3.64

Wisconsin DNR – Lake Level Monitoring

Staff Gauge Survey Data Sheet

Lake Information

Lake Name: DUCK LAKE County: LANGLADE

Data Collectors

Primary Data Collector: Sam Picone Email: sam.picone@gmail.com Phone No.: (715) 443-4329

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' 58.8 Longitude: -89°14'59.2" Mean Sea Level Yes ☐ No ☒ Elevation: ____ Photograph ☐

Location Description: 2016 GAUGE LOCATION IS VERY CLOSE TO 2015 LOCATION SHOWN ON THE NEXT PAGE.

Date: 7/12/16 Time: 2:06 AM/PM D.T.T.R. 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)	+ 2.92			
Height of Instrument (HI1)	102.92	- Staff Gauge	7.44	= 95.48
	HI1	- Ref Mark 2	3.36	= 99.56
	HI1	- Ref Mark 3	3.64	= 99.28

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	95.48			
Back sight 2 (BS2)	+ 7.61			
Height of Instrument (HI2)	103.09	- Ref Mark 1	3.09	= 100.00
	HI2	- Ref Mark 2	3.53	= 99.56
	HI2	- Ref Mark 3	3.80	= 99.29

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

Quality Assurance Checks:

Reference Mark 1: BS1 2.92 FS1 7.44

GE = CE2: BS2 + 7.61 FS2 + 3.09

10.53 = 10.53 ✓

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.

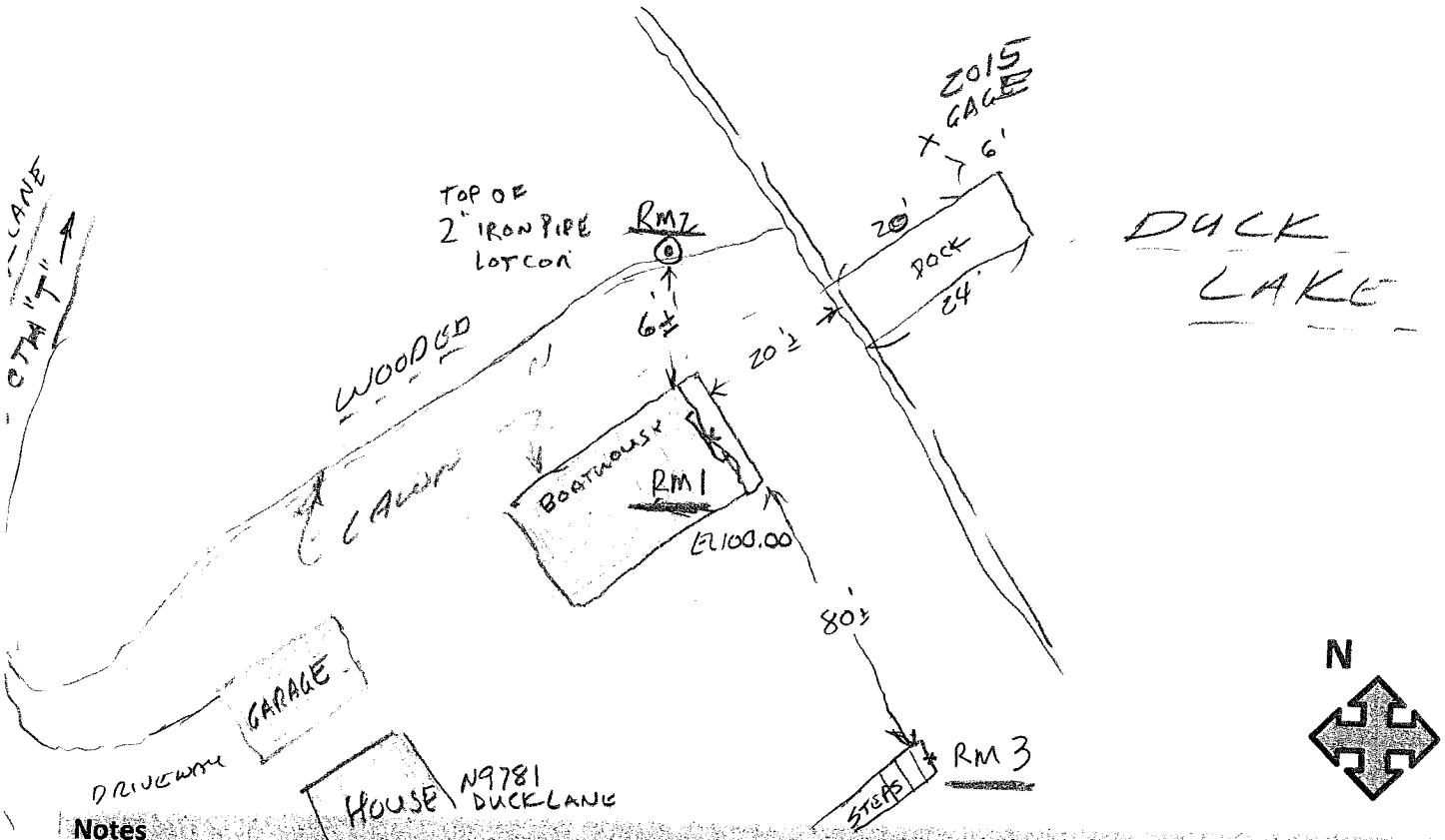
Lake Level Reading: 1.54 ft 7/12/16 D. TLUSTY

Revised 2016

Wisconsin DNR – Lake Level Monitoring

Staff Gage Calibration Data Sheet

Site Diagram including Staff Gage and Reference Marks



Notes

RM 1 BM 100.00 CTR CAP SLAB @ CTR E. DOORWAY OF BOATHOUSE

RM 2 TOP OF 2" IRON PIPE PROPERTY CORNER @ EDGE OF MOWED LAWN

RM 3 CENTER OF NE EDGE OF LAST (BOTTOM) STEP ON CONC STAIRWAY TO HOUSE

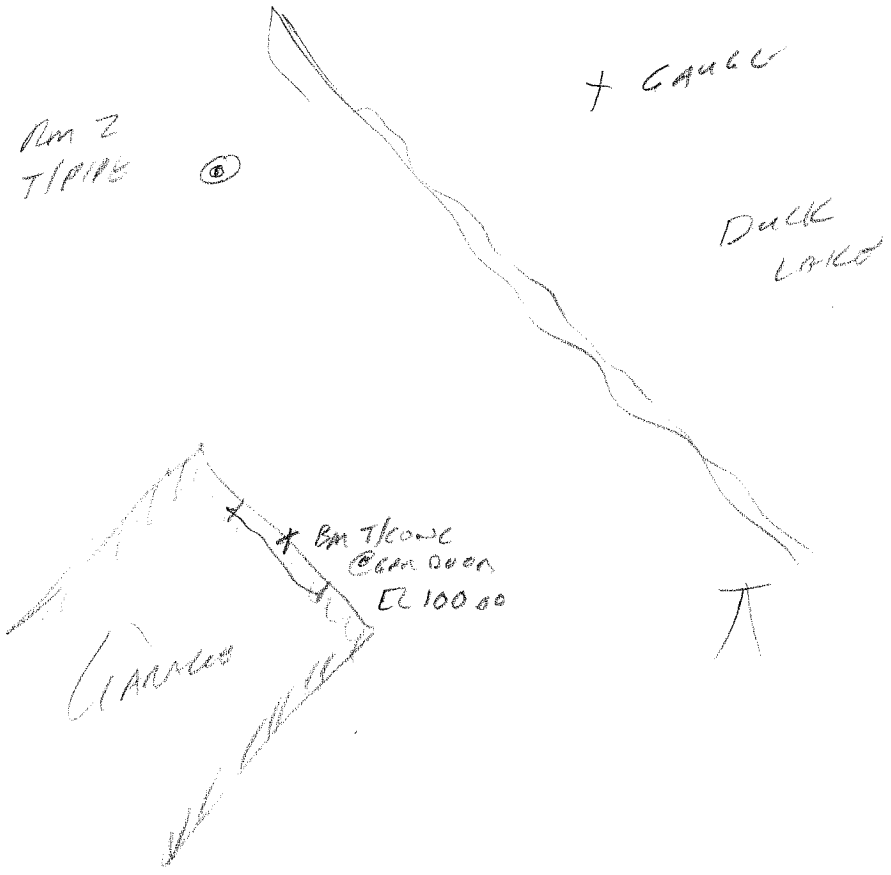
7/12/16 ALL RM's OK TO USE. GAUGE LOCATION CLOSE TO 2016 LOCATION. PROPERTY OWNER VERY CONCERNED ABOUT INVASIVES. WE WASHED BOOTS & LEVEL ROD BEFORE GOING INTO THE WATER. D. TRUSTY

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 11/28/16 D. TUSTY

POINT FILE "DUCK"

HT MACHOT 5.28

INST @ RANDOM PT 1

BS 12 315° (1 → BM)

BM STAKED @ PT 2

PT 3	SHOT TO Rm 2	99.565	
PT 4	SHOT TO CANAL	95.47	DIFFERENCE IN HT
PT 5	" " "	95.47	

DUCK_PTS.TXT

```
1,     5000.0000000,    5000.0000000,     100.0000000,
2,     5017.1084357,    4982.9228885,     100.0000000,BM
3,     5029.1968440,    4987.2204373,      99.5647394,RMTPIPE
4,     5037.9033952,    5016.6691202,      95.4678807,GAUGE
5,     5037.9045980,    5016.6694299,      95.4717615,GAUGE
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DUCK_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 THU 05/25/06 12:26:17A

PC 1 5000.0000000 5000.0000000 100.0000000

CM SCALE 1

CM BM 100.0000 0.0000 5.2500 0.03090 84.42580 24.276

OC 5000.0000000 5000.0000000 103.0143967

SS e HI:0.000 HR:5.250 BM
0 0 2 BAZ:315.00000 0.00000 AR:0.03090 ZA:84.42580
SD:24.27600

SS e HI:0.000 HR:5.250 RMTPIPE
0 0 3 BAZ:315.00000 0.00000 AR:21.21390 ZA:86.46010
SD:31.92200

SS e HI:0.000 HR:1.500 GAUGE
0 0 4 BAZ:315.00000 0.00000 AR:68.44200 ZA:98.18290
SD:41.84600

SS e HI:0.000 HR:1.300 GAUGE
0 0 5 BAZ:315.00000 0.00000 AR:68.44190 ZA:98.34240
SD:41.87600