THE VERMONT CLEAN WATER ACT: WATER QUALITY PROTECTION, LAND USE, AND THE LEGACY OF TROPICAL STORM IRENE

Trey Martin[1]

Introduction: Act 64 of 2015 and the Vermont Clean Water Initiative 688

I. Lessons Learned from Tropical Storm Irene 692

II. Act 138 of 2012 696

III. Act 172 of 2014: The Shoreland Protection Act 699

IV. Act 64 of 2015: The Vermont Clean Water Act 703

Conclusion: Unresolved Issues 707

INTRODUCTION: ACT 64 OF 2015 AND THE VERMONT CLEAN WATER INITIATIVE

Vermont Act 64 of 2015 ("Act 64" or "Vermont Clean Water Act")[2] was passed with broad support and signed into law with much fanfare.[3] Act 64 resulted from a major effort across state government, coordinated by the Vermont Agency of Natural Resources ("ANR" or the "Agency") Department of Environmental Conservation ("DEC"). It is intended to provide legal tools, authority and capacity to comply with federal regulatory requirements to remediate significant phosphorus impairment in Lake Champlain,[4] and more generally to address impaired waters across the

1. Trey Martin is the Deputy Secretary of the Vermont Agency of Natural Resources. Prior to his appointment as Deputy Secretary in January, 2015, he was Senior Counsel for Government Affairs in the Vermont Department of Environmental Conservation. Additional information and editorial suggestions were provided by Michael O'Grady, Deputy Director of the Office of Vermont Legislative Council. Views expressed in this paper reflect the views of the author only and do not necessarily represent the policies of the State of Vermont, the Vermont Agency of Natural Resources, or the Office of Legislative Council.

2. 2015 Vt. Acts & Resolves 975.

3. *See, e.g.*, Press Release, Governor Peter Shumlin, Governor Peter Shumlin Signs Clean Water Bill (June 17, 2015), http://governor.vermont.gov/node/2389 [https://perma.cc/H2GE-86LU].

4 On June 17, 2016, the U.S. Environmental Protection Agency ("EPA") adopted a Total Maximum Daily Load and Phase I Implementation Plan to address phosphorus impairment in Lake Champlain. For more information about the history of the State of Vermont and EPA efforts to regulate and remediate phosphorus impairment in Lake Champlain, please see *Restoring Lake Champlain*, AGENCY OF NAT. RESOURCES, http://dec.vermont.gov/watershed/cwi/restoring [https://perma.cc/HL4L-

state.[5] Passed in anticipation of EPA action to adopt a new Lake Champlain Total Maximum Daily Load ("TMDL"), Act 64 supports the State of Vermont's regulatory obligations established under section 303(d) of the federal Clean Water Act ("CWA").[6] It reaches beyond the "point source" pollution control scheme established by Congress under the CWA and expands state authority to address surface water pollution, particularly polluted stormwater runoff.[7] In the CWA, Congress obligates states to take the steps necessary to restore impaired waters.[8] In the case of Lake Champlain restoration, Vermont's Act 64 promotes a set of policies—regulatory, fiscal, and planning—intended to protect, maintain, enhance, and restore Lake Champlain and all of Vermont's surface waters as part of a statewide, programmatic Clean Water Initiative.[9]

The Vermont General Assembly, executive branch agencies, stakeholders, and advocates have worked together for decades to protect the state's natural resources, including major lake ecosystems like Lake Champlain, from the most adverse impacts of land use and development. Vermont is of course celebrated for policies that conserve and protect waters, forests, and still wild places. Those same policies also protect the health of Vermont's tourism and working-lands economy. Moreover, original patterns of development—small towns and villages clustered around significant lakes, ponds, rivers, and streams and surrounded by working farms and forests—have been protective of natural resources generally. But now many major water resources are impaired in Vermont and Vermonters have clamored for better protections.[10]

5KE4]; *Lake Champlain Phosphorus TMDL: A Commitment to Clean Water*, ENVTL. PROT. AGENCY, http://www.epa.gov/tmdl/lake-champlain-phosphorous-tmdl-commitment-clean-water [https://perma.cc/29VJ-UB5F] (last updated Dec. 1, 2015).

5. *See generally* 2015 Vt. Acts & Resolves 975 ("Despite the State and federal mandates to maintain and prevent degradation of State waters, multiple lakes, rivers, and streams in all regions of the State are impaired, at risk of impairment, or subject to water quality stressors.").

6. *See* Federal Water Pollution Control Act, 33 U.S.C. § 1313(d) (2012) ("Each State shall establish for the waters identified . . . the total maximum daily load, for those pollutants . . . [a]t a level necessary to implement the applicable water quality standards with seasonal variations and a margin of safety."); *see also* Kari Dolan, *The Importance of Inter-Agency Collaboration and Public Engagement in the Development of the Implementation Plan for the Nonpoint Source-Focused Vermont Lake Champlain Phosphorus TMDL*, *supra* p. 666.

7. *See generally Polluted Runoff: Nonpoint Source Pollution*, ENVTL. PROT. AGENCY, http://www.epa.gov/polluted-runoff-nonpoint-source-pollution [https://perma.cc/75CC-AYZM] (last updated Feb. 22, 2016) (describing the difference between point source and nonpoint source pollution).

8. *See generally Implementing Clean Water Act Section 303(d): Impaired Waters and Total Maximum Daily Loads (TMDLs)*, ENVTL. PROT. AGENCY, https://www.epa.gov/tmdl [https://perma.cc/9N8K-KNTA] (last updated Feb. 10, 2016).

9. *See* 2015 Vt. Acts & Resolves 976 (describing the purpose of the bill); *see also Clean Water Initiative*, VT. DEP'T OF ENVTL. CONSERVATION, http://cleanwater.vermont.gov/ [https://perma.cc/VC2J-E67P] (describing the Vermont's Clean Water Initiative).

10. *See* VT. DEP'T OF ENVTL. CONSERVATION, STATE OF VERMONT 2014 WATER QUALITY INTEGRATED ASSESSMENT REPORT 4 (2014),

As an important step in the journey toward clean water across the state, ANR called for a new Clean Water Initiative in 2015.[11] That initiative consists of: (i) internal reorganization and new resources DEC's Watershed Management Division, within the Agency of Agriculture, Food and Markets ("AAFM"), and the Agency of Transportation ("VTrans") to ensure dedicated program capacity to implement the Lake Champlain TMDL and the statewide goals of Act 64; [12] (ii) regulatory targets established under state and federal law to reduce pollution to water resources in almost every corner of Vermont;[13] (iii) tactical basin planning to identify the greatest needs and strategic investments in pollution abatement at the sub-watershed level;[14] and (iv) a new, dedicated Clean Water Fund and requirement for annual programmatic investments in pollution abatement projects and strategic conservation.[15]

Against this comprehensive approach, the challenge facing Vermont and the Clean Water Initiative is primarily diffuse and precipitation-driven, nonpoint source nutrient pollution in our largest watersheds. This includes phosphorus impairment in Lakes Champlain and Memphremagog and nitrogen pollution in the Connecticut River, flowing all the way into Long Island Sound.[16] Identifying, funding, and implementing best management practices ("BMPs") across a rural landscape requires a categorical rethinking of land use practices. Even though controlling point-source discharges is an important part of the equation in many watersheds, Vermont has asserted that the state cannot simply ratchet down the

---

http://dec.vermont.gov/sites/dec/files/documents/WSMD_mapp_305b%20WQ%20Report_2014.pdf [https://perma.cc/Z7AS-S2U5] (describing the impaired or altered waters in Vermont); *see also* 2015 Vt. Acts & Resolves 975 (describing Vermont's waters as "vital assets," noting the extent of impairment and costs of impairment, and stating the purpose to "manage and plan for the use of state waters and development in proximity to State waters"); *see also* STEVE SCHEINERT ET AL., RESEARCH ON ADAPTATION TO CLIMATE CHANGE IN THE LAKE CHAMPLAIN BASIN AND VERMONT'S WATERWAYS, REPORT: VALUE OF WATER QUALITY AND PUBLIC WILLINGNESS TO PAY FOR WATER QUALITY POLICY AND PROJECT IMPLEMENTATION 1–3 (2014), http://epscor.w3.uvm.edu/2/pdfFiles/pubs/wtp_report_v7-1_final.pdf [https://perma.cc/YF3V-SMLH] ("Vermont residents are deeply concerned about water quality, more so than any other surveyed policy issue.").

11. *See generally* VT. AGENCY OF NAT. RES., VERMONT'S CLEAN WATER INITIATIVE 3–4 (2014), http://legislature.vermont.gov/assets/Legislative-Reports/303279.pdf [https://perma.cc/3X6U-72R8].

12. 2015 Vt. Acts & Resolves 1023; *see Watershed Management Division*, VT. DEP'T OF ENVTL. CONSERVATION, http://dec.vermont.gov/watershed/contacts [https://perma.cc/T2V8-RQCW] (last visited Apr. 7, 2016) (reflecting nine new, dedicated positions already working full time under the Clean Water Initiative).

13. *See generally* STATE OF VERMONT 2014 WATER QUALITY INTEGRATED ASSESSMENT REPORT, *supra* note 10 (discussing various water pollution programs throughout Vermont).

14. Neil C. Kamman & Ethan Swift, *Tactical Basin Planning as the Vehicle for Implementation of the Vermont Clean Water Act*, *infra* p. 710.

15. *See* 2015 Vt. Acts & Resolves 1018 (establishing the Clean Water Fund).

16. STATE OF VERMONT 2014 WATER QUALITY INTEGRATED ASSESSMENT REPORT, *supra* note 10, at 41.

phosphorus or nitrogen concentrations in discharges from industrial facilities or sewage treatment plants.[17] Pursuant to the Vermont Clean Water Initiative and the Vermont Lake Champlain Phosphorus TMDL Phase I Implementation Plan ("Phase I Plan"), agricultural fields will be buffered more significantly, cover crops sewn, and manure spreading practices changed.[18] State and municipal roads will be retrofitted with stormwater controls including better ditches and right-sized culverts.[19] Developed lands will require improved practices, such as stormwater retention ponds, vegetated swales, and other green stormwater infrastructure.[20] Natural infrastructure like floodplains, wetlands, and forests will be conserved and protected as perhaps the state's best defense against stormwater pollution.[21] This is a particularly important strategy as Vermont's climate changes and the intensity and frequency of rainfall and snowmelt events increase.[22] The Lake Champlain TMDL and the Phase I Plan, which serve as templates for surface water pollution control statewide, describe all of this planning and the future actions to implement the CWA in great detail. More broadly, the initiative is a commitment by the state's General Assembly and executive branch agencies to improve the care with which Vermonters live on the land, as needed to improve water quality.

In one sense, Act 64 is important because of the significant new and expanded regulatory authority, programmatic capacity, and funding it provides for the state to meet its obligations under the federally required Lake Champlain TMDL and future TMDLs for Lake Memphremagog and the Connecticut River. The requirement under federal law to address nutrient and sediment pollution impairment in Lake Champlain was not the only, or even primary, motivation for Vermont state officials, legislators, stakeholders, and advocates. Over the past several decades, Vermont has increasingly taken an intensive and holistic look at the connectedness among development, economic growth, land use, and water quality.[23] Precedents for state action to address the goals of the CWA through state

17. *See* Letter from Peter Shumlin, Vt. Governor, to Gina McCarthy, Adm'r, Envtl. Prot. Agency & Curt Spalding, Regional Adm'r, Envtl. Prot. Agency, Region 1 (May 29, 2014), (of file with Vt. J. Envtl. L.).

18. *See* STATE OF VT., VERMONT LAKE CHAMPLAIN PHOSPHORUS TMDL PHASE I IMPLEMENTATION PLAN 69, 75 (2015), http://dec.vermont.gov/sites/dec/files/wsm/erp/Champlain/docs/Ph%201_plan_Version_4.pdf [https://perma.cc/DF5N-ATRU].

19. *Id.* at 85–86.

20. *Id.* at 84, 90–92.

21. *Id.* at 92.

22. *Id.* at 128.

23. William G. Howland, *The Lake Champlain Basin Program: Its History and Role*, *supra* p. 588; *see generally* Eric Smeltzer, *History of Vermont's Lake Champlain Phosphorus Reduction Efforts*, *supra* p. 615 (providing an overview of the history of Vermont's response to surface water clean-up).

regulation and land use requirements extend back decades. But perhaps the most dramatic recent lesson about the important connection between how we live on the landscape, and the impact of our choices on water resources, came about as a result of Tropical Storm Irene in August, 2011.

I. LESSONS LEARNED FROM TROPICAL STORM IRENE[24]

On August 28, 2011, Tropical Storm Irene passed through Vermont, dumping up to 11 inches of rain, flooding creeks and rivers, and impacting almost every community in the state.[25] Six people died in the storm and more than 3,000 structures were damaged or destroyed, along with 500 miles of state roads and 200 bridges.[26] Communities were cut off when those road systems went down, dozens of water supply systems were compromised, private wells submerged by floodwaters were contaminated, sewage treatment facilities discharged more than ten million gallons of raw or partially treated sewage, and numerous residential septic systems failed as a result of the storm.[27] The damage to infrastructure was estimated at more than $700 million—almost two-thirds of the state's annual general fund budget.[28]

The damage to the natural environment was equally extreme. Steady, heavy rains fell on ever more saturated soils, overwhelming Vermont's stream and river systems and causing inundation flooding and also fluvial erosion and landslides.[29] Nearly ten thousand acres of forest land were impacted by floodwaters that undermined root systems and debris that damaged tree stems. Floodwaters acted as vectors to move invasive plants and seeds that will inhibit healthy forest generation for decades to come.[30]

---

24. *See generally* David K. Mears & Sarah McKearnan, *Rivers and Resilience: Lessons Learned from Tropical Storm Irene*, 14 VT. J. ENVT. L. 177 (2013) (discussing the value of watershed management policies in protecting communities and preserving the natural environment).

25. Wilson Ring, *Vermont Marks Two Years Since Flooding, Damage*, WEATHER CHANNEL (Aug. 28, 2013), https://weather.com/news/news/vt-marks-2-years-irenes-flooding-damage-20130828 [https://perma.cc/583H-9PUF].

26. Nancy Shulins, *After Irene, Vermont Shows Us What Climate Resilience Looks Like*, GRIST (Nov. 2, 2014), http://grist.org/climate-energy/after-irene-vermont-shows-us-what-climate-resilience-looks-like/ [https://perma.cc/3VBZ-UVK2].

27. SACHA PEALER, VT. AGENCY OF NAT. RES., LESSONS FROM IRENE: BUILDING RESILIENCY AS WE REBUILD 3–4 (2012), http://anr.vermont.gov/sites/anr/files/specialtopics/climate/documents/factsheets/Irene_Facts.pdf [https://perma.cc/A43Q-ZZY8].

28. *See* Ring, *supra* note 25.

29. GEORGE SPRINGSTON & KRISTEN UNDERWOOD, IMPACTS OF TROPICAL STORM IRENE ON STREAMS IN VERMONT 13, http://vcgi.vermont.gov/sites/vcgi/files/event_archive/IreneGeomorphRevised02142012small.pdf [https://perma.cc/6SQ5-KPJN].

30. *See* PEALER, *supra* note 27, at 4.

Hundreds of oil and chemical spills were reported around the state, contaminating flood waters, sediment, and soils.[31]

Water resources were especially impacted by the flooding, which hit ten of Vermont's seventeen major river basins and caused sometimes catastrophic channel enlargement, deposition, and relocation.[32] The floodwaters scoured rivers and streams, stressing fish and macroinvertebrate populations and degrading aquatic habitat.[33] Sediment deposition and increased algae growth disrupted in-stream habitat and chemical contaminants distributed by floodwaters harmed aquatic and terrestrial species.[34] In-stream work to channelize and dredge streams in support of recovery efforts also had a negative impact on the quality and diversity of aquatic habitats according to scientists and environmental activists.[35] Lake Champlain tributaries delivered sediment and nutrient loads to the lake and high winds pushed high waters into waves that eroded shorelines and damaged structures.[36] The clarity of water was impacted by the heavy load sediment and nutrients, and phosphorus levels were recorded at higher than average levels, promoting the conditions in which algal blooms and cyanobacteria thrive.[37] Indeed, aerial photos taken of Lake Champlain after Tropical Storm Irene graphically depict the impact of sediment pollution: huge plumes of chocolate brown, muddy water at the mouth of every major tributary.[38]

This devastation forced scientists, policy makers, and legislators to examine the impact of our built landscape on the natural environment and identify opportunities for protection of natural infrastructure like floodplains, river corridors, and wetlands that help to absorb the impact of flooding and protect our roads, bridges, homes, and businesses.[39] Indeed,

---

31. Brian Mann, *Post-Irene Cleanup May Damage Environment*, NAT'L PUB. RADIO (Sept. 14, 2011), http://www.npr.org/2011/09/14/140461854/post-irene-cleanup-may-damage-environment [https://perma.cc/6VGF-2TV5].

32. *See* PEALER, *supra* note 27, at 5.

33. Vermont PBS, *Vermont Trout River Interview with Kim Greenwood*, YOUTUBE (Apr. 23, 2012), https://www.youtube.com/watch?v=NrnY8gHa054#t=295 [https://perma.cc/B4TC-PMBC].

34. PEALER, *supra* note 27, at 6.

35. Allison Teague, *ANR Renews Commitment to Pre-Irene Enforcement of River Protections*, VT DIGGER (Nov. 27, 2011, 8:20 PM), http://vtdigger.org/2011/11/27/anr-renews-commitment-to-pre-irene-enforcement-of-river-protections/ [https://perma.cc/2XED-KX3F].

36. *2011 Flooding*, LAKE CHAMPLAIN BASIN PROGRAM, http://www.lcbp.org/water-environment/water-quality/flooding/2011-flooding/ [https://perma.cc/C2R8-4XN7] (last visited Apr. 6, 2016).

37. LAKE CHAMPLAIN BASIN PROGRAM, FLOOD RESILIENCE IN THE LAKE CHAMPLAIN BASIN AND UPPER RICHILIEU RIVER 16 (2013), http://www.lcbp.org/wp-content/uploads/2013/04/FloodReport2013_en.pdf [https://perma.cc/QVE4-Z47A].

38. *Photo Gallery: Tropical Storm Irene*, LAKE CHAMPLAIN BASIN PROGRAM (Jan. 31, 2013), http://www.lcbp.org/2013/01/photo-gallery-tropical-storm-irene-2011-2/ [https://perma.cc/43GR-73PA].

39. PEALER, *supra* note 27, at 6–7.

many policy makers concluded in the wake of Irene that "the goals of protecting our communities and preserving our natural environment are closely intertwined and interdependent."[40] A perfect example of this phenomenon was the function of floodplains, wetlands, and forest swamps along the Otter Creek that absorbed flood waters during the storm and saved the town of Middlebury from potentially devastating inundation flooding and erosion.[41] The Otter Creek story was, unfortunately, not the rule. In too many Vermont towns and watersheds, Irene illustrated the risks of development without regard to protection of "natural watershed storage" capable of capturing water, sediment, and woody material during heavy rainfall events and the resulting devastation demanded a strong response.[42] Almost as soon as the flood waters began to recede, the Vermont General Assembly, Shumlin Administration, and municipal and private stakeholders worked together to bolster existing flood resilience policies, create new laws and policies, and prepare for the inevitable next storm.

The link between land use policy and surface water quality is complex and legislative action in Vermont has not been confined to flood resilience policy alone. In the four years following Tropical Storm Irene, the Vermont General Assembly passed three critical pieces of legislation aimed at improving surface water quality through land use regulation at the municipal and state level: Vermont Act No. 138 of 2012 ("Act 138"), Vermont Act No. 172 of 2014 ("Act 172" or "Shoreland Protection Act"), and the Vermont Clean Water Act.[43] Taken together, these three acts represent a major step forward in the history of Vermont's efforts to ensure that land use, development, and economic growth do not come at the expense of ensuring that the waters of Vermont meet the fishable, swimmable, and drinkable standards for surface waters established forty years ago in the CWA.[44] In broad brush strokes, the three acts:

- resulted in new protection for river corridors, flood plains, and flood hazard areas;[45]
- established statewide minimum standards for cutting and managing vegetation and creating new impervious surface

40. Mears & McKearnan, *supra* note 24, at 178.

41. *Id.* at 187.

42. Mike Kline, *Giving Our Rivers Room To Move: A New Strategy and Contribution to Protecting Vermont's Communities and Ensuring Clean Water*, *infra* p. 735; *see generally*, Springston & Underwood, *supra* note 29 (illustrating rainfall totals, inundation damage, and erosion damage throughout Vermont).

43. S. 202, 2011-2012 Leg. Sess. (Vt. 2012); H. 526, 2013-2014 Leg. Sess. (Vt. 2012); H. 35, 2015-2016 Leg. Sess. (Vt. 2015).

44. 33 U.S.C. § 1251(a).

45. *See generally* 2012 Vt. Acts & Resolves 425 (updating the statute to provide more assistance in the case of floods and to have more management of flood hazard areas).

within 250 feet of all lakes and ponds with a surface area greater than ten acres;[46] and

- mandated that the ANR, VTrans, and VAAFM take significant new regulatory actions to control polluted stormwater runoff from developed lands, agricultural and silvicultural operations, and state and local roads.[47]

In each case, Vermont legislators, officials, and stakeholders around the state looked at the human impact on the landscape and the corresponding impact on water resources and pledged to take action to curb or more tightly regulate those human impacts.

Tropical Storm Irene was not the only causal event leading to this concentrated and focused set of legislative and administrative actions between 2012 and 2015. Other precedents are important to consider, including state land use regulations established under Act 250 of 1970, which for nearly forty years has required commercial scale development to avoid impacts to the natural environment (e.g., rivers, streams, lakes, and ponds, and wetlands).[48] During the decade before Irene, Vermont's stormwater statute was enhanced in multiple legislative acts in order to support implementation of the original Lake Champlain TMDL.[49] Two major bills were proposed in order to regulate land use in the buffers of lakes, ponds, rivers, and streams.[50] Then Act 110 of 2010 required ANR to establish a river corridor management program in order to provide guidance to municipalities for regulation of development in river corridors.[51] Those actions were an important prelude for the three major pieces of water quality legislation enacted in the years following Tropical Storm Irene. The rest of this article will explore each of those three acts, providing a summary of the altered state of Vermont's land use regulations as they

---

46. 2014 Vt. Acts & Resolves 775.

47. *See generally* 2015 Vt. Acts & Resolves 976 ("It is the purpose of this act to . . . engage all municipalities, agricultural operations, businesses, and other interested parties as part of the State's efforts to improve the quality of the waters of the State.").

48. *See generally* 1970 Vt. Acts & Resolves 237 (providing the language for the act, passed in 1970, aiming to balance commercial development with environmental harm).

49. *See* 2004 Vt. Acts & Resolves 541 (directing DEC to adopt by rule a stormwater program to regulate stormwater runoff from impervious surface in a manner that would mitigate to the greatest extent its effects on receiving waters in addition to the program for management of stormwater under the CWA NPDES program); *see id.* at 209–10 (showing amendments to the stormwater statute).

50. *See* H.B. 297, 2007–2008 Sess. (Vt. 2007) (a bill requiring a fifteen-foot vegetative buffer along public waters and that the Natural Resources Board regulate buffer zones); *see* H.B. 323. 2009–2010 Leg. Sess. (Vt. 2010) (a bill establishing fifty-foot buffer zones around navigable waters). Although neither bill was enacted into law, environmental leaders within the Vermont General Assembly, ANR staff, and water quality advocates began building the case for shoreland protection during the years before Tropical Storm Irene.

51. *See generally* 2010 Vt. Acts & Resolves 217–18 (amending several sections of title 10 of the Vermont Statutes Annotated related to conservation and development).

apply to surface water quality before concluding with a look forward to the most important unresolved issues facing the state in the quest to protect Vermont's water resources.

II. ACT 138 OF 2012

Act 138 was signed into law by Vermont Governor Peter Shumlin on May 15, 2012,[52] only nine months after Tropical Storm Irene pounded Vermont, following a tough legislative process during which the tension between land use regulation and water quality was at the fore.[53] During the session, nine bills were taken up, dozens of hearings and joint hearings were held, and testimony was taken from myriad witnesses from the Shumlin administration, municipalities, advocates, experts, and stakeholders.[54] On one hand, immediate recovery costs and needs was the primary focus of discussions about Irene during the 2012 legislative session.[55] But Vermont policymakers also looked beyond recovery to flood resiliency, examining vulnerabilities and asking what land use best practices would be necessary to mitigate damage during future flood events.[56]

Initially referred to as the "Rivers and Lakes Bill" by DEC river scientists,[57] Act 138 established new regulations to promote and enhance the function of natural floodplains and to decrease reliance on engineered structures to protect against flood hazards.[58] Act 138 also clarified what river management practices are acceptable and under what circumstances the state can act to minimize river erosion hazards during flood events.[59] This innovative law also established new requirements for towns to identify

---

52. S. 202, 2011–2012 Leg. Sess. (Vt. 2012).

53. Howard Weiss-Tisman, *Lawmakers Try to Address Post-Irene Lessons*, BRATTLEBORO REFORMER (Aug. 25, 2012, 3:00 AM), http://www.reformer.com/irene/ci_21397569/lawmakers-try-address-post-irene-lessons [https://perma.cc/HH3D-5TW3].

54. Based on author's personal knowledge.

55. Based on author's personal knowledge.

56. *See, e.g., Welcome to Flood Ready Vermont*, FLOOD READY VT., http://floodready.vermont.gov [https://perma.cc/P7U7-K2K8] (last visited Apr. 7, 2016) (discussing Vermont's efforts to make communities more flood resilient); VT. AGENCY OF NAT. RES., RESILIENCE: A REPORT ON THE HEALTH OF THE VERMONT ENVIRONMENT 8 (2011), http://anr.vermont.gov/sites/anr/files/aboutus/documents/Resilience%202011.pdf [https://perma.cc/PS9W-MZC7] (discussing techniques for Vermont to reduce flood damage).

57. VT. DEP'T OF ENVTL. CONSERVATION, SUMMARY OF "RIVERS BILL" COMPONENTS IN ACT 138 (2012)

58. *See* 2012 Vt. Acts & Resolves 425, 427 (describing amendments to the statute of flood hazard areas to better manage flooding in Vermont).

59. *Id.* at 429.

and protect river corridors.[60] River scientists at DEC explained the bill's primary objectives related to riparian management as follows:

- to "increase municipal participation, awareness, and protection of floodplain assets"[61] by allowing DEC to delegate review of floodplain development proposals to regional planners and municipal officials implementing standards consistent with the National Flood Insurance Program (NFIP);
- to ensure ongoing compliance with NFIP requirements by requiring DEC regulation of floodplain encroachments otherwise exempt from municipal regulation (i.e., encroachments resulting from agriculture, silviculture, or energy generation), including regulations more stringent than NFIP minimum standards under a new General Permit;
- to reduce the risk to public and private property from flooding by giving authority to DEC for new stream alteration standards, standards for conducting emergency operations after a flood, and standards for excavation and movement of in-stream fill;
- to better protect river corridors, flood plains, and buffers by giving authority to DEC to adopt new rules and procedures to delineate fluvial erosion hazard areas within riparian corridors and to regulate development that would increase the risk within those areas; and
- to ensure coordinated flood resiliency efforts at every level of government by including other requirements for outreach, communication, and education within state government, regional planning commissions, and municipalities.[62]

Environmental advocacy groups like the Vermont League of Conservation Voters supported the underlying legislative effort and praised the result.[63] State Representative David Deen, the Chair of the Vermont House Committee for Fish, Wildlife and Water Resources, summarized the spirit driving this comprehensive river protection legislation: "People were whistling past the graveyard relative to the potential of rivers flooding and impacting communities," Deen said. "Obviously after Irene we were not able to look the other way anymore."[64]

---

60. *Id.* at 435; SUMMARY OF "RIVERS BILL" COMPONENTS OF ACT 138, *supra* note 57, at 2.
61. SUMMARY OF "RIVERS BILL" COMPONENTS IN ACT 138, *supra* note 57, at 1.
62. *Id.* at 1–3.
63. VT. LEAGUE OF CONSERVATION VOTERS, VERMONT ENVIRONMENTAL SCORECARD 4 (2012), http://vermontconservationvoters.org/wp-content/uploads/2013/12/2012_VT_LCV_Scorecardpdfreduced2.pdf [https://perma.cc/BTZ4-TDQD].
64. Weiss-Tisman, *supra* note 53; 2012 Vt. Acts & Resolves 441–42.

In addition to the important flood resiliency aspects of the law, another important legacy of Act 138 was the mandate to DEC to report on priorities, costs, and revenue options needed to protect surface waters in Vermont.[65] This mandate played upon the important theme that public support and funding for water quality protection efforts is critical and that failure to provide that support will have long-term negative impacts not only on human and ecosystem health, but also on Vermont's economy and its use of state resources.[66] Section 19 of Act 138 found that new actions are necessary to preserve, protect, and restore Vermont's surface waters and that regulation of development in floodplains, river corridors, shorelands and wetlands is necessary to promote flood resiliency; it required DEC to estimate the overall funding needs, priorities for action, and mechanisms to administer new programs to abate pollution from agricultural and developed lands in Vermont.[67] As will be discussed in more detail below, the report mandate also directed DEC to make recommendations for restoring and protecting shorelands of lakes and ponds, including whether new statewide standards for development would be necessary to protect the functions and values of Vermont's lakes and ponds.[68]

As the flood waters of Tropical Storm Irene receded, Vermont began a multi-year conversation about the connections among land use, development, surface water quality, and flood resiliency. As directed, DEC prepared a comprehensive report in response to the mandate of Act 138, summarizing investments and actions taken to date, providing an overview of the challenge of nonpoint source pollution control, and describing a menu of investments and programs to address statewide clean water challenges.[69] The report was delivered in multiple legislative committees and joint committees as witnesses from the Shumlin administration, advocacy groups, and other stakeholders worked with legislators to determine what actions would be necessary to remediate Vermont's surface waters and how those efforts should be funded.

The report mandate in Act 138 was intended to generate legislative proposals for programs and funding related to clean water, but DEC's report did not provide specific recommendations and the Shumlin administration, legislative leaders, advocates, and stakeholders did not initially agree on a path forward for surface water pollution control and

---

65. 2012 Vt. Acts & Resolves 441.
66. *Id.*
67. *Id.* at 443.
68. *Id.*
69. *See* VT. AGENCY OF NAT. RES., WATER QUALITY REMEDIATION, IMPLEMENTATION AND FUNDING REPORT 5–6 (2013), http://legislature.vermont.gov/assets/Documents/Reports/286133.PDF [https://perma.cc/6WJG-V4JU].

funding.[70] Legislative leaders and clean water advocates worked on several pieces of legislation, but no substantive bills were passed during the biennium from 2013 to 2014, in large part because the Shumlin administration advocated postponing action until DEC could develop a draft implementation plan for the new TMDL it was working to develop with EPA.[71]

DEC did, however, recommend options for regulating development and land use in the shorelands of lakes and ponds greater than ten acres in size in a separately submitted report at the beginning of the 2013 legislative session, launching a two-year legislative campaign that ended when Governor Shumlin signed the "Shoreland Protection Act" into law on June 5, 2014.[72]

III. ACT 172 OF 2014: THE SHORELAND PROTECTION ACT

In response to the mandate in Act 138 for recommendations regarding regulation of shoreland development, DEC's Lakes and Ponds Program delivered a report to the General Assembly at the beginning of the 2013 legislative session that detailed the value of the state's lakes and ponds, the health of shorelands around those resources, and recommendations for greater protection through state regulations.[73] As detailed in that report, DEC research scientists working with EPA had documented that over eighty percent of lakes and ponds larger than twenty acres in Vermont had compromised shoreland health as a result of development pressure and largely unregulated land use practices.[74] More importantly, the report provided strong evidence that compromised shoreland health negatively impacts water quality in the near shore area of lakes and ponds, results in

---

70. *See* 2014 Acts & Resolves 274 (memorializing ongoing requests for administration recommendations to address surface water pollution in Vermont).

71. *See* H.586: Witnesses, VT. GEN. ASSEMBLY, http://legislature.vermont.gov/bill/status/2014/H.586#witnesses (last visited June 27, 2016) (providing links to one example of proposed legislation before Act 64 and DEC testimony regarding status of TMDL negotiations with EPA); *see also* Kari Dolan, *The Importance of Inter-Agency Collaboration and Public Engagement in the Development of the Implementation Plan for the Nonpoint Source-Focused Vermont Lake Champlain Phosphorus TMDL*, *supra* p. 663 (discussing the disapproval of the 2002 TMDL and Vermont's efforts with EPA to develop a comprehensive management plan in the style of the Chesapeake Bay TMDL); Eric Smeltzer, *History of Vermont's Lake Champlain Phosphorus Reduction Efforts*, *supra* pp. 625–28 (explaining the transition from the 2002 Lake Champlain TMDL to the updated TMDL).

72. H. 526, 2013–2014 Leg. Sess. (Vt. 2012).

73. *See generally* AMY PICOTTE ET AL., VT. AGENCY OF NAT. RES., LAKE SHORELAND PROTECTION AND RESTORATION MANAGEMENT OPTIONS (2013), http://legislature.vermont.gov/assets/Documents/Reports/285836.PDF [https://perma.cc/C3ZX-CNNE] (presenting options and recommendations for strengthening Vermont shoreland management).

74. *See id.* at 21 (explaining that even the twenty percent of towns that have shoreland zoning rules "often have a difficult time enforcing them").

unstable shoreline banks more susceptible to erosion and degradation, and leads to loss of critical habitat for fish, insects, amphibians, birds, and mammals.[75] Additionally, the report detailed the economic functions and values that healthy lakes and ponds have in Vermont: supporting recreation and tourism, hunting, fishing, wildlife watching, swimming, and property values and tax base.[76] Given the threat to these important resources, the DEC Lakes and Ponds Program recommended in the report that the General Assembly enact comprehensive, statewide standards to regulate development and land use in shorelands of Vermont's lakes and ponds.[77]

Although the Agency's report on shoreland protection was initially overshadowed by the Act 138 report on funding needs for surface water quality, shoreland protection emerged in the 2013 session as a leading environmental issue. During the spring of 2013, the Vermont House Committee on Fish, Wildlife and Water Resources worked for six weeks on two separate bills, taking testimony from numerous witnesses, including administration officials, environmental advocates, property rights advocates, and scores of individual citizens who testified at an evening public hearing on the proposed legislation.[78] Not surprisingly, the debate over which land use restrictions would be necessary to protect important shoreland resources was marked by strong support from environmental advocates, scientists, and the Shumlin administration on one hand, and strong opposition from municipalities, property owners, and property rights advocates on the other.[79] Signaling an understanding that reasonable restrictions on land use and development were important to protect water resources, on March, 27, 2013, the Vermont House of Representatives voted 105 to 42 in favor of House Bill 526 ("H.526").

The Vermont Senate Committee for Natural Resources and Energy began taking testimony on H.526, but action was postponed in light of widespread opposition from property rights advocates.[80] After a summer of hearings between sessions of the 2013-2014 biennium, H.526 ultimately did pass and was signed into law as Act 172, with significant revisions to the

---

75. *Id.* at 3–4.

76. *Id.* at 5–6.

77. *Id.* at 16.

78. *See H.526 (Act 172): Witnesses*, VT. GEN. ASSEMBLY, http://legislature.vermont.gov/bill/status/2014/H.526?#witnesses (last visited Apr. 7, 2016) (providing related documents and witness testimony).

79. *See id.* (based on the personal knowledge of the author).

80. *See H.B. 526*, *supra* note 78 (showing a number of Committee for Natural Resources and Energy hearings and based in part of author's personal knowledge); *see* Letter from Lake Bomoseen Association Member to Vt. Legislators (Mar. 26, 2013), http://lakebomoseen.mylaketown.com/uploads/tinymce/lakebomoseen/h223letter.pdf [https://perma.cc/Y79L-ZDBL] (expressing opposition to Vermont's H.526).

bill to address concerns expressed by citizens and advocacy groups during the extended process.[81]

The principal result of Act 172 was to establish a new permitting program within DEC to regulate the creation of new impervious surface or cleared areas within 250 feet of lakes and ponds greater than 10 acres in surface area.[82] Under the act, permits may only be issued for creation of impervious surface or cleared area on slopes of less than 20%, where no more than 20% of the area within 250 feet of the mean high water level is impervious and where no more than 40% of that area is cleared, except where an applicant can demonstrate that the use of BMPs is functionally equivalent to the statutory limits.[83] Under all circumstances, cutting of trees or removal of vegetation within the first 100 feet of the mean high water level must be managed consistent with management standards intended to promote a healthy mix of grasses, shrubs, and trees.[84] The act also makes accommodation for existing (as of July 2014), non-conforming lots, with the goal of ensuring that no landowners would lose their right to develop, use, and enjoy these lots; it also makes allowance for public recreational areas and contains exemptions for certain activities that do not require a DEC permit.[85] Finally, the Shoreland Protection Act allows DEC to delegate permitting authority to municipalities with zoning restrictions functionally equivalent to the statewide standards so long as the municipality is able to demonstrate programmatic capacity to administer a permitting program and enforce those standards.[86]

In the findings of the Shoreland Protection Act, the Vermont General Assembly acknowledges the "multiple pressures" on Vermont's water, despite ongoing efforts to regulate stormwater, wastewater, and agricultural runoff, and asserts the necessity of required BMPs in the lands adjacent to lakes and ponds.[87] Act 172 however was not intended, and does not purport, to offer solutions to major nutrient impairment in Vermont's surface waters. Indeed, although the Phase I Implementation for the Lake Champlain TMDL does include a section on shoreland protection, it is just one component of a much broader plan focused on many different sources of

---

81. H. 526, 2013–2014 Leg. Sess. (Vt. 2012); VT. GEN. ASSEMB., ACT NO. 172 (H. 526): ACT SUMMARY (2014), http://legislature.vermont.gov/assets/Documents/2014/Docs/ACTS/ACT172/Act172%20Act%20Summary.pdf [https://perma.cc/T7YD-SNH2]; 2013 Vt. Acts & Resolves 410–12.

82. 2014 Vt. Acts & Resolves 777.

83. *Id.* at 782.

84. *Id.* at 778–79.

85. *Id.* at 78.

86. *Id.* at 773–74.

87. *Id.*

phosphorus pollution.[88] Nonetheless, the Shoreland Protection Act was a significant step forward in the journey towards the Vermont Water Quality Act.

First, the legislative process, spanning fifteen months and including multiple public hearings and countless hours of committee testimony, provided Shumlin officials the opportunity to educate legislators and the public about water quality and to preview the next set of legislative conversations that would ultimately result in the Vermont Clean Water Act.[89] Next, the legislative process that resulted in Act 172, if sometimes messy and controversial, was robust and productive: multiple committees took testimony on the bill in both bodies of the General Assembly, citizens around the state engaged on the pros and cons of shoreland protection, the final outcome was debated on the floors of both chambers and, in the end, Act 172 passed with overwhelming support.[90] The final disposition of the act showed that Vermont officials, legislators, advocates, and stakeholders could work through complex issues in a manner that protected the environment and respected property rights. Although Act 172 reflects a number of key compromises, it underscores two basic premises: (1) that restrictions on the ways in which we build on and use the land are a necessary part of water quality protection; and (2) that individual landowners are responsible to work with state officials, scientists, and regulators to ensure that their use of private land does not impose a burden on the state's commonly owned water resources.[91]

In the Shoreland Protection Act, those twin premises are reflected most importantly in the vegetation management standards that mandate specific requirements for landowner management of shoreland vegetation and the statutory scheme that requires DEC's Lakes and Ponds Program to provide education, outreach, and assistance to those landowners in addition to permitting allowable activities.[92] The result of this coordination is that each mile of lake and pond shoreland in Vermont will be managed over time to achieve a natural buffer between developed lands and waters, ensuring infiltration of stormwater runoff, a mix of vegetation providing strong root structure and bank stability and ideal habitat for birds, mammals, amphibians, and fish.[93]

---

88. STATE OF VERMONT, *supra* note 18, at 60–61.
89. *H.526*, *supra* note 78.
90. *See id.*
91. *See* H. 526, 2013–2014 Leg. Sess. (Vt. 2014) (requiring permits for certain land development with the goal of preserving Vermont's water resources).
92. *See* 2014 Vt. Acts & Resolves 784.
93. *Id.* at 774.

IV. ACT 64 OF 2015: THE VERMONT CLEAN WATER ACT

In spite of significant progress following Tropical Storm Irene to establish new protective regulations for lakes and ponds, river corridors, and floodplains, the State of Vermont continued to face pressure from EPA, clean-water advocates, and stakeholders around Vermont to take strong action to protect Lake Champlain and to fund the effort required to do so.[94] The State had already submitted to EPA a Phase I Implementation Plan for the Lake Champlain TMDL outlining actions across all sectors necessary to control phosphorus pollution sources across the enormous watershed, including actions for which new state authority or resources would be necessary to successfully complete the mission.[95] State and federal officials had also presented their plans in a series of public meetings across the Lake Champlain Basin during the months leading up to the 2015 Legislative Session.[96] In addition, the Vermont General Assembly had mandated in Act 97 of 2014 that ANR deliver a report outlining programmatic costs, investments, and potential revenue sources needed to support implementation of the impending TMDL and to address surface water impairments across Vermont.[97]

Widespread algal blooms were reported again in Lake Champlain during the warmest months of the summer and fall—not just in the most polluted bays and inlets, but also in the waters off Burlington's beaches.[98] The table was set for action and Governor Shumlin put the pieces in motion during his Inaugural Address and State of the State.[99] In this speech, he outlined legislative actions needed to address stormwater pollution from developed lands, roads, and farms and provide resources to communities, farmers, and loggers to fund required actions and hold all sectors, especially

---

94. *Vermont Outlines Plan to Address Lake Champlain Cleanup*, LAKE CHAMPLAIN LIFE, http://lakechamplainlife.com/latest-tool-in-vermonts-lake-champlain-cleanup/ [https://perma.cc/HD47-VCLK] (last visited Apr. 11, 2016).

95. STATE OF VERMONT, *supra* note 18, at 1–3; *Restoring Lake Champlain*, VT. DEP'T OF ENVTL. CONSERVATION, http://dec.vermont.gov/watershed/cwi/restoring [https://perma.cc/U834-DMZ6] (last visited Apr. 11, 2016).

96. *See* U.S. ENVTL. PROT. AGENCY, REGION 1, PUBLIC OUTREACH MEETINGS: LAKE CHAMPLAIN TOTAL MAXIMUM DAILY LOAD (2015), https://www.epa.gov/sites/production/files/2015-09/documents/aug-2015-public-meeting-presentation.pdf [https://perma.cc/5KYU-7GQQ] (providing an example of the public outreach meetings conducted by officials).

97. 2014 Acts & Resolves 274.

98. Sam Heller, *Two Burlington Beaches Closed by Suspected Algae Blooms*, VT DIGGER (July 13, 2015, 3:07 PM), http://vtdigger.org/2015/07/13/two-burlington-beaches-closed-by-suspected-algae-blooms/ [https://perma.cc/2A2W-6F55]; *Blue-Green Algae in Lake Champlain*, LAKE CHAMPLAIN COMMITTEE, http://www.lakechamplaincommittee.org/lcc-at-work/algae-in-lake/#c4033 [https://perma.cc/2T9R-4DUU] (last visited Apr. 1, 2016) (listing the sites at which algal blooms were reported in the summer and fall of 2015).

99. Governor Peter Shumlin, Third Inaugural Address to Vt. Gen. Assembly (Jan. 8, 2015), https://vimeo.com/116440740 [https://perma.cc/7J4L-9EVN].

agriculture, responsible for failure to comply with water quality laws and regulations.[100] Governor Shumlin announced his administration's intention to support new capital and general fund support for implementation of clean water planning and pollution abatement projects in addition to advocating for creation of a dedicated clean water fund that would serve as a clearing house for state investments and private donations.[101] Referring to the "heartbreaking" algal blooms and pea-green waters of Lake Champlain, the Governor stated that declining water quality is the "greatest threat to our local environment" and underscored that protecting the Lake is "critical to protecting our economy."[102]

Thus, the race was on to enact comprehensive clean water legislation and dedicate new funding for the clean-up effort. Administration officials and legislative leaders worked to craft and introduce a single bill—House Bill 35—that would: provide new authority to ANR and VAAFM to regulate polluted runoff from roads, developed lands, farming operations, and farm fields; institute new penalties for actors failing their obligations under existing and new laws and regulations; and propose a dedicated Clean Water Fund and public process for directing investments in clean water.[103] Eleven different legislative committees held hearings on the bill over the course of four months of process, dozens of witnesses provided testimony, and in the end, H.35 passed with broad bipartisan support in both the Vermont House of Representatives and the Vermont Senate.[104] When Governor Shumlin gathered legislative and municipal leaders, environmental advocates, and other stakeholders together on the shores of Lake Champlain to sign H.35 into law on June 16, 2015, he summarized the spirit that inspired that collaboration:

> This bill is not only about cleaning up Vermont's waterways and Lake Champlain, it is about protecting our economy and a natural habitat that binds Vermonters tightly to our state and inspires others to put roots down here . . . . In short, this bill is about protecting what makes Vermont so special. Cleaning up our waterways won't happen overnight, but this bill puts us on a path

---

100. *News Release of Gov. Peter Shumlin's Inaugural Address*, VT DIGGER (Jan. 8, 2015), http://vtdigger.org/2015/01/08/text-gov-peter-shumlins-inaugural-address/ [https://perma.cc/5PQ3-AJPS].

101. Governor Peter Shumlin, *supra* note 99.

102. *Id.*

103. *See* H. 35, 2015–2016 Leg. Sess. (Vt. 2015).

104. H. 35, 2015–2016 Leg. Sess. (Vt. 2015) (based, in part, on author's personal knowledge).

> to ensure that future generations of Vermonters grow up to enjoy the natural beauty that has defined this state since the beginning.[105]

As stated at the outset of this article, the Vermont Clean Water Act is noteworthy because of the important new and expanded regulatory authority, programmatic capacity, and funding it provides for the State of Vermont to control nutrient and sediment pollution in the Lake Champlain Basin and to address water quality challenges across the state. Act 64 is also significant because it illustrates the principle Justice Brandeis wrote about so eloquently almost 100 years ago in his famous dissent to the *New State Ice* case that states may serve in a cooperative federal system as laboratories "and try novel social and economic experiments" to solve localized problems incisively where the broad strokes of national policy are inadequate.[106] The context of *New State Ice* is wholly distinct from the questions that states face in attempting to address surface water impairment resulting from polluted stormwater runoff (rather than point source pollution traditionally regulated under the CWA), but the need for states to take novel and creative approaches is still real.[107] The reach of the CWA is limited, local solutions are necessary, [108] and Act 64 provides those solutions. At once, it provides support for and complements Vermont's federally delegated clean water programs, finding state law solutions to address the sources of phosphorus and sediment pollution that are beyond the reach of the traditional federal CWA programs: back roads, agricultural fields, and river corridors.[109] Like Act 138 and Act 172 before it, the Vermont Clean Water Act is predicated on the connection between the ways in which we live and develop the land on one hand and water quality on the other.

This connection is reflected in category after category addressed by the bill:

- In the agricultural sector, Act 64 requires VAAFM to engage in rulemaking to revise its "accepted agricultural practices" as "required agricultural practices" in order to establish new water quality management practices and reporting

---

105. Press Release, Governor Peter Shumlin, *supra* note 3.

106. New State Ice Co. v. Liebmann, 285 U.S. 262, 311 (1932) (Brandeis, J., dissenting).

107. David K. Mears & Rebecca Blackmon, *Lessons for Lake Champlain from Chesapeake Bay: Returning Both Waters to the "Land of Living"*, *infra* pp. 580–83 (discussing how the court in the Chesapeake Bay litigation did not find EPA's interpretation of section 303(d) to infringe on traditional state powers, thus allowing states to use their land use powers in implementing TMDLs).

108. *Id.*

109. *See* Eric Smeltzer, *History of Vermont's Lake Champlain Phosphorus Reduction Efforts*, *supra* pp. 624–28 (explaining the disapproval of the first Lake Champlain TMDL and efforts to develop new state authority).

requirements for small farms, nutrient storage and management, buffers, and livestock exclusion.[110] It requires VAAFM and ANR to collaborate on enforcement, anti-degradation policy, and prevention of discharges to state waters; it establishes new certification for custom applicators of manure; and it enacts new penalties for farm operations failing to comply with required agricultural practices, including suspension of tax benefits under Vermont's "Current Use Program."[111]

- Act 64 generally revises ANR's statutory authority to regulate stormwater, including clarification of existing state and federal authority, exemptions, and rulemaking authority to establish watershed priorities in the tactical basin planning process.[112] It establishes new rulemaking authority to regulate runoff from municipal roads and to require redevelopment and retrofits to existing developed lots with more than three acres of impervious surface.[113] Act 64 directs ANR to report on whether to lower from one acre to one-half acre the threshold for requirement of a state stormwater operating permit for new construction.[114] Finally, it requires ANR's Commissioner of Forests, Parks and Recreation to revise and readopt "Acceptable Management Practices for Maintaining Water Quality on Logging Jobs."[115]
- In addition to land use requirements, Act 64 also establishes new positions within DEC and VAAFM to carry out the Clean Water Initiative.[116] Likewise, it establishes a new Clean Water Fund with dedicated revenue to support compliance related projects undertaken by municipalities, agricultural operations, and watershed groups.[117] Finally, it eliminates a safe harbor provision in state law that had allowed waste water treatment facilities not to comply with effluent concentration standards where state funding was not available to finance upgrades.[118]

---

110. 2015 Vt. Acts & Resolves 989.
111. *See id.* (describing enforcement procedures).
112. *Id.* at 1,008.
113. *Id* at 1,010.
114. *Id.* at 1,014.
115. *Id.* at 1,031–32.
116. *Id.* at 1,030
117. *Id.* at 1,018.
118. *Id.* at 1,030.

CONCLUSION: UNRESOLVED ISSUES

Like most legislative efforts of its size and scope, the Vermont Clean Water Act is far from perfect. Act 64 however represents a significant step forward for clean water in Vermont and provides robust new authority to address nutrient and sediment pollution from agricultural and silvicultural operations, roads, and developed lands through standards for land use and development across the Vermont landscape. Moreover, it establishes new capacity within state government to plan, support, and regulate within the Clean Water Initiative. Finally, the new Clean Water Fund creates a mechanism and requirement for annual investment in pollution abatement projects around the state.

Notably, Act 64 does not establish a permanent revenue source for the Clean Water Fund, but provides for a surcharge on Vermont's property transfer tax that sunsets after three years.[119] Moreover, that surcharge is expected to raise only a little more than five million dollars each year, well short of previous estimates of total annual need provided by DEC, clean water advocates, and municipal officials.[120] While "total need" can be an elusive concept, it is clear that implementation and compliance costs for municipalities, agricultural operations, and private landowners will significantly surpass current costs and levels of investment and state support will be necessary to ensure that the comprehensive effort moves continuously forward. The Vermont Clean Water Act, therefore, directs the Vermont Treasurer, working with the Shumlin administration, to report back by January 2017 with recommended sources for permanently funding and financing the Clean Water Initiative.[121] The cost of clean water—especially for investments across a watershed as large as Lake Champlain—is Vermont's next challenge.

Other major challenges loom ahead. Analogous to the cost that regulated entities and landowners will bear under the Clean Water Initiative, the state agencies tasked with implementing new regulations must be able to sustain the capacity and momentum currently developed in the face of constant budget pressures and strong reactions from the regulated community when new regulations are implemented and costs assumed. State officials have embraced new measures and practices to

---

119. *Id.* at 1,022.

120. *See* DANIEL DICKERSON, VT. LEGISLATIVE JOINT FISCAL OFFICE, H.35 AN ACT RELATING TO IMPROVING THE QUALITY OF STATE WATERS (2015), http://legislature.vermont.gov/assets/Documents/2016/WorkGroups/House%20Fish%20and%20Wildlife/Bills/H.35/Witness%20Testimony/H.35~Dan%20Dickerson~Fiscal%20Note~3-31-2015.pdf [https://perma.cc/LA3S-BR54] (providing revenue estimates for fees established in Act 64); *see also* WATER QUALITY REMEDIATION, IMPLEMENTATION AND FUNDING REPORT, *supra* note 69, at 67.

121. 2015 Vt. Acts & Resolves 1,022.

streamline business processes, increase accountability, and protect open government in the years after Tropical Storm Irene. But increased demands on state agencies related to clean water must be balanced with other environmental challenges like: promoting clean energy generation and clean transportation alternatives; protecting forest health and integrity; and protecting critical habitat, travel corridors, and natural areas for native species threatened by climate change and sprawling development—not to mention other challenges, such as healthcare, treatment of mental illness and addiction, and education funding. This article memorializes the spirit of collaboration that marked debate and passage of Act 64, but that spirit must be sustained over decades and in spite of those other pressures and competing needs.

Finally, the Clean Water Initiative depends upon the ability of the state and EPA to adapt to the inevitable development of new information and ideas throughout the implementation period. The monitoring data, studies, models, and assumptions supporting the Lake Champlain TMDL Phase I Implementation Plan and the Clean Water Initiative are comprehensive and cutting edge.[122] Nonetheless, as Professor Owen notes in his article, *After the TMDLs*, there is no proof that the complex, systemic changes necessary to successfully meet the goals underlying TMDLs in the CWA can be delivered by the legal tools available under federal law.[123] The Lake Champlain TMDL Phase I Implementation Plan and the Clean Water Initiative attempt to account for future population growth and development and the unpredictable impact on Vermont of global climate change, but the "problem of nonpoint pollution [results from] a complex set of climatological, ecological, and social factors."[124] The future holds an inevitable loss of forest lands, floodplains, and wetlands, increased stormwater volume from new development, increased rainfall amounts and more severe storms, and the long term challenge of stabilizing Vermont's river systems. Finally, targets for regulation must also account legacy pollution in our receiving waters—the problems in Lakes Champlain and Memphremagog, the Connecticut River, and throughout Vermont are the result of hundreds of years of human activity on the landscape.[125] The work

---

122. Eric Smeltzer, *History of Vermont's Lake Champlain Phosphorus Reduction Efforts*, *supra* pp. 626–28 (discussing Vermont's commitment to implementing a strong TMDL); Neil C. Kamman & Ethan Swift, *Tactical Basin Planning as the Vehicle for Implementation of the Vermont Clean Water Act*, *infra* p. 710 (discussing the role of tactical basin planning in implementing Act 64 and the new TMDL).

123. Dave Owen, *After the TMDLs*, *supra* pp. 864–67.

124. *See* Christopher Koliba et al., *The Lake Champlain Basin as a Complex Adaptive System: Insights from the Research on Adaption to Climate Change (RACC) Project*, *supra* p. 563.

125. Eric Smeltzer, *History of Vermont's Lake Champlain Phosphorus Reduction Efforts*, *supra* p. 617.

from the last decade represents a thoughtful and comprehensive first step. But the State of Vermont, EPA, and stakeholders must be flexible and adaptive during the twenty-year implementation of the Lake Champlain TMDL and in the ongoing work of the Clean Water Initiative. Only through a collective ethic of protection, a dogged habit of collecting and responding to data, and a determination to face yet-unknown challenges can the goal of transforming our land use and restoring our surface waters be achieved.