



Chuck Ross, Secretary
Vermont Agency of Agriculture Food & Markets
116 State Street
Montpelier, VT 05620-2901

Sent via electronic mail and hand delivery

Petition to Require Mandatory Pollution Control Best Management Practices for Agricultural Non-Point Pollution Sources Identified in the Missisquoi Basin Plan

For more than a decade, water in Lake Champlain’s Missisquoi Bay has consistently violated the numeric criteria for safe levels of phosphorus concentrations established by Vermont officials and approved by EPA. This pollution, and the widespread toxic blue green algae blooms it can cause, has led the Vermont Department of Health to issue more “high alert” health warnings for Missisquoi Bay than any other lake segment.¹ When blooms are at their worst, the shores of the Bay can become “littered with hundreds of dead fish of all shapes and sizes”,² suffocated by oxygen depletion. Numerous studies have reached the conclusion—echoed in the Missisquoi Bay Basin Plan—that agricultural operations in the watershed are the largest source of the pollution causing the Bay’s tragic degradation.

Pursuant to 6 V.S.A. § 4813, the Conservation Law Foundation hereby petitions the Secretary of Agriculture, Food and Markets (AAF&M) to require mandatory best management practices for agricultural operations in the Missisquoi Bay basin in addition to accepted agricultural practices. CLF advances this petition to achieve compliance with the water quality goals in 10 V.S.A. § 1250, the duly adopted Missisquoi Bay Basin Plan, and the Vermont Water Quality Standards. Specifically, this petition requests the secretary to require the Best Management Practices (BMPs) needed to reduce non-point source phosphorous pollution from critical source areas as delineated in the “Identification of Critical Source Areas of Phosphorus Within the Vermont Sector of the Missisquoi Bay Basin”³ study prepared for the Lake Champlain Basin Program, prior studies, and subsequent on-the-ground investigations by

¹ Based on a CLF analysis of annual Lake Champlain Basin Program *Monitoring and Evaluation of Cyanobacteria in Lake Champlain* reports as confirmed by personal e-mail communication between CLF Senior Attorney Anthony Iarrapino and VT DEC Aquatic Biologist Angela Shambaugh (May 9, 2014). It should be noted the Bay hosts the largest number of monitoring stations; researchers placed them there, however, because of high expectations of detecting alert level blooms given the Bay’s historically poor water quality at the time monitoring commenced.

² *Lake Champlain Water Quality Gets Worse As Summer Winds Down*, Vermont Public Radio (Aug. 27, 2012)

³ Hereinafter “Critical Source Area Study”

VAAF&M and its partner government and nongovernmental agencies. This pollution contributes to consistently-monitored, longstanding, and ongoing violations of Vermont Water Quality Standards in the Missisquoi Bay watershed.

CLF recognizes that the VAAF&M, along with numerous partner agencies, have worked with some critical source area agricultural operations to provide substantial financial and technical assistance to aid with implementation of the BMPs called for in this petition. Furthermore, CLF appreciates the hard work and financial commitment of those agricultural producers who have voluntarily adopted some or all of the BMPs recommended to them as part of state and federal financial incentive programs. At present, however, this implementation is temporary in nature and limited only to those agricultural operations that have voluntarily agreed to implement BMPs of their choosing. Given the severity of the phosphorous pollution problem plaguing the watershed and the need for dramatic reductions to provide “reasonable assurances” that Vermont can meet the non-point source load reductions required by the forthcoming Total Maximum Daily Load, mandatory BMP adoption at all critical source area agricultural operations must be required by the secretary.

Conservation Law Foundation’s Statement of Interest in Missisquoi Bay Cleanup Consistent with the Duly Adopted Missisquoi Bay Basin Plan

Conservation Law Foundation brings this petition on behalf of its members whose ability to safely use and enjoy the public trust waters of Missisquoi Bay and its tributaries has been harmed by pollution from agricultural sources. Members who use Missisquoi Bay for swimming, boating, fishing, wildlife observation, and/or as a source of drinking water have been discouraged from doing so at many times during the summer and fall because the excess pollution plaguing the Bay spurs growth of toxic cyanobacteria, commonly referred to as blue-green algae blooms. These blue-green algae blooms often make the water unsafe or unpleasant to be in, on, or around. In addition, members who own property on or near the Bay fear that polluted water diminishes the value of their property.



Previous page: A “high alert” blue-green algae bloom fouls the water of Missisquoi Bay in July 2012. Photo taken by Louis Porter.



Photo of dead fish on the shores of Missisquoi Bay after 2012 fish kill. Taken by John Dillon/ Vermont Public Radio and accessed at http://www.vpr.net/news_detail/97270/state-sees-big-bill-to-clean-up-waters-but-no-fund/

Water Quality Goals and Standards Applicable to this Petition

Vermont law authorizes interested persons to file petitions for the requirement of BMPs when necessary to “achieve compliance with the water quality goals in 10 V.S.A. § 1250 and any duly adopted basin plan” 6 V.S.A. § 4813(a).

CLF files this petition to advance and accelerate the achievement of the following state water quality goals set forth in § 1250 to:

(1) protect and enhance the quality, character and usefulness of [Vermont] surface waters and to assure the public health;

(2) maintain the purity of drinking water;

(3) control the discharge of wastes to the waters of the state, prevent degradation of high quality waters and prevent, abate or control all activities harmful to water quality;

(4) assure the maintenance of water quality necessary to sustain existing aquatic communities;⁴

This petition also seeks to achieve the purposes of the Missisquoi Bay Basin Plan duly adopted by the Vermont Agency of Natural Resources in March 2013.

According to the Basin Plan, the Vermont Agency of Agriculture, Food, and Markets was a “partner” in the basin planning process. Basin Plan at 11.

The Basin Plan recognizes that “basin planning is an on-going process designed to be compatible with the Vermont Water Quality Standards and other applicable state and federal laws.” *Id.* at 10. To that end, this petition seeks to remedy the ongoing contribution of agricultural non-point sources to the chronic violation of Vermont Water Quality Standards in the Missisquoi Bay Basin. Specifically VWQS § 3-01(B)(2)(c)T.3 establishes 0.025 mg/l of Phosphorus as the numeric in-lake water quality criterion for Missisquoi Bay.

Moreover, the Basin Plan recognizes the importance of coordinating pollution control implementation activities called for in the plan itself with pollution control activities required by “other concurrent planning processes.” *Id.* at 12. Specifically, this includes the Lake Champlain Phosphorus Total Maximum Daily Load (TMDL) being established by U.S. EPA. One requirement of the TMDL process recognized by the Basin Plan is the “[i]dentific[ation] of programs and requirements to provide sufficient reasonable assurance that nonpoint phosphorus controls are achievable.” Recent communications from EPA have specified that “[a]gricultural land is the dominant phosphorus source” in the Missisquoi Bay watershed, therefore, Vermont must demonstrate “an especially strong commitment to phosphorus reductions from agricultural lands” in the Missisquoi Bay Watershed.⁵

Conclusions in the Basin Plan that Support Requiring Agricultural Nonpoint Source BMPs at Critical Source Area Agricultural Operations in the Basin

1. Lake Champlain’s Missisquoi Bay is a shallow waterway covering 19,150 acres in Franklin County and southern Quebec.

⁴ 10 V.S.A. § 1250

⁵ Letter from Stephen Perkins, Director of the EPA Region I Office of Ecosystem Protection, to Commissioner David Mears, Vermont Department of Environmental Conservation and Secretary Chuck Ross, Vermont Agency of Agriculture Food & Markets (February 13, 2014).

2. “Missisquoi Bay is one of the highlights of natural beauty in northwest Vermont and southern Quebec. Along with the streams, rivers, lakes, ponds and wetlands in its watershed, the bay is a major part of the economy of the region.” Basin Plan at 22.
3. “The ecological and economic significance of the bay is threatened by high levels of nutrient pollution which cause algal blooms that disrupt the natural aquatic systems and impair human use and enjoyment.” Id.
4. “The Missisquoi Bay watershed is the largest contributor of phosphorus to the lake, compared to all other lake segments. Phosphorus concentrations in the bay from 2006-2011 have averaged 0.049 mg/l in Missisquoi Bay and 0.019 mg/l in the Northeast Arm. For comparison, the targets endorsed by the governments of Vermont, Quebec and New York are 0.025 mg/l for Missisquoi Bay and 0.014 mg/l for the Northeast Arm (IJC, 2002).” Id. at 36.
5. “The health of a waterbody is dictated for the most part by the land use in its watershed.” Id. at 21
6. “In the Vermont portion of the Missisquoi Bay watershed, there are 290 dairy farms, with 250 of them in Franklin County. Approximately 100 additional farms in the watershed are involved in other animal-related operations.” Id. at 22
7. “[T]he predominance of agricultural land in the basin makes it the primary source of phosphorus, the pollutant that supports algal blooms in Missisquoi Bay as well as a source of other pollutants.” Id. at 21-22.
8. “A significant amount of legacy phosphorus and sediment loading [in the Missisquoi Bay watershed] is attributable to in-channel erosion (Stone Environmental, Inc. 2011). Current and past tile drain installation in agricultural fields across the Basin and the state has generated concern over the practice’s potential to intensify channel erosion as well as nutrient loading.” Id. at 28.
9. “Land erosion is another source of sediment and nutrients in the [Missisquoi Bay] watershed.” Id. at 38.
10. “The most common causes of erosion in the Missisquoi Watershed are believed to be agricultural practices. Soil erosion from annually tilled corn fields is a significant concern, while permanent hayfields typically experience less erosion (NRCS, 2008). The NRCS conducted a Cropland Slope Analysis which found that two thirds of the total cropland (47,146 acres) is on slopes greater than 8%, and 40% of corn cropland is on slopes of 3 to 8%.” Id. at 35-36.
11. In 2011, Stone Environmental, Inc., published the results of a study commissioned by the Lake Champlain Basin Program in partnership with Vermont state officials. As set forth in the Missisquoi Bay Basin Plan, “[t]he overall purpose of this project was to identify

- critical source areas (CSA) in order to improve the cost-effectiveness and efficiency of land treatment efforts to reduce phosphorus loads.” Id. at 17
12. “The principal goal of this project was to identify, locate, and rank the most important critical source areas of phosphorus loads in the Vermont sector of the Missisquoi Bay Basin.” Id.
 13. “The Critical Source Area Study (Stone Environmental, Inc., 2011) estimated that 64% of the nonpoint source phosphorus entering the Missisquoi Bay was due to agricultural land uses.” Id.
 14. “The tactical level work [completed by Stone] combined data generated through the strategic assessment with other high-resolution datasets to define CSAs at a scale practical for specifying Best Management Practices (BMPs) at the farm and field scale.”
 15. “Identifying CSAs at multiple scales allows future management activities to be focused on major sub-watershed, subbasin, and field scale goals. The model also clearly demonstrated the value of targeting BMPs to the areas of highest risk. For each BMP tested, significant benefit was realized by implementing the BMP on areas representing the most important CSAs. For the three BMP scenarios tested, targeted BMPs gave two to three times the phosphorus load reduction that resulted from traditional, more random, implementation.” Id.

BMPs that Should Be Required

- Cover Cropping
- Grassed waterways and critical area seeding
- Vegetated filter strips (also known as buffers) in which manure spreading and harvesting of vegetation is prohibited and that are at least > 25 ft. (with greater widths required as field slope increases) along all waterways and field ditches adjoining critical source area agricultural operations.
- Manure incorporation
- Conservation tillage
- Livestock exclusion from waterways
- Conversion of tilled cropland to permanent cover

These BMPs go above and beyond the minimum requirements set forth in Vermont’s Accepted Agricultural Practices. Their use, on a site-by-site basis, to reduce nonpoint source phosphorous pollution from agricultural sources in the Missisquoi Bay watershed is supported by the Missisquoi Bay Basin Plan and numerous other technical publications attached as exhibits to this petition.

Identification of Agricultural Operations in the Basin Where Best Management Practices Must be Required

As a regulatory agency with oversight over all agricultural operations in Vermont, VAAF&M possesses and/or has access to the names and complete mailing addresses of the agricultural operations that are critical source areas for the discharge of phosphorus in the Missisquoi Bay Basin. Following the completion of the Critical Source Area Study, VAAF&M has continued to work with partners, including the U.S. Department of Agriculture's Natural Resources Conservation Service, specifically to coordinate offering of technical and financial assistance to all agricultural operations identified, by the Critical Source Area Study, as critical source areas in the watershed. Based on that outreach and the information routinely collected by VAAF&M as part of its regulatory operations, the agency can easily identify those agricultural operations that are critical source areas of nonpoint source phosphorus pollution.

Moreover, Appendix B of the Missisquoi Bay Basin Plan contains detailed information about the agricultural operations in the watershed. Basin Plan at 78-84. This information was "[p]repared by the Vt. Association of Conservation Districts for the Vt. Agency of Agriculture, Food and Markets," *id.* at 78. As the Secretary knows, the Vermont Association of Conservation Districts is a partner agency of VAAF&M with information sharing responsibilities pursuant to a January 1, 2012, Memorandum of Understanding.

Based on the foregoing, Petitioner submits that the name and mailing addresses of the agricultural operations that are the subject of this petition are already known to VAAF&M and need not be specified herein. CLF will, to the extent required by law, provide copies of this petition to agricultural operations subject to this petition at its own expense once the agency provides CLF with a list of names and mailing addresses for said operations.

List of Exhibits

Vermont Department of Environmental Conservation. *Missisquoi Bay Basin Water Quality Management Plan*. March 2013

Lake Champlain Basin Program Technical Report 63(B). (B) *Identification of Critical Source Areas of Phosphorus in the Vermont Sector of the Missisquoi Bay Basin* Michael Winchell, Project Manager, Don Meals, Solomon Folle, Julie Moore, Dave Braun, Christine DeLeo, and Katie Budreski, Stone Environmental, Inc. and Roy Schiff, Milone and MacBroom, Inc..

Lake Champlain Basin Program Technical Report 60. *An Environmental Accounting System to Track Nonpoint Source Phosphorus Pollution in the Lake Champlain Basin, Second Year Report*. Lula Ghebremichael and Mary Watzin, UVM Rubenstein School of Environment and Natural Resources. May 2010.



Lake Champlain Basin Program Technical Report 58. *Reducing Phosphorus Runoff from Small Livestock Farms into Missisquoi Bay*. James K. Bushey, Jeffrey E. Carter, Jonathan R. Chamberlin, and Sally A. Flis, Ph.D. Summer 2009.

New England Interstate Water Pollution Control Commission/Vermont Department of Environmental Conservation. *Water quality response to riparian restoration in an agricultural watershed in Vermont, USA*. *Water Science and Tech.* 43(5): 175–182. Don W. Meals 2001.

Lake Champlain Basin Program Technical Report 35. *Determination and Quantification of Factors Controlling Pollutant Delivery from Agricultural Land to Streams in the Lake Champlain Basin*. J.W. Hughes, W.E. Jokela, D. Wang, C. Borer, UVM. September 1999.

Respectfully submitted this 22nd day of May 2014 by:

A handwritten signature in black ink, appearing to read 'Anthony N.L. Iarrapino', written in a cursive style.

Anthony N.L. Iarrapino, Esq.
Senior Attorney
Conservation Law Foundation

Cc: Jolinda LaClair, VT AAF&M
David Mears, VT DEC
Stephen Perkins, US EPA