

# Memorandum

To: Stephen J. Hjort  
CC: James Folk  
From: Randal K. Weltzin, P.E., L.S.  
Date: 01/25/00  
Re: Lake Koshkonong – Review of WDNR Survey Notes

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At the District's request, I have reviewed the WDNR field survey notes dated 7/31/99. These notes include 6 pages of field notes; the instrument person was K.J. and the rod man was B. H. The purpose of my review was to provide a professional opinion concerning WDNR's findings, and the basis for their findings, with respect to the OHWM elevations.

In general, the differential level survey was performed according to well defined survey standards. Temporary benchmarks were established by leveling through and completing the level circuit. Sideshots were not taken. The error of closure for each circuit appears to be within 3<sup>rd</sup> order survey accuracy. The survey notes have been reduced correctly. The level note format is widely used and is acceptable.

The descriptions of the benchmarks, and the descriptions of the locations where elevation information was collected are only partially documented, or in some cases, not documented at all. This makes it difficult to confirm the locations of the benchmarks or the locations where elevations were surveyed. On pages 3 and 4, some of the field notes are crossed out with an "X" and no explanation is provided.

In the level circuits, Ordinary High Water Mark (OHWM) elevations were surveyed at 6 locations. The description for one of the elevations states "algee on rocks", but doesn't provide a description of where the rocks are located with respect to Lake Koshkonong. A second elevation was also obtained at this unspecified location. Four additional elevations were surveyed at Schmelling Park according to the field notes.

At the first location, the elevation was computed to be 776.69 feet. A second elevation was surveyed in the same vicinity and was computed to be 776.39. In the description, a note was written stating that 0.3 feet had been added for the depth of

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the rod below the OHWM, conveniently making the elevation of the OHWM at 776.69 feet, which is equal to the first reading.

At the Schmelling Park location, OHWM elevations were surveyed at 4 locations with elevations and descriptions as follows:

- Elev = 777.02 @ stain on rock
- Elev = 776.41 @ OHWM vegetation change – *false reading*
- Elev = 776.41 @ OHWM vegetation change – *false reading*
- Elev = 776.88 @ stain on rock

The words *false reading* were in a different hand writing than the original notes. A final note in the field notes states to “use 776.7 OHWM”.

Based on a review of the field notes, no technical justification exists for the use of 776.7 as the OHWM elevation. It appears the surveyor was attempting to force 776.7 as the OHWM elevation. The basis for this opinion is:

- In all cases, the elevations are computed to the 0.01 foot accuracy. After the first survey shot, a note was made to add 0.3 feet for the depth of rod below the OHWM. This number seems convenient and makes this elevation equal to the first elevation surveyed.
- At Schmelling Park, the note “false reading” was added to two of the elevations in a different hand writing than the note taker. No reasons were provided for believing that these were false readings. There is no such thing as a false reading. The surveyor only surveys points which he/she feels are the proper location. One possible reason for assuming these points could be false readings would be that the number calculated did not match an expected value for the elevation.
- There is no technical basis for the statement to use 776.7 as the elevation of the OHWM. The 6 locations surveyed do not have either a mean or median value of 776.7 feet. If the three elevations were discarded where 0.3 feet were added and where false readings were detected, the average value would be 776.87 feet.

In summary, the 776.7 feet elevation cannot be justified with the field data provided.

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Date