

A Juxtaposition of the Province of Quebec and the State of Vermont's Actions Addressing

Phosphorus Loading Problems in Missisquoi Bay Hana Aronowitz



Introduction

In 2002, the State of Vermont and the Province of Quebec adopted the 'Agreement Concerning Phosphorus Reduction in Missisquoi Bay'. In this agreement, the two governments allocated differing amounts of responsibility to Vermont and Quebec based on the watershed distribution: Vermont was allotted 60% of responsibility (58.3 metric tons/yr [mt/yr] of Phosphorous) and Quebec allotted 40% of responsibility (38.9 mt/yr of Phosphorus loading).

Since this agreement, Vermont and Quebec have been working towards a safer and cleaner bay. Both governments signed an agreement to reduce the phosphorus deposited in the bay from 167.3 mt/yr to 97.2 mt/yr, with a goal of achieving a Phosphorous concentration of 0.025 mg/l in Missisquoi Bay by 2016.

The International Missisquoi Bay Task Force was created on June 15th, 2004 to assess the impact of the Missisquoi Bay Bridge on the bay's Phosphorus level. In August 2004, Vermont Governor James Douglas and Quebec Premier Jean Charest agreed to reach target loads by 2009.

In 2008, the governments of Canada and United States (U.S.) asked the International Joint Commission (IJC) to help create and implement a project to lower the phosphorus levels in the Missisquoi Bay. On September 15, 2008 the International Missisquoi Bay Study Board was created by the IJC to address the bay's phosphorus loading problem. This board was created to implement solutions for both Canada and U.S.

Materials and Methods

An analysis of how the state of Vermont and the Province of Quebec strive for better water quality in the Missisquoi Bay was done by examining various government documents and web sites, incentivized agricultural programs, press reports, research institution websites, town reports on water quality and Non-Governmental Organizations (NGOs) that focus on Missisquoi Bay Basin water quality. The collected information was compiled into a comprehensible graphic.

Results

| Method of Action | State of Vermont | Province of Quebec |
|----------------------------------|--|--|
| Incentivized Programs: | <ul style="list-style-type: none"> Agency of Agriculture- Best Management Practices (BMP) Cost Share Program, Nutrient Management Plan Incentive Grants, Environmental Quality Incentives Program, etc. Department of Environmental Conservation- Ecosystem Restoration Program implements projects in individual towns within the Missisquoi Bay Basin | <ul style="list-style-type: none"> Prive-Vert- Incentivized programs that control non-point source pollution (i.e. stream edge stabilization, dairy effluent management, aeration of irrigation ponds, etc) |
| Regulatory Measures: | <ul style="list-style-type: none"> Agency of Agriculture-Accepted Agricultural Practices (AAP) are a set of regulations by which operators are required to abide by | <ul style="list-style-type: none"> Centre de controle en environnement du Quebec- Surveyed Quebec farms in Missisquoi Bay Basin to ensure farms were in compliance with REA; 74 out of the 83 inspected farms were found non-compliant Agricultural Operations Regulations (REA)- In 2005-2006 the Ministry of Sustainable Development put \$1.2 million into the REA to lower Quebec's impact on the Missisquoi Bay <ul style="list-style-type: none"> - Environment Quality Act is a set of regulations for farming facilities which raise animals |
| Non- Governmental Organizations: | <ul style="list-style-type: none"> Lake Champlain Basin Program (LCBP) (1990)- Partners with government agencies, other private organizations, and local communities to plan and fund actions which benefit Lake Champlain's water quality Missisquoi River Basin Association Volunteers participating in cost-sharing programs with farmers for nutrient management, stream bank stabilization, educational tool provision, etc. Lake Champlain Committee (1963)- Local citizens and professionals who advocate for the protection of Lake Champlain through education and collaborative action | <ul style="list-style-type: none"> Conservation Baie Missisquoi (1988)- Non-profit organization that organizes local action to improve Missisquoi Bay's water quality Quebec Citizens Advisory Committees- Through LCBP, made up of citizens, other non-profits and Unions Corporation Bassin Versant Baie Missisquoi (1999)- Petitioned government to do studies on bay Conservation Baie Missisquoi (1989)- Non-profit organization which acts to reduce pollution in the bay, protect coast lines, and raise awareness |
| Critical Source Areas: | <ul style="list-style-type: none"> International Missisquoi Bay Study Board (2008)- Organized by the International Joint Commission | <ul style="list-style-type: none"> Government mandated IRDA research (early 2000s) – Research's effectiveness of agri-environmental practices and non-point nutrient pollution, identifying most problematic points for phosphorus loading |

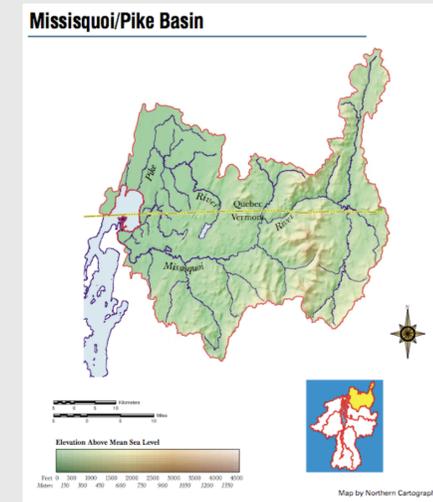


Image retrieved from: <http://masterella.wordpress.com/category/water/page/2/>

Conclusions

The state of Vermont and the Province of Quebec have used similar methods to remediate the worsening quality of the shared waters of Missisquoi Bay. Though it is useful to understand the steps taken by both governments, it is also helps inform the ways the State of Vermont and the Province of Quebec direct the most resources into the most effective methods of improving water quality.

There are numerous other research projects that may be useful in determining the discrepancies between the two governments' methods of actions. The State of Vermont and the federal Agency of Agriculture have focused most of their resources in agricultural incentive programs. It would be helpful to determine the utilization of BMPs and how successful they have been in improving water quality. There is already an agricultural survey implemented by EPSCoR to determine which BMPs Vermont farmers are currently using. Once the responses to survey have been analyzed, the information could potentially inform this project. It would also be helpful to communicate with current employees and committee members of the agencies and organizations listed in this research.

Literature cited

Caron, Christine. (2003) *Plainte à porter à la Commission Mixte Internationale*. Retrieved from: <http://eau.secoq.org/secoqsans/2003memorie.pdf>

Vermont Agency of Natural Resources. (2013) *Missisquoi Bay Basin Water Quality Management Plan*. Retrieved from: http://www.vtwaterquality.org/map/docs/mp_Basin08Plan.pdf

Beck,Erik. Bochove, Eric van. Smeltzer, Eric. Leblanc, Daniel. (2012). *International Missisquoi Bay Study Board*. Retrieved from: <http://ijc.org/missisquibayreport/>

Agriculture, Dérivés et Alimentation Québec. (2013). *Prime-vert*. Retrieved from: <http://www.mapaq.gouv.qc.ca/fr/Productions/mnd/programmesliste/agroenv/ronnement/Pages/primevert.aspx>

Développement durable, Environnement, Faune et parcs Québec. (2013). *Centre for Environmental Control of Quebec*. Retrieved from: https://www.google.com/search?q=ceeq+quebec&rlz=C1CHFX_enUS533US537&oeq=CCEQ&ags=chrome_1.6915769159012.27660&sourceid=chrome&ie=UTF-8&av=on.2.or.r_cp.r_gl&fa=a62daa00361da6e98c=Centre+de+control+en+environnement+du+Quebec

Hunt, Caitlyn. (2009). *EPA New England's TMDL Review*. Retrieved from: http://www.vtwaterquality.org/map/docs/mp_TMDL_Cairni_approval.pdf

Vermont Department of Environmental Conservation. (2013). *Programs that Protect and Restore Waters of Vermont: Agricultural Runoff Control Programs*. Retrieved from: http://www.vtwaterquality.org/vecd_mgtplan/sems_appD.htm#_Toc280274706

Boisclair, Andre. Johnstone, Scott. (2002) *Agreement Between the Gouvernement du Québec and the Government of the State of Vermont Concerning Phosphorus Reduction in Missisquoi Bay*. Retrieved from: http://www.mdsdp.gouv.qc.ca/communiqués_en/Vermont-Quebec_Agreement_Missisquoi.pdf

Stone Environmental, Inc. (2011). *Identification of Critical Source Areas of Phosphorus Within the Vermont Sector of the Missisquoi Bay Basin*. Retrieved from: <http://northernlakechamplain.files.wordpress.com/2012/04/csa-final-report-stone-enviro-12-15-12.pdf>

Lake Champlain Basin Program. (2013). *Mission*. Retrieved from: <http://www.lcbp.org/about-us/mission/>

Missisquoi River Basin Association. (2013). *A Vermont/Quebec Watershed Alliance in the Lake Champlain Basin*. Retrieved from: <http://www.troutnetwork.org/trba/>

Acknowledgments

- VT EPSCoR Staff:
- Christopher Koliba
 - Richard Kujawa
 - Yu-Shiou Tsai
 - Steve Scheinert
- Group 3 Research Team

Further information:

Funding provided by NSF Grant EPS-1101317