March 23, 2020

Data correction for lake level data collected in 2019 on Long Lake, Polk County

WBIC 2478200 Station ID 10043975

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In 2019, the surveyors (Steve Geiger and Michael Markee) surveyed the staff gauge off of the top of the staff gauge board instead of the lag bolt at the 0 mark of the staff gauge ruler. Thus, the corrected water level elevations are incorrect (too high by about 3.73 feet). Below, I outline the edits made in SWIMS to ensure that the corrected elevations are correct. I opted to alter the calculated elevation of the staff gauge so that the automated calculations in SWIMS would function properly.

The surveyors also surveyed the elevation of the water level the day of the survey. This combined with the staff gauge reading that day was used to derive the elevation of the lag bolt on the staff gauge.

**June 6, 2019 survey:**

All survey data in the survey data sheet are correct, but note that the calculated elevation of the staff gauge (1151.47 feet) is the top of the staff gauge. Thus, it is incorrect to add the staff gauge reading to this number.

To derive the elevation of the zero mark on the staff gauge:

1. The height of the instrument on survey stage 2 was 1158.33
2. The fore sight to the water level was 8.78 feet (see bottom of data sheet – this parameter does not exist in SWIMS)
3. The elevation of water was 1158.33 – 8.78 = 1149.55 feet
4. The staff gauge reading was 1.81 feet
5. The elevation of the 0 mark on the staff gauge is 1149.55 – 1.81 = 1147.74

\*\*\*Because the staff gauge elevation is used in other calculations, I changed this value from 1151.47 to 1147.74 for parameters 91977 and 92060 in SWIMS. I left the other fore sight and back sight readings the same.

**September 9, 2019 survey:**

All survey data in the survey data sheet are correct, but note that the calculated elevation of the staff gauge (1151.38 feet) is the top of the staff gauge. Thus, it is incorrect to add the staff gauge reading to this number. I also changed DNR parameter 90004 from 1149.71 to 2.07 feet because this parameter is meant to be the direct staff gauge reading of the water level, not the calculated elevation of the water level.

To derive the elevation of the zero mark on the staff gauge:

1. The height of the instrument on survey stage 2 was 1158.32
2. The fore sight to the water level was 8.61 feet (see bottom of data sheet – this parameter does not exist in SWIMS)
3. The elevation of water was 1158.32 – 8.61 = 1149.71 feet
4. The staff gauge reading was 2.07 feet
5. The elevation of the 0 mark on the staff gauge is 1149.71 – 2.07 = 1147.64

\*\*\*Because the staff gauge elevation is used in other calculations, I changed this value from 1151.38 to 1147.64 for parameters 91977 and 92060 in SWIMS. I left the other fore sight and back sight readings the same.

\*\*\*\*the gauge moved by 0.1 feet between June 6 and September 10, 2019.