# ACT 2006 Year End Report

## Lake Mishnock Preservation Association

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Dear Dan:

The second consecutive year of the Nuisance Aquatic Plant Management Program was completed at Lake Mishnock during the 2006 season. The program continued to focus on lake-wide control of variable watermilfoil (*Myriophylum heterophyllum)* through treatment with Reward herbicide and area-selective thinning of waterlily cover through spot-treatment with Rodeo herbicide. Specific details of the 2006 program and recommendations for 2007 are provided in the following report.

### Chronological Summary of 2006 Management Activities

- Prepared and submitted Pesticide Permit Application with RI DEM..... early February
- Received approved Permit from RI DEM.....March 24th
- Cursory pre-treatment inspection.....May 18th
- Reward herbicide treatment for milfoil control.....May 31st
- Post-treatment survey to identify waterlily treatment areas ..... July 13th
- Rodeo herbicide treatment for waterlily control..... July 31st
- Final post-treatment inspection .....October 19th
- Presentation at Association's fall meeting .....November 9th

### Summary of 2006 Program

A principle objective for the 2006 program was to perform the initial milfoil treatment earlier. Reasons for this were two-fold: 1) milfoil plants are most susceptible when they were just beginning the most active phase of growth, and 2) less plant biomass at the time of treatment should help to limit any loss of water clarity caused by decomposing plants. The permit application was prepared in late January and submitted to DEM in early January. An approved permit for the 2006 season was issued on March 24th.

Marc Bellaud from Aquatic Control performed the early season inspection with Dan Albro and Ken Brown on May 18th. Milfoil was actively growing in both Big and Little Mishnock and the surface water temperature was over 60° F. Water temperatures above 65° F are generally preferred when treated with Reward (active ingredient diquat) herbicide.

Treatment was scheduled for May 31st. Aquatic Control provided LMPA with warning

signs that were posted around the lake several days prior to treatment. The treatment was performed using a 16-foot conventional sprayboat that was used to try and inject the herbicide deeper into the water and to help limit how much sediment was stirred-up in Little Mishnock. Suspended sediment in the water can inactivate diquat herbicide. The treatment proceeded smoothly and without incident.



Marc Bellaud performed a post-treatment survey with Dan Albro and Ken Brown on July 13th to assess the effectiveness of the milfoil treatment and to finalize waterlily spot-treatment areas. The diquat treatment provided a much more complete kill of milfoil in 2006 as compared to the initial treatment in 2005. Milfoil appeared to be almost completely controlled in Big Mishnock. There were some stipped milfoil stalks still upright in the shallow portions of Little Mishnock, but the vast majority of plant material was decomposing on the pond bottom. Despite concerns over reduced water clarity, we recorded Secchi disk clarity readings of 8.25 feet in Little Mishnock and 9.25 feet in Big Mishnock.

The first and only Rodeo (active ingredient glyphosate) herbicide treatment for waterlily control was scheduled and performed on July 31st. Again, pre-treatment notification and posting of the lake shoreline was handled by LMPA. Previously selected areas of waterlily growth were sprayed using a low-pressure handgun pump. A total of approximately 7 acres of scattered waterlily growth were treated. Again, several patches of waterlily growth were intentionally left untreated to serve as fish and wildlife habitat.

The final post-treatment inspection was performed on October 19th. By that time, there was active regrowth of milfoil seen throughout Little Mishnock and in the south cove and southeast cove on Big Mishnock. Most of the regrowth was seen in areas with thick deposits of mucky bottom sediments.

These areas typically harbor the most extensive milfoil root structures. Milfoil plants were generally 2-3 feet tall and had bright green tips, which is indicative of new growth. The waterlily treatment appeared to provide effective control of the targeted beds, while leaving the habitat preservation areas untouched.There also appeared to be significant growth of non-targeted native species, including bladderwort (*Utricularia sp.)*, stonewort (*Nitella sp.)* and pondweeds (*Potamogeton spp.).*

**Recommendations and Expectations for 2007**

Lake Mishnock appeared to respond favorably to the spot-treatments performed in 2006. More complete and longer lasting control of milfoil was achieved following the diquat herbicide treatment that was performed two-weeks earlier than the initial treatment in 2005. Good carryover control of waterlilies was achieved from the 2005 treatments and only one glyphosate treatment was needed in 2006. As anticipated, there was late season milfoil regrowth, which suggests that maintenance treatments will be needed in 2007 to maintain control over this invasive plant.

Some concerns were voiced over the regrowth of milfoil and likelihood that spot-treatments may continue to be needed on an annual basis. On October 19th we arranged to have Shaun Hyde, the Northeast Aquatic Specialist for SePRO Corporation, accompany us on our inspection. SePRO produces Renovate (active ingredient triclopyr) herbicide, which is a systemic-acting product that controls the entire milfoil plant including the root structures. Successful triclopyr treatments typically provide multiple year control of milfoil. Triclopyr has been used for terrestrial weed control for many years and has been evaluated for aquatic weed control for more than a decade, but it did not receive a full aquatic label from

EPA until 2005. We had previously discussed this product with LMPA, but had not previously recommended it for Mishnock because the liquid formulation was prohibitively expensive (>$1000 per acre for chemical alone) and there was limited treatment experience on variable watermilfoil. Over the past two years, testing performed by the US Army Corps of Engineers and the manufacturer suggest that triclopyr will be effective on variable watermilfoil. In November 2006, a solid formulation of triclopyr (Renovate OTF – On Target Flakes) received an aquatic label from EPA. The flake formulation allows the herbicide to be concentrated in the lower 4 feet of the water column and makes the product much more cost-effect for deeper water treatments. Again the primary advantage of triclopyr is that it should provide multiple-year control of milfoil. It should also be more selective, leaving many of the native species untouched.

Triclopyr targets dicot or broadleaf species, which include milfoil and waterlilies.



We believe that it would be worthwhile for LMPA to consider switching to Renovate OTF for the 2007 treatment season. At the November 9th LMPA meeting we presented the following recommended treatment program for 2007:

**Recommended 2007 Treatment**

**•Little Mishnock – entire area**

**•One or two plots in Big Mishnock to evaluate smaller**

**treatment areas**

**• Cost Range: $7400 - $7950**

This treatment program would target all of the milfoil growth in Little Mishnock and the areas with the most abundant milfoil growth in Big Mishnock. Treating smaller blocks in Big Mishnock will enable us to evaluate the efficacy of Renovate OTF when used on smaller treatment areas, which will be more representative of the spot-treatment work that will be required at Mishnock in subsequent years. The cost to treat these areas with Renovate OTF in 2007 will be $7400-$7950, depending on the final amount of acreage being treated.

The waterlily growth should be significantly thinned-out in Little Mishnock by the Renovate OTF treatment, and the treatment costs quoted above assume that there will be no follow-up waterlily treatment performed. Treatment would likely be scheduled and performed in mid May. We would not need to waitfor the water temperatures to reach 65° F when treating with Renovate. Similar to past treatments, we would recommend closing the lake to all uses (swimming, boating, fishing) on the day of treatment. Lake water should also not be used for irrigation until the concentration drops below 1 ppb, which will likely take 3-4 weeks.

If LMPA decides not to switch to Renovate OTF in 2007, then we would recommend continuing with the diquat and glyphosate spot-treatment program and would expect the program to be similar to what was performed in 2006. The total program cost would be $6592.50 as listed in our current three-year contract.

We trust that this information will assist LMPA with planning ongoing nuisance aquatic vegetation management efforts at Lake Mishnock. We are currently assembling the hydro-raking permit application for your review and subsequent submittal to DEM. We expect to have this out to you shortly after thefirst of the year.

The management efforts performed at Lake Mishnock over the past two years have made some positive headway in improving conditions at the lake. We have enjoyed working with LMPA on this project and look forward to continuing our working relationship in the coming years. Please do not hesitate to contact us if you have any questions or would like to discuss 2007 recommendations in greater detail.

Sincerely,

**AQUATIC CONTROL TECHNOLOGY, INC.**

Marc Bellaud Gerald N. Smith

Senior Biologist President/Aquatic Biologist

Renovate is a selective broadleaf herbicide that can be used to control a variety ofnuisance and invasive aquatic plant species such as Eurasian Watermilfoil and PurpleLoosestrife. While controlling unwanted exotics, Renovate allows many nativemonocots, and less susceptible dicots, to thrive following treatment. Therefore, Renovate can be used selectively to restore wetlands and for aquatic ecosystem management. The active ingredient, triclopyr, rapidly enters through a plant's leaves and stems, then translocates down into the roots, disrupting the plant's metabolism.

Renovate may be applied to a variety of aquatic sites including ponds, lakes, reservoirs, marshes, wetlands and non-irrigation ditches or canals, which have little to no continuous flow. Renovate carries no restrictions on recreational use such as swimming and fishing, or on livestock consumption of water from the treatment area.

**Feature:**

Renovate's unique chemistry selectively controls invasive species such as Eurasian Watermilfoil, Purple Loosestrife, Water Hyacinth and Alligator Weed.

**Feature:**

Renovate is effective on submersed, emersed and floating aquatic plants and wetland species.

**Feature:**

Renovate's mode of action is systemic in nature.

**Feature:**

A commercial immunoassay is available for Renovate.

**Advantage:**

Selective, targeted control of undesirable species without impacting many of the desired native aquatic plants and grasses.

**Advantage:**

With Renovate, one aquatic herbicide tool can replace the need for multiple products.

**Advantage:**

Renovate provides complete control of the targeted plants, both above and below the soil surface—"roots and all"—not just a temporary burn down.

**Advantage:**

Aquatic applicators can quickly inform customers when they may return to normal usage of their valuable water supply. (Human consumption and irrigation).

**Benefit:** Allows you to protect desirable plant species and native vegetation while selectively removing the targeted invasive species, making for a more rapid return to a natural state for the aquatic ecosystem.

**Benefit:** The Renovate immunoassay will provide a higher level of confidence for state regulators concerned with environmental stewardship—translating into more regulatory approvals and more potential for use in a variety of different situations.

**Benefit:** This flexibility of Renovate will allow applicators to control undesirable vegetation in a wider variety of situations with just one product—above and below the water surface, and all around the shoreline.

**Benefit:** Renovate provides "complete" control of the nuisance and exotic plants delivering longer lasting results.

# Renovate®

## Aquatic Herbicide



**SePRO Corporation** 11550 North Meridian Street, Suite 600, Carmel, IN 46032 **www.sepro.com**

# Features, Advantages & Benefits

**April 2004**

# Health Questions and Answers

## On use of triclopyr to treat Eurasian watermilfoil

### What is triclopyr?

Triclopyr *(pronounced tri–clo–peer)* is an herbicide that can control infestations of *Eurasian*

*watermilfoil* and other invasive water plants. *E. watermilfoil* is more sensitive to triclopyr than many native pond weed species including coontail, rushes and cattails. Triclopyr can therefore be used at low concentrations to remove *E. watermilfoil* without killing many native plants. One triclopyr product is currently marketed for aquatic weeds under two names: Garlon 3A and Renovate 3. Both products contain mostly triclopyr and water. Other ingredients include ethanol, 3% triethylamine, and 2.3% ethylenediaminetetraacetic acid (EDTA). The whole product, including these other ingredients, is diluted more than 100,000-fold during an application for *E. watermilfoil*.

### How toxic is triclopyr?

Only dilute amounts of triclopyr are needed to kill *E. watermilfoil*. These dilute concentrations have not been shown to cause skin irritation or other health effects. Triclopyr is not well absorbed through skin. If ingested, research has shown that low doses of triclopyr are rapidly excreted in humans and are unlikely to accumulate in human tissue or cause adverse effects.

Concentrated triclopyr products are corrosive and can cause skin irritation and irreversible eye damage. Pesticide applicators must take care to protect their eyes and skin during the application.

In natural waters, the initial breakdown products of triclopyr are TCP and TMP.1 Tests in laboratory animals on both these metabolites have shown that their toxicity to mammals is less than or equal to triclopyr. These metabolites are relatively short-lived in the environment.

Complete breakdown of triclopyr results in carbon dioxide, oxamic acid, and other low molecular weight carboxylic acids. Triclopyr is not considered by the EPA to be a cause of cancer, birth defects, or genetic mutations. Nor is it considered likely to cause systemic, reproductive, or developmental effects in mammals at or near concentrations encountered during normal human use.

1 TCP is 3,5,6-trichloro-2-pyridinol. TMP is 3,5,6-trichloro-2-methoxypyridine

Washington State Department of Health considers it prudent public health advice to minimize exposure to pesticides regardless of their known toxicity.

## How long will the herbicide last in the lake water?

In natural water, sunlight and microorganisms rapidly degrade triclopyr.Triclopyr concentrations decline sharply over the first several days after treatment. Residuesshould be more than 95% degraded and dissipated from treated water in 1-2 weeks following treatment with triclopyr.

## If Capitol Lake is treated with triclopyr, will I be exposed to this herbicide?

Residues of triclopyr and its metabolites should not be detectable in lake water more than a couple weeks past the application. Capitol Lake is not commonly used for swimming or other water play. If you do wade or swim in the lake, touch pets that have been in the lake, or eat fish from treated water shortly after the treatment, you may be exposed to dilute concentrations of triclopyr and its metabolites.There is little chance of inhalation exposure to bystanders. This is because liquid triclopyr herbicide is injected directly into the water column. The application method eliminates opportunity for drift of sprays onto bystanders or nearby residents during the application. Triclopyr has a low vapor pressure and is quite water-soluble so it will not volatilize from treated water and drift through air following the application.

## Is it safe to swim or play in the water following the herbicide application?

There are no swimming restrictions on the Garlon 3A or Renovate 3 labels following applications of triclopyr to water. This means that the federal Environmental Protection Agency

(EPA) considers the treated water safe for swimming.

Washington State Department of Ecology recently contracted for an independent scientific assessment of triclopyr safety including this question of a swimmer's exposure. The worst-case scenario considered a 6 year-old who swims for 3 hours and inadvertently swallows 150 ml of water from the treated water immediately following an milfoil application with triclopyr. The estimated amount the child would absorb in this scenario was still more than 100 times less than the daily dose animals were fed over their lifetime with no observable adverse effects. Washington State Department of Health (DOH) has reviewed the data and agrees that skin contact with treated water at the dilute treatment concentration is unlikely to result in any adverse health effect in people. Triclopyr products are concentrated when initially injected into water during an application so, as a precaution, DOH advises people to avoid contact with water in treated areas for twelve hours following an application to allow the herbicide concentrate to disperse and reach the dilute treatment concentration.

## Are fish from the treated area safe to eat?

One breakdown product of triclopyr, called TMP, can temporarily accumulate in fish andshellfish immediately following a triclopyr application. The EPA did not consider theconcentration of this metabolite to be of health concern and requires no fishing restrictions. Washington State Department of Ecology recently contracted for an independent scientific assessment of triclopyr safety including this question of eating fish from treated waters. Scenarios for children and adults consuming fish every day from treated water resulted in estimated exposures that were more than 1000 times less than the daily doses animals were fed over their lifetime with no observable adverse effects.

## Has Triclopyr been tested for special sensitivity to children?

The EPA is required to assess each pesticide for its potential to cause toxicity specifically to infants and young children. This is because children's bodies are still developing and they may be more susceptible to the action of a toxicant. EPA conducted this assessment using animal tests and concluded "Reliable pre-and post-natal data

indicate no special sensitivity of young animals to triclopyr residues."

**FOR MORE INFORMATION CONTACT:**

Washington State Department of Health

Office of Environmental Health and Safety - Pesticide Program

(360) 236-3360

National Pesticide Information Center

1-800-858-7378

This hotline provides pesticide information to the public and health care providers. Funding comes from state university cooperative extension and from the Environmental Protection Agency.

Risk Assessments of triclopyr that are available online:

http://www.epa.gov/oppsrrd1/REDs/factsheets/2710fact.pdf (fact sheet on triclopyr by EPA)

http://www.epa.gov/oppsrrd1/REDs/2710red.pdf (detail risk assessment of triclopyr by EPA)

http://www.ecy.wa.gov/pubs/0410018.pdf (Environmental Impact Statement for use of

triclopyr on aquatic weeds, prepared by WA Dept of Ecology)