

McKeown Lake 11-0261-00

MN Lake ID: 11-0261-00
 County: Cass
 Ecoregion: Northern Lakes and Forests
 Major Drainage Basin: Upper Mississippi River
 Latitude/Longitude: 46.96472222 / -94.33052778
 Water Body Type: Public Waters
 Monitored Sites (Primary): 202

Physical Characteristics

Surface area (acres): 147
 Littoral area (acres): 128
 % Littoral area: 87%
 Max depth (ft): 37
 (m): 11.3
 Mean depth (ft): N/A(m): N/A
 Watershed size (acres): N/A

Water Quality Characteristics - Historical Means

Years monitored: 2008-2010

Trophic State Index Mean: 37.5
 Trophic State: Oligotrophic

Parameters	Primary Site 202
Total Phosphorus Mean:	12
Total Phosphorus Min:	8
Total Phosphorus Max:	28
Number of Observations:	13
Chlorophyll-a Mean:	2.3
Chlorophyll-a Min:	1
Chlorophyll-a Max:	5
Number of Observations:	13
Secchi Depth Mean:	18
Secchi Depth Min:	11
Secchi Depth Max:	29
Number of Observations:	13

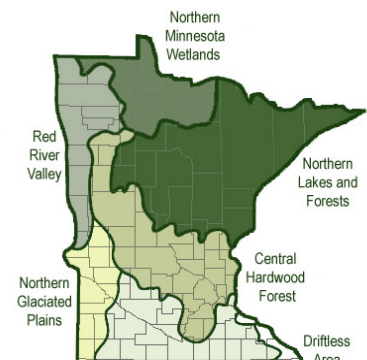


Ecoregion Comparisons

Minnesota is divided into 7 ecoregions based on land use, vegetation, precipitation and geology. The MPCA has developed a way to determine the "average range" of water quality expected for lakes in each ecoregion.

From 1985-1988, the MPCA evaluated the lake water quality for chosen reference lakes. These reference lakes are not considered pristine, but are considered to have little human impact and therefore are representative of the typical lakes within the ecoregion. The "average range" refers to the 25th - 75th percentile range for data within each ecoregion.

Cass County is in the Northern Lakes and Forests Ecoregion. **McKeown (Site 202)** compares to the ecoregion average ranges as indicated below:



Minnesota Ecoregion Map

Total Phosphorus:	Below Expected Range, which indicates better than expected water quality for the area
Chlorophyll-a:	Within Expected Range, which indicates expected water quality for the area
Secchi Depth:	Above Expected Range, which indicates better than expected water quality for the area

Trend Analysis Report

For detecting trends, a minimum of 8-10 years of data with 4 or more readings per season are recommended. Minimum confidence accepted by the MPCA is 90%. This means that there is a 90% chance that the data are showing a true trend and a 10% chance that the trend is a random result of the data. Only short-term trends can be determined with just a few years of data, because there can be different wet years and dry years, water levels, weather, etc., that affect the water quality naturally.

There is not enough data to perform trend analysis for total phosphorus, chlorophyll *a* or transparency on McKeown Lake.

Individual Lake Data Summary

County	MN Lake ID	Lake	Site	Date Range	Data Source
Cass	11-0261-00	McKeown	202 (Primary)	06-01-2008 - 09-30-2010	RMB Lab

Mean of data range selected in this report							12	2.3	18	39	37	36	37
Date	Time	Site	Sampler	Lab Code	Data Source	TP ug/L	ChlA ug/L	Secchi Ft.	TSI Phos.	TSI ChIAL	TSI Secchi Ft.	TSI Avg.	
6/8/2008	2:05 PM	202	Ralph Bjorgaard	78450	RMB Lab	28	3	29	52	41	29	41	
6/29/2008	2:00 PM	202	Ralph Bjorgaard	80743	RMB Lab	9	1	20	36	31	34	34	
7/27/2008	4:35 PM	202	Ralph Bjorgaard	83611	RMB Lab	10	3	15.5	37	41	38	39	
9/9/2008	3:15 PM	202	Ralph Bjorgaard	87180	RMB Lab	9	4	16	36	44	37	39	
Annual Summer Mean							14	2.8	20.1	40	39	34	38
Date	Time	Site	Sampler	Lab Code	Data Source	TP ug/L	ChlA ug/L	Secchi Ft.	TSI Phos.	TSI ChIAL	TSI Secchi Ft.	TSI Avg.	
5/31/2009	1:50 PM	202	Ralph Bjorgaard	98225	RMB Lab	8	1	26	34	31	30	32	
6/21/2009	12:10 PM	202	Ralph Bjorgaard	101100	RMB Lab	10	1	21	37	31	33	34	
7/12/2009	12:10 PM	202	Ralph Bjorgaard	103471	RMB Lab	10	2	16	37	37	37	37	
8/9/2009	2:20 PM	202	Ralph Bjorgaard	107087	RMB Lab	13	2	15	41	37	38	39	
9/13/2009	3:15 PM	202	Ralph Bjorgaard	110806	RMB Lab	11	1	19	39	31	35	35	
Annual Summer Mean							10.4	1.4	19.4	37	33	34	35
Date	Time	Site	Sampler	Lab Code	Data Source	TP ug/L	ChlA ug/L	Secchi Ft.	TSI Phos.	TSI ChIAL	TSI Secchi Ft.	TSI Avg.	
6/6/2010	2:55 PM	202	Ralph Bjorgaard	122453	RMB Lab	10	2	18	37	37	35	36	
6/28/2010	2:15 PM	202	Ralph Bjorgaard	125078	RMB Lab	11	1	15	39	31	38	36	
8/15/2010	5:30 PM	202	Ralph Bjorgaard	131842	RMB Lab	11	4	11	39	44	43	42	
9/19/2010	11:35 AM	202	Ralph Bjorgaard	135619	RMB Lab	16	5	12	44	46	41	44	
Annual Summer Mean							12	3	14	39	39	39	39