

STAFF DRAFT

Adirondack Park Agency Policy, Procedures & Guidance System	RASS - 1
Topic: Guidelines for Appropriate Use of the Aquatic Herbicides Renovate® and Renovate® OTF to Manage Eurasian Water- Milfoil, an Aquatic Invasive Plant	
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I. Purpose and Applicability

Under New York State’s Freshwater Wetlands Act, the Adirondack Park Agency is responsible for review and approval of projects involving freshwater wetlands in the Adirondack Park. As such, an Agency permit is required for management of aquatic invasive vegetation involving the use of aquatic herbicides that will pollute or substantially impair freshwater wetlands.

The purpose of these guidelines is to provide guidance to the Agency, lake associations, state agencies and local municipalities, Adirondack Park Invasive Plant Program (APIPP), and others involved with management of aquatic invasive plants. The goal of any aquatic invasive species management strategy is to achieve long-term control of the target species, while avoiding or limiting impacts to freshwater wetlands and non-target organisms.

II. Background

Deep water marsh and emergent marsh wetlands are an integral part of a healthy aquatic ecosystem and provide essential habitat for fish, macroinvertebrates, reptiles, amphibians, and wildlife. They are important in stabilizing lake sediment, storing and recycling nutrients, and improving water quality. Healthy wetland communities typically

consist of a diverse assemblage of native aquatic vegetation. Non-native invasive species, such as Eurasian watermilfoil (*Myriophyllum spicatum*, EWM), compete with native plants for available resources and can establish dense monocultures which can outcompete native plants, decrease plant diversity and diminish habitat for fish, macroinvertebrates, and other aquatic organisms. Dense EWM beds can also displace native vegetation, including NYS rare, threatened and endangered species. Dense monocultures can also directly or indirectly impact aquatic organisms by changing lake nutrient dynamics, increasing water temperature, reducing fish spawning habitat and feeding success of predatory fish, etc. Seasonal die-off of invasive plants, such as EWM, can lead to a decline in water quality and low or no dissolved oxygen conditions. Widespread dense monocultures of invasive plants can also impact recreational activities such as swimming, boating and fishing.

Several aquatic herbicides, including Endothall, Fluridone, Glyphosate, Imazamox, Triclopyr, etc. are approved for use in New York State. For management of EWM, Triclopyr, tradename, Renovate® OTF, is preferred because it is highly selective and fast acting. Triclopyr targets primarily plants classified as dicots and many native monocots such as pondweed, elodea, coontail, sedges and grasses etc. are not susceptible. Triclopyr is a systemic herbicide and will enter through a plant's leaves and stems and translocate to the root system, thereby disrupting the plant's metabolism. As a systemic herbicide, killing the entire plant, including root system, will have greater efficacy and will provide for a longer period of control of the target plant¹. Triclopyr is the preferred aquatic herbicide to manage EWM since it is functionally selective and of low toxicity.

Lake communities responding to an EWM infestation typically consist of lake volunteers with little to no funding. Management efforts are generally financed by the local municipality, private donations, or fund raising efforts by volunteers. As a result, these communities often conclude that the least expensive control is the most desirable management strategy. Aquatic herbicides, such as Renovate® or Renovate® OTF provide a cost effective management option for large dense beds of EWM. However, widespread use of this herbicide may not be an acceptable alternative to the general public. Furthermore, unless careful consideration is given to the appropriateness of an herbicide and, if appropriate, to the application strategy, there may be unacceptable impacts to non-target native plants and

animals, including NYS protected species.

III. Agency Guidance

A. General Guidance

The aquatic herbicide Renovate® or Renovate OTF® should only be used to manage the aquatic invasive species in Adirondack waterbodies when the project is designed to avoid or minimize impacts to freshwater wetlands, especially to non-target native flora and fauna. The applicant must demonstrate that there has been a lakewide management program using non-chemical options, such as hand harvesting or benthic barriers, prior to applying for an Agency permit for aquatic herbicide use. The non-chemical control effort should be a multi-year activity and must be documented by the applicant (i.e. by providing the number of acres hand harvested or matted per year, amount of plant material hand harvested per site, number and size of the benthic barriers, etc.). The herbicide treatment must be limited to areas where large, dense or moderately dense EWM beds need to be reduced to levels which will allow non-chemical control to continue in the future. Further, management of the area after treatment must include a long-term strategy to use non-chemical options to prevent recolonization by invasive species.

The applicant must also demonstrate that all alternatives have been evaluated and the EWM cannot be controlled by non-chemical means or without undesirable non-target impacts, has the potential to continue to spread rapidly due to existing habitat (i.e. extent of littoral area, suitable substrate, etc.), and may outcompete and eliminate diverse assemblages of native vegetation or protected plant species.

It must also be demonstrated that the use of Renovate® or Renovate® OTF will restore habitat and that failure to respond to the infestation could result in loss of native plant diversity and a viable functioning wetland community.

Only aquatic herbicides licensed in New York State and authorized by DEC will be approved and only for invasive species.

B. Minimum Size of Treatment Area

In most Adirondack waterbodies, partial lake or spot treatments are more desirable than whole lake treatments since there is less impact to native aquatic plants, animals and to the aquatic ecosystem. It is recommended that the

treatment area be greater than five acres in size and consist of dense and moderately dense EWM beds. Furthermore, the treatment area should not consist of more than 15% of the lake's littoral zone in any single treatment year. Areas with scattered to trace amounts of EWM adjacent to the dense beds should not be included as part of the treatment area, since these areas can be hand harvested. Whole lake treatments involving an aquatic herbicide will not be allowed unless there is a demonstrated overall benefit to the water body.

C. Limiting Non-target Impacts

An aquatic herbicide program needs to limit non-target impacts of susceptible native flora and fauna. Areas with scattered to trace amounts of EWM should not be treated if dominated by protected or susceptible native plants and a cost effective non-chemical control option is available which will achieve the same management outcome for the applicant and provide better protection to susceptible flora or fauna.

The following treatment considerations must be evaluated to eliminate or reduce impacts to non-target organisms and freshwater wetlands:

1. Timing of Herbicide Application

In most situations, Renovate should be applied early in the spring when target plants are actively growing and herbicide uptake is at a maximum. Eurasian watermilfoil initiates productivity and metabolic activity at an earlier time than native plants¹. Since triclopyr is highly selective for EWM and other dicots, completing the treatment in spring, when EWM is typically the first emergent plant may reduce impact to other native dicots which are still dormant.

Treating in the spring allows a targeted application when the EWM biomass is low and when many other plants have not yet emerged. This early season control reduces the potential for suppressed or depleted dissolved oxygen concentrations which can occur during mid to late summer treatments when vegetation is at the height of the growing season. Furthermore, spring treatments occur before the lake becomes stratified thus allowing the lake to remain well oxygenated during plant degradation.

2. Sequestration Curtains

Sequestration curtains or limnocurtains are impermeable membrane barriers typically constructed of polyvinyl chloride or similar material. Sequestration curtains can significantly reduce the dilution and dispersal of the herbicide by restricting the flow of water into and out of the treatment area. Restricting herbicide drift reduces lethal exposure to susceptible native plants outside the target area. It also allows for a much lower rate of application (concentration) than what is typically required, and herbicide efficacy is improved as the effects of dilution and herbicide drift is reduced. Using a herbicide concentration below the allowable label strength can reduce non-target impacts both within and outside the treatment area.

Curtains should extend from the lake surface to the bottom and completely enclose or surround the treatment area. If treating an embayment the curtains should extend from shoreline to shoreline. Recycled curtains must be sanitized to ensure that there is no additional non-native species introduction.

D. Booster Treatments

Several aquatic herbicides licensed for use in NYS, including Renovate® OTF, are designed to react quickly with the target plant and then dissipate. In most cases re-treatment or booster treatment is not required within the same application period. In order to avoid booster treatment it is important to use the correct herbicide for the target species and determine what other features (i.e. lake morphometry, flow patterns in or near treatment area, site conditions, timing, etc.) may have on treatment efficacy. Aquatic herbicides should only be used in waterbodies and areas where the hydrology and site conditions allow for adequate contact time. Booster treatments will generally not be allowed unless there are extenuating circumstances which will require additional justification by the applicant.

E. Herbicide Concentration Monitoring

An aquatic herbicide can be dispersed by wave and wind action and can be diluted and degraded by water exchange and natural processes. Post-treatment monitoring of herbicide residue provides information on target concentration success, degradation or dilution of herbicide to non-lethal levels, and compliance with label restrictions (i.e. potable

water restriction, irrigation ban, etc.).

As part of any herbicide application, the Agency will require a detailed herbicide monitoring plan. Because the circumstance surrounding each treatment is unique, the plan will be customized to provide spatial and temporal understanding of herbicide drift and persistence. To reduce the need for overlapping sampling by the Agency and the New York State Department of Environmental Conservation, where possible, the Agency will use label use restriction concentrations in the sampling requirements. Sampling plans proposed by the applicant should be based upon input from the Agency and the New York State Department of Environmental Conservation.

It is recommended that a detailed monitoring plan be prepared for each treatment site. The following is offered as guidance for sample frequency: "The first round of sampling will begin 12 hours after treatment and will continue at a minimum, 24 hours, day 3 and day 7 after treatment. Sampling at all sites will continue weekly thereafter until triclopyr concentrations drop below 50 ppb which is the NYS potable water restriction (Supplement Labeling (Chapter 24(c) Special Local Need)). One additional round of sampling will be completed at one downstream and one upstream site in order to verify when concentrations fall below 1 ppb, at which time the restriction on using treated lake water for irrigation purposes may be lifted." Additional sample sites should be chosen to identify areas of concern, such as, high occurrence of native dicots and/or rare, threatened or endangered species susceptible to the herbicide.

Outlet Monitoring - Additional sampling sites may be required downstream of the treatment area if the application point is located near the outlet and/or concentrations in the outflow are predicted to be high enough to impact freshwater wetlands in downstream areas.

F. Long-term Management

As outlined previously, the use of Renovate® and Renovate® OTF should be used for partial lake or spot treatment in areas with dense or moderately dense EWM beds to reduce populations to levels that can be managed long-term using non-chemical controls. The chemical treatment must be part of a lake-wide integrated pest management strategy which includes the use of non-chemical options to achieve long-term objective of no herbicide or herbicide minimization for

the entire water body. All areas treated with an aquatic herbicide will require monitoring and aggressive hand harvesting or other non chemical control once EWM begins to become re-established. Areas with scattered EWM plants located adjacent to a treatment area that will not be treated should also be aggressively managed using hand harvesting or benthic barrier techniques in order to eliminate a source of EWM recolonization.

G. **Post-treatment Aquatic Plant Surveys**

Aquatic plant community composition will change after a chemical treatment, and treated areas which previously consisted of dense biomass of EWM will begin to repopulate with native plants. In order to evaluate the effectiveness of the treatment and impacts to non-target organisms the Agency will require an aquatic plant post-treatment survey and report within one year of the treatment. The survey should be conducted or designed comparable to the pre-treatment survey, and the report should include an analysis comparing pre- and post-treatment aquatic plant community composition, including details of any non-target impacts.

H. **Rapid Response to a New AIS Infestation**

The Agency reserves the right to review and expedite the approval for an aquatic herbicide permit application submitted in response to a new infestation involving a highly invasive species, such as hydrilla (*Hydrilla verticillata*). The use of any New York State Department of Environmental Conservation registered aquatic herbicide as a tool to rapidly respond to an aggressive invasive species may be necessary in order to eradicate the invasive before it can spread within the infested water or to a new waterbody.

I. **Legal Effect**

This policy is not intended to set forth a fixed general principle to be rigidly applied. Rather, its tenets are to be utilized solely as guidance and will be applied only after taking into account the specific facts and circumstances pertaining to each specific aquatic invasive species management project.

¹Hammond, NY. Menninger, H. 2011. A Review of the Science and Management of Eurasian watermilfoil: Recommendations for Future Action in New York State. Unpublished report. Cornell University

² New York State Department of Environmental Conservation. 2007. Use of the Aquatic Herbicide Triclopyr Renovate® in the State of New York. Supplemental Environmental Impact Statement.