TURBIDITY

Materials Checklist

___ Power Macintosh
___ soft tissue
___ LabPro, Power Supply, Cable
___ Vernier Turbidity Sensor
___ Turbidity Standard (100 NTU)
___ Distilled water Standard (0 NTU)
___ Turbidity Cuvette
___ 50 mL beaker for sampling aquarium

Testing Procedure

1. Prepare the computer for data collection by opening “Test 03 Turbidity” from the Water Quality with Computers experiment files of LoggerPro. On the Graph window, the vertical axis has turbidity scaled from 0 to 200 NTU. The horizontal axis has time scaled from 0 to 10 seconds. There is also a Meter window which displays live turbidity readings.

2. Plug the Turbidity Sensor into Channel 1 of the LabPro. **Warm up for ten minutes.**

3. You are now ready to calibrate the Turbidity Sensor.
   
   First Calibration Point Reading 1
   a. Choose Calibrate from the Experiment menu and then choose LabPro: 1 CH 1: Turbidity.
   b. Select “Calibrate Now”.
   c. Prepare a **blank** by rinsing the glass turbidity cuvette with distilled water, then filling it ¾ full with distilled water. Place the lid on the cuvette. Gently wipe the outside with a soft, lint-free cloth or tissue.
   d. Check the cuvette for air bubbles. If air bubbles are present, gently tap the bottom of the cuvette on a hard surface to dislodge them.
   e. Holding the cuvette by the lid, place it in the Turbidity Sensor. Make sure that the mark on the cuvette is aligned with the mark on the Turbidity Sensor. Close the lid.
   f. Type “0” (the value in NTU) in the edit box.
   g. When the displayed voltage reading for channel Input volts stabilizes, click [ ].
   h. Remove the cuvette and set aside for use in Step 5.
   
   Second Calibration Point
   h. Obtain the cuvette containing the StableCal® Formazin Standard (100 NTU) and gently invert it four times to mix in any particles that may have settled to the bottom. **Important:** Do not shake the standard. Shaking will introduce tiny air bubbles that will affect turbidity.
   i. Wipe the outside with a soft, lint-free cloth or tissue.
   j. Holding the standard by the lid, place it in the Turbidity Sensor. Make sure that the mark on the cuvette is aligned with the mark on the Turbidity Sensor. Close the lid.
   k. Type the “100” (the value in NTU) in the edit box.
   l. When the displayed voltage reading for channel Input volts stabilizes, click [ ], then click done.

*Water Quality with Computers*
4. You are now ready to collect turbidity data.
   a. Empty the water from the cuvette used in Step 4.
   b. Gently submerge a clean 50 ml beaker into the ecosystem and fill with water. **Do not use the cuvette for collecting the sample.**
   c. Slowly pour the water into the cuvette until three quarters full. Place the lid on the cuvette. Gently wipe the outside with a soft tissue.
   d. Check the cuvette for air bubbles. If air bubbles are present, gently tap the bottom of the cuvette on a hard surface to dislodge them.
   e. Holding the cuvette by the lid, place it into the Turbidity Sensor. Make sure it is in the same orientation in the cuvette slot that is was before. Close the lid of the Turbidity Sensor.
   f. Monitor the turbidity value in the Meter window. If this value stabilizes, record it on the Data table. **Note:** Particles in the water will settle over time and show a slow downward drift in turbidity readings. Therefore, take your readings soon after placing the cuvette in the sensor.

5. If the turbidity value displayed in the Meter window is fluctuating, determine the mean (or average) turbidity. To do this:
   a. Click **Collect** to begin a 10-second sampling run.
   b. Click on the Statistics button, **Rec**, to display the statistics box on the graph.
   c. Record the mean turbidity value on the Data table.