

May 2020

Dear Citizen Monitoring Program Volunteer:

Thank you for a great 2019 monitoring season! We really appreciate your continued dedication to collecting data on Minnesota lakes and streams. As you know, volunteer monitoring is one of our state's most important water quality tracking systems. The data that you submit, along with all other water quality data collected by the Minnesota Pollution Control Agency (MPCA), are used to analyze water quality trends and provide a basis for water quality goal setting.

Please find enclosed individual site report(s) for each lake or stream site you monitored in 2019.

We acknowledge that since we migrated to an online data reporting system, print versions of individual site reports are not as robust as their online counterparts. Electronic reporting on the web allows us to present more interactive displays of information, but some of these displays are not possible in printed format. In particular, please note that print versions do not include maps (represented by the blank, outlined boxes on pages 1 and 5 of the report). The switch to online delivery of reports has reduced printing and mailing costs for our program and increased access to the data summaries by a wider audience, but we realize it comes with limitations to print copy recipients. We greatly appreciate your understanding in this. We plan to continue sending printed versions of annual site reports and newsletters as long as we have volunteers requesting print copies, so please do not hesitate to contact us with any questions or concerns.

In addition to your site report(s), we are enclosing a printed version of the 2019 Citizen Monitoring Program yearbook, *Reflections*. As with reports, we moved to an electronic format for *Reflections* to save on printing costs and to expand the ways in which we share volunteer stories. In addition to an electronic file, we are sharing the yearbook as a slideshow on YouTube and other social media platforms.

If you would prefer to access your report or *Reflections* online, please share your email address with us. Once we have your email address on file, you will also be able to receive electronic newsletters, notices regarding reports, and program updates.

The MPCA thanks all of our Citizen Monitoring Program Volunteers for collecting valuable water quality data. Your efforts toward protecting the surface waters of Minnesota are greatly appreciated!

Sincerely,



Laurie Sovell
Citizen Stream Monitoring Specialist
Environmental Analysis and Outcomes Division



Shannon Martin
Citizen Lakes Monitoring Specialist



Josh Stock
Environmental Specialist

LS/SM/JS:ds

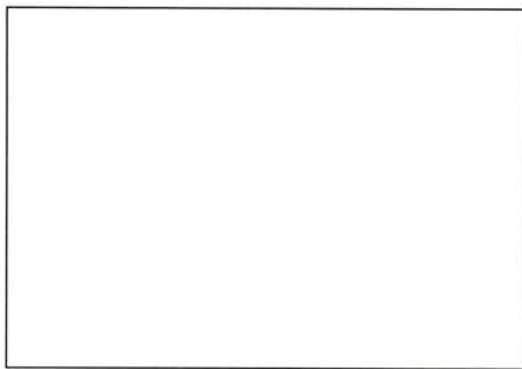
5-20



Water clarity data for

Lake: Big Pine Site: 01-0157-00-202

Data collected by volunteer monitors as part of the Citizen Lake and Citizen Stream Monitoring Programs. For more information on these programs, visit the [Volunteer Monitoring page](#).



Lake ID:	01-0157-00
Nearest town:	Big Pine
County:	Aitkin
Watershed name:	Rum River
Ecoregion:	Northern Lakes and Forests
Max depth (ft) if available:	78
Lake area (acres) if available:	617
Years of data at this site:	14

- [Annual Data Summary](#)
- [Water Quality Assessment](#)
- [Transparency Trends](#)
- [Map](#)
- [Contacts](#)

Annual Data Summary

This is an in-depth look at data collected by volunteers at this site for the most recent monitoring season, including site-specific summary statistics, user perception, and transparency data.

2019 Site summary statistics

Count Mean Min Max

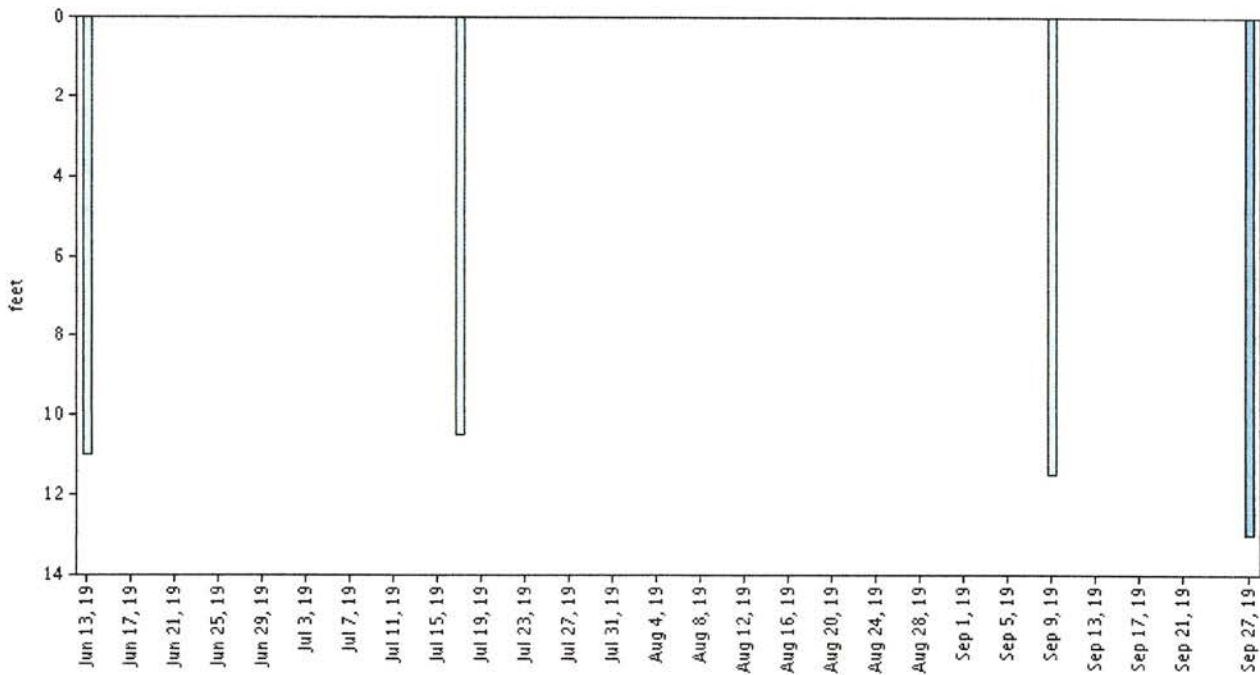
Secchi Transparency data (ft): 4 11.50 10.5 13
Physical appearance: 0
Recreational suitability: 0

2019 User perception data

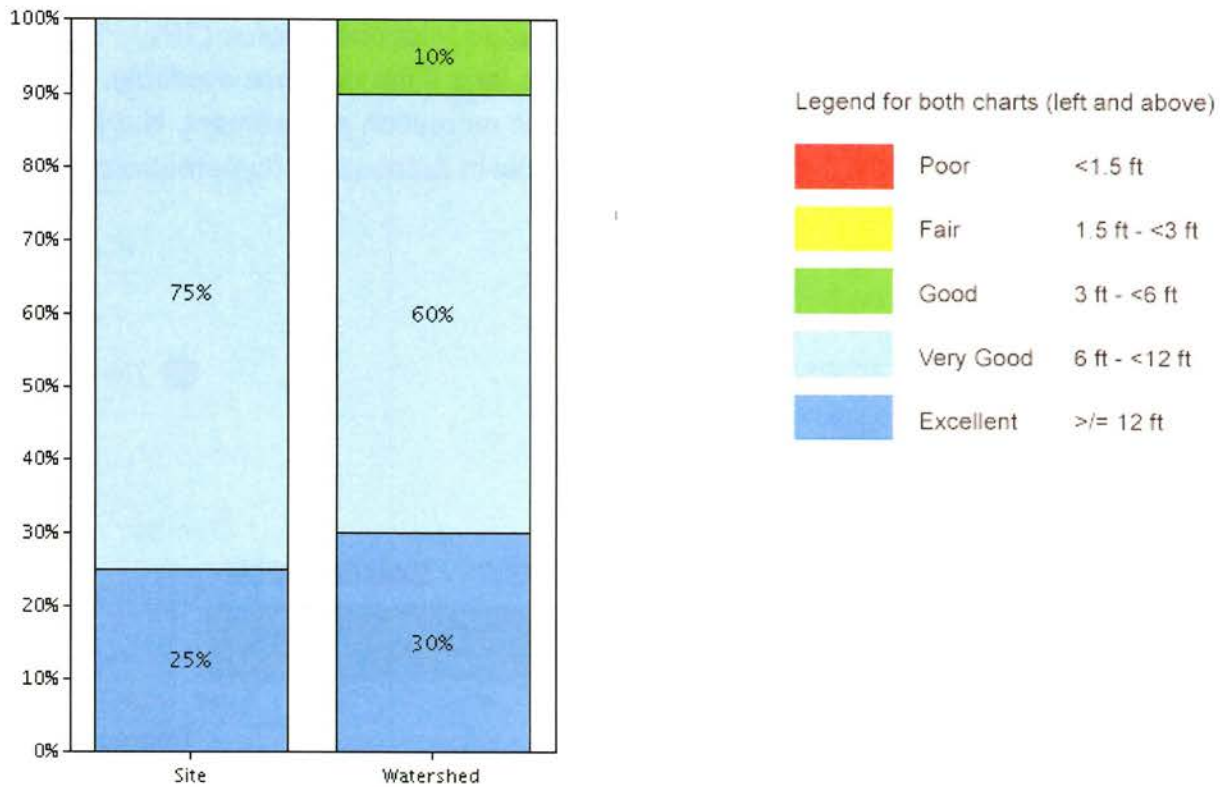
▲ Physical appearance ● Recreational suitability

There are no data.

2019 Secchi transparency data



2019 transparency at this site compared to entire watershed



For more information about your lake or stream, visit the MPCA's [Surface Water Environmental Data](#) and [Minnesota Watersheds](#) pages.

Water Quality Assessment

The federal Clean Water Act requires states to identify and list polluted or "impaired" waters. A lake or stream is impaired if it fails to meet one or more of Minnesota's water quality standards. Standards exist for pollutants such as nutrients or sediment, which are directly related to water transparency. When nutrients or sediment are high, water transparency is low.

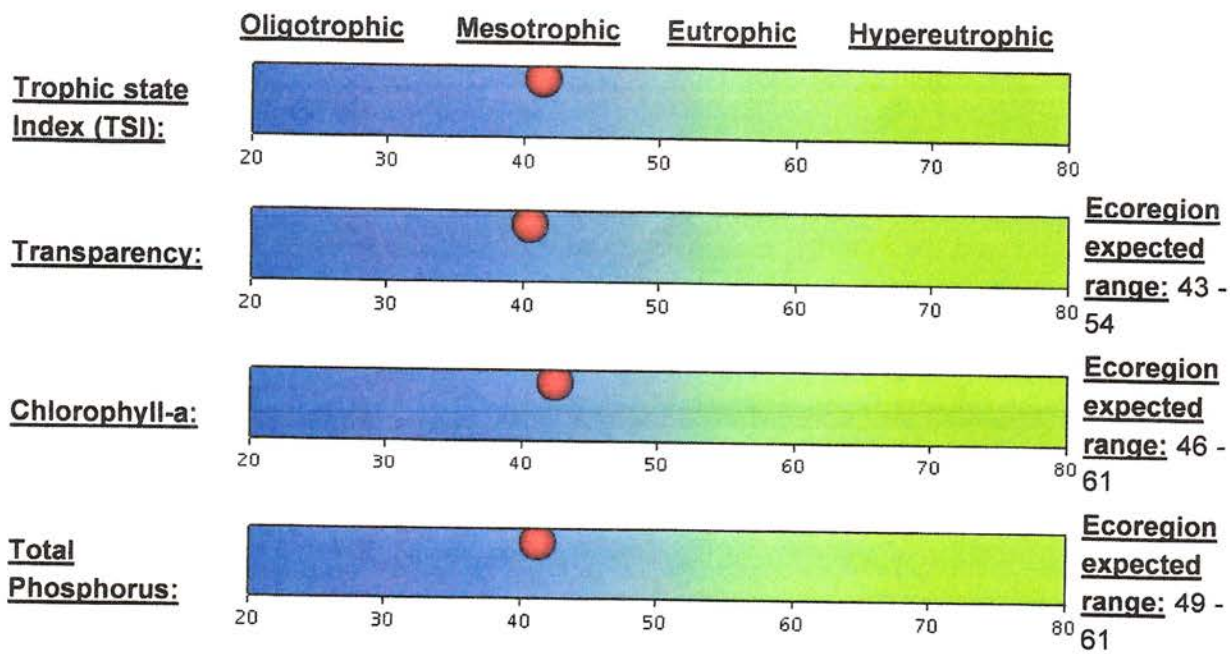
Citizen Lake Monitoring Program transparency data are used to determine the "aquatic recreation assessment," which describes how well a lake can support uses such as swimming, wading, and overall aesthetics.

Assessment information for this lake

Nutrient richness

"Indicators of nutrient richness" provides 10-year average total phosphorus (TP), chlorophyll-a, and Secchi transparency values for this lake if the data are available. These three parameters are used to make the aquatic recreation assessment. Nutrient richness ranges from "oligotrophic" which are lakes low in nutrients to "hypereutrophic" which are very nutrient-rich.

Indicators of nutrient richness – whole lake

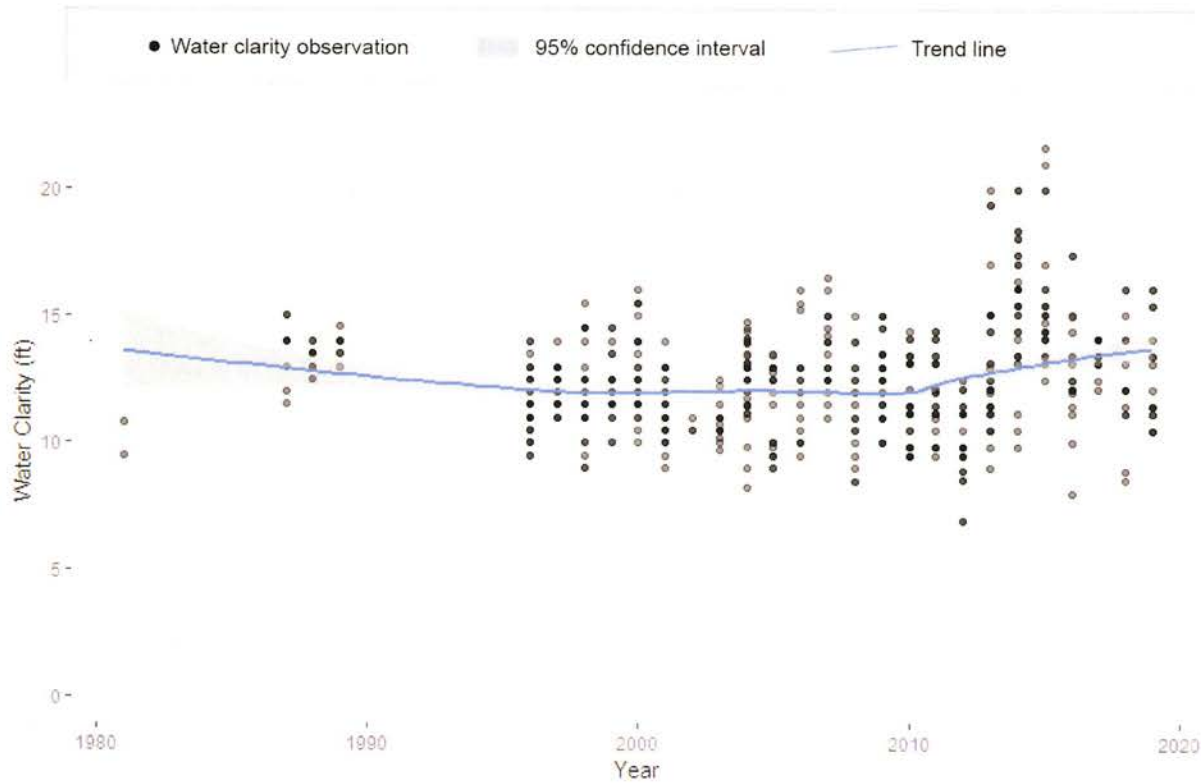


Transparency Trends

This figure show water clarity over time on this lake. The trend analysis was performed with a Seasonal Mann Kendall test. This statistical test detects changes in water clarity over time by comparing months across years (example - Mays are compared to Mays, Junes to Junes, etc...). For lakes with enough data, the figures include a trend line, which shows the direction of detected changes in water clarity. The gray area around the trend line represents the range where the actual clarity measure will fall with 95% certainty.

Lake Transparency Trend

Trend analysis result: For years 1981 to 2019 there is no identifiable water clarity trend at this lake. For the most recent year of the analysis, median water clarity was 1.31 feet higher than the watershed median.



Land use map

This map shows the distribution of land uses across this site's major **watershed**. As water flows through one of Minnesota's 80 major watersheds toward a river or lake, its water quality is influenced by surrounding land use practices. Use the scroll bar to zoom in and view **lake catchment areas**.















Monitoring Sites


-  Biological
-  Discharge
-  Lake
-  Stream
-  USGS

Watershed Boundaries

-  Major Watershed

Land Cover (2006 NLCD)

- | | |
|---|--|
|  Water |  Grassland |
|  Developed |  Pasture/Hay |
|  Barren Land |  Cultivated Crops |
|  Forest |  Wetland |
|  Scrub/Shrub | |

-  Waterbody Location

Contacts

If you have questions on information contained in these pages, please contact CMP staff at 651-296-6300 (Twin Cities metro only) or 800-657-3864 (Greater Minnesota only).
 Citizen Lake Monitoring Program: clmp.pca@state.mn.us Citizen Stream Monitoring Program: csmp.pca@state.mn.us

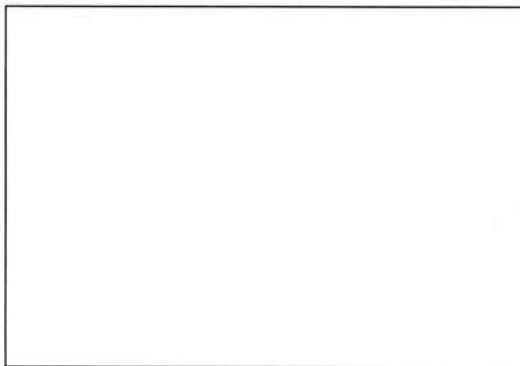
5-20



Water clarity data for

Lake: Big Pine Site: 01-0157-00-203

Data collected by volunteer monitors as part of the Citizen Lake and Citizen Stream Monitoring Programs. For more information on these programs, visit the [Volunteer Monitoring page](#).



Lake ID:	01-0157-00
Nearest town:	Big Pine
County:	Aitkin
Watershed name:	Rum River
Ecoregion:	Northern Lakes and Forests
Max depth (ft) if available:	78
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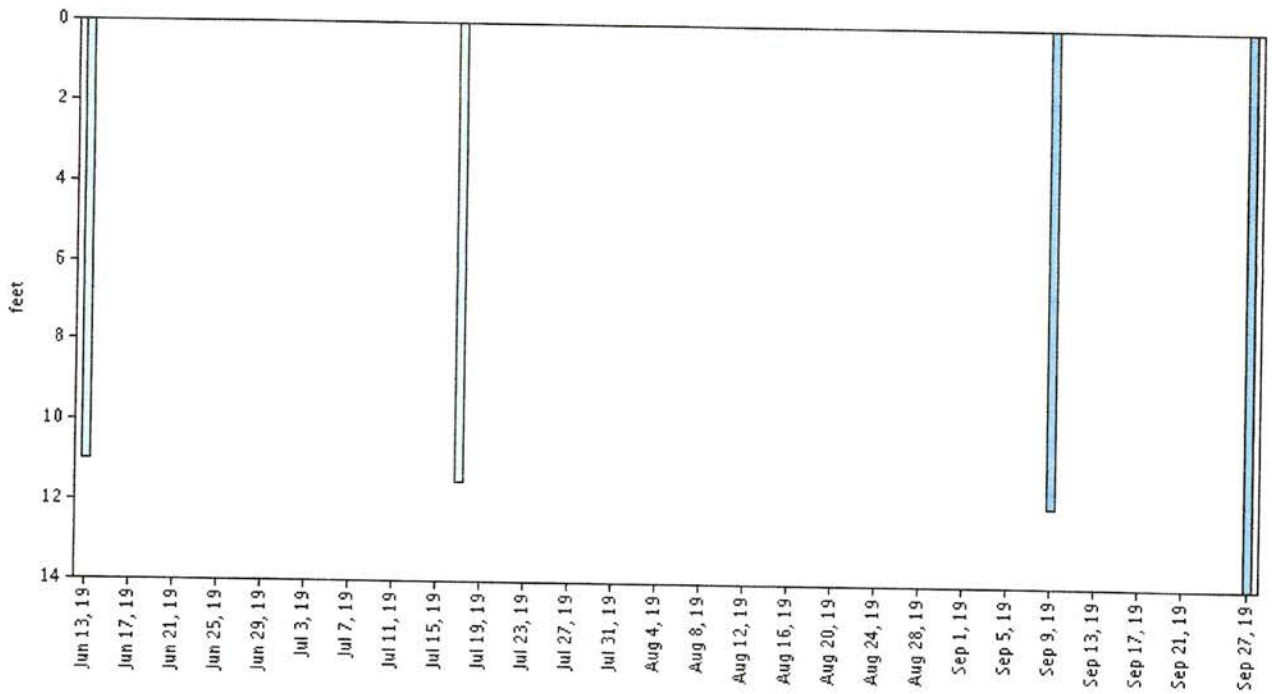
Secchi Transparency data (ft): 4 12.13 11 14
Physical appearance: 0
Recreational suitability: 0

2019 User perception data

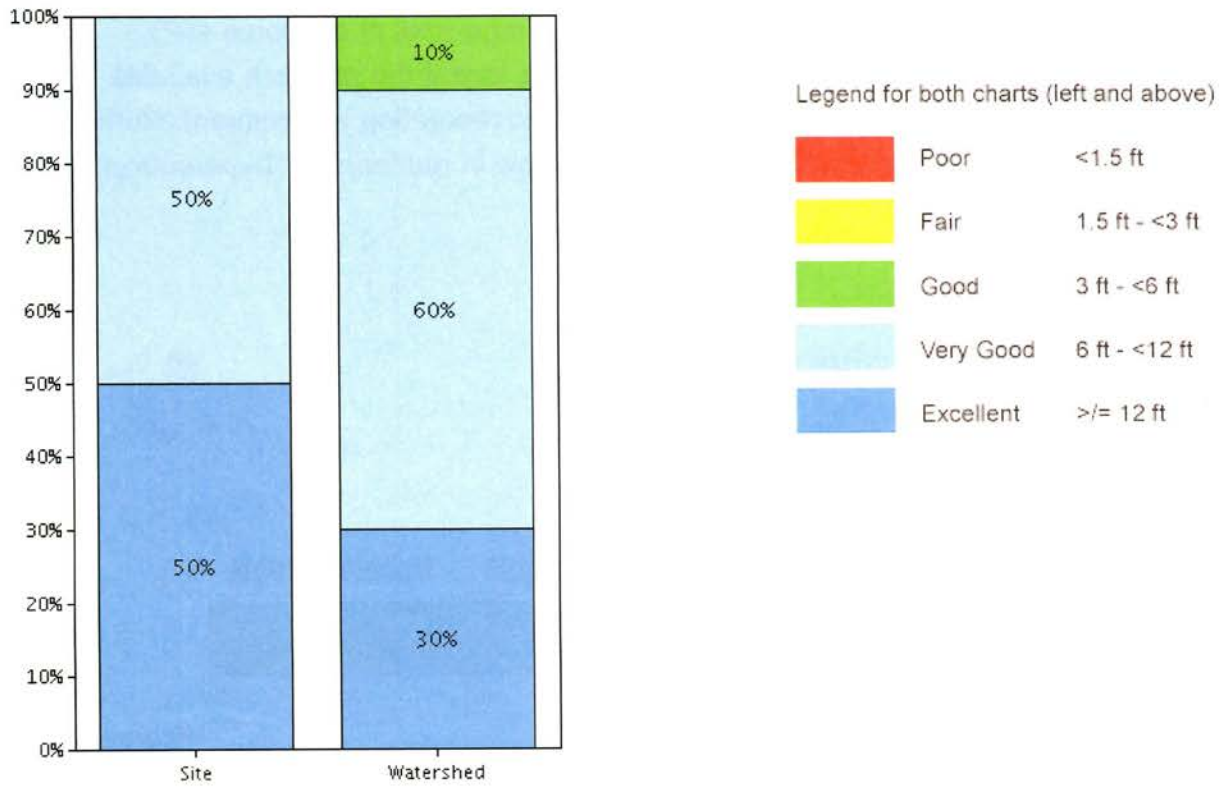
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There are no data.

2019 Secchi transparency data



2019 transparency at this site compared to entire watershed



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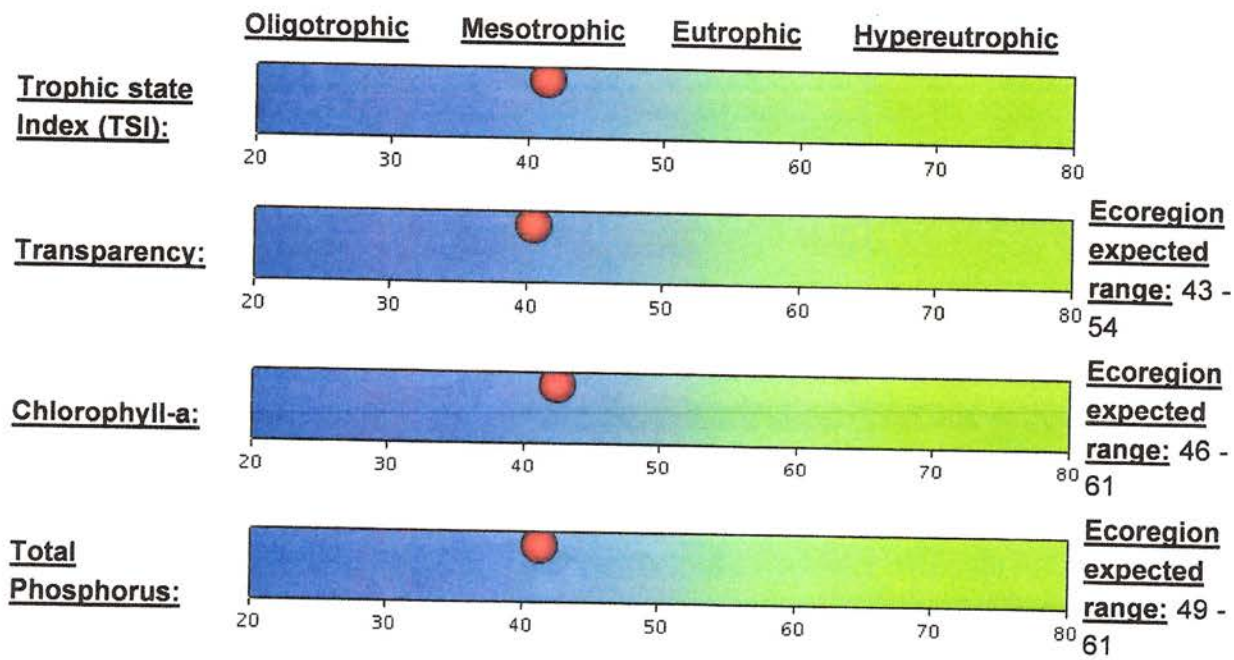
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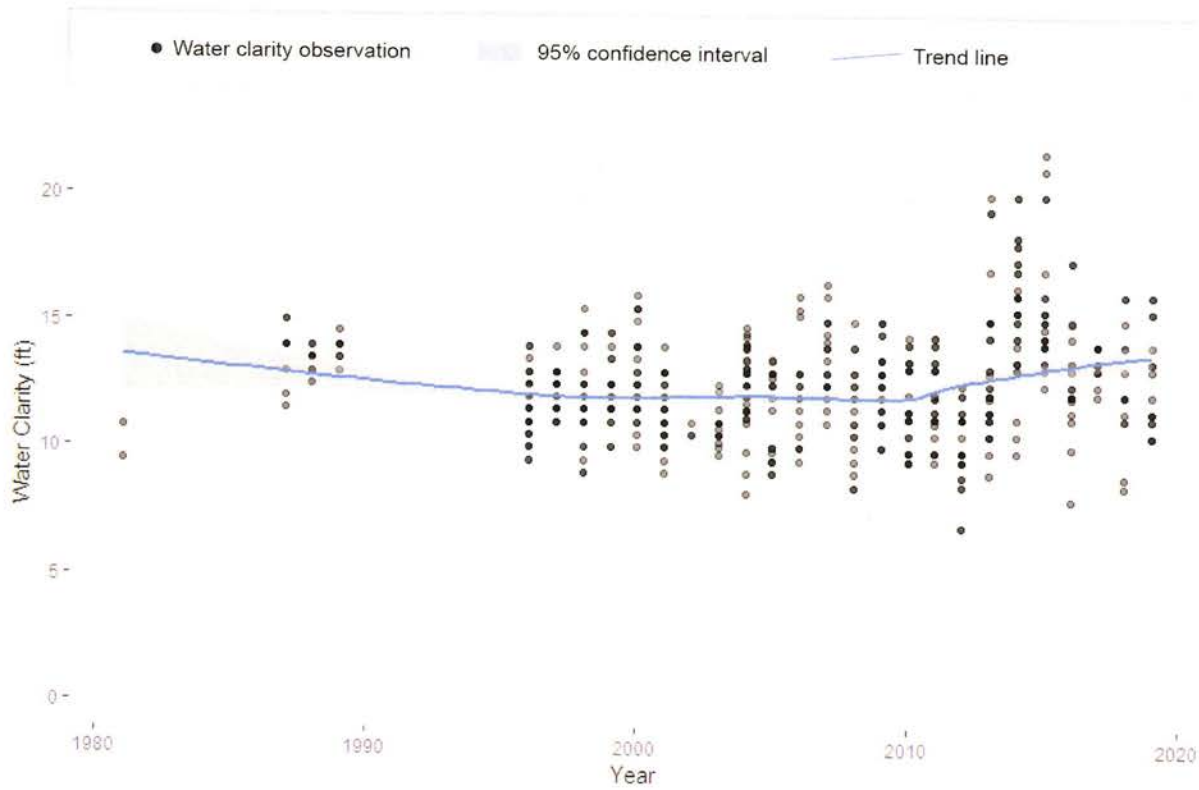
Indicators of nutrient richness – whole lake



Transparency Trends

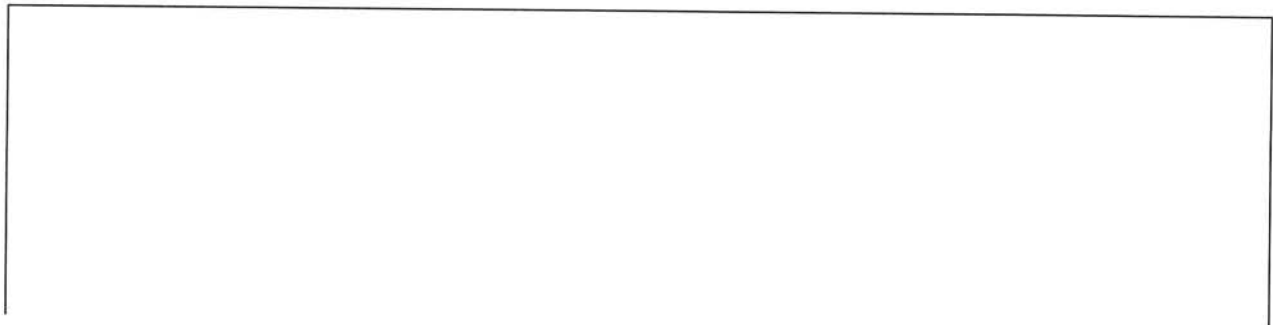
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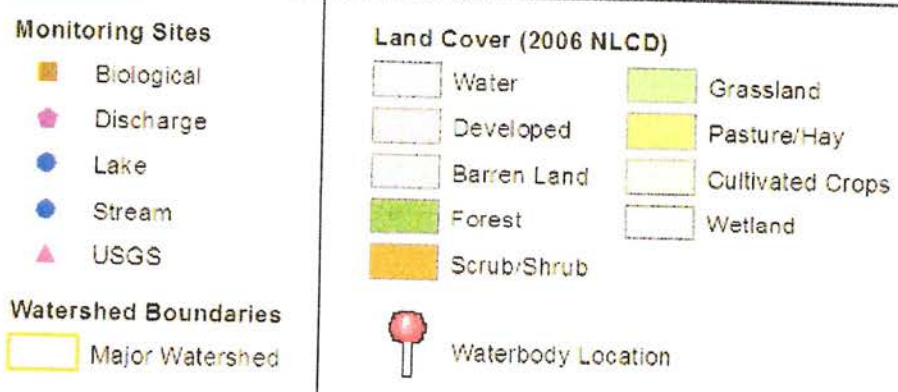
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