

## CSLAP 2011 Lake Water Quality Summary: Madison Lake

### General Lake Information

|                              |  |
|------------------------------|--|
| <b>Location</b>              | Town of Madison  |
| <b>County</b>                | Madison  |
| <b>Basin</b>                 | Mohawk River   |
| <b>Size</b>                  | 13 hectares (32.1 acres)   |
| <b>Lake Origins</b>          | Natural  |
| <b>Watershed Area</b>        | 580 hectares (1,431 acres)   |
| <b>Retention Time</b>        | 0.5 years  |
| <b>Mean Depth</b>            | 7.1 meters   |
| <b>Sounding Depth</b>        | 23.3 meters  |
| <b>Public Access?</b>        | private  |
| <b>Major Tributaries</b>     | no named tribs   |
| <b>Lake Tributary To...</b>  | no named outlet  |
| <b>WQ Classification</b>     | C (non-contact recreation = boating, angling)  |
| <b>Lake Outlet Latitude</b>  | 42.899   |
| <b>Lake Outlet Longitude</b> | -75.527  |
| <b>Sampling Years</b>        | 1988-1993, 1998, 2004-2011   |
| <b>2011 Samplers</b>         | Ron Buell, Mark Tornatore, Tim Gacioch, Carolyn Anderson-Katz, Karen Waterman, and Amy Perry |
| <b>Main Contact</b>          | Mark Tornatore   |

### Lake Map



## **Background**

Madison Lake is a 32 acre, class C lake found in the Town of Madison in Madison County, in central New York State. It has been sampled as part of CSLAP off and on since 1989.

It is one of 12 CSLAP lakes among the greater than 20 lakes found in Madison County, and one of 28 CSLAP lakes among the greater than 290 lakes and ponds in the Mohawk River drainage basin.

## **Lake Uses**

Madison Lake is a Class C lake; this means that the best intended use for the lake is for non-contact recreation—boating and fishing, aquatic life, and aesthetics. The lake is used by lake residents and invited guests for non-powered boating and swimming, through residential shoreline access to the lake and a common launch area. There is no public access to the lake.

It is not known if Madison Lake has been stocked through public or private stocking efforts.

General statewide fishing regulations are applicable in Madison Lake. In addition, the open season for trout is April 1<sup>st</sup> thru October 15<sup>th</sup>, there is no minimum size limit, but a daily take limit of five, with no more than two greater than 12 inches, and five brook trout less than eight inches.

There are no lake-specific fish consumption advisories on Madison Lake.

## **Historical Water Quality Data**

CSLAP sampling was conducted on Madison Lake from 1988 to 1993, 1998, and 2004 to 2011. The CSLAP reports for each of the past several years can be found on the NYSFOLA website at <http://nysfola.mylaketown.com>. The 2009 and 2010 CSLAP reports for Madison Lake can also be found on the NYSDEC web page at <http://www.dec.ny.gov/lands/77861.html>.

Madison Lake has not been sampled as part of any previous state monitoring programs. It is not known by the report authors if the lake has been sampled as part of any local resource management efforts (such as fish stocking).

None of the Madison Lake tributaries are named or have been monitored through the NYSDEC Rotating Intensive Basins (RIBS) program. No sites have been sampled through the state stream macroinvertebrate monitoring program, or are included in the state fisheries (water quality) database.

## **Lake Association and Management History**

Madison Lake is served by the Madison Lake Association. It is not known to what extent the lake association is involved in lake management and social activities, or if the lake association maintains a web site.

## **Summary of 2011 CSLAP Sampling Results**

### **Evaluation of 2011 Annual and Monthly Results Relative to 2006-2010**

The Lake Condition Summary Table below and Appendix B compare annual and monthly results from 2011 to those measured in previous CSLAP sampling seasons. The pertinent deviations from normal conditions are discussed below.

### **Evaluation of Eutrophication Indicators**

Chlorophyll *a* readings were lower than normal in 2011 after being higher than normal in 2010, although in 2011 this did not lead to significant changes in water clarity, and occurred despite higher total phosphorus readings in 2011. However, water clarity readings have decreased in response to increasing total phosphorus readings. The cause of this increase in phosphorus is not known, although it may be due to increasing nutrient loading to the lake or changes in the biological balance in the lake. Lake productivity has not exhibited any clear seasonal patterns; this (lack of a seasonal trend) was also apparent in 2011. The lake can be characterized as *mesotrophic*, or moderately productive, based on chlorophyll *a*, water clarity and total phosphorus readings (all typical of *mesotrophic* lakes), although the lake is trending toward mesoeutrophic conditions. The trophic state indices (TSI) evaluation suggests that algae levels are lower than expected given the nutrient and water clarity readings in the lake, perhaps due to some biological changes in the lake. Overall trophic conditions are summarized on the Lake Scorecard and Lake Condition Summary Table.

### **Evaluation of Potable Water Indicators**

Algae levels are not high presently enough to render the lake susceptible to taste and odor compounds or elevated DBP (disinfection by product) compounds that could affect the potability of the water, although it is trending toward susceptibility. However, the lake is not classified for use for drinking water. Hypolimnetic phosphorus and ammonia readings were again elevated in 2011, suggesting that any deepwater intakes might not support “unofficial” potable water use. Potable water conditions, at least as measurable through CSLAP, are summarized in the Lake Scorecard and Lake Condition Summary Table.

### **Evaluation of Limnological Indicators**

Ammonia and calcium readings were higher than normal in 2011, the latter more so in mid summer. pH readings were lower than normal, consistent with a long term trend toward decreasing pH. Conductivity readings have decreased and color readings have increased since the late 1980s. It is not known if either of these changes is related to the increase in phosphorus readings over this period. None of the other limnological indicators has exhibited any clear long-term changes. Overall limnological conditions are summarized in the Lake Scorecard and Lake Condition Summary Table.

### **Evaluation of Biological Condition**

The 1992 phytoplankton survey of the lake showed low algal biomass dominated by green algae, bacteria and cryptomonads. It is not known if this is representative of normal conditions in the lake, although the chlorophyll *a* levels in the sample were in the (low-to-) normal range for the lake.

Aquatic macrophyte survey data collected through SUNY Oneonta and via CSLAP at Madison Lake found at least 25 aquatic plant species, including two exotic plant species (*Myriophyllum*

*spicatum*, Eurasian watermilfoil, and *Phragmites australis*, common reed). The modified floristic quality index (FQI) for the lake indicates that the quality of the aquatic plant community is “fair.”

The composition of the fish community is not known, but it is assumed that the lake supports either a two story or coolwater fishery.

Macroinvertebrates were sampled as part of the DEC biomonitoring study of Madison Lake (and a dozen other NYS lakes) in 2011, but the results from this study are not yet available. Many of the aquatic plants found in previous studies were also seen in 2011.

Zooplankton have not been evaluated through CSLAP in Madison Lake.

Biological conditions in the lake are summarized in the Lake Scorecard and Lake Condition Summary Table.

### **Evaluation of Lake Perception**

Recreational assessments were less favorable than normal in 2010 and 2011, consistent with higher phosphorus readings (and higher algae levels in 2010). Water quality assessments have degraded since the early 1990s, consistent with the increase in lake productivity. Recreational assessments have also degraded over this period, although it is not known if this change has been statistically significant. Lake perception degrades slightly during the summer, a seasonal pattern also observed in 2011, despite the lack of any clear seasonal trends in lake productivity. Overall lake perception is summarized on the Lake Scorecard and Lake Condition Summary Table.

### **Evaluation of Local Climate Change**

Air and water temperature readings in the summer index period were close to normal in 2011, and neither air nor water temperature readings has exhibited any long-term trends. It is not known if this is an indication of the lack of local climate change or if these changes cannot be well evaluated through CSLAP.

### **Evaluation of Algal Toxins**

Algal toxin levels can vary significantly within blooms and from shoreline to lake, and the absence of toxins in a sample does not indicate safe swimming conditions. Phycocyanin readings are usually below the levels indicating susceptibility for harmful algal blooms (HABs), so algae toxins samples have not been analyzed.

# Lake Condition Summary

| Category                  | Indicator              | Min   | 89-11 Avg | Max   | 2011 Avg | Classification   | 2011 Change?               | Long-term Change?        |
|---------------------------|------------------------|-------|-----------|-------|----------|--|----------------------------|--------------------------|
| Eutrophication Indicators | Water Clarity          | 1.85  | 4.27      | 8.38  | 3.63     | Mesotrophic  | Within Normal Range        | Decreasing Significantly |
|                           | Chlorophyll <i>a</i>   | 0.01  | 2.37      | 25.70 | 1.17     | Mesotrophic  | Lower Than Normal          | No Change                |
|                           | Total Phosphorus       | 0.003 | 0.011     | 0.026 | 0.014    | Mesotrophic  | Higher than Normal         | Increasing Significantly |
| Potable Water Indicators  | Hypolimnetic NH4       | 0.01  | 0.50      | 2.84  | 0.81     | Highly Elevated Deepwater NH4                                      | Higher than Normal         | Not known                |
|                           | Hypolimnetic As        |       |           |       |          | Not measured through CSLAP   |                            |                          |
|                           | Hypolimnetic Iron      |       |           |       |          | Not measured through CSLAP   |                            |                          |
|                           | Hypolimnetic Mn        |       |           |       |          | Not measured through CSLAP   |                            |                          |
| Limnological Indicators   | Hypolimnetic TP        | 0.003 | 0.150     | 0.720 | 0.222    | Elevated Deepwater TP  | Higher than Normal         | Not known                |
|                           | Nitrate + Nitrite      | 0.00  | 0.03      | 0.25  | 0.03     | Low NOx  | Within Normal Range        | No Change                |
|                           | Ammonia                | 0.01  | 0.03      | 0.23  | 0.06     | Low Ammonia  | Higher than Normal         | No Change                |
|                           | Total Nitrogen         | 0.09  | 0.60      | 1.66  | 0.63     | Intermediate Total Nitrogen  | Within Normal Range        | No Change                |
|                           | pH                     | 6.82  | 8.12      | 8.70  | 7.51     | Alkaline   | Lower Than Normal          | Decreasing Significantly |
|                           | Specific Conductance   | 68    | 198       | 282   | 210      | Intermediate Hardness  | Within Normal Range        | Decreasing Significantly |
|                           | True Color             | 0     | 17        | 77    | 27       | Intermediate Color   | Within Normal Range        | Increasing Significantly |
|                           | Calcium                | 18.9  | 25.4      | 35.0  | 32.0     | Highly Susceptible to Zebra Mussels                                | Higher than Normal         | No Change                |
| Lake Perception           | WQ Assessment          | 1     | 2.1       | 3     | 2.1      | Not Quite Crystal Clear  | Within Normal Range        | Highly Degrading         |
|                           | Plant Coverage         | 1     | 2.5       | 4     | 2.9      | Surface Plant Growth   | Within Normal Range        | No Change                |
|                           | Rec. Assessment        | 1     | 2.3       | 4     | 2.7      | Excellent  | Less Favorable than Normal | No Change                |
| Biological Condition      | Phytoplankton          |       |           |       |          | Low algal biomass dominated by green algae, bacteria, cryptomonads | Not known                  | Not known                |
|                           | Macrophytes            |       |           |       |          | Fair quality of the aquatic plant community                        | Not known                  | Not known                |
|                           | Zooplankton            |       |           |       |          | Not evaluated through CSLAP  | Not known                  | Not known                |
|                           | Macroinvertebrates     |       |           |       |          | Not evaluated through CSLAP  | Not known                  | Not known                |
|                           | Fish                   |       |           |       |          | Cold- or coolwater fishery?  | Not known                  | Not known                |
|                           | Invasive Species       |       |           |       |          | Eurasian watermilfoil, Phragmites                                  | Not known                  | Not known                |
| Local Climate Change      | Air Temperature        | 9     | 21.7      | 32    | 20.1     |  | Within Normal Range        | No Change                |
|                           | Water Temperature      | 13    | 21.8      | 28    | 21.1     |  | Within Normal Range        | No Change                |
| Harmful Algal Blooms      | Open Water Phycocyanin | 12    | 44        | 154   | 26       | Some readings indicate moderate to high risk of BGA                | Not known                  | Not known                |
|                           | Open Water Microcystis |       |           |       |          | No lakewide toxins data  | Not known                  | Not known                |
|                           | Shoreline Phycocyanin  |       |           |       |          | No shoreline blooms reported                                       | Not known                  | Not known                |
|                           | Shoreline Microcystis  |       |           |       |          | No shoreline blooms reported                                       | Not known                  | Not known                |
|                           | Other Toxins           |       |           |       |          | No anatoxin-a and cylindrospermopsin data                          | Not known                  | Not known                |

## **Evaluation of Lake Condition Impacts to Lake Uses**

Madison Lake is presently among the lakes listed on the Mohawk River drainage basin Priority Waterbody List (2010) as having *no known impairments*. The PWL listing for the lake is provided in Appendix C.

### **Potable Water (Drinking Water)**

The CSLAP dataset at Madison Lake, including water chemistry data, physical measurements, and volunteer samplers' perception data, is inadequate to evaluate the use of the lake for potable water, and the lake is not used for this purpose. The occasionally elevated (and perhaps rising) algae levels suggest that potable water use of surface waters might not be supported in the near future, and elevated deepwater ammonia and phosphorus levels indicate hypolimnetic conditions that might not support any "unofficial" potable water use from the bottom waters of the lake.

### **Contact Recreation (Swimming)**

The CSLAP dataset at Madison Lake, including water chemistry data, physical measurements, and volunteer samplers' perception data, suggests that swimming and contact recreation should be fully supported, although additional information about bacterial levels is needed to evaluate the safety of the water for swimming (and the trend toward less favorable water quality conditions may ultimately impact swimming conditions).

### **Non-Contact Recreation (Boating and Fishing)**

The CSLAP dataset on Madison Lake, including water chemistry data, physical measurements, and volunteer samplers' perception data, suggest that non-contact recreation may be *stressed* by Eurasian watermilfoil and excessive weeds, although these impacts may vary significantly from year to year.

### **Aquatic Life**

The CSLAP dataset on Madison Lake, including water chemistry data, physical measurements, and volunteer samplers' perception data, suggest that aquatic life may be *stressed* by deepwater anoxia (based on elevated deepwater ammonia and phosphorus levels), and *threatened* by the presence of invasive species or elevated pH, although pH levels have been decreasing. Additional data are needed to evaluate the food and habitat conditions for aquatic organisms in the lake.

### **Aesthetics**

The CSLAP dataset on Madison Lake, including water chemistry data, physical measurements, and volunteer samplers' perception data, suggest that aesthetics may be *threatened* by excessive weeds.

### **Fish Consumption**

There are no fish consumption advisories posted for Madison Lake.

## **Additional Comments and Recommendations**

The Madison Lake Association should continue to investigate any watershed sources of nutrients to the lake, and the extent to which activities contributing to nutrient loading (soil erosion, failing septic, stormwater runoff, etc.) may be contributing to the rise in phosphorus concentrations and decreasing water clarity in the lake. A fisheries and plankton study may help to determine the impact of increasing phosphorus may have (or may have been caused by) higher phosphorus levels in the lake.

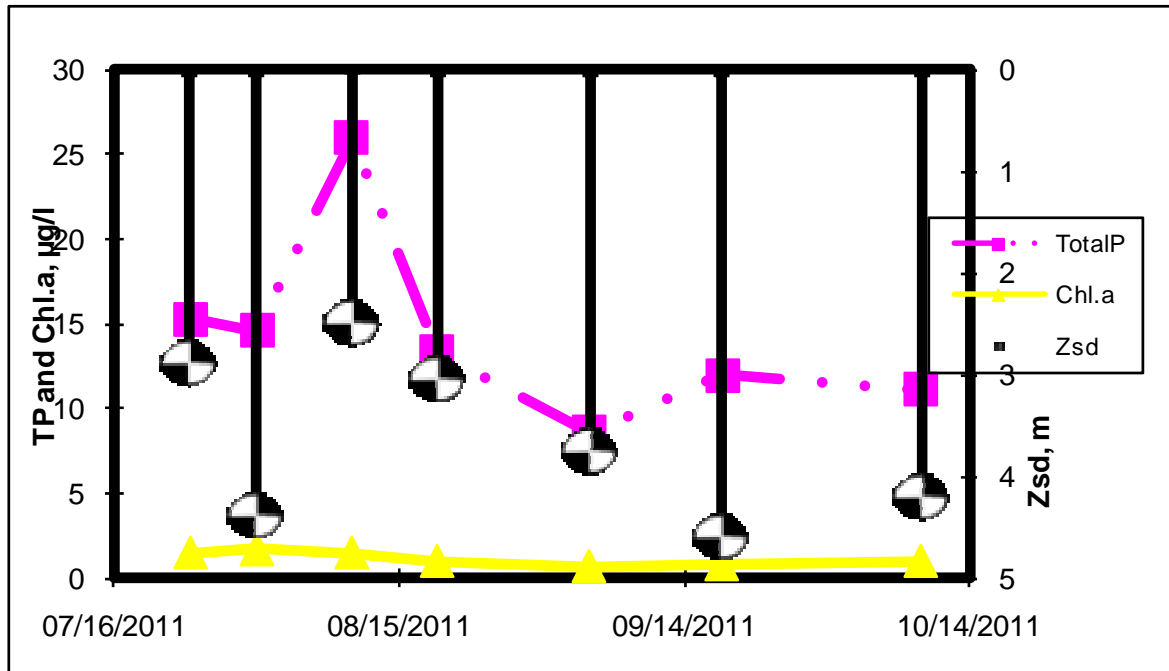
## Aquatic Plant IDs-2011

None submitted in 2011; however, the following plants were identified through the DEC biomonitoring study:

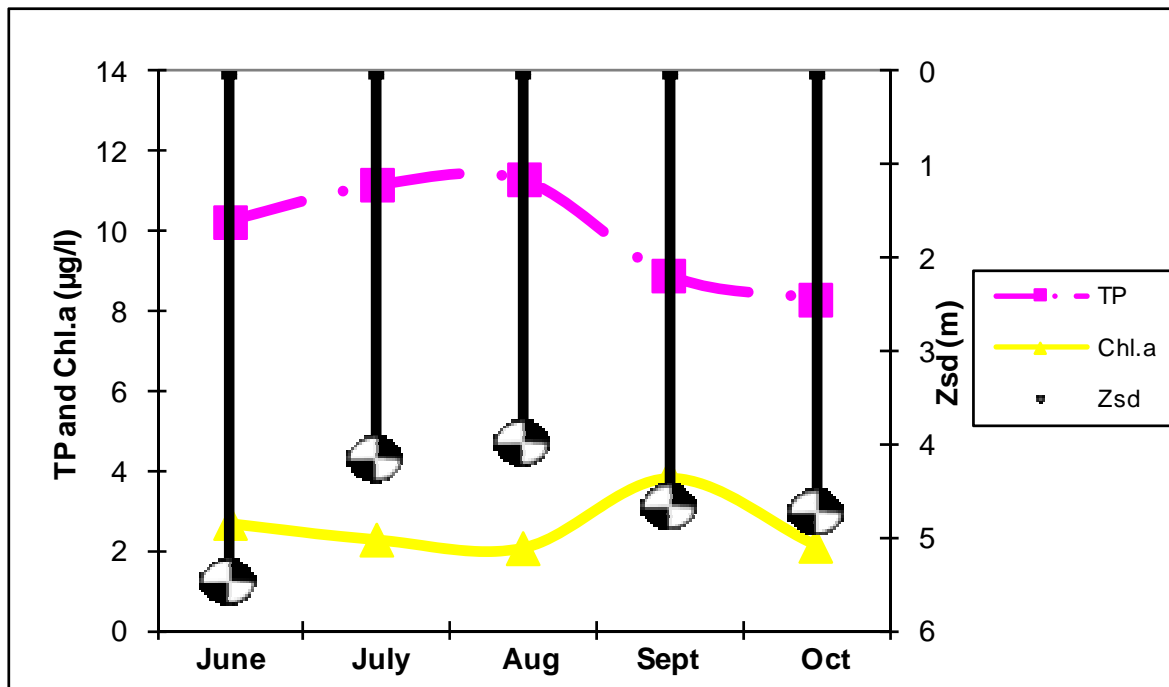
| <i>Scientific Name</i>          | <i>Common Name</i>    | <i>Type</i> |
|---------------------------------|-----------------------|-------------|
| <b>Ceratophyllum demersum</b>   | coontail              | submergent  |
| <b>Elodea canadensis</b>        | common waterweed      | submergent  |
| <b>Myriophyllum sibiricum</b>   | northern watermilfoil | submergent  |
| <b>Myriophyllum spicatum</b>    | Eurasian watermilfoil | submergent  |
| <b>Najas flexilis</b>           | slender naiad         | submergent  |
| <b>Nymphaea sp.</b>             | white water lily      | floating    |
| <b>Polygonum amphibian</b>      | water smartweed       | emergent    |
| <b>Potamogeton pusillus</b>     | small pondweed        | submergent  |
| <b>Potamogeton richardsonii</b> | Richardson's pondweed | submergent  |
| <b>Stuckenia pectinatus</b>     | Sago pondweed         | submergent  |
| <b>Vallisneria americanum</b>   | eelgrass              | submergent  |

Eurasian watermilfoil is the only exotic plant in this list.

### Time Series: Trophic Indicators, 2011

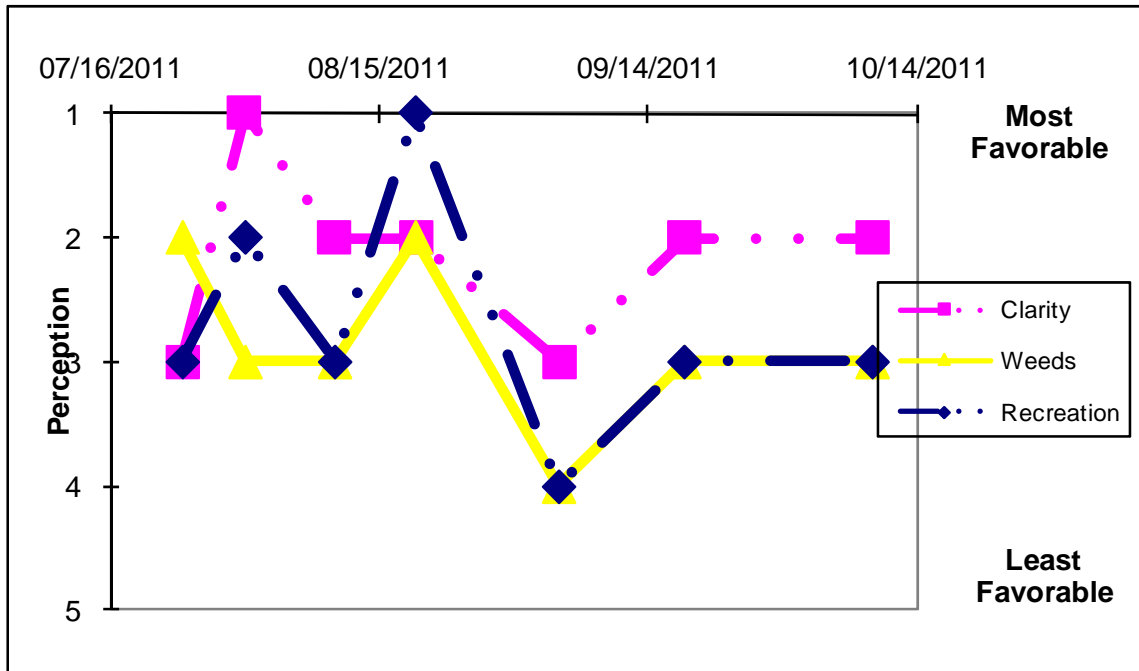


### Time Series: Trophic Indicators, Typical Year (1989-2011)

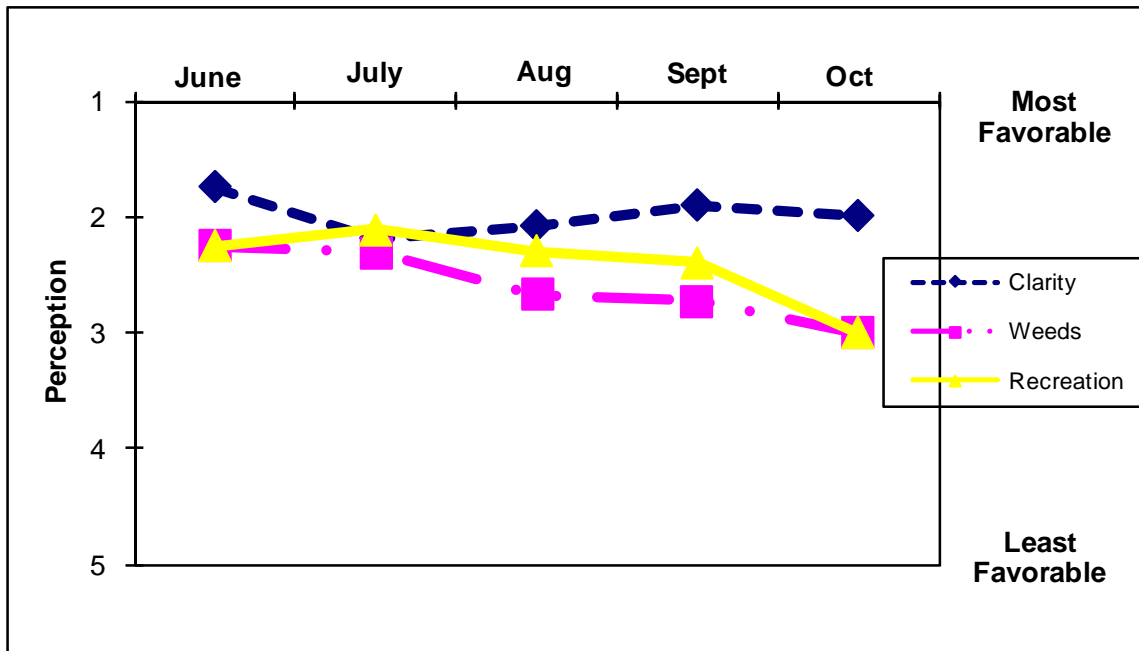




## Time Series: Lake Perception Indicators, 2011



## Time Series: Lake Perception Indicators, Typical Year (1989-2011)



## Appendix A- CSLAP Water Quality Sampling Results for Madison Lake

| LNum | PName     | Date       | Zbot | Zsd  | Zsamp | Tot.P | NO3  | NH4  | TDN  | TN/TP | TColor | pH   | Cond25 | Ca   | Chl.a |
|------|-----------|------------|------|------|-------|-------|------|------|------|-------|--------|------|--------|------|-------|
| 47   | Madison L | 7/16/1989  | 7.9  | 6.45 | 1.5   | 0.005 | 0.08 |      |      |       | 5      | 8.61 | 207    |      | 2.53  |
| 47   | Madison L | 7/23/1989  | 7.6  | 6.54 | 1.5   | 0.007 | 0.01 |      |      |       | 4      | 8.69 | 210    |      | 9.32  |
| 47   | Madison L | 7/30/1989  | 8.8  | 6.71 | 1.5   | 0.005 | 0.02 |      |      |       | 2      | 8.44 | 208    |      | 1.85  |
| 47   | Madison L | 8/7/1989   | 8.5  | 7.00 | 1.5   | 0.005 | 0.01 |      |      |       | 4      | 8.52 | 204    |      | 1.08  |
| 47   | Madison L | 8/14/1989  | 9.1  | 7.67 | 1.5   | 0.006 | 0.01 |      |      |       | 2      | 8.41 | 209    |      | 1.50  |
| 47   | Madison L | 8/21/1989  | 8.7  | 5.41 | 1.5   | 0.004 | 0.01 |      |      |       | 3      | 8.46 | 209    |      | 2.15  |
| 47   | Madison L | 8/28/1989  | 7.7  | 6.33 | 1.5   | 0.003 | 0.01 |      |      |       | 5      | 8.42 | 208    |      | 1.86  |
| 47   | Madison L | 9/2/1989   | 8.9  | 5.05 | 1.5   | 0.009 | 0.01 |      |      |       | 5      | 8.29 | 211    |      | 2.04  |
| 47   | Madison L | 9/10/1989  | 15.0 | 5.27 | 1.5   | 0.007 | 0.01 |      |      |       | 2      | 8.42 | 213    |      | 1.86  |
| 47   | Madison L | 9/17/1989  | 15.2 | 5.24 | 1.5   | 0.008 | 0.02 |      |      |       | 4      | 8.36 | 212    |      | 2.04  |
| 47   | Madison L | 9/25/1989  | 9.4  | 4.47 | 1.5   | 0.006 | 0.02 |      |      |       | 5      | 8.43 | 213    |      | 2.40  |
| 47   | Madison L | 10/3/1989  | 12.7 | 4.10 | 1.5   | 0.008 | 0.01 |      |      |       | 2      | 8.46 | 216    |      |       |
| 47   | Madison L | 10/16/1989 | 15.2 | 5.69 | 1.5   | 0.008 | 0.01 |      |      |       | 3      | 8.42 | 220    |      | 1.69  |
| 47   | Madison L | 7/2/1990   | 15.0 | 4.88 | 1.5   | 0.009 | 0.25 |      |      |       |        | 8.05 | 266    |      | 2.56  |
| 47   | Madison L | 7/10/1990  | 15.2 | 5.72 | 1.5   | 0.007 | 0.18 |      |      |       | 3      | 8.39 | 265    |      | 2.66  |
| 47   | Madison L | 7/24/1990  | 15.2 | 5.82 | 1.5   | 0.006 |      |      |      |       | 2      | 8.53 | 252    |      | 2.36  |
| 47   | Madison L | 8/7/1990   | 15.2 | 5.56 | 1.5   | 0.005 | 0.10 |      |      |       | 4      | 8.48 | 246    |      | 1.79  |
| 47   | Madison L | 8/22/1990  | 8.2  | 2.06 | 1.5   | 0.010 |      |      |      |       | 8      | 8.15 | 243    |      | 9.40  |
| 47   | Madison L | 9/4/1990   | 14.5 | 3.89 | 1.5   | 0.006 | 0.01 |      |      |       | 2      | 8.44 | 224    |      | 3.83  |
| 47   | Madison L | 9/18/1990  | 10.7 | 4.19 | 1.5   | 0.007 |      |      |      |       | 4      | 8.38 | 231    |      | 3.43  |
| 47   | Madison L | 10/1/1990  | 15.2 | 4.95 | 1.5   | 0.006 | 0.02 |      |      |       | 7      | 8.46 | 235    |      | 3.64  |
| 47   | Madison L | 6/18/1991  | 15.0 | 5.15 | 1.5   | 0.009 | 0.21 |      |      |       | 2      | 8.49 | 279    |      | 4.79  |
| 47   | Madison L | 7/2/1991   | 15.0 | 2.50 | 1.5   | 0.007 | 0.07 |      |      |       | 5      | 8.08 | 259    |      | 2.81  |
| 47   | Madison L | 7/15/1991  | 15.0 | 6.11 | 1.5   | 0.008 |      |      |      |       | 4      | 8.48 | 248    |      | 2.65  |
| 47   | Madison L | 7/29/1991  | 15.0 | 6.97 | 1.5   | 0.009 | 0.01 |      |      |       | 5      | 8.48 | 241    |      | 3.11  |
| 47   | Madison L | 8/20/1991  | 6.9  | 4.44 | 1.5   | 0.005 |      |      |      |       | 4      | 8.44 | 243    |      | 3.42  |
| 47   | Madison L | 8/27/1991  | 13.1 | 3.80 | 1.5   | 0.008 | 0.01 |      |      |       | 4      | 8.40 | 240    |      | 1.51  |
| 47   | Madison L | 9/8/1991   | 15.0 | 6.48 | 1.5   | 0.006 |      |      |      |       | 5      | 8.48 | 242    |      | 2.51  |
| 47   | Madison L | 9/23/1991  | 15.0 | 3.77 | 1.5   | 0.005 | 0.01 |      |      |       | 2      | 8.49 | 244    |      |       |
| 47   | Madison L | 6/23/1992  | 15.2 | 8.38 | 1.5   | 0.006 | 0.10 |      |      |       | 8      | 8.51 | 261    |      | 0.70  |
| 47   | Madison L | 7/7/1992   | 15.2 | 6.60 | 1.5   | 0.007 | 0.08 |      |      |       | 8      | 8.51 | 253    |      | 1.76  |
| 47   | Madison L | 7/21/1992  | 10.0 | 4.25 | 1.5   | 0.010 | 0.01 |      |      |       | 2      | 8.46 | 237    |      | 2.92  |
| 47   | Madison L | 8/4/1992   | 7.3  | 3.50 | 1.5   | 0.008 | 0.01 |      |      |       | 6      | 8.50 | 233    |      | 2.94  |
| 47   | Madison L | 8/19/1992  | 15.2 | 3.26 | 1.5   | 0.008 | 0.01 |      |      |       | 7      | 8.42 | 231    |      | 0.70  |
| 47   | Madison L | 9/8/1992   | 8.5  |      | 1.5   | 0.008 |      |      |      |       | 8      | 8.43 | 233    |      | 1.72  |
| 47   | Madison L | 9/14/1992  | 13.4 | 5.73 | 1.5   | 0.007 | 0.01 |      |      |       | 8      | 8.43 | 235    |      | 1.87  |
| 47   | Madison L | 9/28/1992  | 15.2 | 5.49 | 1.5   | 0.008 |      |      |      |       | 7      | 8.43 | 240    |      | 1.14  |
| 47   | Madison L | 6/22/1993  | 15.2 |      | 1.5   | 0.010 | 0.19 |      |      |       | 7      | 8.32 | 282    |      | 1.12  |
| 47   | Madison L | 7/6/1993   | 15.2 | 4.65 | 1.5   | 0.009 | 0.10 |      |      |       | 3      | 8.47 | 274    |      | 2.80  |
| 47   | Madison L | 7/21/1993  | 15.2 | 2.46 | 1.5   | 0.009 | 0.01 |      |      |       | 3      | 8.22 | 249    |      | 3.78  |
| 47   | Madison L | 8/3/1993   | 15.2 | 4.24 | 1.5   | 0.008 | 0.01 |      |      |       | 2      | 8.40 | 250    |      | 0.96  |
| 47   | Madison L | 8/17/1993  | 15.2 | 5.02 | 1.5   | 0.010 | 0.01 |      |      |       | 2      | 8.32 | 230    |      | 2.16  |
| 47   | Madison L | 8/31/1993  | 15.2 | 4.85 | 1.5   | 0.008 | 0.01 |      |      |       | 4      | 8.43 | 249    |      | 3.19  |
| 47   | Madison L | 9/14/1993  | 15.2 | 6.23 | 1.5   | 0.010 | 0.02 |      |      |       | 5      | 8.36 | 252    |      | 0.67  |
| 47   | Madison L | 9/27/1993  | 15.2 |      | 1.5   | 0.011 | 0.03 |      |      |       | 5      | 8.36 | 265    |      | 3.61  |
| 47   | Madison L | 7/30/1998  | 8.6  | 3.51 | 1.5   | 0.013 | 0.01 |      |      |       | 6      | 8.15 | 231    |      | 12.70 |
| 47   | Madison L | 8/3/1998   | 8.1  | 3.06 | 1.5   | 0.007 | 0.01 |      |      |       | 2      | 8.04 | 220    |      | 1.91  |
| 47   | Madison L | 8/19/1998  | 12.0 | 3.99 | 1.5   | 0.006 |      |      |      |       | 2      | 8.41 | 223    |      | 1.48  |
| 47   | Madison L | 8/24/1998  | 15.2 | 4.06 | 1.5   | 0.011 |      |      |      |       | 1      | 8.24 | 216    |      | 1.02  |
| 47   | Madison L | 8/31/1998  | 14.7 | 5.22 | 1.5   | 0.006 |      |      |      |       | 7      | 7.80 | 230    |      | 2.80  |
| 47   | Madison L | 9/8/1998   | 14.2 | 3.75 | 1.5   | 0.006 | 0.01 |      |      |       | 6      | 8.48 | 223    |      | 3.83  |
| 47   | Madison L | 9/14/1998  | 13.0 | 5.40 |       | 0.011 |      |      |      |       | 3      | 8.31 | 226    |      | 2.68  |
| 47   | Madison L | 9/23/1998  | 12.5 | 5.55 | 1.5   | 0.005 |      |      |      |       | 1      | 8.19 | 227    |      | 2.26  |
| 47   | Madison L | 6/24/2004  | 9.9  | 5.01 | 1.5   | 0.009 | 0.01 | 0.01 | 0.97 | 226.5 | 20     | 6.90 | 202    | 26.2 | 0.20  |
| 47   | Madison L | 6/28/2004  | 11.9 | 5.45 | 1.5   | 0.009 | 0.15 | 0.04 | 0.51 | 119.9 | 49     | 7.13 | 206    |      | 0.90  |
| 47   | Madison L | 7/19/2004  | 11.3 | 6.10 | 1.5   | 0.007 | 0.15 | 0.05 | 0.50 | 161.9 | 14     | 6.93 | 197    |      | 0.50  |
| 47   | Madison L | 8/1/2004   | 15.5 | 6.89 | 1.5   | 0.010 | 0.03 | 0.02 | 0.09 | 18.8  | 15     | 7.81 | 184    |      | 0.70  |
| 47   | Madison L | 8/17/2004  | 10.4 | 4.88 | 1.5   | 0.009 | 0.01 | 0.01 | 0.33 | 83.6  | 31     | 7.95 | 170    | 26.9 | 5.30  |
| 47   | Madison L | 8/30/2004  | 14.6 | 4.42 | 1.5   | 0.009 | 0.01 | 0.01 |      |       | 23     | 7.89 | 147    |      | 2.20  |
| 47   | Madison L | 9/12/2004  | 11.0 | 2.60 | 1.5   | 0.011 | 0.01 | 0.01 | 0.16 | 34.1  | 51     | 7.62 | 157    |      | 12.30 |
| 47   | Madison L | 9/27/2004  | 15.5 | 4.80 | 1.5   | 0.008 | 0.01 | 0.02 | 0.25 | 68.6  | 4      | 7.90 | 176    |      |       |
| 47   | Madison L | 7/2/2005   | 28.0 | 2.75 | 1.5   | 0.012 | 0.01 | 0.01 | 0.37 | 70.0  | 19     | 7.70 | 162    | 25.0 | 0.41  |
| 47   | Madison L | 7/9/2005   | 24.6 | 3.45 | 1.5   | 0.012 | 0.03 | 0.01 | 0.41 | 76.9  | 52     | 8.60 | 68     |      | 0.25  |

| LNum | PName     | Date       | Zbot | Zsd  | Zsamp | Tot.P | NO3  | NH4  | TDN  | TN/TP  | TColor | pH   | Cond25 | Ca   | Chl.a |
|------|-----------|------------|------|------|-------|-------|------|------|------|--------|--------|------|--------|------|-------|
| 47   | Madison L | 7/16/2005  | 15+  | 3.30 | 1.5   | 0.007 | 0.06 | 0.02 | 0.61 | 191.2  | 2      | 7.50 | 146    |      | 0.35  |
| 47   | Madison L | 7/23/2005  | 15.2 | 5.49 | 1.5   | 0.009 |      |      | 0.47 | 111.2  | <1     | 7.79 | 155    |      | 1.48  |
| 47   | Madison L | 7/30/2005  | 14.3 | 5.75 | 1.5   | 0.007 | 0.05 | 0.06 | 0.65 | 196.5  | 12     | 8.05 | 148    | 23.0 | 0.25  |
| 47   | Madison L | 8/6/2005   | 17.0 | 4.55 | 1.5   | 0.020 | 0.01 | 0.01 | 0.19 | 20.8   | 9      | 7.86 | 199    |      | 0.29  |
| 47   | Madison L | 8/13/2005  | 35.0 | 5.64 | 1.5   | 0.008 | 0.04 | 0.01 | 0.54 | 144.0  | 10     | 8.14 | 164    |      | 0.75  |
| 47   | Madison L | 8/20/2005  | 15+  | 6.25 | 1.5   | 0.006 | 0.01 | 0.01 | 0.20 | 70.9   | 25     | 7.88 | 174    |      | 0.05  |
| 47   | Madison L | 7/1/2006   | 7.5  |      | 1.5   |       | 0.05 | 0.02 | 0.62 |        | 30     | 7.74 | 188    |      | 0.26  |
| 47   | Madison L | 7/15/2006  | 24.0 | 3.75 |       | 0.014 | 0.01 | 0.01 | 0.69 | 108.1  | 52     | 8.30 | 132    |      | 0.14  |
| 47   | Madison L | 7/23/2006  | 22.8 | 3.63 | 1.5   | 0.013 | 0.02 | 0.03 | 0.98 | 165.4  | 25     | 7.54 | 186    |      | 0.10  |
| 47   | Madison L | 7/29/2006  | 23.0 | 2.88 | 1.5   | 0.014 | 0.02 | 0.02 | 1.06 | 169.9  | 59     | 7.95 | 154    |      | 0.21  |
| 47   | Madison L | 8/5/2006   | 23.0 | 3.00 | 1.5   | 0.014 | 0.01 | 0.02 | 0.80 | 129.6  | 36     | 7.98 | 162    |      | 1.99  |
| 47   | Madison L | 8/12/2006  | 23.0 | 3.66 | 1.5   | 0.012 | 0.01 | 0.01 | 0.65 | 119.3  | 24     | 7.34 | 126    |      | 0.79  |
| 47   | Madison L | 8/20/2006  | 23.0 | 2.93 | 1.5   | 0.006 | 0.04 | 0.17 | 1.66 | 598.7  | 15     | 7.74 | 166    |      | 0.49  |
| 47   | Madison L | 8/26/2006  |      |      |       | 0.015 | 0.01 | 0.07 | 0.95 | 141.6  | 17     | 7.23 | 122    |      | 7.01  |
| 47   | Madison L | 6/30/2007  | 23.3 | 3.50 | 1.5   | 0.018 | 0.02 | 0.03 | 1.14 | 142.9  | 44     | 8.30 | 182    | 30.5 | 8.35  |
| 47   | Madison L | 7/7/2007   | 9.3  | 3.15 | 1.5   | 0.011 | 0.00 | 0.02 | 0.58 | 113.1  | 20     | 7.74 | 231    |      | 1.99  |
| 47   | Madison L | 7/14/2007  | 23.0 | 2.00 | 1.5   | 0.015 | 0.02 | 0.03 | 0.71 | 104.1  | 16     | 7.74 | 279    |      | 2.18  |
| 47   | Madison L | 7/21/2007  | 23.5 | 2.20 |       | 0.016 | 0.01 | 0.02 | 0.85 | 119.9  | 73     | 8.29 | 198    |      | 1.80  |
| 47   | Madison L | 7/28/2007  | 23.0 | 3.23 | 1.5   | 0.011 | 0.02 | 0.02 | 0.85 | 171.8  | 26     | 7.90 | 210    | 26.4 | 0.63  |
| 47   | Madison L | 8/4/2007   | 23.0 | 2.83 | 1.5   | 0.012 | 0.01 | 0.03 | 0.91 | 164.3  | 47     | 8.06 | 164    |      | 0.01  |
| 47   | Madison L | 8/11/2007  | 21.0 | 4.25 | 1.5   | 0.013 | 0.01 | 0.02 | 0.65 | 116.0  | 28     | 8.50 | 160    |      | 0.99  |
| 47   | Madison L | 8/18/2007  | 21.0 | 4.25 | 1.5   | 0.013 | 0.01 | 0.05 | 0.69 | 117.2  | 38     | 8.22 | 147    |      | 0.47  |
| 47   | Madison L | 7/12/2008  | 23.3 | 3.95 | 1.5   | 0.016 | 0.03 | 0.06 | 0.47 | 64.37  | 25     | 8.12 | 196    | 26.6 | 0.58  |
| 47   | Madison L | 7/19/2008  | 23.0 | 3.05 | 1.5   | 0.015 | 0.02 | 0.04 | 0.41 | 5.89   | 30     | 8.33 | 141    |      | 0.10  |
| 47   | Madison L | 7/26/2008  | 23.0 | 3.45 | 1.5   | 0.011 | 0.01 | 0.03 | 0.35 | 72.89  | 7      | 8.61 | 159    |      | 1.92  |
| 47   | Madison L | 8/2/2008   | 23.0 | 3.05 | 1.5   | 0.010 | 0.00 | 0.03 | 0.41 | 92.58  | 26     | 7.83 | 166    |      | 1.45  |
| 47   | Madison L | 8/9/2008   | 23.0 | 2.78 | 1.5   | 0.016 | 0.01 | 0.03 | 0.42 | 58.66  | 26     | 7.68 | 138    | 24.4 | 0.10  |
| 47   | Madison L | 8/16/2008  | 19.0 | 2.28 | 1.5   | 0.012 | 0.00 | 0.03 | 0.39 | 70.33  | 6      | 7.57 | 167    |      | 1.57  |
| 47   | Madison L | 8/23/2008  | 23.0 | 2.65 | 1.5   | 0.010 | 0.00 | 0.04 | 0.47 | 107.68 | 32     | 8.47 | 163    |      | 0.91  |
| 47   | Madison L | 8/30/2008  |      |      |       | 0.016 | 0.01 | 0.03 | 0.52 | 69.50  | 41     | 8.08 | 196    |      | 9.92  |
| 47   | Madison L | 07/19/2009 | 23.0 | 3.75 | 1.5   | 0.020 | 0.07 | 0.05 | 0.63 | 69.54  | 52     | 8.16 | 150    | 21.4 | 0.23  |
| 47   | Madison L | 07/26/2009 | 10.0 | 2.74 |       | 0.015 | 0.01 | 0.02 | 0.62 | 88.14  | 47     | 8.46 | 105    |      | 1.35  |
| 47   | Madison L | 08/02/2009 | 15.1 | 3.13 | 1.5   | 0.012 | 0.02 | 0.03 | 0.49 | 88.18  | 22     | 8.36 | 127    |      | 1.59  |
| 47   | Madison L | 08/08/2009 | 23.0 | 4.00 | 1.5   | 0.018 | 0.05 | 0.05 | 0.52 | 61.91  | 46     | 8.37 | 69     |      | 0.60  |
| 47   | Madison L | 08/16/2009 | 23.0 | 3.55 | 1.5   | 0.011 | 0.02 | 0.02 | 0.46 | 91.96  | 17     | 7.76 | 115    | 22.3 | 0.30  |
| 47   | Madison L | 08/23/2009 | 23.0 | 3.45 | 1.5   | 0.016 | 0.04 | 0.03 | 0.50 | 67.21  | 30     | 6.82 | 129    |      | 0.50  |
| 47   | Madison L | 08/30/2009 | 23.0 | 4.05 | 1.5   | 0.012 | 0.01 | 0.02 | 0.45 | 79.13  | 34     | 7.73 | 133    |      | 0.80  |
| 47   | Madison L | 09/07/2009 | 23.0 | 4.00 |       | 0.015 | 0.02 | 0.06 | 0.52 | 76.85  | 77     | 8.70 | 119    |      | 1.40  |
| 47   | Madison L | 07/18/2010 | 23.0 | 3.00 | 1.5   | 0.022 | 0.01 | 0.02 | 0.80 | 79.58  | 26     | 8.59 | 168    | 20.1 | 0.30  |
| 47   | Madison L | 07/25/2010 | 23.0 | 1.85 | 1.5   | 0.020 | 0.01 | 0.03 |      |        | 9      | 8.55 | 168    |      | 3.30  |
| 47   | Madison L | 08/01/2010 | 23.0 | 2.05 | 1.5   | 0.016 | 0.03 | 0.06 | 0.79 | 106.74 | 21     | 8.03 | 134    |      | 1.80  |
| 47   | Madison L | 08/08/2010 | 23.0 | 2.25 | 1.5   | 0.015 | 0.01 | 0.02 |      |        | 4      | 8.35 | 195    |      |       |
| 47   | Madison L | 08/15/2010 | 23.0 | 2.75 | 1.5   | 0.017 | 0.01 | 0.02 |      |        | 3      | 7.65 | 72     | 18.9 | 5.90  |
| 47   | Madison L | 08/24/2010 | 23.0 | 2.30 | 1.5   | 0.024 | 0.02 | 0.03 | 0.55 | 50.48  | 21     | 7.98 | 190    |      | 1.70  |
| 47   | Madison L | 08/29/2010 | 23.0 | 3.05 | 1.5   | 0.017 | 0.01 | 0.05 | 0.54 | 70.19  | 10     | 8.53 | 168    |      | 0.80  |
| 47   | Madison L | 09/06/2010 | 23.0 | 3.25 | 1.5   | 0.021 | 0.03 | 0.04 | 0.54 | 56.47  | 3      | 8.43 | 159    |      | 25.70 |
| 47   | Madison L | 07/24/2011 |      | 2.90 | 1.5   | 0.015 | 0.02 | 0.02 | 0.57 | 82.10  | 31     | 7.85 | 210    | 35.0 | 1.50  |
| 47   | Madison L | 07/31/2011 | 23.0 | 4.40 | 1.5   | 0.015 | 0.02 | 0.02 | 0.56 | 83.63  | 12     | 7.34 | 240    |      | 1.70  |
| 47   | Madison L | 08/10/2011 | 23.0 | 2.50 |       | 0.026 | 0.01 | 0.04 | 0.62 | 52.49  | 36     | 7.26 | 168    |      | 1.50  |
| 47   | Madison L | 08/19/2011 | 23.0 | 3.05 | 1.5   | 0.013 | 0.03 | 0.03 | 0.66 | 109.17 | 24     | 7.26 | 183    | 29.0 | 1.00  |
| 47   | Madison L | 09/04/2011 | 23.0 | 3.75 | 1.5   | 0.009 | 0.02 | 0.01 | 0.58 | 147.09 | 19     | 7.75 | 218    |      | 0.70  |
| 47   | Madison L | 09/18/2011 | 23.0 | 4.60 | 1.5   | 0.012 | 0.02 | 0.23 | 0.81 | 148.87 | 30     | 7.80 | 219    |      | 0.80  |
| 47   | Madison L | 10/09/2011 | 23.0 | 4.20 | 1.5   | 0.011 | 0.12 | 0.07 | 0.60 | 119.32 | 37     | 7.31 | 229    |      | 1.00  |
| 47   | Madison L | 6/24/2004  |      |      |       | 0.006 | 0.01 | 0.01 | 0.32 | 54.3   |        |      |        |      |       |
| 47   | Madison L | 6/28/2004  |      |      |       | 0.009 | 0.01 | 0.01 | 0.23 | 26.8   |        |      |        |      |       |
| 47   | Madison L | 7/19/2004  |      |      |       | 0.007 | 0.01 | 0.02 | 0.17 | 22.8   |        |      |        |      |       |
| 47   | Madison L | 8/1/2004   |      |      |       | 0.290 | 0.01 | 0.72 | 0.67 | 2.3    |        |      |        |      |       |
| 47   | Madison L | 8/17/2004  |      |      |       | 0.011 | 0.02 | 0.08 | 0.55 | 52.2   |        |      |        |      |       |
| 47   | Madison L | 8/30/2004  |      |      |       | 0.634 | 0.01 | 1.45 | 0.93 | 1.5    |        |      |        |      |       |
| 47   | Madison L | 9/12/2004  |      |      |       | 0.014 | 0.01 | 0.02 | 0.20 | 14.5   |        |      |        |      |       |
| 47   | Madison L | 9/27/2004  |      |      |       | 0.033 | 0.02 | 0.18 | 0.45 | 13.7   |        |      |        |      |       |
| 47   | Madison L | 7/2/2005   |      |      |       | 0.014 |      |      |      |        |        |      |        |      |       |
| 47   | Madison L | 7/9/2005   |      |      |       | 0.045 |      |      |      |        |        |      |        |      |       |
| 47   | Madison L | 7/16/2005  |      |      |       | 0.017 |      |      |      |        |        |      |        |      |       |
| 47   | Madison L | 7/23/2005  |      |      |       | 0.003 |      |      |      |        |        |      |        |      |       |
| 47   | Madison L | 7/30/2005  |      |      |       | 0.031 |      |      |      |        |        |      |        |      |       |

| LNum | PName     | Date       | Zbot | Zsd | Zsamp | Tot.P | NO3 | NH4  |  |  |      | NO2 | Fe | Mn | As |
|------|-----------|------------|------|-----|-------|-------|-----|------|--|--|------|-----|----|----|----|
| 47   | Madison L | 8/6/2005   |      |     |       | 0.021 |     |      |  |  |      |     |    |    |    |
| 47   | Madison L | 8/13/2005  |      |     |       | 0.014 |     |      |  |  |      |     |    |    |    |
| 47   | Madison L | 8/20/2005  |      |     |       | 0.013 |     |      |  |  |      |     |    |    |    |
| 47   | Madison L | 7/1/2006   | 7.5  |     | 0.0   | 0.041 |     |      |  |  |      |     |    |    |    |
| 47   | Madison L | 7/15/2006  | 24.0 |     | 0.0   | 0.141 |     |      |  |  |      |     |    |    |    |
| 47   | Madison L | 7/23/2006  | 22.8 |     | 0.0   | 0.022 |     |      |  |  |      |     |    |    |    |
| 47   | Madison L | 7/29/2006  | 23.0 |     | 0.0   | 0.101 |     |      |  |  |      |     |    |    |    |
| 47   | Madison L | 8/5/2006   | 23.0 |     | 0.0   | 0.062 |     |      |  |  |      |     |    |    |    |
| 47   | Madison L | 8/12/2006  | 23.0 |     | 0.0   | 0.120 |     |      |  |  |      |     |    |    |    |
| 47   | Madison L | 8/20/2006  | 23.0 |     | 0.0   | 0.024 |     |      |  |  |      |     |    |    |    |
| 47   | Madison L | 8/26/2006  |      |     |       | 0.028 |     |      |  |  |      |     |    |    |    |
| 47   | Madison L | 7/7/2007   | 9.3  |     |       | 0.079 |     |      |  |  |      |     |    |    |    |
| 47   | Madison L | 7/14/2007  | 23.0 |     | 15.0  | 0.353 |     |      |  |  |      |     |    |    |    |
| 47   | Madison L | 7/21/2007  | 23.5 |     |       | 0.182 |     |      |  |  |      |     |    |    |    |
| 47   | Madison L | 7/28/2007  | 23.0 |     | 14.0  | 0.174 |     |      |  |  |      |     |    |    |    |
| 47   | Madison L | 8/4/2007   | 23.0 |     | 15.0  | 0.032 |     |      |  |  |      |     |    |    |    |
| 47   | Madison L | 8/11/2007  | 21.0 |     | 15.0  | 0.504 |     |      |  |  |      |     |    |    |    |
| 47   | Madison L | 8/18/2007  | 21.0 |     | 11.5  | 0.394 |     |      |  |  |      |     |    |    |    |
| 47   | Madison L | 7/7/2007   | 9.3  |     |       | 0.079 |     |      |  |  |      |     |    |    |    |
| 47   | Madison L | 7/12/2008  |      |     | 15.0  | 0.194 |     |      |  |  |      |     |    |    |    |
| 47   | Madison L | 7/19/2008  |      |     | 16.5  | 0.014 |     |      |  |  |      |     |    |    |    |
| 47   | Madison L | 7/26/2008  |      |     | 18.9  | 0.042 |     |      |  |  |      |     |    |    |    |
| 47   | Madison L | 8/2/2008   |      |     | 16.0  | 0.211 |     |      |  |  |      |     |    |    |    |
| 47   | Madison L | 8/9/2008   |      |     |       | 0.137 |     |      |  |  |      |     |    |    |    |
| 47   | Madison L | 8/16/2008  |      |     | 12.0  | 0.039 |     |      |  |  |      |     |    |    |    |
| 47   | Madison L | 8/23/2008  |      |     | 11.5  | 0.451 |     |      |  |  |      |     |    |    |    |
| 47   | Madison L | 8/30/2008  |      |     |       | 0.212 |     |      |  |  |      |     |    |    |    |
| 47   | Madison L | 07/19/2009 | 23.0 |     | 20.0  | 0.343 |     | 1.07 |  |  |      |     |    |    |    |
| 47   | Madison L | 07/26/2009 | 10.0 |     |       | 0.049 |     | 0.02 |  |  |      |     |    |    |    |
| 47   | Madison L | 08/02/2009 | 15.1 |     | 15.1  | 0.113 |     | 0.48 |  |  |      |     |    |    |    |
| 47   | Madison L | 08/08/2009 | 23.0 |     |       | 0.048 |     | 0.15 |  |  |      |     |    |    |    |
| 47   | Madison L | 08/16/2009 | 23.0 |     | 15.5  | 0.243 |     | 0.01 |  |  |      |     |    |    |    |
| 47   | Madison L | 08/23/2009 | 23.0 |     | 13.0  | 0.156 |     | 0.02 |  |  |      |     |    |    |    |
| 47   | Madison L | 08/30/2009 | 23.0 |     | 7.8   | 0.102 |     | 0.49 |  |  |      |     |    |    |    |
| 47   | Madison L | 09/07/2009 | 23.0 |     | 9.0   | 0.027 |     | 0.14 |  |  |      |     |    |    |    |
| 47   | Madison L | 7/18/2010  | 23.0 |     |       | 0.671 |     | 1.05 |  |  |      |     |    |    |    |
| 47   | Madison L | 7/25/2010  | 23.0 |     | 22.0  | 0.038 |     | 0.14 |  |  |      |     |    |    |    |
| 47   | Madison L | 8/1/2010   | 23.0 |     | 23.0  | 0.187 |     | 0.69 |  |  |      |     |    |    |    |
| 47   | Madison L | 8/8/2010   | 23.0 |     | 22.0  | 0.720 |     | 2.15 |  |  |      |     |    |    |    |
| 47   | Madison L | 8/15/2010  | 23.0 |     | 18.0  | 0.036 |     | 0.09 |  |  |      |     |    |    |    |
| 47   | Madison L | 8/24/2010  | 23.0 |     | 11.0  | 0.062 |     | 0.05 |  |  |      |     |    |    |    |
| 47   | Madison L | 8/29/2010  | 23.0 |     | 9.1   | 0.154 |     | 0.59 |  |  |      |     |    |    |    |
| 47   | Madison L | 9/6/2010   | 23.0 |     | 9.0   | 0.100 |     | 0.31 |  |  |      |     |    |    |    |
| 47   | Madison L | 7/24/2011  |      |     | 19.0  | 0.140 |     | 0.50 |  |  | 0.01 |     |    |    |    |
| 47   | Madison L | 7/31/2011  | 23.0 |     | 20.0  | 0.479 |     | 0.91 |  |  | 0.01 |     |    |    |    |
| 47   | Madison L | 8/10/2011  | 23.0 |     |       | 0.023 |     | 0.15 |  |  | 0.01 |     |    |    |    |
| 47   | Madison L | 8/19/2011  | 23.0 |     |       | 0.020 |     | 0.14 |  |  | 0.01 |     |    |    |    |
| 47   | Madison L | 9/4/2011   | 23.0 |     | 23.0  | 0.031 |     | 0.19 |  |  | 0.01 |     |    |    |    |
| 47   | Madison L | 9/18/2011  | 23.0 |     | 15.0  | 0.254 |     | 0.92 |  |  | 0.01 |     |    |    |    |
| 47   | Madison L | 10/9/2011  | 23.0 |     | 14.3  | 0.607 |     | 2.84 |  |  | 0.01 |     |    |    |    |

| LNum | PName     | Date      | Site | TAir | TH20 | QA | QB | QC | QD | QFQG | AQ-PC | AQ-Chla | MC-LR | Anatoxina | Cyclin |
|------|-----------|-----------|------|------|------|----|----|----|----|------|-------|---------|-------|-----------|--------|
| 47   | Madison L | 7/16/1989 | epi  | 23   | 23   |    |    |    |    |      |       |         |       |           |        |
| 47   | Madison L | 7/23/1989 | epi  | 31   | 25   |    |    |    |    |      |       |         |       |           |        |
| 47   | Madison L | 7/30/1989 | epi  | 25   | 23   |    |    |    |    |      |       |         |       |           |        |
| 47   | Madison L | 8/7/1989  | epi  | 16   | 23   |    |    |    |    |      |       |         |       |           |        |
| 47   | Madison L | 8/14/1989 | epi  | 24   | 23   |    |    |    |    |      |       |         |       |           |        |
| 47   | Madison L | 8/21/1989 | epi  | 24   | 22   |    |    |    |    |      |       |         |       |           |        |
| 47   | Madison L | 8/28/1989 | epi  | 24   | 21   |    |    |    |    |      |       |         |       |           |        |
| 47   | Madison L | 9/2/1989  | epi  | 22   | 22   |    |    |    |    |      |       |         |       |           |        |
| 47   | Madison L | 9/10/1989 | epi  | 28   | 22   |    |    |    |    |      |       |         |       |           |        |
| 47   | Madison L | 9/17/1989 | epi  | 17   | 19   |    |    |    |    |      |       |         |       |           |        |
| 47   | Madison L | 9/25/1989 | epi  | 10   | 15   |    |    |    |    |      |       |         |       |           |        |
| 47   | Madison L | 10/3/1989 | epi  | 10   | 13   |    |    |    |    |      |       |         |       |           |        |

| LNum | PName     | Date       | Site | TAir | TH20 | QA | QB | QC | QD  | QF | QG | AQ-PC | AQ-Chla | MC-LR | Anatoxin-a | Cyclin |
|------|-----------|------------|------|------|------|----|----|----|-----|----|----|-------|---------|-------|------------|--------|
| 47   | Madison L | 10/16/1989 | epi  | 21   | 14   |    |    |    |     |    |    |       |         |       |            |        |
| 47   | Madison L | 7/2/1990   | epi  | 25   | 21   |    |    |    |     |    |    |       |         |       |            |        |
| 47   | Madison L | 7/10/1990  | epi  | 21   | 22   |    |    |    |     |    |    |       |         |       |            |        |
| 47   | Madison L | 7/24/1990  | epi  | 24   | 25   |    |    |    |     |    |    |       |         |       |            |        |
| 47   | Madison L | 8/7/1990   | epi  | 20   | 22   |    |    |    |     |    |    |       |         |       |            |        |
| 47   | Madison L | 8/22/1990  | epi  | 22   | 21   |    |    |    |     |    |    |       |         |       |            |        |
| 47   | Madison L | 9/4/1990   | epi  | 22   | 21   |    |    |    |     |    |    |       |         |       |            |        |
| 47   | Madison L | 9/18/1990  | epi  | 14   | 16   |    |    |    |     |    |    |       |         |       |            |        |
| 47   | Madison L | 10/1/1990  | epi  | 13   | 17   |    |    |    |     |    |    |       |         |       |            |        |
| 47   | Madison L | 6/18/1991  | epi  | 25   | 23   |    |    |    |     |    |    |       |         |       |            |        |
| 47   | Madison L | 7/2/1991   | epi  | 20   | 20   |    |    |    |     |    |    |       |         |       |            |        |
| 47   | Madison L | 7/15/1991  | epi  | 26   | 24   |    |    |    |     |    |    |       |         |       |            |        |
| 47   | Madison L | 7/29/1991  | epi  | 22   | 24   |    |    |    |     |    |    |       |         |       |            |        |
| 47   | Madison L | 8/20/1991  | epi  | 19   | 20   |    |    |    |     |    |    |       |         |       |            |        |
| 47   | Madison L | 8/27/1991  | epi  | 30   | 25   |    |    |    |     |    |    |       |         |       |            |        |
| 47   | Madison L | 9/8/1991   | epi  | 23   | 23   |    |    |    |     |    |    |       |         |       |            |        |
| 47   | Madison L | 9/23/1991  | epi  | 17   | 13   |    |    |    |     |    |    |       |         |       |            |        |
| 47   | Madison L | 6/23/1992  | epi  | 15   | 19   | 1  | 2  | 2  |     |    |    |       |         |       |            |        |
| 47   | Madison L | 7/7/1992   | epi  | 17   | 20   |    |    |    |     |    |    |       |         |       |            |        |
| 47   | Madison L | 7/21/1992  | epi  | 20   | 24   |    |    |    |     |    |    |       |         |       |            |        |
| 47   | Madison L | 8/4/1992   | epi  | 25   | 22   |    |    |    |     |    |    |       |         |       |            |        |
| 47   | Madison L | 8/19/1992  | epi  | 20   | 22   |    |    |    |     |    |    |       |         |       |            |        |
| 47   | Madison L | 9/8/1992   | epi  | 20   | 21   |    |    |    |     |    |    |       |         |       |            |        |
| 47   | Madison L | 9/14/1992  | epi  | 20   | 19   |    |    |    |     |    |    |       |         |       |            |        |
| 47   | Madison L | 9/28/1992  | epi  | 20   | 22   |    |    |    |     |    |    |       |         |       |            |        |
| 47   | Madison L | 7/6/1993   | epi  | 27   | 24   | 2  | 1  | 3  | 1   |    |    |       |         |       |            |        |
| 47   | Madison L | 7/21/1993  | epi  | 24   | 20   | 2  | 2  | 2  |     |    |    |       |         |       |            |        |
| 47   | Madison L | 8/3/1993   | epi  | 25   | 23   | 1  | 2  | 2  | 6   |    |    |       |         |       |            |        |
| 47   | Madison L | 8/17/1993  | epi  | 24   | 21   | 1  | 2  | 2  | 5   |    |    |       |         |       |            |        |
| 47   | Madison L | 8/31/1993  | epi  | 25   | 24   |    |    |    |     |    |    |       |         |       |            |        |
| 47   | Madison L | 9/14/1993  | epi  | 21   | 20   | 2  | 2  | 2  |     |    |    |       |         |       |            |        |
| 47   | Madison L | 9/27/1993  | epi  | 15   | 15   | 2  | 2  |    | 5   |    |    |       |         |       |            |        |
| 47   | Madison L | 7/30/1998  | epi  | 23   | 24   | 2  | 2  | 2  |     |    |    |       |         |       |            |        |
| 47   | Madison L | 8/3/1998   | epi  | 25   | 25   | 2  | 2  | 1  |     |    |    |       |         |       |            |        |
| 47   | Madison L | 8/19/1998  | epi  | 20   | 24   | 1  | 1  | 1  |     |    |    |       |         |       |            |        |
| 47   | Madison L | 8/24/1998  | epi  | 28   | 23   | 1  | 2  | 2  |     |    |    |       |         |       |            |        |
| 47   | Madison L | 8/31/1998  | epi  | 20   | 25   | 2  | 2  | 2  |     |    |    |       |         |       |            |        |
| 47   | Madison L | 9/8/1998   | epi  | 20   | 19   | 2  | 2  | 4  | 15  |    |    |       |         |       |            |        |
| 47   | Madison L | 9/14/1998  | epi  | 19   | 20   | 1  | 1  | 1  |     |    |    |       |         |       |            |        |
| 47   | Madison L | 9/23/1998  | epi  | 9    | 20   | 1  | 3  | 2  | 5   |    |    |       |         |       |            |        |
| 47   | Madison L | 6/24/2004  | epi  | 24   | 20   | 2  | 2  | 1  | 7   |    |    |       |         |       |            |        |
| 47   | Madison L | 6/28/2004  | epi  | 22   | 20   | 2  | 2  | 3  | 5   |    |    |       |         |       |            |        |
| 47   | Madison L | 7/19/2004  | epi  | 24   | 23   | 2  | 1  | 1  |     |    |    |       |         |       |            |        |
| 47   | Madison L | 8/1/2004   | epi  | 30   | 24   | 1  | 3  | 2  | 6   |    |    |       |         |       |            |        |
| 47   | Madison L | 8/17/2004  | epi  | 32   | 24   | 2  | 2  | 1  | 0   |    |    |       |         |       |            |        |
| 47   | Madison L | 8/30/2004  | epi  | 23   | 24   | 2  | 3  | 3  | 5   |    |    |       |         |       |            |        |
| 47   | Madison L | 9/12/2004  | epi  | 30   | 25   | 3  | 3  | 2  | 2   |    |    |       |         |       |            |        |
| 47   | Madison L | 9/27/2004  | epi  | 29   | 22   | 2  | 3  | 2  | 5   |    |    |       |         |       |            |        |
| 47   | Madison L | 7/2/2005   | epi  | 20   | 23   | 3  | 2  | 2  | 25  |    |    |       |         |       |            |        |
| 47   | Madison L | 7/9/2005   | epi  | 20   | 23   | 2  | 1  | 2  | 5   |    |    |       |         |       |            |        |
| 47   | Madison L | 7/16/2005  | epi  | 31   |      | 2  | 3  | 3  | 0   |    |    |       |         |       |            |        |
| 47   | Madison L | 7/23/2005  | epi  | 29   | 26   | 1  | 3  | 2  | 0   |    |    |       |         |       |            |        |
| 47   | Madison L | 7/30/2005  | epi  | 26   | 25   | 2  | 3  | 1  | 0   |    |    |       |         |       |            |        |
| 47   | Madison L | 8/6/2005   | epi  | 26   | 25   | 2  | 2  | 2  | 0   |    |    |       |         |       |            |        |
| 47   | Madison L | 8/13/2005  | epi  | 24   | 26   | 2  | 3  | 2  | 5   |    |    |       |         |       |            |        |
| 47   | Madison L | 8/20/2005  | epi  | 20   | 23   | 2  | 3  | 2  | 2   |    |    |       |         |       |            |        |
| 47   | Madison L | 7/1/2006   | epi  | 22   | 19   | 3  | 3  | 3  | 568 |    |    |       |         |       |            |        |
| 47   | Madison L | 7/15/2006  | epi  | 22   | 20   | 2  | 2  | 2  | 5   |    |    |       |         |       |            |        |
| 47   | Madison L | 7/23/2006  | epi  | 24   | 21   | 2  | 2  | 2  | 7   |    |    |       |         |       |            |        |
| 47   | Madison L | 7/29/2006  | epi  | 22   | 23   | 2  | 3  | 2  | 8   |    |    |       |         |       |            |        |
| 47   | Madison L | 8/5/2006   | epi  | 20   | 24   | 2  | 3  | 2  | 0   |    |    |       |         |       |            |        |

| LNum | PName     | Date       | Site | TAir | TH20 | QA | QB | QC | QD  | QF | QG | AQ-PC | AQ-Chla | MC-LR | Anatoxin-a | Cyclin |
|------|-----------|------------|------|------|------|----|----|----|-----|----|----|-------|---------|-------|------------|--------|
| 47   | Madison L | 8/12/2006  | epi  | 19   | 23   | 2  | 1  | 1  | 0   |    |    |       |         |       |            |        |
| 47   | Madison L | 8/20/2006  | epi  | 22   | 22   | 2  | 3  | 2  | 2   |    |    |       |         |       |            |        |
| 47   | Madison L | 6/30/2007  | epi  | 19   | 22   | 2  | 3  | 3  | 5   |    |    |       |         |       |            |        |
| 47   | Madison L | 7/7/2007   | epi  | 26   | 23   | 2  | 3  | 3  | 2   |    |    |       |         |       |            |        |
| 47   | Madison L | 7/14/2007  | epi  | 19   | 21   | 2  | 2  | 2  | 5   |    |    |       |         |       |            |        |
| 47   | Madison L | 7/21/2007  | epi  | 20   | 21   | 2  | 2  | 2  | 0   |    |    |       |         |       |            |        |
| 47   | Madison L | 7/28/2007  | epi  | 26   | 25   | 2  | 3  | 2  | 2   |    |    |       |         |       |            |        |
| 47   | Madison L | 8/4/2007   | epi  | 24   | 28   | 2  | 2  | 1  | 2   |    |    |       |         |       |            |        |
| 47   | Madison L | 8/11/2007  | epi  | 18   | 23   | 2  | 3  | 2  | 8   |    |    |       |         |       |            |        |
| 47   | Madison L | 8/18/2007  | epi  | 15   | 20   | 2  | 3  | 2  | 5   |    |    |       |         |       |            |        |
| 47   | Madison L | 7/12/2008  | epi  | 22   | 21   | 3  | 2  | 2  | 3   |    |    |       |         |       |            |        |
| 47   | Madison L | 7/19/2008  | epi  | 20   | 22   | 2  | 2  | 8  | 2   |    |    |       |         |       |            |        |
| 47   | Madison L | 7/26/2008  | epi  | 22   | 20   | 3  | 2  | 0  | 3   |    |    |       |         |       |            |        |
| 47   | Madison L | 8/2/2008   | epi  | 21   | 23   | 3  | 3  | 5  | 3   |    |    |       |         |       |            |        |
| 47   | Madison L | 8/9/2008   | epi  | 19   | 22   | 3  | 3  | 25 | 3   |    |    |       |         |       |            |        |
| 47   | Madison L | 8/16/2008  | epi  | 18   | 22   | 3  | 3  | 2  | 3   |    |    |       |         |       |            |        |
| 47   | Madison L | 8/23/2008  | epi  | 20   | 21   | 3  | 2  | 1  | 3   |    |    |       |         |       |            |        |
| 47   | Madison L | 07/19/2009 | epi  | 21   | 21   | 3  | 2  | 2  | 235 |    |    |       |         |       |            |        |
| 47   | Madison L | 07/26/2009 | epi  | 22   | 22   | 3  | 1  | 2  | 57  |    |    |       |         |       |            |        |
| 47   | Madison L | 08/02/2009 | epi  | 23   | 22   | 2  | 4  | 3  | 23  |    |    |       |         |       |            |        |
| 47   | Madison L | 08/08/2009 | epi  | 18   | 22   | 3  | 3  | 3  | 23  |    |    |       |         |       |            |        |
| 47   | Madison L | 08/16/2009 | epi  | 26   | 24   | 3  | 3  | 2  | 23  |    |    |       |         |       |            |        |
| 47   | Madison L | 08/23/2009 | epi  | 20   | 22   | 2  | 2  | 2  | 5   |    |    |       |         |       |            |        |
| 47   | Madison L | 08/30/2009 | epi  | 19   | 22   | 3  | 3  | 3  | 25  |    |    |       |         |       |            |        |
| 47   | Madison L | 09/07/2009 | epi  | 23   | 22   | 1  | 4  | 2  | 0   |    |    |       |         |       |            |        |
| 47   | Madison L | 07/18/2010 | epi  | 22   | 24   | 3  | 3  | 2  | 0   | 4  | 0  |       |         |       |            |        |
| 47   | Madison L | 07/25/2010 | epi  | 21   | 20   | 2  | 3  | 2  | 0   | 0  | 0  |       |         |       |            |        |
| 47   | Madison L | 08/01/2010 | epi  | 24   | 23   | 3  | 4  | 4  | 12  | 3  |    | 60.28 |         |       |            |        |
| 47   | Madison L | 08/08/2010 | epi  | 23   | 24   | 3  | 4  | 4  | 23  | 4  | 0  |       |         |       |            |        |
| 47   | Madison L | 08/15/2010 | epi  | 21   | 24   | 2  | 3  | 4  | 25  |    |    | 153.7 |         |       |            |        |
| 47   | Madison L | 08/24/2010 | epi  | 22   | 22   | 3  | 3  | 3  | 2   |    |    |       |         |       |            |        |
| 47   | Madison L | 08/29/2010 | epi  | 19   | 20   | 2  | 3  | 3  | 0   | 0  | 0  |       |         |       |            |        |
| 47   | Madison L | 09/06/2010 | epi  | 20   | 22   | 2  | 3  | 2  | 5   |    | 5  |       |         |       |            |        |
| 47   | Madison L | 7/24/2011  | epi  | 25   | 25   | 3  | 2  | 3  | 2   | 0  | 0  | 19.40 |         |       |            |        |
| 47   | Madison L | 7/31/2011  | epi  | 18   | 23   | 1  | 3  | 2  | 0   | 0  |    | 23.40 |         |       |            |        |
| 47   | Madison L | 8/10/2011  | epi  | 21   | 24   | 2  | 3  | 3  | 2   | 67 | 4  | 55.00 |         |       |            |        |
| 47   | Madison L | 8/19/2011  | epi  | 22   | 21   | 2  | 2  | 1  | 0   | 0  | 0  | 26.70 |         |       |            |        |
| 47   | Madison L | 9/4/2011   | epi  | 22   | 21   | 3  | 4  | 4  | 268 | 4  | 47 | 12.00 |         |       |            |        |
| 47   | Madison L | 9/18/2011  | epi  | 15   | 17   | 2  | 3  | 3  | 25  | 0  | 0  | 24.20 |         |       |            |        |
| 47   | Madison L | 10/9/2011  | epi  | 18   | 16   | 2  | 3  | 3  | 25  | 0  | 0  | 22.10 |         |       |            |        |
| 47   | Madison L | 6/24/2004  | hypo |      | 19   |    |    |    |     |    |    |       |         |       |            |        |
| 47   | Madison L | 6/28/2004  | hypo |      | 19   |    |    |    |     |    |    |       |         |       |            |        |
| 47   | Madison L | 6/30/2007  | hypo |      | 17   |    |    |    |     |    |    |       |         |       |            |        |
| 47   | Madison L | 7/14/2007  | hypo |      | 12   |    |    |    |     |    |    |       |         |       |            |        |
| 47   | Madison L | 7/21/2007  | hypo |      | 13   |    |    |    |     |    |    |       |         |       |            |        |
| 47   | Madison L | 8/11/2007  | hypo |      | 14   |    |    |    |     |    |    |       |         |       |            |        |
| 47   | Madison L | 7/12/2008  | hypo |      | 18   |    |    |    |     |    |    |       |         |       |            |        |
| 47   | Madison L | 7/19/2008  | hypo |      | 19   |    |    |    |     |    |    |       |         |       |            |        |
| 47   | Madison L | 7/26/2008  | hypo |      | 19   |    |    |    |     |    |    |       |         |       |            |        |
| 47   | Madison L | 8/23/2008  | hypo |      | 18   |    |    |    |     |    |    |       |         |       |            |        |
| 47   | Madison L | 07/19/2009 | hypo |      | 14   |    |    |    |     |    |    |       |         |       |            |        |
| 47   | Madison L | 08/02/2009 | hypo |      | 15   |    |    |    |     |    |    |       |         |       |            |        |
| 47   | Madison L | 08/16/2009 | hypo |      | 15   |    |    |    |     |    |    |       |         |       |            |        |
| 47   | Madison L | 08/23/2009 | hypo |      | 20   |    |    |    |     |    |    |       |         |       |            |        |
| 47   | Madison L | 08/30/2009 | hypo |      | 16   |    |    |    |     |    |    |       |         |       |            |        |
| 47   | Madison L | 7/25/2010  | hypo |      | 13   |    |    |    |     |    |    |       |         |       |            |        |
| 47   | Madison L | 8/1/2010   | hypo |      | 17   |    |    |    |     |    |    |       |         |       |            |        |
| 47   | Madison L | 8/8/2010   | hypo |      | 10   |    |    |    |     |    |    |       |         |       |            |        |
| 47   | Madison L | 8/15/2010  | hypo |      | 19   |    |    |    |     |    |    |       |         |       |            |        |
| 47   | Madison L | 8/29/2010  | hypo |      | 15   |    |    |    |     |    |    |       |         |       |            |        |
| 47   | Madison L | 7/24/2011  | hypo |      | 15   |    |    |    |     |    |    |       |         |       |            |        |

| LNum | PName     | Date      | Site | TAir | TH20 | QA | QB | QC | QD | QF | QG | AQ-PC | AQ-Chla | MC-LR | Anatoxin-a | Cyclin |
|------|-----------|-----------|------|------|------|----|----|----|----|----|----|-------|---------|-------|------------|--------|
| 47   | Madison L | 7/31/2011 | hypo |      | 15   |    |    |    |    |    |    |       |         |       |            |        |
| 47   | Madison L | 8/10/2011 | hypo |      |      |    |    |    |    |    |    |       |         |       |            |        |
| 47   | Madison L | 8/19/2011 | hypo |      | 18   |    |    |    |    |    |    |       |         |       |            |        |
| 47   | Madison L | 9/4/2011  | hypo |      | 18   |    |    |    |    |    |    |       |         |       |            |        |
| 47   | Madison L | 9/18/2011 | hypo |      |      |    |    |    |    |    |    |       |         |       |            |        |
| 47   | Madison L | 10/9/2011 | hypo |      |      |    |    |    |    |    |    |       |         |       |            |        |

## Legend Information

| <i>Indicator</i>             | <i>Description</i>  | <i>Detection Limit</i> | <i>Standard (S) / Criteria (C)</i>         |
|------------------------------|---|------------------------|--|
| <b>General Information</b>   |   |                        |  |
| <b>Lnum</b>                  | lake number (unique to CSLAP)   |                        |  |
| <b>Lname</b>                 | name of lake (as it appears in the Gazetteer of NYS Lakes)  |                        |  |
| <b>Date</b>                  | sampling date   |                        |  |
| <b>Field Parameters</b>      |   |                        |  |
| <b>Zbot</b>                  | lake depth at sampling point, meters (m)  |                        |  |
| <b>Zsd</b>                   | Secchi disk transparency or clarity   | 0.1m                   | 1.2m ( C)                                  |
| <b>Zsamp</b>                 | water sample depth (m) (epi = surface, hypo = bottom)   | 0.1m                   | none                                       |
| <b>Tair</b>                  | air temperature ( C)  | -10C                   | none                                       |
| <b>TH20</b>                  | water temperature ( C)  | -10C                   | none                                       |
| <b>Laboratory Parameters</b> |   |                        |  |
| <b>Tot.P</b>                 | total phosphorus (mg/l)   | 0.003 mg/l             | 0.020 mg/l ( C)                            |
| <b>NOx</b>                   | nitrate + nitrite (mg/l)  | 0.01 mg/l              | 10 mg/l NO3 (S),<br>2 mg/l NO2 (S)         |
| <b>NH4</b>                   | total ammonia (mg/l)  | 0.01 mg/l              | 2 mg/l NH4 (S)                             |
| <b>TN</b>                    | total nitrogen (mg/l)   | 0.01 mg/l              | none                                       |
| <b>TN/TP</b>                 | nitrogen to phosphorus (molar) ratio, = (TKN + NOx)*2.2/TP  |                        | none                                       |
| <b>TCOLOR</b>                | true (filtered) color (ptu, platinum color units)   | 1 ptu                  | none                                       |
| <b>pH</b>                    | powers of hydrogen (S.U., standard pH units)  | 0.1 S.U.               | 6.5, 8.5 S.U. (S)                          |
| <b>Cond25</b>                | specific conductance, corrected to 25C (umho/cm)  | 1 umho/cm              | none                                       |
| <b>Ca</b>                    | calcium (mg/l)  | 1 mg/l                 | none                                       |
| <b>Chl.a</b>                 | chlorophyll a (ug/l)  | 0.01 ug/l              | none                                       |
| <b>Fe</b>                    | iron (mg/l)   | 0.1 mg/l               | 1.0 mg/l (S)                               |
| <b>Mn</b>                    | manganese (mg/l)  | 0.01 mg/l              | 0.3 mg/l (S)                               |
| <b>As</b>                    | arsenic (ug/l)  | 1 ug/l                 | 10 ug/l (S)                                |
| <b>AQ-PC</b>                 | Phycocyanin (aquafior) (unitless)   | 1 unit                 | none                                       |
| <b>AQ-Chl</b>                | Chlorophyll a (aquafior) (ug/l)   | 1 ug/l                 | none                                       |
| <b>MC-LR</b>                 | Microcystis-LR (ug/l)   | 0.01 ug/l              | 1 ug/l potable (C)<br>20 ug/l swimming (C) |
| <b>Ana</b>                   | Anatoxin-a (ug/l)   | 0.3 ug/l               | none                                       |
| <b>Cyl</b>                   | Cylindrospermopsin (ug/l)   | 0.1 ug/l               | none                                       |
| <b>Lake Assessment</b>       |   |                        |  |
| <b>QA</b>                    | water quality assessment; 1 = crystal clear, 2 = not quite crystal clear, 3 = definite algae greenness, 4 = high algae levels, 5 = severely high algae levels   |                        |  |
| <b>QB</b>                    | aquatic plant assessment; 1 = no plants visible, 2 = plants below surface, 3 = plants at surface, 4 = plants dense at surface, 5 = surface plant coverage   |                        |  |
| <b>QC</b>                    | recreational assessment; 1 = could not be nicer, 2 = excellent, 3 = slightly impaired, 4 = substantially impaired, 5 = lake not usable  |                        |  |
| <b>QD</b>                    | reasons for recreational assessment; 1 = poor water clarity, 2 = excessive weeds, 3 = too much algae, 4 = lake looks bad, 5 = poor weather, 6 = litter/surface debris, 7 = too many lake users, 8 = other |                        |  |
| <b>QF, QG</b>                | Health and safety issues today (QF) and past week (QG); 0 = none, 1 = taste/odor, 2 = GI illness humans/animals, 3 = swimmers itch, 4 = algae blooms, 5 = dead fish, 6 = unusual animals, 7 = other       |                        |  |



## Appendix B- Monthly Evaluation of Babcock Lake Data, 2006-2011

### June Data

|               | 2006 | 2007   | 2008 | 2009 | 2010 | 2011 |
|---------------|------|--------|------|------|------|------|
| <i>Zsd</i>    |      | NORMAL |      |      |      |      |
| <i>TP</i>     |      | NORMAL |      |      |      |      |
| <i>Chl.a</i>  |      | HIGH   |      |      |      |      |
| <i>NOx</i>    |      | NORMAL |      |      |      |      |
| <i>NH4</i>    |      | NORMAL |      |      |      |      |
| <i>TN</i>     |      | HIGH   |      |      |      |      |
| <i>pH</i>     |      | NORMAL |      |      |      |      |
| <i>SpCond</i> |      | NORMAL |      |      |      |      |
| <i>Color</i>  |      | NORMAL |      |      |      |      |
| <i>Ca</i>     |      | HIGH   |      |      |      |      |
| <i>QA</i>     |      | NORMAL |      |      |      |      |
| <i>QB</i>     |      | NORMAL |      |      |      |      |
| <i>QC</i>     |      | NORMAL |      |      |      |      |
| <i>TH20</i>   |      | NORMAL |      |      |      |      |

High = average monthly reading > 90<sup>th</sup> percentile reading for lake, 2000-2010

Low = average monthly reading < 10<sup>th</sup> percentile reading for lake, 2000-2010

Normal = average monthly reading between 10<sup>th</sup> and 90<sup>th</sup> percentile reading for lake, 2000-2010

### July Data

|               | 2006   | 2007   | 2008   | 2009   | 2010   | 2011   |
|---------------|--------|--------|--------|--------|--------|--------|
| <i>Zsd</i>    | NORMAL | NORMAL | NORMAL | NORMAL | NORMAL | NORMAL |
| <i>TP</i>     | NORMAL | NORMAL | NORMAL | NORMAL | HIGH   | NORMAL |
| <i>Chl.a</i>  | NORMAL | NORMAL | NORMAL | NORMAL | NORMAL | NORMAL |
| <i>NOx</i>    | NORMAL | NORMAL | NORMAL | NORMAL | NORMAL | NORMAL |
| <i>NH4</i>    | NORMAL | NORMAL | NORMAL | NORMAL | NORMAL | NORMAL |
| <i>TN</i>     | NORMAL | NORMAL | NORMAL | NORMAL | NORMAL | NORMAL |
| <i>pH</i>     | NORMAL | NORMAL | NORMAL | NORMAL | HIGH   | NORMAL |
| <i>SpCond</i> | NORMAL | HIGH   | NORMAL | NORMAL | NORMAL | HIGH   |
| <i>Color</i>  | NORMAL | NORMAL | NORMAL | NORMAL | NORMAL | NORMAL |
| <i>Ca</i>     |        | NORMAL | NORMAL | NORMAL | LOW    | HIGH   |
| <i>QA</i>     | NORMAL | NORMAL | NORMAL | NORMAL | NORMAL | NORMAL |
| <i>QB</i>     | NORMAL | NORMAL | NORMAL | LOW    | NORMAL | NORMAL |
| <i>QC</i>     | NORMAL | NORMAL | NORMAL | NORMAL | NORMAL | NORMAL |
| <i>TH20</i>   | NORMAL | NORMAL | NORMAL | NORMAL | NORMAL | NORMAL |

High = average monthly reading > 90<sup>th</sup> percentile reading for lake, 2000-2010

Low = average monthly reading < 10<sup>th</sup> percentile reading for lake, 2000-2010

Normal = average monthly reading between 10<sup>th</sup> and 90<sup>th</sup> percentile reading for lake, 2000-2010

## August Data

|        | 2006   | 2007   | 2008   | 2009   | 2010   | 2011   |
|--------|--------|--------|--------|--------|--------|--------|
| Zsd    | NORMAL | NORMAL | NORMAL | NORMAL | NORMAL | NORMAL |
| TP     | NORMAL | NORMAL | NORMAL | NORMAL | NORMAL | HIGH   |
| Chl.a  | NORMAL | NORMAL | NORMAL | NORMAL | NORMAL | NORMAL |
| NOx    | NORMAL | NORMAL | NORMAL | NORMAL | NORMAL | NORMAL |
| NH4    | HIGH   | NORMAL | NORMAL | NORMAL | NORMAL | NORMAL |
| TN     | HIGH   | NORMAL | NORMAL | NORMAL | NORMAL | NORMAL |
| pH     | NORMAL | NORMAL | NORMAL | NORMAL | NORMAL | LOW    |
| SpCond | NORMAL | NORMAL | NORMAL | LOW    | NORMAL | NORMAL |
| Color  | NORMAL | NORMAL | NORMAL | NORMAL | NORMAL | NORMAL |
| Ca     |        |        | NORMAL | NORMAL | LOW    | HIGH   |
| QA     | NORMAL | NORMAL | NORMAL | NORMAL | NORMAL | NORMAL |
| QB     | NORMAL | NORMAL | NORMAL | NORMAL | HIGH   | NORMAL |
| QC     | NORMAL | NORMAL | NORMAL | NORMAL | HIGH   | NORMAL |
| TH20   | NORMAL | HIGH   | NORMAL | NORMAL | NORMAL | NORMAL |

High = average monthly reading > 90<sup>th</sup> percentile reading for lake, 2000-2010

Low = average monthly reading < 10<sup>th</sup> percentile reading for lake, 2000-2010

Normal = average monthly reading between 10<sup>th</sup> and 90<sup>th</sup> percentile reading for lake, 2000-2010

## September Data

|        | 2006 | 2007 | 2008 | 2009   | 2010   | 2011   |
|--------|------|------|------|--------|--------|--------|
| Zsd    |      |      |      | NORMAL | NORMAL | HIGH   |
| TP     |      |      |      | NORMAL | HIGH   | NORMAL |
| Chl.a  |      |      |      | NORMAL | HIGH   | NORMAL |
| NOx    |      |      |      | NORMAL | NORMAL | NORMAL |
| NH4    |      |      |      | HIGH   | NORMAL | HIGH   |
| TN     |      |      |      | NORMAL | NORMAL | NORMAL |
| pH     |      |      |      | HIGH   | NORMAL | NORMAL |
| SpCond |      |      |      | LOW    | NORMAL | HIGH   |
| Color  |      |      |      | HIGH   | LOW    | NORMAL |
| Ca     |      |      |      |        |        |        |
| QA     |      |      |      | LOW    | NORMAL | NORMAL |
| QB     |      |      |      | HIGH   | NORMAL | HIGH   |
| QC     |      |      |      | NORMAL | NORMAL | HIGH   |
| TH20   |      |      |      | NORMAL | NORMAL | LOW    |

High = average monthly reading > 90<sup>th</sup> percentile reading for lake, 2000-2010

Low = average monthly reading < 10<sup>th</sup> percentile reading for lake, 2000-2010

Normal = average monthly reading between 10<sup>th</sup> and 90<sup>th</sup> percentile reading for lake, 2000-2010

# Madison Lake ( 1204-0006)

NoKnownImpct

## Waterbody Location Information

Revised: 01/29/2010

|                         |                    |                     |                     |
|-------------------------|--------------------|---------------------|---------------------|
| <b>Water Index No:</b>  | H-240-223-P1051    | <b>Drain Basin:</b> | Mohawk River        |
| <b>Hydro Unit Code:</b> | 02020004/040       | <b>Str Class:</b>   | C                   |
| <b>Waterbody Type:</b>  | Lake (Mesotrophic) | <b>Reg/County:</b>  | 7/Madison Co. (27)  |
| <b>Waterbody Size:</b>  | 34.5 Acres         | <b>Quad Map:</b>    | MUNNSVILLE (J-18-2) |
| <b>Seg Description:</b> | entire lake        |                     |                     |

## Water Quality Problem/Issue Information

(CAPS indicate MAJOR Use Impacts/Pollutants/Sources)

| Use(s) Impacted  | Severity | Problem Documentation |
|------------------|----------|-----------------------|
| NO USE IMPAIRMNT |          |                       |

### Type of Pollutant(s)

Known: ---  
Suspected: ---  
Possible: ---

### Source(s) of Pollutant(s)

Known: ---  
Suspected: ---  
Possible: ---

## Resolution/Management Information

|                             |   |                                  |
|-----------------------------|---|----------------------------------|
| <b>Issue Resolvability:</b> | 8 (No Known Use Impairment)                 |                                  |
| <b>Verification Status:</b> | (Not Applicable for Selected RESOLVABILITY) |                                  |
| <b>Lead Agency/Office:</b>  | n/a   | <b>Resolution Potential:</b> n/a |
| <b>TMDL/303d Status:</b>    | n/a   |                                  |

## Further Details

### Water Quality Sampling

Madison Lake has been sampled as part of the NYSDEC Citizen Statewide Lake Assessment Program (CSLAP) in 1992, 1993, 1998 and from 2001 through 2008. An Interpretive Summary report of the findings of this sampling was published in 2009. These data indicate that the lake continues to be best characterized as mesotrophic, or moderately unproductive. Phosphorus levels in the lake consistently fall below state guidance values indicating impacted/stressed recreational uses, though levels have been somewhat higher in recent years. Corresponding transparency measurements typically exceed the recommended minimum for swimming beaches. Measurements of pH typically fall within the state water quality range of 6.5 to 8.5. The lake water is weakly to moderately colored, but this is considered to reflect natural conditions and does not limit water transparency. (DEC/DOW, BWAM/CSLAP, February 2009)

### Recreational Assessment

Public perception of the lake and its uses is also evaluated as part of the CSLAP program. This assessment indicates recreational suitability of the lake to be favorable. The recreational suitability of the lake is described most frequently as "excellent." The lake itself is most often described as "not quite crystal clear." Assessments have noted that aquatic plants occasionally grow to the lake surface, and have been cited more frequently as impacting recreational uses. (DEC/DOW, BWAM/CSLAP, February 2009)

### Lake Uses

This lake waterbody is designated class C, suitable for use as a general recreation water and aquatic life support, but not for water supply use or public bathing. Water quality monitoring by NYSDEC focuses primarily on support of general recreation and aquatic life. Samples to evaluate the bacteriological condition and bathing use of the lake or to evaluate contamination from organic compounds, metals or other inorganic pollutants have not been collected as part of the CSLAP monitoring program. Monitoring to assess potable water supply and public bathing use is generally the responsibility of state and/or local health departments.

#### Segment Description

This segment includes the total area of the entire lake.