

APPENDIX B

HYDRILLA MANAGEMENT FREQUENTLY ASKED QUESTIONS

The following frequently asked questions and answers were developed for DEP to use in public outreach communications. Many of these can be used directly by utilities for answering questions from the public on hydrilla. Others that are specific to DEP and New Croton Reservoir can be used as examples for utilities to develop their own questions and answers for public outreach on chemical control of hydrilla.

GENERAL INFORMATION ON HYDRILLA

- 1) What is hydrilla?
 - a) Hydrilla is an aquatic invasive (non-native) plant that can grow quickly and prevent growth of native plant species. It can infest large portions of lakes and rivers, causing a variety of impacts to water quality, natural resources, and recreational use.
- 2) Why should I care?
 - a) Hydrilla grows in water up to 20 to 40 feet deep and forms dense mats that shade out other species.
 - b) The thick mats at the surface interfere with boating and swimming.
 - c) Hydrilla changes local ecology by killing off native plant species, changing the ecology.
 - d) Hydrilla causes changes to water quality, particularly in the fall when the mass of vegetation dies off and decays.
 - e) The dead vegetation can clog drinking water, irrigation and cooling intakes and screens.
 - f) It can reduce sportfish populations due to loss of open water and native vegetation.
 - g) It can harm the local economy by impacting tourism and waterfront property values.
- 3) How does hydrilla spread?
 - a) Hydrilla reproduces in multiple ways from seeds, tubers, turions (buds), and plant fragments.
 - b) Hydrilla fragments can remain viable out of water in moist conditions for up to four days.
 - c) Tubers and turions in sediment can remain dormant for several years and can withstand ice cover and drying.
- 4) What is hydrilla's habitat?
 - a) Hydrilla can grow in a wide variety of still and slow-moving waters, such as freshwater lakes, ponds, rivers, reservoirs and canals.
 - b) It tolerates a wide range of pH, nutrient, salinity and light levels.
 - c) The optimum temperature for growth is 68-81°F (20-27°C). In colder areas, it dies back and relies on buried tubers for next year's growth. In warmer areas, it does not fully die back during the winter.
- 5) How can we stop hydrilla?

- a) Typical ways of controlling aquatic plant growth include physical removal, biological controls, and herbicides.
 - b) Because hydrilla can easily regrow and spread from plant fragments, physical removal is not used due to the risk of making the infestation worse.
 - c) Effective biological controls are currently limited to adding sterile grass carp, which are restricted in New York, and many other states, to waters with no possibility of escape for the fish.
 - d) Herbicides are the predominant method for controlling hydrilla in New York and have been used in the Erie Canal, the Croton River, Cayuga Lake, and Cayuga Inlet.
 - i) The two primary herbicides used to control hydrilla in New York are fluridone and endothall.
 - ii) These two herbicides have been registered for aquatic plant management since 1986 and 1960, respectively, and are approved in all states.
 - iii) Both herbicides are approved in sources of drinking water when following the label restrictions.
 - iv) Other herbicides that can help control hydrilla include bispyribac-sodium, flumioxazin, imazamox, penoxsulam, and topramezone, but may not be approved in all states.
 - e) Controlling hydrilla requires continued treatment for years to truly eliminate the infestation.
- 6) What can I do to prevent the spread of hydrilla?
- a) Inspect and remove plant fragments and mud from boats, trailers, and equipment before and after each use.
 - b) Dispose of all debris in trash cans or above the waterline on dry land, because tubers and turions can be transported in clumps of sediment.
 - c) Clean and dry your equipment thoroughly before visiting other bodies of water and remove any plant fragments from boats, trailers and equipment.
 - d) Do not dispose of unwanted aquarium plants in water, ditches or canals.
 - e) Monitor recently acquired aquatic plants, because hydrilla tubers can be transported in the attached soil/growing material.

SPECIFIC INFORMATION FOR FLURIDONE TREATMENT IN NEW CROTON RESERVOIR

- 1) When did DEP discover hydrilla in New Croton Reservoir?
 - a) Hydrilla was identified in the Reservoir in October 2014.
 - b) The largest infestation is in proximity to a boat launch that is not open to the public.
 - c) DEP installed small barriers around the boat launch in 2015 and 2016 to limit hydrilla's spread, while further study was ongoing.
 - d) Surveys of the reservoir in 2016 and 2017 identified additional locations of hydrilla that range from sparse to dense.
- 2) How could hydrilla impact DEP?
 - a) If left untreated, hydrilla is expected to infest all viable parts of the reservoir (19% to 55% of the surface area) including DEP's upstream reservoirs as well the Croton River and Hudson River downstream. Hydrilla in the Croton System risks its spread into Kensico Reservoir.

- b) The large biomass will change water quality and increase plant debris and decay (called natural organic matter) that can react with disinfectants to form undesired chemicals that are regulated in drinking water.
 - c) Hydrilla biomass can also cause clogging of intakes and treatment processes.
- 3) What herbicide is DEP considering for New Croton Reservoir?
- a) DEP is planning to use fluridone slow-release pellets at locations of hydrilla infestation.
 - b) DEP will apply the herbicide at low doses (approximately 2 to 4 parts per billion[ppb]) for 90 to 120 days during the spring and summer months.
 - c) DEP expects they'll need to treat for up to five years to effectively control hydrilla. Treatment could occur after the first five years, but at lower levels to ensure complete removal.
- 4) What are the risks to drinking water safety from fluridone?
- a) USEPA approves the use of fluridone for application near drinking water intakes at concentrations up to 20 ppb, well above DEP's planned dose of 2 to 4 ppb.
 - b) The New York State Department of Environmental Conservation also approves use of fluridone in New York.
 - c) Based on toxicology studies and a treatment dose of 4 ppb, an adult would have to drink more than 200,000 liters of water before it would cause negative effects, and a child would have to drink over 35,000 liters of water.
 - d) DEP's drinking water intake at New Croton Reservoir is deep and not expected to pull in the herbicide.
 - e) Significant thermal layering (a thermocline) typically develops in the reservoir in the spring and summer and prevents water in the upper 20 to 30 feet of the reservoir from mixing with deeper water. The water intakes are below 30 feet. Fluridone will only be applied in the shallower portions of the reservoir where hydrilla is growing, so it is not expected to reach the intakes.
- 5) What are the effects on fish in the reservoir from fluridone?
- a) While studies show that fish do absorb fluridone, it dissipates over time and does not bioaccumulate.
 - b) Potential impacts to fish from fluridone are not a concern until concentrations reach 500 ppb to over 8,000 ppb (depending on species), which is well above doses for hydrilla control.
- 6) What are the potential impacts to the Reservoir's ecology?
- a) Impacts to plants other than hydrilla are expected to be low, because hydrilla is more sensitive to fluridone treatment than other plant species.
 - b) It is expected that herbicide treatment will result in fewer ecological impacts than potential impacts from a large-scale hydrilla infestation.
- 7) How will fluridone application at New Croton Reservoir affect fluridone application in the Croton River downstream?
- a) DEP will coordinate with New York State Department of Environmental Conservation to ensure fluridone levels remain in the target range for the Croton River.
- 8) Where can I find more information on fluridone?
- a) <http://ccetompkins.org/environment/aquatic-invasives/hydrilla/management-options/herbicides/fluridone/fluridone-faq>

- 9) Where can I find more information on hydrilla in New Croton Reservoir?
 - a) DEP will have a website with information on the herbicide treatment program for New Croton Reservoir.

RECREATIONAL OUTREACH

- 1) Where are the closest hydrilla infestations to New Croton Reservoir and the Croton River?
 - a) Hydrilla is in a small pond in Orange County, NY and the Silvermine River in Norwalk and New Canaan, Connecticut, both which are approximately 20 miles from New Croton Reservoir. Other nearby locations of hydrilla are the Connecticut River in Connecticut and the Delaware and Raritan Canal in New Jersey, both which are approximately 65 miles away.
 - b) Hydrilla is not currently widespread in the northeast, so managing hydrilla in New Croton Reservoir is regionally important to prevent further spread.
- 2) How long does DEP think fluridone treatment will be needed in New Croton Reservoir?
 - a) Intensive treatment is expected to be required for up to five years to provide effective hydrilla control. Decreasing amounts of treatment would be required for an additional five years as the infestation is reduced.
 - b) Control of hydrilla requires sustained management over a period of years to deplete the energy reserves within the tuber bank and ultimately eradicate the infestation.
- 3) What is DEP doing to prevent the spread of hydrilla?
 - a) DEP requires that boats be steam cleaned and stored onsite at the reservoir to prevent further spread of hydrilla.
 - b) DEP will work with contractors and agencies accessing the reservoir to ensure boats on official business do not spread or reintroduce hydrilla to the reservoir.
- 4) How will recreational users be notified during herbicide application?
 - a) DEP will use signs to ensure recreational users of the reservoir are aware of herbicide application.
 - b) DEP will use local newspapers to notify the public about the herbicide application.