

Sanctuary Pond

Bathymetric Map Report

October 7, 2005

Prepared For: Prairie Crossing HOA
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Sanctuary Pond Bathymetric Map Report

INTRODUCTION

Integrated Lakes Management (ILM) visited Sanctuary Pond at the Prairie Crossing Subdivision on October 7, 2005 to map the water depths and sediment thickness. As part of this study, ILM staff members Christopher J Ryan and Will Duncan probed 59 points on the pond with a 1.5 inch PVC pole graduated in tenths of a foot. The goal of this study was to determine the average water depth and sediment thickness. This information should be compared to future studies to determine if major changes have occurred.

OBSERVATIONS

- The pond was 1.27 feet below normal water level as measured by the staff gage located near ILM's point of entry to Sanctuary Pond. Normal water level is not known exactly at this pond, so ILM used an average of spring time gauge readings to determine roughly what normal water level is. The pond also had an extensive weed bed consisting almost entirely of Eurasian Watermilfoil. These conditions however, did not inhibit accurate data collection. Water level measurements have been corrected to normal water level.
- The maximum depth encountered was 9.1 feet. This information is based upon 59 points probed with a 1.5 inch PVC pole graduated in tenths of a foot. It is possible that deeper areas exist that were not encountered. The average depth was calculated to be 5.4 feet.
- Sediment in the lake was quite minimal with an average thickness of 0.4 feet. The thickest sediment deposit was 2.0 feet. The majority of the sediment in Sanctuary Pond is located in the eastern bay, along the southern/south eastern shoreline, and west/ north western portions of the pond. Most of the sediment consists of muck except for some sand in the southwest corner, near ILM's point of entry to Sanctuary Pond, where some sand had been deposited a few years ago.

RECOMMENDATIONS

At this time the lake does not need to be dredged, but it is recommended that these maps be updated in 5-10 years. At that time dredging may be needed in the eastern bay, central portions of the western bay, along the southern shoreline, and the north/ north western shoreline.

BATHYMETRIC SURVEY RESULTS

From probing 59 locations throughout the lake, ILM staff determined the following information:

| | |
|----------------------------|-------------------|
| Size of Sanctuary Pond | 2.9 Acres |
| Average Water Depth | 5.4 Feet |
| Maximum Water Depth | 9.1 Feet |
| Water Volume | 15.7 Acre-Feet |
| | |
| Average Sediment Thickness | 0.4 Feet |
| Maximum Sediment Thickness | 2.0 Feet |
| Sediment Volume | 1,931 Cubic Yards |
| Sediment Type | Muck Throughout |

More detailed information regarding the transect data is listed in the appendix.

METHODS

The method utilized to determine the water depth and sediment thickness was based on 59 stations within 13 transects spaced throughout the lake. Individual stations within each transect were placed 10 and 20 feet from either shore, and one station in the middle. Along transects where Sanctuary Pond narrows stations were established 10 feet from either shoreline and one in the middle (see transect map).

The water depth was probed using a 1.5 inch PVC pole graduated in tenths of a foot. Measurements were made to the nearest tenth of a foot. Two measurements were recorded at each station. One was the depth to the top of the sediment (water depth), and the second was the total depth to firm substrate below the sediment (water depth + sediment thickness = total depth). The sediment depth was determined by taking the difference between water depth and total depth. Locations were determined through the use of a Garmin etrex vista brand handheld GPS unit. A back up GPS unit, on loan from Liberty Prairie Foundation, was also used to verify accuracy. The data was downloaded into ArcView GIS version 3.2.

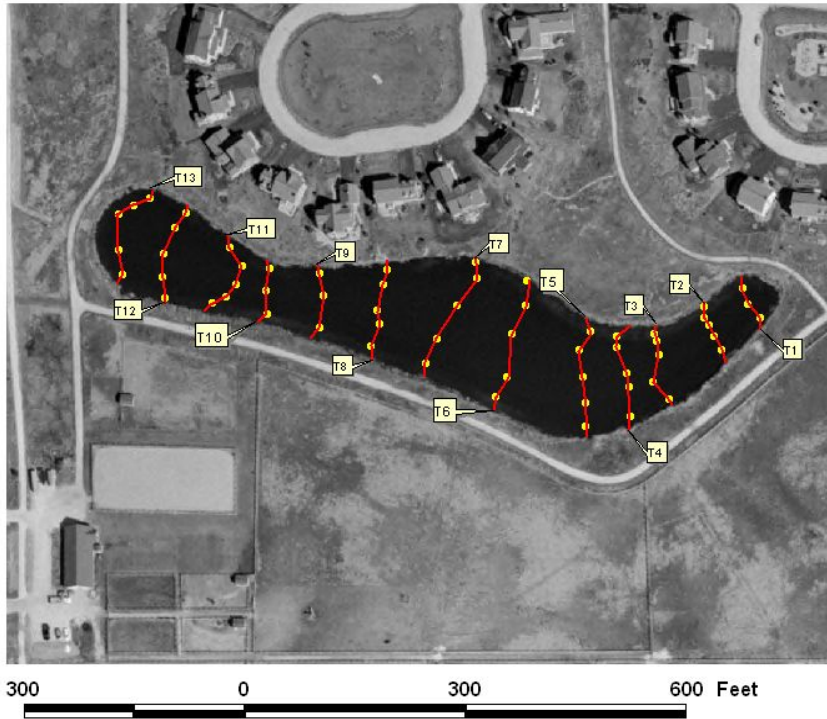
The base map used for the bathymetric and sediment thickness map was from recent aerial photographs enlarged to a scale of ~1 inch = 133 feet. Water depth contours were drawn at 2 foot intervals and sediment thickness contours were drawn at 0.5 foot intervals. The maps were generated by ArcView.

Water volume in the lake was determined by measuring the area within each of the contour lines and multiplying by the average depth. Sediment volume was also calculated in the same manner. Both water depth and sediment thickness estimates are based on ILM's interpolations of the data points. The accuracy of this interpolation is +/- 20%

The temperature at the time of this survey was 50/55 degrees Fahrenheit. The weather on October 7th was overcast and windy with speeds of 5-10 MPH.

The pond level was 1.27 feet bellow normal water level as measured at the gauge located at ILM's point of entry to Sanctuary Pond. All measurements were adjusted to normal water conditions.

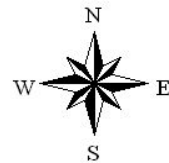
Sanctuary Pond Bathymetric Map (10/7/05)



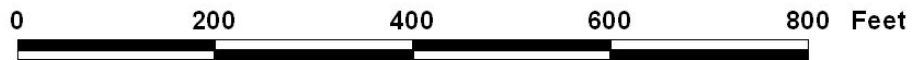
See report and charts for detailed information.



Transects.shp
Sp data.shp

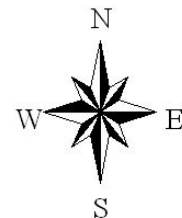


Sanctuary Pond Bathymetric Map October 7, 2005



Isopleths based on interpretation between points probed with a 1.5 inch diameter PVC pole graduated in tenths of a foot.
Map is based on 59 data points
and should be regarded with some margin of error

- 2ft.shp
- 4ft.shp
- 6ft.shp
- 8ft.shp
- Sp data.shp



Sanctuary Pond Sediment Thickness Map October 7, 2005



Sediment thickness is based on interpolation between points probed with a 1.5 inch diameter PVC pole graduated in tenths of a foot. Map is based on 59 data points and should be regarded with some margin of error.

- 0fts sediment.shp
- 2fts sediment.shp
- 1fts sediment.shp
- Half ft sediment.shp
- Sp data.shp

