Wisconsin DNR – Lake Level Monitoring

Staff Gauge Survey Data Sheet

Lake Information

Lake Name: CRYSTAL LAKE County: LANGLADE

Data Collectors

Primary Data Collector: MIKE WERDEO Email: mwerdeo@antigo.k12.wi.us Phone No.: (715) 350 1871

Additional Data Collector(s): _____

Reference Mark and Staff Gauge Information

Reference Mark #1 (RM1) Reference Mark Type: _____

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

Location Description: _____

Reference Mark #2 (RM2) Reference Mark Type: _____

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

Location Description: _____

Reference Mark #3 (RM3) Reference Mark Type: _____

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

Location Description: _____

Staff Gauge

Latitude: 45°22'33.4" Longitude: -88°55'47.1" Mean Sea Level Yes ☐ No ☒ Elevation: —— Photograph ☐

Location Description: _____

Date: 7/12/17 Time: 1:15 AM/PM DT JL Check one: Install ☒ Midseason ☐ Removal ☐

Survey Stage 1 - Instrument at first height*

	Reference Mark 1		Fore sight (FS1)	Calculated Elevation (CE1)
Given Elevation (GE_{RM1})	100.00			
Back sight 1 (BS1)	+ 3.71			
Height of Instrument (HI1)	103.71	- Staff Gauge	6.09	= 97.62
	HI1	- Ref Mark 2	2.56	= 101.15
	HI1	- Ref Mark 3	2.69	= 101.02

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	97.62 ←			
Back sight 2 (BS2)	+ 6.40			
Height of Instrument (HI2)	104.02	- Ref Mark 1	4.02	= 100.00
	HI2	- Ref Mark 2	2.86	= 101.16
	HI2	- Ref Mark 3	3.04	= 100.98

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

Quality Assurance Checks:

Reference Mark 1:	BS1 3.71		FS1 6.09	
GE = CE2	BS2 + 6.40		FS2 + 4.02	
	10.11	=	10.11	

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.

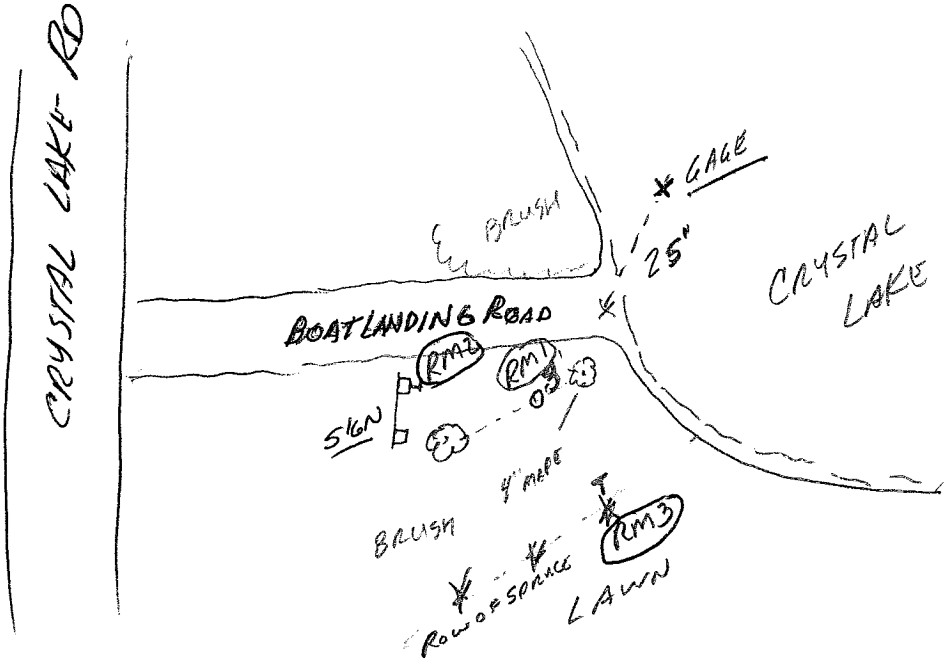
Lake Level Reading: 1.79 ft 7/12/16 D. TLUSTY

Revised 2016

Wisconsin DNR – Lake Level Monitoring

Staff Gage Calibration Data Sheet

Site Diagram including Staff Gage and Reference Marks



Notes

RM 1 = 1" x 36" IRON PIPE FLUSH 3' WSW OF 4" MAPLE ELEV 100.00

RM 2 = 40d SPK IN EAST FACE OF NORTH SIGN POST

RM 3 40d SPK LOW IN N FACE 10" SPRUCE 20' S OF BOAT LANDING

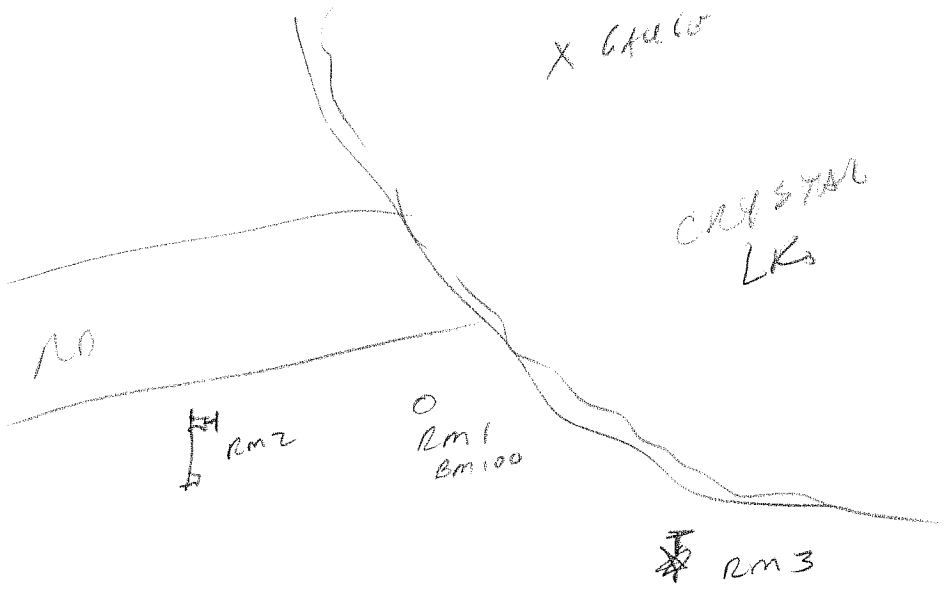
7/12/16 SKETCH IS STILL OK. ALL 2015 RM'S IN PLACE & OK TO USE. D. TOUSLEY

Data Management

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

Equipment Maintenance

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



FINAL SURVEY 11/23/16 D RUSTY
FILE "CRYSTAL"

INST @ RANDOM PT 1
BS A2 TO BM (RM1) (PT2)
TARGET HT (HT) 5.28

				PREVIOUS ELEV'S
PT #3	SHOT TO RM 2	101.15		101.16
PT 4	SHOT TO RM 3	101.02		100.98
PT 5	CAMP	97.62	HT 2.00	97.62
PT 7	"	97.616	HT 3.00	97.62

CRYSTAL_PTS.TXT

1,	5000.0000000,	5000.0000000,	104.5445601,INSN
2,	4999.9730139,	4986.7784427,	99.9995856,BM RM1
3,	4995.9207735,	4967.7272133,	101.1471873,RM2
4,	4988.9472062,	5001.7188552,	101.0164106,RM 3
5,	5038.1685846,	5009.8276461,	97.6196634,GAUGE
6,	5038.1953789,	5009.8343476,	97.7211759,GAUGE
7,	5038.1931899,	5009.8337840,	97.6163749,GAUGE

CRYSTAL_SHOTS.TXT

CM V6 Definitions: SS: Side Shot; TR: Traverse; OC: Occupied Coordinates;
PC: Point Coordinates; CM: Comment; OS: Occupied Station;
TS = time stamp; e = electronic; m = manual;

CM Time Stamp WED 05/24/06 11:35:38P

PC 1 5000.0000000 5000.0000000 100.0000000

CM SCALE 1

CM BM 100.0000 0.0000 5.2800 359.52590 86.49020 13.246

OC 5000.0000000 5000.0000000 104.5445601

PC 1 5000.0000000 5000.0000000 104.5445601 INSN

SS e HI:0.000 HR:5.280 BM RM1
0 1 2 BAZ:270.00000 0.00000 AR:359.52590 ZA:86.49050
SD:13.24200

SS e HI:0.000 HR:5.280 RM2
0 1 3 BAZ:270.00000 0.00000 AR:352.47460 ZA:86.41160
SD:32.58400

SS e HI:0.000 HR:5.280 RM 3
0 1 4 BAZ:270.00000 0.00000 AR:261.09380 ZA:81.05560
SD:11.32200

SS e HI:0.000 HR:2.000 GAUGE
0 1 5 BAZ:270.00000 0.00000 AR:104.26200 ZA:97.07210
SD:39.72000

SS e HI:0.000 HR:3.000 GAUGE
0 1 6 BAZ:270.00000 0.00000 AR:104.26190 ZA:95.32130
SD:39.62600

SS e HI:0.000 HR:3.000 GAUGE
0 1 7 BAZ:270.00000 0.00000 AR:104.26190 ZA:95.41170
SD:39.63400