Temperature Calibration Check Procedure *Rev. 9/22/16*

<u>Preparation the day before</u>: Fill a large container with tap water the night before calibration. You want this water to sit overnight to stabilize to room temperature. If this is not possible, fill a container with water that is as close to the air temperature in the room as possible.

Equipment Needed:

- "Temperature Calibration Protocol & Data Sheets" binder
- Pencil and clipboard
- All air/stick thermometers (check the numbers against the data sheet to ensure you have all thermometers – look at the last calibration sheet to see which numbers were missing before). You may need to get them out from the kits and grab sample bags, Winkler box, and other places they may be "stashed" in the office.
- All digital thermometers
- Mercury thermometer
- All of the electronic temperature sensors you will be checking (YSI's, Hydrolabs, etc.)
- NIST-traceable thermometer (digital thermometer in plastic case)
- Ice: check the staff freezer. If no Streamkeeper ice is available, you will need to buy a bag and save the receipt for reimbursement.

Calibration Procedure:

1. Set up your work space; you need enough room to lay out the meters and all thermometers as well as your bucket of water and notebook.
2. Turn on the electronic meters and warm them up (approx 15 min. or until the temperature stabilizes).

- Room Temperature Calibration Check Procedure
    1. Place all the thermometers and the electronic meter probes into the room temp water. You need to keep the thermometers and probes approximately in the center of the water and off the bottom. Stir the water continuously and watch the temperature readings on the electronic meters to stabilize.
    2. On the data sheet, begin to record the water temperatures from each meter and the NIST temperature at time of reading. Record meter readings to the nearest 0.1 degree and NIST readings to nearest 0.01.
    3. Record the stick temperature thermometer readings on the data sheet. As before, record NIST readings at the same time. You want to read the temps while the tips are in the water to the nearest whole

degree. Remember to continuously stir the water to maintain consistent temperature throughout the water.

- Ice Bath Calibration Check Procedure
    1. Prepare the ice bath. You need about 1/2 ice to water.
    2. Move the digital and air thermometers, as well as any meter probes, to the ice bath. Stir the ice water continuously. You are looking for the digital thermometer to read as close to zero as possible. If it is warmer, add more ice and mix.
    3. Check the electronic meters again for stability and record the water temperatures to the nearest 0.1 degree. Again, you will also record the NIST thermometer for comparison. Stir the water to maintain even temperatures, adding ice if you move above zero on the digital thermometer.
    4. Now record the stick thermometer readings on the data sheet, to the nearest whole degree, keeping the tips in the water while you take the readings. Make sure the data sheet is completely filled in with your initials and the date.
    5. Notify staff of any instrument that doesn't pass its QC test*.
    6. Put any unused ice back into the freezer.
    7. File your data sheet in the calibration notebook behind the "completed data sheets" tab, with the most recent data sheet on top.

*Electronic sensors must match within 0.2 degrees of the NIST
*Stick thermometers must match within 1 degree of NIST