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MESSAGE IN A WATER BOTTLE: THE CALL FOR A TRI-STATE TMDL FOR WESTERN LAKE ERIE

LAUREN COLEMAN*

INTRODUCTION

In August 2014, harmful algal blooms in western Lake Erie rendered the drinking water in Toledo, Ohio unusable.¹ The algae released high levels of microcystin into the water, a toxin that can cause health problems for people and animals.² The city of Toledo implemented a “Do Not Drink” advisory, meaning that more than 400,000 residents could not drink or use the tap water for several days and instead had to depend on bottled water for their daily needs.³ Toledo stores quickly ran out of water bottles, forcing residents to travel to nearby cities and Michigan for supplies.⁴ The lack of fresh water also directly impacted local businesses, causing restaurants and universities to shut down for the duration of the advisory.⁵ Ohio Governor John Kasich declared a state of emergency for Toledo and its major counties, mobilizing state resources to provide assistance to the city’s government officials and residents.⁶ In response to the emergency, the National Guard transported 300 cases of bottled water

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¹ Maria Gallucci, *Lake Erie Algae Bloom Crisis is Putting Pressure on Ohio, Farm States to Tackle Agricultural Pollution Problems*, INT’L BUS. TIMES (Aug. 16, 2014, 7:00 AM), <http://www.ibtimes.com/lake-erie-algae-bloom-crisis-putting-pressure-ohio-farm-states-tackle-agricultural-1660240> [<http://perma.cc/Y4F3-SAZ8>].

² Codi Kozacek, *Toledo Issues Emergency ‘Do Not Drink Water’ Warning to Residents*, CIRCLE OF BLUE (Aug. 2, 2014), <http://www.circleofblue.org/waternews/2014/world/toledo-issues-emergency-warning-residents-drink-water/> [<http://perma.cc/75NV-ATRE>].

³ *Id.*; Gallucci, *supra* note 1.

⁴ Kozacek, *supra* note 2.

⁵ *Id.*

⁶ State of Ohio Emergency Operations Cent., *Gov. John Kasich Declares Emergency*, available at http://ema.ohio.gov/Documents/Releases/2014/20140802_GovernorDeclaresEmergency.pdf [<http://perma.cc/2Z59-GJ6G>].

to shelters, community organizations delivered water to homebound individuals, and volunteers ran “water distribution centers.”⁷

Since Lake Erie provides water for “twenty-three public water systems” and serves about “2.6 million Ohioans,” the emergency sparked serious concern among both public officials and residents, and brought Lake Erie’s water quality to public attention.⁸ When the water advisory ended, Governor Kasich communicated in a public statement: “Over the past two days we’ve been reminded of the importance of our crown jewel—Lake Erie—to our everyday lives. We must remain vigilant in our ongoing efforts to protect it.”⁹ Prior to the summer 2014 bloom, leaders and policy-makers had been discussing potential next steps to address harmful algae blooms in the western basin of Lake Erie.¹⁰ The recent crisis presents state and federal governments with an opportunity to assess current efforts to combat harmful algae blooms, build upon science and programs already in place, and discuss potential new solutions.

Lake Erie falls subject to the Great Lakes Water Quality Agreement (“GLWQA”), an agreement between the United States and Canada to improve water quality and reduce pollution from human activities in the Great Lakes.¹¹ Just months before the August algal bloom, the International Joint Commission (“IJC”), a binational committee formed by the GLWQA to act in an “advisory role,” issued a report on ways to lower phosphorus runoff into Lake Erie and prevent harmful algal blooms.¹² The IJC report determined that current target levels outlined by the GLWQA for phosphorus loadings into Lake Erie were not sufficient to reduce harmful

⁷ Kozacek, *supra* note 2.

⁸ OHIO CLEAN LAKES INITIATIVE, OHIO STRENGTHENS EFFORTS TO FURTHER PROTECT LAKE ERIE, *available at* <http://www.governor.ohio.gov/Portals/0/08.14.14%20Protecting%20Lake%20Erie%20Fact%20Sheet.pdf> [<http://perma.cc/6T35-VTYD>]. See Gallucci, *supra* note 1.

⁹ Rob Nichols, *Kasich Administration Supports City of Toledo Decision to Lift Water Advisory*, OHIO COMM’N DEPT (Aug. 4, 2014), http://ema.ohio.gov/Documents/Releases/2014/20140804_ToledoDrinkingWaterRelease.pdf [<http://perma.cc/6T5K-XQY5>].

¹⁰ See, e.g., *International Panel Recommends Diet for Toxic-Plagued Lake Erie*, OHIO ENVTL. COUNCIL (Feb. 27, 2014), <http://www.theoec.org/press-releases/international-panel-recommends-nutrient-diet-toxic-plagued-lake-erie> [<http://perma.cc/6NDJ-L8LY>] (discussing the IJC’s sixteen recommendations to reduce nutrient pollution in western Lake Erie).

¹¹ See Great Lakes Water Quality Agreement of 2012 art. 3, U.S.-Can., Sept. 7, 2012 [hereinafter GLWQA 2012], *available at* http://www.ec.gc.ca/grandslacs-greatlakes/A1C62826-72BE-40DB-A545-65AD6FCEAE92/1094_Canada-USA%20GLWQA%20_e.pdf [<http://perma.cc/E5BR-JBNC>].

¹² INT’L JOINT COMM’N, A BALANCED DIET FOR LAKE ERIE: REDUCING PHOSPHORUS LOADINGS AND HARMFUL ALGAL BLOOMS 3 (2014), *available at* <http://www.ijc.org/files/publications/2014%20IJC%20LEEP%20REPORT.pdf> [<http://perma.cc/8EWF-YCUB>].

algal blooms and called for the United States and Canada to jointly set new targets.¹³ The report also recommended a series of actions for the United States and Canada to take to meet the GWLQA targets.¹⁴ The IJC emphasized that a tri-state phosphorus Total Maximum Daily Load (“TMDL”) for western Lake Erie could serve as a key tactic to actually meet targets.¹⁵ Specifically, the IJC recommended:

[that] the governments of Michigan and Ohio should, under the United States *Clean Water Act*, list the waters of the western basin of Lake Erie as impaired because of nutrient pollution; this would trigger the development of a tri-state phosphorus total maximum daily load (TMDL) including those states and Indiana, with U.S. Environmental Protection Agency oversight.¹⁶

A tri-state TMDL for western Lake Erie would be consistent with the Clean Water Act’s specific provision on the Great Lakes committing the United States to meeting the goals of the GLWQA and stating that the “Environmental Protection Agency should take the lead in the effort to meet those goals,” in collaboration with other federal, state, and local entities.¹⁷

This Note will discuss the feasibility of setting up a tri-state TMDL for western Lake Erie and propose that a TMDL would serve as a workable solution for improving responses to the algal bloom problem. Current state efforts individually implemented by Ohio, Michigan, and Indiana involving educational and voluntary measures may not be sufficient to reduce phosphorus loadings going forward.¹⁸ A tri-state TMDL for western Lake Erie could improve collaboration and increase accountability among the states.

As evidence that a multistate TMDL process can work, six states, Washington, D.C., and the federal Environmental Protection Agency (“EPA”) implemented a TMDL for the Chesapeake Bay watershed that focuses on enhancing accountability.¹⁹ Although the Ohio, Michigan, and

¹³ *Id.* at 70–71.

¹⁴ *Id.* at 71–72.

¹⁵ *Id.*

¹⁶ *Id.* at 72.

¹⁷ See 33 U.S.C. § 1268(a)(1)(C) (2014).

¹⁸ See *infra* Part III.B.

¹⁹ EPA et al., *Chesapeake Bay Total Maximum Daily Load for Nitrogen, Phosphorus, and Sediment* (Dec. 29, 2010) [hereinafter Chesapeake Bay TMDL], available at <http://www2.epa.gov/chesapeake-bay-tmdl> [<http://perma.cc/QET5-QTRM>].

Indiana governments cannot completely copy the Bay TMDL and impose it on western Lake Erie, they can draw lessons from the Bay's process in establishing a multistate TMDL framework and incorporate similar accountability measures.²⁰ The recent water crisis in Toledo has brought the algal bloom problem to public attention, meaning that governments are well-positioned to implement change. In addition, scientists have been studying algal blooms in western Lake Erie since the 1960s and the IJC has determined that sufficient research exists to begin the multistate TMDL process.²¹

Part I of this Note provides background information and history about harmful algal blooms in Lake Erie leading up to the current crisis. Part II reviews the TMDL framework under the Clean Water Act and explains the structure of the Chesapeake Bay TMDL. Part III highlights some of the current state and federal government initiatives enacted to address harmful algae blooms in Lake Erie and the Great Lakes. While many of the states have made good first steps, current voluntary measures, as well as disjointed approaches by the states, may not be sufficient to solve the harmful algal bloom problem. Part IV proposes that the Ohio, Michigan, and Indiana governments, with EPA oversight, should follow the IJC recommendation for a tri-state TMDL, and learn lessons from the Chesapeake Bay's process in implementing a TMDL. This part also addresses key factors to consider in creating a multistate TMDL for western Lake Erie. The final part provides implications for the future in reducing phosphorus runoff and states the conclusion.

I. BACKGROUND

This section tracks the history of harmful algal blooms in Lake Erie from the 1960s through the current crisis in the summer of 2014.²² It identifies the causes of harmful algae blooms and then briefly explains the Great Lakes Water Quality Agreement and the International Joint Commission's recommendations for improving phosphorus loadings in Lake Erie, focusing particularly on the suggestion for a tri-state TMDL.²³

²⁰ See INT'L JOINT COMM'N, *supra* note 12, at 48–49 (comparing the Chesapeake Bay with Western Lake Erie).

²¹ See *id.* at 2, 70 (“The IJC believes that sufficient science exists to propose loading targets for TP [total phosphorus] and DRP [dissolved reactive phosphorus] for Lake Erie that will reduce HABs in the western basin . . .”).

²² See *infra* Part I.A.

²³ See *infra* Part I.B.

A. *A History of Algal Blooms in Western Lake Erie*

Western Lake Erie has a long history of harmful algal blooms (“HABs”) resulting primarily from a “combination of warm temperatures and excess nutrients, especially phosphorus” that run off into the water.²⁴ HABs are often composed of cyanobacteria, commonly known as blue-green algae, that can release toxins like microcystin into water.²⁵ These toxins can cause skin irritations and liver problems for humans and animals that drink the water.²⁶ In addition, HABs can lead to low dissolved oxygen levels, block sunlight to aquatic vegetation, and result in fish kills.²⁷

Lake Erie is particularly prone to HABs. As the most shallow of the five Great Lakes, its surface waters warm easily, creating a productive environment for algae growth.²⁸ In addition, phosphorus runoff levels can be high since Lake Erie is the “most densely populated of the five Great Lakes” and the land surrounding Lake Erie is “intensely farmed.”²⁹

Combatting HABs in Lake Erie from the 1960s through the 1980s proved to be a success.³⁰ In 1972, Congress passed the Clean Water Act setting the stage for U.S. pollution controls, and the United States and Canadian governments formed the Great Lakes Water Quality Agreement seeking to improve the health of the Great Lakes.³¹ Governed by these two initiatives, the states bordering Lake Erie implemented laws that focused on addressing point source pollution, particularly improving sewage treatment plants.³² Point source pollution involves pollution that

²⁴ Kenneth Kilbert et al., *Legal Tools for Reducing Harmful Algal Blooms in Lake Erie*, 44 U. TOL. L. REV. 69, 70 (2012).

²⁵ INT’L JOINT COMM’N, *supra* note 12, at 5.

²⁶ See OHIO DEPT’ OF AGRIC., OHIO LAKE ERIE PHOSPHORUS TASK FORCE II FINAL REPORT 1 (2013) [hereinafter OHIO PHOSPHORUS TASK FORCE REPORT], available at http://lakeerie.ohio.gov/Portals/0/Reports/Task_Force_Report_October_2013.pdf [<http://perma.cc/B542-7DSE>].

²⁷ Chesapeake Bay TMDL, *supra* note 19, at ES-3; OHIO EPA, OHIO 2013 INTEGRATED WATER QUALITY MONITORING AND ASSESSMENT REPORT at A-8 (2014), available at <http://www.epa.state.oh.us/dsw/tmdl/OhioIntegratedReport.aspx#156068837-draft-report> [<http://perma.cc/NK25-MJW3>].

²⁸ INT’L JOINT COMM’N, *supra* note 12, at 2.

²⁹ *Id.* at 24; see *Lake Erie*, EPA, <http://www.epa.gov/greatlakes/lakeerie/> [<http://perma.cc/MT6S-35MA>] (last updated Aug. 20, 2014) (“Approximately twelve million people live in the [Lake Erie] watershed, including seventeen metropolitan areas with more than 50,000 residents.”).

³⁰ *Lake Erie*, *supra* note 29.

³¹ Clean Water Act, 33 U.S.C. § 1251 *et seq.*; GLWQA 2012, *supra* note 11.

³² Kilbert et al., *supra* note 24, at 70.

enters a water body from a particular source, whether from a pipe, factory, or treatment plant.³³ The result of these efforts was significant HAB reductions in the Lake by the 1980s.³⁴

However, HABs in western Lake Erie have been on the rise since the mid-1990s.³⁵ This shift can be attributed to changing “sources and remedies” of the problem.³⁶ The primary concern is no longer point pollution from sewage treatment plants, but instead nonpoint pollution from farmland and urban areas.³⁷ Nonpoint source pollution involves rainwater or snowmelt transporting sediment, nutrients, and “human-made pollutants” into water bodies.³⁸ The IJC reports that 44% of the total phosphorus feeding into Lake Erie can be contributed to farming activities, which is a higher percentage compared to the other Great Lakes.³⁹ Nonpoint sources are often more challenging for states to monitor and require a wide variety of responses.⁴⁰ Instead of issuing mandatory permits, states often employ educational initiatives or voluntary programs that create incentives to use better farming techniques.⁴¹ Controlling phosphorus runoff from nonpoint sources has generally been less effective than from point sources, meaning that nonpoint sources contribute higher levels of phosphorus to Lake Erie.⁴²

Total phosphorus (“TP”) in Lake Erie equals the sum of particulate phosphorus (“PP”) and dissolved reactive phosphorus (“DRP”), and DRP is the “most readily available to support algae growth” and HABs.⁴³ The Ohio Phosphorus Task Force identified the main contributor to HABs to be storm runoff from agriculture, particularly since farmers often use fertilizers with high dissolved phosphorus content.⁴⁴ Dissolved phosphorus levels in Lake Erie are exacerbated by stronger rainstorms, increased agricultural production, and new farming techniques like adding fertilizers

³³ See 33 U.S.C. § 1362(14).

³⁴ INT'L JOINT COMM'N, *supra* note 12, at 3.

³⁵ Kilbert et al., *supra* note 24, at 70.

³⁶ INT'L JOINT COMM'N, *supra* note 12, at 4.

³⁷ *Id.*

³⁸ *Polluted Runoff: Nonpoint Source Pollution*, EPA, <http://water.epa.gov/polwaste/nps/> [<http://perma.cc/M2EW-DPTU>] (last updated Feb. 25, 2015).

³⁹ INT'L JOINT COMM'N, *supra* note 12, at 50.

⁴⁰ See Kilbert et al., *supra* note 24, at 72.

⁴¹ See OHIO PHOSPHORUS TASK FORCE REPORT, *supra* note 26.

⁴² Kilbert et al., *supra* note 24, at 71–72.

⁴³ INT'L JOINT COMM'N, *supra* note 12, at 4, 27.

⁴⁴ See OHIO PHOSPHORUS TASK FORCE REPORT, *supra* note 26, at 1; see also Gallucci, *supra* note 1.

directly to soil surface without tilling.⁴⁵ While TP levels have stayed relatively stable since the 1990s, DRP levels have increased, creating a need to shift focus towards lowering DRP levels.⁴⁶

In the summer of 2011, western Lake Erie experienced its largest bloom to date, with green algae “visible from satellites” and extending about 120 miles from Toledo to Cleveland.⁴⁷ Scientists, forecasting higher temperatures and heavier rainstorms in the coming years, predicted the 2011 bloom was a sign of more algal blooms to come.⁴⁸ True to their predictions, the HAB problem persisted in 2014, having a direct effect on residents of Toledo, Ohio and sparking public discourse about ways to curb agricultural runoff into western Lake Erie.

B. *Lake Erie Under the Great Lakes Water Quality Agreement*

In 1972, Canada and the United States collaborated to produce the Great Lakes Quality Agreement (“GLWQA”), which established a commitment to restoring water quality in the Great Lakes through sound research, practices, and cooperation.⁴⁹ The Agreement sets interim targets for pollutant loadings to be implemented through the combined efforts of the United States and Canada.⁵⁰ For the open waters, the United States and Canada are supposed to work with state and local governments to “review and update the phosphorus loading targets” in the Lakes and establish particular load allocations from each country to meet the targets.⁵¹

⁴⁵ Gallucci, *supra* note 1; Cheryl Turner, *Buckeye State’s Agriculture in a Nutshell*, U.S. DEP’T OF AGRIC. (Aug. 7, 2014, 11:00 AM), <http://blogs.usda.gov/2014/08/07/buckeye-states-agriculture-in-a-nutshell/> [<http://perma.cc/89HE-BU3K>] (noting that, according to the Census of Agriculture, there was a 42% rise in Ohio’s sale of agricultural products such as corn, soybeans, wheat, poultry, hogs and milk together from 2012 as compared to 2007).

⁴⁶ Kilbert et al., *supra* note 24, at 71; INT’L JOINT COMM’N, *supra* note 12, at 4.

⁴⁷ INT’L JOINT COMM’N, *supra* note 12, at 34; Gallucci, *supra* note 1.

⁴⁸ Jim Erickson, *Record-breaking 2011 Lake Erie Algae Bloom May Be Sign of Things to Come*, UNIV. OF MICH. (Apr. 1, 2013), <http://www.ns.umich.edu/new/releases/21342-record-breaking-2011-lake-erie-algae-bloom-may-be-sign-of-things-to-come> [<http://perma.cc/K8QR-QX6B>].

⁴⁹ GLWQA 2012, *supra* note 11, art. 2.

⁵⁰ Alisha Tschorke, *Great Lakes Water Quality Agreement: Is Honesty without Accountability or Enforcement Still Enough?*, 15 MO. ENVTL. L. & POL’Y REV. 273, 280 (2008); *GLWQA—2012 Annexes*, INT’L JOINT COMM’N, available at http://www.ijc.org/en/_GLWQA_Annexes [<http://perma.cc/3RET-G8UF>]. The current interim objective for total phosphorus concentration in the open waters of the western basin of Lake Erie is 15ug/l and the interim loading target for phosphorus for the entirety of Lake Erie at 11,000 metric tons of phosphorus per year.

⁵¹ *GLWQA—2012 Annexes*, *supra* note 50.

In 2006, the IJC revealed that one of the main limitations of the GLWQA was that it “lack[ed] both accountability and enforcement mechanisms” necessary to impose the targets.⁵²

Following the 2011 algal bloom in western Lake Erie, the IJC implemented the “Lake Erie Ecosystem Priority (“LEEP”) Study” to research current problems affecting the Lake and give advice to state, federal, and international governments on ways to lower dissolved phosphorus runoff.⁵³ The IJC used the results of this study in its February 2014 report, “A Balanced Diet for Lake Erie,” and provided recommendations to prevent HABs in western Lake Erie.⁵⁴ The main proposals from the 2014 IJC report can be summarized as follows:

- 1) putting in place “Phosphorus Reduction Targets,” which involves creating a TMDL to enforce the targets;
- 2) lowering the amount of phosphorus entering Lake Erie from “agricultural sources and septic systems”;
- 3) decreasing the amount of phosphorus entering Lake Erie from urban areas; and
- 4) increasing scientific “monitoring and research” of Lake Erie.⁵⁵

To meet these goals, the IJC advocated that governments take on an adaptive management approach to phosphorus control and adopt best management practices.⁵⁶ Adaptive management involves “improving actions through long term monitoring, modeling, and assessment.”⁵⁷ Essentially it is a flexible and progressive “planning process” that allows for changes as new science becomes available or new events occur, so as to best respond to future situations.⁵⁸ To combat HABs in western Lake Erie, governments can change loading targets and implement new best management practices (“BMPs”) or techniques to meet these targets.⁵⁹ The

⁵² Tschorke, *supra* note 50, at 284; *IJC's 13th Biennial Report Calls for Strong Great Lakes Accountability Framework by the two National Governments*, INT'L JOINT COMM'N (Feb. 7, 2007), available at http://www.ijc.org/rel/news/070208_e.htm [<http://perma.cc/9B4S-XSU2>].

⁵³ INT'L JOINT COMM'N, *supra* note 12, at 4.

⁵⁴ *Id.*

⁵⁵ *Id.* at 8–10.

⁵⁶ *Id.* at 49–57.

⁵⁷ *Id.* at 49.

⁵⁸ *Id.*

⁵⁹ *Id.*

Ohio Lake Erie Phosphorus Task Force II Final Report, for example, outlines basic phosphorus reduction and management practices that states can employ.⁶⁰ The IJC noted that “current BMPs aim primarily to reduce particulate phosphorus, not DRP,” so governments should adjust BMPs to focus on lowering dissolved phosphorus levels.⁶¹

The IJC found that the current phosphorus targets under the 2012 Annex are not sufficient to reduce the “size and severity of HABs in western Lake Erie” and that the governments should develop new targets for phosphorus loads.⁶² In response to the August 2014 algal bloom, the United States and Canadian governments are discussing changes to the target levels.⁶³ As the international governments work to set up new broad targets, the IJC also recommends several potential policy instruments for meeting those target levels.⁶⁴

One best management option to meet the targets would be for Ohio and Michigan to declare western Lake Erie as “impaired” under the Clean Water Act and begin the TMDL development process.⁶⁵ The IJC envisions that the United States EPA would work with Michigan, Ohio, and Indiana governments to set up a “tri-state phosphorus TMDL.”⁶⁶ Each state would determine the primary sources of phosphorus, “allocate specific reductions of phosphorus” depending on the amounts coming from each source, and formulate plans on how to reach the proposed targets by a set deadline.⁶⁷

II. UNITED STATES TMDL LAW AND THE CHESAPEAKE BAY MULTISTATE TMDL FRAMEWORK

This section reviews the process of establishing a TMDL under the Clean Water Act and discusses the creation of the Chesapeake Bay multi-state TMDL. It also highlights the recent lawsuit, *American Farm Bureau Federation v. EPA*, brought by farmers challenging EPA’s authority to

⁶⁰ See *id.* at 50; see generally OHIO PHOSPHORUS TASK FORCE REPORT, *supra* note 26.

⁶¹ INT’L JOINT COMM’N, *supra* note 12, at 61.

⁶² *Id.* at 70.

⁶³ Codi Kozacek, *Lake Erie Algae Blooms Prompt New International Targets for Phosphorus*, CIRCLE OF BLUE (Aug. 09, 2014), <http://www.circleofblue.org/waternews/2014/world/lake-erie-algae-blooms-prompt-new-international-targets-phosphorus/> [http://perma.cc/U9WY-56UD].

⁶⁴ INT’L JOINT COMM’N, *supra* note 12, at 72.

⁶⁵ *Id.*

⁶⁶ *Id.* at 71.

⁶⁷ *Id.*

create and implement the Bay TMDL.⁶⁸ The lawsuit discusses how coordination works among states and the federal government when implementing a multistate TMDL, and could influence how the TMDL structure spreads to other watersheds.⁶⁹

A. *The Clean Water Act and the Basic TMDL Framework*

The Clean Water Act has a purpose to “restore and maintain the chemical, physical, and biological integrity of the Nation’s waters.”⁷⁰ The Act requires states to determine water quality standards for the waters within their boundaries, describing the “uses” of the water and the “criteria necessary to protect the uses,” submitting them for review by EPA.⁷¹ After setting these water quality standards, states then monitor the health of the waters and submit a water quality report to EPA every two years reporting on their findings.⁷²

States also have a duty to determine which waters in their borders have “pollution controls [that] ‘are not stringent enough to implement any water quality standard applicable to such waters’” and add them to a § 303(d) impaired waters list.⁷³ The placement of a water body on the § 303(d) impaired waters list triggers the development of TMDLs tailored to the specific water bodies.⁷⁴ A TMDL is a maximum amount of a pollutant that “a body of water can receive from point sources or waste load allocations (“WLAs”), and non-point sources, or load allocations (“LAS”).”⁷⁵ The TMDL is basically the sum of WLAS and LAS plus a margin of safety to account for uncertainty and variations in seasons.⁷⁶ TMDLs are tailored to specific pollutants but are often packaged together into a single TMDL document for a particular water body or watershed.⁷⁷

EPA and state governments work together to establish TMDLs, which ultimately serve as “informational tools” to shape plans to reach the

⁶⁸ *Am. Farm Bureau Fed’n v. EPA*, 984 F. Supp.2d 289 (2013).

⁶⁹ *See infra* Part II.C.

⁷⁰ 33 U.S.C. § 1251(a).

⁷¹ *Am. Farm Bureau Fed’n*, 984 F. Supp.2d at 297 (2013); 40 C.F.R. §§ 130.3, 131.6.

⁷² *Overview of Impaired Waters and Total Maximum Daily Loads Program*, EPA, <http://water.epa.gov/lawsregs/lawsguidance/cwa/tmdl/intro.cfm> [<http://perma.cc/8YJK-LGLB>] (last updated Mar. 6, 2012).

⁷³ *Am. Farm Bureau Fed’n*, 984 F. Supp.2d at 297 (quoting 33 U.S.C. § 1313(d)(1)(A)).

⁷⁴ 33 U.S.C. § 1313(d)(1)(c); 40 C.F.R. § 130.7(c)(1).

⁷⁵ 40 C.F.R. § 130.2.

⁷⁶ *What is a TMDL?*, EPA, <http://water.epa.gov/lawsregs/lawsguidance/cwa/tmdl/overviewoftmdl.cfm> [<http://perma.cc/K7ZG-96GC>] (last updated Sept. 11, 2013).

⁷⁷ *Id.*

necessary water quality standards.⁷⁸ The underlying goal of creating a TMDL is for the states to develop strategic plans to meet the determined pollution levels.⁷⁹ States have the primary responsibility to implement the TMDL in their respective borders and determine how they are going to meet the proposed nutrient targets.⁸⁰ EPA maintains a “supervisory” role and has the ability to step in with backstop measures to ensure states make progress.⁸¹

Although EPA has “limited” enforcement authority under the Clean Water Act, there are ways that it can hold states accountable.⁸² For example, EPA sets deadlines and timelines for developing implementation plans to meet TMDL targets.⁸³ In addition, it requires “reasonable assurances” that the WLAs and LAs will be reached and water quality standards met.⁸⁴ The reasonable assurances standard can be met when a state shows that it is employing “reliable delivery mechanism[s]” to meet targets like pollution permit programs for point source pollutants or sufficient regulations for nonpoint source pollutants.⁸⁵ In case a state does not meet the reasonable assurances standard, EPA can step in to adjust targets and create “backstop allocations.”⁸⁶

B. The Chesapeake Bay TMDL: A Collaborative, Multistate Effort

The Chesapeake Bay experiences similar water quality problems to Lake Erie. High levels of phosphorus, nitrogen, and sediment from point sources and agricultural runoff enter the Bay, resulting in algal blooms that deplete oxygen levels in the water and create “dead zones” where aquatic plant and animal life cannot live.⁸⁷ Although the states bordering the Chesapeake Bay worked for twenty-five years to reduce pollutants

⁷⁸ *Am. Farm Bureau Fed’n*, 984 F. Supp.2d at 297.

⁷⁹ *See What is a TMDL?*, *supra* note 76.

⁸⁰ *See Am. Farm Bureau Fed’n*, 984 F. Supp.2d at 314.

⁸¹ *Id.*

⁸² *Id.* at 315.

⁸³ Oliver A. Houck, *The Clean Water Act Returns (Again): Part I, TMDLs and the Chesapeake Bay*, 41 ENVTL. L. REP. NEWS & ANALYSIS 10208, 10222 (Mar. 2011).

⁸⁴ Claudia Copeland, *Clean Water Act and Pollutant Total Maximum Daily Loads (TMDLS)*, CONG. RES. SERVICE 6 (Sept. 2012), available at <http://fas.org/sgp/crs/misc/R42752.pdf> [<http://perma.cc/2ETH-4K2H>].

⁸⁵ *See* Houck, *supra* note 83, at 10210.

⁸⁶ Chesapeake Bay TMDL, *supra* note 19, at 21.

⁸⁷ *Id.* at ES-3.

entering the Bay, little progress had been made towards accomplishing necessary water quality.⁸⁸ Creating a TMDL framework for the Chesapeake Bay involved conversations among six different states, the District of Columbia, and EPA.⁸⁹ The Bay TMDL, extending 64,000 square miles, has been deemed “the largest water restoration project in America, indeed the world.”⁹⁰

Virginia, Maryland, Pennsylvania, and the District of Columbia agreed to work together to clean up the Bay, creating the first Chesapeake Bay Agreement in 1983 and setting a broad goal in 1987 to reach a 40% reduction in phosphorus and nitrogen by 2000.⁹¹ Efforts continued throughout the 1980s and 1990s, with the parties agreeing to implement tributary strategies to clean up tributary waters feeding into the Bay, and eventually adding the Bay to the impaired waters list.⁹² By 2000, the Bay had only experienced a 25% reduction in phosphorus levels and 13% reduction in nitrogen, and parties formed a new Chesapeake Bay Agreement seeking to remove the Bay from the impaired waters list by 2010.⁹³

At this point, states were creating TMDLs for the Bay waters but were developing plans individually, and thus addressing only “piece[s] of the problem.”⁹⁴ In addition, the TMDL program was not proving as effective as planned because the states realized that it was “merely informational and required no more than a set of numbers for load reductions that might or might not be achieved.”⁹⁵ States were reluctant to impose measures that would be too limiting on farmers, and there was no real regulatory enforcement for nonpoint pollution.⁹⁶

In response to limited progress in Bay restoration over the years, the White House issued an Executive Order in 2009 calling for a comprehensive TMDL for the Bay.⁹⁷ The Bay TMDL would be the biggest and “most complex” TMDL created, composed of 92 smaller TMDLs for

⁸⁸ *Id.*

⁸⁹ *Id.* at ES-1. The six states are Virginia, Delaware, Maryland, New York, Pennsylvania, and West Virginia; *Id.* at ES-3.

⁹⁰ Houck, *supra* note 83, at 10209.

⁹¹ *Id.* at 10214; Chesapeake Bay TMDL, *supra* note 19, at 1-4.

⁹² Chesapeake Bay TMDL, *supra* note 19, at 1-3, 1-5.

⁹³ Houck, *supra* note 83, at 10214.

⁹⁴ *Id.* at 10215.

⁹⁵ *Id.* at 10210.

⁹⁶ *Id.* at 10215.

⁹⁷ Exec. Order No. 13508, 3 C.F.R. 13508 (May 12, 2009), available at <http://www.gpo.gov/fdsys/granule/CFR-2010-title3-vol1/CFR-2010-title3-vol1-eo13508> [<http://perma.cc/8M6G-RFY4>].

particular portions of the Bay.⁹⁸ Since the states had already performed research and acquired information about phosphorus loadings in the Bay, governments were well-positioned to carry out this plan.⁹⁹

Supporters of the Bay TMDL considered it to be “unique because of the extensive measures EPA and the jurisdictions adopted to ensure accountability for reducing pollution and meeting deadlines for progress.”¹⁰⁰ Specifically, the Bay TMDL required each of the states to submit watershed implementation plans (“WIPs”) outlining specific practices and plans to reduce nutrient runoff.¹⁰¹ Basically the WIPs served as “roadmaps” for the states to meet the TMDL targets and varied depending on the needs and resources of the state.¹⁰² Once the states submitted Phase I WIPs for review, EPA released a draft TMDL open for public comment and worked with “each jurisdiction to revise and strengthen its plan.”¹⁰³ If a Phase I WIP did not provide reasonable assurances of meeting pollution targets, EPA stepped in with backstop allocations for pollution amounts.¹⁰⁴ Two more phases of WIPs must be submitted after the final TMDL, and although implementing the WIPs remains primarily a state obligation, EPA plays a role in holding the states accountable to reaching goals.¹⁰⁵ EPA has set two-year milestones to ensure the states stay on track, expressed a commitment to monitoring progress of the states, and communicated that it will take “specific federal contingency actions if the jurisdictions do not meet their commitments.”¹⁰⁶ If a state does not provide reasonable assurances that it will meet the two-year milestone goal, EPA can step in to help the state adjust to meet targets.¹⁰⁷ EPA can also decrease federal funding to states that are not making enough progress to meet deadlines and loading goals.¹⁰⁸ The Bay TMDL set long-term goals of meeting 60% of the targets by 2017 and putting in place “all pollution control measures needed to fully restore the Bay and its tidal rivers” by 2025.¹⁰⁹

⁹⁸ Chesapeake Bay TMDL, *supra* note 19, at ES-3.

⁹⁹ Houck, *supra* note 83, at 10215.

¹⁰⁰ Chesapeake Bay TMDL, *supra* note 19, at ES-8.

¹⁰¹ *Am. Farm Bureau Fed'n*, 984 F. Supp.2d at 298.

¹⁰² Chesapeake Bay TMDL, *supra* note 19, at ES-8.

¹⁰³ *Id.* at ES-10.

¹⁰⁴ *See id.* at ES-10 to ES-12.

¹⁰⁵ *Id.* at ES-10 to ES-14.

¹⁰⁶ *Id.* at ES-8.

¹⁰⁷ *Id.*

¹⁰⁸ Chesapeake Bay TMDL, *supra* note 19, at ES-8.

¹⁰⁹ *Id.* at ES-1.

C. *Litigation over the Chesapeake Bay TMDL: The American Farm Bureau Federation et al. v. United States Environmental Protection Agency et al.*

Just after EPA issued a large-scale TMDL in 2010 monitoring nitrogen, phosphorus, and sediment runoff into the Chesapeake Bay, the American Farm Bureau Federation and the Pennsylvania Farm Bureau filed suit in the United States District Court for the Middle District of Pennsylvania.¹¹⁰ They were later joined by other interest groups from the agriculture industry, while environmental groups like the Chesapeake Bay Foundation and some municipal wastewater groups intervened on behalf of EPA.¹¹¹ The plaintiffs raised a series of challenges to the formation and implementation of the TMDL. Specifically, they asserted that the CWA did not give EPA authority to create a TMDL, the TMDL extended beyond the scope of EPA's legal power, the TMDL was "arbitrary and capricious," and EPA did not give proper notice to the public for their feedback as required by the Administrative Procedures Act ("APA").¹¹² In September 2013, Judge Rambo dismissed the plaintiffs' motion for summary judgment and granted summary judgment for EPA.¹¹³ Essentially, the district court upheld the federal EPA and state efforts to restore the health of the Chesapeake Bay through a collaborative TMDL framework.¹¹⁴

In January 2014, the American Farm Bureau Federation and its supporters appealed the decision to the Third Circuit.¹¹⁵ Twenty-one state attorneys and eight counties signed onto amici briefs in support of the Farm Bureau.¹¹⁶ The list includes Indiana and Michigan, two of the states that would be involved in a tri-state TMDL for western Lake Erie.¹¹⁷ The

¹¹⁰ *Judge Rambo Ruling: American Farm Bureau, et al v. EPA, et al*, CHESAPEAKE BAY FOUND., <http://www.cbf.org/document.doc?id=1749> [<http://perma.cc/9C4L-QJGH>] (last visited Jan. 22, 2016).

¹¹¹ *Id.*

¹¹² *Am. Farm Bureau Fed'n*, 984 F. Supp.2d at 294.

¹¹³ *Id.*

¹¹⁴ Oliver A. Houck, *Cooperative Federalism, Nutrients and the Clean Water Act*, 44 ENVTL. L. REP. NEWS & ANALYSIS 10426, 10441 (May 2014); *CBF Issues Statement on New Efforts to Derail Bay Clean Up*, CHESAPEAKE BAY FOUND. (Feb. 4, 2014), <http://www.cbf.org/news-media/newsroom/fed/2014/02/04/cbf-issues-statement-on-new-efforts-to-derail-bay-clean-up> [<http://perma.cc/6AL2-8V29>].

¹¹⁵ John Vogel, *Battle Over Chesapeake Bay TMDLs Moves to Appeals Court*, FARM FUTURES (Feb. 5, 2014), <http://farmfutures.com/story-battle-chesapeake-bay-tmdls-moves-appeals-court-0-108294> [<http://perma.cc/9ZJP-JYQ7>].

¹¹⁶ *Id.*

¹¹⁷ *Opposition to Chesapeake Bay Cleanup by Michigan and Indiana Could Hamper Great*

states opposing the Chesapeake Bay TMDL expressed concern that EPA was overstepping its legal authority and not following the CWA's "framework of cooperative federalism."¹¹⁸ They sought to ensure that the states maintained "their role in regulating land-use within their [own] borders" without excessive federal oversight.¹¹⁹ None of the states actually involved in the Chesapeake Bay TMDL signed onto amici briefs in opposition of EPA's position.¹²⁰ The lawsuit carries important implications because similar TMDL processes and structures could spread to other states, and the outcome could shape the contours of federal EPA involvement in the TMDL process and implementation.¹²¹ This case broadens the debate over TMDLs to finding the balance between state and federal power in the spirit of cooperative federalism.¹²² The Third Circuit unanimously upheld the Chesapeake Bay TMDL on July 6, 2015.¹²³

III. CURRENT EFFORTS TO ADDRESS HABS IN WESTERN LAKE ERIE: THE STATE OF AFFAIRS AFTER THE 2014 BLOOM

This section overviews some of the current programs that the states surrounding Lake Erie and federal government have put in place to combat agricultural runoff and reduce HABS. It discusses some of the limitations of the current tactics including (1) the emphasis on voluntary and educational programs without a sufficient regulatory structure to hold states accountable, and (2) the individualized nature of current efforts with a need for more coordination among the states and federal government to address the phosphorus issue in the western basin.

A. *State and Federal Actions*

Ohio, Michigan, and Indiana currently have implemented numerous voluntary and educational programs to increase awareness about

Lakes Protection Efforts, ALLIANCE FOR THE GREAT LAKES ET AL. (Feb. 25, 2014), available at <http://www.greatlakes.org/document.doc?id=1455> [<http://perma.cc/B4E5-XW7S>].

¹¹⁸ Brief of the States of Kansas et al. as Amici Curiae in Support of Reversal at 2, *Am. Farm Bureau Fed'n v. EPA*, 984 F. Supp.2d 289 (2013) (No. 13-4079).

¹¹⁹ *Id.* at 1–2.

¹²⁰ See *Chesapeake Bay Clean Water Blueprint*, *supra* note 110.

¹²¹ See Houck, *supra* note 114, at 10441.

¹²² See *id.*; Vogel, *supra* note 115.

¹²³ The Author wrote this Note before the subsequent decision of the Third Circuit. See *Third Circuit Upholds EPA's Chesapeake Bay TMDL in Landmark Decision, September 2015*, VA. ASS'N OF MUN. WASTEWATER AGENCIES, http://www.vamwa.org/wp-content/uploads/2015/09/2015-09_Court_Upholds_Bay_TMDL.pdf [<https://perma.cc/99AG-TYZV>].

nonpoint source pollution.¹²⁴ Ohio in particular, as the state most affected by the 2014 algal bloom, has recently revamped its efforts to educate farmers on reducing phosphorus runoff from agricultural land.¹²⁵ Just prior to the Toledo crisis, the Ohio Senate passed Senate Bill 150 specifically targeting agricultural runoff.¹²⁶ Effective 2017, farmers who use chemical fertilizers on land parcels greater than fifty acres will have to participate in a “fertilizer applicator certification program” that provides education on proper application techniques and the appropriate amount of fertilizer to apply on farmland.¹²⁷ The bill also provides incentives for farmers to make “voluntary nutrient management plan[s].”¹²⁸ Specifically, the plans can serve as a defense to civil actions when farmers can show that they applied fertilizer “in substantial compliance” with the protocols outlined in their plans.¹²⁹ Although few studies have been implemented to show how effective the new educational and voluntary efforts will prove, Ohio lawmakers are hopeful that they will contribute directly to reducing fertilizer runoff and preventing HABs.¹³⁰ After the Toledo crisis, several Ohio senators have supported requiring certification for manure application as well since manure runoff can also contribute high levels of dissolved phosphorus to the lake.¹³¹

The states have continued to implement a variety of best management practices for nonpoint source pollution tailored to meet the needs of their particular geographic area.¹³² Ohio, Michigan, and Indiana have all

¹²⁴ See, e.g., OHIO PHOSPHORUS TASK FORCE REPORT, *supra* note 26; see also *Nutrient Management Initiatives in Ohio*, OHIO EPA, available at <http://www.epa.ohio.gov/Portals/35/wqs/NutrientManagementInitiatives.pdf> [<http://perma.cc/58ME-D637>].

¹²⁵ See Jeremy Pelzer, *Kasich Set to Sign Ohio's 'First Big Step' Toward Curbing Lake Erie Algal Blooms*, NE. OHIO MEDIA GRP. (May 19, 2014), http://www.cleveland.com/open/index.ssf/2014/05/kasich_set_to_sign_ohios_first.html [<http://perma.cc/HK3S-4JCR>].

¹²⁶ Ohio S. 150, 130th Gen. Assemb. (2014) (enacted).

¹²⁷ *Id.* §§ 905.321, 905.322. Fertilizer applicator certification programs must accomplish the following: “(a) [Educate] an applicant for certification on the time, place, form, amount, handling, and application of fertilizer; (b) [Serve] as a component of a comprehensive state nutrient reduction strategy addressing all sources of relevant nutrients; (c) [Support] generally practical and economically feasible best management practices.” *Id.*

¹²⁸ *Id.* § 905.323.

¹²⁹ *Id.* § 905.325.

¹³⁰ Pelzer, *supra* note 125.

¹³¹ *Id.*; Jim Provance, *More Regulations Proposed for Manure in Ohio*, THE TOLEDO BLADE (Feb. 5, 2015), <http://www.toledoblade.com/State/2015/02/05/More-regulations-proposed-for-manure-in-Ohio.html> [<http://perma.cc/J758-C6SM>].

¹³² See OHIO PHOSPHORUS TASK FORCE REPORT, *supra* note 26 (outlining the specific policies in place for Ohio); see also *Nonpoint Source Program*, MICH. DEPT. OF ENVTL. QUALITY, http://www.michigan.gov/deq/0,4561,7-135-3313_3682_3714-13061--,00.html [<http://perma>

promoted educational programs using the “4R Stewardship Framework” to “manage nutrients responsibly” which involves the “right fertilizer source,” “right rate” for application, “right time” of application for crops, and “right place” or placement of fertilizers.¹³³ The three states have also implemented separate TMDLs for many of the tributaries that feed into the western basin of Lake Erie.¹³⁴ Ohio, for example, has several TMDLs in place for portions of the Maumee River, which contributes about “50% of phosphorus loadings” into the western Lake Erie.¹³⁵ In this respect, Lake Erie parallels the Chesapeake Bay, as the Bay states had put in place multiple TMDLs before coming together to coordinate a comprehensive TMDL plan.¹³⁶

In addition to individual state efforts, the federal government has spearheaded and implemented several initiatives providing monetary funds to help the states in reducing phosphorus runoff.¹³⁷ EPA Region 5 provided \$8.6 million to Ohio, Michigan, and Indiana after the 2014 algal bloom to improve responses to HABs, and plans to provide more funding for future projects.¹³⁸ EPA announced that the money would go towards “providing technical assistance and incentives to farmers” who cultivate around western Lake Erie and its tributaries to lower their phosphorus output, and to improve scientific monitoring of phosphorus levels in the tributaries.¹³⁹ The grants were part of the Great Lakes Restoration Initiative (“GLRI”), a program that EPA created in 2010 to improve the Great Lakes as a whole through federal funding and a focus on addressing urgent issues including harmful algal blooms.¹⁴⁰

.cc/Q8LF-D8JH] (last visited Jan. 22, 2016); IND. STATE DEPT. OF AGRIC., INDIANA NUTRIENT REDUCTION STRATEGY 8 (stating that Indiana “encourage[s] actions that are voluntary, incentive-based, practical and cost-effective”), available at [http://in.gov/isda/files/Indiana_Nutrient_Reduction_Strategy_\(2\).pdf](http://in.gov/isda/files/Indiana_Nutrient_Reduction_Strategy_(2).pdf) [<http://perma.cc/FVW5-F6GL>].

¹³³ INT’L JOINT COMM’N, *supra* note 12, at 54; see also *What are the 4Rs*, THE FERTILIZER INST., <http://www.nutrientstewardship.com/what-are-4rs> [<http://perma.cc/9SAZ-J57U>] (last visited Jan. 22, 2016).

¹³⁴ See, e.g., *Total Maximum Daily Load (TMDL) Program*, OHIO EPA, available at <http://www.epa.state.oh.us/dsw/tmdl/index.aspx> [<http://perma.cc/7XS2-ZWNP>] (last visited Jan. 22, 2016).

¹³⁵ INT’L JOINT COMM’N, *supra* note 12, at 73.

¹³⁶ See Houck, *supra* note 83, at 10215.

¹³⁷ See *EPA Awards Great Lakes Restoration Initiative Grants to Ohio, Michigan, and Indiana to Target Harmful Algal Blooms in Lake Erie*, EPA (Oct. 20, 2014), <http://yosemite.epa.gov/opa/admpress.nsf/a5792a626c8dac098525735900400c2d/999c5b35070e307585257d7700656557!OpenDocument> [<http://perma.cc/T2UF-46XH>].

¹³⁸ *Id.*

¹³⁹ *Id.*

¹⁴⁰ Pervaze A. Sheikh, *The Great Lakes Restoration Initiative: Background and Issues*, CONG. RESEARCH SERV. 1, available at <http://fas.org/sgp/crs/misc/R43249.pdf> [<http://perma>

B. *Limitations of Current Responses*

Current state and federal actions have been steps in the right direction to reduce HABs, and the 2014 water ban in Toledo has made improving water quality a high priority for the public and policymakers.¹⁴¹ However, the large-scale blooms in 2011 and 2014 reveal that high phosphorus runoff has continued to persist and governments will need to continue to develop new responses to nonpoint source pollution.

One of the primary concerns with the current efforts is that voluntary educational programs will not be sufficient to implement widespread change and can only address the problem so far.¹⁴² Not all farmers will choose to participate in the voluntary programs, and therefore the programs will not reach their full potential. In addition, when farmers perform a cost-benefit analysis, incentives in the programs may not be sufficient to spark changes in farming practices.¹⁴³

Due to the shortcomings of voluntary programs, support has been growing for a more regulatory approach to hold states more accountable for meeting water quality targets.¹⁴⁴ One suggestion to accomplish this goal is to increase federal involvement in the nonpoint source pollution regulation process.¹⁴⁵ Nonpoint source pollution often “implicates interstate waters or contributes to downstream water quality deterioration,” so one state may be contributing to the problem in another state.¹⁴⁶ As a result, federal involvement may be needed to help enhance coordination and communication among different localities to properly address the problem.¹⁴⁷ Another key suggestion includes still allowing the states to exercise “flexibility” in addressing pollution from nonpoint sources, but ensure that “several core minimum regulatory requirements” set clear

.cc/7QMS-7HDZ]; see also WHITEHOUSE COUNCIL ON ENVTL. QUALITY ET AL., GREAT LAKES RESTORATION INITIATIVE ACTION PLAN 10–11 (2010), available at http://glri.us/pdfs/glri_actionplan.pdf [<http://perma.cc/GY6Y-6HC4>].

¹⁴¹ See Emma G. Fitzsimmons, *Tap Water Ban for Toledo Residents*, N.Y. TIMES (Aug. 3, 2014), http://www.nytimes.com/2014/08/04/us/toledo-faces-second-day-of-water-ban.html?_r=0 [<https://perma.cc/BH46-MXN5>].

¹⁴² Douglas R. Williams, *When Voluntary Incentive-Based Controls Fail Structuring a Regulator Response*, 9 WASH. U. J.L. & POL'Y 21, 25 (2002).

¹⁴³ *Id.* at 27.

¹⁴⁴ See Gallucci, *supra* note 1; see INT'L JOINT COMM'N, *supra* note 12, at 76.

¹⁴⁵ Williams, *supra* note 142, at 25–27.

¹⁴⁶ *Id.* at 25.

¹⁴⁷ *Id.*

expectations for water quality standards.¹⁴⁸ For the western basin, a tri-state TMDL with federal EPA backstop measures in place could act as a viable option for setting specific targets, picking dates to meet those targets, and ensuring higher accountability to meet those targets.

The second key concern is that the states, by implementing programs individually, may not achieve the results necessary to lower phosphorus levels to meet water quality standards. The U.S. Government Accountability Office (“GAO”) in 2003 issued a report emphasizing that a significant weakness in the Great Lakes region was the wide variety of programs in place and the lack of a “comprehensive strategy or plan similar to those developed for other large ecosystem restoration projects, such as the South Florida ecosystem and the Chesapeake Bay.”¹⁴⁹ Ohio, Michigan, and Indiana have tended to function on an individual level with multiple projects and plans in place for the western basin.¹⁵⁰ These separate plans can only address particular “piece[s] of the problem” without addressing the larger picture.¹⁵¹ The Chesapeake Bay experienced the same problem in the 1990s and early 2000s, before pooling resources to address pollution as a whole and take a more collaborative approach.¹⁵²

The GLRI federal program grew in part as a response to GAO’s 2003 report, and has attempted to improve collaboration among federal, state, and international governments, and create a more widespread plan addressing water quality issues in all five Great Lakes.¹⁵³ However, the program is still in its early stages, and the Congressional Research Service determined that the current GLRI Action plan, although putting in place broad goals, leaves a lot undetermined.¹⁵⁴ The “scope and scale” of the initiative remains unclear, as well as “what a restored ecosystem might look like” and specific benchmarks or money estimates.¹⁵⁵ It is also not

¹⁴⁸ *Id.* at 29.

¹⁴⁹ GOV’T ACCOUNTABILITY OFFICE, GAO-03-515: GREAT LAKES: AN OVERALL STRATEGY AND INDICATORS FOR MEASURING PROGRESS ARE NEEDED TO BETTER ACHIEVE RESTORATION GOALS 7 (2003), available at <http://www.gao.gov/assets/160/157435.pdf> [<http://perma.cc/U6KD-EU4P>].

¹⁵⁰ See INT’L JOINT COMM’N, *supra* note 12, at 8–10.

¹⁵¹ See GOV’T ACCOUNTABILITY OFFICE, *supra* note 149, at 6–8; see also Houck, *supra* note 83, at 10215.

¹⁵² Houck, *supra* note 83, at 10215.

¹⁵³ *The Great Lakes Water Quality Initiative*, GREAT LAKES RESTORATION <http://glri.us/actionplan/index.html> [<http://perma.cc/NQ44-CB7W>] (last visited Jan. 22, 2016).

¹⁵⁴ Sheikh, *supra* note 140, at 15–17, 19.

¹⁵⁵ *Id.* at Summary.

clear how federal and state governments will interact and allocate power when trying to implement the broad goals.¹⁵⁶

The GLRI continues to look at increasing funding and coordination for all five of the Great Lakes, but the same principles and ideas of collaboration can be applied to particular lakes. The IJC's recommendation to create a multistate TMDL could help to further the goals and concerns of GAO's 2003 report for western Lake Erie in particular. It would do so by increasing planning coordination among the states and federal EPA, putting in place clear targets and due dates to accomplish the phosphorus target goals, as well as improving accountability and regulations to meet those targets.

IV. RECOMMENDATIONS FOR WESTERN LAKE ERIE WHEN ESTABLISHING A MULTISTATE TMDL

The states surrounding Lake Erie need to increase collaboration and accountability to reduce harmful algal blooms in the western basin, and a TMDL can serve as a useful tool to help accomplish these goals. The Chesapeake Bay TMDL involved collaboration among seven jurisdictions and EPA, and was specifically designed to increase accountability through reasonable assurances and backstop measures.¹⁵⁷ The Bay TMDL can serve as a useful model for leaders in Ohio, Michigan, Indiana, and EPA Region 5 to build off of when developing a TMDL tailored to western Lake Erie.

A. *Learning from the Chesapeake Bay*

The Bay TMDL has received a lot of attention because of the "extensive measures EPA and jurisdictions have adopted to ensure accountability" while still using the existing legal framework for TMDLs under the Clean Water Act.¹⁵⁸ The TMDL focuses on making sure the jurisdictions stay on track to meet target dates and therefore improve the health of the Bay by 2025.¹⁵⁹ The lawsuit over the Bay TMDL started in part

¹⁵⁶ *Id.* at 11.

¹⁵⁷ See EPA et al., *Chesapeake Bay TMDL Fact Sheet*, <http://www.epa.gov/chesapeake-bay-tmdl/chesapeake-bay-tmdl-fact-sheet> [<https://perma.cc/TK3D-UCUD>].

¹⁵⁸ Chesapeake Bay TMDL, *supra* note 19, at ES-8.

¹⁵⁹ Copeland, *supra* note 84, at 12.

because other states feared that a similar accountability structure could spread, shaping the way TMDLs are implemented in other watersheds.¹⁶⁰

Incorporating accountability measures from the Bay TMDL into a western Lake Erie TMDL could help to lower phosphorus levels and prevent HABs. Ohio, Michigan, and Indiana could develop watershed implementation plans (“WIPs”) following a development process similar to the Bay states.¹⁶¹ EPA, in a letter to the Bay states, outlined its expectations for the WIPs and emphasized eight different factors the WIPs should address.¹⁶² These factors included determining specific target loads for pollutants, assessing the “legal” and “technical capacity” to meet the target loads, describing strategies to meet the targets, and identifying ways to fill gaps between the “current capacity” and “capacity needed to fully attain . . . target loads.”¹⁶³ Developing WIPs with these factors in mind would help Lake Erie states to implement current programs more effectively and improve accountability. Along with the WIPs, the western Lake Erie TMDL could create an overarching timeline to meet phosphorus goals and set specific milestones along the way to ensure the states stay on track. EPA Region 5 could set dates in coordination with the GLWQA timeframe to help meet the overall targets for the western basin.

In the Bay TMDL, EPA evaluated WIPs to ensure reasonable assurances were in place.¹⁶⁴ Especially for nonpoint source pollution, EPA assessed “whether practices capable of reducing the specified pollutant load (1) exist[ed], (2) [were] technically feasible at a level required to meet the allocations, [and] (3) [had] a high likelihood of implementation.”¹⁶⁵ Developing WIPs with the underlying goal of giving reasonable assurance would provide Ohio, Michigan, and Indiana with an opportunity to assess current practices like the 4R Stewardship Program or GLRI, identify any

¹⁶⁰ Karl Blankenship, *21 States, 8 Counties Join Farm Bureau Challenge to Bay TMDL*, BAY J. (Feb. 05, 2014), http://www.bayjournal.com/article/21_states_8_counties_join_farm_bureau_challenge_to_bay_tmdl [<http://perma.cc/D5RD-Q7DP>] (“Most . . . of the states joining [an amicus brief in opposition to the Bay TMDL] were in the Mississippi River drainage, where agricultural groups are worried that similar efforts may be made to force nutrient reductions from Midwest farms.”).

¹⁶¹ See Chesapeake Bay TMDL, *supra* note 19, at 7-6.

¹⁶² *Id.* Table 7-1 lists the eight elements the Bay states were expected to include in their Watershed Implementation Plans. *Id.*

¹⁶³ *Id.*

¹⁶⁴ See ENVTL. LAW INST., REASONABLE ASSURANCE—ACHIEVING WATER QUALITY STANDARDS THROUGH TMDLS (Apr. 2011), *available at* http://www.eli.org/sites/default/files/docs/Martinez_001.pdf [<http://perma.cc/7UPC-9TFG>].

¹⁶⁵ Chesapeake Bay TMDL, *supra* note 19, at 7-1.

weaknesses, determine how to enhance existing practices, and perhaps seek to add alternative or additional measures. Forming a TMDL for the western basin could therefore help improve current phosphorus reduction tactics and significantly reduce HABs.

Under the Bay TMDL, if WIPs do not provide reasonable assurances that LAs for nonpoint sources will be met, EPA can step in to allocate more phosphorus reductions from point sources.¹⁶⁶ The Bay TMDL highlights a variety of backstop measures that EPA can implement including setting new load targets or modifying the TMDL.¹⁶⁷ In addition, EPA can expand its supervision of the NPDES permit program for point sources and increase the number of sources requiring permits.¹⁶⁸ These backstop measures would provide more assurance that target loads would be met in accordance with the TMDL timeline.

Another accountability measure that would be particularly useful for Lake Erie would be to establish a monitoring system that tracks the progress of meeting the TMDL. The Bay TMDL has the BayTAS, a “[w]eb-based system” that incorporates scientific data from the individual states and EPA to show progress made.¹⁶⁹ Setting up a tracking system would serve as a way to hold states and governments to commitments and allow stakeholders, agencies, and the public to clearly see results.¹⁷⁰ If the data showed that states were not on track, the public could encourage states to improve actions.¹⁷¹ The Lake Erie states could set up a similar system for western Lake Erie perhaps in collaboration with the National Oceanic and Atmospheric Administration (“NOAA”), which has recorded data on HABs. NOAA has been tracking harmful algal blooms and recording size and severity of the blooms online over the past several years.¹⁷² Especially with the recent federal funding to increase scientific research and improve

¹⁶⁶ *Id.* at 7-2.

¹⁶⁷ David Sternberg, *EPA Establishes Landmark Chesapeake Bay “Pollution Diet,”* EPA (Dec. 29, 2010), <http://yosemite.epa.gov/opa/admpress.nsf/90829d899627a1d98525735900400c2b/c15f64f4d172edff852578080061fa30!OpenDocument> [<http://perma.cc/9K6R-HGSV>].

¹⁶⁸ Chesapeake Bay TMDL, *supra* note 19, at 7-2.

¹⁶⁹ *Id.* at 7-10; *Chesapeake Bay TMDL Tracking and Accounting System*, CHESAPEAKESTAT, http://stat.chesapeakebay.net/?q=node/130&quicktabs_10=1p [<http://perma.cc/TYC9-JYPR>] (last visited Jan. 22, 2016).

¹⁷⁰ *See id.*

¹⁷¹ Chesapeake Bay TMDL, *supra* note 19, at 7-3.

¹⁷² *See Harmful Algal Blooms in Lake Erie—Experimental HAB Bulletin Archive*, NAT'L OCEANIC & ATMOSPHERIC ADMIN. GREAT LAKES ENVTL. RESEARCH LAB, <http://www.glerl.noaa.gov/res/waterQuality/lakeErieHABArchive/> [<http://perma.cc/DLH4-TX4F>] (last visited Jan. 22, 2016).

data analyses, an online tracking system would be a valuable tool for increasing accountability and implementing the tri-state TMDL.

B. Considerations For Implementing a Western Lake Erie TMDL

Lake Erie differs from the Chesapeake Bay because Canada, an international entity, also contributes phosphorus loads to the western basin.¹⁷³ Canada is not subject to United States TMDL law.¹⁷⁴ However, the states can still implement a TMDL as a way to improve the United States' phosphorus contributions to the basin and meet the targets under the GLWQA.¹⁷⁵ When developing the western Lake Erie TMDL, the states would need to consider Canada's contributions.¹⁷⁶ They could account for and adjust their own phosphorus contributions to the water accordingly.¹⁷⁷ This Note focuses on solutions for reducing phosphorus loads on a national level as opposed to international level, but recognizes the importance of continuing to collaborate with Canada on an international level to restore the health of the western basin.

Another consideration for TMDL development is that Indiana and Michigan signed onto the amicus brief that state attorneys general wrote in opposition to EPA in the Chesapeake Bay lawsuit.¹⁷⁸ Conversations among the states would need to investigate and address any concerns by Indiana and Michigan about the Bay TMDL. The amicus brief focused on the states' desire to ensure that they still have the ability to shape and structure their own plans without excessive federal involvement.¹⁷⁹ The Lake Erie states and EPA could work together to address concerns and ensure all entities understand their roles. In order for a multistate TMDL to work effectively, the states and EPA need to establish a joint commitment to improving water quality. A western Lake Erie TMDL would cover a smaller area than the Bay TMDL and involve fewer states, so it could potentially prove less complex and more manageable.

¹⁷³ INT'L JOINT COMM'N, *supra* note 12, at 71.

¹⁷⁴ "Budgeting" to Ensure that We Can Use Lake Erie, FAIR SHAKE ENVTL. LEGAL SERVICES (Nov. 11, 2014), <http://www.fairshake-els.org/blog/2014/10/8/budgeting-to-ensure-that-we-can-use-lake-erie> [<http://perma.cc/28EH-LHRM>] [hereinafter FAIR SHAKE ENVTL. LEGAL SERVICES]

¹⁷⁵ See INT'L JOINT COMM'N, *supra* note 12, at 71.

¹⁷⁶ FAIR SHAKE ENVTL. LEGAL SERVICES, *supra* note 174.

¹⁷⁷ See *id.*

¹⁷⁸ See Brief of the States of Kansas et al., *supra* note 118.

¹⁷⁹ *Id.* at 2-4.

The Lake Erie states can also learn from aspects of the Bay TMDL that faced challenges. In *Am. Farm Bureau Fed'n*, plaintiffs argued that they had not been sufficiently included in TMDL conversations and that the forty-five-day comment period was insufficient to provide valuable input.¹⁸⁰ The district court, however, noted that EPA took measures to converse with different stakeholders and that planning meetings allowed for participation from the public.¹⁸¹ When developing a tri-state TMDL, the Lake Erie states could work to improve transparency and promote conversations with farmers, industries, and the public. The states could also talk with Bay TMDL creators to see if they had any suggestions or recommendations in making a TMDL that meets the needs of different parties.

Finally, funding and resources should be a consideration when evaluating the creation of a TMDL. Although a TMDL may require additional funding for pollution controls, the benefit could be substantial water quality improvements. Since Lake Erie provides drinking water for a large population and significantly supports the local economy, it is important to keep the water clean and usable.¹⁸² The 2011 algal bloom, which was the largest in Lake Erie's history, and the recent summer 2014 algal bloom emphasize the need to reduce phosphorus levels, and a TMDL could serve as a potential solution. The states would need to figure out what would be achievable with current resources and perhaps seek new funding sources as well when implementing a tri-state TMDL.

CONCLUSION

The summer 2014 algal bloom and Toledo water crisis sent a message that HABs are a serious problem for western Lake Erie and the surrounding states need to enhance their efforts to reduce phosphorus loads. Current voluntary efforts in Lake Erie by the separate states may not be sufficient to reduce HABs. Overall, Ohio, Michigan, Indiana, and EPA should seek to (1) improve collaboration and (2) enhance accountability in improving water quality and meeting specified targets.

¹⁸⁰ See Karl Blankenship, *Judge upholds Bay TMDL, but Critics Likely to Appeal*, BAY J. (Sept. 24, 2013), available at http://www.bayjournal.com/article/court_decision_in_tmdl_case_backs_epa [<http://perma.cc/4CTF-QYUC>]; see *Am. Farm Bureau Fed'n*, 984 F. Supp. 2d at 333.

¹⁸¹ *Am. Farm Bureau Fed'n*, 984 F. Supp.2d at 333.

¹⁸² *Lake Erie*, EPA, <http://www.epa.gov/greatlakes/lakeerie/> [<http://perma.cc/2WP5-7XFM>] (last updated Aug. 20, 2014) ("Approximately 12 million people live in the watershed. . . . The lake provides drinking water for about eleven million of these inhabitants.").

A TMDL would improve both of these goals, with the three Lake Erie states and EPA assessing the problems together, determining phosphorus contributions from different sources, setting clear targets, expressing a commitment to meeting those targets, and improving accountability. TMDLs require the states and EPA to evaluate the effectiveness of existing programs in the development process to ensure reasonable assurances are in place and determine ways to better meet TMDL goals.¹⁸³ The Lake Erie states have the benefit of having the Chesapeake Bay TMDL to work from, and a lot of the collaboration and accountability measures can carry over to a tri-state TMDL. The states could use the Bay as a model and adapt it to meet the needs of western Lake Erie.

Cleaning up Lake Erie HABs will still need to include international discussions with Canada.¹⁸⁴ However, as the IJC suggested, a TMDL for western Lake Erie serves as a viable way to meet GLWQA targets, improve United States' phosphorus contributions, and keep in line with the overall purpose of the GLWQA to "restore and maintain the chemical, physical, and biological integrity of the Waters of the Great Lakes."¹⁸⁵ Creating a tri-state TMDL could serve as a key tactic to reduce harmful algal blooms in western Lake Erie and help to protect the "crown jewel" Lake for the future.

¹⁸³ See Chesapeake Bay TMDL, *supra* note 19, at 7-1.

¹⁸⁴ INT'L JOINT COMM'N, *supra* note 12, at 7.

¹⁸⁵ GLWQA 2012, *supra* note 11, art. 2.

