

**Draft: Big Lake, Polk County,  
Endothall Concentration Monitoring Summary, 2013**

**11 October 2013**

**John Skogerboe**

Big Lake has an area of 245 acres, and a maximum depth of 24 ft. On 21 May 2013, 15 sites totaling 20.58 acres (Figure 1) were treated with a liquid formulation of endothall (Aquathol K) to control curly-leaf pondweed (*Potamogeton crispus*).

The endothall was applied at a target concentration of 2500 ug/L (2.5 mg/L) active ingredient (ai) to areas less than 5 acres and at a target concentration of 1500 ug/L ai (1.5 mg/L ai) for areas greater than 5 acres. Endothall application rates are specified as active ingredient (ai) in the product label, while endothall chemical analysis is specified as acid equivalent (ae). A concentration of 2500 ug/L ai is equal to 1774 ug/L ae, and a concentration of 1500 ug/L ai is equal to 1065 ug/L ae. Water sample sites were established in 3 treatment areas to monitor endothall concentrations (Figure 2). Treatment area B-1 was 5.88 acres and treatment area B-2 was 1.95 acres. Two sample sites (B15-1 and B15-2) were located in treatment area B-15 which was 5.95 acres.

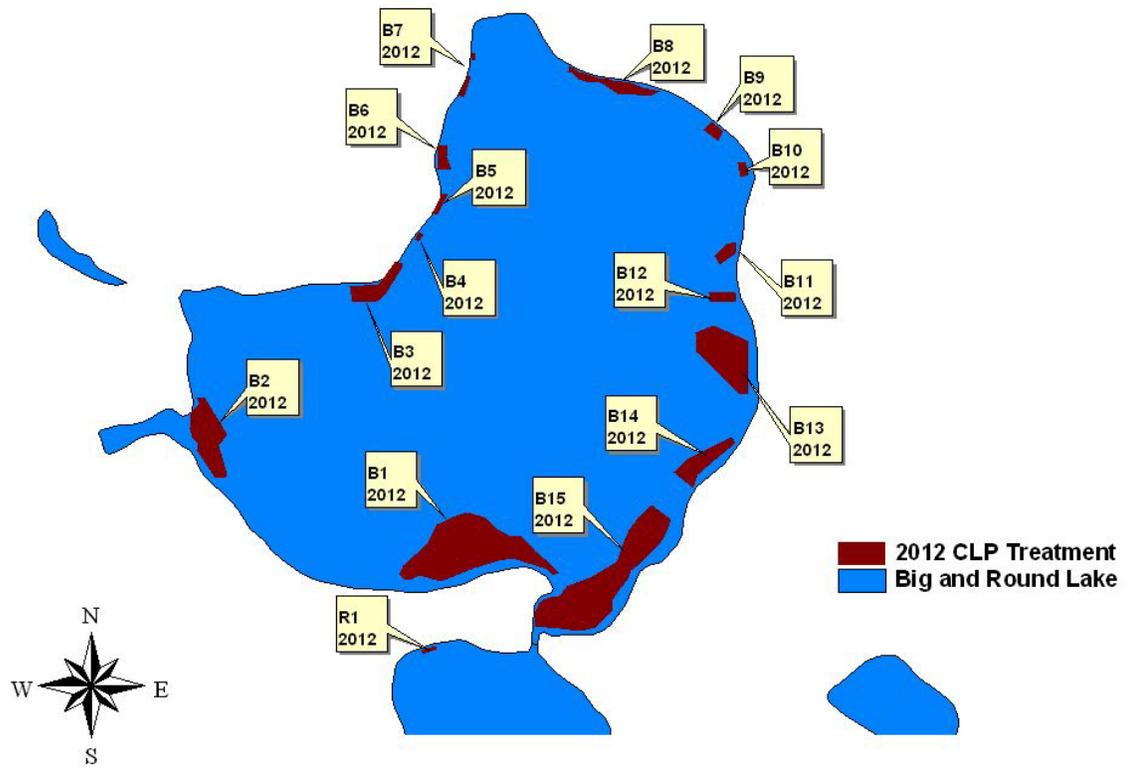
Water samples were collected using an integrated water sampler which collects a water sample throughout the water column. Water samples were collected at intervals of approximately 1, 2, 4, 6, 8, and 24 hours after treatment (HAT). Samples were taken to shore after completion of each sample interval, and 3 drops of muriatic acid were added to each sample bottle to fix the herbicide and prevent degradation of the endothall. Samples were then stored in a refrigerator, until shipped to the US Army Engineer Research and Development Center (ERDC) laboratory in Gainesville, FL for analysis.

Endothall concentrations at sample sites B-1 and B-2 were less than the detection limits at 1 HAT indicating very rapid dissipation from the target site (Figure 3). Concentrations of endothall at site B-2 did increase at 4 to 8 HAT, and was likely the result of herbicide dissipation from other sites or herbicide being circulated in the area.

The endothall concentration at sample site B15-1 was 1039 ug/L ae at 1 HAT compared to the target concentration of 1065 ug/L ae. The endothall concentration at B15-1 was less than the detection limit at 4 HAT, increased to 754 ug/L ae at 6 HAT, and declined to below the detection limit by 8 HAT. The endothall concentration at sample site B15-2 was 119 ug/L ae at 1 HAT again indicating rapid dissipation, and then oscillated to a peak concentration of 697 ug/L ae at 8 HAT.

Endothall concentration data collected from Big Lake indicate that herbicide is dissipated from target areas rapidly and that herbicides may be moving through out the lake. Exposure times from the initial herbicide applications are mostly short 1 to 4 hrs, however movement of herbicides may provide additional exposure of endothall.

**Figure 1. Big Lake Endothall Treatment Areas 2013**



**Figure 2. Big Lake Endothall Sample Locations  
2013**

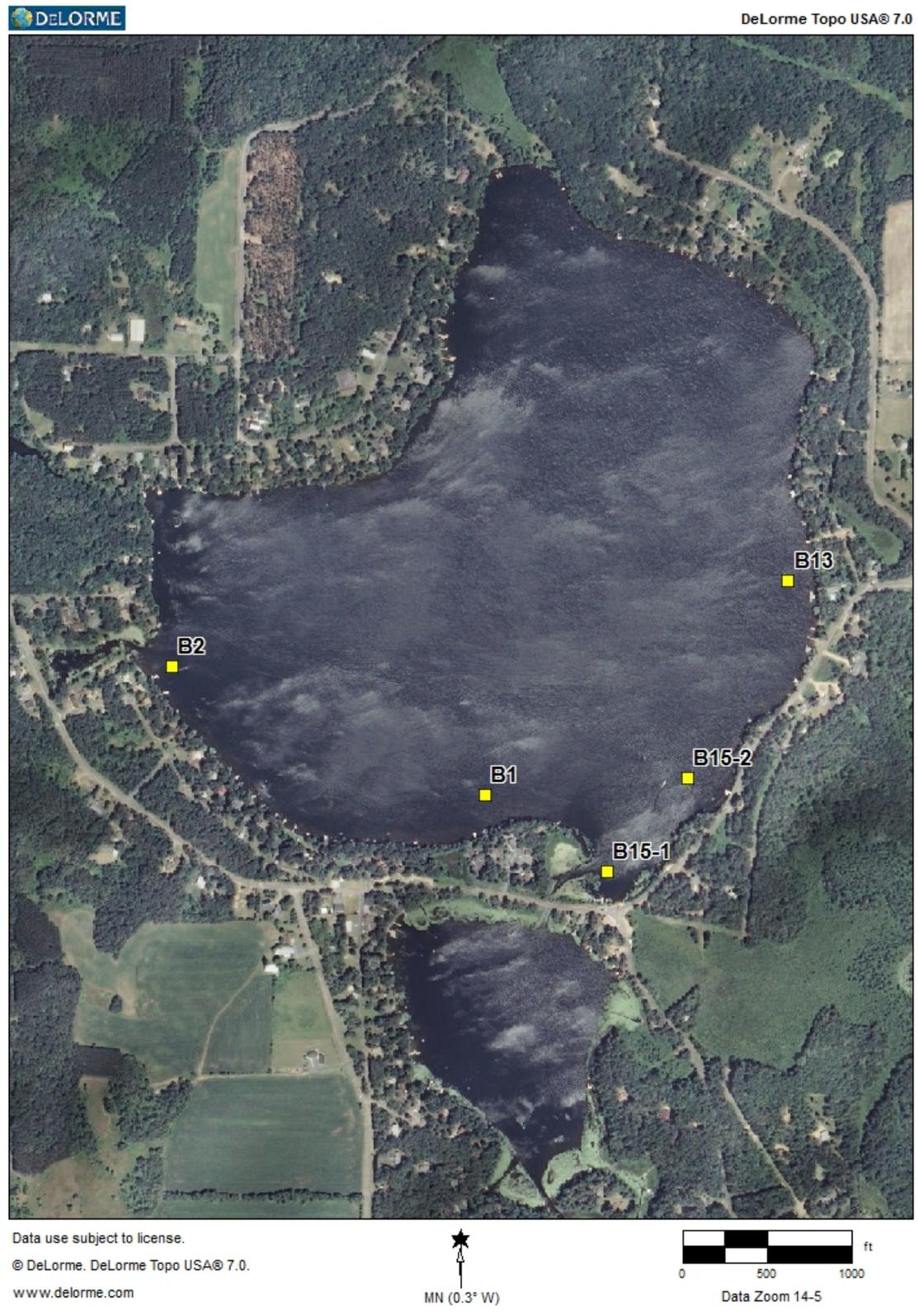


Figure 3

