



Secchi Disk Monitoring - Des Moines Lake Water Clarity

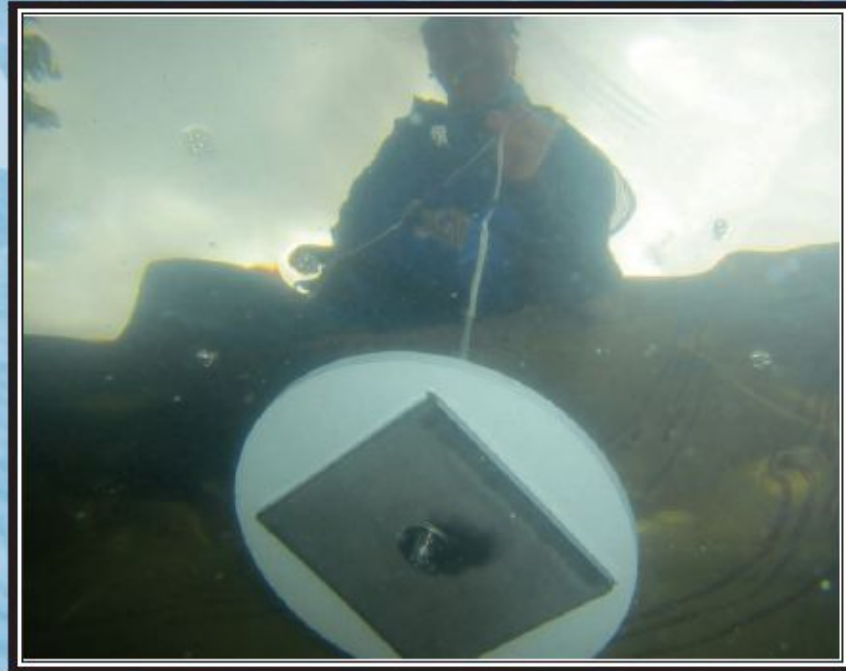
Chris Franken & Beth Ihry - Volunteers

*A lake is the landscape's most
beautiful and expressive feature.
It is the Earth's eye; looking into
which the beholder measures the
depth of his own nature.*

-Henry David Thoreau

Wisconsin Citizen Lake Monitoring Training Manual

(Secchi Disk Procedures)



3rd Edition

Written by

Des Moines Lake “Deep Hole”



The Secchi Disk Procedure

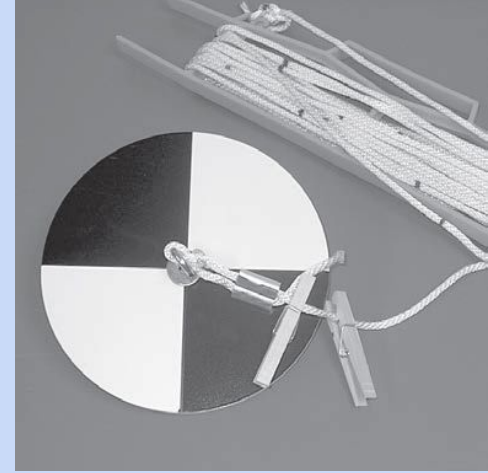
The Secchi disk is lowered into the water on a marked rope until just disappears from view, that point is marked with a clothespin at the water's surface.

Volunteers then lower the disk a couple of feet further into the water.

They then slowly raise the disk until they can see it again. That point is also marked with a clothespin.

The average of these two measurements is recorded.

Doing the two measurements using the “clothespin method” allows the volunteer’s eyes to acclimate to looking in the water and gives a more accurate reading.



Record @ Surface Water Integrated Monitoring System (SWIMS): Date, Time, and Comments + Data & Observations

Sample collector comments:

- Busy boat traffic- Brian suffering from swimmer's itch- mystery snails- several loons sighted so far this summer.
- Bright sunny day. Light breeze. No boats at all on the lake besides ours. Water appears cloudy today. Heavy rains the past few days. 65 degrees
- No boats observed. Partly sunny day; calm wind; 82 degrees; two pair of loons observed; greenish hue to the water.

Data and observation categories to record include:

Secchi Depth

Hit Bottom

Lake Level

Clarity

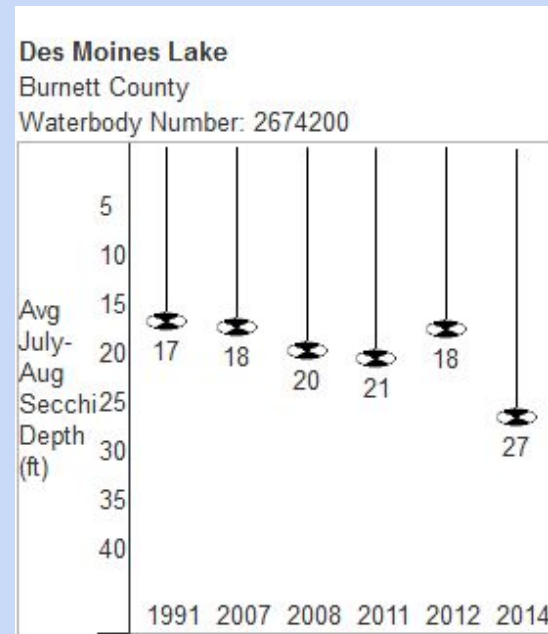
Color

Perception

Secchi Depth

SD (ft) = “Secchi depth in feet” These are measurements of water transparency – the number of feet that a Secchi disc can be lowered into the lake while remaining visible to someone on the surface.

This is the quickest and easiest way to estimate a lake’s Trophic State Index (TSI) score, but it is less accurate in lakes that are heavily stained with tannins or other color-adding compounds. Click on “Secchi Graph” on your lake’s annual report page to see a history of Secchi depth on your lake.



Hit Bottom

This is a simple yes/no question, indicating whether the Secchi disc hit the bottom of the lake during measurement. If the answer is yes, we know that the true Secchi depth value is actually deeper than the value that was reported, but the disc could not physically be lowered any further into the lake.

Lake Level

The lake level is noted as “high”, “normal”, or “low” on the report. This is simply an opinion of the person who conducted the monitoring on that date. Compared to what they believe is a “normal” lake level, they indicate whether the level was higher than normal, lower than normal, or at the normal level.

Clarity

This column is called “appearance” on the field datasheet. “Clear” is entered if the water appears to be mostly free of algae and other suspended particles. Otherwise, “murky” is entered.

Color

One of five color choices is noted in this column: “blue”, “green”, “brown”, “red”, or “yellow”. The color of a lake’s water can be influenced by algae, suspended particles, or dissolved compounds. Green water indicates a large presence of green algae. Yellow or brown colors are caused by dissolved organic compounds that are released from decaying organic matter. Red color can be caused by certain kinds of algae or other microorganisms, or by dissolved iron in the water.

Relatively pure water typically contains low concentrations of algae, suspended particles, or dissolved compounds. It appears blue because of two primary reasons. First, the other wavelengths (colors) of light are absorbed first in a lake, allowing a higher relative percentage of blue light to be reflected back to a person’s eye. The deeper the water is, the more pronounced this effect becomes. Secondly, lakes appear bluer on sunny days, because the color of the blue sky is reflected off of the lake’s surface.

Perception

This column describes the volunteer's opinion of the lake's aesthetic quality on the day of monitoring. It ranges from:

- 1 "beautiful, could not be nicer"
- 2 "very minor aesthetic problems"
- 3 "enjoyment somewhat impaired"
- 4 "would not swim but boating OK"
- 5 "swimming and aesthetic enjoyment of lake substantially reduced because of algae levels".

General summary of our measurements & observations:

Secchi Depth: Measured consistently at ~18-20 feet.

Hit Bottom: Never recorded a “Hit Bottom”.

Lake Level: Typically “Normal” and now trending “High”

Clarity: Primarily “Clear” with very few “Murky” observations.

Color: Primarily “Blue”. Few “Green” observations. No Brown, Yellow or Red.

Perception: 1 “beautiful, could not be nicer” or 2 “very minor aesthetic problems”

https://www.youtube.com/watch?v=CfwlXd_OimY&feature=youtu.be

Using CLMN data - CLMN Webinar Series, Oct 28th, 2020



**Finding & Using
Citizen Lake Monitoring
Network Data**

**Katie Hein
WDNR**