

October 13, 2009

Mr. David J. Rousseau, Director
NH Division of Pesticide Control
PO Box 2042
Concord, NH 03302-2042



Re: 2009 Fanwort and Milfoil Treatment at Otternic Pond in Hudson, NH – SP-078

Dear Mr. Rousseau:

In accordance with NH Pesticide Rules 603.03, Aquatic Control Technology, Inc. is submitting a written year-end report for the herbicide treatment program performed at Otternic Pond in Hudson. This treatment was conducted in accordance with the conditions of Special Permit #SP-078 issued by the Division of Pesticide Control.

Treatment Summary

Otternic Pond was treated with Sonar (active ingredient fluridone) herbicide for control of fanwort (*Cabomba caroliniana*) and variable watermilfoil (*Myriophyllum heterophyllum*). Sonar effectively controls both species at low concentrations (<20 ppb) provided that herbicide contact-time with the targeted plants is maintained for 60-90 days. Two formulations of Sonar herbicide [SonarOne (pellet) - EPA Reg. No. 67690-45 and Sonar AS (liquid) - EPA Reg. No. 67690-4] were applied on three separate occasions. A complete summary of the treatment program is provided below:

Herbicide Applications:

Date	Product Applied	Estimated Concentration (ppb) applied	Comments
6/1/09	SonarOne – 400 lbs.	35 ppb	<ul style="list-style-type: none">Water level estimated to be 1-foot above normal/full poolFanwort and milfoil plants had 3-4 feet of new growth at the time of the initial treatment
6/22/09	SonarOne – 400 lbs.	35 ppb	<ul style="list-style-type: none">Considerable rainfall and outflow occurred between 1st and 2nd treatmentsSmall amount of chlorosis (whitening) noticeable on fanwort and white waterlily
7/20/09	SonarOne – 220 lbs Sonar AS – 5.75 qts.	20 ppb (Sonar One) 10 ppb (Sonar AS)	<ul style="list-style-type: none">Considerable chlorosis evident on fanwort and milfoil, but plants remain upright in the water columnWaterlilies showing signs of chlorosis, but plants were still viablePondweeds and all emergent species (pickerelweed, rushes, cattails, woody shrubs, etc) seen in adjacent wetlands were not showing any signs of chlorosis
TOTALS	SonarOne – 1020 lbs Sonar AS – 5.75 qts.	100 ppb	<ul style="list-style-type: none">Totals for all three applications

Herbicide applications were conducted by Aquatic Control using an airboat. The Sonar One pellet formulation was applied using a calibrated spreader mounted on the bow of the airboat. The Sonar AS liquid formulation (only used during the July 20th application) was diluted with pond water and injected subsurface through weighted hoses using a calibrated pumping system. The pond was divided into several treatment sectors and the amount of herbicide needed for each sector was applied accordingly. The treatment areas were preloaded into a GPS unit that was used for real-time navigation during each treatment to insure that the herbicide was applied accurately. No significant adverse impacts to non-targeted plants or other aquatic organisms were observed following each application

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Non-target, native species appeared to survive the treatment program quite well. There was some noticeable impact on white waterlily and watershield, but these species typically rebound within one year of treatment. Floating-leaf pondweed, bladderwort and stonewort were all observed in low densities post-treatment. No impact was noted on emergent species located around the pond edges and in the adjacent wetlands. Notable species observed included cattails, pickerelweed, water smartweed and several rushes and sedges.

FasTEST Results:

(required sampling 7 and 14 days after each application)

Date	Concentration	Note
6/8/09	5.3 ppb	1-week after 1 st application – surface grab
6/15/09	6.1 ppb	2-weeks after 1 st application – surface grab
6/29/09	21.8 ppb	1-week after 2 nd application – surface grab
7/6/09	5.3 ppb	2-weeks after 2 nd application – surface grab
7/27/09	14.6 ppb	1-week after 3 rd application – surface grab
8/3/09	9.8 ppb	2-weeks after 3 rd application – surface grab

(additional sampling performed by Aquatic Control)

8/10/09	6.8 ppb	3-weeks after 3 rd application – northeast surface grab
8/10/09	6.5 ppb	3-weeks after 3 rd application – northwest surface grab
9/14/09	7.5 ppb	8-weeks after 3 rd application – northeast samples taken 1 foot off of bottom
9/14/09	11.4 ppb	8-weeks after 3 rd application – northwest samples taken 1 foot off of bottom

Results/Discussion

The targeted fanwort and milfoil plants have been slow to respond to the Sonar treatment program in Otternic Pond. Only limited chlorosis (bleaching or whitening associated with fluridone) was noticeable following the initial application. Symptoms were more evident following the second and third applications, but the plants continued to grow during the months of June and July. When the final application was performed on July 20th, plants were 4-5 feet tall and many of the fanwort plants around the perimeter of the pond were flowering, even though they were chlorotic at the tips. The in-pond fluridone concentrations being recorded by the FasTEST analysis were favorably high for what is typically seen following Sonar pellet applications. These are time-release pellets and often times less than 25% of what is applied is detected in the water column. Concentrations did fluctuate, but surprisingly high readings were detected following the second and third application.

Conditions observed during our August 10th inspection did not reveal significant die-back of fanwort since the third application on July 20th. Strong chlorosis was evident in the top 2-12 inches of the plants. The remaining tissue was green, but it was a dark green color and not the typical vibrant green seen in healthy fanwort. Aquatic Control collected additional samples for FasTEST analysis of fluridone residues from the northeast and northwest portions of the pond where the most abundant fanwort growth was observed. The results still suggested that lethal fluridone concentrations remained in contact with the targeted plants. No viable milfoil growth was observed during this inspection.

After discussing the condition of the remaining plants with DES and the Association, Aquatic Control consulted with SePRO (manufacturer of Sonar). They recommended additional FasTEST samples be collected from the bottom 1 foot of the water column to determine if fluridone is still being released from the pellets. The results were higher than what was detected from a surface grab performed 5 weeks earlier. A final year-end survey was performed on October 8th. By that time, we noted that more of the chlorotic fanwort had dropped out of the water column in some parts of the pond. The majority of remaining fanwort had chlorotic tips and the remaining stalks were dark green to brown, but the majority of plants around the perimeter were still standing. We are optimistic that the targeted fanwort plants did receive a lethal dose of fluridone, but are simply dying back slowly. After further consultation with SePRO and forwarding them pictures taken by DES, they agree that the plants do not appear to be actively photosynthesizing. Usually bright green shoots are evident on the plants if they are attempting to recover. No healthy new shoots were observed. There is also still fluridone in the pond that should suppress any recovery during the fall or early spring months.

Fanwort is typically controlled for two or three years following successful Sonar treatments. Variable watermilfoil control is less predictable, but based on the absence of milfoil late this summer we do not expect it will regrow to nuisance densities in 2010. Again, we are optimistic that fanwort will not recover during the spring of 2010 and that nuisance level control will be achieved for 2-3 years. However, we will continue to discuss the results of the treatment with the Town, the Association and DES and try to determine if there should be a back-up plan in place for the 2010 season. Provided that the fanwort is effectively controlled, the pond should continue to be monitored to determine if non-chemical strategies, particularly hand-pulling could be utilized in future years to further extend the duration of control over these two nuisance species.

Please feel free to contact our office if you have any questions or require additional information.

Sincerely,

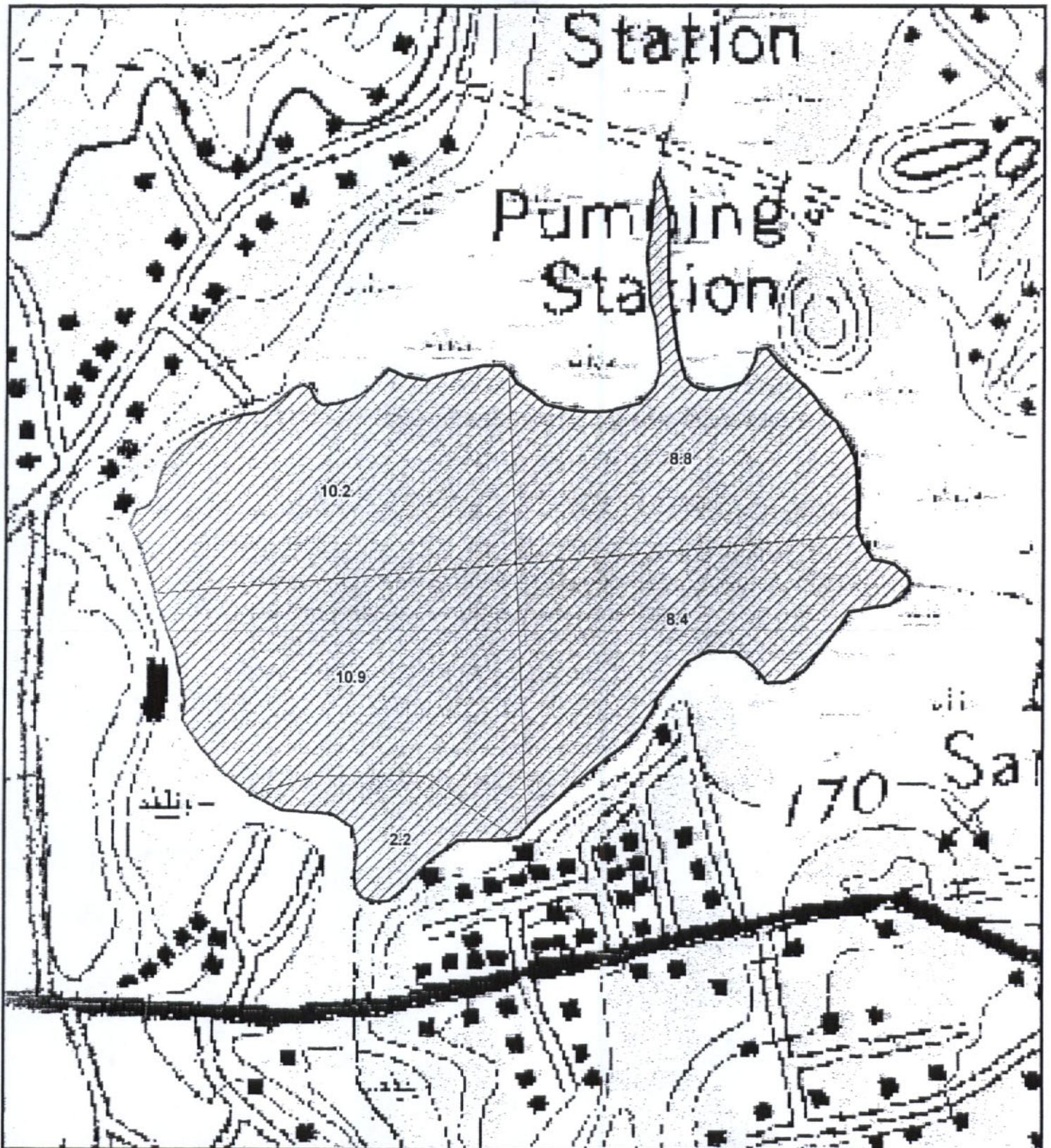
AQUATIC CONTROL TECHNOLOGY, INC.



Marc Bellaud
Senior Biologist

Enclosures: 2009 Treatment Sector Map
FasTEST laboratory reports

cc: Benjamin J. Nadeau, Chairman, Hudson Board of Selectmen
Karen Mercer, Otternic Pond Association
Robert Estabrook, NH DES Water Division
Amy Smagula, NH DES Water Division



Otternic Pond
Hudson, NH

2009 Treatment Map

FIGURE:	SURVEY DATE:	MAP DATE:
2	2008	1/15/09

Legend:

* Actual treatment areas/
sectors as shown

0 260 520 1,040 Feet

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