EPA Grant: Investigating blue green algae and its impact on health & well-being of people and wildlife



As was obvious from the disasterous blooms at Lake Carmi last summer, blue green algae still does not receive adequate focus from Vermont regulators. Not only does the lake become unusable during blooms, the main government response is a warning from VT Health Department urging people and animals to stay out of the water. In our view, this is inadequate and we believe there are more active solutions.

Disturbingly, some in the scientific community suspect that algae toxins may have serious effects on human health, as well as on fish that live in affected waterways. If this is true, the need for lake cleanup becomes even more urgent.

A recent EPA grant awarded to UVM will focus on this issue. The SAAWA Board has agreed to assist in this research project. While SAAWA is generally in the "enough studies" camp, there is a need to understand whether algae blooms are merely an inconvenience, or a true health hazard which should receive more thorough and immediate remediation.

Saturday, June 9, 2018 SAAWA's **RESTORE THE BAY 5K** is back!

It's bigger than ever this year, with a new KIDS' RACE and fun activities including an appearance by Champ!

Lots of great informational displays by many or last year's Take a Stake in the Lake partners will be on hand!

SEE PAGE 5 FOR MORE DETAILS.

The grant consists of two parts. The first is a study of fish species led by UVM researchers. By harvesting/sampling fish from the area, they will research whether the physical health and fatty acids of fish species are affected by presence of blue green algae. Studies elsewhere have seen a correlational relationship



between fish consumption and certain health conditions such as ALS. Whether this is a causal relationship has not yet been determined, but it is certainly a concern, and which should be

continued p. 7

Increased cover cropping of GMO corn blamed for huge rise in glyphosate use

Vermont's large scale planting of GMO corn to support the dairy industry now makes it the state's number one crop. State regulators and environmental groups have encouraged farmers to plant cover crops to reduce runoff, but it appears instead of tilling, or no-till, some manage the process by "burning down" the cover crop with herbicides such glyphosate. A recent commentary by Michael Colby for *Vermont Digger* (https://vtdigger.org/2018/02/04/michael-colby-gmo-corn-blame-soaring-pesticide-use/) stated that use of glyphosate, the most heavily used herbicide, more than doubled in 2016 to 62,458 pounds, up from 27,440 pounds in 2014. Overall, in 2016 GMO cornfields received a 194,631 pound dose of 34 different pesticides, from atrizine to 2,4-D, up from 142,604 pounds in 2014.

Good intentions gone awry. Again. Glyphosate use seems like a counterproductive way to manage cover crops intended to improve water quality. Monsanto says it is "safer than salt" but in addition to being named a probable carcinogen by the California EPA and International Agency on the Research for Cancer (division of the World Health Organization), the surfactants in the chemical are said make the phosphorus runoff dramatically worse. We need answers on why this is "good" practice for Vermont's already vulnerable lakes and streams.

Research Buoy Update:

Data Reveals Differences in Missisquoi, St. Albans Bay Algae Bloom Behavior



The research buoys were removed last fall and Andrew Schroth, Research Associate Professor in the UVM Geology Department, has provided SAAWA with a short update on the project. Researchers are still in the process of conducting lab measurements of water samples and interpreting some of the monitoring data, but they can make some interesting interpretations from what they have looked at thus far.

The algae blooms were late this year, not because the water was particularly cool, but rather because we had a relatively stormy summer that kept the water column mixed during what is usually the peak bloom month of August. In 2017, the most sustained cyanobacteria bloom did not start until the first week of September, which is about a month late relative to what the historical record indicates.

Interestingly, the blooms were longer and more severe in Missisquoi Bay relative to Saint Albans Bay. The blooms that began in September in St. Albans were shut down by a minor short-lived mixing event (associated with 1/4" of rain and some wind) in late September, whereas the blooms in Missisquoi Bay lasted for more than a week after the same mixing event and went well into October.

Initial data collected indicates that blooms at the two sites have important similarities, and differences, in their response to weather. Researchers on this project will continue to explore the mechanisms controlling bloom behavior, develop models and continue to interpret additional data as it becomes available

It was an exciting year for the UVM researchers, and they are looking forward to getting out on the water again in the coming spring. This winter, they have also conducted some sampling of water, sediment, and biology under the ice, and hope to get out on St. Albans Bay and Missisquoi Bays a few more times before the ice thaws.



PO Box 1567, St. Albans, VT 05478

The SAAWA Newsletter is a publication of the Saint Albans Area Watershed Association

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Visit us on the web: SAAWAVT.org

The Board generally meets on the 1st & 3rd Wednesdays of each month at 5:30 pm. All are welcome!

Email: info@saintalbanswatershed.org for directions.

JOIN US! Demand Clean Water!

Your support is essential and helps SAAWA keep the focus on clean water in St. Albans Bay! Please complete the form below and return to:

St. Albans Area Watershed Association PO Box 1567, St. Albans, VT 05478

Name	
Address	<u> </u>
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Email	
Phone	
Shoreline property owner? \square yes \square no	I
Membership Level	ı
\$10 Individual \$20 Family (Individual, Family and Student memberships receive SAAWA newsletter)	□ \$5 Student
\$50 Lake Advocate \$\infty\$ \$100 Lake Steward \\ \text{(Winslow book on Lake Champlain)}\$	□ \$150 Business Sponsor (Website Link)

>>>

You may become a member or renew your membership securely online at saawavt.org

If you have an interest in becoming a SAAWA Board Member, please contact Steve Langevin, SAAWA president: info@saintalbanswatershed.org.

Join us and speak up for clean water!

Renewed Developer Interest in Jewett Brook Biodigester But Many Water Quality Concerns Remain

Last year Green Mountain Power (GMP) suspended plans to move forward with a biodigester project near the banks of Jewett Brook that would utilize manure from three local farms to produce electricity. This was good news for those of us concerned with water quality in St. Albans Bay. While biodigesters can be a positive method for making renewable energy from farm and other waste, the location along Jewett Brook is an unnecessary and risky proposition for an already impaired waterway.

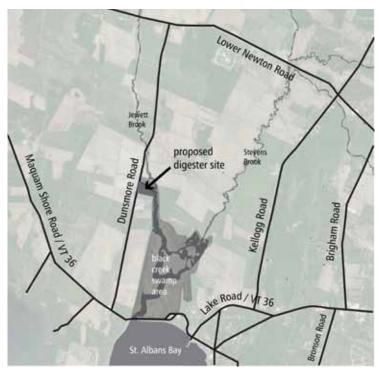
The brook is one of two major sources that feed directly into St. Albans Bay, and according to Vermont Agency of Natural Resources (ANR) testimony, the GMP development plan did not adequately address mitigation strategies for spill avoidance, storm events (a major influence on pollution from runoff), accidents, or improper use. Additionally, biodigesters do not remove phosphorus (the biggest contributor of lake pollution from runoff) from the manure during the decomposition process, and the remaining waste still needs to be disposed of in a way that does not negatively impact water quality.

Some argue that, after the biodigester process, the waste is in a more portable form and can be easily transported to areas that need the nutrients, and out of areas that don't but this does not eliminate the potential for improper disposal and reliance on questionably enforced farm nutrient management plans. On the contrary, digester operation demands a continuous stream of incoming and outgoing phosphorus-rich waste in close proximity to the shores of the brook. This just sounds like a bad idea.

The reasons that the Jewett Brook site was selected are only speculative, as there are conceivably many other locations for such a project. There is certainly no good environmental argument for it. The production of renewable energy should not be at the expense of another natural resource, especially one as important and revered as Lake Champlain.

The abandonment of the project by GMP seemed like a win, but as it turns out they have now sold the rights for the project to an outside developer, Purpose Energy. Purpose Energy is a Florida-based corporation that specializes in biodigester technology implementation for the food and beverage industry. They work with such customers such as Kellogg and Coca-Cola, and also have a system installed at Magic Hat Brewery in Burlington. The acquisition of the GMP project is a pilot program to determine if there are markets in the agricultural sector. The business developer, Eric Fitch, presented the project to the St. Albans Town Selectboard in August. This meeting can be reviewed on the selectboard website.

It is unknown if Purpose Energy fully appreciates the context of this site in relation to the health of the St. Albans Bay, but they anticipated completing all required permitting by early spring 2018. By Vermont law, this includes getting buyoff from the ANR regarding environmental impact and mitigation plans, and getting a certificate of public good from the Public Utility Commission (PCU,



formerly Public Service Board). As of this writing, they have not yet filed for the certificate. When they do, SAAWA will be there. We hope you will join us. This is our lake, and there are many other more appropriate opportunities for supporting renewable energy and waste management initiatives. This one is far too risky.



Invasive Species: Water Chestnut Paddle

Last fall, a SAAWA paddle into Black Creek Swamp and Mill River area did not show obvious signs of the invasive water chestnut that were seen during the summer eradication efforts. This June, SAAWA plans to return to the Black Creek Swamp area to watch for new growth. If you want to participate in this, or any other SAAWA paddles, please email kate@saintalbanswatershed.org and we will keep you informed.

SAAWA Completes 14th Year of Weed Harvesting



The St. Albans Area Watershed Association (SAAWA) successfully completed a 14th season of weed harvesting. Two weed harvesters are now in operation—an Aquarius Systems EH-420 purchased in 2008, and an Aquamarine H5-200, purchased in 2016. Before 2008, weed harvesting was conducted under a contract with Aquatic Control Technology costing \$32,000.00 per season. The cost for operating two weed harvesters by SAAWA in 2017 was \$21,707.65.

John's Auto Care, Inc was again contracted to operate, perform daily maintenance and transport weeds to compost sites. The funding for weed harvesting is from the Town of St. Albans (\$7,500), the Town of Georgia (\$2,500), the City of St. Albans (\$10,500), and a \$10,290 grant from the State of Vermont. Additional funding through the Aquatic Nuisance Control Grant-in-Aid has allowed SAAWA to hire additional personnel to operate and maintain the weed harvesters.

A total of approximately 69,020 bushels of weeds were removed last season. Weeds were transported to a composting site located on lands of John Pelletier, or to a compost site on lands of Robert Hathaway. There is a large garden adjacent to the Hathaway compost site and weeds are used in that garden to provide additional nutrients.

Removal of the weeds allows better water circulation and reduces the incidence of algae blooms. If weeds are left to decompose in the lake they add to the sediments layer in the lake bottom, and add nutrients which promote more weed growth and algal blooms. In 2017, about 4,417,280 pounds of wet weeds were removed from the bay, which equals about 441,728 pounds of organic matter. Composted weeds have the same nutrient content as composted cow manure. Each pound of either composted cow manure or composted weeds contains .06% phosphorous.

Each year SAAWA makes an effort to observe the correlation between lake water levels, duration of ice coverage, rain fall

events, water clarity, water temperature, weed growth and algae blooms. 2016 saw one of the lowest lake levels in recent history. Entering the winter of 2017 the lake level was still quite low. By May the lake level had recovered to approximately 98 feet. The lake level remained quite high through the summer. The Lake Champlain Basin experienced numerous significant rain events which kept the lake level high, however the St. Albans Bay watershed did not experience these rain events. With a few exceptions, water clarity remained relatively good into mid-August 2017. Following a local rain event, the Bay did experience algae blooms which lasted several days.

In the past, St. Albans Bay had ice coverage from early December through April. In 2017, the Bay remained open well into January and the ice went out on April 10th. Over the last ten years the Bay has not frozen over until late December or early January, and the ice leaves in late March. The lack of ice coverage and good water clarity throughout the spring and summer did not seem to promote an abundant weed growth as expected. Although St. Albans Bay did not experience a particularly bad weed year, residents on Lapan Bay and Maquam Shore did report massive amounts of weeds piling up on their shores. These weeds were driven on shore by frequent strong westerly winds.

It has been SAAWA's goal to create an operating and funding structure which assures the continuation of weed harvesting. This effort has been shown to improve water quality when conducted annually over successive seasons. We gratefully acknowledge support from the Towns of St. Albans and Georgia, the City of St. Albans, and SAAWA membership.



Less phosphorus? Ummm, maybe...

Last year an article in the *St. Albans Messenger* (8/24/17) reported that "farmers in the St. Albans Bay watershed reduced phosphorus runoff by 3,000 pounds in 2016, according to estimates from the Natural Resource Conservation Service (NRCS)." The reductions have come mainly from reduced tillage and cover cropping. NRCS believes this will bring farms near 87% of their targeted reduction by 2020. Compliance is said to be improving, but as usual, the pace of improvement is glacial. In addition, the many caveats from regulators in the article regarding residual sediment seem to be preparing us for disappointment and trying to change the focus.

So many questions... Does missing a reduction target ever get us to where water quality will truly improve? Is "big corn" really the best crop for this area? Will these reductions in phosphorus be countered by new, bigger operations and more-cows/more-corn? Are there alternatives that will foster healthier soil, healthier animals and a cleaner environment that would be more consistent with the Vermont brand? Are these "estimates" of achievement even accurate? And how do they fit into the bigger picture? We applaud those farmers who are leading the way in rotational grazing, organic farming and animal husbandry, cover cropping, no-till, buffer zones and other environmentally responsible methods, but these are questions we should all continue to ask. Loudly.

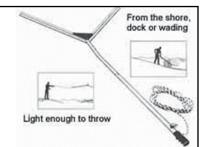
Secretary of Agriculture, Food & Markets Anson Tebbetts' recently stated "There is a water cleanup plan. It is in place. The plan is robust, and it is being followed – any suggestions to the contrary are false." He went on to say that "Farmers working the land around Lake Carmi have stepped up and are willing to do more for water quality than they are legally obligated to do, during one of the most economically challenging periods..."

At the same time, we note a recent story in VT Digger (https://vtdigger.org/2018/03/13/a-dairy-expands-near-polluted-lakes-putting-regulators-to-the-test/) that one of Vermont's largest farming operators has just expanded a small farm without a permit. The expansion, which appears to increase the farm's herd from a max of 199 to approx 700 (huge by Vermont standards), also included construction of a manure pit with a multi-million gallon capacity. This farm is only miles from a struggling and polluted Lake Carmi.

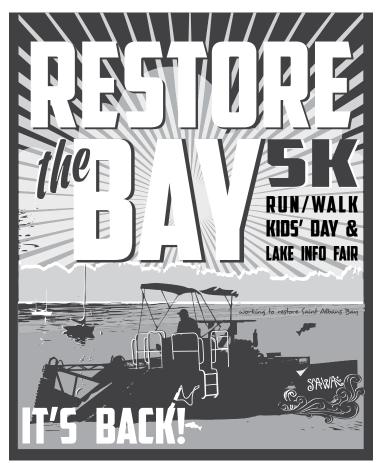
Mr. Tebbets says they are doing their best and that any criticism is false. We disagree. We see poor practices persisting in our area every day. Just look around. Big corn and big dairy continue to increase the burden on the environment as small farms go under. We will continue to be heard. The stakes are high and we are running out of time.

SAAWA has a Weed Razr for members to use for removal of weeds close to shore.

Phone Kate at 802.309.8019 if you would like to try it out.



Take a Stake in the Lake Event!



Saturday, June 9, 2018

We are excited to announce the return of the **RESTORE THE BAY 5K**. This year, there will be extra activities for families — **KIDS RACES, BOUNCY HOUSE, CHAMP** & MORE — as well as a **CLEAN WATER FAIR** with hands-on displays by watershed advocates on clean water action. Visit **SAAWAVT.ORG** for more!

The 5K is a timed run/walk from Kamp Kill Kare State Park to St. Albans Bay Town Park. There will be prizes, hot dogs & hamburgers, and more.

TENTATIVE SCHEDULE:

8:00 am | Registration (at the Bay Park) begins at 8 am.

8:45 am | Runners take Shuttle Bus to KillKare

9:00 am | Race Begins at Kamp Kill Kare State Park

10:00 am—noon | Kids Races, Obstacle Course & Bouncy House 10:00 am—12:30 pm | Take A Stake in The Lake Displays Open

Join us for a fun, family-friendly event, learn more about the Lake and and support efforts to clean up St. Albans Bay!



Guest Commentary: James Maroney Vermont's failure at 'saving agriculture and protecting the lake'

Reprinted by the kind permission of James H. Maroney Jr., of Leicester, VT. Mr. Maroney has a master's degree in environmental law and policy from Vermont Law School and is a former farmer. He has long advocated for a new approach. His is an interesting and informed perspective on why conventional farming has failed both water quality and farmers themselves, and why some legislation has made it worse.

The blue-green algae blooming in Lake Carmi presents Vermont with an unusually good opportunity to face up to an inconsistency between what the Vermont Legislature has been taxing the people for programs it says are intended to "reduce" lake pollution — programs that go back 50 years — and what it has actually been doing.

In 1961, when the Interstate Highway System was extended into Vermont, Gov. George Aiken said it would "spark the greatest development Vermont had ever seen." But shortly came the realization that development was a threat to Vermont farms. Never mind that by 1961 Vermont farms were already compromised by the widespread adoption of conventional farming, which had destroyed their economy: the prevailing attitude was that Vermont did not want to "look like New Jersey."

So in 1967 – that is 50 years ago — increasingly anxious about development, the Legislature enacted land use regulation, sold as a measure to help Vermont farms, which is why on its very first page, Vermont Land Use exempts farming, its largest land use. Back then, 4,729 Vermont dairy farmers housed 204,000 cows, which produced as much manure as 6.5 million people. In 2017, Vermont has fewer than 900 dairy farms housing about 135,000 cows, or 66 percent as many as in 1967. Yet these 135,000 cows produce 44 percent more milk than in 1967, and only as much manure as 4.3 million persons, virtually all of it applied "untreated" to corn land in, or adjacent to, the flood plains. Be that as it may, land use regulation did not meet its stated legislative intent so ...

In 1978 – 40 years ago — again saying it was acting to "save agriculture and protect the lake," the Vermont Legislature enacted "Use Value Appraisal," i.e., Current Use. Obviously, state subsidization for property taxes would be popular and today Current Use has 15,000 properties enrolled, covering 2 million acres, or a third of the state.

In Michigan v. EPA 2006 Supreme Court Justice Antonin Scalia wrote that "No regulation is appropriate if it does more harm than good," yet Current Use, which costs the taxpayers \$55 million per year, or about \$2 billion since its enactment, didn't make a dent in lake pollution or farm attrition and the data bear this out: In 1978, at the initiation of Current Use, Vermont had 3,382 dairy farms while today there are fewer than 900, an attrition of 73 percent and lake pollution is higher than ever. So ...





In 1987, the Legislature created the Vermont Housing and Conservation Board, to "relieve pressure on our valuable agricultural lands" and to "maintain the essential characteristics of the Vermont countryside." Since its inception, VHCB has spent approximately \$860 million from private and public sources to pay for the "conservation" of 390,740 acres of agricultural and recreational lands. The program has not met its stated objectives: In 1987, Vermont dairy farms numbered 2,771 while today they number fewer than 900, an attrition of 70 percent. And VHCB has failed to stanch lake pollution, which has empirically increased every year since then. Thirty years later the program is still in effect, so ...

In 1996 the Legislature promulgated the Accepted Agricultural Practices Rules (AAPs), which were intended to "reduce" pollution attributable to agriculture. But like all its predecessors enacted for the same purpose, the AAPs scrupulously ignored what it was exactly that conventional dairy was doing that pollutes the lake. Consequently the AAPs, including the much-ballyhooed winter spreading ban, did not "reduce" water pollution from agriculture, so ...

In 2016, the Legislature enacted Act 64, which included a mandate to the Agency of Agriculture to replace the AAPs with the Required Agricultural Practices Rules (RAPs). The new rules require farmers to file nutrient management plans, which are supposed to inform farmers of how much fertilizer and manure they can apply to their fields. But the RAPs impose no limit on the importation and application of NPK (nitrogen, phosphorus and potassium) fertilizer because the prevailing opinion among non-farmers and legislators is that the problem is manure. One might well ask how manure can be the problem when today Vermont dairy farmers house 66 percent as many cows as they did a generation ago and lake pollution has risen every year. Don't pay any attention to that man behind the curtain!

Here is a list of Vermont's efforts going back 50 years to "save agriculture and protect the lake:"

- Land Use Regulation (1967)
- Act 250 (1970)

- Vermont Land Trust (1977)
- Use Value Appraisal (Current Use) (1978)
- Vermont Housing & Conservation Board (1987)
- Act 200 (1989)
- Lake Champlain Special Designation Act (1990)
- Vermont Milk Commission (1991)
- Accepted Agricultural Practices Rules (1995)
- Act 115 10 V.S.A. § 6025(d)(5) (2004)
- Act 183 Sec. 1. 24 V.S.A. § 2790(d) (2006)
- Farm to Plate, Sec. 35 10 V.S.A. chapter 15A § 330 (2009)
- Act 142, VWLEIP, Sec. 1 6 V.S.A chapter 207 § 4603 (2010)
- Act 138 Water Quality Remediation & Implementation,(2012)
- H.586 Small Farm Certification Sec. 1 6 V.S.A. § 4858a Act 64

All these laws, to pay for which roughly \$2 billion of the taxpayers' money has gone up the flue, have empirically failed to achieve their legislative intent, most conspicuously in Lake Carmi, because the Legislature prefers the symptoms of the problem to its cause. And since conventional farming is the major cause of farm attrition and lake pollution, since conventional farming is the prevailing farm modality, since the Legislature and the Vermont Agency of Agriculture, Farms and Markets are blind to the harm conventional farming does to the economy, the environment and to the farm industry itself, the Vermont Legislature is still with one hand feeding the problem it blithely taxes it citizens with the other to stanch.

Any industry that seeks to scale up must import additional resources. More milk, like more cars or more furniture, does not come out of thin air; it comes from adding resources.

Vermont conventional dairy is no different. The industry has been steadily ramping up production since the 1960s by importing additional nutrients on increasingly fewer, increasingly larger farms. The state of Vermont implicitly and explicitly supports the practices listed below without bothering to notice that they all correlate with rising lake pollution, which the state insists it is trying to clean up.

- As the number of farms in Vermont decreased, lake pollution increased.
- As the number of cows in Vermont decreased, lake pollution increased
- As the number of cows per farm in Vermont increased, lake pollution increased.
- As milk production per cow in Vermont increased, lake pollution increased.
- As total milk production in Vermont increased, lake pollution increased.

Last week, the Agency of Agriculture, with the complicity of the Agency of Natural Resources and the Department of Environmental Conservation, announced that they had drained a million gallons of phosphorus-laden water from a little pond that feeds into Lake Carmi. This was, they all said, an indication of their commitment to clean water. But they did not ban the

application of artificial fertilizer to the lands along our rivers and streams. They did not ban the stocking of farms with more than one cow for every acre of land under management on which that cow's feed is harvested and her manure is spread. They did not ban the importation of high-phosphorus feed supplements, which farmers feed to their cows in order to force them to produce more milk than Federal Milk Marketing Orders markets can absorb. The agencies of Agriculture and Natural Resources and the Department of Environmental Conservation did not, in other words, stop the problem at its source.

Vermont has normalized lake pollution because 50 years ago it justified lake pollution on the pretext of helping agriculture — and agriculture was the antidote to development. The results today are unambiguous: Agriculture is walking on it uppers and lake pollution rises before everyone's eyes every year. The secretary of Natural Resources and the commissioner of the Department of Environmental Conservation should take stock of what the taxpayers pay them and their staffs to do. They have no justification for accepting a polluted lake because they have no justification for subordinating natural resource protection to conventional dairy.

EPA Grant (continued from p. 1):

either confirmed or disproved. Algae toxins are a concern for those who live and recreate on the water, as well as those who may consume fish. Some may be especially impacted by presence of algal toxins in fish tissue, such as low income households who rely on fish for food.

Jason Stockwell, director of the Rubenstein Ecosystem Science Laboratory on Burlington's lakeshore and co-principal investigator on the grant, will lead efforts to understand the impacts of algal toxins in the tissues of fish.

"We have very little information about how many and how much cyanobacteria toxins can accumulate in fish," said Stockwell. "We will be evaluating a long list of potential toxins, including neurotoxins, that are typically not assessed in fish tissues."

The second part of the grant, led by Rachelle Gould, will involve participation from local residents to determine how the compromised state of St. Albans Bay has affected the health and well-being of different segments of our community. Recreational and commercial fishermen, property owners, boaters, paddlers, swimmers, business owners and families who use local park facilities are all impacted in different ways. In the coming year, we hope to contact many of these groups to discuss how the state of the lake has impacted them, how well they understand the information and how to take community action.

SAAWA will contact members during the coming year to organize small group meetings and interviews, as well as conduct surveys to solicit community feedback on Lake conditions.

If you would like to help with this project, please contact SAAWA at info@saintalbanswatershed.org.



PO Box 1567 St. Albans, VT 05478

www.saawavt.org

working to restore Saint Albans Bay

Stay connected! Check SAAWA's Facebook page for the latest info on ...

ESTORE THE BAY 5K and TAKE A S'

Our new page continues to grow and it is helping us to stay better connected to SAAWA members and the community at large. Find us on: facebook

Please visit, 'Like' and 'Share' our new page: www.FACEBOOK.COM/SAAWAVT/ to stay in the loop.



A fun, family-friendly timed 5K run/walk from Kamp KillKare to St. Albans Bay Town Park.

PRE-REGISTER ONLINE: saawavt.org

Registration (Bay Park) at 8:00 am | Bus to KillKare: 8:40 am Race begins: 9:00 am



A hands-on event to celebrate the lake. Over 12 clean water advocates with displays and info to help you learn ways to preserve and restore water quality. 10am -12:30 pm.

PLUS. **NEW** THIS YEAR!

Kids races, bouncy house, an appearance by Champ and more. 10am-12pm