bonn*, THE RTS. OF NATURE, <http://therightsofnature.org/4th-international-rights-of-nature-tribunal-bonn/> (last visited Apr. 24, 2019) (describing the Rights of Nature Tribunal’s meeting in Bonn, Germany); Universal Declaration of Rights of Mother Earth, *supra* note 3 (declaring Mother Earth as a being with rights); Symposium, *Exploring our legal relationship with the living world*, AELA (2018) (describing an international symposium in Brisbane, Australia); Press Release, Women’s Earth & Climate Action Network Int’l, Int’l Rights of Nature Symposium in Quito, Ecuador, (Sept. 2, 2018), <https://wecaninternational.org/news/1963/press-release-international-rights-of-nature-symposium-in-quito-ecuador> (describing an international Rights of Nature conference in Quito, Ecuador); *1st U.S. Rights of Nature Symposium*, COMMUNITY ENVTL LEGAL DEF. FUND, <https://celdf.org/rights-nature-symposium/> (last visited Apr. 24, 2019) (describing a Rights of Nature symposium in Louisiana); Darlene May Lee, *Why Education is Critical to the Earth Law Movement*, MOTHER EARTH NEWS (Nov. 16, 2017), <https://www.motherearthnews.com/nature-and-environment/why-education-is-critical-to-the-earth-law-movement-zbcz171> (describing how the Rights of Nature movement focuses on specialized segments of society like law schools).

25. *See generally* KATHERYN SIKKINK, THE JUSTICE CASCADE: HOW HUMAN RIGHTS PROSECUTIONS ARE CHANGING WORLD POLITICS 6 (2011) (discussing the global spread of individual prosecutions for human rights violations after several significant early cases).

26. Intervenor-applicants Little Mahoning Watershed and East Run Hellbenders Soc’y, Inc. reply to Plaintiff’s brief in opposition to their motion to intervene at 3, Pa. Gen. Energy Co. v. Grant Twp., 139 F.Supp.3d 706 (W.D. Pa. 2015) (No. 1:14-cv-209).

While the Colombian and Indian court rulings reflect a global movement to institutionalize RoN norms to achieve ecologically sustainable development, they emanated from local communities' struggles. These communities seek to protect their ethnic and cultural identities, the places they hold sacred, and the water on which they depend for life. The rulings do not merely parrot global discourse regarding RoN but instead interpret emerging global norms within the context of domestic law and culture, thus creating unique institutional expressions. In sum, the Colombian and Indian cases demonstrate how normative underpinnings at the local and global levels converge to develop new legal tools and governance structures. These tools and structures are based on the normative assumption that the law should not dominate nature but rather be embedded within in it.²⁷

The remainder of this article is organized in four sections. The first section describes the RoN norms circulating globally, particularly as they relate to the rights of rivers and the networks diffusing them. The following section describes New Zealand's law granting rights to the Whanganui River and highlights how this law departed significantly from previous RoN laws to provide a new model for institutionalizing RoN. We then detail the Colombian and Indian court rulings, showing how they draw on existing RoN arguments, especially the New Zealand model, but adapt them to fit domestic conditions by strategically interpreting existing domestic law. The final section notes key similarities and differences between the New Zealand, Colombian, and Indian RoN legal provisions and offers some preliminary lessons to consider.

I. GLOBAL DIFFUSION OF RIGHTS OF RIVER NORMS

Indigenous peoples from around the globe have long advocated norms and governance structures that unite humans and nature. Casey Camp Horinek, a leader of Oklahoma's Ponca Nation, explained her indigenous view of the relationship between nature and people in her opening address at the International Rights of Nature Tribunal held in Quito, Ecuador, in January 2014. She said:

If you drank the water this morning or liquids, if you ate of the hooded nations or the four legged; if you breathe; if your body became warm from the fires of the earth, then you must recognize and understand that there is no separation between humans and Earth

27. See Osprey Orielle Lake, *Recognizing the Rights of Nature and the Living Forest*, in *RIGHTS OF NATURE AND MOTHER NATURE: RIGHTS-BASED LAW FOR SYSTEMIC CHANGE* 20, 21 (Shannon Biggs et al. eds., 2017) (comparing the current legal framework to the Rights of Nature framework).

and all that are relatives of Earth and the cosmos, because you live in relation with her as a result of being one with her and there is no separation.²⁸

Camp Horinek and others in indigenous communities around the world are working within the Global Alliance for the Rights of Nature (GARN), a transnational RoN network, to codify their understanding of the interdependencies between humans and other elements of nature into new Western legal provisions.²⁹ This indigenous worldview is often expressed in terms of RoN because of the emphasis on rights in Western legal culture. RoN laws in Ecuador, Bolivia, New Zealand, Colombia, and elsewhere express the efforts of indigenous communities to gain recognition for their understanding of humans' relationship to nature is currently expressed in RoN laws in Ecuador, Bolivia, New Zealand, Colombia, and elsewhere.³⁰

Many of the efforts to codify RoN are focused on protecting rivers. This is not surprising given that water is not only biologically necessary, but often considered sacred. Tom Goldtooth of the Indigenous Environmental Network explains that "[w]ater has spirit and water has life – water is life – water has rights that are recognized by Indigenous peoples."³¹ For Camp Horinek, Goldtooth, and Patricia Gualinga of the Sarayaku community of Ecuador, there is a "kinship" between people and water, the earth, and non-human creatures. This relationship structures their societies' governance arrangements.³² Many indigenous communities have governance structures that recognize human and non-human elements of the planet as being equally important and interdependent. The RoN legal provisions in New Zealand and Colombia detailed below similarly call for a restructuring of governance systems to better address the interdependencies between human and non-human members of biotic communities.³³

28. Casey Camp Horinek, Tribal Councilwoman, Ponca Tribe of Oklahoma, Opening of the Rights of Nature Tribunal (Jan. 17, 2014), in *RIGHTS OF NATURE AND MOTHER NATURE: RIGHTS-BASED LAW FOR SYSTEMIC CHANGE* 12, 12 (Shannon Biggs et al. eds., 2017).

29. See generally *RIGHTS OF NATURE & MOTHER EARTH: RIGHTS-BASED LAW FOR SYSTEMIC CHANGE* 4 (Shannon Biggs et al. eds., 2017) (compiling articles from various members of indigenous communities and GARN members).

30. *Sentencia T-622/16*, *supra* note 7, at 45–46; CONSTITUCIÓN DE LA REPÚBLICA DEL ECUADOR DE 2008, title 2, chapter 7; see also Documents of the World's People's Conference on Climate Change and the Rights of Mother Earth, Bolivia, April 2010 (calling for the UN to recognize rights of nature); Te Awa Tupua Act 2017, *supra* note 6, at pt 1 s 13 (describing the intrinsic value of Te Awa Tupua).

31. Tom B.K. Goldtooth, *Indigenous Peoples Cosmovision, Conflicts of Conquest and Need for Humanity To Come Back to Mother Earth*, in *RIGHTS OF NATURE & MOTHER EARTH: RIGHTS-BASED LAW FOR SYSTEMIC CHANGES* 15, 15 (Shannon Biggs et al. eds., 2017).

32. *Id.*

33. See *infra*, Parts III, IV.

The normative framework undergirding existing RoN legal provisions (including those in Colombia and India) challenges dominant Western norms regarding humans' relationship to nature. Goldtooth differentiates Western society as one that sees humans as separate from nature, objectifies the natural world, and emphasizes its domination for human use.³⁴ By contrast, Goldtooth argues the indigenous worldview sees humans as part of nature, an integrated whole in which the component parts have a "harmonious, awake, loving, and intelligent relationship with all other aspects of creation."³⁵ This harmony between humans and nature is the basis of *sumak kawsay*, or well-being, an indigenous Quichua principle recognized in the preamble of the Ecuadorian Constitution.³⁶ The harmony between humans and nature is also reflected in the Iroquois (or Haudenosaunee) normative framework for living called the Good Mind.³⁷ Other Lakota and Dakota nations refer to this harmonious relationship as *Mitakuye Owasin*, "All My Relations."³⁸ Similar concepts exist in other communities around the world.³⁹

Non-indigenous communities are now adopting comparable normative frameworks, often to protect the water resources on which they depend. Norms associated with RoN are even transforming conversations and movements in the U.S. For example, citizens in the Pennsylvania townships of Grant and Highland wrote home rule charters recognizing RoN as a tool for protecting their local water ecosystems from wastewater injection wells created by fracking companies.⁴⁰ As rural, farming communities that rely on well water, they too are deeply connected to their natural environments. As one Grant Township Board of Supervisors noted, "We understand that an injection well for frack waste is a very bad idea, not only for the people who live here, but for the natural environment."⁴¹ These Pennsylvania townships

34. See Goldtooth, *supra* note 31, at 15 (describing Western Society as seeing humans as having "Dominion over all things").

35. *Id.* at 16.

36. CONSTITUCIÓN DE LA REPÚBLICA DEL ECUADOR DE 2008, pmbi ("This harmony between humans and nature is the basis of *sumak kawsay*, or well-being, an indigenous Quichua principle recognized in the preamble of the Ecuadorian Constitution.").

37. See generally Jack Manno & Pamela Martin, *The Good Life (Sumak Kawsay) and the Good Mind (Ganigonhi:oh): Indigenous Values and Keeping Fossil Fuels in the Ground*, in *ENDING THE FOSSIL FUEL ERA* 279, 280 (Thomas Princen et al. eds., 2015) (describing the framework of indigenous society).

38. See Mark Rumi, *Mit Mitakuye Owás'i (All My Relatives); Dakota Wiconi (Way of Life) and Wicozani Waste (Well-Being)*, in 6 *ABORIGINAL POL'Y RES. SERIES* 187, 187 (2013) (describing origin and meaning of *Mitakuye Owasin*).

39. See, e.g., Rickard Lalander, *Rights of Nature and the Indigenous Peoples in Bolivia and Ecuador: A Straitjacket for Progressive Development Politics?*, 3 *IBEROAMERICAN J. OF DEV. STUD.* 149, 153–54 (2014) (describing "the Good Way of Living" in Bolivia and Ecuador).

40. Press Release, Community Envtl. Legal Def. Fund, *Despite Court Ruling, Grant Township Bans Fracking Injection Wells Again, Through Municipal Charter* (Nov. 3, 2015).

41. Letter from Grant Township to Federal County, PA General Energy, and Those Who Will Stand for What's Right, Pa. Grant Township Board of Supervisors, Community Envtl. Legal Def. Fund (Dec. 2, 2018), <https://celdf.org/2018/01/grant-township-pa-sanctions-lawyers-badge-courage/>.

are not unique. There are approximately 90 movements in the U.S. dedicated to promoting community rights to a clean environment and to recognizing RoN.⁴²

While an indigenous worldview does not drive these U.S. movements, they adopt similar understandings of humans as part of a larger biotic community. Interdependencies and reciprocal relationships characterize these communities. Marsha Buhl of Pennsylvania's Highland Township explains why she and others in the community are including RoN in their township home rule charter:

...the ecosystem, the animals, the plants, they have, they should have, rights to clean water, clean air, and that's what we're fighting for, our clean water and our clean air. The Pennsylvania constitution says we have the right to clean water and clean air and that's all we're asking for... is rights to clean water and clean air, and the ecosystem should have that right too.⁴³

The normative framework undergirding RoN laws is gaining salience in communities around the world, and in international discourse, in large part because of the work of the GARN⁴⁴ and other transnational networks. Indigenous organizations, environmental NGOs, environmental lawyers, academics, and other RoN advocates share legal tools and strategies through GARN and other networks like the UN Harmony with Nature Knowledge Network.⁴⁵ Increasingly, organizations are holding conferences to provide

42. See *State & National Networks*, COMMUNITY ENVTL. LEGAL DEF. FUND (Aug. 30, 2015), <https://celdf.org/join-the-movement/where-we-work/state-national-networks/> (listing community rights networks); *State Law Center*, COMMUNITY ENVTL. LEGAL DEF. FUND (Aug. 4, 2015), <https://celdf.org/law-library/state-law-center/> (describing the Community Rights State Law Center); *Rights of Nature Database*, EARTH L. CTR., <https://www.earthlawcenter.org/crestone/> (last visited Apr. 24, 2019) (showing U.S. RoN movements).

43. Telephone interview with Marsha Buhl, Pa. Highland Twp. (Jul. 13, 2017).

44. See generally *Founding the Global Alliance*, THE RTS. OF NATURE, <http://therightsofnature.org/founding-meeting/> (last visited Apr. 24, 2019) (explaining GARN's objective as creating a world network to further the implementation of RoN).

45. Leading rights of nature organizations include CELDF, Movement Rights, Earth Law Center, Indigenous Environmental Network, Pachamama Alliance, Women's Earth & Climate Action Network, and many others. See *About*, COMMUNITY ENVTL. LEGAL DEF. FUND (Aug. 4, 2018), <https://celdf.org/about/> (describing CELDF); see also *About Us*, MOVEMENT RTS, <http://www.movementrights.org/about-us/> (last visited Apr. 24, 2019) (describing Movement Rights training programs); *About Earth Law Center*, EARTH L. CTR., <https://www.earthlawcenter.org/about-earth-law-center> (last visited Apr. 24, 2019) (describing Earth Law Center's approach); *About*, INDIGENOUS ENVTL. NETWORK, <http://www.iencanet.org/about/> (last visited Apr. 24, 2019) (describing history and goals of Indigenous Environmental Network); *Mission & Vision*, PACHAMAMA ALLIANCE, <https://www.pachamama.org/about/mission> (last visited Apr. 24, 2019) (describing purpose, mission, and values of Pachamama Alliance); *About the Women's Earth & Climate Action Network (WECAN) International*, WOMEN'S EARTH & CLIMATE ACTION NETWORK, <https://wecaninternational.org/about> (last visited Apr. 24, 2019) (describing the mission and guiding principles of WECAN).

forums for RoN advocates from different countries to share ideas and strategize about local and global actions.⁴⁶

This transnational organizing is giving rise to global expressions of RoN norms and efforts to codify the rights of rivers in international documents. In 2010, a number of civil society organizations adopted the Universal Declaration for the Rights of Mother Earth.⁴⁷ Following its adoption, the Earth Law Center coordinated the drafting of a Universal Declaration of River Rights to provide greater protection for the world's rivers. The Declaration recognizes the "vital role of rivers in Earth's hydrologic cycle ... and that national and international laws pertaining to waterways are vastly inadequate to protect the integral health of rivers ... to ensure current and future generations with adequate supplies of clean water to meet their basic needs."⁴⁸ Consequently, the Declaration calls for the recognition of rivers' rights: (1) to flow; (2) to perform essential functions within their ecosystems; (3) to be free from pollution; (4) to feed and be fed by sustainable aquifers; (5) to native biodiversity; and (6) to restoration.⁴⁹

The above anecdotes illustrate how RoN norms are circulating globally and being used to justify new legal provisions and governance structures to protect river ecosystems. Below, we analyze how judges in Colombia and India adopted these norms and strategically interpreted existing laws in their countries. The judges used these norms to justify rulings which recognized river rights and created new governance structures to protect the rights and wellbeing of rivers. The judges based these governance structures on a model New Zealand pioneered. We first summarize New Zealand's law recognizing the rights of the Whanganui River. This provides a basis for analyzing the Colombian and Indian cases and highlighting the diffusion of RoN norms and legal provisions.

46. See generally *1st U.S. Rights of Nature Symposium*, COMMUNITY ENVTL. LEGAL DEF. FUND, <https://celdf.org/rights-nature-symposium/> (last visited Apr. 24, 2019) (highlighting the proceedings of CELDF's Rights of Nature Symposium); Press Release, Vt. Law Sch., Vt. Journal of Envtl. Law Asks: 'Should Nature Have Its Day in Court?' (Oct. 10, 2018), <https://www.vermontlaw.edu/news-and-events/newsroom/press-release/vermont-journal-environmental-law-asks-should-nature-have> (describing Vermont Journal of Environmental Law's 2018 Symposium on the Rights of Nature); Press Release, Int'l Rights of Nature Tribunal, Int'l Rights of Nature Tribunal in Bonn Finds Legal Sys. Incapable of Preventing Climate Change and Protecting Nature (Nov. 10, 2017), <http://therightsofnature.org/wp-content/uploads/Press-release-Bonn-Tribunal-final-2.pdf> (summarizing the proceedings of the 2017 Rights of Nature Tribunal).

47. See generally *Universal Declaration of Rights of Mother Earth*, World People's Conference on Climate Change and the Rights of Mother Earth, Apr. 22, 2010 (declaring Mother Earth as a living being with rights).

48. *Universal Declaration of River Rights*, EARTH L. CTR., <https://www.earthlawcenter.org/river-rights> (last visted Apr. 24, 2019).

49. *Id.*

II. NEW ZEALAND'S PIONEERING GUARDIANSHIP MODEL

New Zealand's law granting rights to the Whanganui River (the 2017 Te Awa Tupua Act) emerged from treaty settlement negotiations resolving historical Treaty of Waitangi claims of the Whanganui Iwi tribe in relation to the Whanganui River.⁵⁰ The Maori of the Whanganui River and the New Zealand government signed the settlement agreement, Tūtohu Whakatupua, on August 30, 2012.⁵¹ The 2017 Te Awa Tupua Act gave the terms of the treaty settlement the force of national law.⁵²

In addition to addressing issues of cultural and financial redress, the settlement adopts the Māori view of the river, recognizing the Whanganui River as a living being, Te Awa Tupua, "an indivisible whole incorporating its tributaries and all its physical and metaphysical elements from the mountains to the sea."⁵³ In describing the river, the agreement details the Whanganui Iwi's relationship to the river:

Whanganui Iwi have common links in two principal ancestors, Paerangi and Ruatipua. Ruatipua draws life force from the headwaters of the Whanganui River on Mount Tongariro and its tributaries which stretch down to the sea. The connection of the tributaries to form the Whanganui River is mirrored by the interconnection through whakapapa [genealogy] of the descendants of Ruatipua and Paerangi.⁵⁴

To implement the Māori perspective of the river, the Te Awa Tupua Act codifies "the intrinsic values that represent the essence of Te Awa Tupua," or Tupua te Kawa.⁵⁵ The Act also recognizes the river as a legal person, Te Awa Tupua, with "all the rights, powers, duties, and liabilities of a legal person."⁵⁶ Recognizing the river as a legal person reflects the Whanganui Iwi's view of the river. For the Whanganui Iwi, the river is a living entity with intrinsic value that is "incapable of being 'owned' in an absolute

50. See, e.g., Te Awa Tupua Act 2017, *supra* note 6, at pt 2, s 11, para 14 (mandating that the Act must further the settlement agreement).

51. Elaine Hsiao, *Whanganui River Agreement*, 42 ENVTL. POL'Y & L. 371, 371 (2012).

52. Isaac Davison, *Whanganui River Given Legal Status of a Person Under Unique Treaty of Waitangi Settlement*, NZ HERALD (Mar. 15, 2017), https://www.nzherald.co.nz/nz/news/article.cfm?c_id=1&objectid=11818858.

53. Hsiao, *supra* note 51, at 374.

54. Record of Understanding in Relation to Whanganui River Settlement, Whanganui Iwi - The Crown, Oct. 13, 2011, cl. 1.1.

55. Te Awa Tupua Act 2017, *supra* note 6, at pt 2, s 13.

56. *Id.* at s 14.

sense.”⁵⁷ Recognizing the river as a legal person also enables the river to have legal standing in its own right.⁵⁸

New Zealand’s Whanganui treaty settlement was pioneering, in part, because it differed greatly from previous RoN laws established in Ecuador, Bolivia, and the U.S. RoN laws in those countries recognized numerous rights of all natural ecosystems, including the rights to exist, maintain their integrity, regenerate their life cycles and functions, and be restored when damaged.⁵⁹ By contrast, the Whanganui treaty settlement and Te Awa Tupua Act do not delineate specific rights, but merely recognize the Whanganui River as a legal person.⁶⁰ The treaty settlement and Act grant the river procedural access to New Zealand’s political, legal, and economic systems.

This different approach stems from the fact that the treaty settlement institutionalized the Māori’s connection to the river. In interviews, Māori negotiators explained that “rights” is a foreign concept from the European legal system.⁶¹ Instead of focusing on rights, the Māori emphasize their responsibility of guardianship (*rangatiratanga*) for the natural entity to which their *iwi* is tied genealogically.⁶² The Māori focus their responsibility on caring for their ancestor to maintain their ties to it. For Whanganui negotiators, the idea of granting their river a legal personality was an imperfect approximation of treating the river as a whole, living, spiritual being, but likely the best that could be done within a European legal framework.⁶³

The river’s new legal personhood status raised the question of who would speak for the river. Given the Māori emphasis on the responsibility of guardianship, the treaty settlement established a guardian body, Te Pou Tupua, authorized to speak on behalf of Te Awa Tupua and protect its interests.⁶⁴ The guardian body has one Whanganui *iwi* representative and one Crown representative.⁶⁵ Guardians must secure Te Awa Tupua’s spiritual

57. Michael Mountain, *River Recognized as a Legal Person*, EARTH IN TRANSITION (Sept. 10, 2012), <https://www.earthintransition.org/2012/09/river-recognized-as-legal-person/>.

58. Catherine Iorns Magallanes, *Moving Toward Global Eco-Integrity*, in THE EARTH CHARTER, ECOLOGICAL INTEGRITY AND SOCIAL MOVEMENTS 181, 187 (Laura Westra & Mirian Vilela eds., 2014).

59. E.g. CONSTITUCION DE LA REPUBLICA DEL ECUADOR DE 2008, arts. 71–72, *translated* (enumerating the basic rights of Pacha Mama (nature) recognized in Ecuador).

60. Te Awa Tupua Act 2017, *supra* note 6, at pt 2, s 14.

61. Interview with Gerrard Albert, Lead Whanganui Negotiator, in Whanganui, N.Z. (Aug. 16, 2016); Interview with Tamati Kruger, Lead Tūhoe Negotiator, in Wellington, N.Z. (Aug. 17, 2016); Interview with Kirsti Luke, Lead Tūhoe Negotiator, in Wellington, N.Z. (Aug. 17, 2016). Interviews with Maori negotiators.

62. *Id.*

63. *Id.*

64. Te Awa Tupua Act 2017, *supra* note 6, at pt 2, ss 18–19.

65. *Id.* at s 20.

and cultural rights, not only its physical and ecological rights.⁶⁶ The Act created an advisory group, Te Karewao, to provide advice and administrative support to the guardians.⁶⁷ Groups with interests in the river, other than the Whanganui Iwi (e.g., the local government and other iwi), appoint individuals to the three-person advisory group.⁶⁸

The guardian body had another marked difference from existing RoN laws. In Ecuador, Bolivia, and the U.S., RoN laws empower, but do not require, anyone to bring suit to defend the RoN.⁶⁹ By contrast, New Zealand's Te Awa Tupua Act created statutory guardians to promote and protect the river's interests and well-being.⁷⁰ Although this legal design limits who can represent Nature, advocates argue that the guardianship model is stronger because appointed representatives must protect Nature at all times.⁷¹

Another unique feature of New Zealand's guardianship-based approach is that it embedded the guardianship body within a collaborative, integrated watershed management body, Te Kōpuka nā Te Awa Tupua.⁷² The watershed management body consists of various stakeholders with interests in the river, including multiple iwi, central and local governments, commercial actors, recreational users, and environmental groups.⁷³ The watershed management body is charged with developing an integrated strategy to ensure the environmental, social, cultural, and economic health and well-being of the Whanganui River.⁷⁴ The body is responsible for monitoring the management plan's implementation and for providing a forum to discuss issues related to the health and well-being of Te Awa Tupua.⁷⁵

From the perspective of protecting RoN, this integrated watershed management body is arguably the most important element of the Te Awa Tupua Act. As a legal person, the river itself is a member of the integrated watershed management body, via its guardians, and thus participates directly in watershed management decisions.⁷⁶ Moreover, the body is obliged to

66. *Id.* at ss 18–19.

67. *Id.* at s 27.

68. *Id.* at s 28.

69. Kauffman & Martin, *supra* note 1, at 51.

70. Te Awa Tupua Act 2017, *supra* note 6, at pt 2, ss 18–20.

71. Catherine Iorns Magallanes, *A World Where the Rivers are People Too*, ELGAR BLOG (June 22, 2017), <https://elgar.blog/2017/06/22/rivers-as-people/>.

72. Te Awa Tupua Act 2017, *supra* note 6, at pt 2, ss 29–30.

73. *Id.* at s 29.

74. *Id.* at s 30.

75. *Id.*

76. See Magallanes, *supra* note 71 (describing river's guardians); see also Te Awa Tupua Act 2017, *supra* note 6, at pt 2, s 19 (describing the functions of the river's guardianship body).

make decisions with “particular regard to . . . the Te Awa Tupua status” and its intrinsic values.⁷⁷

In sum, New Zealand’s law codifies the intrinsic values of the river’s ecosystem, recognizes the river as a legal person, and appoints guardians, which embeds the river within a new governance institution.⁷⁸ The institution is tasked with managing the river in an integrated way that is consistent with RoN. This system incorporates RoN principles into watershed management decision-making processes, allowing the principles to be addressed proactively. The legal personhood provision allows the river to participate directly in these decision-making processes via its guardians. In comparison, other reactive RoN laws enumerate specific rights of nature but do not require defenders of nature to challenge violations in court.

Because of the transnational RoN networks’ promotional efforts, New Zealand’s recognition of river rights quickly gained international attention.⁷⁹ In the following sections, we show how judges in Colombia and India cited the Te Awa Tupua Act to justify recognizing RoN. These judges replicated key elements of New Zealand’s guardianship model in their court decisions. These decisions addressed serious threats to important river ecosystems in the face of government inaction. Although the judges drew on New Zealand’s precedent, they also justified their decisions by strategically interpreting domestic laws that do not explicitly recognize RoN. Moreover, the judges adapted the model to match distinct socio-political environments. The concluding analyzes the varying outcomes of these adaptations.

III. RECOGNIZING RIGHTS FOR THE ATRATO RIVER, COLOMBIA

In November 2016, Colombia’s Constitutional Court declared the Atrato River Basin a legal person, possessing the rights to “protection, conservation, maintenance, and restoration.”⁸⁰ Although Colombia’s Constitution does not explicitly recognize RoN, Judge Jorge Ivan Palacio ruled that RoN are included in “biocultural rights.” Judge Palacio inferred these rights from guarantees in Colombia’s Constitution for biodiversity, cultural, and humanitarian protections.⁸¹ The biocultural argument is unique because it

77. Te Awa Tupua Act 2017, *supra* note 6, at pt 2, s 30.

78. *Id.* at ss 14, 18.

79. For example, the Te Awa Tupua treaty settlement and subsequent act were widely publicized by RoN organizations. See Shannon Biggs, *When Rivers Hold Legal Rights*, GLOBAL ALLIANCE FOR THE RTS. OF NATURE (Apr. 20, 2017), <http://therightsofnature.org/when-rivers-hold-legal-rights/> (describing the Te Awa Tupua and subsequent RoN cases); *New Zealand*, EARTH L. CTR. (Aug. 16, 2016), <https://www.earthlawcenter.org/international-law/2016/8/new-zealand> (describing the Te Awa Tupua).

80. *Sentencia T-622/16*, *supra* note 7, at 134.

81. See *id.* at 151 (referring to articles 1, 2, 5, 8, 11, 12, 13, 16, 22, 44, 48, 49, 63, 65, 67, 70, 72, 79, 80, 188, 189, 288, 298, 311 339, 356, 357, 365, and 366 of Colombia’s Constitution).

bridges the special designation and rights of Colombian indigenous and Afro-Colombian citizens with the ecological diversity of the Choco region and Atrato River. Judge Palacio reasoned that the rights of Choco inhabitants are intertwined with the rights of the Atrato River, thus necessitating both biological and cultural rights.⁸²

A. Background of the Atrato River Case

Choco makes up four percent of Colombia's territory and is one of the most biodiverse regions on the planet.⁸³ Ninety percent of Choco's territory is a special conservation zone that is home to Los Katíos, Ensenada de Utría, and Tatamá National Parks.⁸⁴ The Atrato river is located in a large valley, representing 60 percent of the Choco region.⁸⁵

Choco is home to about 500,000 residents.⁸⁶ Eighty-seven percent of the residents are of African descent, ten percent are indigenous, and three percent are mestizo.⁸⁷ The population is organized into collective institutions, including 600 Afro-Colombian organizations in 70 communities and 120 indigenous organizations.⁸⁸ The communities along the Atrato river are agricultural and grow corn, rice, cacao, coconuts, sugar cane, plantains, and other products.⁸⁹ These communities also engage in other traditional activities such as fishing and artisanal mining.⁹⁰ Most communities are organized in peasant (campesino) collectives that are subsistence communities, which live off the river and land.⁹¹

Since the rise of armed conflict in the 1970s, Choco community members face greater levels of violence, and many have been displaced.⁹² Rich deposits of gold, platinum, and minerals in the river have exacerbated these threats, as armed combatants seek those substances.⁹³ Despite such natural

82. *Id.* at 65.

83. *Id.* at 2.

84. *Id.*

85. *Id.* at 2–3.

86. *Choco*, COLOM. REP. DATA (Aug. 4, 2018), <https://data.colombiareports.com/choco/>.

87. *Sentencia T-622/16*, *supra* note 7, at 2.

88. *Id.*

89. *Id.* at 3

90. *Id.*

91. *Id.* at 3–4.

92. *Colombia*, INTERNAL DISPLACEMENT MONITORING CTR., <http://www.internal-displacement.org/countries/colombia> (last visited Apr. 24, 2019) (noting Columbia has one of the world's most severe internal displacement situations); *see also* Terry Gibbs & Garry Leech, *Colombia: Displacing Development in the Choco*, RELIEFWEB (Oct. 12, 2003) <https://reliefweb.int/report/colombia/colombia-displacing-development-choc%C3%B3> (reporting displacement and conflict in Choco).

93. *Sentencia T-622/16*, *supra* note 7, at 4.

resource wealth, 49 percent of the region's citizens live in extreme poverty and 83 percent do not meet the basic minimum needs for living.⁹⁴

Although mining has been present in Choco for centuries, current large-scale mining and illegal logging practices have severely impacted traditional ways of life for Afro-Colombians and indigenous peoples.⁹⁵ Illegal logging has changed the flow of the river, and mining has increased the level of toxic chemicals entering the river system.⁹⁶ Logging has also caused sedimentation in the river, which threatens many species.⁹⁷

Chemicals used in illicit mining (e.g., mercury and cyanide) have severely impacted the most vulnerable people in these societies, including children.⁹⁸ A 2014 Defensoria del Pueblo (Ombudsman Office) report documented 37 indigenous child deaths and an increase in illnesses such as dengue, malaria, and dysentery.⁹⁹ Such public health crises coincide with an increase in large-scale illegal mining.¹⁰⁰ A 2016 study showed that miners in the Choco region are exposed to mercury levels beyond the acceptable levels set by the World Health Organization.¹⁰¹ According to Mercury Watch, Colombia emits 180 tons of mercury due to gold extraction each year.¹⁰² Because mercury is the most toxic non-radioactive substance in nature, the health impacts on Choco's communities are significant.¹⁰³ By the 2000s, the river's level of contamination had negatively impacted food, water, health, and local communities' culture and spiritual places.¹⁰⁴

In 2011, local communities asked the National Mining Agency to stop illegal activity, producing Decree 4134 to suspend mining concessions.¹⁰⁵ In 2013 and 2014, the National Mining Agency worked in Choco to create

94. *Id.*

95. *Id.*

96. *Id.* at 6.

97. *Id.*

98. Defensoria del Pueblo de Colombia, *Situación de los Derechos Humanos en el Departamento de Cauca* (2018).

99. *See Crítica situación de derechos humanos en Chocó por impacto de la minería ilegal y enfrentamientos entre grupos criminales*, DEFENSORIA (Oct. 4, 2014), <http://www.defensoria.gov.co/...-grupos-criminales-desplazamiento-miner%EDa-ilegal-Autodefensas-Gaitanistas-Alto-Baud%F3--miner%EDa-ilegal.htm> (describing increased illnesses in Chocó); *Illegal Mining Would be Responsible for the Death of 37 Children in Chocó*, SEMANA SOSTENIBLE (Feb. 5, 2016), <https://sostenibilidad.semana.com/medio-ambiente/articulo/mineria-ilegal-seria-responsable-de-la-muerte-de-37-ninos-en-choco/34536> (describing the death of 37 children between 2013-14).

100. *Sentencia* T-622/16, *supra* note 7, at 5-6.

101. *See Sentencia* T-622/16, *supra* note 7, at 95-96 (describing article by Claudia Rojas & Carolina Montes discussing mercury exposure in miners).

102. *Colombia Emite 180 Toneladas Anuales de Mercurio por Minería*, OBSERVATORIO DE CONFLICTOS MINEROS DE AMÉRICA LATINA (Feb. 16, 2016), <http://www.ocmal.org/colombia-emite-180-toneladas-anuales-de-mercurio-por-mineria>.

103. *Sentencia* T-622/16, *supra* note 7, at 94.

104. *Id.* at 95-96.

105. *See id.* at 9 (discussing Decree 4134).

sustainable mining practices with the community.¹⁰⁶ Despite this, in 2014 the Defensoría declared a state of human and environmental emergency in Choco.¹⁰⁷ The Defensoría noted that neither national nor local government agencies had taken action to confront the serious situation threatening the Atrato River, its tributaries, the forest, and the people dependent on them.¹⁰⁸

In light of these grave circumstances, Colombia formed an inter-governmental panel called the Mesa Minera Interinstitucional (Interinstitutional Mining Working Group) in 2014.¹⁰⁹ However, Choco residents complained that the inter-governmental panel never met and was not effective.¹¹⁰ Frustrated with the government's failure to take action, community organizations filed a motion for protection in the Administrative Court of Cundinamarca in January 2015.¹¹¹ The plaintiffs included the Center for the Study of Social Justice "Tierra Digna," representing the Community Council of Peasants of Alto Atrato (Cocomopoca); the Community Council of the Integral Peasant Association of Atrato (Cocomacia); the Association of Community Councils of Bajo Atrato (Asocoba); and the Inter-Ethnic Forum of Choco Solidarity (FISCH).¹¹²

On February 11, 2015, the Administrative Tribunal of Cundinamarca decided against protective action for the community.¹¹³ The tribunal argued that the government ministries named in the suit were not competent to provide protection as this did not fall within their prescribed duties under the national law.¹¹⁴ The Tribunal ordered the inter-institutional working group to meet and create sustainable mining practices and policies.¹¹⁵ Frustrated with the lack of progress, the plaintiffs brought their case to the Sixth Circuit Constitutional Court for review.¹¹⁶

B. Courts Justifying Rights for the Atrato River

Colombia's Constitutional Court found in favor of the Choco residents.¹¹⁷ Citing the precedent established by New Zealand's RoN laws,¹¹⁸ the court issued orders to implement provisions that, not coincidentally,

106. *Id.*

107. *Id.* at 6.

108. *Id.*

109. *Id.* at 7.

110. *See id.* (noting Mesa Minera Interinstitucional did not achieve its mission).

111. *Id.* at 7–8.

112. *Id.* at 1.

113. *Id.* at 12.

114. *Id.* at 107.

115. *Id.* at 105–06.

116. *See id.* at 1 (showing date of decision).

117. *Id.* at 153 (recognizing river as having rights, in favor of residents).

118. *Id.* at 140, n.315.

mirror the key provisions in New Zealand's Te Awa Tupua Act.¹¹⁹ First, the court recognized the Atrato River as a legal person with rights to protection, conservation, maintenance, and restoration by the State and ethnic communities.¹²⁰ Additionally, the court ordered the creation of a guardian body—the Commission of the Guardians of Atrato River—within three months of the decision.¹²¹ The commission includes two designated guardians as well as an evaluation team from the Humboldt Institute and World Wild Fund (WWF) Colombia.¹²² The court also ordered that a panel of experts convene to assist the guardians.¹²³ The panel act as auditors to verify that the work to restore the Atrato River is complete, to accompany the guardians, and to supervise such work.¹²⁴ This is similar to the role of Te Karewao in New Zealand's Te Awa Tupua Act.¹²⁵ The court then embedded the above RoN legal provisions within an integrated watershed management governance body.¹²⁶ It ordered the Ministries of Environment, Housing, and Defense, the governments of Choco and Antioquia, the Humboldt Institute, the Universities of Antioquia and Cartagena, the Institute for Environmental Research of the Pacific, WWF Colombia, and other organizations with ethnic community associations to collectively implement an integrated watershed management plan.¹²⁷ The plan would reestablish the river channels, eliminate mining activities, and reforest affected areas.¹²⁸

In addition, the court ordered the Ministry of Defense, National Police, Commission Against Illegal Mining, the National Military, the Treasury, and the municipalities of Choco and Antioquia to eradicate illegal mining in the Atrato River.¹²⁹ It also ordered the Ministries of Agriculture, Interior, and Housing; the Departments of National Planning, Social Prosperity, and Interior; and municipal governments to create integrated action plans to restore traditional forms of subsistence farming and cleaner food sources.¹³⁰ Finally, the court ordered the Ministry of Environment, Ministry of Health, the Humboldt Institute, the University of Antioquia, University of Cartagena, the Institute of Environmental Research of the Pacific, and WWF Colombia

119. *Id.* at 140.

120. *Id.*

121. *Id.*

122. *Id.* at 154.

123. *Id.*

124. *Id.*

125. Te Awa Tupua Act 2017, *supra* note 6, at pt 2, ss 27-28.

126. *See Sentencia T-622/16, supra* note 7, at 154 (describing cooperative governance body).

127. *Id.*

128. *Id.*

129. *Id.* at 159.

130. *Id.* at 155.

to initiate epidemiology and toxicology studies to establish a base line of environmental indicators for the region.¹³¹

The Constitutional Court justified this ruling despite Colombia's Constitution not specifically recognizing RoN. Judge Palacio invoked Article 215 of Colombia's Constitution, which allows the government to declare a "state of emergency" when there is "a grave or imminent" threat to "the economic, social, or ecological order of the country."¹³² Judge Palacio also noted that the Constitution recognizes special protection for indigenous and Afro-Colombian ethnic groups, which are culturally distinct from the "dominant culture."¹³³ The ruling gave the Choco region's ethnic and indigenous organizations the authority to represent the collective will of the peoples.¹³⁴

Judge Palacio then outlined the Constitution's "social state of rights" that encompass human dignity, social justice, well-being, protections for vulnerable peoples, cultural and ethnic diversity, and protection of the environment and natural resources.¹³⁵ These Constitutional principles form an Ecological Constitution that justifies the protection not only of a pluralist society with diverse cultures, but also of the environment in which those peoples live.¹³⁶ Judge Palacio also noted the spiritual importance of natural resources and the environment for many cultures.¹³⁷ He explained that the cultural, economic, social, and environmental rights recognized in the Constitution combine to form a set of biocultural rights.¹³⁸ Judge Palacio based his decision to give the Atrato River legal personhood status on this concept of biocultural rights, which emphasizes that the rights of people and nature are inextricably linked.¹³⁹ Consequently, Judge Palacio stated that such rights should prevent (or proactively control) environmental destruction and should support conservation, restoration, and sustainable development.¹⁴⁰

Judge Palacio's decision also recognized that sustainable development solutions require integrated responses and that the State is not structurally organized in an integrated manner to adequately meet the needs presented by the case.¹⁴¹ Consequently, the ruling restructures the government and

131. *Id.* at 156.

132. *Id.* at 151–52; *CONSTITUCIÓN POLÍTICA DE COLUMBIA [C.P.] art. 215.*

133. *Sentencia T-622/16, supra* note 7, at 145.

134. *Id.*

135. *Id.* at 30–31. The Constitutional Court cited other decisions as providing a foundation for this ruling, including *Sentencias T-426/92, T-505/92, SU-747/98, C-1064/01.*

136. *Sentencia T-622/16, supra* note 7, at 32–33.

137. *Id.* at 49.

138. *Id.* at 44.

139. *Id.* at 43–44.

140. *Id.* at 36.

141. *Id.* at 21.

creations an institutional framework not only for guardianship, but also for the integrated care of the peoples and ecosystems of which they are a part.¹⁴²

In addition to the constitutional provisions discussed above, Judge Palacio justified the ruling by citing Colombia's ratification of international treaties.¹⁴³ Judge Palacio noted that these international treaties and New Zealand's RoN laws contributed to the conception of biocultural rights in his decision.¹⁴⁴ Moreover, his orders to restructure governance are meant to fulfill the UN's 2030 Sustainable Development Agenda, which calls for a unified approach to social, economic, and environmental solutions and planning in states.¹⁴⁵

C. Current Status

In July 2017, Colombia's President appointed the Ministry of Environment as the government's designee to the Guardian Council for the Atrato River, which was formed in May 2018.¹⁴⁶ The Guardian Council also contains 14 community members from the Choco region, including seven permanent members and seven replacements.¹⁴⁷ Representatives of the Chocoano communities chose these guardians based on their leadership in their communities.¹⁴⁸ The Ministries of Environment, Defense, Housing, and Health coordinate and implement policies relating to the river, including decontamination; eradication of illicit mining; food security; and toxicology and epidemiology studies.¹⁴⁹ Colonel Juan Francisco Pelaez of Colombia's Anti-Illicit Mining Unit says that the constitutional decision to give rights to the Atrato River has improved his coordination with the military and the

142. *Id.* at 158–59.

143. *Id.* at 38, 48–50, 60–61 (discussing the Stockholm Convention (1972); ILO Convention 169 (1989) and prior informed consent to communities regarding activities in their territories; the Convention on Biological Diversity (1994); the UN Declaration for Rights of Indigenous Peoples (2007); the American Declaration on Rights of Indigenous Peoples (2016) and the obligation of states to receive informed consent from indigenous peoples who may be affected by development or resources extraction; and the UNESCO Convention on Cultural Patrimony (2003)).

144. *Id.* at 140, n.315.

145. *Id.* at 60–61.

146. Julian Amorrocho Becerra, *En Marcha la Comision de Guardianes para el Rio Atrato*, EL COLOMBIANO (May 28, 2018), <http://www.elcolombiano.com/Colombia/minambiente-confirma-puest-en-accion-de-la-comision-de-guardianes-para-el-rio-atrato-LD8775397>.

147. Sergio Silva Nuna, *Los Guardianes Encargados de Salvar el Río Atrato*, EL ESPECTADOR (Nov. 15, 2017), <http://www.elspectador.com/noticias/medio-ambiente/los-guardianes-encargados-de-salvar-el-atrato-articulo-723291>.

148. *See id.* (describing the guardians).

149. *See Sentencia T-622/16*, *supra* note 7, at 154–57 (instructing the Ministries on their role).

treasury.¹⁵⁰ He also notes that the structural changes provide institutional solutions to these complex problems.¹⁵¹

In a December 2017 speech, Judge Palacio explained his decision to give the Atrato River rights: “When protection came to my charge, I knew what the path was. Nature has a right not to be contaminated, not to be destroyed, to be used rationally.”¹⁵² Much like the cosmovision of indigenous peoples, Judge Palacio’s decision recognizes that humans are part of nature.¹⁵³ According to Palacio, the interdependency between humans and other elements means that the dominant anthropocentric approach to development must be replaced with an emphasis on “ecocentrism in which the human is just one more species within nature, like fauna, flora, and other species.”¹⁵⁴

The court ruling recognizing the rights of Colombia’s Atrato River shows how normative underpinnings for RoN are diffusing globally. The ruling also shows how states may institutionalize RoN theories in the absence of laws explicitly recognizing these rights.¹⁵⁵ For example, judges can strategically interpret existing domestic laws in light of global RoN norms, expanding the range of legal doctrines judges can invoke worldwide to justify recognition of RoN. Moreover, this Colombian case shows how incorporating RoN legal provisions, like legal personality and guardianship bodies, into new governance structures can give them greater force. These structures are designed to develop new solutions for the difficult and complex challenges of sustainable development in the face of extractive industries.¹⁵⁶

IV. RECOGNIZING RIGHTS FOR THE GANGA AND YAMUNA RIVERS, INDIA

On March 20, 2017, the Uttarakhand High Court (UHC), in the Indian State of Uttarakhand, issued a ruling declaring that:

[T]he Rivers Ganga and Yamuna, all their tributaries, streams, every natural water flowing with flow continuously or intermittently of these rivers, are declared as juristic/legal persons/living entities having the status of a legal person with all corresponding rights,

150. *El Coronel que Protégé el Río Atrato*, SEMANA (Dec.15, 2017), <http://semana.com/contendios-editoriales/trato-el-rio-tiene-la-palabra/articulo/coronel-juan-francisco-pelaez-protecte-al-rio-atrato/551281>.

151. *Id.*

152. *Jorge Iván Palacio: El Centinela del Río Atrato*, EL ESPECTADOR (Dec. 3, 2017), <http://www.elespectador.com/noticias/judicial/jorge-ivan-palacio-el-centinela-del-rio-atrato-articulo-726304>.

153. *Id.*

154. *Id.*

155. *See generally Sentencia T-622/16*, *supra* note 7 (recognizing RoN, despite a lack of explicit laws).

156. *Id.* at 104.

duties and liabilities of a living person in order to preserve and conserve [the] river[s] Ganga and Yamuna.¹⁵⁷

Based on these rights, the court ordered government agencies to take specific actions to “promote the health and wellbeing of these rivers.”¹⁵⁸

A. Public Interest Litigation to Restore the Ganga

The UHC’s ruling provides another example of courts acknowledging RoN in the absence of laws explicitly recognizing such rights. The state court’s ability to issue such orders stems from India’s constitutional provision allowing public interest litigation.¹⁵⁹ India introduced public interest litigation in the 1970s.¹⁶⁰ Justified under Article 32 of India’s constitution, this form of litigation offers marginalized groups access to justice when the state fails to address public problems.¹⁶¹ Public interest litigation allows any party to seek legal remedy from the courts when they can demonstrate that a public interest is at stake and the state has failed to take action.¹⁶² Importantly, parties do not have to be directly affected by an infringement to bring public interest lawsuits.¹⁶³ A court may also introduce public interest litigation unilaterally.¹⁶⁴ India has extensively, if inconsistently, used public interest litigation to address environmental harms.¹⁶⁵ Despite this, studies show that the practice is widely accepted and has reduced pollution levels in some cases.¹⁶⁶

The 2017 UHC ruling came after decades of failed government programs designed to clean up the Ganga River.¹⁶⁷ The Ganga is one of the most sacred

157. *Salim* 2017, *supra* note 7, at 11.

158. *Id.* at 12.

159. INDIA CONST. art. 39-A.

160. Anuj Bhuwania, *Courting the People: Public Interest Litigation in Post-Emergency India*, 16 INT’L. J. OF CONST. L. 710, 711 (2018).

161. *Id.* at 715.

162. *The PILS Project, What is Public Interest Litigation?*, <https://www.pilsni.org/about-public-interest-litigation> (last visited June 25, 2019).

163. Bhuwania, *supra* note 160, at 711.

164. See Zachary Holladay, *Public Interest Litigation in India as a Paradigm for Developing Nations*, 19 IND. J. OF GLOBAL LEGAL STUD. 555, 559–60 (2012) (describing the court’s role as guardians of political, social, and economic rights and its ability to “surely do something” about the problems of the underprivileged”).

165. Gitanjali Nain Gill, *Human Rights and the Environment in India: Access Through Public Interest Litigation*, 14 ENVTL. L. REV. 200, 203 (2012).

166. Michael Faure & A.V. Raja, Effectiveness of Environmental Public Interest Litigation in India: Determining the Key Variables, 21 FORDHAM ENVTL. L. REV. 239, 239 (2010); Geetanjoy Sahu, Public Interest Environmental Litigations in India: Contributions and Complications, 69 INDIAN J. OF POL. SCI. 745, 745 (2008).

167. Pallav Das, *Rights of Nature and the River Ganga*, RADICAL ECOLOGICAL DEMOCRACY (June 27, 2017), <https://www.radicalecologicaldemocracy.org/rights-of-nature-and-the-river-ganga/>.

rivers for Hindus, believed by many to contain divine properties.¹⁶⁸ Furthermore, many cities are built on its banks, and millions of people depend on it for survival.¹⁶⁹ The Ganga and the Yamuna—the Ganga's longest tributary—are also highly polluted.¹⁷⁰ The government first attempted to restore the Ganga with the 1986 National Ganga Action Plan.¹⁷¹ The second attempt came from the National Ganga Basin Authority's 2009 mission Clean Ganga.¹⁷² Both attempts were unqualified failures.¹⁷³ The latest attempt to restore the Ganga is Namami Gange, "Obeisance to Ganga" in Sanskrit, an initiative launched in 2014 by the Hindu nationalist Bharatiya Janata Party government.¹⁷⁴

The process leading to the UHC's historic ruling began with Mohammed Salim, a resident of Kuhlal, Uttarakhand. Salim complained to state authorities about encroachments on the banks of a canal connecting to the Ganga in the state capital.¹⁷⁵ The encroachments resulted from illegal private mining and stone crushing operations on land managed by the Uttarakhand Irrigation Department.¹⁷⁶ State authorities ordered the illegal encroachments to be removed and further construction to be stopped.¹⁷⁷ The private actors refused and sought an injunction against the order.¹⁷⁸ They argued that they had purchased the land from the state of Uttar Pradesh, which they claimed owned the land at the time of sale.¹⁷⁹ India's parliament carved Uttarakhand out of Uttar Pradesh as a separate state in 2000.¹⁸⁰ Thus, inter-state disputes over land and the diversion of water from the Ganga complicated the case from the beginning.

Frustrated by the lack of action, Salim filed a public interest lawsuit with the UHC in 2014 to stop the construction and mining, have the encroachments removed, and address the high levels of pollution in the

168. Mark Cartwright, *Ganges*, ANCIENT HIST. ENCYCLOPEDIA (May 25, 2015), <https://www.ancient.eu/Ganges/>.

169. SUNITA NARAIN, *GANGA: THE RIVER, ITS POLLUTION AND WHAT WE CAN DO TO CLEAN IT* 5, 7 (Souparno Banerjee ed., 2014).

170. *Pollution, Solution and Ganga Revolution*, GANGA ACTION PARIVAR, <https://www.gangaaction.org/actions/issues/> (last visited Apr. 24, 2019).

171. *Ganga Action Plan*, MADHYA PRADESH POLLUTION CONTROL BOARD, <http://www.mppcb.nic.in/gap.htm> (last visited Apr. 24, 2019).

172. Das, *supra* note 167.

173. *Id.*

174. *Namami Gange Programme*, NT'L MISSION FOR CLEAN GANGA, <https://nmcg.nic.in/NamamiGanga.aspx>, (last visited Feb. 12, 2019).

175. Mohd. Salim v. State of Uttarakhand, 2016 PIL No. 126 of 2014, 1–2 (India) [hereinafter *Salim* 2016].

176. *Id.* at 2.

177. *Id.* at 1.

178. *Id.* at 2.

179. *Id.* at 2–3.

180. *State Profile*, GOV'T OF UTTARAKHAND, <http://uk.gov.in/pages/display/115-state-profile> (last visited Apr. 24, 2019).

Ganga and its tributaries.¹⁸¹ The lawsuit also called on India's central government to settle the disputes over the distribution of land and water between the two states.¹⁸² The process dragged on for several years, but state authorities took no action to remove the encroachments despite numerous court orders.¹⁸³

B. Courts Justifying Rights for the Ganga and Yamuna Rivers

On March 20, 2017, the UHC issued its ruling ordering the Ganga and Yamuna rivers to be treated as living human entities with all the rights and responsibilities of a legal person.¹⁸⁴ Interestingly, the original lawsuit never asked to declare the rivers legal persons; the judges took this step unilaterally.¹⁸⁵ In justifying this extraordinary step, the court noted: "[t]he extraordinary situation has arisen since [the] Rivers Ganga and Yamuna are losing their very existence. This situation requires extraordinary measures to be taken to preserve and conserve [the] Rivers Ganga and Yamuna."¹⁸⁶

The court cited as precedent the Whanganui River Settlement, in which New Zealand awarded legal personhood status to the river.¹⁸⁷ Nevertheless, the UHC also had to interpret domestic legal provisions to justify the ruling.¹⁸⁸ The judges noted that the Indian Supreme Court had "held that the concept 'Juristic Person' arose out of necessities in human development—Recognition of an entity as [a] juristic person is for subserving the needs and faith of society."¹⁸⁹ Additionally, the UHC cited previous Indian court rulings establishing that Hindu idols representing deities can have legal personhood status.¹⁹⁰ These idols can sue to protect their interests due to their spiritual role in subserving the needs and faith of the society.¹⁹¹ The UHC argued that:

Rivers Ganges and Yamuna are [similarly] worshipped by Hindus. These rivers are very sacred and revered. The Hindus have a deep

181. *Salim* 2016, *supra* note 175, at 1–2, 8.

182. *Id.* at 1.

183. *Id.*

184. *Id.* at 11.

185. See Omair Ahmad, *Can Rivers be Legal Entities?*, THIRD POLE (Mar. 27, 2017), <https://www.thethirdpole.net/en/2017/03/27/can-rivers-be-legal-entities/> (discussing the original complaint which eventually led to the UHC ruling).

186. *Salim* 2017, *supra* note 7, at 4.

187. *Uttarakhand High Court Accords Status of 'Living Entities' to Ganga, Yamuna*, TIMES OF INDIA (Mar. 20, 2017), <https://timesofindia.indiatimes.com/india/uttarakhand-high-court-accords-status-of-living-entities-to-ganga-yamuna/articleshow/57738570.cms>.

188. *Salim* 2017, *supra* note 7, at 10–11.

189. *Id.* at 7.

190. *Id.* at 5–7.

191. *Id.* at 5.

and spiritual connection with Rivers Ganges & Yamuna. According to Hindu beliefs, a dip in River Ganga can wash away all the sins... Thus, to protect the recognition and the faith of society, Rivers Ganga and Yamuna are required to be declared as the legal persons/living persons.¹⁹²

The court also argued that “there is utmost expediency to give legal status as a living person/legal entity to Rivers Ganga and Yamuna” because of the government’s failure to adequately address Articles 48-A and 51A (g) of the Indian constitution.¹⁹³ These articles require the State to “endeavor to protect and improve the environment” and oblige Indian citizens “to protect and improve the natural environment including forests, lakes, rivers and wild life.”¹⁹⁴

After establishing the rivers as legal persons whose wellbeing is threatened due to neglect, the UHC invoked the legal doctrine in loco parentis (Latin for “in the place of a parent”) to make a set of government bodies and officers responsible for acting on behalf of the rivers.¹⁹⁵ Courts commonly use in loco parentis to appoint guardians for children or incapacitated people who cannot defend themselves.¹⁹⁶ Adopting the same logic, the UHC appointed the Chief Secretary of Uttarakhand, the Advocate General of Uttarakhand, and the Director of Namami Gange as guardians.¹⁹⁷ These state bureaucrats are “bound to uphold the status” of the rivers and to promoting their health and well-being.¹⁹⁸ The UHC charged the Advocate General with representing the rivers at all legal proceedings.¹⁹⁹

The UHC ruling ordered several immediate steps to begin restoring the river. First, the court ordered Uttarakhand state authorities to evict the private actors engaged in the mining and stone crushing that prompted the suit.²⁰⁰ Second, it directed India’s central government to make a final decision regarding the division of assets and properties between the states of Uttarakhand and Uttar Pradesh within three months.²⁰¹ Third, the court directed the central government to create a Ganga Management Board to

192. *Id.* at 4, 11.

193. *Id.* at 11.

194. INDIA CONST. art. 48-A, 51-A.

195. *Salim* 2017, *supra* note 7, at 12.

196. 67A C.J.S PARENT AND CHILD § 366 (2019).

197. *Salim* 2017, *supra* note 7, at 11.

198. *Id.* at 12.

199. *Id.* at 5–7, 12.

200. *Salim* 2016, *supra* note 175, at 20.

201. *Id.*

develop a coordinated approach to managing the river basin.²⁰² Finally, the court banned mining in the Ganga's river bed and highest flood plain.²⁰³

The UHC ruling is similar in several respects to New Zealand's Te Awa Tupua Act. The ruling recognizes the Ganga and Yamuna rivers as living spiritual beings with legal personhood status.²⁰⁴ It also provides for a guardian body to speak on behalf of the rivers.²⁰⁵ These provisions tend to receive the most attention by RoN scholars, as these provide the basic framework for RoN.²⁰⁶ However, the UHC ruling lacks several features of the New Zealand model that are crucial to putting RoN into action. Following the usual procedure of *in loco parentis*, the court appointed state officials to serve as guardians rather than having local stakeholders nominate guardians.²⁰⁷ More importantly, the ruling did not embed the guardianship body within a multi-stakeholder, collaborative, integrated watershed-management body.²⁰⁸ Furthermore, the ruling did not establish a set of principles to guide decision-making based on the character of the rivers as integrated, living, spiritual beings.²⁰⁹ These differences have undermined efforts to protect the rights of rivers in India compared to similar efforts in New Zealand and Colombia.

C. Legal Challenge to the UHC Ruling

In May 2017, the State of Uttarakhand, India's central government, and others filed a petition with India's Supreme Court to overturn the UHC ruling naming them as the rivers' legal guardians.²¹⁰ The primary complaint appears to be that Uttarakhand authorities do not wish to be held accountable for the Ganga and Yamuna rivers. In a press conference, Uttarakhand minister and state government spokesperson Madan Kaushik stated, "[l]et me be very clear that we are not against according living entity status to the two holy rivers Ganga and Yamuna . . . [but] [h]ow can the chief secretary here be held accountable if the river is polluted in West Bengal, Bihar, Jharkhand or

202. *Id.*

203. *Id.*

204. *Salim* 2017, *supra* note 7, at 11.

205. *Id.*

206. *Supra*, Part III (exploring the various RoN provisions scholars focus on).

207. *Salim* 2017, *supra* note 7, at 11–12.

208. *Id.*

209. *See generally id.* (failing to show decision making guidelines based on the river's character).

210. ERIN O'DONNELL, LEGAL RIGHTS FOR RIVERS: COMPETITION, COLLABORATION, AND WATER GOVERNANCE 169–70 (2018).

UP?”²¹¹ More importantly, from the perspective of RoN jurisprudence, the petition complains that if the rivers flood and someone dies—as often happens—victims’ families could sue for damages against the Chief Secretary.

The petition asks the Supreme Court to determine whether the state government, as the rivers’ legal parents, would be liable to bear the financial burden of harms caused by the river.²¹² This concern stems from the use of the *in loco parentis* doctrine.²¹³ In conventional applications, such as with children, court-appointed parents do not simply speak for those in their charge; they are also responsible for what their wards do.²¹⁴ Making guardians of natural ecosystems liable for incidental damage done to humans is problematic and contradicts the logic behind RoN.²¹⁵ Nevertheless, courts must now address the legal question of guardian liability due to the use of *in loco parentis* to justify RoN legal provisions.

The UHC case illustrates the unintended consequences of RoN jurisprudence that arise from interpreting existing laws to justify recognizing RoN.²¹⁶ The petition cites several other objections related to jurisdictional issues resulting from the fact that the river basins span multiple states.²¹⁷ Uttarakhand state authorities argue that the UHC does not have the authority to control the actions of other states. If the Supreme Court upholds the UHC ruling, the Court will have to determine a number of jurisdictional questions. Does Uttarakhand’s Chief Secretary, as the river’s legal parent, have the authority to give orders to other states or to the federal government? Can court cases related to the river only be filed in the name of the Chief Secretary (thus denying this legal authority to other states and the central government)? Since the river basin is one legal person spanning state boundaries, is it possible to file separate litigation in different states? Previously, the National Green Tribunal had jurisdiction to determine cases of encroachment; will the Chief Secretary now have to submit cases before courts of law?²¹⁸ India’s Supreme Court agreed to hear the petition and temporarily stayed the UHC ruling.²¹⁹ At the time of this writing, the court has issued no decision.

211. *Supreme Court Stays Uttarakhand High Court's Order Declaring Ganga and Yamuna 'Living Entities'*, TIMES OF INDIA (Jul. 7, 2017), <https://timesofindia.indiatimes.com/india/supreme-court-stays-uttarakhand-high-courts-order-declaring-ganga-and-yamuna-living-entities/articleshowprint/59489783.cms>.

212. O'DONNELL, *supra* note 210, at 169–70.

213. *Salim* 2017, *supra* note 7, at 11–12.

214. 67A C.J.S. Parent and Child § 366 (2019).

215. Sarah Schwemin, *What if we Could Sue the Hurricanes? The Necessity of Recognizing the Rights of Natural Entities*, 11 BARRY L. REV. 95, 110–11 (2008).

216. O'DONNELL, *supra* note 210, at 169–70.

217. *Id.*

218. *Id.*

219. *Id.*

CONCLUSION

RoN activists did not spearhead the lawsuits resulting in court rulings recognizing rights for the Atrato, Ganga, and Yamuna rivers.²²⁰ These lawsuits sought to protect the rivers but did not ask the courts to recognize RoN.²²¹ The judges deciding these cases unilaterally invoked RoN principles and models circulating globally through networks of environmental lawyers and activists.²²² Specifically, the Colombian and Indian judges cited New Zealand's Te Awa Tupua Act as precedent, and their rulings replicated key elements of New Zealand's guardianship model.²²³

The judges in each case justified their extraordinary rulings by citing the need to address serious problems of environmental degradation that had long been known and acknowledged by governments but were effectively ignored.²²⁴ After repeated orders to clean up the rivers, courts took the extra step of recognizing the rivers' rights only after prolonged government inaction.²²⁵

Despite citing international precedent, the judges rooted their decisions in domestic law that does not explicitly recognize RoN.²²⁶ In both Colombia and India, judges strategically interpreted constitutional provisions and other domestic laws to justify granting rivers legal personhood.²²⁷ In Colombia, Judge Palacio drew on biodiversity, cultural, and humanitarian guarantees in the Colombian constitution to argue that the rights of the peoples of the Choco region and the Atrato river are intertwined, thus necessitating both biological and cultural rights.²²⁸ In India, the UHC based its ruling on the spiritual significance of the Ganga and Yamuna rivers and cited court rulings establishing legal personhood status for Hindu deities and idols.²²⁹ The UHC also cited constitutional provisions requiring the state to protect and improve the environment.²³⁰

220. *Colombia: The Atrato River Legal Decision*, INT'L RIVERS (Mar. 26, 2018), <https://www.internationalrivers.org/resources/colombia-the-atrato-river-legal-decision-16827>; Omair Ahmad, *Uttarakhand's Case Points to the Challenges of Giving a River the Rights of a Human*, SCROLL.IN (July 5, 2017), <https://scroll.in/article/842565/uttarakhands-case-points-to-the-challenges-of-giving-a-river-the-rights-of-a-human>.

221. *Salim* 2016, *supra* note 175, at 1.

222. *Salim* 2017, *supra* note 7, at 10–12; *Sentencia T-622/16*, *supra* note 7, at 44–48.

223. *Sentencia T-622/16*, *supra* note 7, at 42, n.87; *Ganges and Yamuna Rivers Granted Same Legal Rights as Human Beings*, THE GUARDIAN (Mar. 21, 2017), <https://www.theguardian.com/world/2017/mar/21/ganges-and-yamuna-rivers-granted-same-legal-rights-as-human-beings>.

224. *Sentencia T-622/16*, *supra* note 7, at 94, 96, 117, 137; *Salim* 2017, *supra* note 7, at 4.

225. *Salim* 2017, *supra* note 7, at 2, 4; *Sentencia T-622/16*, *supra* note 7, at 6–7, 139–40.

226. *Salim* 2017, *supra* note 7, at 7–9; *Sentencia T-622/16*, *supra* note 7, at 44, 56–57.

227. *Salim* 2017, *supra* note 7, at 11; *Sentencia T-622/16*, *supra* note 7, at 44.

228. *Sentencia T-622/16*, *supra* note 7, at 44.

229. *Salim* 2017, *supra* note 7, at 11.

230. *Id.* at 11.

While both the Colombian and Indian rulings drew on New Zealand's model, they structured guardianship differently. In Columbia, civil society and community groups occupy seven of the eight positions in the Atrato River's guardianship body.²³¹ As in New Zealand, the state is represented in the guardianship body, but its influence is balanced with civil society participation.²³² Moreover, participating in the guardianship body is voluntary, with stakeholder organizations selecting the individuals to represent them.²³³ By contrast, only court-mandated state representatives serve on the Ganga's guardianship body.²³⁴ This situation is problematic given the Indian government's poor record of protecting the river²³⁵.

Attempts by the Ganga's legal guardians to overturn the UHC ruling reveal several dilemmas not previously contemplated by most RoN advocates.²³⁶ These dilemmas include the consequences of guardians not discharging their duties, and whether there should be an oversight system that penalizes negligent guardians.²³⁷ Until recently, people generally assumed that appointed guardians would be willing to protect nature's interests.²³⁸ The Indian case shows this may not always be true. Provisions for dealing with this may need to be built into future RoN laws based on New Zealand's guardianship model.

The Indian case also reveals a second unresolved dilemma inherent in the New Zealand model. The dilemma is that legal personhood status confers not only rights but also responsibilities and liabilities.²³⁹ The idea that rivers could be held liable for damage is something that has largely been ignored by RoN activists but is a topic central to the legal dispute in India.²⁴⁰ This is largely due to the use of *in loco parentis*.²⁴¹ This doctrine makes the guardians responsible for their wards and forces them to assume any

231. *Sentencia T-622/16*, *supra* note 7, at 140, 153–54.

232. *Id.* at 153–54.

233. *Id.*

234. *Salim* 2017, *supra* note 7, at 11–12.

235. Jason Burke, *Half of India's Rivers are Polluted, Says Government Report*, THE GUARDIAN (Apr. 7, 2015), <https://www.theguardian.com/world/2015/apr/07/half-india-rivers-polluted-new-government-report>.

236. O'DONNELL, *supra* note 210, at 169–70.

237. Ashish Kothari & Shrishtee Bajpai, *We Are the River, the River Is Us*, 52 ECON. & POL. WKLY. 103, 105 (2017).

238. *Id.*

239. Schwemin, *supra* note 215, at 110.

240. *Compare* Kothari, *supra* note 237, at 103–04 (“For the river to have rights in the eyes of law would mean that a suit could be brought in the name of the river, injury can be recognised, the polluter can be held liable for harming, and the compensation will be paid that would benefit the river.”) *with* *Salim* 2017, *supra* note 7, at 11 (“[T]he Rivers Ganga and Yamuna...are declared as juristic/legal persons/living entities having the status of a legal person with all corresponding rights, duties and liabilities of a living person. . .”).

241. *Salim* 2017, *supra* note 7, at 11–12.

liabilities incurred by their charges.²⁴² When applied to rivers, this may suggest that rivers and their guardians may be liable for damages incurred by people and their property. While RoN advocates have not wanted to focus on this issue, it will have to be addressed to implement and copy the guardianship model in the future.

Finally, the case comparisons highlight the importance of combining guardianship with collaborative integrated management systems when legal personhood status is granted to ecosystems. The Whanganui and Ganga river cases do not delineate an explicit set of rights.²⁴³ Rather, they provide legal standing for the rivers to defend their interests.²⁴⁴ While guardians can respond to violations by going to court, it is more efficient to proactively address harmful activities through governance arrangements.²⁴⁵ For this reason, a crucial aspect of the New Zealand and Colombian systems is the involvement of a variety of local stakeholders. This greatly strengthens the guardians' ability "to understand complex issues, to withstand pressure to compromise the river's interests, or reach resolution in the case of disputes."²⁴⁶ This kind of collaborative, integrated watershed-management body was not part of the UHC order.²⁴⁷ As Kothari and Bajpai note, however, it could potentially be added "as the operational aspects of the order are worked out" via the Supreme Court's review.²⁴⁸

242. *Id.*

243. *Id.* at 11 (designating the means by which the Ganga and Yamuna rivers will be legally recognized); Te Awa Tupua Act 2017, s 14 (recognizing that Te Awa Tupua has rights, without explaining what those rights are).

244. *Salim* 2017, *supra* note 7, at 11; Te Awa Tupua Act 2017, s 14.

245. Kothari, *supra* note 237, at 106.

246. *Id.* at 105.

247. *Salim* 2017, *supra* note 7, at 2.

248. Kothari, *supra* note 237, at 105. . . .

THE SAGA OF JERUSALEM’S EIN LAVAN SPRING: HOW THE HUMAN RIGHT TO DEVELOPMENT TRUMPS RIGHTS OF NATURE

*Rachelle Adam**

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INTRODUCTION

Ein Lavan, “White Spring,” named for the white color of surrounding bedrock, is located in the Refaim Stream National Park in Jerusalem.¹ The spring flows year-round out of a cave from its groundwater source, streaming into two ancient pools carved out of the hillside landscape.² Ein Lavan is part of a narrow ribbon of similar springs encompassing

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1. Rachelle Adam, *Securing Rights for the Ein Lavan Natural Spring*, EARTH L. CTR. (Nov. 15, 2018), <https://www.earthlawcenter.org/blog-entries/2018/11/securing-rights-for-the-ein-lavan-natural-spring>; see also *Things to do in Israel*, ATTRACTIONS IN ISR. (Aug. 14, 2011), <http://www.attractions-in-israel.com/jerusalem-area/jerusalem-parks/ein-lavan---lavan-spring---en-lavan---nahal-refaim-nature-reserve/>.

2. Adam, *supra* note 1; see also *Things to do in Israel*, *supra* note 2. See also Yoni Cohen, *Weekend Walk: Ein Lavan*, THE JERUSALEM POST (June 3, 2011 12:40PM), www.jpost.com/Travel/Around-Israel/Weekend-Walk-Ein-Lavan; Yishaysho, *Ein Lavan Spring*, GEOCACHING (Nov. 20, 2010), www.geocaching.com (login and search “Ein Lavan Spring”) (describing the spring).

Jerusalem.³ These springs were the critical elements of ancient settlements nestled within biblical agricultural landscapes, festooned with terraces that supported intensive farming for Iron Age farmers.⁴ This area has been described as the cradle of agriculture of the Kingdom of Judea, dating to around 900 B.C.E. Consensus holds that these springs must be preserved and protected as important natural and cultural assets.⁵

Ein Lavan is a critical water source for the rich biodiversity of its surrounding lands. In addition, as a naturally flowing spring in an urban setting within an arid country, Ein Lavan provides unique cultural and recreational services. Israel has few surface water sources thus enhancing the value of Ein Lavan, widely used by landlocked and beach-less Jerusalemites (in contrast to the denizens of Israel's coastal Mediterranean cities), "thirsty" for a cool dip in a natural spring during the long and hot summers.

Yet Ein Lavan is under threat; the government is promoting a development plan extending throughout the spring's watershed that, according to scientists, is liable to kill the spring by cutting it off from its underground water sources.⁶

I propose to frame a discussion of Ein Lavan within the context of the human right to development versus rights of nature, and specifically from the biocentric viewpoint of the spring itself. Currently, Ein Lavan is a vividly alive natural spring enjoying its flow of water from a watershed still mostly in a natural state.⁷ The spring thrives within its ecosystem. It is fed by an underground system of water as well as runoff from a natural area still relatively free of the blight of urban pollution.⁸ Most importantly, the spring is protected by Art. 6 (6) of Israel's Water Law—that guarantees its

3. Adam, *supra* note 1; see also Ron Havalio, presentation submitted in objection to the Reches Lavan plan (on filw with author)

4. *Id.*

5. YOSSE BAR, (2018) (Expert opinion of Yossi Bar on the impact of the development of Reches Lavan on the Ein Lavan spring, attached to the objection submitted by the Society for the Protection of Nature in Israel regarding District Masterplan 1/30/1, January 8, 2018).

6. Zafir Riant, *Environmentalists Up in Arms Against Massive Jerusalem Housing Drive*, HAARETZ (Jul. 23, 2018) <https://www.haaretz.com/israel-news/.premium-environmentalists-up-in-arms-against-massive-jerusalem-housing-drive-1.630167> (describing a conservation group's concern for the Ein Lavan's value from groundwater and water ecology).

7. Adam, *supra* note 1; see also *Things to do in Israel*, *supra* note 1 (describing the characteristics of the Ein Lavan).

8. See Zafir Rinat, *Environmentalists Up in Arms Against Massive Jerusalem Housing Drive*, HAARETZ (Jul. 24, 2018) <https://www.haaretz.com/israel-news/.premium-environmentalists-up-in-arms-against-massive-jerusalem-housing-drive-1.630167> (describing the importance of the spring for groundwater and water ecology and stating opposition of developing the spring from its natural state). See also Adam *supra* note 2 (describing the importance of the natural water to the arid area).

right to water.⁹ Yet forces unknown to the spring hover menacingly, undermining its right to water. Laws granting rights to voiceless nature can be conveniently ignored by governments more interested in expanding their economies while ignoring planetary boundaries. While there are brave judges who issue judgments that fly in the face of political considerations and corporate interests, and the general proclivity of governments to grow, develop, and expand courts in general tend to toe the line and issue judgements conforming to government policy, sometimes even under government threats.¹⁰

Part I describes the impending dangers to the Ein Lavan Spring. Part II discusses the underlying causes behind the development plan and their impact on Israel generally. It also discusses how, through technology, Israel has succeeded in overcoming water scarcity, and the role of technology in the development plan. Part III addresses the Ein Lavan case as a conflict between the human right to development and rights of nature: bringing examples of similar cases from other countries. Part IV discusses nature's right to water under Israel's Water Law, and Ein Lavan's legal position under the law. Part V examines the situation today regarding Ein Lavan, and raises various scenarios regarding litigation in the name of the spring. Part VI summarizes and concludes this article.

I. EIN LAVAN UNDER THREAT

A development plan for 5,000 housing units over an area of 550 dunams (0.55 sq/km) threatens Ein Lavan in "Reches Lavan" or, "the White Ridge"—a key Jerusalem nature site abutting the spring.¹¹ Reches Lavan comprises Ein Lavan's watershed area that extends throughout this forestland marked for massive development.¹² In addition to housing, the

9. See generally Water Law, 571901959, SH 1361 (Isr) (declaring "[a]ny right for water is linked to... [p]rotection and restoration of natural and landscape values, including springs, rivers, and wetlands).

10. See DAVID BOYD, *THE RIGHTS OF NATURE, A LEGAL REVOLUTION THAT COULD SAVE THE WORLD* 179 (2005) (discussing examples of negotiations canceled after phone calls with the prime minister).

11. Decisions of the District Planning and Building Committee for Jerusalem, from July 17 and July 28 2019, at 2, para 1 [Hebrew] (hereinafter "Decisions").. See generally Zafir Rinat, *Environmentalists Up in Arms Against Massive Jerusalem Housing Drive*, HAARETZ (Jul. 23, 2018) <https://www.haaretz.com/israel-news/.premium-environmentalists-up-in-arms-against-massive-jerusalem-housing-drive-1.6301617> (discussing the proposed housing complex and its impact on Reches Lavan); see also Adam, *supra* note 1.

12. Adam, *supra* note 1; see also Rinat, *supra* note 8 (describing the natural area and the potential impacts of the urban development)

plan includes areas for commerce, light industry, public institutions and hotels.¹³

Reches Lavan is characterized by its high hydrological sensitivity. Experts hold that construction of the new neighborhood will likely dry up Ein Lavan and other springs in the area.¹⁴ The construction will block underground flow paths to the spring, sealing the spring off from its natural inflow.¹⁵ Excavations are likely to cause fragmentation of karstic flow systems and impede the movement of groundwater.¹⁶ Moreover, by covering the area with cement and asphalt, the construction will divert runoff that naturally filters down to the aquifer as groundwater recharge.¹⁷ Residential, industrial, and commercial areas are likely to become sources of sewage and other contaminants, seeping into groundwater through cracks in the ground and polluting both land and water.¹⁸ Construction of the new neighborhood also threatens the following ecosystem services: (1) rainwater percolation,¹⁹ (2) the supply of clean air and drinking water, (3) carbon sequestration, (4) climate regulation, (5) soil creation and conservation, (6) biodiversity support, and (7) cultural and recreational activities.²⁰

Despite the critical contribution of these services to the health and welfare of Jerusalem's residents, the current planning system does not provide mechanisms for incorporating their value into decisions on the conversion of forests and other natural areas to high-density residential and commercial uses. Hence the decision to deposit the plan was approved without an in-depth discussion on the impact of their loss. Moreover, Ein Lavan's rights to water under law, and generally its right to continue to exist and to thrive, were simply not considered. The Jerusalem district

13. Adam, *supra* note 1.

14. *See id.* (describing how the construction will stop the functions of rainwater and percolation, and will seal off the area from natural water flow).

15. *Id.*

16. *See* Guoping Ding et al., *Modelling Study on the Impact of Deep Building Foundations on the Ground Water System*, 22 WILEY INTERSCIENCE 1857 (2008) (discussing how building in coastal cities can affect groundwater flow).

17. Adam, *supra* note 1; *see also* Jonathan M. Harbor, *A Practical Method for Estimating the Impact of Land-Use Change on Surface Runoff, Groundwater Recharge and Wetland Hydrology*, 60 J. OF THE AM. PLAN. ASS'N. 95, 95 (2007) (describing the impact of development's impervious surfaces on runoff and groundwater).

18. *See generally id.* (describing the impact of runoff volume on areas undergoing land use changes). *See also* the planning committee's response to the argument that the development will increase the pollution of aquifer recharge, that "water samples of the springs in the area indicate pollution... from land use in Moshav Ora and particularly from old septic tanks", 41

19. Adam, *supra* note 1.

20. *See generally* Susan M. Stein et al., *Forest on the Edge*, U.S. Forrest Services, https://www.fs.fed.us/openspace/pubs/gtr_wo78%20pg36-40.pdf (last visited Feb. 15, 2019) (discussing the repercussions of housing development on various ecosystem services); Adam, *supra* note 1.

planning and building committee²¹ decided that although “the local springs have great importance ecologically and historically and are a cultural and recreational resource . . . even if after all efforts to prevent it, the springs dry up, *the public need for this plan justifies its approval, despite its impact on the springs.*”²²

II. UNDERLYING CAUSES

Understanding the planning committee’s decision requires an identification of the underlying causes that have shoved Israel (and other countries) into its current environmental crisis. Israel’s population is growing rapidly and by 2065 will reach 20 million from the current 8.7 million.²³ Israel is experiencing high economic growth, fast-growing consumption and a rising standard of living.²⁴ Furthermore, geographically, Israel is located in an arid region characterized by chronic water scarcity—by 1980, water use reached the total capacity of freshwater.²⁵

Historically, Israel has solved its water shortage by creating more water.²⁶ The country generates extensive use of treated wastewater effluents for irrigation in agriculture.²⁷ Today, roughly 90 percent of the wastewater generated is reused,²⁸ marking Israel as the world’s leading country in water reuse.²⁹ Since the beginning of this century, Israel ranks high in the production and use of desalinated water, which makes up approximately 70

21. Hereinafter “the planning committee”, or, “the committee”.

22. Adam, *supra* note 1.

23. See Lidar Grave Lazi, *Israel’s Population to Reach 20 Million by 2065*, The Jerusalem Post (May 21, 2017) <https://www.jpost.com/printarticle.aspx?id=492429#> (reporting that Israel’s population will be 20 million by 2065); See David Krivine, *Houses for Israel’s Growing Population*, 67 INT’L LAB. REV. 262, 262 (1953) (describing Israel’s growing population). Adam, *supra* note 1.

24. ORGANISATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT, OECD ECONOMIC SURVEY: ISRAEL 10, 34 (2018).

25. ARTHUR WIENER, LEVELS OF CONTROL IN WATER QUALITY UNDER CONDITIONS OF SCARCITY, IN WATER QUALITY MANAGEMENT UNDER CONDITIONS OF SCARCITY: ISRAEL AS A CASE STUDY 18 (Hillel I. Shuval ed., 1980).

26. See Kole Kelly, *Let There Be Water: Israel’s Solution for a Water-Starved World*, 21 U. DENV. WATER L. REV. 267, 268 (2018) (describing mechanisms used by Israel to better manage water resources).

27. See Melanie Lidman, *Desalination isn’t the magic bullet, Water Authority warns Israelis*, TIMES OF ISRAEL, (June 5, 2018), <https://www.timesofisrael.com/desalination-isnt-the-magic-bullet-water-authority-warns-israelis> (mentioning the amount of water relied on for agriculture and how, at times of drought, water use is restricted); see also Adam, *supra* note 1.

28. See Zafir Rinat, *Israeli Wastewater Policy Continues to Pay Off*, HAARETZ (March 23, 2015), <https://www.haaretz.com/life/premium-israeli-wastewater-policy-continues-to-pay-off-1.5341228> (asserting that 90 percent of wastewater makes it to water treatment facilities).

29. Zafir Rinat, *Israel is Undisputed World Leader in Using Purified Wastewater for Crops*, HAARETZ (Dec. 11, 2016 11:44 PM), <https://www.haaretz.com/life/premium-israel-is-undisputed-champion-in-using-purified-wastewater-for-crops-1.5472512>.

percent of Israel's drinking water supply.³⁰ The question of sustainability of the extensive reuse of effluents and massive desalination looms large over Israel's formidable success in overcoming its chronic water scarcity. To further complicate the issue, an admirable goal of government policy in its sweeping use of desalinated water is to cut back on pumping groundwater,³¹ allowing the restoration of natural inflow to denigrated streams and springs.

Yet while technology can increase Israel's water reserves, it cannot do the same for Israel's land reserves.³² Israel's high rate of population growth has led to an ever increasing demand for housing, leading to the loss of natural areas to new neighborhoods, such as the development plan threatening Ein Lavan.³³ Israel's laws and official policy recognize Ein Lavan's and other wetlands' right to water.³⁴ However, other government policy in expanding the economy and increasing the country's GDP, together with a rapidly expanding population, determine policy de facto.³⁵ Human needs unquestionably take priority in the allocation of ecosystem goods and services.³⁶ As a result, laws recognizing rights of nature are rendered powerless when faced with formidable political forces demanding construction of massive new neighborhoods in a geographically small country.³⁷

30. See generally Lidman, *supra* note 27 (speaking about Israel's general need for clean water); see also Josef Federman, *Israel Solves Water Woes with Desalination*, PHYS.ORG: TECHNOLOGY, ENERGY, & GREEN TECH (May 30, 2014), <https://www.timesofisrael.com/desalination-isnt-the-magic-bullet-water-authority-warns-israelis> (estimating the "[r]oughly 35percent of Israel's drinking-quality water now comes from desalination. That number is expected to exceed 40 percent by next year and hit 70 percent in 2050."); Adam, *supra* note 1.

31. See generally Lidman, *supra* note 29.

32. See *Israeli Cabinet Looking into Plans for Construction of Artificial Islands*, PRESSTV (Jan. 8, 2018), <https://www.presstv.com/Detail/2018/01/08/548221/Israel-artificial-islands-coast> (discussing the technology available to purify drinking water, while also addressing the lack of land to build infrastructure and housing).

33. On over=population in Israel see 1 Generally on population in Israel see Alon Tal, *The Land is Full: Addressing Overpopulation in Israel* (2016); Alon Tal, *Racing Towards Disaster: Israel's Unsustainable Population Bomb*, THE JERUSALEM POST (Mar. 13, 2015) <https://www.jpost.com/printarticle.aspx?id=504249> (describing Israel's booming population has the government scrambling to 60,000 new housing units a year); Adam, *supra* note 1.

34. See generally ISRAEL MINISTRY OF ENVIRONMENTAL PROTECTION, WATER AND WASTEWATER (2012), <http://www.sviva.gov.il/English/Legislation/Pages/WaterAndWastewater.aspx> (compiling a comprehensive list of Israel's water legislation in English).

35. See generally Yoram Gabbay, *Israel at an Economic-policy Crossroads*, Haaretz (Feb. 18, 2016) <https://www.haaretz.com/israel-news/business/.premium-israel-at-an-economic-crossroads-1.5405807>.

36. Adam, *supra* note 1.

37. *Id.*

III. THE HUMAN RIGHT TO DEVELOPMENT VERSUS RIGHTS OF NATURE

Ein Lavan illustrates the conflict between the human need for shelter, versus nature's need for habitat and water. By returning to a "rights" context, the conflict can be framed as the universally recognized human right to development³⁸ versus the unrecognized rights of nature.³⁹ The right to development, along with the human rights to shelter, water, property, employment, and family—while worthy and necessary rights—can readily be abused as justification for economic growth and massive consumerism,⁴⁰ which exploits nature as an unlimited repository of commodities, feeding the economy and the consumption addiction of humans.⁴¹ Human needs are the moral and legal justification for governments' and corporations' illegal and immoral activities that exploit the human right to development, and drive the worsening ecological crisis.

This is particularly evident in countries rich in forests, minerals, and fossil fuels, sought by wealthy and powerful corporations in cahoots with governments for lucrative profits.⁴² Ecuador is a particularly salient example of the gap between laws granting rights to nature and the implementation of these laws.⁴³ In 2008, Ecuador created a world-renowned constitution that includes a chapter on the rights of nature.⁴⁴ The Constitution acknowledges that nature in all its life forms has the *right to exist, persist, maintain and regenerate its vital cycles*.⁴⁵ The Constitution authorizes the Ecuadorian people to enforce these rights on behalf of

38. See Declaration on the Right to Development, Adopted by General Assembly resolution 41/128 of 4 December 1986, <https://www.ohchr.org/en/professionalinterest/pages/righttodevelopment.aspx>.

39. See generally UNIVERSAL DECLARATION OF RIGHTS OF MOTHER EARTH, April 22, 2010, <http://therightsofnature.org/wp-content/uploads/FINAL-UNIVERSAL-DECLARATION-OF-THE-RIGHTS-OF-MOTHER-EARTH-APRIL-22-2010.pdf> (addressing the unrecognized rights of nature at the World People's Conference on Climate Change and the Rights of Mother Earth in Cochabamba, Bolivia).

40. See generally Neva Goodwin et al., Consumption and the Consumer Society, Global Development And Environment Institute (2008), http://www.ase.tufts.edu/gdae/education_materials/modules/Consumption_and_the_Consumer_Society.pdf.

41. Roberto Bermejo Gómez de Segura, HANDBOOK FOR A SUSTAINABLE ECONOMY 24 (2014).

42. See generally GRANT WILSON ET AL., EARTH L. CENTER, FIGHTING FOR OUR SHARED FUTURE: PROTECTING BOTH HUMAN RIGHTS AND NATURE'S RIGHTS (2016).

43. *Id.* at 88-89.

44. CONSTITUTION POLITICA DE LA REPUBLICA DEL ECUADOR, Oct. 20, 2008, art. 71-74, translated in Political Database of the Americas, available at bda.georgetown.edu/Constitutions/Ecuador/english08.html.

45. WILSON, *supra* note 42, at 4.

ecosystems.⁴⁶ Yet, the Ecuadorian government is guilty of multiple violations of both its own constitution and universal human rights,⁴⁷ These violations including the government's involvement in the murders of indigenous leaders protesting "mining, oil extraction, hydroelectric dams and colonization of the indigenous lands by Transnational Corporations . . . [that] are committing Human Rights abuses and violate economic, social and cultural rights."⁴⁸ In a much-publicized incident, the government granted permits for fossil fuel extraction in the Dasani nature reserve despite its initial opposition.⁴⁹ The government also granted permits to foreign corporations for mining gold in the Mirador mine in Ecuador's Amazon rainforest.⁵⁰ The mining destroyed hundreds of thousands of hectares of protected rainforest and its incredibly rich biodiversity.⁵¹ The indigenous Shaur, who inhabit the area and who have been protesting the mine, were subject to brutality and violence at the hands of the developers.⁵² One indigenous protester was murdered days before he was meant to testify against the mine at the International Tribunal on Rights of Nature in Lima, Peru.⁵³

The 2017 protest of the Standing Rock Sioux Tribe against the North Dakota access pipeline has been framed by the US government and corporations as an attack on development and the general good of the United States.⁵⁴ The tribe was protesting the threat to their health, environment, water, and culture from the pipeline carrying half a million gallons of crude oil each day, The Tribe also protested the authorities' lack of consultation regarding the location of the pipeline. Yet the tribe and

46. LINDA SHEEHAN & GRANT WILSON, EARTH L. CENTER, FIGHTING FOR OUR SHARED FUTURE: PROTECTING BOTH HUMAN RIGHTS AND NATURE'S RIGHTS 9 (2015).

47. Silvio, *Leaders from Peru and Ecuador Reunited in Bomboiza*, PROTECT ECUADOR (July 9, 2013) <http://protectecuador.org/indigenous-leaders-from-peru-and-ecuador-reunited-in-bomboiza/>.

48. *Id.*

49. John Vidal, *Drills for Oil on Edge of Pristine Rainforest in Yasuni*, THE GUARDIAN (Apr. 4, 2016), <https://www.theguardian.com/environment/2016/apr/04/ecuador-drills-for-oil-on-edge-of-pristine-rainforest-in-yasuni> (discussing the drilling efforts in Ecuador's Rainforest despite the country's recognition of the rights of nature).

50. Mazabanda C. et al., *Impacts of Mining Project "Mirador" in the Ecuadorian Amazon*, MONITORING OF THE ANDEAN AMAZON PROJECT (2018), <https://maaproject.org/mirador-ecuador/>.

51. Silvio, *supra* note 47.

52. *Id.* at 88.

53. Jonathan Watts & Dan Collins, *Ecuador Indigenous Leader Found Dead Days Before Planned Lima Protest*, THE GUARDIAN (Dec. 6, 2014), <https://www.theguardian.com/world/2014/dec/06/ecuador-indigenous-leader-found-dead-lima-climate-talks>.

54. See ENERGY TRANSFER LP, *Dakota Access Pipeline Facts*, <https://dapipelinefacts.com/>.

other protestors who joined them were decried by the epitaph “eco-terrorists,” as destroyers of public property, threatening personal safety, and undermining the public need to expand infrastructure in making the U.S. energy independent.⁵⁵

And the list goes on, Canadian tar sands, fracking in the United States and other countries, palm oil plantations in Malaysia and Indonesia and South American countries as well, logging of rainforests, mining for gold and other minerals in highly sensitive lands, these crimes of ecocide are being committed in the name of development.⁵⁶ Governments and corporations justify corruption and ecocide under the guise of progress and development. Indigenous people defending their lands and homes, and other environmental defenders are accused of being anti-development and standing in the way of progress.⁵⁷ Many of these people have paid with their lives—hundreds have been murdered for protesting these incidents of ecocide and the numbers are growing from year to year, triggering not only an ecological crisis but a human rights crisis as well.⁵⁸

IV. NATURE’S RIGHT TO WATER UNDER ISRAELI LAW

The legal right of nature to water developed in Israel as a response to the degradation of Israel’s streams, springs, and other wetlands by intense human activity.⁵⁹ Israel’s Water Law evolved from a tool for intense urban, industrial, and agricultural development to a law also protecting nature’s rights to water.⁶⁰ At the Water Law’s initial adoption in 1959,⁶¹ water was perceived as a commodity for development. Yet evolving together with the growing awareness of the environmental crisis, a new chapter on pollution prevention was added in 1972.⁶² In 1991, stronger enforcement provisions

55. Craig Stevens, GAIN coalition spokesman, <https://www.desmoinesregister.com/story/money/business/2017/10/25/should-iowas-dakota-access-pipeline-protesters-face-terrorism-charges/796025001/>.

56. See EARTH LAW CENTER, *Fighting for our Shared Future*, <https://www.earthlawcenter.org/co-violations-of-rights/>.

57. *Id.*

58. WILSON ET AL., *supra* note 42; see generally GLOBAL WITNESS, DEFENDERS OF THE EARTH, GLOBAL KILLINGS OF LAND AND ENVIRONMENTAL DEFENDERS IN 2016 (2017) (highlighting the increasing suppression and murder of environmental and land rights activists).

59. *Id.*

60. See TAMAR KEINAN, WATER JUSTICE: WATER AS A HUMAN RIGHT IN ISRAEL 18 (Gidon Bromberg ed., Ilana Goldberg trans., Heinrich Boll Foundation 2005) (discussing how the water law’s aim is now to protect water sources from pollution); Adam, *supra* note 1.

61. Water Law, 5719-1959, § 1, 13 L.S.I. 173, (1959-1960) (Isr.).

62. Amendment to the Water Law, 1971, S.H.640.

were added to the law to strengthen pollution control.⁶³ Most recently in 2004, the law finally evolved to guarantee nature the right to water for the “conservation and restoration of nature and landscapes, including springs, streams and wetlands.”⁶⁴

The 2004 amendment was a direct response to the grievous state of Israel's streams.⁶⁵ They reflect the extreme development of the past 70 years that dried up wetlands and transformed streams into drainage and sewage canals.⁶⁶ Stream restoration became a national priority, supported by the 2000 government decision allocating 50 million cubic meters of water annually.⁶⁷ In 2002, a government masterplan for water management implemented allocations for stream restoration, defining nature as a legitimate consumer of water.⁶⁸ In 2003, the government issued a landmark policy paper entitled “Nature's Right to Water,” which recognized streams' entitlement to their own inflow rather than water from the national grid.⁶⁹

The concept of streams' rights to water was now driving government policy, which directly led to the 2004 “Nature's Right to Water” amendment to the Water Law.⁷⁰ The explanatory note to the amendment clarified that “the proposed law will create a legal framework for restoration . . . of . . . wetlands . . . it is proposed to add nature and wetlands to the list of those entitled to water and establish a right to water for nature. . . . Thus nature will also be taken into consideration when allocating water.”⁷¹

Can Article 6(6) of the Water Law ward off impending threats to Ein Lavan? The law has certainly not stopped the government from moving ahead with the development of its watershed. As noted above, when the issue is the public's needs for housing versus Ein Lavan's need for water, the government decided that “the public need for this plan justifies its

63. See Water Law, 5719-1959, SH 1361 (Isr) (providing stronger regulations on water pollution); Adam, *supra* note 1.

64. Water Law, 5719-1959, § 6 (1959-1960) (as amended) (Isr.) (translating Hebrew version of Water Law).

65. *Id.*; see Sharon Hophmayer-Tokich, *Water Pollution Control Legislation in Israel: Understanding Implementation Processes from an Actor-Centered Approach*, 5 Water 1393, 1407 (2013); see also Israel Ministry of Environmental Protection, *supra* note 32.

66. Adam, *supra* note 1.

67. *Id.*

68. *Id.*

69. See Keinan, *supra* note 60, at 18 (emphasizing that while the Water Law entitles all to the basic right of access to water, two supply problems exist in “connecting the unrecognized Bedouin villages to the national grid and the use of water cut offs to communities that have not paid their water debts to the national water company.”)

70. Water Law, 5764-2004 (2005) (as amended) (Isr.) (translating Hebrew version of Water Law).

71. *Id.*

approval, despite its impact on the springs.”⁷² If the plan is finally approved, environmental organizations and activists will undoubtedly petition for judicial review. Can Ein Lavan also petition the court challenging the government decision threatening its survival? The law recognizes the right of the spring to water but does not go further to declare the stream a legal person. While the original intention was to declare wetlands a legal entity, this provision did not make it to the final version of the amendment.⁷³ Streams and springs are legally entitled to water, however, humans have priority over nature in the conflict between humans’ rights to shelter and streams’ rights to water.⁷⁴ Whether Ein Lavan would be allowed into court, as a formal petitioner, remains unseen.

Could the public trust doctrine support the spring’s standing in court? Under Section 2 of the Water Law, “water sources belong to Israel’s public, subject to the control of the state.”⁷⁵ Government officials are public trustees for protecting the country’s ecosystems, streams, springs, plants, wildlife, and biodiversity, but the public is the beneficiary and not the actual ecosystem, stream, or spring.⁷⁶ The alternative would be to turn the public into trustees and nature into the beneficiary. However, this would require new legislation, which always problematic.

V. THE SITUATION TODAY

Government bureaucrats and planning committees, under pressure by politicians, worked furiously to gain approval of the development plan.⁷⁷ The plan was deposited in late December 2018. The planning committee justifying its deposit by declaring that the plan accurately reflects the balance between the need to address the housing shortage and the need to protect ecosystems.⁷⁸ Over the next several months the public submitted six thousand objections.⁷⁹ The opposition was led by Israel’s Society for the Protection of Nature (SPNI) that orchestrated a coalition of

72. Adam, *supra* note 1 (quoting a recent decision of the Jerusalem Region Building and Planning Committee).

73. David Schorr, המים חוק מתוקף ולא, למים הטבע זכות את מבטיה הישראלי הדין [Israel’s Laws Ensures the Right of Nature to Water and Not from Power of the Water Law], 8 ECOLOGY AND ENVIRONMENT 94, 94–96 (2017) (Hebrew); Adam, *supra* note 1.

74. Richard Laster & Dan Livney, *Israel: The Evolution of Water Law and Policy*, in THE EVOLUTION OF THE LAW AND POLITICS OF WATER 121, 136 (Joseph Dellapenna & Jpyeeta Gupta eds., 2009) (arguing that there exists a fragmented system when it comes to the relationship between human rights and rights of nature); Adam, *supra* note 1.

75. Water Law, *supra* note 61.

76. Laster & Livney, *supra*, note 74; see also Adam, *supra* note 1.

77. Water Law, *supra* note 61.

78. Decisions, *supra* note 12, 35.

79. *Id.* at 11, para 32.

likeminded organizations to create a forceful and unified response. Websites were set up for digital signing of objections. Experts in hydrology, ecology, zoology and economics were drafted to support the objections. Regularly scheduled hikes to Ein Lavan and Reches Lavan were offered to the public to persuade visitors to voice their opposition over the loss of this unique nature site. Four full-day hearings were held.⁸⁰ Tensions were high and the hearings often developed into rancorous squabbles within the crowded conference room of the planning committee.

The key argument throughout the hearings was that the development would cause irreversible harm consequential to the fragmentation of the ecological corridor that transverses the area, the desiccation of natural springs in the area, and destruction of the landscape.⁸¹ It was further argued that the harm was avoidable because of the potential for new construction within the city. This was a key issue during the hearings: the government argued that Jerusalem suffers from a severe housing shortage that could only be solved by building new neighborhoods, while the SPNI countered, on the basis of its own data, that building opportunities within existing neighborhoods offered the same number of housing units, avoiding the destruction of natural areas. Finally, the committee rejected these findings and its official position remained that the acute housing shortage in Jerusalem justifies the development in Reches Lavan.⁸²

With the completion of the hearings, in July 2019 the district planning committee decided to approve the development plan. It noted the vast number of objections protesting the ecological damage that the development entails. The committee reiterated that the plan minimized the environmental impact and in particular by its scaled-down size that excluded highly sensitive areas adjacent to Ein Lavan.⁸³ Yet the committee admitted that “there is still no doubt that the development plan will . . . cause environmental harm. . . . Implementing the plan will expose the top layer of soil, harming the natural plant diversity including protected and rare species, reduce in size the range lands of the Israeli Gazelle, increase human activities [in the vicinity of the spring] as well as air pollution and noise . . . and the spread of invasive species. . . .”⁸⁴

As to the plan's impact on aquatic ecosystems, the committee responded that the plan provides for the implementation of a model developed to ensure groundwater recharge. The model calls for construction of a series of

80. *Id.* at 12, para 34.

81. *Id.* at 31-43.

82. *Id.* at 11-12; *see generally*, 13-31.

83. *Id.* at 34.

84. *Id.* at 33.

artificial pools designed to catch runoff and secure aquifer recharge as well as to safeguard the spring's natural flow. But the committee admitted that because of the model's limitations, the assumption underlying the plan remains that the development could reduce the spring's current flow. To remedy this and prevent its desiccation, the plan provides for connecting the spring to external water sources, namely, Jerusalem's water supply.⁸⁵

Firing back the SPNI noted that "An artificial system, as sophisticated and well-invested as it might be, is not an alternative to a natural system . . . municipal tap water is a sorry and absurd alternative to natural spring flow. . . ."⁸⁶ And finally the committee held fast to its earlier decision that despite the probability of harm to the spring as a result of the development, notwithstanding the implementation of technology meant to minimize the harm, "the public need for housing justifies the plan's approval."⁸⁷

Following the planning committee's approval of the plan, seven objectors—both organizations and individuals—filed administrative appeals to the National Planning and Building Council, the country's highest planning authority. If the Council rejects the appeals, the next step will be petitions for judicial review to Israel's Supreme Court. As to the spring's right to water, the key question is whether Ein Lavan has standing to petition the court itself or would it have to rely on humans petitioners. Yet even if Ein Lavan succeeds in crossing the court's threshold to argue that the government's development plan for Reches Lavan violates its legal right to water the court would in all likelihood reject its claim. As its custom, the Court would defer to government experts testifying that the dire need for housing requires building in natural areas despite the impact on Ein Lavan, tossing out evidence on building opportunities within the city and Ein Lavan's right to water.⁸⁸ Human petitioners acting as guardians for the spring would find a similar fate in the court rejecting their arguments and yielding to government experts.

That of course does not mean that litigation in the name of the spring should not proceed. Multiple cases submitted in the name of rivers, streams, ecosystems, etc., suffering from a lack of water due to diverting it to human needs, will eventually drive the message home to the courts, government, and the general public. The lingering question is one of time: will we have time as agents of change to promote this revolution?

85. *Id.* at 38-39

86. SPNI objections Reches Lavan plan 101-0387449, February 2019, at 9 [Hebrew].

87. Decisions, *supra* note 78, at 38

88. *See generally* FRANK DANE, BORROWING LEGITIMACY: THE ISRAELI SUPREME COURT AND AMERICAN LAW (noting that the Israeli government is afforded special deference because it executes the will of the state).

CONCLUSION

I started writing this article while forest fires rage in northern and southern California, forcing members of my own family from their homes. As these fires raged, the U.S. federal government issued its report on climate change with dire findings.⁸⁹ As I complete the article, fires are ravaging Australia, destroying homes, towns, vast tracts of wilderness and forests, and reportedly killing roughly one billion animals. I question myself, while facing this crisis that threatens the future of life on earth, should I be writing about rights for nature, a seemingly esoteric issue with a medley of dissenters who mockingly argue that it borders on the absurd (rights for insects? For viruses? Microbes?)? Is this not similar to Nero fiddling while Rome burnt?⁹⁰

However, if the human species is to save itself from collapse, rights of nature are a critical tool to return our species to living within Earth's ecological limits. Rights of nature are not meant to extend well entrenched human rights—formally recognized by the international community since 1948 with the adoption of the UN Declaration of Human Rights—to non-human species, but rather to create a context within which to tackle the most fundamental drivers of today's ecological crisis.⁹¹ Reversing this crisis requires transforming the status of nature from human property, to an independent entity with its own legal rights. Adopting a biocentric perspective, nature has inherent value far beyond its worth to humans as property to be exploited for economic growth.

The frenetic pace of consumerism that engines the global economy is based on the belief in unlimited growth and an ever expanding global population (despite lower birth rates) together driving our civilization to a calamitous end.⁹² The overall goal is to change society's relationship to nature, from one of ownership over "natural resources" as raw material for the economy to one recognizing that humans and nature are intertwined on this planet. To protect human rights, we must recognize and protect nature's rights to thrive, evolve, and exist. It is not enough for laws to recognize

89. See generally FOURTH NATIONAL CLIMATE ASSESSMENT, <https://nca2018.globalchange.gov/> (last visited Feb. 15, 2009) (discussing the implications for not addressing climate change on the future, focusing on twelve areas including communities, the economy, interconnected impacts, etc.).

90. See generally *Did Nero really fiddle while Rome burned?* HISTORY (Nov. 20, 2012) <https://www.history.com/news/did-nero-really-fiddle-while-rome-burned> (telling the story of Nero fiddling while Rome burned).

91. *What is Rights of Nature?*, GLOBAL ALLIANCE FOR THE RIGHTS OF NATURE, therightsofnature.org/what-is-rights-of-nature/ (last visited Mar. 20, 2019); G.A. Res. 217 (III) A Universal Declaration of Human Rights (Dec. 10, 1948).

92. MEADOWS ET AL., *THE LIMITS TO GROWTH* (Potomac Associates 1972).

these rights. These laws are too easily tossed out in favor of the perceived needs and interests of humans and corporations. As David Boyd points in his book, “Not only our laws, but also our cultures require a fundamental reorientation, transforming humans from conquerors of nature to members of the planet’s community of life.”⁹³

The role of rights of nature is to counter the all-powerful right to development, as well as to challenge our belief that the earth’s resources are unlimited; that nature is indestructible and will recover from whatever we throw at it; and that we can populate, mine, manufacture, and consume without limits. On the positive side, rights of nature reminds us that our well-being is symbiotically intertwined with the well-being of nature.

93. DAVID R. BOYD, *THE RIGHTS OF NATURE: A LEGAL REVOLUTION THAT COULD SAVE THE WORLD*, 219 (Susan Renouf ed., ECW Press 2017).

CRUISING INTO A NEW ENERGY FUTURE: A LOOK INTO THE ENERGY TRANSITION IN THE CRUISE SHIP INDUSTRY

*Elias Ancharski**

The Cruise Ship Industry must invest further into liquefied natural gas (LNG) powered ships to become environmental stewards, to help meet future industry regulations, and to bridge the gap to a more sustainable fuel economy such as renewables. In an industry plagued with a devastating past, LNG offers hope to increase environmental awareness. Current regulations are constantly changing, forcing the cruise industry to adapt. The current environmental regulations are good but leave much to be desired. International and domestic organizations must take action to solve one of the ocean's biggest problems. LNG is not the final step in the process but one that provides more time while allowing us to cruise into a clean energy future.

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INTRODUCTION

Close your eyes and picture yourself lounging on a tropical beach. The waves are slowly crashing against the shore, the sand is warm beneath your toes, and in the distance, you see a cruise ship slowly coming into port. Once the cruise ship gets closer, you can see many patrons having a wonderful time on the upper deck while waiting to embark on island excursions. After your initial amazement wears off, you begin to think about the environmental and health impacts that could be associated with cruise ships. A bit of research uncovers some unpleasant facts and statistics about the negative environmental impacts of cruise ships. For example, cruise ships have a fuel efficiency of 0.0023 miles per gallon.¹ Cruise ships' fuel usage affects the air

1. See Erik Hinrichsen, *Cruise Ship Fuel Efficiency*, BRIGHT HUB ENG'G, <http://www.brighthubengineering.com/naval-architecture/100758-cruise-ship-fuel-efficiency/> (last updated Dec. 27, 2010) (discussing the fuel efficiency of Royal Caribbean's Oasis of the Seas while operating at the top speed of 26 miles per hour).

quality in all the corners of the world where the ships travel.² As the cruise ship industry rapidly grows, it becomes a larger percentage of the global use of dirty fuels; the cruise industry is responsible for an estimated three percent of all global greenhouse gas emissions.³

While this information is upsetting, the industry is beginning to change and support an environmentally sustainable approach to business. The companies, international organizations, and domestic regulators are addressing the negative environmental problems and are moving the industry in the right direction. Regulations are becoming stricter forcing the industry to adapt. Liquefied natural gas (LNG) powered cruise ships appear to be an attractive opportunity to comply with stricter emission standards and make positive change within the industry. LNG provides many benefits over the oil and gas fuels currently used in the shipping industry.⁴ One benefit includes a reduction in “nearly all types of air pollutants and carbon dioxide”⁵ Switching to LNG- powered ships has the potential to allow the industry to comply with regulations while reducing the negative impacts of ships on the beach you are currently enjoying.

This Paper examines the environmental and human effects of the cruise ship industry around the world while calling for changes in the fuel sources being used to power the ships. Part I examines the current environmental practices in the cruise ship industry, environmental and economic impacts, and what the industry is doing to change. Part II provides an overview of the relevant international and domestic forms of governance that control the cruise ship industry. Part III examines the shift from petroleum to LNG and its effect on the environment, arguing that companies need to look to LNG to meet regulations and to become better environmental stewards.

2. See Nicole Mölders, Scott Gende, & Michael Pierhalla, *Assessment of Cruise-Ship Activity Influences on Emissions, Air Quality, and Visibility in Glacier Bay National Park*, 4 ATMOSPHERIC POLLUTION RES. 435, 436 (2013) (noting cruise ships may produce sulfur dioxide, nitrogen-oxide, volatile organic compounds, carbon monoxide, ammonia, and particulate matter).

3. Eric V. Hull, *Missing the Boat on Protecting Human Health and The Environment: A Re-Evaluation of The EPA's Emissions Policy on Large Ocean-Going Vessels*, 81 TEMP. L. REV. 1035, 1045 (2008).

4. Mar. Highways Comm., *LNG as Ship Fuel: Effects on Ship Design, Operations and Supporting Infrastructure* (Jan 14, 2013), <http://www.lngbunkering.org/sites/default/files/2013%20HEC%20lng%20effect%20on%20ship%20design.pdf>.

5. U.S. ENERGY INFO. ADMIN., NATURAL GAS EXPLAINED: NATURAL GAS AND THE ENVIRONMENT, https://www.eia.gov/energyexplained/index.cfm?page=natural_gas_environment (last updated July 12, 2017).

I. CURRENT ENVIRONMENTAL PRACTICES IN THE CRUISE SHIP INDUSTRY

A. Scientific Data and Background on Cruise Ships

By nature, the cruise ship industry is linked directly to the planet's water system. Without water, there would be no cruise ships. And without cruise ships, there may be less pollution within the water. Concerns about the environmental impacts of cruise ships center around the water pollution that ships cause.⁶ While water pollution is a major concern, the world's air quality also needs to be considered.

Cruise ships run on different types of fuel.⁷ All of the fuels used by cruise ships generate air pollutants.⁸ Examples of air pollutants are sulfur dioxide (SO₂), nitrogen-oxides (NO_x), volatile organic compounds (VOC), carbon monoxide (CO), carbon dioxide (CO₂), ammonia (NH₃), and particulate matters (PM).⁹ Each of these pollutants affects human health and the environment in different ways. Not every cruise ship is created equal, and many factors—such as speed, weight, and fuel-type—will determine the type of and how many emissions are entering the air.¹⁰ Specifically, researchers look at “cruise-voyage data (position, cruise speed, operation mode) and the ships’ characteristics (engine power, size, fuel-type, maximum cruise-speed)” to estimate emissions.¹¹

Few studies focus on the environmental impacts cruise ship emissions have on air quality. One study assessed the impacts of cruise ships in Glacier

6. See U.S. GOV'T ACCOUNTABILITY OFFICE, GAO-RCED-00-48, MARINE POLLUTION: PROGRESS MADE TO REDUCE MARINE POLLUTION BY CRUISE SHIPS, BUT IMPORTANT ISSUES REMAIN 4 (2000) (noting number of illegal discharges to U.S. waters caused by cruise ships) [hereinafter MARINE POLLUTION]; U.S. ENVTL. PROT. AGENCY, CRUISE SHIP WHITE PAPER (2000), https://nmsmontereybay.blob.core.windows.net/montereybay-prod/media/resourcepro/resmanissues/pdf/white_paper.pdf (discussing petition to investigate cruise ship wastewater discharges); Claudia Copeland, CRUISE SHIP POLLUTION: BACKGROUND, LAWS AND REGULATIONS, AND KEY ISSUES 1 (CRS Reports RL32450, 2008) (describing types of cruise ship waste, many of which are water pollution); Andrew Schulkin, *Safe Harbors: Crafting an International Solution to Cruise Ship Pollution*, 15 GEO. INT'L ENVTL. L. REV. 105, 106–07 (2002) (noting cruise ships discharge waste into the ocean, causing environmental concerns).

7. See Molly Harris, *How are Cruise Ships Powered?*, USA TODAY, <https://traveltips.usatoday.com/cruise-ships-powered-30089.html> (last updated May 14, 2018) (listing different cruise ship fuels).

8. See Chloe Farand, *Air quality on cruise ship deck 'worse than world's most polluted cities', investigation finds*, Independent, (July 4, 2017), <https://www.independent.co.uk/news/world/pollution-cruise-ships-po-oceana-higher-piccadilly-circus-channel-4-dispatches-a7821911.html> (reporting high cruise ship emissions, especially with heavy fuel oils).

9. See Mölders et al., *supra* note 2, 436 (2013) (measuring emission rates of air pollutants); see also Christina Nunez, *Air Pollution, Explained*, NAT'L GEOGRAPHIC, <https://www.nationalgeographic.com/environment/global-warming/pollution/> (last visited Feb. 14, 2019) (noting carbon dioxide as an air pollutant associated with burning fossil fuels).

10. Mölders et al., *supra* note 2, at 435.

11. *Id.*

Bay National Park in Alaska.¹² Researchers chose Glacier Bay National Park for this case study because it is easier to pinpoint air pollution problems from the ships in areas where they are the only anthropogenic emission source, accounting for greater than 95% of all visitors.¹³ The cruise ships that visit the park are the major source of air pollution, in a geographical area that generally has little to no other pollution sources.¹⁴ After all, cruise ships often showcase exciting, new locations. Unfortunately, the ships have disproportionately larger effects on these areas due to the lack of development or other pollution sources.¹⁵

The study, *Assessment of Cruise-ship Activity Influences on Emissions, Air Quality, and Visibility in Glacier Bay National Park*, developed a model and performed emissions simulations to understand how management actions can modify the emissions impact.¹⁶ The study used a complex model that creates activity-based ship-emission inventories to determine the hourly emission rates for air pollutants, including sulfur dioxide.¹⁷ The cruise ships in the study used marine gas oil (sulfur content <1.5%) and intermediate fuel oil (sulfur content <4.5%) for the main engines.¹⁸ Once researchers determined the rates, they assigned the rates to the cruise ship's path using a calculated mean speed.¹⁹ It is important to note that cruise ships still need to run while docked at ports-of-call.²⁰ Thus, they are still creating emissions while at port, but at a different variable rate.²¹

After running the model and simulations, the study ended by determining the emissions for the 2008 cruise-ship season to serve as reference emissions.²² The study used the reference emissions to model how management of cruise ship factors affect air pollution.²³ The two management actions, a prescribed speed in the area and implementation of an Emission Control Area (ECA), drastically affect the emissions and air quality within Alaska.²⁴ On average, cruise ships emitted approximately 2.5 µg/m²/s PM in Glacier Bay.²⁵ Implementing a 6.69 m/s speed decreased PM-emissions by 32%.²⁶ The International Maritime Organization (IMO)

12. *Id.* at 436.

13. *Id.* at 435.

14. *See id.* (noting cruise ship emissions are major concern in area where there is no road).

15. *See id.* (noting no roads go into Glacier Bay National Park).

16. *Id.* at 436.

17. *Id.*

18. *Id.*

19. *Id.*

20. *Id.*

21. *See id.* (noting use of different emissions factors during berthing).

22. *Id.* at 444.

23. *Id.* at 435–445.

24. *Id.* at 438.

25. *Id.* at 435.

26. *Id.*

established the ECA in Alaska to reduce fuel sulfur content to 0.1% 1,000 ppm, and NOx emissions by 80% by 2016.²⁷ Using ECA standards reduced PM-emissions by 74%.²⁸

Emission rates vary depending on what the cruise ships are doing and how fast they are going.²⁹ “Emissions were highest close to ports and in front of glaciers . . . demonstrating that operating for longer periods in an area (berthing, maneuvering) at low loads can more than offset the increased emission rates when cruising through an area.”³⁰ Speed is another key factor that determines the emissions in an area.³¹ “Lifting speed limits means the engines are less frequently at low propulsion loads, at which emission rates increase with decreasing load for all species but SO₂ and NH₃, for which emission just increases with speed”³² These assertions help illustrate some of the factors that influence air pollution from cruise ships while giving scientifically-tested theories on how to mitigate the environmental problems associated with the cruise ship industry.

B. Environmental and Economic Impacts of the Cruise Ship Industry

The environmental impacts of cruise ships go beyond air pollution. Specifically, cruise ships also cause water pollution, several types of waste, and other human health concerns.³³ This Note will mainly focus on the emission and air pollution concerns. Before looking at the environmental impacts, it is important to understand the economics behind the cruise ship industry and what drives the \$117 billion dollar industry.³⁴ Cruise Lines International Association (CLIA) estimates there are more than 950,000 jobs globally in the cruise industry.³⁵ In 2016, more than 24 million passengers experienced a cruise—double the 11.5 million passengers in 2005.³⁶ CLIA estimates that 25.3 million passengers will sail in 2017.³⁷ As the number of passengers grow, so does the size of each company’s fleet, as well as the size of new ships.³⁸ The average ship size has been increasing by roughly 90 feet

27. *Id.* at 437.

28. *Id.* at 435.

29. *Id.* at 438.

30. *Id.*

31. *See id.* (noting changing cruise speed altered emission distribution).

32. *Id.*

33. *See* Schulkin, *supra* note 6, at 109–12, 118 (noting human health effects of cruise ship waste and how cruise ships contribute to water pollution).

34. CRUISE LINES INT’L ASS’N, 2016 ANNUAL REPORT (2016) [hereinafter ANNUAL REPORT].

35. *Id.*

36. *Id.*; Copeland, *supra* note 6, at 1.

37. ANNUAL REPORT, *supra* note 34, at 31.

38. Copeland, *supra* note 6, at 1.

every five years.³⁹ Currently the three biggest ships belong to Royal Caribbean Cruise Lines.⁴⁰ The largest is the *Harmony of the Seas*, measuring at 1,188 feet long and possessing the capacity to hold 6,687 passengers.⁴¹ Not only are the ships massive, the cruise ship industry also has a titanic effect on the global economy.

The size of the cruise ship industry helps put the pollution issues into perspective. However, the cruise industry has roughly 300 ocean-going vehicles—only a small percent of the 50,000 international commercial maritime ships.⁴² While relatively small in number, cruise ships still contribute a big share of pollution.⁴³ Cruise ships have historically used large diesel engines that burn large amounts of fuel; that fuel contains sizeable amounts of sulfur and other particulate matter (PM).⁴⁴ Because the large engines burn such dirty fuels, cruise ships are a significant source of pollution globally.⁴⁵

In 2000, the U.S. Environmental Protection Agency (EPA) estimated “large marine diesel engines accounted for about 1.6% of mobile source nitrogen oxide emissions and 2.8% of mobile source particulate emission in the United States”⁴⁶ Due to the disproportionate effects on certain areas, this number can significantly increase, as in Glacier Bay National Park.⁴⁷ This effect has also been seen in areas like Santa Barbara, where large marine engines contributed about 37% of total nitrogen oxide emissions.⁴⁸

Emissions, specifically diesel fuel emissions, have a history of negative human and global health effects.⁴⁹ Many of the pollutants, particularly particulate matter, can irritate and advance dangerous health problems such as asthma.⁵⁰ “Particulate matter is a mixture of extremely small particles and liquid droplets consisting of a number of components, including acids (such as nitrates and sulfates), organic chemicals, metals, and soil or dust particles.”⁵¹ Sulfur levels of fuels used by ships have a direct correlation to

39. *Id.*

40. Miquel Ros, *15 Biggest Cruise Ships in the World*, CNN (Dec. 3, 2018), <https://www.cnn.com/travel/article/worlds-biggest-cruise-ships/index.html>.

41. *Harmony of the Seas: Fast Facts*, ROYAL CARIBBEAN INTERNATIONAL, <https://www.royalcaribbeanpresscenter.com/fact-sheet/29/harmony-of-the-seas/> (last visited Mar. 12, 2019).

42. CRUISE LINES INT’L ASS’N, ENVIRONMENT SUSTAINABILITY REPORT 3 (2016) [hereinafter SUSTAINABILITY REPORT].

43. Copeland, *supra* note 6, at 7.

44. Hull, *supra* note 3, at 1045.

45. *Id.* at 1037.

46. Copeland, *supra* note 6, at 6.

47. See Mölders et al., *supra* note 2, at 435 (noting an increased number of cruise ships in Glacier Bay National Park).

48. Copeland, *supra* note 6, at 7.

49. Schulkin, *supra* note 6, at 112.

50. *Id.* at 113.

51. Hull, *supra* note 3, at 1040.

the volume of PM emissions.⁵² PM emissions have also been linked to ocean acidification because they enter the water supply and alter the normal pH balance necessary to maintain a suitable environment for the organisms living there.⁵³

Arguably, one of the biggest impacts from cruise ship emissions is the contribution to climate change. Anthropogenic greenhouse gases, such as CO₂, CH₄, and SO₂, contribute to global climate change.⁵⁴ Greenhouse gases “act to absorb terrestrial radiation reflected from the Earth’s surface that, in turn, causes global temperatures to rise.”⁵⁵ Sources emitting greenhouse gases, including cruise ships, are changing the global climate. As of 2008, the shipping industry emitted 5 to 6 percent of all greenhouse gas emissions and twenty percent of all SO₂ emissions.⁵⁶ All of these emissions mean that the relatively small shipping industry accounts for a significant portion of the total greenhouse gas emissions and, ultimately, contribute to anthropogenic climate change.

C. What the Cruise Ship Industry is Doing to Change Its Environmental Practices

While cruise ships may have a murky history of environmental stewardship,⁵⁷ the industry is taking great strides to preserve the environment and human health. Environmental conservation campaigns, commitments for the future, and technological advancements allow the cruise ship industry to reduce its impact on the environment.⁵⁸ Transitioning an entire industry overnight is not a viable option. But taking small steps toward environmental goals will help meet regulations and standards.

Cruise Lines International Association (CLIA) “is the world’s largest cruise industry trade association, providing a unified voice and leading authority of the global cruise community.”⁵⁹ Along with unifying the

52. *Id.*

53. Elizabeth Kolbert, *The Darkening Sea*, NEW YORKER, Nov. 20, 2006,

54. CHRIS WOLD ET AL., CLIMATE CHANGE AND THE LAW 6-7 (LexisNexis eds., 2nd ed. 2013).

55. Hull, *supra* note 3, at 1041.

56. Rachel Oliver, *Shipping’s Impact on the Air*, CNN, <http://edition.cnn.com/2008/WORLD/asiapcf/01/20/eco.about.ships/> (last visited Mar. 12, 2019).

57. See e.g., MARINE POLLUTION, *supra* note 6, at 40–52 (reporting incidents of illegal discharges of pollution, alleged pollution incidents, and violations involving pollution incidents from cruise ships from 1993–98).

58. *Royal Caribbean and the Environment*, ROYAL CARIBBEAN CRUISES LTD., <http://www.rclcorporate.com/environment/> (last visited Mar. 12, 2019); see *Sustainability*, CARNIVAL CORP. AND PLC, <http://phx.corporate-ir.net/phoenix.zhtml?c=140690&p=irol-sustainability> (last visited Mar. 12, 2019) (listing Carnival’s sustainability initiatives); *Sail & Sustain Environmental Program*, NORWEGIAN CRUISE LINE, <https://www.ncl.com/about/environmental-commitment> (last visited Mar. 12, 2019).

59. SUSTAINABILITY REPORT, *supra* note 42, at 4.

industry, CLIA actively promotes environmental sustainability for a safe and healthy experience for everyone.⁶⁰ Each year CLIA publishes several reports, including the Environmental Sustainability Report that highlights ongoing environmental practices in the industry.⁶¹ Examples of the environmental practices adopted by cruise corporations include prohibiting discharge of untreated sewage anywhere in the world, developing technologies to allow ships to “plug in” at port to reduce air emissions, and pledging \$2.5 million in support the Nature Conservancy’s work on global marine protection priorities.⁶² CLIA members invested over \$1 billion in advanced emission systems and alternative fuels, like liquefied natural gas.⁶³

Individual companies are changing the status quo by partnering with environmental conservation groups, developing environmental management plans, and increasing energy efficiency through the use of LED lights and solar panels.⁶⁴ Royal Caribbean Cruises LTD. (Royal Caribbean), one of the largest cruise corporations, emphasizes its positive relationship with the environment.⁶⁵ “Save the Waves” is Royal Caribbean’s environmental stewardship program focusing on four key principles: (1) reduce, reuse, recycle; (2) practice pollution prevention; (3) Go Above and Beyond Compliance program; and (4) continuous improvement.⁶⁶ Royal Caribbean partnered with the World Wildlife Fund and the University of Miami’s Rosenstiel School of Marine and Atmospheric Science to collaboratively research and “ensure the long-term health of the world’s oceans.”⁶⁷ Royal Caribbean’s sustainable practices include a \$100 million wastewater treatment system upgrade, engineering new hull and propulsion designs to maximize performance, and housing two laboratories on the Explorer of the Seas to study water pollution and climate change.⁶⁸ While impressive, Royal Caribbean’s partnerships and practices represent only a fraction of what the cruise industry is doing to promote environmental sustainability and stewardship.

Carnival Corporation & PLC (Carnival) publishes a yearly sustainability report to highlight current practices and promote their future goals.⁶⁹ Cruise

60. *Id.*

61. *Id.* at 3.

62. *Id.* at 5–6.

63. *See id.* at 6 (noting that investments in advanced emission systems and alternative fuels have been occurring over the past decade).

64. ROYAL CARIBBEAN CRUISES LTD., *supra* note 58.

65. *Id.*

66. *Id.*

67. *Community: World Wildlife Fund*, Royal Caribbean Cruises Ltd., <http://www.rclcorporate.com/community/#world-wildlife-fund> (last visited Mar. 23, 2019).

68. Kristin Underwood, *7 Ocean-Friendly Eco Cruises Hitting the High Seas*, TREEHUGGER (June 3, 2009), <https://www.treehugger.com/natural-sciences/7-ocean-friendly-eco-cruises-hitting-the-high-seas.html>.

69. CARNIVAL CORP. & PLC, SUSTAINABILITY FROM SHIP TO SHORE 8 (2017).

companies establish these goals and practices to remain in compliance with environmental regulations, but also to preserve the health and safety of the environment and patrons on board. One of Carnival's biggest commitments is to pioneer the use of LNG, specifically partnering with Shell Western LNG B.V. to supply the fuel.⁷⁰ Some of the benefits Carnival estimates include: zero sulfur dioxide emissions; 85% reduction in nitrogen oxides emissions; 25% reduction in carbon emissions; and 95%–100% reduction in particulate matter.⁷¹ Carnival is ahead of its scheduled reduction of carbon emissions and continues to reduce waste onboard ships.⁷² Carnival's sustainability report highlights and apologizes for violations of company policy and environmental laws that led to a plea agreement with the United States Department of Justice.⁷³

Moreover, Norwegian Cruise Line's mission is "to continually improve our sustainability culture through fresh innovation, progressive education and open collaboration."⁷⁴ Norwegian Cruise Line receives awards and accolades for their environmental commitment.⁷⁵ For example, the Maritime Award of Americas and the United States Coast Guard William M. Benkert Award for Environmental Excellence.⁷⁶ The State of Washington only allows Norwegian Cruise Line to operate in the "pristine" waters of Puget Sound because Norwegian Cruise Line led the industry by installing an eco-ballast system.⁷⁷ Additionally, Norwegian Cruise Line is retrofitting many of its ships with an exhaust gas cleaning system to "scrub away" sulfur dioxide and particulate matter.⁷⁸

The examples above describe technological advancements, commitments to the environment, and partnerships with environmental groups. This supports the proposition that the cruise ship industry is taking major strides to preserve the natural world we inhabit.

70. *Id.* at 9.

71. *Id.*

72. *Id.* at 11.

73. *See id.* at 9 (apologizing for the conduct of some employees who violated environmental laws); *see also* Gene Sloan, *Princess Cruises to Plead Guilty to Polluting Ocean*, USA TODAY (Dec. 2, 2016, 4:13 PM), <https://www.usatoday.com/story/news/nation/2016/12/01/princess-cruises-felony-plea-pollution/94726786/> (noting Princess Cruise ship discharged oily water into the ocean).

74. *Norwegian Cruise Line Environmental Commitment*, NORWEGIAN CRUISE LINE, <https://www.ncl.com/about/environmental-commitment> (last visited Mar. 12, 2019).

75. *Id.*

76. *Id.*

77. *See* Underwood, *supra* note 68 (describing an eco-ballast system that ensures "water leaving the ship does not send out toxin or other invasive species").

78. NORWEGIAN CRUISE LINE, *supra* note 74.

II. CURRENT ENVIRONMENTAL REGULATIONS THE CRUISE SHIP INDUSTRY MUST MEET

A. International Regulations

Many industries around the world follow regulations on an international and domestic scale. The cruise ship industry is no exception. Several international entities, such as the International Maritime Organization (IMO)⁷⁹ and the United Nations Convention on the Law of the Seas (UNCLOS)⁸⁰ currently exist to regulate the world's seas and waterways. While both fall under the purview of the United Nations, the distinction between the two entities before looking at what and how they regulate is imperative.

1. International Maritime Organization

The United Nations decided it would be more effective to improve maritime safety and pollution prevention on an international scale instead of on a country-by-country basis.⁸¹ In 1984, the United Nations adopted a convention establishing the International Maritime Organization (IMO).⁸² Currently, the IMO has 170 Member States, including the United States, and three Associate Members.⁸³ “Safe, secure and efficient shipping on clean oceans” is the official IMO slogan.⁸⁴ The IMO's technical organization contains committees and subcommittees, such as the Marine Environment Protection Committee (MEPC) and the Sub-Committee on Pollution Prevention and Response (PPR), which are responsible for carrying out many assigned duties.⁸⁵ These duties include “co-ordinating [sic] the Organization's activities in the prevention and control of pollution of the environment from ships.”⁸⁶

Among other responsibilities, the IMO establishes regulations preventing and dealing with pollution through the use of conventions and amendments.⁸⁷ The most significant and comprehensive plan to deal with

79. INT'L MARITIME ORG., <http://www.imo.org/EN/Pages/Default.aspx#1> (last visited Mar. 19, 2019).

80. Convention on the Law of the Sea, Dec. 10, 1982, 1833 U.N.T.S. 397.

81. INT'L MARITIME ORG., IMO – WHAT IT IS, at 1, Oct. 20, 2013, http://www.imo.org/en/About/Documents/What%20it%20is%20Oct%202013_Web.pdf [hereinafter IMO – WHAT IT IS].

82. *Id.* at 2.

83. *Id.*

84. *Id.*

85. *Id.*

86. *Id.*

87. *Id.*

pollution from ships came in 1973 when the IMO adopted the “first ever comprehensive anti-pollution convention,” the International Convention for the Prevention of Pollution from Ships (MARPOL).⁸⁸ In 1978, the Conference on Tanker Safety and Pollution Prevention expanded MARPOL to include operation and construction requirements.⁸⁹ This expansion is important because it allows MARPOL to address the sources of pollution, like cruise ships, not just the pollution itself.

MARPOL regulates most forms of pollution from ships, including oil, sewage, and air pollution.⁹⁰ The Convention is broken up into six Annexes that address several types of pollution and determine international objectives:⁹¹

- Annex I deals with regulations preventing pollution by oil.
- Annex II details the discharge criteria and measures for controlling pollution by noxious liquid substances carried in bulk.
- Annex III contains general requirements for issuing standards on packing, marking, labeling, and notifications for preventing pollution by harmful substances.
- Annex IV contains requirements for controlling pollution of the sea by sewage.
- Annex V deals with different types of garbage, including plastics, and specifies the distances from land and the manner in which they may be disposed of.
- Annex VI sets limits on sulfur oxide, nitrogen oxide, and other emissions from marine vessel operations and prohibits deliberate emissions of ozone-depleting substances.⁹²

The standard Annex ratification process is unique because they must be “ratified by a total number of member countries whose combined gross tonnage represents 50% of the world’s gross tonnage.”⁹³ Essentially, the bigger the polluter, the more influence they have on ratifying the proposed Annexes.

88. *Id.* at 10–11.

89. *Id.* at 11.

90. WOLDE ET AL., *supra* note 55, at 506.

91. Copeland, *supra* note 6, at 7.

92. *Id.*

93. *Id.* at 8.

Annex VI, adopted in 1997, sets the international air pollution limits on nitrogen oxides (NOx).⁹⁴ It prohibits deliberate emissions of ozone-depleting substances from marine vessel operations.⁹⁵ Also, Annex VI sets limits on the sulfur content of marine fuels used by ships.⁹⁶ Under Annex VI, the ship's registered country (flag state) must verify a ship's compliance with MARPOL's standards.⁹⁷ In North America, these requirements apply to ships within the Emission Control Area (ECA).⁹⁸ The North American ECA, where emission impacts are most felt, extends 200 nautical miles off the coast.⁹⁹ Cruise ships are not an exception to this rule and must follow the applicable standards when moving between the regulated areas.¹⁰⁰

A 2011 amendment to Annex VI implemented two energy efficiency standards for ocean-going ships: the Energy Efficient Design Index (EDDI) and the Ship Energy Efficiency Management Plan (SEEMP).¹⁰¹ EDDI requires ships to meet a minimum energy efficiency standard by choosing from different technologies and designs.¹⁰² Energy efficiency standards are "measured in CO2 emissions, per capacity mile (e.g. tonne mile) for different ship types (e.g., tankers, container ships)."¹⁰³ The SEEMP requires that ship operators implement an environmental management system that will monitor ship performance and increase energy efficiency.¹⁰⁴ Technology upgrades and review of operational practices are two ways for the cruise industry to meet SEEMP requirements.¹⁰⁵ The IMO estimates these programs will reduce CO2 emissions by 151.5 tons annually by 2020, which will translate into fuel savings of \$50 billion in 2020.¹⁰⁶ While these numbers are estimates for the entire shipping industry, cruise ships will see proportional reductions.¹⁰⁷ Liquified natural gas (LNG) offers one way that these ships can increase energy efficiency while reducing emissions.¹⁰⁸

94. IMO – WHAT IT IS, *supra* note 81, at 11; *MARPOL Annex VI*, U.S. ENVTL. PROTECTION AGENCY, <https://www.epa.gov/enforcement/marpol-annex-vi> (last visited Mar. 13, 2019) [hereinafter *MARPOL Annex VI*].

95. Copeland, *supra* note 6, at 8.

96. *MARPOL Annex VI*, *supra* note 94.

97. Copeland, *supra* note 6, at 8.

98. *MARPOL Annex VI*, *supra* note 94.

99. *Id.*; WOLD ET AL., *supra* note 54, at 507.

100. WOLD ET AL., *supra* note 54, at 507.

101. *Id.*

102. *Id.*

103. *Id.*

104. *Id.*

105. *Id.*

106. *Id.*

107. *Id.*

108. SUSTAINABILITY REPORT, *supra* note 42, at 15.

2. United Nations Convention on the Law of the Sea

The United Nations Convention on the Law of the Sea (UNCLOS) is a comprehensive agreement that establishes “the basic legal and institutional framework for ocean governance.”¹⁰⁹ In 1973, in the third UNCLOS, the General Assembly of the United Nations met in New York to form an international agreement that set guidelines for jurisdiction of the seas and marine resources.¹¹⁰ The agreement specifically mentions conservation of the living resources and the preservation of the marine environment.¹¹¹ As of November 6, 2017, UNCLOS has been ratified by 168 nations.¹¹² The United States refuses to ratify the Convention due to limits on seabed mining and exploration.¹¹³

A major function of UNCLOS is to resolve jurisdictional issues over marine areas.¹¹⁴ UNCLOS created a series of coastal zones: internal waters, territorial seas, contiguous zones, exclusive economic zones (EEZ), and high seas.¹¹⁵ Within these zones, environmental protections and conservation obligations exist to create rights and responsibilities for each member state, such as patrolling waters to deter polluters.¹¹⁶ Addressing pollution within each zone is crucial for cruise ships because each zone calls for different standards, forcing different types of procedures and strategies to come into effect during a voyage. Although UNCLOS sets the international standards, it fails to create effective enforcement measures, essentially leaving it to the states to “to prevent, reduce and control pollution of the marine environment.”¹¹⁷ Coastal states are only able to enforce pollution violations in their territorial seas and EEZs because many cruise ships register with foreign states.¹¹⁸

The international nature of the cruise ship industry makes it a challenging industry to govern. UNCLOS requires registration of ships in a flag state that

109. WOLD ET AL., *supra* note 54, at 525.

110. *Third United Nations Conference on the Law of the Sea*, UNITED NATIONS http://legal.un.org/diplomaticconferences/1973_los/ (last visited Mar. 13, 2019).

111. UNITED NATIONS, FINAL ACT OF THE THIRD UNITED NATIONS CONFERENCE ON THE LAW OF THE SEA 25 (1973) http://www.un.org/depts/los/convention_agreements/texts/final_act_eng.pdf.

112. *Chronological Lists of Ratifications of, Accessions and Successions to the Convention and the Related Agreements*, UNITED NATIONS, http://www.un.org/depts/los/reference_files/chronological_lists_of_ratifications.htm (last visited Mar. 13, 2019).

113. Schulkin, *supra* note 6, at 119.

114. WOLD ET AL., *supra* note 54, at 525.

115. *Id.*

116. *Id.*

117. See, e.g., Convention on the Law of the Sea (UNCLOS), art. 194, Dec. 10, 1982, 1833 U.N.T.S. 397 [hereinafter UNCLOS] (discussing measures to take to “prevent, reduce and control pollution of the marine environment from any source”); see also UNCLOS, art. 204 (monitoring the risks or effects of pollution on the marine environment); Schulkin, *supra* note 6, at 120.

118. Schulkin, *supra* note 6, at 120.

is responsible for regulating pollution and enforcing violations.¹¹⁹ However, the requirements for registration are weak, requiring only a “genuine link” between the ship and flag state without elaborating on what this “genuine link” is.¹²⁰ Such relaxed standards lead to the practice of cruise ship registration in states where the pollution laws and regulations are weak or non-existent.¹²¹ This does not mean that cruise ship operators are free to do what they want; they must follow the rules and regulations of any state’s water in which they enter, and they must follow their flag state’s laws when they are in international waters.¹²² Strengthening the registration requirements is one way that the international community can help alleviate pollution from ships skirting environmental duties by registering in places with the least restrictive regulations.¹²³

3. Relationship Between the IMO and UNCLOS

The Law of the Sea Convention “is acknowledged to be an ‘umbrella convention’ because most of its provisions, being of general nature, can be implemented only through specific operative regulations” in other international treaties.¹²⁴ UNCLOS establishes general obligations for governance that reference the IMO standards.¹²⁵ UNCLOS contains no standard specifications of its own.¹²⁶ Several IMO convention provisions give notice that their text “does not prejudice the codification and development of the law of the sea by UNCLOS or any present or future claims and legal views of any State concerning the law of the sea and the nature and extent of coastal and flag State jurisdiction.”¹²⁷

Many of the UNCLOS provisions reference the “competent international organization,” which has been widely accepted to mean the IMO.¹²⁸ One provision, Article 2, refers to the IMO as a legitimate state-utilized international forum for setting international standards.¹²⁹ Due to the

119. *Id.* at 119.

120. *Id.*

121. *Id.*

122. *Passenger Cruise Ship Information*, U.S. DEP’T. OF TRANSP <https://www.transportation.gov/mission/safety/passenger-cruise-ship-information> (last visited Mar. 19, 2019).

123. *See generally* Copeland *supra* note 6, at 7–8 (noting that many countries have ratified all MARPOL annexes, including Liberia and Panama, where a majority of cruise ships are flagged).

124. BARBARA KWIATKOWSKA ET AL., *INTERNATIONAL ORGANIZATIONS AND THE LAW OF THE SEA DOCUMENTARY YEARBOOK* (Martinus Nijhoff Publishers 1997).

125. ANNA MIHNEVA-NATOVA, *THE RELATIONSHIP BETWEEN UNITED NATIONS CONVENTION ON THE LAW OF THE SEA AND THE IMO CONVENTION* 14 (2005).

126. *Id.*

127. *Id.* at 7.

128. *Id.*

129. UNCLOS, art. 2; MIHNEVA-NATOVA, *supra* note 125, at 7.

specialized nature of the IMO, UNCLOS drafters saw the “efficiency of potentially higher standards adopted within IMO.”¹³⁰ As a result, UNCLOS drafters assume the IMO standards are the primary regulatory source for determining the shipping industry’s international obligations.¹³¹

Despite rarely being recognized as environmental leaders, the IMO and UNCLOS are the leading mechanisms for protecting the marine environment.¹³² The IMO primarily uses MARPOL to regulate maritime pollution.¹³³ Article 192 of UNCLOS establishes the general obligation “to protect and preserve the marine environment,” and Article 211 deals with pollution from vessels.¹³⁴ Article 212 addresses pollution from and through the atmosphere.¹³⁵ With the inclusion of the “competent international organization” clause, UNCLOS does not create new technical or pollution rules; rather it suggests the IMO standards are the ruling authority.¹³⁶

UNCLOS and the IMO actively protect the maritime environment but differ in their approach. UNCLOS emphasizes prevention and penalizes ocean discharges without specifying enforcement mechanisms, leaving this up to the coastal states.¹³⁷ The IMO, through MARPOL, addresses non-compliance with preventative measures whether or not non-compliance results in illegal discharges.¹³⁸ The shipping industry, specifically cruise ships, needs to be aware of the relevant environmental rules and regulations when hitting the open ocean.

The United States, like most countries, is concerned with protecting its coastal and marine environments. In regard to the IMO and MARPOL, the United States has ratified all the Annexes except for Annex IV; which requires sewage discharge controls.¹³⁹ The United States is the only industrialized nation that has not ratified UNCLOS due to concerns over the provisions limiting seabed mining and exploration.¹⁴⁰ While the United States is not a signatory to the Convention, many of the principal ideals can be found throughout domestic environmental regulation.

130. MIHNEVA-NATOVA, *supra* note 125, at 8.

131. Copeland, *supra* note 6, at 22.

132. MIHNEVA-NATOVA, *supra* note 125, at 15.

133. MARPOL Annex VI, *supra* note 94.

134. UNCLOS, art. 192; UNCLOS, art. 211.

135. UNCLOS, art. 212.

136. MIHNEVA-NATOVA, *supra* note 125, at 7.

137. *Id.* at 16, 18.

138. *Id.* at 16.

139. Copeland, *supra* note 6, at 8, 11.

140. Schulkin, *supra* note 6, at 119.

B. Domestic Regulations

Cruise ships are a fascinating topic from an environmental regulatory point of view, especially in the United States, due to the international and diverse nature of the industry. Many agencies, including the U.S. Coast Guard and the State Department, collaborate to regulate and enforce environmental practices within the cruise ship industry.¹⁴¹ While several agencies participate in the regulations and negotiations, the EPA is the main environmental regulatory and standard-setting body.¹⁴² United States environmental law is a vast, complex machine that works to preserve the environment while regulating industry in economically and environmentally sustainable ways. While this Paper deals with the environmental laws that regulate emissions from cruise ships, it should be acknowledged that cruise ship operators need to look at many sources of law to deal with the many types of environmental matters that arise.

The Clean Air Act (CAA) is one of the most complex federal laws that regulates emissions and air quality.¹⁴³ The CAA defines “air pollutant” as “any air pollution agent or combination of such agents, including any physical, chemical, biological, radioactive . . . substance or matter which is emitted into or otherwise enters the atmosphere.”¹⁴⁴ The CAA regulates air pollutants from stationary and mobile sources.¹⁴⁵ More specifically, in 2007, the Supreme Court in *Massachusetts v. EPA* gave the EPA the authority to regulate greenhouse gas emissions under the CAA.¹⁴⁶ This decision eventually allowed the EPA to regulate emissions from mobile sources on land and at sea.¹⁴⁷

In 2003, the EPA promulgated regulations for cruise ships.¹⁴⁸ Since then, the EPA has set standards to regulate emissions from Category 3 marine diesel engines on large vessels flagged in the United States.¹⁴⁹ The EPA continually reviews issues and technologies related to emissions in an effort

141. Copeland, *supra* note 6, at 9.

142. *Id.*; see, e.g. *Domestic Regulations for Emissions from Marine Compression-ignition (Diesel) Engines*, U.S. ENVTL. PROT. AGENCY, <https://www.epa.gov/regulations-emissions-vehicles-and-engines/domestic-regulations-emissions-marine-compression> (last visited Mar. 12, 2019) (listing EPA’s regulation concerning emissions from marine diesel engines).

143. 42 U.S.C. §§ 7401–7671(q) (2018); Copeland, *supra* note 6, at 9; WOLD ET AL., *supra* note 54, at 629.

144. § 7602(g); WOLD ET AL., *supra* note 54, at 629.

145. WOLD ET AL., *supra* note 54, at 629.

146. *Massachusetts v. Env’tl. Prot. Agency*, 549 U.S. 497, 497 (2007); WOLD ET AL., *supra* note 54, at 629.

147. See § 7521 (regulating emission standards from new motor vehicles or new motor vehicle engines); § 7547 (regulating emission from non-road engines and non-road vehicles).

148. Copeland, *supra* note 6, at 16.

149. § 7547, Copeland, *supra* note 6, at 16 (classifying Category 3 marine engines include container ships, tankers, bulk carriers, and cruise ships flagged or registered in the United States).

to set the standards for non-road engines and vehicles.¹⁵⁰ In 2004, Bluewater Network lost a challenge to the EPA's emissions standards for ocean-going vessels.¹⁵¹ The D.C. Circuit Court determined that the emissions standards were set to the same level as Annex VI of MARPOL and thus satisfied international standards and the CAA.¹⁵²

To further the goal of limiting emissions from ocean-going vessels, Congress enacted the Act to Prevent Pollution from Ships (APPS).¹⁵³ APPS is the United States legislation that implements provisions of MARPOL, specifically Annex VI regarding air pollution.¹⁵⁴ Not only does APPS apply to these standards to U.S.-flagged ships, the Act also applies to foreign-flagged vessels operating within the navigable waters of the United States.¹⁵⁵ The Coast Guard is working with the EPA to oversee and enforce violations of APPS, which may result in criminal or civil liability in the United States.¹⁵⁶ APPS creates a zone of enforcement called the North American Emission Control Area (ECA) in which ships must meet the most advanced standards for NOx emissions and use fuel with lower sulfur content.¹⁵⁷ Because the ECA extends 200 miles off the coast of the United States, the Coast Guard needs to stay vigilant in order to enforce APPS and protect the maritime environment.¹⁵⁸

III. HOW THE SHIFT FROM PETROLEUM TO LNG WILL AFFECT THE ENVIRONMENT

Many refer to natural gas as the "bridge fuel to the future" when looking at its economic and environmental impacts.¹⁵⁹ A shift to natural gas, specifically liquefied natural gas (LNG), will allow the shipping industry to meet its emission goals while greatly reducing its environmental impacts. The IMO implemented a global sulfur limit of 0.5% m/m (mass/mass) by 2020, representing a great reduction from the current 3.5% m/m global

150. Copeland, *supra* note 6, at 16.

151. Bluewater Network v. Env'tl. Prot. Agency, 372 F.3d 404, 405 (D.C. Cir. 2004).

152. *Id.* at 407.

153. See generally 33 U.S.C. §§ 1901–1915 (regulating marine pollution from ships in the United States); Copeland, *supra* note 6, at 8.

154. Copeland, *supra* note 6, at 8.

155. CRUISE SHIP WHITE PAPER, *supra* note 6.

156. MARPOL Annex VI, *supra* note 94.

157. *Id.*

158. *Id.*

159. JOSEPH P. TOMAIN & RICHARD D. CUDAHY, ENERGY LAW IN A NUTSHELL 317 (3d ed. 2017); Richard J. Pierce, Jr., *Natural Gas: A Long Bridge to a Promising Destination*, 32 UTAH ENVTL. L. REV. 245, 245 (2012).

limit.¹⁶⁰ Also, the IMO, working in tandem with the Cruise Line's International Association, set a mandatory 30% reduction in carbon emissions by 2025 for new ships.¹⁶¹ One way the cruise ship industry is attempting to meet these goals is switching from heavy fuel oil (HFO) to LNG powered ships.¹⁶² In doing so, the cruise ship industry is working to comply with international standards while improving their environmental stewardship and commitment to public health.¹⁶³ The cruise ship industry, along with the shipping industry at large, should look to LNG as a powerful driver of regulatory, health, and environmental revolution.

A. Evaluating the Environmental and Economic Impacts of LNG

In 2000, the EPA estimated that "large marine diesel engines accounted for about 1.6% of mobile source nitrogen oxide emissions and 2.8% of mobile source particulate emissions in the United States" ¹⁶⁴ These percentages drastically change in certain areas of the country, such as Baton Rouge and Santa Barbara, where cruise ships are more prevalent.¹⁶⁵ One way to reduce these numbers and meet the mandatory goals is to change fuel sources to LNG. Several cruise lines, including Royal Caribbean and Carnival, have a total of eight ships powered by LNG on order.¹⁶⁶ These ships, scheduled to be ready for 2019, will demonstrate the potential environmental and health benefits of LNG fuel sources.¹⁶⁷ Notably, the cost to build Royal Caribbean's Allure of the Seas and Oasis of the Seas cruise ships ranges from roughly \$150 million to just over \$1.4 billion.¹⁶⁸ Hopefully, as the benefits of LNG-powered cruise ships become apparent, more cruise liners will place more orders. This shift is important because of the potential environmental and economic benefits that come from utilizing LNG as a fuel source compared to HFO.¹⁶⁹

160. IMO Sets 2020 Date for Ships to Comply with Low Sulphur Fuel Oil Requirement, IMO (Oct. 28, 2016), <http://www.imo.org/en/MediaCentre/PressBriefings/Pages/MEPC-70-2020sulphur.aspx?platform=hootsuite>.

161. SUSTAINABILITY REPORT, *supra* note 42, at 3.

162. Joe Baker, *How are Cruise Operators Preparing for the IMO Sulphur Cap?*, SHIP TECHNOLOGY (May 21, 2018), <https://www.ship-technology.com/features/cruise-operators-preparing-imo-sulphur-cap/>.

163. SUSTAINABILITY REPORT, *supra* note 42, at 3.

164. Copeland, *supra* note 6, at 6.

165. *Id.*

166. SUSTAINABILITY REPORT, *supra* note 42, at 15.

167. *Id.*

168. *How Much Does a Cruise Ship Cost to Build*, OZCRUSING, <https://www.ozcruising.com.au/blog/how-much-does-a-cruise-ship-cost-to-build> (Mar. 3, 2015).

169. See Baker, *supra* note 162 (stating that using LNG is expected to reduce sulphur emissions by 99% and carbon dioxide emissions by up to 85% when compared to conventional HFOs).

According to the U.S. Energy Information Administration, “burning natural gas for energy results in fewer emissions of nearly all types of air pollutants and carbon dioxide (CO₂) than burning coal or petroleum products to produce an equal amount of energy.”¹⁷⁰ In the United States, building natural gas plants instead of coal-fired plants would reduce new greenhouse gas emissions by half.¹⁷¹ Some estimates state that LNG can greatly reduce air emissions from sources, specifically “nitrogen oxides by up to 80 percent and particulate matter by approximately 80 percent.”¹⁷² Ship engines running on LNG are clean-burning, meaning that levels of SO_x, particulate, and NO_x emissions are low.¹⁷³ LNG offers a cleaner source of energy than what cruise liners currently use to power cruise ships, thus making it a desirable move by the industry.

One of the best attributes LNG brings to the cruise ship industry is a dramatic reduction of sulfur content.¹⁷⁴ Reducing sulfur emissions will significantly help the shipping industry meet the 2020 IMO goals.¹⁷⁵ Aside from meeting the required emissions limits, reducing sulfur will drastically decrease cruise ships’ negative effects on human and environmental health. Sulfur emissions are harmful to human health because the airborne particles intrude on the human pulmonary system, leading to “respiratory illness, irritation of the eyes, nose, and throat, and premature mortality.”¹⁷⁶ These impacts are most prevalent near ports where concentrations of SO₂ and SO_x are highest.¹⁷⁷ Cruise ships reducing sulfur emissions at ports or on the sea would reduce the negative health impacts associated with such emissions.¹⁷⁸ Transitioning to LNG-powered cruise ships would greatly improve the overall public health.

A transition to LNG engines demonstrates the industry’s commitment to the environment. Reducing greenhouse gas emissions, including sulfur oxides, can reduce the amount of emissions contributing to climate change.¹⁷⁹

170. U.S. ENERGY INFO. ADMIN., *supra* note 5.

171. WOLD ET AL., *supra* note 54, at 820.

172. SUSTAINABILITY REPORT, *supra* note 42, at 15.

173. MAR. HIGHWAYS COMM, *supra* note 4.

174. SUSTAINABILITY REPORT, *supra* note 42, at 15; FREDERICK ADAMCHAK & AMOKEYE ADEDE, POTEN & PARTNERS, LNG AS MARINE FUEL 10 (Apr. 17, 2013) <https://www.gti.energy/wp-content/uploads/2018/12/Transport-11-Fred-Adamchak-LNG17-Presentation.pdf>.

175. See *IMO Sets 2020 Date for Ships to Comply with Low Sulphur Fuel Oil Requirement*, *supra* note 160 (noting IMO’s goal of global sulfur limit of 0.50% m/m by 2020).

176. Hull, *supra* note 3, at 1038.

177. *Id.*

178. *IMO Sets 2020 Date for Ships to Comply with Low Sulphur Fuel Oil Requirement*, *supra* note 160.

179. See *Environmental Impacts of Natural Gas*, UNION OF CONCERNED SCIENTISTS, <http://www.ucsusa.org/clean-energy/coal-and-other-fossil-fuels/environmental-impacts-of-natural-gas#.WgIJFbaZN-U> (last visited Feb. 14, 2019) (noting that releasing less sulfur dioxide meant the release of less heat-trapping gases).

When these gases accumulate in the atmosphere, they absorb radiation reflected from the earth causing global temperatures to rise.¹⁸⁰ Sulfur oxides are volatile compounds that can react with other molecules forming strong acids.¹⁸¹ Acids devastate ecological landscapes by changing water chemistry, increasing disease rates in plants and animals, and even eroding infrastructures of communities in the area.¹⁸² Therefore, industry-wide shifts to LNG will reduce the negative impacts of fossil fuel emissions on the ecological environment.

Acting as a “bridge fuel,” natural gas could displace coal and oil, thereby reducing greenhouse gas emissions.¹⁸³ While reducing greenhouse gasses through the transition to natural gas, the world should also invest and research renewable alternatives. Natural gas is not the last step in our energy transition. However, natural gas has the potential to reduce our environmental footprint while we work towards a carbon-free energy system. Every industry, including the cruise ship industry, should look to implement this “bridge” to move towards a more sustainable system of energy while the energy sector innovates. New technologies, such as LNG engines and scrubbers, are drastically decreasing the negative environmental and health effects of cruise ships.¹⁸⁴ These technologies will allow the industry to meet the current mandatory IMO standards and give engineers time to explore new technologies to reduce the industry’s carbon footprint.

Every solution will have its drawbacks as we look towards improving technologies and bettering our world; LNG is no exception. Widely noted for its environmental benefits over coal, LNG can have a significant negative impact on the environment if not properly utilized.¹⁸⁵ Natural gas is mostly methane, a greenhouse gas with strong global warming potential.¹⁸⁶ Methane has the global warming potential of 25 to 34 times more than carbon dioxide over a 100-year period.¹⁸⁷ One problem with natural gas and methane is the leakage from wells, storage, pipelines, and plants.¹⁸⁸ “These leaks were the cause of about 32% of total U.S. methane emissions and about 4% of total U.S. greenhouse gas emissions in 2015.”¹⁸⁹ Reducing leaks is crucial when

180. Hull, *supra* note 3, at 1041.

181. *Id.* at 1038.

182. *Id.*

183. Pierce, Jr., *supra* note 159, at 245, 249.

184. NED MOLLOY, S&P GLOBAL PLATTS, THE IMO’S 2020 GLOBAL SULFUR CAP (Oct. 2016) <https://www.platts.com/IM.Platts.Content/InsightAnalysis/IndustrySolutionPapers/SR-IMO-2020-Global-sulfur-cap-102016.pdf>; *see also Environmental Impacts of Natural Gas*, *supra* note 179 (noting burning natural gas releases very little sulfur).

185. U.S. ENERGY INFO. ADMIN., *supra* note 5.

186. *Id.*

187. WOLD ET AL., *supra* note 54, at 823; *Environmental Impacts of Natural Gas*, *supra* note

179.

188. U.S. ENERGY INFO. ADMIN., *supra* note 5.

189. *Id.*

looking to LNG as a viable fuel source for cruise ships. Technologies exist to limit these leaks from engines, but they are not infallible.¹⁹⁰

Infrastructure complications are another hurdle that the cruise ship industry must overcome to properly utilize LNG. The cruise ship industry is confident that LNG will be available for use in their new ships, but is uncertain where this fuel will be located due to the specialized nature of LNG refueling stations.¹⁹¹ Currently, experts believe that the U.S. natural gas reserve will meet U.S. needs for the next century.¹⁹² However, natural gas pipelines are not as widespread as other resources, making it difficult to fuel ships at the necessary ports.¹⁹³ This creates a complicated problem for the cruise ship industry as well as the LNG developers who want secure, profitable investments. Fuel infrastructure industries will not build the port infrastructure without confidence that the shipping industry will use it.¹⁹⁴ Meanwhile, the shipping industry won't build LNG-powered ships unless they are sure the infrastructure will be there.¹⁹⁵ Cruise ship CEOs, specifically Royal Caribbean Cruises, Ltd. chairman and chief executive officer, Richard Fain, have voiced commitments to LNG ships that makes it easier for suppliers to commit to infrastructure development.¹⁹⁶ A commitment by the industry could open up the LNG market, thereby moving the energy industry away from coal and aiding the environment.

Another argument that refutes the use of LNG as a "bridge fuel" is one of complacency.¹⁹⁷ Building the infrastructure to ports for LNG is expensive and time-consuming. Development and investment in LNG are a long-term commitment. Some argue that we will continue to use natural gas as a substitute for coal instead of using it as a short-term transitional energy.¹⁹⁸ Investing in LNG may restrain the cruise ship industry from doing more research or looking to new energy sources without new regulations persuading them to do so.

In tandem with environmental impacts, LNG is helping the United States economy become less dependent on foreign fuel sources.¹⁹⁹ LNG prices have dropped since 2014, creating a bigger market for the increasingly

190. MAR. HIGHWAYS COMM, *supra* note 4.

191. Anna Shiryayevskay & Rakteem Katakey, *Oil Tankers to Cruise Ships Fueled by LNG Offer Hope on Glut*, BLOOMBERG L.P. (April 26, 2017, 11:23 AM), <https://www.bloomberg.com/news/articles/2017-04-25/oil-tankers-to-cruise-ships-fueled-by-lng-offer-hope-on-gas-glut>.

192. Pierce, Jr., *supra* note 159, at 246.

193. ADAMCHAK & ADEDE, *supra* note 174, at 6.

194. *Id.* at 9.

195. *Id.*

196. *Liquid Natural Gas is Clean, Cold, and New to Cruising*, ROYAL CARIBBEAN CRUISES LTD. (Oct 10, 2016), <https://www.rclcorporate.com/liquid-natural-gas-is-clean-cold-and-new-to-cruising>.

197. WOLD ET AL., *supra* note 54, at 820.

198. *Id.*

199. Pierce, Jr., *supra* note 159, at 249–50.

environmentally friendly fuel.²⁰⁰ While prices are becoming more competitive with coal and oil, the U.S. has increased its natural gas reserves at a rate of almost 48% per year since 2006.²⁰¹ Demand for LNG is expected “to rise to 364 million tons in 2025, from 260 million tons.”²⁰² Cruise ships will not have a major impact on the market but can assist in furthering the demand and usefulness of LNG. If these trends continue and the demand for natural gas increases, the fossil fuel industry will start to see a decrease in productivity and demand.

B. Why Cruise Ship Companies Should Adopt LNG-Powered Ships

Several prominent cruise lines have begun placing orders for LNG-powered ships, with plans to set sail in 2019.²⁰³ Adopting LNG-powered ships into cruise line fleets offers the industry an advanced way to push the environmental envelope by not only meeting regulations, but by exceeding them.²⁰⁴ The 2020 International Maritime Organization standards that set a 0.50% m/m cap on sulfur emissions should prompt the industry to look at innovative ways to meet the standards.²⁰⁵ While current cruise ships meet, or should be meeting, the current international standards, these standards are subject to change. These standards could create a legal obligation for cruise liners to adapt their fleets to cleaner models, such as LNG-powered engines. LNG will assist cruise companies to meet further obligations if the IMO and CLIA succeed in setting a mandatory carbon emission reduction for new ships.²⁰⁶

If the cruise ship company decides the environmental impacts are not a concern, the economic consequences of not shifting to LNG could be damaging. Non-compliance with SOx regulations, in countries with ECAs, could cost companies \$25,000 per day in the United States or up to €6,000,000 in Belgium.²⁰⁷ Companies need to consider customer perception, on top of economic penalties for failure to meet regulations.

200. Shiryayevskay & Katakey, *supra* note 191.

201. Pierce, Jr., *supra* note 159, at 246.

202. Shiryayevskay & Katakey, *supra* note 191.

203. SUSTAINABILITY REPORT, *supra* note 42, at 15 (noting that just three companies have announced that they will build up to eight total ships powered by LNG).

204. *Maritime Regulation*, CLIA, <https://cruising.org/maritime-regulation> (last visited Feb. 14, 2019) (“[CLIA] leads efforts to develop and update industry-level policies which go above and beyond international regulatory requirements to ensure . . . environmental stewardship.”).

205. See *IMO Sets 2020 Date for Ships to Comply with Low Sulphur Fuel Oil Requirement*, *supra* note 160 (noting ships will have to use fuel with a low sulfur content).

206. SUSTAINABILITY REPORT, *supra* note 42, at 3.

207. MOLLOY, *supra* note 184, at 9.

In an industry where customers have choices, companies must consider their reputation when making decisions.²⁰⁸ People can voice their opinions and express dissatisfaction with a company, leading to potential loss of profits or business. Environmental stewardship and threat of sanctions may not be enough for stubborn companies to change their business practices. However, people voicing their disapproval towards a certain practice by buying their cruise tickets elsewhere gets attention. Once cruise lines begin the shift to LNG-powered engines, customers can actively decide between companies that utilize LNG and companies that do not. Companies not adapting will be left behind as the push for more environmental business practices come to the forefront.²⁰⁹

Regulatory frameworks are constantly evolving to match industry standards and ever-changing technologies. CLIA works with the IMO to develop, implement, and apply standards that support the cruise ship industry.²¹⁰ However, current industry regulations leave much to be desired due to gaps in coverage between the different regulatory frameworks, specifically in oversight and enforcement.²¹¹ To kick-start a clean energy transition in the cruise industry, stricter regulations should and will be implemented, by IMO and UNCLOS, in the future with a focus on enforcement and oversight. These regulations will work similarly to the increasing Corporate Average Fuel Economy (“CAFE”) standards promulgated by the EPA. These regulations reduce greenhouse gas emissions and improve fuel economy for light-duty vehicles, effectively pressuring the car manufacturing industry to implement new technologies and find ways to come into compliance.²¹² Similar standards for the cruise industry could promote LNG and the development of even cleaner fuel sources, such as wind and solar.

Regulations and standards should not be the only reasons that cruise ship companies look to LNG. The eight LNG-powered ships already on order represent the cruise ship company’s commitment to improving the environment through using innovative solutions.²¹³ Those companies who do not follow suit and fail to take progressive steps will be left in the wake trying to catch up to the competition. Companies are developing innovative

208. Robert G. Eccles, et al., *Reputation and Its Risks*, HARV. BUS. REV. (Feb. 2007), <https://hbr.org/2007/02/reputation-and-its-risks>.

209. *Id.*

210. SUSTAINABILITY REPORT, *supra* note 42, at 3.

211. See Copeland, *supra* note 6, at 23–26 (discussing inadequacy of enforcement measures, inability to properly verify records, and lack of U.S. Coast Guard resources).

212. *Final Rule for Model Year 2017 and Later Light-Duty Vehicle Greenhouse Gas Emissions and Corporate Average Fuel Economy Standards*, U.S. ENVTL. PROT. AGENCY, <https://www.epa.gov/regulations-emissions-vehicles-and-engines/final-rule-model-year-2017-and-later-light-duty-vehicle> (last visited Feb. 14, 2019).

213. SUSTAINABILITY REPORT, *supra* note 42, at 15.

technologies daily and more plans are ever-present. Some ships have implemented small scale solar panels to power lights, while others are looking to utilize the power of the wind to move cruise ships around the globe.²¹⁴ Massive cruise ships powered by wind and solar are years away, but we currently have a reliable fuel source in LNG that can slash emissions, help meet future regulations, and reduce the negative impact of the cruise industry.

CONCLUSION

Thirty years have gone by and you find yourself back on that same tropical beach where you first became curious about the environmental effects of the cruise ship industry. You look to the horizon and see a similar scene with the cruise ship coming into port. Except this ship is vastly different than the first one you saw. Giant sails ripple in the wind, solar panels glisten on the sides of the ship, and there are no longer giant smokestacks spewing emissions due to the LNG-powered engine. The cruise ship industry could reach this drastic change through a variety of reasons including a commitment to the environment, a strengthened regulatory framework, and the advancement of liquefied natural gas-powered cruise ships.

Global emissions from the cruise ship industry are a problem for our health and our environment. There needs to be a push towards a more sustainable and clean future that will allow the advancement of technologies and environmental stewardship to advance in an industry with a harmful past. Liquefied natural gas offers hope that the industry can learn from its mistakes and guide not only the cruise ship industry, but the entire shipping industry, in the right direction. While LNG may not be the final solution, it is a substantial step that will allow cruise ships to sail into a new energy future.

214. Sarah Fecht, *Is This The Cruise Ship of The Future?*, POPULAR SCIENCE (Dec. 29, 2014), <https://www.popsci.com/cruise-ship-future#page-3> (highlighting Celebrity's *Solstice* using 216 solar panels to generate as much as 52 kilowatts of power and STX Europe's concept cruise that runs mainly on wind and solar).

USING THE PUBLIC TRUST DOCTRINE TO “MAKE IT RAIN”

*Ethan Story**

The question of “who owns the rain?” is not easily answered. This Note discusses the complexities of harvesting rainwater under existing legal principles. Here, it is augured that our elected officials should change policy to incorporate rainwater under the Public Trust Doctrine. By doing so it would clarify the legal ambiguity of harvesting rainwater. Additionally, the courts, state officials, and the public will benefit legally, environmentally, and economically.

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INTRODUCTION

When water is plentiful, there is no need for law to govern it. Unfortunately, this is not the case today, and it has not been for quite some time. While some cities and states are experiencing flooding, others are

experiencing record droughts.¹ The states facing these record-breaking droughts have legitimate worries over how to govern their water supply.² However, there is an ancient method of collecting water that has become popular in these desperate times: rainwater harvesting.³ The rise in popularity created a demand for clarity on the legal implications of rainwater harvesting.⁴ This is also true across the nation as concerns rise around water quality standards, especially in the western states where water is scarce.⁵ This Note proposes the solution to the water crisis that utilizes a centuries-old legal principle to allow rainwater collection without legal repercussion: the public trust doctrine (PTD).

Part one explains why rainwater harvesting is beneficial. Part two examines the challenges of accessing water in today's world. Part three turns to our nation's history of water law, including evolution of the malleable Public Trust Doctrine. This doctrine has a foundation in placing natural resources such as water, wildlife, and air into public ownership. Within this section, the Note proposes using the existing public trust law to permit rainwater harvesting. Part four provides a brief description of what some states do and do not allow concerning rainwater harvesting. The Note also suggests that the states that do not allow rainwater harvesting should incorporate water harvesting under the PTD. Last, part five describes the challenges to such a proposal.

I. MODERN CHALLENGES CONCERNING WATER

Water is the life source of society. Water is used for drinking, agriculture, manufacturing, energy production, transportation and

1. Angela Fritz & Jason Samenow, *Harvey Unloaded 33 Trillion Gallons of water in the U.S.*, WASH. POST (Sept. 2, 2017), <https://www.washingtonpost.com/news/capital-weather-gang/wp/2017/08/30/harvey-has-unloaded-24-5-trillion-gallons-of-water-on-texas-and-louisiana> (reporting that hurricane Harvey dropped close to 19 trillion gallons of water in the Greater Houston area); see *The California Drought: Who Gets the Water and Who's Hung Out to Dry?*, EARTHJUSTICE, <https://earthjustice.org/features/the-california-drought> (last visited Dec. 6, 2018) (explaining that in 2015, California experienced a record breaking drought where the Governor called for a mandatory 25% reduction of all residential water use).

2. See EARTHJUSTICE, *supra* note 2 (describing water concerns of different, sometimes competing, interests).

3. *Rise of the Rain Collectors*, Earth911 (Oct. 8, 2015), <http://earth911.com/home-garden/rise-rainwater-collection/>.

4. See generally *State Rainwater Harvesting Laws and Legislation*, National Conference of State Legislatures (NCSL) (Feb. 2, 2018), <http://www.ncsl.org/research/environment-and-natural-resources/rainwater-harvesting.aspx> (demonstrating that some states have pending legislation, failed legislation, and passed legislation on rain harvesting).

5. *Id.*

commerce, recreation, and waste removal.⁶ Variable water availability consequently affects the operation of society. The shift in weather patterns due to climate change has diverse effects on the different parts of the nation.⁷ Droughts and unusual heat waves, which cause higher than normal evaporation levels, can have drastic effects on water resources thousands of miles away.⁸

In the continental United States, the average “yearly precipitation has increased by 0.16 inches per decade since 1895.”⁹ Despite the increased national average of rain, the southwest and northeast areas of the country saw much drier-than-average conditions.¹⁰ In areas where water is plentiful, factors such as deforestation, pollution, farming, increasing population, conflicting values, and simple overuse of water can place a burden on the water supply.¹¹ In other words, when water is available to those who have it, the trend is to use the water before it is gone and worry about the downstream users later.

Another issue affecting the availability of water is urban sprawl. In the mid-1940s there were 15 million acres of urban property in the United States.¹² In 2002, this number jumped to over 60 million acres.¹³ As the population grows, urban development must also accommodate for it. The urban landscape is a mix of impermeable surfaces consisting of residential and commercial buildings, roads, and parking lots. These large constructed areas replaced the natural landscape surfaces that would inherently absorb or divert the water.¹⁴ In contrast, urban areas offer little in natural

6. Kenneth D. Frederick & Peter H. Gleick, *Potential Impacts on U.S. Water Resources*, in CLIMATE CHANGE SCIENCE, STRATEGIES, & SOLUTIONS 63, 63 (Eileen Claussen ed., 2001).

7. NASA, HOW CLIMATE IS CHANGING, <https://climate.nasa.gov/effects/>, (detailing the regional effects of climate change in the U.S.) (last visited Dec. 6, 2018).

8. B.C. BATES ET AL., CLIMATE CHANGE AND WATER: IPCC TECHNICAL PAPER VI 35–51 (2008).

9. NOAA, CLIMATE CHANGE REPORT—2016, (2016) <https://www.ncdc.noaa.gov/sotc/national/201613>.

10. *Id.*

11. Daniel Findlay, *Rainwater Collection, Water Law, and Climate Change: A Flood of Problems Waiting to Happen?*, 10 N.C. J.L. & TECH. 74, 82-83 (2009); see generally CENT. INTELLIGENCE AGENCY, COUNTRY COMPARISON: POPULATION GROWTH RATE, THE WORLD FACTBOOK (2002), <https://www.cia.gov/library/publications/the-world-factbook/rankorder/2002rank.html> (listing world population growth rates); Trading Economics, *United States GDP Growth Rate*, <https://tradingeconomics.com/united-states/gdp-growth> (last visited Dec. 6, 2018).

12. CYNTHIA NICKERSON ET AL., U.S. DEP’T OF AGRIC., MAJOR USES OF LAND IN THE UNITED STATES, 2007, 5 (Dec. 2011), https://www.ers.usda.gov/webdocs/publications/44625/11159_eib89_2_.pdf (referencing data on major U.S. land uses data between 1945-2007 in Table 2).

13. *Id.*

14. See *id.* at 29-32 (discussing the conversion of rural land to urban uses in the U.S. in recent history).

drainage.¹⁵ Thus, urban sprawl adds to the problem of where water goes, how it gets there, and how we supply water to these large concentrated areas.¹⁶ Due to the growing demand for water, challenges posed by urban sprawl, and climate change, two things must change: how we acquire water and how we use water.¹⁷

II. WHY IS IT BENEFICIAL TO HARVEST RAINWATER?

Harvesting rainwater is a practice that has been done for thousands of years by many different cultures and civilizations.¹⁸ Harvested rainwater is often used on the same property from which it originated.¹⁹ This is unlike large water projects in the West where water is shipped in canals and pipelines.²⁰ In modern settings, containers such as barrels, tanks, or cisterns are used to collect rain from roofs.²¹ People also use landscaping design to maximize rainwater capture.²² Small bowl-like areas are set up in the property that collect the rainwater.²³ The landowner can then mulch and strategically arrange plants that will utilize the rainwater collected in the bowl-like areas.²⁴

Almost half of the water used in the United States is for outdoor and agriculture purposes, and allowing people to harvest rainwater could

15. U.S. ENVTL. PROT. AGENCY, PROTECTING WATER QUALITY FROM URBAN RUNOFF: MANAGING URBAN RUNOFF, 841-F-03-003, Feb. (2003) https://www.epa.gov/sites/production/files/2015-10/documents/nps_urban-facts_final.pdf.

16. *Id.*

17. Olivia S. Choe, Note, *Appurtenancy Reconceptualized: Managing Water in an Era of Scarcity*, 113 Yale L.J. 1909, 1911 (2004).

18. *History of Rainwater Harvesting*, RENEWABLE ENERGY HUB, <https://www.renewableenergyhub.co.uk/rainwater-harvesting-information/the-history-of-rainwater-harvesting.html>, [hereinafter *History of Rainwater Harvesting*] (last visited Dec. 6, 2018).

19. See Water Association of Kern County, *The State Water Project (SWP)*, <http://www.wakc.com/water-overview/sources-of-water/state-water-project-swp/> (last visited Dec. 6, 2018) (explaining that California's water "[p]roject includes 34 storage facilities, reservoirs and lakes; 20 pumping plants; 4 pumping-generating plants; 5 hydroelectric power plants; and about 701 miles of open canals and pipelines"); see, e.g., *Harvesting Rainwater by Not Letting it Go to Waste*, Nat'l Public Radio (Jan. 10, 2008, 12:01 AM ET) [hereinafter *Not Letting Rainwater Go to Waste*], <https://www.npr.org/templates/story/story.php?storyId=17977057> (describing the common method of rainwater harvesting).

20. See Lauren Sommer, *About That \$17 Billion Water Project Delta Tunnels 101*, KQED Science (July 25, 2016), <https://www.kqed.org/science/2016/07/25/about-that-17-billion-water-project-delta-tunnels-101/> (reporting that California plans to build two 30-mile-long pipelines that are forty feet in diameter to transport water from the Sacramento River to the Bay area).

21. *Not Letting Rainwater Go to Waste*, *supra* note 19.

22. *Id.*

23. *Id.*

24. *Id.*

potentially reduce demand on municipal water infrastructure.²⁵ Most people use rainwater for outside purposes, as it is costly to treat for consumption.²⁶ Rainwater can carry pollutants from the impermeable surface that drains into the barrel, such as arsenic leached from wood shingles.²⁷

Another benefit of rainwater harvesting is that it prevents pollution during large storms.²⁸ When a rainwater harvesting system is installed, it reduces the amount of runoff and the amount of pollutants that would normally enter a stormwater collection system.²⁹ Harvesting rainwater can alleviate stress on the dilapidated and aging combined sewer overflow systems, which are located throughout the United States, and mitigate water quality concerns of downstream users.³⁰

Though rainwater harvesting has been around for many years, some states are just starting to harness rainwater collection benefits.³¹ In California, many cities have started the practice of rainwater harvesting. For instance, in the fall of 2008 San Francisco spent \$100,000 on harvesting-tank building workshops.³² Santa Monica installed a cistern under the city public library that holds up to 200,000 gallons of rainwater for non-drinking uses like watering plants and flushing toilets.³³ Santa Monica also implemented a rebate program for homeowners who start their own rainwater harvesting system.³⁴

California's ventures into rainwater harvesting show potential for everyone, from individual homeowners saving on water cost to entire municipalities reducing pollution loads deposited into municipal treatment

25. *Rainwater Harvesting for Changing Water Realities*, CAL. GREEN SOLS. (June 13, 2008), <http://www.californiagreensolutions.com/cgi-bin/gt/tpl.h,content=2177>.

26. U.S. ENVT. PROT. AGENCY, EPA-841-R-13-00, RAINWATER HARVESTING 7 (Jan. 2013), <https://www.epa.gov/sites/production/files/2015-11/documents/rainharvesting.pdf> [hereinafter EPA RAINWATER HARVESTING].

27. *Id.* at 21.

28. Blue Barrel, *Environmental Benefits of Rainwater Harvesting*, <https://www.bluebarrelsystems.com/blog/environmental-benefits-of-rainwater-harvesting/> (last visited Nov. 17, 2018).

29. EPA RAINWATER HARVESTING, *supra* note 26, at 7.

30. *Id.* at 28; See Bert Walton, *America's Water Infrastructure Shows Its Age*, WATER NEWS (Mar. 5, 2012) <http://www.circleofblue.org/2012/world/americas-water-infrastructure-shows-its-age-the-national-debate-about-how-to-pay-for-repairs/> (explaining there are water pipes still in use that are over a century old, and the U.S. spends \$2.8 billion every year repairing water main breaks resulting in a loss of over 1.7 trillion gallons of water).

31. *History of Rainwater Harvesting*, *supra* note 18.

32. Milia Wollan, *Rainwater Collectors Work to Ease Shortages*, DAILY NEWS (Wash.), Aug. 31, 2008, http://tdn.com/news/rainwater-collectors-work-to-ease-shortages/article_06a36fcc-dbb6-5432-b786-12d00619141a.html.

33. *Id.*

34. *Id.*

facilities.³⁵ A residential home with a roof area of one thousand square feet can collect six hundred gallons of water for every one inch of rain.³⁶ If only fifteen percent of residential water came from rainwater harvesting, the United States could save upwards of a billion gallons of water per day.³⁷ Therefore, allowing harvesting rainwater could help reduce water demands as well as help meet municipal water-use reduction goals that many cities have implemented.³⁸

III. A BRIEF LOOK AT THE HISTORY OF WATER LAW

A. Riparianism

Riparian water law developed in the eastern states during an era when water concerns were non-existent,³⁹ and water was more of an amenity than a commodity.⁴⁰ The United States adopted riparianism from England, granting landowners whose lands touches a watercourse the right to use the water.⁴¹ The traditional riparian right focuses solely on the fact that one owns property bordering the water's edge.⁴² The riparian doctrine, also known as the natural flow doctrine, states that the riparian land owner has a right to a steady stream of water "undiminished as to quality or quantity."⁴³ Upstream landowners can use the water, but they may not diminish the use for those downstream.⁴⁴

35. See Charles Q. Su, *Rainwater Harvesting on the Sea: A New Sustainable Water Resource*, 35 WATER INT'L 6, 779, 783 (2010), <https://www.tandfonline.com/doi/abs/10.1080/02508060.2010.533347> (proposing that states start to develop submarines that capture rainwater in the ocean and transport water back to shore for use).

36. Findlay, *supra* note 11, at 80–81.

37. *Id.* at 80.

38. See, e.g., CITY OF PHOENIX WATER SERVS. DEP'T, DROUGHT MGMT. PLAN AND WATER USE REDUCTION GUIDELINES (2015), <https://www.phoenix.gov/waterservice/ Documents/2015%20DMP%20FINAL.pdf> (listing the City of Phoenix, Arizona's water conservation plan); see also CITY OF CENTER, TEXAS, CITY IMPLEMENTS STATE II OF WATER CONSERVATION PLAN, <http://www.centertexas.org/news/city-implements-stage-ii-water-conservation-plan> (stating that the city of Center has set a goal of reducing usage by 400,000 gallons of water per day) (last visited Nov. 18, 2018); and CEDAR HILLS, UTAH, CITY IMPLEMENTS WATER CONSERVATION GUIDELINES, <http://www.cedarhills.org/node/2785> (last visited Dec. 14, 2018) (explaining the City's water usage goals).

39. See generally WATERS AND WATER RIGHTS § 7.01-7.03 (Robert E. Beck & Amy K. Kelly eds., LexisNexis 1991 ed.) (2007) (providing the theories of how riparian water law developed).

40. BARTON H. THOMPSON, JR ET AL., LEGAL CONTROL OF WATER RESOURCES 29 (6th ed. 2018).

41. *Id.*

42. *Id.*

43. *Id.* at 30.

44. *Id.*

The rapid growth of industry in the East brought heightened competition for the supply of available water.⁴⁵ This growth resulted in many eastern states transitioning from the natural flow riparian doctrine to the reasonable use riparian doctrine.⁴⁶ The reasonable use doctrine, still based on the requirement that property touch the watercourse, recognizes that all water use will produce an adverse result—some more than others.⁴⁷ The test for what is reasonable depends on the downstream riparian landowners.⁴⁸ If the use fundamentally harms or impairs the use downstream, then the use is unreasonable and unlawful.⁴⁹ The exception to this rule is if the upstream use is necessary to any beneficial use along the entire stream.⁵⁰ Humans have a common interest in water; therefore, under the riparian doctrine, we must all accept that there will be minor inconveniences that provide a disproportionate benefit to others.

Riparian lands are lands that touch or surround a water body.⁵¹ It is not necessary for the land to be an underwater-only border, no matter what kind of watercourse is at question.⁵² Traditionally, the riparian doctrine allows use of the water only on the tract of land itself.⁵³ Restricting the use to the tract of land itself ensures that upstream users did not harm downstream users by diminishing the flow of the stream or river.⁵⁴

B. Prior Appropriation

In a dry and thirsty land, it is necessary to divert the waters of streams from their natural channels, in order to obtain the fruits of the soil, and this necessity is so universal and imperious that it claims recognition of the law. [W]hen the lands of this territory were derived from the general government, they were subject to the

45. Anita Porte Robb, *Applying the Reserved Rights Doctrine in Riparian States*, 14 N.C. CENT. L.J. 98, 100 (1983).

46. *See id.* (explaining that industrialization and competition for water led to a transition to the reasonable use doctrine).

47. *Snow v. Parsons*, 28 Vt. 459, 462 (1856).

48. *Id.*

49. *Id.*

50. *Id.*; *see also* Samuel C. Wiel, *What is Beneficial Use of Water*, 3 CAL. L. REV. 460, 460 (1915) (discussing that a beneficial use is to be determined by a jury and what a reasonable person would consider a beneficial use).

51. N.M. FOREST AND WATERSHED HEALTH, RIPARIAN ZONE, <http://allaboutwatersheds.org/library/kyw-poster-files-and-links/riparian-zone> (last visited Dec. 14, 2018).

52. THOMPSON, *supra* note 40, at 29.

53. *People v. Shirokow*, 605 P.2d 859, 864 (2008).

54. *See, e.g., Town of Gordonsville v. Zinn*, 106 S.E. 508 (Va. 1921) (explaining the limited policy considerations and land grants).

law of nature, which holds them barren until awakened to fertility by nourishing streams of water, and the purchasers could have no benefit from the grant without the right to irrigate them.⁵⁵

In the Western United States, the prior appropriation regime developed from the concept of “first-in-time, first-in-right.”⁵⁶ This doctrine places no significance on the actual property owner, but rather the individual that applies the water of a natural stream to a “beneficial use.”⁵⁷ Compared to the riparian doctrine used by the eastern states, the western states developed this doctrine with the understanding that the scarcity of water would require a new legal theory to promote development.⁵⁸ This system, founded on seniority, permits the first person who uses the water to have access to their allotment before anyone else.⁵⁹ Thus, a junior appropriator who is upstream to a senior appropriator may have to let water flow past their diversion point to ensure that the downstream senior user has access to their appropriated amount.⁶⁰ Additionally, if the senior appropriator stops putting the water to use, they ultimately lose their rights to that allotted amount.⁶¹

The water law doctrines discussed above both have established legal precedent.⁶² However, neither one expressly addresses the legality of rainwater.⁶³ Local governments can apply the PTD to allow rainwater harvesting within the framework of riparianism and prior appropriation.

C. Proposal: Under the Public Trust Doctrine, Private Land Owners Should be Able to Harvest Rainwater Without Repercussion.

With the ever-growing problem of water scarcity, mainly from climate change, a detailed and scientifically-informed approach to implementing policies that will protect and possibly enhance the water cycle is needed.⁶⁴ The PTD offers a legal paradigm to resolve this issue.

55. Yunker v. Nichols, 1 Colo. 551, 553–55 (1872).

56. Findlay, *supra* note 11, at 83.

57. THOMPSON, *supra* note 40, at 176.

58. Arizona v. California, 283 U.S. 423, 459 (1931).

59. *Id.*

60. THOMPSON, *supra* note 40, at 179.

61. *Id.* at 176.

62. Findlay, *supra* note 11, 83–89.

63. *Id.*

64. Robin K. Craig, *Adapting to Climate Change: The Potential Role of State Common-Law Public Trust Doctrines*, 34 VT. L. REV. 781, 781 (2010).

1. History

The PTD has a long, convoluted history.⁶⁵ It originated from English common law when the British Crown held title to the land that ran beneath the tidal waters.⁶⁶ The principle was that the Crown owned the beds under the water to provide for commerce and navigation.⁶⁷ Thus, the Crown held this property in trust for the people.⁶⁸

In the United States, when the thirteen original colonies won their independence, they adopted this common-ownership concept of underwater land.⁶⁹ Each state received trust property of submerged lands including control over navigable waters.⁷⁰ This doctrine spread west as the nation did.⁷¹ Upon the establishment of the Northwest Territory, navigable waters would be “forever free” for the citizens of the United States, and any new state admitted would receive the same sovereignty as the original states.⁷² Article IV of the Northwest Ordinance provided that:

The navigable waters leading into the Mississippi and St. Lawrence, and the carrying places between the same, shall be common highways, and forever free, as well to the inhabitants of the said territory, as to the citizens of the United States, and those of any other states that may be admitted into the confederacy, without any tax, impost, or duty therefor.⁷³

The language of this ordinance sets a duty on the state to regulate navigable waters.⁷⁴ The ordinance also establishes that the state must protect and promote the trust and allow the public to use this trust property.⁷⁵

65. See Thomas Cooper, *The Institutes of Justinian: With Notes* 67 (3d ed. 1812) (“Things common to mankind by the law of nature, are the air, running water, the sea, and consequently the shores of the sea”).

66. *Willow River Club v. Wade*, 76 N.W. 273, 274 (Wis. 1898).

67. *Id.* at 278.

68. *Id.* at 281–82.

69. *Diana Shooting Club v. Husting*, 145 N.W. 816, 819 (Wis. 1914).

70. *Id.* at 818.

71. See *id.* (holding that when the Northwest Territory was formed, trust property was held for all citizens of the United States).

72. See *Muench v. Public Serv. Comm'n*, 53 N.W.2d 514, 516 (Wis. 1952) (“These conditions were incorporated into the Northwest Ordinance of 1787, which set up the machinery for the government of the Northwest Territory.”).

73. *Diana Shooting Club*, 145 N.W. at 818 (quoting the Northwest Ordinance of 1787).

74. *Id.*

75. *Muench*, 53 N.W.2d at 516; *City of Milwaukee v. State*, 214 N.W. 820, 830 (Wis. 1927).

2. Illinois Central Railroad Co. v. Illinois

The *Illinois Central Railroad Company v. Illinois* (“*Illinois Central*”) case was a landmark case as it helped shape the PTD.⁷⁶ The Supreme Court of the United States examined whether the Illinois legislature was within its rights to convey one square mile of Lake Michigan to the Illinois Central Railroad for development, including land that at one point was submerged by the lake.⁷⁷ Upon review, the Court held that conveying that land was beyond the Illinois legislature’s authority because the Great Lakes were owned by the states as sovereigns at the time of their admission into the Union.⁷⁸ More importantly, the Court held that the state owned rights to the land beneath the waters in trust for the benefit of the citizens for uses such as navigation, hunting, fishing, and commerce.⁷⁹ The Court came to this conclusion by looking to the PTD. Under the PTD, the Court believed that it was outside the state’s power to convey public trust land (including waters) for a private use or to convey land in a way that would impede on the public’s right of use.⁸⁰

The PTD gained its momentum from *Illinois Central*. The holding gave the PTD teeth and characteristics that many jurisdictions and states rely on today by providing the fundamental purpose and scope of the doctrine.⁸¹ The PTD applies to both the navigable waters, such as the Great Lakes, and the tidal lands that run alongside of those waters.⁸² Even more importantly, the Court acknowledged that the scope of the doctrine might have to change over time to ensure that the public has a right to use and access these navigable waters and tidal lands.

Many courts have embraced the *Illinois Central* interpretation of the scope of the PTD. The New Jersey Supreme Court held that, “[W]e perceive the public trust doctrine not to be ‘fixed or static,’ but one to ‘be molded and extended to meet changing conditions and needs of the public it was created to benefit.’”⁸³ Much like the New Jersey Supreme Court, the California Supreme Court held, “In administering the trust the state is not

76. See generally *Ill. Cent. R.R. v. Illinois*, 146 U.S. 387 (1892) (explaining the fundamental concept of the PTD).

77. *Id.* at 433–34, 438.

78. *Id.* at 437.

79. *Id.* at 452.

80. *Id.* at 436–37.

81. *Id.* at 435–37.

82. James Olson, *All Aboard: Navigating the Course for Universal Adoption of the Public Trust Doctrine*, 15 Vt. J. Envtl. L. 135, 149 (2014).

83. *Raleigh Ave. Beach Ass’n v. Atlantis Beach Club, Inc.*, 879 A.2d 112, 121 (N.J. 2005) (quoting *Matthews v. Bay Head Improvement Ass’n*, 471 A.2d 355, 365 (N.J. 1984)).

burdened with an outmoded classification favoring one mode of utilization over another.”⁸⁴

Even though some jurisdictions understand that neither the environment nor the doctrines dealing with the environment are static, courts sometimes limit the PTD to its traditional roots of navigable waters and streambeds.⁸⁵ This raises the question about how society is changing: is society evolving around traditional roots or is it evolving with newer, faster, and better technology that is nothing but traditional? Joseph Sax, professor of law at the University of Michigan, eloquently phrased the issue this way:

[I]t is clear that the judicial techniques developed in public trust cases need not be limited either to [the] conventional interest or to question of disposition of public properties . . . [but] would be equally applicable and equally appropriate in controversies involving air pollution, the dissemination of pesticides, the location of rights of way for utilities, and strip mining or wetlands filling on private lands in a state where governments permits are required.⁸⁶

These examples show that the different courts and scholarly opinions demonstrate that the PTD has and can change over time to ensure that states’ citizens’ resources (such as access to the water or possibly harvesting of water) are truly theirs to use.

D. Who Owns the Rain?

The answer to the question of who owns the rain is not easily found in the United States. Some states, like Vermont, say very little about how rainwater can be used.⁸⁷ Conversely, Kansas regulates who can use rainwater and for what purposes via a permit process.⁸⁸ Even then, if one does obtain a permit, they are only allowed to use rainwater for domestic purposes.⁸⁹ In short, even though we may never know who actually owns

84. Marks v. Whitney, 491 P.2d 374, 380 (Cal. 1971).

85. See Joseph L. Sax, *The Public Trust Doctrine in Natural Resource Law: Effective Judicial Intervention*, 68 MICH. L. REV. 471, 488 (1969) (describing an instance where a Wisconsin court takes a relatively restrictive view of the doctrine).

86. *Id.* at 556–57.

87. See generally VT. DEPT. OF ENVTL. CONSERVATION, <https://dec.vermont.gov/search/node/rainwater> (last visited Nov 18, 2018) (demonstrating that the Vermont Department of Environmental Conservation has no obvious policies regarding rainwater).

88. Kansas Water Appropriation Act, KAN. STAT. ANN. § 82a-708a (2017).

89. § 82a-704a(f).

the rain, we as a nation know that rainwater is being tracked and regulated in some jurisdictions and is free to flow in others.

Some states explicitly say, or did at one time, that the states or the municipalities in those states own the rain. For instance, Gary Harrington, a resident of Medford, Oregon, was sentenced to jail and fined \$1,500 for collecting rainwater on his property.⁹⁰ Medford, a city in southwest Oregon, where Harrington resides, had a 1925 water law that explained that the city “is granted the exclusive right to use for municipal purposes all the waters of Big Butte Creek, . . . and of its tributaries.”⁹¹ In the case with Harrington, the Oregon law makes it clear that the municipality owns all the water in the drainage.⁹² The city claimed that it owned the rain because in its view rain is a main source of its water.⁹³ Therefore, when Harrington collected the state’s water falling onto his property, he was violating the law. However, since the Harrington case, the state has revised its water laws to allow a homeowner to harvest rainwater but only from their rooftop.⁹⁴

E. Nature of the Public Trust

As the demand for water flows into the spotlight for most of the western states, the need for clear legislation to allow for private and municipal rainwater collection will likely follow. When it does, the legislature will need to address the relationship between current water laws (riparian and prior appropriation schemes) and rainwater collection.⁹⁵ In general, public trust waters are the “navigable waters” of a State.⁹⁶ The public trust lands are the lands found under these waters, up to the mean high water mark.⁹⁷ These lands are unique in that the flora and fauna that

90. Craig Bannister, *If Oregon Owns the Rain, Then Who Owns The Air?*, CNS NEWS (July 29, 2012, 5:50 PM), <https://www.cnsnews.com/blog/craig-bannister/if-oregon-owns-rain-then-who-owns-air>.

91. Or. Rev. Stat. § 538.430(1).

92. Bannister, *supra* note 90.

93. See Kendra Alleyne, *Oregon Man Sentenced to 30 Days in Jail*, CNS NEWS (July 26, 2012, 8:58 PM), <https://www.cnsnews.com/news/article/oregon-man-sentenced-30-days-jail-collecting-rainwater-his-property> (describing that the state argued Harrington had diverted water that was part of the town’s water supply).

94. Building Codes Division Oregon Smart Guide: Rainwater Harvesting, 1, <https://www.oregon.gov/bcd/Documents/brochures/3660.pdf> (last visited December 9, 2018).

95. States have different definitions of “diffuse surface water” and some states have no definition at all. See, e.g., *Ready Mixed Concrete Co. v. Farmers Reservoir & Irrigation Co.*, 115 P.3d 638, 642 (Colo. 2005) (discussing existing Colorado law that “[f]lowing water, even diffuse runoff and seepage that is not in a defined channel, is presumed to be tributary to the river system.” Demonstrating that a land owner may not capture rainwater if it harms a prior appropriator downstream, illustrating tension between water laws).

96. DAVID C. SLADE ET AL., *PUTTING THE PUBLIC TRUST DOCTRINE TO WORK* 13 (1990).

97. *Id.*

live in these lands are also subject to the PTD.⁹⁸ Though not always, often the lands under the PTD are considered unsuitable for commercial use, any permanent development, or agriculture as a defining characteristic of the doctrine.⁹⁹ In contrast, these lands are considered an area for public purpose or recreation.¹⁰⁰

Today, the PTD explains the relationship that a state has with its water resources and the public of the state.¹⁰¹ It is a legal doctrine recognizing common public rights used to gain access to water resources like fishing, boating, hunting, commerce, and recreation.¹⁰² It also provides a certain level of protection of some water resources such as the wildlife found within the public water and the land itself.¹⁰³ Because this doctrine holds the state's public interest in mind, each state has different ideas as to what is protected under the PTD.¹⁰⁴ One consideration is how heavily (or lightly) a state relies on the PTD to protect their navigable waters.¹⁰⁵ This reliance alludes to how developed and clear the state's legal doctrine will be.

If the state holds the resource as a trustee (in this case water), it is the state's responsibility to ensure its citizens have access to the water and fair use of it.¹⁰⁶ This raises the question: can fair use incorporate water that has fallen on your property? If so, can individuals use the rainwater to water their lawn, wash their car, or even water their livestock? Many state laws govern river diversion and groundwater extraction, however, rainwater collection often falls into a legal void.¹⁰⁷

98. *Id.*

99. Compare *id.*, with Jayni Foley Hein, *Oil Companies are Drilling on Public Land for the Price of a Cup of Coffee. Here's Why That Should Change*, WASH. POST: POSTEVERYTHING (June 16, 2015), https://www.washingtonpost.com/posteverything/wp/2015/06/16/oil-companies-are-drilling-on-public-land-for-the-price-of-a-cup-of-coffee-heres-why-that-should-change/?utm_term=.16dae84a3ef2 (briefly discussing that many states lease oil and gas development on public land).

100. Slade, *supra* note 96, at 13.

101. Melissa K. Scanlan, *The Evolution of the Public Trust Doctrine and the Degradation of Trust Resources: Courts, Trustees and Political Power in Wisconsin*, 27 *ECOLOGY L.Q.* 135, 137 (2000).

102. *Id.* at 159; see also *Forestier v. Johnson*, 127 P. 156, 162–63 (Cal. 1912) (describing private ownership of submerged lands as subject to public rights to pass over lands on navigable waters in boats for hunting and fishing).

103. Slade, *supra* note 96, at 13.

104. See Scanlan, *supra* note 101, at 137 (“Courts have continually expanded what they recognize as the public's interest in public trust resources to include everything from the right to hunt to the right to maintain pollution-free water.”).

105. *Id.*

106. *Id.*

107. NCSL, *supra* note 4 (Only nineteen states currently have laws or pending legislation governing containment of rainwater include Arizona, Arkansas, California, Colorado, Hawaii, Illinois, Nevada, New Jersey, North Carolina, Ohio, Oklahoma, Oregon, Rhode Island, Texas, Utah, Virginia, Washington, U.S. Virgin Islands).

Prior appropriators might argue that the harvested rainwater of others belongs to them by law; they appropriated it for their use long before anyone set up a rain barrel.¹⁰⁸ If the harvested water is not allowed to flow into the local lakes and streams it harms prior appropriators' rights.¹⁰⁹ However, proponents of rainwater harvesting would argue that this is not the case. For instance, two-thirds of the rain and precipitation in this country evaporates or transpires back to the atmosphere.¹¹⁰ So, even if allowed to flow into the rivers, well over half of this rainwater would have been lost to natural causes anyway.¹¹¹ If the state permits individuals to trap rainwater in containers with a lid, then this would solve the evaporation issue and put to use a resource that, in theory, was already wasted. Many rain barrels have lids to prevent evaporation, minimize windblown contaminants, and prevent breeding grounds for mosquitos.¹¹²

Another argument to allow rainwater harvesting is that rainwater management has a direct effect on navigable waters of the United States and, thus, falls under the PTD.¹¹³ One could argue that certain natural resources, like rainwater, do not have an owner and, therefore, belong to all citizens.¹¹⁴ When federal statutory law fails to offer implied (or even express) protection over a resource, the PTD imposes upon states a duty to protect the resource for its citizens.¹¹⁵ The states may have an obligation to allow citizens to use current and advancing technology to capture rainwater that has fallen on their land in perpetuity without legal repercussion.¹¹⁶ Under the idea that rainwater belongs to everyone, it is then up to state politicians to expand the state's PTD to allow its citizens to harvest rainwater, a public resource, without legal consequences.

108. See R. Mark Josephson, *An Analysis of the Potential Conflict between the Prior Appropriation and Public Trust Doctrines in Montana Water Law*, 8 PUB. LAND & RESOURCES L.R. 83, 102, 106 (discussing considerations, such as balancing prior appropriators' needs, when the prior appropriation and public trust doctrines conflict); see *History of Rainwater Harvesting*, *supra* note 18 (indicating many states have prohibited rain barrels until recently); see also Lawrence J. MacDonnell, *Out-of-Priority Water Use: Adding Flexibility to the Water Appropriation System*, 83 NEB. L.R. 485, 485 n.2 (2004) (noting the prior appropriation system was first recognized in 1855 in Western states).

109. MacDonnell, *supra* note 108, at 486–87, n.6.

110. Frederick & Gleick, *supra* note 6, at 63.

111. *Id.*

112. See 2016 Bill Text Colo. H.B. 1005 37-96.5-102 (1) (explaining that all rain barrels must have a lid to comply with the law).

113. *Should the public trust doctrine be expanded to the use of groundwater?*, PACIFIC LEGAL FOUNDATION, <https://pacificlegal.org/public-trust-doctrine-expanded-use-groundwater/> (last visited Dec. 8, 2018); see *The Daniel Ball*, 77 U.S. 577, 563 (1870) (establishing a test to determine which waters of the United States are navigable in fact).

114. See *e.g.*, *Prah v. Maretti*, 321 N.W.2d 182, 188 n.9 (Wis. 1982) (describing that all landowners have an interest in sunlight).

115. *The Daniel Ball*, 77 U.S. at 564.

116. *Id.*

One problem with this argument is that even though the PTD has close ties to many *United States judicial holdings*, it looks to have fallen through the cracks of administrative law. Many politicians do not believe that it is their duty to be the trustee of public property and its resources.¹¹⁷ Rather, many legislators are under the belief that they are only to decide on political and statutory issues that result in protecting or destroying natural resources via permit systems.¹¹⁸ This line of thinking only leads to the belief that it is someone else's job to protect state resources.¹¹⁹ This illustrates yet another reason why states need to reevaluate its policies to ensure its resources are both protected and made available for use by its citizens.

F. Using the Public Trust Doctrine to Create New Policy

The idea of the public holding water resources in trust has been around for centuries.¹²⁰ Today, the idea of using the PTD to reach areas beyond water is starting to gain traction.¹²¹ Mary Wood is a professor of law and faculty director of the Environmental and Natural Resources Law Center at the University of Oregon School of Law in Eugene and author of *Nature's Trust*.¹²² She proposes a new legal framework based on the PTD to define and carry out the government's ecological responsibility.¹²³ Professor Wood believes there is a vast opportunity awaiting in supporting the PTD, which politicians currently are not utilizing.¹²⁴ She explains how the doctrine could and should guide a dramatically new approach to protecting the environment (land, water, air, and wildlife) as a whole.¹²⁵

Wood's primary argument is that decision makers should use the PTD to support conservation efforts in both the public's and the environment's

117. MARY C. WOOD, *NATURE'S TRUST* 15 (2014).

118. *Id.*

119. *See id.* at 16 (describing that many view the public trust doctrine as only judicial, rather than legislative).

120. Cooper, *supra* note 65, at 67.

121. The U.S. Supreme Court held in *Geer v. Connecticut* that the public trust doctrine was meant to include wildlife. *Geer v. Connecticut*, 161 U.S. 519, 521–23 (1896); *see* WOOD, *supra* note 117, at 15 (advocating for the public trust doctrine to cover the environment as a whole); *see also* Alyssa Falk, *As Easy as Shooting Fish in a Barrel? Why Private Game Reserves Offer a Chance to Save the Sport of Hunting and Conservation Practices*, U. ILL. L. REV. 1329, 1338–39 (2015) (discussing the potential of wildlife falling under the protection of the public trust doctrine).

122. Mary Wood, U. OR. SCH. OF L., <http://law.uoregon.edu/explore/Mary-Wood> (last visited Nov. 17, 2018).

123. WOOD, *supra* note 117, at 14.

124. *See id.* at 16–17 (summarizing how Wood foresees the PTD impacting political and social dynamics).

125. *See id.* at 15–16 (explaining that the public trust doctrine, if used correctly, could stimulate modern bureaucracy by implementing new statutory laws that could affect all natural resources).

best interest.¹²⁶ While this Note reinforces Wood's argument, it more specifically looks at using the PTD to allow private citizens and even municipalities to harvest rainwater as a public resource. This is not a farfetched argument because the PTD reaches much further than navigable waters. The original intent was to include not only "'navigable waters' in a state" in the PTD, but also "lands beneath these waters . . . [and] living resources, e.g. the fish and aquatic plants and animal life, inhabiting these lands and waters."¹²⁷ Additionally, looking to the holding of *Illinois Central*, the Court explained that the doctrine may need to be flexible in order to protect the public's best interest.¹²⁸ Much like how the western states created the prior appropriation doctrine to accommodate their water needs, local governments could adopt rainwater harvesting as part of their state's PTD to meet their growing water needs. Thus, the argument for state-level decision makers to allow the PTD to cover a multitude of resources (rainwater harvesting) for different reasons (to lessen the burden on public utilities, lower cost for taxpayers, etc.) is reasonable and realistic.

IV. WHAT ARE STATES DOING?

At the time of this publication, there were no laws banning rain barrels outright.¹²⁹ However, there have been numerous obstacles to allowing one to use one, and the legal issues change as much as the flow of the rivers themselves. Some states encourage rainwater harvesting while others have many requirements that make it hard for the average homeowner to set up a basic rain barrel.¹³⁰ This reinforces the premise that advocates must get ahead of the issue and use the courts to ensure the PTD applies to rainwater collection.

126. See *id.* at 15, 17 (discussing proposed fiduciary duty of government as trustee).

127. SLADE, *supra* note 96, at 13.

128. Ill. Cent. R.R. v. Illinois, 146 U.S. 387, 436–37 (1892); see also Leora Broydo Vestel, *The Legalties of Rainwater Harvesting*, N.Y. Times: Green Blogs (June 29, 2009, 9:18 AM ET) <https://green.blogs.nytimes.com/2009/06/29/the-legalities-of-rainwater-harvesting/> (explaining that while the purchase of a rain barrel is not illegal, the act of harvesting water via rain barrel a prior appropriation state, such as Colorado, can lead to legal consequences).

129. See generally NCSL, *supra* note 4 (an overview of the states that have laws or legislations concerning rainwater and rain barrels).

130. See, e.g., COLO. REV. STAT. § 37-96.5-105 (2016) (explaining that in Colorado if the use of a rain barrel proves to be detrimental to a senior water rights holder, the State Engineer can stop a private collector); see also Philadelphia Water Dep't, Watershed Blog, News Stream: Mt. Airy Rain Barrels (Mar. 23, 2012) <http://www.phillywatersheds.org/news-stream-mt-airy-rain-barrels> (explaining that The Philadelphia Water Department and the Mt. Airy Business Improvement District installed rain barrels in local neighborhood in Philadelphia).

A. Colorado

Colorado is a state that follows the prior appropriation doctrine.¹³¹ This first-in-time, first-in-right method is most common in the West where water is scarce.¹³² This type of water law also makes the practice of harvesting rainwater extremely difficult. Capturing water out of priority may deny downstream and/or senior water right holders the use of water that they have planned for and often have state permits to acquire.¹³³ In arid environments, every little bit of water adds to the larger picture, and many people count on the rain to supply their appropriated rights and needs.

Due to the prior appropriation doctrine in the state, Colorado has slowly changed their laws on who and how one can harvest rainwater. Before 2009, it was illegal for a residential home owner to collect rainwater in Colorado.¹³⁴ In the event that a citizen harvested rainwater prior to 2009, they were subject to a \$500 fine per day.¹³⁵ However, after some legislative proposals and decisions, the state finally passed two laws that allowed private citizens to harvest rainwater legally, but with some restrictions.¹³⁶ First, the collected water must be used on the property where the water is collected.¹³⁷ Second, residents are only allowed up to two barrels (with a combined total of 110 gallons), and the water must be used for outdoor purposes only.¹³⁸ The passing of these two laws shows that Colorado has made some progress in the past few years for allowing rainwater harvesting.

131. Dep't of Nat. Res., Colorado Division of Water Resources: Prior Appropriation Law, <http://water.state.co.us/surfacewater/swrights/pages/priorapprop.aspx> (last visited Dec. 8, 2018).

132. THOMPSON, *supra* note 40 at 176.

133. See Stephen N. Bretsen, *Rainwater Harvesting Under Colorado's Prior Appropriation Doctrine: Property Rights and Takings*, 22 FORDHAM ENVTL. LAW REV. 159, 170 (2010) (explaining that the ability of residents to harvest rainwater is limited because of prior rights and over-appropriation).

134. See ACER Watertanks: Is Rainwater Harvesting Legal in Your State? (Jan. 11, 2017) <https://acerwatertanks.com/is-rainwater-harvesting-illegal/> (explaining that in 2009, two laws were passed (Senate Bill 80 and House Bill 1129) that loosened restrictions on rainwater harvesting); see also Jeff Guo, *It is Actually Illegal in Colorado to Collect the Rain That Falls on Your Home*, WASH. POST, Mar. 24, 2015, <https://www.washingtonpost.com/blogs/govbeat/wp/2015/03/24/it-is-actually-illegal-in-colorado-to-collect-the-rain-that-falls-on-your-home/> (explaining the laws preventing rain barrels and harvesting rainwater before 2009) (last visited Nov 18, 2018).

135. Findlay, *supra* note 11, at 75.

136. COLO. REV. STAT. §§ 37-96.5-103, 37-90-105 (2016).

137. NCSL, *supra* note 4.

138. COLO. REV. STAT. § 37-96.5-103.

B. California

California, like most of the western states, is known for its struggle to obtain water.¹³⁹ In reaction to this crisis, California passed the Rainwater Capture Act of 2012.¹⁴⁰ This Act allows homeowners, commercial properties, and government landowners to operate rain barrel systems to harvest rainwater.¹⁴¹ In fact, the legislation encourages property owners to harvest rainwater for beneficial use.¹⁴² The Act also lays out a plan to reduce the dependency on potable water by 20% by 2020.¹⁴³ The Act does not explicitly say that there is a limit to how much one can collect.¹⁴⁴ One study found that, with a proper collection kit, a single-family home in California could replace upwards of 60% of their water needs.¹⁴⁵ In a state with an average rainfall of 20 inches of rain per year, a single-family home could collect as much as 24,000 gallons of water using a rain barrel kit.¹⁴⁶

Property owners could not always collect rainwater in California. Prior to the 2012 Rainwater Capture Act, anyone who harvested rainwater

139. See, e.g., Dennis Dimick, *5 Things You Should Know About California's Water Crisis*, NAT'L GEOGRAPHIC (Apr. 6, 2015), <https://news.nationalgeographic.com/2015/04/150406-california-drought-snowpack-map-water-science/> (describing the current and historic water crisis in California); see also Olivia Lambert, *SBS Program Dateline Explores Water Wars in California*, NEWS.COM.AU (Aug. 1, 2017, 10:06 PM) <http://www.news.com.au/technology/environment/conservation/sbs-program-dateline-explores-water-wars-in-california/news-story/264fb4f97ff3a2ba89930c8b69a758c5> (discussing California's water wars); see *Los Angeles Water Harvesting Laws*, RAIN GUTTER PROS INC. <http://www.raingutterprosinc.com/los-angeles-water-harvesting-laws> (noting that Los Angeles is known for its water shortages) (last visited Nov. 24, 2017); NCSL, *supra* note 4 (describing California legislation concerning rainwater collection).

140. CAL. WATER CODE § 10571 (2012).

141. See *id.* (indicating that capturing rainwater involves "efforts at all levels, from individual landowners to state and local agencies and watershed managers"); *Rain Barrel Program*, CITY OF OAKLAND, <http://www2.oaklandnet.com/Government/o/PWA/o/FE/s/ID/OAK025822> (showing the city of Oakland ran a three-year program that subsidized rain barrels for local participants in rainwater harvesting) (last visited Nov. 17, 2018).

142. See CAL. WATER CODE § 10571 (indicating the benefits of rainwater harvesting and that individuals should participate).

143. *Id.*

144. See *Los Angeles Water Harvesting Laws*, *supra* note 139 (noting that residents may freely collect rainwater) (last visited Nov. 24, 2017).

145. *Id.*

146. *Rain Barrel Guide: How Much Water Can You Collect in Rain Barrels During a Rainfall*, RAIN BARRELS: ULTIMATE BUYER'S GUIDE, <https://web.archive.org/web/20180504232035/http://www.rainbarrelguide.com/how-much-water-can-you-collect-in-rain-barrels-during-a-rainfall/> (last visited Nov. 18, 2018).

without a permit was subject to a fine because the state legally owned the rights to the rainwater.¹⁴⁷ The legislature enacted the Rainwater Capture Act because the legal doctrine of prior appropriation already allocated surface water (replenished by rain water) to other users.¹⁴⁸ However, the Act also contains limitations. For example, it is illegal to collect rainwater that has already drained from a previous system.¹⁴⁹ In other words, one cannot collect water that has already been put to use by another.¹⁵⁰ Lastly, the collected water must be put to a beneficial use, otherwise the collector is subject to a fine.¹⁵¹

C. New Mexico

New Mexico is also a prior appropriation water rights state. One hundred percent of New Mexico's water and water rights have been accounted for because of the state's reliance on this doctrine.¹⁵² The State Engineer oversees the allocated water rights in the state; therefore, one must acquire existing rights to proceed with installing any system that collects water.¹⁵³ However, New Mexico does not have any laws that explicitly deal with the legal ownership of rainwater or any requirements for outdoor use of rainwater.¹⁵⁴ Conversely, the state has started a tax credit program for "Green Buildings," which could include rainwater harvesting.¹⁵⁵ Those wishing to participate in the tax credit program for green buildings with rainwater harvesting systems encounter issues with the law because a person must first acquire a water right from the State Engineer; but, 100% of the water in the state has already been accounted for.¹⁵⁶ The law is ambiguous in New Mexico. Therefore, New Mexico could benefit from legislative action that allows rainwater harvesting under the PTD.

147. *Los Angeles Water Harvesting Laws*, *supra* note 139.

148. *See id.* (describing that, prior to the Rainwater Capture Act, individuals required permits to access water).

149. *Id.*

150. *Id.*

151. *Id.*; *see also* Samuel C. Wiel, *What is Beneficial Use of Water*, 3, 2 CAL. L. REV. 2 (1915) (discussing that a beneficial use is to be determined by a jury and what a reasonable person would consider a beneficial use).

152. *Rainwater Regulations and Statutes Around the World*, HARVESTH2O, http://www.harvesth2o.com/statues_regulations.shtml#nm (last visited Nov. 18, 2018).

153. *Id.*

154. *Id.*

155. *Id.*

156. *Id.*

D. Nevada

Nevada, a prior appropriation state, is one of the most troubling states in the nation concerning rainwater harvesting. In Nevada Revenue Statutes section 533.030, the state forbids rain barrels unless an individual has already appropriated that water.¹⁵⁷ Violating the Nevada law is a misdemeanor.¹⁵⁸ As JoAnn Kittrell, the public information manager for the Nevada Department of Conservation and Natural Resources, said, “Any collection of rainwater by anyone, anywhere in the state is in violation of Nevada water law.”¹⁵⁹ This applies to both homeowners and corporations.¹⁶⁰ In short, the State Engineer has determined that even the smallest amount of water collecting is illegal.¹⁶¹ Nevada’s law takes precautions to protect those who hold prior water usage rights, much like how the Oregon water laws acknowledge the city of Medford, Oregon’s existing right to utilize Big Butte Creek.¹⁶² Therefore, the state and private appropriators can bring a lawsuit against anyone who has caused them harm by harvesting rainwater.¹⁶³

E. Allowing Rainwater Harvesting to Fall Under the PTD Would Benefit the States

Access to water is necessary for every living being.¹⁶⁴ With growing populations and increasing global temperatures, the demand for water is swelling.¹⁶⁵ There are many suggestions to slow this problem. One example is allotment through water permits—where a user has the right to obtain and use water made available—either through selling or buying rights.¹⁶⁶

157. NEV. REV. STAT. § 533.030 (2017).

158. Mark Robson, *Update 2: Can Nevadans Collect Rain in Barrels? No*, RENO GAZETTE JOURNAL (May 28, 2015, 9:09 PM), <http://www.rgj.com/story/news/2015/05/26/ask-rgj-can-nevadans-collect-rain-barrels/27983037/>.

159. *Id.*

160. *See id.* (noting that anyone in Nevada is subject to rainwater collection restrictions).

161. *Id.*

162. *See* OR. REV. STAT. § 538.430(1) (2017) (recognizing Medford, Oregon’s existing water rights).

163. *See id.* (noting that no person may appropriate water, suggesting a cause of action against those who do so illegally); Robson, *supra* note 158 (indicating violating Nevada appropriation laws is a misdemeanor); *see also* Bretson, *supra* note 133, at 226 (describing that senior appropriators may bring a cause of action against the state in Colorado).

164. *Water – Its Importance and Source*, AUSTL. GOV’T DEP’T OF HEALTH (Nov. 2010), <http://www.health.gov.au/internet/publications/publishing.nsf/Content/ohp-enhealth-manual-atsi-cnt-l-ohp-enhealth-manual-atsi-cnt-l-ch6~ohp-enhealth-manual-atsi-cnt-l-ch6.1>.

165. World Bank Grp. [WBG], *High and Dry: Climate Change, Water, and the Economy*, at vi (2016).

166. *Id.* at viii, 34.

Another example is implementing pricing structures for commercial users, much like municipal water meters.¹⁶⁷ Some argue that implementing a pricing element attached to how much water is used could help preserve water, as many would become more resourceful in order to avoid waste or higher usage fees.¹⁶⁸ Another example involves utilizing the law to allow for water storage—specifically by allowing private parties and municipalities to collect rainwater under the PTD in the state’s common law or as a matter of federal law.¹⁶⁹

If states adopt rainwater harvesting under the PTD, homeowners would be able to either start or continue to collect rainwater. Homeowners could harvest rainwater without the fear that the State Engineer would stop these practices, or worse, would file a lawsuit alleging that homeowners caused harm to a downstream appropriator.¹⁷⁰

For instance, if the Colorado State Legislature follows this recommendation, private rainwater harvesters could then use the water they collect for more than just outdoor use.¹⁷¹ Private citizens could use this resource to support livestock, fill toilet tanks, or even wash clothes without fear of litigation. Additionally, in Colorado, a broader PTD would give all private citizens the right to collect more than 110 gallons and, in some cases, give them the right to even harvest rainwater in the first place.¹⁷² Legal rainwater harvesting in Colorado is still a narrowly defined act. The laws are limited to small clusters of houses with a small-capacity well and single-family dwellings.¹⁷³

Under the precipitation collection statute, a multi-unit building, one that has five or more units using municipal water, is barred from harvesting rainwater.¹⁷⁴ A building consisting of four family units or less is allowed to harvest 110 gallons for the entire building.¹⁷⁵ No matter the size of the family, a single-family dwelling can harvest up to 110 gallons of water, whereas a unit with five separate family dwellings can only harvest the same amount: 110 gallons of water. Therefore, this law prohibits some

167. *Id.* at 43.

168. *See id.* (indicating leaking plumbing in urban settings wastes 32 billion cubic meters of treated water worldwide).

169. *See id.* at ix (proposing expanding different types of water storage).

170. *See, e.g.,* COLO. REV. STAT. § 37-96.5-105 (2016) (explaining that, in Colorado, if the use of a rain barrel proves to be detrimental to a senior water rights holder, the State Engineer can stop a private collector).

171. *See* COLO. REV. STAT. § 37-96.5-103 (showing that rainwater collected in Colorado can be used for outdoor use only).

172. *See id.* (indicating individuals may not collect more than 110 gallons of rainwater); COLO. REV. STAT. § 37-90-105 (allowing rooftop precipitation collection for residences).

173. Bretsen, *supra* note 133, at 176.

174. COLO. REV. STAT. § 37-96.5-103.

175. *Id.*

families from utilizing a natural resource based on either their economic resources or lifestyle choices.¹⁷⁶ Yet, the law rewards families who can either afford or chose to live in a single-family dwelling.

The PTD protections that allow one to harvest rainwater reach farther than Colorado. Applying the PTD in California could allow citizens to collect rainwater and previously used drainage water. California neighborhoods could create a “daisy chain” of rainwater use, to maximize efficiency with minimal impact on the overall water supply. Allowing rainwater harvesting under the PTD in a state like Nevada (a prior appropriation state) could protect citizens from lawsuits when they harvest the rain and put it to beneficial use. Doing so would prevent the State Engineer from filing a lawsuit against a family who wanted to collect rainwater to simply water their garden.

To allow rainwater to fall under the PTD’s legal framework would clarify legal access to harvest rainwater for both the legislature and its constituents. This may cure the confusion about the legal use of rain barrels, much like the ambiguity in Nevada and New Mexico.¹⁷⁷ Where there is such ambiguity in prior appropriation states, some citizens might not want to risk litigation just to make environmentally sound choices. Also, there is very little case law focusing on water not located within a stream or lake.¹⁷⁸ Therefore, providing clarity to legislation is not the only benefit: allowing rainwater harvesting under the PTD would also provide courts a legal doctrine to fall back on when a dispute arises.

With respect to diffused surface waters, most case law deals with the “civil law” approach. The “civil law” approach contemplates when a property owner rids their land to prevent flooding—not trying to keep the water falling on their property.¹⁷⁹ Generally, it is a tortious act under the civil law approach to divert the natural flow of surface water.¹⁸⁰ Under this rule, landowners are barred from acts such as raising their property elevation because it might cause run off, which might “harm” the neighboring property.¹⁸¹ The one benefit of this rule provides a type of

176. *Id.*

177. *See* HarvestH2O, *supra* note 152 (explaining that there are known laws or statutes concerning rain harvesting).

178. THOMPSON, *supra* note 40 at 179.

179. *See* Argyelan v. Haviland, 435 N.E.2d 973, 976 (Ind. 1982) (explaining that it is “not unlawful to accelerate or increase the flow of surface water by limiting or eliminating ground absorption or changing the grade of land”).

180. Gwenn Rinkenberger, *Landowner’s Right to Fight Surface Water: The Application of the Common Enemy Doctrine in Indiana*, 18 VAL. U.L. REV. 481, 484 (1984).

181. *Id.* at 484–85.

predictability for all property owners.¹⁸² The harshness of this rule has dissuaded many states from accepting it, especially because increased development leads to diverting diffused water. However, providing citizens with unambiguous language that allows for rainwater harvesting under the PTD could end further litigation and confusion on how to handle such disputes. Meaning that instead of diverting water away from the property, which could lead to damage of a neighboring property, one could capture water for on-tract use.

Last, to gain the full effect of the PTD, this Note proposes that by holding this resource in trust, the state could implement strategies allowing entire cities and municipalities to harvest rainwater. If states implement tactics allowing entire cities to collect water, it could also result in benefits across many spectrums. These tactics could protect cities by providing flood control.¹⁸³ These tactics could also lead to a decrease in pollution and even reduce sewer overflows.¹⁸⁴ Studies also show that implementing rainwater-harvesting systems can have a positive effect on developed land by complementing the hydrology of the land in its predeveloped condition.¹⁸⁵ Second, in some cases, it would align well with: city planning buffer areas; sediment and erosion control; storm water control; and illicit discharges of water.¹⁸⁶ Finally, by allowing cities to collect rainwater under a legal doctrine, the law could relieve litigation pressure on the courts regarding ambiguous water laws. Therefore, allowing entire cities to harvest rainwater reduces pressure on municipalities' storm water and drainage water systems, as well as their legal systems.

V. COUNTER ARGUMENT AND COMPLEXITIES

No clear plans or easy answers exist to any natural resource problems—using the PTD to allow rainwater harvesting is no exception. Currently, the concept of harvesting rainwater is still in its infancy and few are taking advantage of this method to capture the resource. If large suburban areas start the practice of harvesting rainwater, the negative effects to downstream flows and groundwater levels increases.¹⁸⁷ These negative

182. Timothy Weston, *Gone with the Water: Drainage Rights and Storm Water Management in Pennsylvania*, 22 VILL. L. REV. 901, 907 (1977).

183. EPA RAINWATER HARVESTING, *supra* note 26, at 28.

184. *Id.*

185. *Id.*

186. *Id.* at 32.

187. Bretsen, *supra* note 133, at 176.

effects could injure senior appropriators.¹⁸⁸ In short, when many private citizens collect a large amount of rain they prevent rainwater from flowing into the local rivers and lakes that others rely on for their source of water.¹⁸⁹ Following the holding of *Webb's Fabulous Pharmacies Inc., v. Beckwith*, it would not be surprising to find a rise in takings claims brought on behalf of the acting city as they would argue that the state "took their water rights from them."¹⁹⁰ The only way this takings claim could hold water is if under prior state law, the property owner's rights to the rainwater were clearly subordinate to the rights of surface water users.

Case law from other jurisdictions further complicates the counter argument. The court in *De Grayner & Co. v. Department of Natural Resources* defined a navigable body of water as one that can float any "boat, skiff, or canoe, of the shallowest draft used for recreational purposes."¹⁹¹ Since the PTD covers navigable waters and the courts define navigable bodies of water, rainwater would be exempt from this area, as one cannot "float" a boat of any kind on rainwater.

Safety is also an issue. Elected public officials must address public safety and health if they champion any bill that allows people or entire municipalities to collect rainwater. One of the reasons Colorado does not let its citizens use rainwater for indoor use is because of concerns over contamination and health hazards.¹⁹² In a traditional rainwater harvesting system, rainwater flows over the roof into a drain system and discharges into a storage container.¹⁹³ The water that flows over the roof is susceptible to pollutants and bacteria deposited from birds and other animals.¹⁹⁴ Another factor is that the chemicals on roofing materials can also be hazardous to consume.¹⁹⁵ Details of the potential pollutants and how they interact with the type of roofing material is shown in Table 1.

188. See *id.* (describing that if rainwater is captured, surface water levels could be impacted, which can injure the rights of prior appropriators).

189. *Webb's Fabulous Pharmacies, Inc., v. Beckwith*, 449 U.S. 155, 164 (1980).

190. *Id.* at 163–65.

191. *DeGrayner & Co. v. Dep't of Nat. Res.*, 236 N.W.2d 217, 222 (Wis. 1975) (citing *Muench v. Public Serv. Comm'n*, 53 N.W.2d 514, 519 (Wis. 1952)).

192. Colo Dep't of Pub. Health and Env't, Best Practices in Sustainability: Residential Rain Barrels, https://www.colorado.gov/pacific/sites/default/files/DEHS_Sust_RainBarrel2017.pdf (last visited Nov. 30, 2017); see *Water-Efficient Technology Opportunity: Rainwater Harvesting Systems*, Fed. Energy Mgmt. Program: Office of Energy Efficiency & Renewable Energy <https://www.energy.gov/eere/femp/water-efficient-technology-opportunity-rainwater-harvesting-systems> (diagramming the traditional rainwater harvesting schematic) (last visited Nov. 17, 2018).

193. U.S. ENVTL. PROT. AGENCY, *Soak Up the Rain: Rain Barrels*, <https://www.epa.gov/soakuptherain/soak-rain-rain-barrels> (last updated Feb. 2, 2018).

194. *Id.*

195. See *id.* (explaining that harvested rainwater should not be used on gardens meant for consumption).

Table 1¹⁹⁶

Roofing Material	Pollutants of Concern	Suitable End Uses
Asphalt shingles	Lead, Mercury	Contaminants vary by product. Sample water quality prior to use.
Galvanized metal	Cadmium, Nickel, Zinc, Phosphorus	Contaminants vary by product. Sample water quality prior to use.
Green roof	Nutrients, COD	Suitable for irrigation and other non-potable end uses.
Copper flashing, solder	Copper	Not suitable for human consumption, including drinking water, vegetable gardening, or swimming pools.
Lead flashing, solder	Lead	Not suitable for human consumption, including drinking water, vegetable gardening, or swimming pools.
Wood shingle	Copper, Arsenic, Nutrients	Not recommended for rainwater harvesting.
Cement and terra cotta tiles	Lead, Copper, Cadmium, Bacteria, Asbestos	Not recommended for rainwater harvesting.
Aluminum roofing	None	All uses
Rubber membrane	None	All uses

Table 1 demonstrates that those who decide to harvest rainwater could run into more issues and costs than anticipated. To harvest rainwater, one might need to purchase a containment system and also pay for testing.¹⁹⁷ This supports the argument that use of harvested rainwater may not be feasible because it may be contaminated.

In order to maintain a safe but functional rainwater-harvesting scheme, the states should enact laws to protect the public and the public's resource in unison. As for the public resource, the states should follow the language of the Supreme Court in *Illinois Central*, which explains that states will

196. EPA RAINWATER HARVESTING, *supra* note 26, at 21.

197. *Id.*

need to adapt to the times as insurance for their citizens.¹⁹⁸ As for the safety concern, many organizations, such as the Environmental Protection Agency, have provided guides and tools (e.g., Table 1) to understand what steps can be taken to protect people from unintended harm.¹⁹⁹

CONCLUSION

Asking states to adopt rainwater harvesting as part of the PTD is smart water policy and smart development policy given current climate change issues. Interpreting the PTD this way would likely require decision makers to invest time and effort to ensure that the costs do not outweigh the benefits. However, the cost of inaction would be far greater than the cost of action. One thing is for certain; the future will demand a need for more water and reasonable ways to obtain that water. With the right kind of policy, local governments can ensure that people and the ecosystem are not susceptible to the forecasted floods and droughts ahead. The framework of using the PTD to allow rainwater harvesting already exists; it is up to the local decision makers to use the tools at their disposal to protect the citizens that they represent.

198. *See generally* Ill. Cent. R.R. v. Illinois, 146 U.S. 387, 435–38 (1892) (describing the need for evolution in the laws to adapt to the growth of population in cities, sovereign states, and the United States).

199. *See generally* EPA RAINWATER HARVESTING, *supra* note 26 (providing guidance for the protection of public safety).