

SWIMS
FA
11/25/24

6/20/2024

8-8:01

Wisconsin DNR – Lake Level Monitoring Staff Gauge Survey Data Sheet

Lake Information

Lake Name Antler 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: Well Cap

Latitude: _____ Longitude: _____ Mean Sea Level Yes ☐ No ☐ Elevation: 1244.03 Photograph ☐

Location Description: _____

Reference Mark #2 (RM2)

Reference Mark Type: Top Boulder

Latitude: _____ Longitude: _____ Mean Sea Level Yes ☐ No ☐ Elevation: 1240.40 Photograph ☐

Location Description: _____

Reference Mark #3 (RM3)

Reference Mark Type: PK Nail top of Stump

Latitude: _____ Longitude: _____ Mean Sea Level Yes ☐ No ☐ Elevation: 1240.38 Photograph ☐

Location Description: _____

Staff Gauge

Latitude: _____ Longitude: _____ Mean Sea Level Yes ☐ No ☐ Elevation: 1235.85 Photograph ☐

Location Description: _____

Date: _____ Time: _____ AM/PM

Check one: Install ☐ Midseason ☐ Removal ☐

Survey Stage 1 - Instrument at first height*

	Reference Mark 1		Fore sight (FS1)	Calculated Elevation (CE1)	Water FS1 10.06 Elev. = 1234.78 - 2.7
Given Elevation (GE_{RM1})	<u>1244.03</u>				
Back sight 1 (BS1)	+ <u>0.81</u>				
Height of Instrument (HI1)	<u>1244.84</u>	- Staff Gauge	<u>8.99</u>	= <u>1235.85</u>	
		- Ref Mark 2	<u>2.44</u>	= <u>1242.40</u>	
		- Ref Mark 3	<u>4.46</u>	= <u>1240.38</u>	

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	<u>1235.85</u>				
Back sight 2 (BS2)	+ <u>8.91</u>				
Height of Instrument (HI2)	<u>1244.76</u>	- Ref Mark 1	<u>0.73</u>	= <u>1244.03</u>	
		- Ref Mark 2	<u>2.36</u>	= <u>1242.40</u>	
		- Ref Mark 3	<u>4.39</u>	= <u>1240.37</u>	

Survey Equations:

$HI2 = CE_{SG1} + BS2$

$CE2 = HI2 - FS2$

Quality Assurance Checks:

Reference Mark 1: BS1 0.81 FS1 8.99
 $GE = CE2$ BS2 + 8.91 FS2 + 0.73
9.72 = 9.72

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.



Wisconsin DNR – Lake Level Monitoring Staff Gauge Survey Data Sheet

Lake Level Reading: 2.70 ft

Revised 2016

Site Diagram (including Staff Gauge and Reference Marks)



Notes

[illegible]

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: _____

EGAD # 3200-2018-45



Swims
11/25/20

9/26/2024

8-8:01

Wisconsin DNR – Lake Level Monitoring
Staff Gauge Survey Data Sheet

Lake Information

Lake Name Antler 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: Well Cap

Latitude: Longitude: Mean Sea Level Yes ☐ No ☐ Elevation: 1244.03 Photograph ☐

Location Description:

Reference Mark #2 (RM2)

Reference Mark Type: Top Boulder

Latitude: Longitude: Mean Sea Level Yes ☐ No ☐ Elevation: 1240.40 Photograph ☐

Location Description:

Reference Mark #3 (RM3)

Reference Mark Type: PK Nail top of Stump

Latitude: Longitude: Mean Sea Level Yes ☐ No ☐ Elevation: 1240.38 Photograph ☐

Location Description:

Staff Gauge

Latitude: Longitude: Mean Sea Level Yes ☐ No ☐ Elevation: 1235.83 Photograph ☐

Location Description:

Swims
1234.96

Date: Time: AM/PM

Check one: Install ☐ Midseason ☐ Removal ☐

Survey Stage 1 - Instrument at first height*

	Reference Mark 1		Fore sight (FS1)	Calculated Elevation (CE1)	Water FS1 10.18 Elev. = 1234.34 - 2.28 Swims 1234.36 1232.06
Given Elevation (GE _{RM1})	<u>1244.03</u>				
Back sight 1 (BS1)	+ <u>0.49</u>				
Height of Instrument (HI1)	<u>1244.52</u>	- Staff Gauge	<u>8.69</u>	= <u>1235.83</u>	Survey Equations: HI1 = GE _{RM1} + BS1 CE1 = HI1 - FS1
	HI1	- Ref Mark 2	<u>2.13</u>	= <u>1242.39</u>	
	HI1	- Ref Mark 3	<u>4.14</u>	= <u>1240.38</u>	

Survey Stage 2 – Reset instrument at different height

	Staff Gauge		Fore sight (FS2)	Calculated Elevation (CE2)	
Calculated Elevation1	<u>1235.83</u>				
Back sight 2 (BS2)	+ <u>8.64</u>				Survey Equations: HI2 = CE _{SG1} + BS2 CE2 = HI2 - FS2
Height of Instrument (HI2)	<u>1244.47</u>	- Ref Mark 1	<u>0.44</u>	= <u>1244.03</u>	
	HI2	- Ref Mark 2	<u>2.08</u>	= <u>1242.39</u>	
	HI2	- Ref Mark 3	<u>4.09</u>	= <u>1240.38</u>	

Quality Assurance Checks:

Reference Mark 1: BS1 0.49 FS1 8.69
GE = CE2 BS2 + 8.64 FS2 + 0.44
9.13 = 9.13

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.



Wisconsin DNR – Lake Level Monitoring

Lake Level Reading: 2.28 ft

Revised 2016

Site Diagram (including Staff Gauge and Reference Marks)



Notes

Blank lined paper for writing.

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: _____

