

DATE: February 25, 2015

FILE REF: 3600

TO: Silver Lake, Manitowoc County File

FROM: Stephen Surendonk-Fisheries Technician

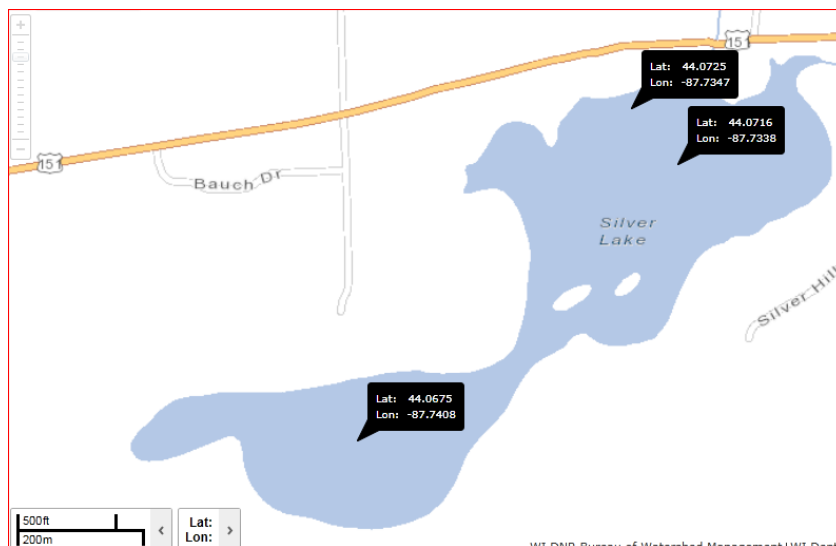
SUBJECT: Investigation of Low Dissolved Oxygen Levels and Dead Fish in Silver Lake, Manitowoc County (February 24, 2015).

On February 23, 2015 Steven Hogler – Fisheries Biologist requested that Rod Lange – Fisheries Technician and Surendonk conduct a general investigation of Silver Lake, Manitowoc County; following a citizens report of dead fish and fish in distress at that location (February 23, 2015). Hogler requested that the investigation occur on February 24, 2015.

Lange and Surendonk traveled to Silver Lake in the late morning (February 24, 2015). We noted a heavy used vehicular path transecting the lake from the public access extending as far as the western lake basin and that five permanent ice fishing shacks had been placed in the eastern basin with four shacks observed in the western basin. Five individual anglers were observed fishing during the investigation period. Further, they noted mostly sunny conditions with normal seasonal temperature at the time of sampling (~12:00 – 1330 hours).

Sampling locations were based upon Surendonk knowledge of the generalized lake contour gradients. The depicted map shows the approximate sampling locations (Figure 1).

Figure 1. Water Quality Sampling Location (Feb. 24, 2015)



Lange and Surendonk working in concert sampled at three locations and found the ice to be of uniform depth estimated at approximately 18 inches to 24 inches of depth and approximately three inches of hard packed snow was found on the ice surface. The three sampling locations showed similar low dissolved oxygen reading throughout the water column (Table 1- Table 3). Surendonk didn't note any abnormality associated with the water quality sampling effort (ex. distressed fish or odor).

(East Basin - Center)

44.0716 -87.7338

Meter	Degree C Temp.	Dissolved Oxygen Mg/L
Surface	1.1	0.84
1	2.9	0.58
2	2.9	0.50
3	3.1	0.39
4	3.4	0.36
5	3.8	0.32
6	3.8	0.29
7	3.8	0.25

Table 1. Sample Location One.

(East Basin -North Shore)

44.0725 87.7347

Meter	Degree C Temp.	Dissolved Oxygen Mg/L
Surface	0.4	2.20
1	2.7	0.78
2	2.9	0.56
3	3.1	0.45
4	3.3	0.37
5	3.4	0.33
5.5	3.6	0.28

Table 2. Sample Location Two.

(West Basin - Center)

44.0675 -87.7408

Meter	Degree C Temp.	Dissolved Oxygen Mg/L
Surface	0.3	1.50
1	1.9	0.95
2	2.8	0.70
3	3.0	0.46
4	3.1	0.34
5	3.1	0.29
6	3.1	0.25
7	3.2	0.21
8	3.4	0.19

Table 3. Sample Location Three.

Following the water quality sampling both Lange and Surendonk spoke briefly with anglers who were observed on the lake. One party (two anglers) indicated that they had reported the event to the Department over the weekend, they stated that they were participating in a small fishing contest and they and others participants witnessed distressed fish surfacing in their holes, dead fish on the bottom and that the minnow bait placed on their hooks died. They stated that angling success had been very poor for approximately two weeks; prior to that they had been catching fish.

The parties' permanent shack was located in the Eastern Basin south western shoreline (shallow littoral zone). Surendonk noted fish (four) surfacing in an ice hole identified as a small golden shiner, a YOY bluegill and YOY bullhead (2). Additionally, a number of unidentified dead adult fish were observed on the lake bottom. These fish appeared to range in estimated size from 4-8 inches numbering approximately 20 -30 individual fish. Surendonk noted good water clarity at this location.

Lange and Surendonk conversed with another angler who stated that last winter (2013-2014) he experienced small yellow perch surfacing in his ice fishing holes on Silver Lake.

Lange and Surendonk traveled to a location near the lake access and conversed with a fourth angler who stated he was conducting a survey for the Manitowoc Fish and Game Association. This individual was utilizing a Marcum Ice Fishing Camera and held a hand sketched map with biological observations. He stated that fish started appearing in his ice holes as soon as he drilled them. He stated he saw a live walleye on camera. The angler appeared agitated, expressing displeasure with this days event, the restoration success and searching for remedies that could improve ASAP (solar powered aerator). He convened agitation in discussing environmental concerns he had witnessed in Manitowoc County and reported to other Department staff. Lange provided the individual with Hogler's office phone number.

Surendonk noted numerous YOY largemouth bass and YOY bluegill surface in the hole cut for the Marcum Ice Fishing Camera during the conversation. Surendonk noted fair water clarity on the Marcum Ice Fishing Camera as well as numerous macroscopic zooplanktons that appeared to be Daphnia. Lange and Surendonk departed from Silver Lake at approximately 14:00 hours.

Lange and Surendonk stopped at the Manitowoc County Soil and Water (SW) office where Surendonk made contact with Tony Smith. Surendonk asked Mr. Smith to inform SW staff of the event and low oxygen findings.

Surendonk discussed with Gansberg the low Mg/L Oxygen results as well as other observations. Gansberg concluded that based on the recorded stable low reading she should check the meter for accuracy. Gansberg found the meter to be good, reading accurately at 16:55 hours (February 24, 2015).

Lastly, on February 24, 2015 Surendonk informed Hogler, Mike Donofrio-Fisheries Supervisor and Manitowoc County Warden Nick Miofsky of the days event and recorded data.