Gauge doesn't start at 0 - so SWMS not calculating

Wisconsin DNR – Lake Level Monitoring 5/15/2025

Staff Gauge Survey Data Sheet

Lake Information

Lake Name: Horseshoe Lake County: Polk

Data Collectors

Primary Data Collector _____ Email _____ Phone No. (___) ___-____

Additional Data Collector(s) _____

Reference Mark and Staff Gauge Information

Reference Mark #1 (RM1) Reference Mark Type: NE Cor. concrete step

Latitude: _____ Longitude: _____ Mean Sea Level Yes ☐ No ☐ Elevation: 1215.79 Photograph ☐

Location Description: _____

Reference Mark #2 (RM2) Reference Mark Type: Gin Spike east side of Maple

Latitude: _____ Longitude: _____ Mean Sea Level Yes ☐ No ☐ Elevation: 1218.29 Photograph ☐

Location Description: _____

Reference Mark #3 (RM3) Reference Mark Type: PK Nail west side of Oak

Latitude: _____ Longitude: _____ Mean Sea Level Yes ☐ No ☐ Elevation: 1217.29 Photograph ☐

Location Description: _____

Staff Gauge

Latitude: _____ Longitude: _____ Mean Sea Level Yes ☐ No ☐ Elevation: 1211.18 Photograph ☐

Location Description: _____

Date: _____ Time: _____ AM/PM Check one: Install ☐ Midseason ☐ Removal ☐

Survey Stage 1 - Instrument at first height*

Water FS1 8.92
Elev. = 1213.19

	Reference Mark 1		Fore sight (FS1)	Calculated Elevation (CE1)
Given Elevation (GE_{RM1})	1215.79			
Back sight 1 (BS1)	+ 6.32			
Height of Instrument (HI1)	1222.11	- Staff Gauge	10.93	= 1211.18
	HI1	- Ref Mark 2	3.81	= 1218.30
	HI1	- Ref Mark 3	4.80	= 1217.31

Survey Equations:
$HI1 = GE_{RM1} + BS1$
$CE1 = HI1 - FS1$

Survey Stage 2 – Reset instrument at different height

	Staff Gauge		Fore sight (FS2)	Calculated Elevation (CE2)
Calculated Elevation1	1211.18			
Back sight 2 (BS2)	+ 10.89	1213.19 - 5.34 = 1207.84		
Height of Instrument (HI2)	1222.07	- Ref Mark 1	6.27	= 1215.80 / ~~1218.80~~
	HI2	- Ref Mark 2	3.76	= 1218.31
	HI2	- Ref Mark 3	4.75	= 1217.32

Survey Equations:
$HI2 = CE_{SG1} + BS2$
$CE2 = HI2 - FS2$

Quality Assurance Checks:

Reference Mark 1:	BS1 6.32	FS1 10.93	
GE = CE2	BS2 + 10.89	FS2 + 6.27	
	17.21	=	17.20

QA Equations:
$BS1 + BS2 = FS1_{SG} + FS2_{RM1}$
$GE_{RM1} = CE2_{RM1}$

*Accept Survey Stage 1 If QA checks within 0.01 ft. Use calculated elevations 1 for the rest of the season unless the gauge moves.

EGAD # 3200-2018-45

WISCONSIN DEPT OF NATURAL RESOURCES

Wisconsin DNR – Lake Level Monitoring

Staff Gauge Survey Data Sheet

Lake Level Reading: 2.02 5.34 ft

Revised 2016

Site Diagram (including Staff Gauge and Reference Marks)

BOARD STARTS AT 3.32

1216.52
− 3.32
1213.20

Notes

Data Management

Survey Data uploaded to SWIMS?	Yes ☐ No ☐	Date: _____	Name: _____
Data Sheet scan uploaded to SWIMS?	Yes ☐ No ☐	Date: _____	Name: _____

Equipment Maintenance

Replace bolts/screws on staff gauge?	Yes ☐ No ☐	Date: _____	Name: _____
Replace gauge plate on staff gauge?	Yes ☐ No ☐	Date: _____	Name: _____
Replace post or wooden board?	Yes ☐ No ☐	Date: _____	Name: _____

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