

Pre-Season Meter Summary

4/14/2021 Kendall Sewell (MSU Water Quality Extension)

During the last week of March 2021 and the first two weeks of April 2021, all 5 meters were cleaned, calibrated, and assessed for drift. Meter kit materials were restocked. This was conducted at the MSU Marsh Laboratory in Bozeman, MT by MSU Water Quality Extension Office (MSUEWQ) employee Kendall Sewell. Laura Nowlin (MWC) will include the necessary paperwork in each of the meter tubs before distributing to volunteers.

Cleaning

No noticeable damage was discovered. Meters were cleaned with tap water and pipe cleaners before calibration. All meters were found with batteries still in the monitors. New meter batteries and pipe cleaners were purchased and replaced. All cameras arrived with batteries and memory cards inside as well.

Calibration

YSI Pro30 specific conductivity was calibrated according to the 2020 MWC SAP and SOP. The YSI ProPlus meter specific conductivity was calibrated according to the MSUEWQ instructional video (see below link). 1413 conductivity calibration solution was used. LMCDs 1-4 had relative percent differences (reading before calibration vs 1413) within the acceptable range of -5% to 5%. It should be noted that LMCD 4 had an RPD of -4.39%. The ProPlus meter had a similar RPD once the probe was replaced (see Announcements below).

Drift Test

A drift test was performed according to the 2020 MWC SAP and SOP. All five meters were placed in the same bucket of water and readings were recorded simultaneously while slugs of salt water were added to assess agreement among the meters over the range of salinities observed. The greatest relative percent difference was 39.03%. The YSI ProPlus meter significantly impacted relative percent differences (RPD) and averages as its readings were higher. This can also be seen in the readings before calibration and readings after the drift test. The YSI ProPlus pre-season drift test RPDs were greater than the November 2020 post-season drift test RPDs, indicating worsening meter integrity. Future use of this meter should be discussed before the 2021 monitoring season begins.

To get a feel for how the YSI Pro30s performed, a separate comparison table that excludes the YSI ProPlus meter was created. In this comparison, the greatest RPD was -2.29%, well within the acceptable range. So, the difference among these four meters at the beginning of the season was less than 3%. LMCD 4 readings were consistently lower than LMCD 1-3.

Announcements

With assistance from Adam Sigler (MSUEWQ) and in conversation with Laura Nowlin (MWC), the YSI ProPlus meter SC probe was replaced with a probe from the MSUEWQ office. This probe was tested for drift, recalibrated (results shown in the calibration log), and deemed acceptable for use.

LMCD 1's camera battery is not functioning and needs to be replaced. The SD card was heavily corroded. The camera will need to be assessed for damage and whether it is recoverable. For long term storage,

it's important to remove batteries and memory cards in the cameras in addition to batteries in the meters.

MSUEWQ How to calibrate a YSI Pro Plus Meter: <https://www.youtube.com/watch?v=SCnAVq2Ib5s>

Meter Departure

All tubs include:

- Carrying case (pelican case or satchel)
- Meter with new batteries and extra batteries
- Meter probe (and cups for the ProPlus)
- Clip board
- Pipe cleaners
- Bottled water (for rinsing probe after getting readings)
- Wash cloth (for quickly drying probe after getting readings)
- LMCD 4 and ProPlus tubs have fully charged, functioning cameras as well as camera box, case, charger, and cords
 - LMCD 3 is missing the camera charger and cord
 - LMCD 2 has no camera or shares a camera with ProPlus
 - LMCD 1 camera is not functioning and needs to be assessed
- Dry erase marker
- Pens and/or pencil
- Location and photo directions, photo data sheets, and site sampling season sheets (to be provided by Laura Nowlin)
- Laminated sheet of white paper (for photo documentation)
- MSU hats! Thank you volunteers :)