

Round Trade Lakes 2018 Chemical Treatment of Curly-leaf Pondweed and Eurasian Watermilfoil

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Planning for chemical management of curly-leaf pondweed (CLP) and Eurasian watermilfoil (EWM) in the Trade Lakes (Long Trade, Round, Little Trade, & Big Trade) began in late 2017 and continued through early 2018. Management planning was completed using funds from an existing Wisconsin DNR grant, but implementation in 2018 was dependent on receiving additional grant funding. Three Aquatic Invasive Species Control grants were applied for in February 2018: one each for Long Trade Lake, Round Lake, and a combined grant application for Big and Little Trade Lakes. This grant funding was awarded to the tune of about \$156,000.00 over three years. Along with this award about \$52,000.00 worth of donated services, volunteer time, and cash are required as sponsor match over the same three years.

One of the largest expenses associated with the new grants was chemical management of CLP and EWM in the system. Proposal for chemically treating 6.8 acres of CLP and EWM in Long Trade Lake; 8.86 acres of EWM in Round Lake; 7.42 acres of CLP and 4.11 acres of EWM in Little Trade Lake; and 13.28 acres of EWM in Big Trade Lake were made. These treatment proposals were accepted by the WDNR and were implemented on May 29 & 30, 2018 by Northern Aquatic Services out of Dresser, WI.

Four different herbicides were used in chemically treating the lakes: Aquathol K, Shredder Amine 4, and Tribune area liquid formulations of endothal, 2,4-D, and diquat respectively. Sculpin G is a granular form of 2,4-D and was only used on Big Trade Lake.

One requirement of the chemical treatments was to collect herbicide concentration data in the four lakes to determine how long the herbicide stayed in the lakes and what concentration the herbicide reached in each lake. The following four figures show the results of that testing.

Figure 1 reflects the concentrations reached at the outlet of Long Trade Lake. Two different herbicides were applied to Long Trade Lake: 1) Aquathol K- at a concentration of 2000 parts per billion (ppb), and 2) Shredder Amine 4 at a concentration of 3000 ppb. The last time herbicide was applied to Long Trade Lake at this level was in 2013 and at the time no concentration testing was done at the mill pond dam. This was done in 2018. It took nearly 9 hours for the herbicide applied in the lake to reach the dam, and once at the dam never exceeded a concentration of 45 ppb, way less than when it was applied indicating rapid dissolution and breakdown of the chemicals in the lake. After 48 hours, the herbicide concentration in the Mill Pond starting going down.

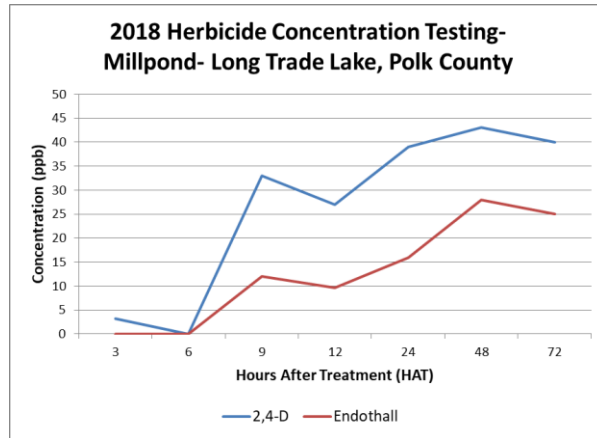


Figure 1 – Herbicide Concentrations at the Mill Pond Dam on Long Trade Lake

Figure 2 reflects the results of herbicide concentration testing in Round Lake. It was expected that the herbicide applied to Round Lake would rapidly dissipate in the entire lake and then leave via the outlet. Only Shredder Amine 4 was applied in Round Lake at a concentration of 4000 ppb. It was expected that the whole-lake concentration would reach about 47 ppb. Herbicide concentration testing was completed at four different sites in the lake, some within the treated areas and some outside the treated areas. The highest concentration reached was about 450 ppb in the SE bay of Round Lake near the Resort. After 3 hours herbicide concentrations started going down, and by 48 hours after treatment were back to the expected lakewide concentration, and was showing signs of declining further.

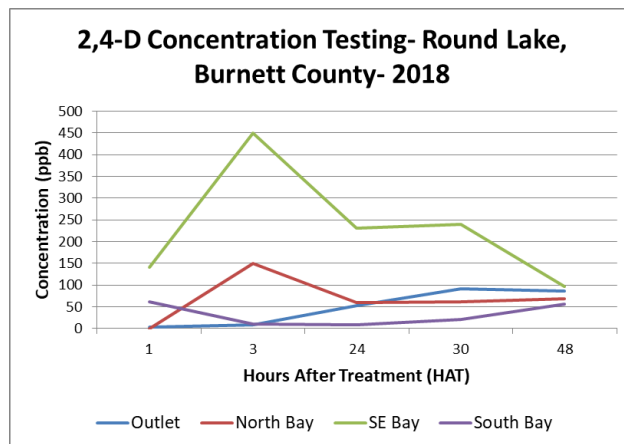


Figure 2 – Herbicide Concentrations at four sites in Round Lake

Figure 3 reflects the results of herbicide concentration testing in Little Trade Lake. Both CLP and EWM were treated so, like Long Trade Lake both Aquathol K (2000 ppb) and Shredder Amine 4 (3000 ppb) herbicide were applied. In addition to these herbicides, Tribune was used. As with the other lakes, it was expected that the herbicides applied would dissipate quickly from the areas they were applied. Four sites were monitored for herbicide concentrations in Little Trade Lake. The highest concentrations reached in Little Trade Lake were 600 ppb for Shredder Amine 4 and about 280 ppb for Aquathol K at one hour after treatment within or immediately adjacent to treated areas. Outside the treated areas

almost no herbicide was detected. After one hour, herbicide concentrations were already going down, but then leveled out around 300 ppb for Shredder and 150 ppb for Aquathol K. Concentration was not completed past 24 hours after treatment, but had it been, it would likely have showed continued decline in the concentration of herbicide in the water. Concentration testing was not done for Tribune.

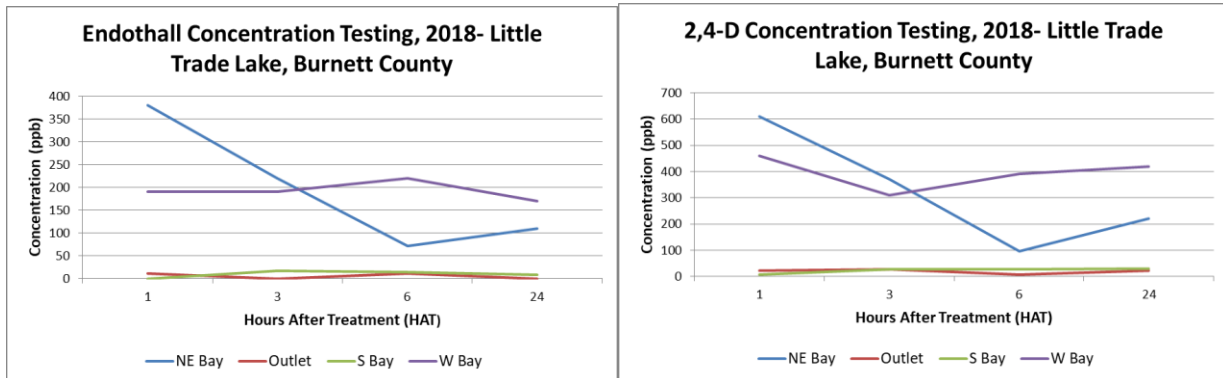


Figure 3 – Herbicide Concentrations at four sites in Little Trade Lake

Figure 4 reflects the results of herbicide concentration testing on Big Trade Lake. Only EWM was chemically treated, however there were multiple smaller areas and several larger areas included in the treatment proposal. In the small areas, Sculpin G, a granular form of the same herbicide in Shredder Amine 4, was used at 4000 ppb. Shredder Amine 4 at 4000 ppb was used in larger treatment areas. Concentration testing was completed at six sites within the lake again with some in and some out of the treated areas. One of the interesting things about concentration testing in Big Trade Lake was the fact in a couple of areas water samples were collected almost immediately following herbicide application. Generally the first round of samples is collected at 1 hour after application; however in this case, at two sites (both the small rock islands in the middle of the lake (east Island and west Island)) sampling was done within 15-20 minutes of herbicide application. The number reflected in Figure 4 shows these concentrations indicating herbicide concentration levels the reached or exceeded the 4000 ppb it was applied at. But as expected, the herbicide dissipated rapidly and by 20 hours after treatment, concentrations were very low.

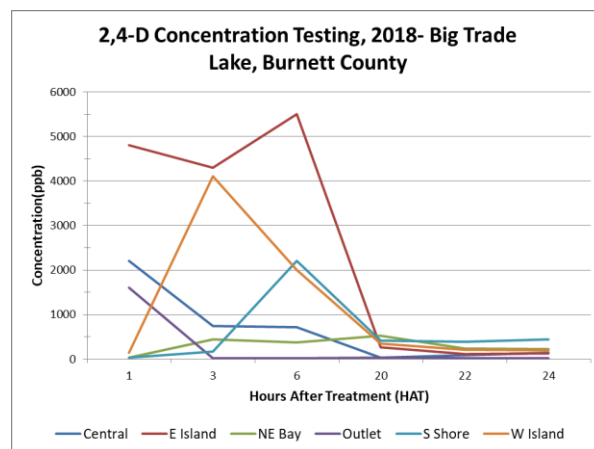


Figure 4 – Herbicide Concentrations at six sites in Big Trade Lake

While it was expected that the concentration of the herbicides applied would dissipate rapidly in all of the lakes, the question always remain as to whether or not the concentrations of herbicide reached and maintained over a period time were sufficient to do what it was supposed to – kill CLP and/or EWM. Based on aquatic plant survey results completed in early July, the answer to that question was yes. Chemical treatments on all four lakes worked better than they have in previous years. Only a few individual EWM plants were found in Long Trade Lake in early July. EWM in Round Lake and in Little and Big Trade was almost non-existent during the post-treatment survey. This could be due to a number of factors including weather conditions and the type of herbicide used. Shredder Amine and Sculpin G have not been used in the Trade Lakes in the past. DMA 4 and Navigate were used with the same active ingredients as Shredder Amine 4 and Sculpin G, but the formulations are slightly different.

The bad news is that it appears a lot of northern watermilfoil, a native aquatic plant, was also taken out. In addition, according to local accounts on the lakes, water quality in the four lakes also appears to be down this summer. This may or may not be related to the CLP and EWM treatments, but it certainly cannot be ruled out.

Bed-mapping of EWM will again be done this fall to see if the results of this year's treatments will likely have lasting results into next year. If it does, then a much smaller chemical treatment plan may be completed in 2019 with more focus put on physical removal of EWM in all four of the lakes.

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