Turbidity

Primary Importance:
Turbidity is the relative clarity of the water and is measured by shining a light through the water column. Turbidity is a significant indicator of overall water quality. Photosynthesis is impaired and excessive suspended particles absorb heat, raising water temperature and lowering dissolved oxygen levels. High turbidity levels are caused from erosion, runoff, and algal blooms.

Problem
When light transmission decreases, algae can only grow in the surface of the water. The water looks "dirty" and organisms on the stream bottom receive no light.

Causes
- Most of the particles come from erosion of soils, either from fields, parking lots, or the stream bank itself.
- Algae and organic particles also contribute to turbidity.
- Construction can have a large effect on the amount of light-scattering materials that enter a stream.

Instructions:
Turbidity can be measured with many types of equipment from an electronic turbidimeter to a homemade Secchi disk or turbidity tube (see "How to Make a Turbidity Tube").

CHECKLIST
- ☐ Turbidity tube
- ☐ Bucket or other sample container
- ☐ Testing Instructions
- ☐ Data Sheets

1. Collect sample water in a bucket or other container from which you can pour the water into a calibrated turbidity tube. Do not allow the sample to settle. (Note: For a more accurate assessment of stream turbidity, avoid stirring the bottom sediments when sampling.)

2. Slowly pour the sample water into the tube while looking vertically down into it. When the water level reaches a point at which you can barely see the "X" on the bottom of the tube, stop pouring. (Note: Placing the bottom of the tube on a white surface will help in reading the result. In addition, allow air bubbles to dissipate before taking the reading.)

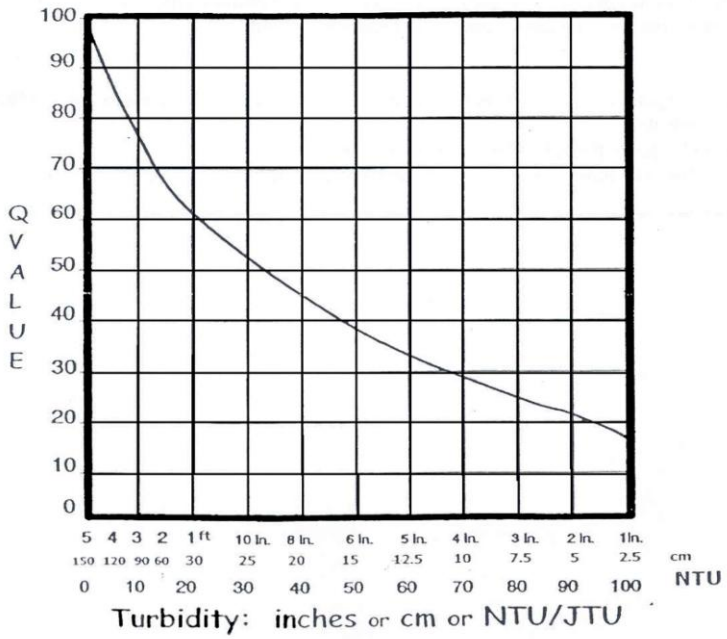
3. Read the measurement of water in the tube and record it in centimeters or inches.

4. Repeat the above steps to verify the result. (Note: Allowing one or two additional people to repeat the test may help in obtaining a more accurate result.)

5. To report results, convert your reading from cm to Nephelometer Turbidity Units (NTU's) using the Turbidity Q-value chart.

TYPICAL RANGE FOR TURBIDITY = 4.5 to 173 NTUs

Turbidity Q-values



Turbidity (NTU)	Transparency (cm)	Q-Value
0	150	97
5	120	84
10	90	76
<15 (turb tube)	>60 (turb tube)	70
15	60	68
20	30	62
25	27.5	57
30	25	53
35	22.5	48
40	20	45
50	15	39
60	12.5	34
70	10	28
80	7.5	25
90	5	22
100	2.5	17
>100	<2.5	5

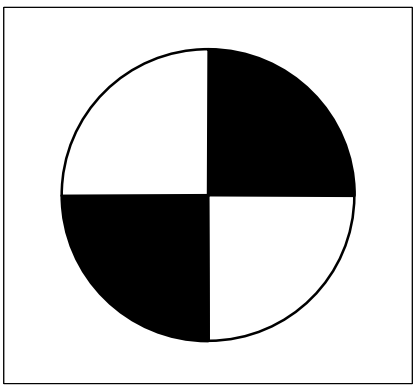
How to Make a Turbidity Tube:

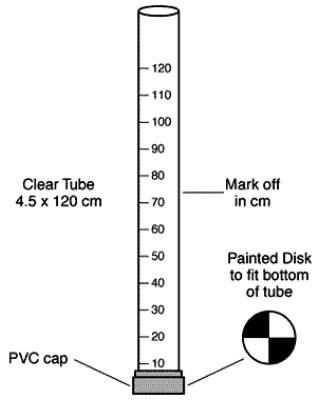
For instructions on how to correctly use the turbidity tube, see the Chemical Testing Instructions.

Directions:

1. Put a PVC cap or other covering on one end of a clear tube (a florescent light bulb tube cover works great). Cap should fit tightly so water will not leak out. Clear packing tape can also be used to secure the cap.
2. Cut a disk from the template provided. It should be the same size as the tube diameter.
3. Seal the disk by laminating or covering with clear packing tape to make it waterproof.
4. Adhere the disk to the cap at the bottom of the tube with clear packing tape.
5. Use a permanent marker and meter stick to make a scale on the side of the tube, beginning with 0 cm at the disk. Number the tube in increments of 5 or 10 ending with 150 cm at the top.

Sample Disk Template





Sample Turbidity Tube

Note: JTUs versus NTUs

Jackson Turbidity Units (JTUs) and Nephelometer Turbidity Units (NTUs) are not *exactly* equivalent but are approximately the same.
Ex) 40 JTU ~ 40 NTU