

# Aquatic Nuisance Control Decision and Denial

Under 10 V.S.A. § 1455



VERMONT DEPARTMENT OF  
ENVIRONMENTAL CONSERVATION  
**WATERSHED  
MANAGEMENT DIVISION**  
LAKES & PONDS PROGRAM

<p><b>Applicant(s):</b> Town of Williston c/o Richard McGuire – Town Manager (decision-maker)</p> <p>SOLitude Lake Management (operator)</p> <p><b>Control Activity:</b> Pesticide (Herbicide – Sonar A.S.®)</p>	<p><b>Permit Number:</b> 2240-ANC</p> <p><b>Waterbody:</b> Lake Iroquois; Hinesburg, Richmond, Williston</p>
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Based upon the Findings contained in this decision, it is the decision of the Secretary of the Agency of Natural Resources (Secretary) that the project described herein, as set forth in the following findings and in the application on file with the Secretary, does not comply with the criteria of 10 V.S.A. § 1455, and is hereby DENIED.

**a. Findings**

1. Jurisdiction - 10 V.S.A. § 1455(a). Within waters of the state, no person may use pesticides, chemicals other than pesticides, biological controls, bottom barriers, structural barriers, structural controls, or powered mechanical devices to control nuisance aquatic plants, insects, or other aquatic nuisances, including lamprey, unless that person has been issued a permit by the secretary. The project, as described in Permit Application #2240-ANC, proposed the use of a pesticide, Sonar A.S.®, to control the aquatic invasive species Eurasian watermilfoil (EWM), *Myriophyllum spicatum*, within Lake Iroquois located in Hinesburg, Richmond, and Williston. The Secretary has identified EWM as an aquatic nuisance pursuant to the statutory definition found at 10 V.S.A. § 1452(2). Therefore, the Department has jurisdiction under 10 V.S.A. Chapter 50.
  
2. Application Receipt & Review. A permit application for an Aquatic Nuisance Control permit submitted by the Town of Williston was received on November 14, 2016. The application was reviewed in accordance with the Department of Environmental Conservation’s Permit Application Review Procedure, adopted May 22, 1996.
 

The Secretary can issue an Aquatic Nuisance Control permit for the use of pesticides in waters of the State for the control of nuisance aquatic plants pursuant to 10 V.S.A. § 1455 (d) if the following findings can be made:

  - (1) there is no reasonable non-chemical alternative available;
  - (2) there is acceptable risk to the non-target environment;
  - (3) there is negligible risk to public health;
  - (4) a long-range management plan has been developed which incorporates a schedule of pesticide minimization; and
  - (5) there is a public benefit to be achieved from the application of a pesticide or, in the case of a pond located entirely on a landowner's property, no undue adverse effect upon the public good.

The Secretary was unable to affirmatively find there was no reasonable non-chemical alternative available, that there was an acceptable risk to the non-target environment, and that there was a public benefit to be achieved from the application of a pesticide.
  
3. Background; Aquatic Nuisance Control Permit History. Control methods jurisdictional under 10 V.S.A. § 1455 for EWM have been used in Lake Iroquois, including the use of bottom barriers, powered mechanical devices, and the use of a biological control. ANC permits #1994-B01, #2009-B04, #2016-B06, #2016-B08, and #2206-ANC permitted the use of a bottom barrier. ANC permits #1999-H03, #2005-H07, #2014-H02, and #2016-H13 (2203-ANC) permitted the use of a powered mechanical device. ANC permit #2005-W01 permitted the use of a biological control (*Eurychiopsis lecontei*). All the above-mentioned ANC permits were issued for the control

of the aquatic invasive plant EWM, which was first identified in Lake Iroquois in 1990. Copies of a permit may be available upon request where records exist. Application #2240-ANC was the first application requesting the use of a pesticide to control EWM in Lake Iroquois.

4. Project Purpose. The purpose of the project was to control EWM to promote a diverse native plant community, to improve fish and wildlife habitat, and to support public recreational use of the lake.
5. No Reasonable Non-Chemical Alternative Available – 10 V.S.A. 1455(d)(1). Comments that were received during the public comment period emphasized how all reasonable non-chemical actions to control EWM in Lake Iroquois have not been pursued and that there are additional reasonable non-chemical alternative control methods available to achieve the project purpose. Permits were issued to the Lake Iroquois Association to conduct diver assisted suction harvesting (permit #2016-H13 issued on July 20, 2016) and to use bottom barriers (permit #2206-ANC issued on February 2, 2017). However, these control projects have only been used to a limited degree in efforts to create a navigation channel to open water from the Vermont Department of Fish & Wildlife public access area at the northwest portion of the lake. As a result, the Secretary cannot affirmatively find that there is no reasonable non-chemical alternative available that would achieve the project purpose. It has not been demonstrated that these previously permitted non-chemical control methods are inadequate to address the EWM issue in Lake Iroquois and achieve the stated project purpose. In addition to considerations of potential non-chemical alternatives, the Secretary considered how an applicant may develop a reasonable integrated pest management plan as a means of identifying various control methods given the long-term well-established population of EWM that is present in Lake Iroquois where lake-wide control efforts have not occurred since EWM was first discovered in the lake in 1990.

In review of the public comments received related to this finding, the Secretary identified a potentially reasonable approach for addressing a lake-wide population of EWM. Baseline assumptions regarding the proposed project, as well as identifying ecological and water quality characteristics for Lake Iroquois, were made as a means to outline a reasonable approach for controlling EWM for this waterbody:

- The control activity was proposed to target the aquatic invasive species EWM.
- EWM has been established in Lake Iroquois since at least 1990.
- The EWM population has spread throughout the lake, is a well-established population, and eradication is a highly unlikely outcome from control efforts.
- A sustained lake-wide management approach using non-chemical or chemical means to control EWM has not occurred in Lake Iroquois, although permits have been issued for the use of non-chemical controls.
- Lake Iroquois is 244 acres and the littoral zone covers 105 acres, which is 43% of the total lake surface area as identified in the application. Open water conditions comprise 139 acres, 57% of the total lake surface area.
- Lower Pond is approximately 0.25 miles downstream of Lake Iroquois; it should be anticipated that Sonar A.S.® would flow into this waterbody should the pesticide be applied to Lake Iroquois.
- As identified in the Vermont Lake Score Card related to phosphorus concentrations, Lake Iroquois is considered eutrophic (nutrient rich). Given this trophic state, there is an increased likelihood of there being elevated biological productivity, which will likely result in dense populations of aquatic plants, including EWM.
- As identified in the Vermont Lake Score Card, the Lake Iroquois watershed is classified as being highly disturbed.
- As identified in the Vermont Lake Score Card, the Vermont Inland Lake Shoreland and Habitat Score/USEPA National Lake Assessment Score ranks Lake Iroquois as being in poor condition. This ranking is a measure of the human activity within 15 meters of the lake's shoreline at ten random sites around the lake; it reflects how intensively and extensively a lake's shore is developed. The poor condition

indicates Lake Iroquois has significant development within the immediate shoreline, which reduces the natural resiliency of the waterbody and increases potential adverse impacts to the biological, chemical, and physical integrity of the waterbody.

While requesting to control EWM was reasonable, the Secretary has determined that the whole-lake use of a pesticide is not a reasonable approach to manage the species. A whole-lake pesticide treatment targets the entire littoral zone. This management approach will impact locations of native aquatic plant species that may be sensitive to the pesticide and is not capable of targeting limited locations within the littoral zone where public good uses, such as boating, fishing, or swimming, are being impacted by EWM. Given the increased biological activity and the poor condition of the lake based on shoreline development at Lake Iroquois, it is anticipated that dense aquatic plant populations will exist in the lake regardless of whether a whole-lake control project occurs. Therefore, a reasonable control project would be to target a specific area where a public good use of the water is impacted.

Aquatic invasive species are considered stressors on Vermont's surface waters. However, EWM is and will continue to be a part of the aquatic environment of Lake Iroquois for the foreseeable future. In response to these assumptions, a targeted approach using an integrated pest management plan to control nuisance levels of aquatic plants that are impacting public good uses is a reasonable approach to achieve the project purpose, rather than a whole-lake control approach.

To develop an integrated pest management plan for a species that has spread throughout a waterbody, is well-established, and where eradication is a highly unlikely outcome from control efforts, the following criteria need to be assessed in conjunction with the baseline biological, chemical, and physical characteristics of the waterbody and watershed to set expectations for what a control project may achieve:

- Identify the aquatic nuisance problem, the area(s) with the aquatic nuisance problem, and characterize the extent of the problem, including, for example, water use goals not attained (e.g. wildlife habitat, fisheries, native vegetation, and recreation).
- Identify locations of species that may be sensitive to a control project.
- Identify locations where wetlands may be present.
- Identify an action threshold to determine when a control project may be appropriate.
- Identify possible factors causing or contributing to the aquatic nuisance problem.
- Review the past management history of the aquatic nuisance.
- Develop an integrated pest management plan that incorporates short and long-term goals, anticipated levels of control, expectations achieved by a control project, and whether a control project will need to occur in perpetuity to maintain anticipated levels of control.
- Develop management alternatives, such as no action, prevention, mechanical or physical methods, cultural methods, biological control agents, or the targeted use of pesticides, to identify how different control projects may reach the goals of the integrated pest management plan. Management alternatives should be compatible with other water uses, not adversely affect natural lake functions, have a known and understood mechanism of control, be documented as low risk to natural ecosystem functions, and are predictable and repeatable in efficacy and outcome.
- Develop methods for evaluating the efficiency of the integrated pest management plan to act as a feedback loop for determining how future control efforts should proceed.
- Implement watershed and shoreline management strategies to address sources of phosphorus and to promote the long-term stability and resilience of the waterbody to help reduce the likelihood of nuisance populations from developing.

Based on the current conditions of Lake Iroquois and in response to public comments received, there are reasonable non-chemical alternatives available to achieve the project purpose. Non-chemical alternatives for controlling nuisance populations of EWM could be strategically implemented to control a specific nuisance population and have reasonable short and long-term goals. Non-chemical alternatives such as bottom barriers, diver assisted suction harvesting, and mechanical harvesting could achieve those goals while limiting potential negative impacts. In conjunction with identifying an in-lake aquatic nuisance control management plan, addressing sources of phosphorus throughout the watershed should be considered as well due to phosphorus being a contributing factor to nuisance aquatic plant growth.

Therefore, the finding that there is no reasonable non-chemical alternative available cannot be made, and the application must be denied.

6. Acceptable Risk to the Non-Target Environment – 10 V.S.A. 1455(d)(2). Comments that were received during the public comment period raised concerns over potential impacts to the non-target environment. Based on the comments related to this finding, the Secretary identified the following as the non-target environment:

- Aquatic plants and animals within the waterbody proposed for treatment and waters downstream of the waterbody.
- Wetlands within the waterbody proposed for treatment and wetlands downstream of the waterbody.
- Human use of waters treated with the pesticide. This includes, hydroponic farming, greenhouse and nursery plants, and all locations irrigated with waters treated with Sonar A.S.®.
- The ecological integrity of the waterbody, which is the culmination of how the biological, chemical, and physical integrity of the waterbody interact. The concept of ecological integrity is identified in the [Vermont Department of Environmental Conservation Watershed Management Division's Statewide Surface Water Management Strategy](#).

For determining what might be considered an acceptable risk to the non-target environment from the proposed treatment, the Secretary made several baseline assumptions related to the non-target environments potentially affected by the proposed treatment:

- A control project for an aquatic nuisance species has an impact on the ecological integrity of the waterbody regardless of the species being targeted as the non-target environment cannot be avoided completely.
- Rare aquatic plant species have been recorded as being present in Lake Iroquois. Species observed include prickly hornwort (S2S3), *Ceratophyllum echinatum*, last observed 9/11/2014; Nuttall's waterweed (S3), *Elodea nuttallii*, last observed 8/30/2012; slender naiad (S2), *Najas gracillima*, last observed 9/17/1968; straight-leaf pondweed (S2S3), *Potamogeton strictifolius*, last observed 8/2/1993; Vasey's pondweed (S2), *Potamogeton vaseyi*, last observed 8/2/1993; and lesser bladderwort (S3), *Utricularia minor*, last observed 9/14/2012. Aquatic plants controlled by Sonar A.S.® as identified on the product label that have been observed to occur in Lake Iroquois include bladderwort, *Utricularia* spp.; common coontail, *Ceratophyllum demersum*; common elodea, *Elodea canadensis*; naiad, *Najas* spp.; pondweed, *Potamogeton* spp.; watermilfoil, *Myriophyllum* spp.; spatterdock, *Nuphar luteum* syn. *Nuphar variegata*; waterlily, *Nymphaea* spp.; and common duckweed, *Lemna minor*. Native vascular aquatic plants partially controlled by Sonar A.S.® as identified on the product label that have been observed to occur in Lake Iroquois include tape grass, *Vallisneria americana*; cattail, *Typha* spp.; smartweed, *Polygonum* spp.; and spikerush, *Eleocharis* spp.
- A rare aquatic plant species, fruited bladderwort (S3), *Utricularia geminiscapa*, has been recorded as being present in Lower Pond and was last observed on 9/24/2003. Aquatic plants controlled by Sonar A.S.® as identified on the product label that have been observed to occur in Lower Pond include bladderwort, *Utricularia* spp.; common coontail, *Ceratophyllum demersum*; common elodea, *Elodea canadensis*; naiad, *Najas* spp.; pondweed, *Potamogeton* spp.; watermilfoil, *Myriophyllum* spp.;

spatterdock, *Nuphar luteum* syn. *Nuphar variegata*; waterlily, *Nymphaea* spp.; and common duckweed, *Lemna minor*. Native vascular aquatic plants partially controlled by Sonar A.S.<sup>®</sup> as identified on the product label that have been observed to occur in Lake Iroquois include tape grass, *Vallisneria americana*; cattail, *Typha* spp.; smartweed, *Polygonum* spp.; and spikerush, *Eleocharis* spp.

- Mapped Class II wetlands are located at the northern end of Lake Iroquois.
- Mapped Class II wetlands are located at the northern end of Lower Pond, which is the point at which the outlet stream for Lake Iroquois enters Lower Pond.
- Lake Iroquois and its waters are public, and it is reasonable to assume that all public waters may be used for irrigation, which is an identified use in the application.
- While the potential impact to every potential aquatic animal that may come into contact with Sonar A.S.<sup>®</sup> is not known, the treatment concentration target, 5-8 parts per billion of the active ingredient fluridone, has not been shown to present an unacceptable impact to aquatic animals (pages 6-9: 2240-ANC\_TechnicalReferences\_02062018).

Based on the comments that were received related to this finding and the subsequent review conducted by the Secretary, the proposed project presents an unacceptable risk to the non-target environment. Given that the EWM population has spread throughout the lake, is a well-established population, and eradication is a highly unlikely outcome from control efforts, attempts to control the entirety of the EWM population poses an unacceptable risk to stability of the ecological integrity of Lake Iroquois. While the target concentration of Sonar A.S.<sup>®</sup> was proposed to be at a concentration that would likely limit the impact on non-target aquatic plant species, the proposed whole-lake treatment would not be able to avoid non-target aquatic plant populations of species either controlled or partially controlled by Sonar A.S.<sup>®</sup> or avoid areas mapped as Class II wetlands where species that are sensitive to Sonar A.S.<sup>®</sup> are likely to be found at higher densities. By targeting the entire population of EWM over the course of one growing season, there would likely be a temporary but significant decrease in EWM densities as well as reductions of non-target aquatic plant species controlled or partially controlled by Sonar A.S.<sup>®</sup>. Additionally, this drop in aquatic plant density does have the potential to result in more available phosphorus within the lake that could then be readily utilized by algae, which could result in unintended algae blooms. As eradication of EWM is not the goal of the project or a feasible outcome from control efforts, EWM populations would recover and likely revert to the current state of Lake Iroquois over time, which consists of a lake-wide distribution of EWM. This reversion back to the current state would likely result in the same conditions that resulted in the submission of this permit application for a whole-lake treatment, thus creating a long-term continuous cycle of impact on the non-target environment within the entirety of the lake.

In addition to impacts on species and environments within and downstream of Lake Iroquois, the waters of Lake Iroquois were identified as being used for irrigation. The proposed treatment was to occur over 90-days, beginning in May. As identified on the Sonar A.S.<sup>®</sup> label, irrigation from a Sonar A.S.<sup>®</sup> treated area may result in injury to the irrigated vegetation. For those non-target environments irrigated with waters treated with Sonar A.S.<sup>®</sup>, the treatment poses an unacceptable risk to that non-target environment due to the prolonged duration of the treatment, which would have overlapped with the time of year where irrigation is likely to occur.

While EWM is a stressor on the ecological integrity of Lake Iroquois, the potential lake-wide impacts on the non-target environments as a result of a whole-lake treatment is greater than the impact from the existence of EWM in Lake Iroquois. Given that EWM will be a part of Lake Iroquois for the foreseeable future and that once EWM control efforts are initiated, those control activities would need to occur in perpetuity to maintain suppressed levels of EWM, the proposed whole-lake treatment poses an unacceptable risk to the non-target environment. Therefore, this finding cannot be made, and the application must be denied.

7. Public Benefit – 10 V.S.A. 1455(d)(5). In response to public comments, the Secretary considered the following criteria in determining whether there is a public benefit to be achieved from the application of the pesticide:
- Whether carrying out the project produces tangible benefits to public good uses, such as boating, fishing, and swimming, that outweigh potential impacts on the water resource.
    - Assessment: Tangible benefits to be achieved in the target waterbody primarily stemmed from the anticipated temporary decrease in the frequency of occurrence and biomass of EWM. This temporary decrease was anticipated to result in a tangible benefit for boating and swimming, as the littoral zone within the waterbody would likely have had a reduced abundance of aquatic plant biomass, which would have facilitated less impeded use. Lake Iroquois is 244 acres and the littoral zone covers approximately 105 acres, which is 43% of the total lake surface area as identified in the application. Open water conditions comprise 139 acres, 57% of the total lake surface area. The potential temporary tangible benefit to boating and swimming could have occurred at up to 43% of the total surface area of the lake while the remaining surface area would see no anticipated change. Regarding fishing as a public good use in relation to the proposed project, it remains undetermined as to whether the project would produce a tangible long or short-term benefit. EWM has been identified as not providing beneficial habitat for fish. However, a lake-wide reduction of EWM as a result of a treatment and the subsequent shift in aquatic plant population dynamics may have unintended consequences on fish populations. As a result, the Secretary cannot confirm there would be a tangible benefit to fishing. Potential impacts on the water resource are identified in finding a.6. of this decision. The Secretary has determined that the temporary tangible benefits to boating and swimming do not outweigh the potential impacts on the water resource.
  - Whether the potential cumulative impacts from carrying out the control project adversely affect the water resource and the public that utilizes that resource.
    - Assessment: Additional cumulative impacts were considered that related to the water resource and how the public may utilize that resource. The Secretary has determined that the cumulative impacts from carrying out the control project would adversely affect the water resource and the public that utilizes that resource.
      - For property owners abutting Lake Iroquois and for property owners abutting the immediate surface waters downstream, which includes the 58-acre waterbody known as Lower Pond, which is approximately 0.25 miles downstream of Lake Iroquois, the VDH issued recommended water use restrictions for those properties, which includes temporary avoidance of treated water up to one mile from the outlet of Lake Iroquois for all uses, including boating, fishing, swimming, and domestic use. In addition, product use precautions from the Sonar A.S.® label recommends not using water from a treated area for irrigation for up to 30 days after application for established row crops, turf, or plants. The recommended water use precautions could remain in effect for approximately 90 days beginning in May and are unreasonably burdensome on individuals who use the water for irrigation and recreation.
      - Lake Iroquois is located within Zone 2 of the Champlain Water District Surface Water Source Protection Area. While it was not anticipated that Sonar A.S.® would reach the Champlain Water District's intake pipe, the waters of Lake Iroquois are considered to be a primary recharge area for the Champlain Water District. It was not anticipated that the project would have a cumulative impact that would adversely affect the surface water source protection area.
      - Lake Iroquois is not located within a Groundwater Source Protection Area.

- Whether measures to reduce impacts on the water resource have been taken.
  - Assessment: The project proposed to control EWM only, which is an aquatic invasive species. The target concentration of Sonar A.S.® was reduced to 5-8 ppb to reduce potential impacts to non-target species that are controlled or partially controlled by Sonar A.S.®.
- Whether the project is excessive for the stated purpose.
  - Assessment: Sustained aquatic nuisance control activities have not occurred in Lake Iroquois. Initiating a lake-wide EWM control effort in Lake Iroquois with a whole-lake treatment before more thoroughly undertaking less intrusive feasible alternatives is excessive. The project is considered excessive for the stated purpose.

Based upon review of the public good criteria, the Secretary has determined that the potential impact on the public good outweighs the perceived public benefit to be achieved from the application of a pesticide. Therefore, the Secretary cannot affirmatively find that there is a public benefit to be achieved from the application of a pesticide, and the application must be denied.

10. Public Notification – 10 V.S.A. 1455(h). An opportunity for the public to review and comment on this application was provided in accordance with the Department of Environmental Conservation’s *Public Review and Comment Procedures for Aquatic Nuisance Control Permit Applications and General Permits*, adopted per 3 V.S.A. Chapter 25, on January 30, 2003. A public informational meeting on the draft permit was held on May 4, 2017. Public comments were received. A response to public comments has been issued with this decision.

11. References:

[SePRO Sonar AS® Specimen Label](#)

[SePRO Sonar AS® Material Safety Data Sheet](#)

[Surface Water Source Protection Areas Factsheet](#)

[Vermont Department of Environmental Conservation Watershed Management Division’s Statewide Surface Water Management Strategy](#)

[Vermont Lake Score Card – Lake Iroquois](#)

[Vermont Lake Score Card – How Lakes are Scored](#)

**b. Standard Conditions**


Appeals. Pursuant to 10 V.S.A. Chapter 220, any appeal of this decision must be filed with the clerk of the Environmental Division of the Superior Court within 30 days of the date of the decision. An aggrieved person shall not appeal this decision unless the person submitted to the Secretary a written comment during the comment period or an oral comment at the public meeting conducted by the Secretary and the person may only appeal issues related to the person’s comment to the Secretary unless otherwise outlined in 10 V.S.A. chapter 220. The Notice of Appeal must specify the parties taking the appeal and the statutory provision under which each party claims party status; must designate the act or decision appealed from; must name the Environmental Division; and must be signed by the appellant or the appellant’s attorney. The appeal must give the address or location and description of the property, project, or facility with which the appeal is concerned and the name of the applicant or any permit involved in the appeal. The appellant must also serve a copy of the Notice of Appeal in accordance with Vermont Rules for Environmental Court Proceedings. For further information, see the Vermont Rules for Environmental Court Proceedings available at [www.vermontjudiciary.org](http://www.vermontjudiciary.org). The address for the Environmental Division is: 32 Cherry Street; 2nd Floor, Suite 303; Burlington, VT 05401 Telephone: 802-951-1740.

**c. Denial**

By delegation from the Secretary, the Vermont Department of Environmental Conservation has made a determination that the control activity does not comply with the criteria of 10 V.S.A. § 1455 for an individual aquatic nuisance control permit.

In accordance with 10 V.S.A. § 1455, the Department hereby issues this decision and denial to the Town of Williston and SOLitude Lake Management for the above-named project.

Emily Boedecker, Commissioner  
Department of Environmental Conservation

 10/8/2018  
1:31 PM  
By: \_\_\_\_\_

Perry Thomas, Manager  
Lakes & Ponds Management and Protection Program  
Watershed Management Division