pH Sampling Instructions

Step 1
Dip one strip of indicator (litmus) paper in to the stream and pull it out quickly.

Time – 2 minutes
Persons – 1
Materials – pH strips

Step 2
Wait 1 minute.

Step 3
Compare the color of the litmus paper to the pH color key on the pH box.

Step 4
Record the number associated with the correct color match on the student worksheet.

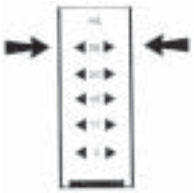
Remember: Take pH readings directly in the stream. If this cannot be done safely, collect water in a bucket or a sample bottle and immediately take the pH reading.

In Utah:
The allowable range of pH is 6.5 to 9.0.

Dissolved Oxygen Sampling Instructions

Sunlight can damage the ampoules in your DO kit. Keep them shaded at all times.

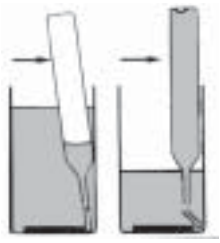
Time – 3 minutes
Persons – 1
Materials – Chemetrics Dissolved Oxygen Sampling Kits



Step 1

1. Pre-rinse collection bottle with stream water.
2. Fill the sample cup to the 25 ml mark with your sample.

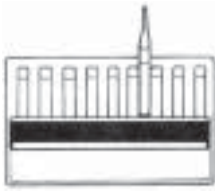
Step 2



1. Place the glass ampoule in the sample cup.
2. Snap the tip by pressing the ampoule against the side of the cup.
3. The ampoule will fill, leaving a small bubble that will help you mix the contents.

Step 3

1. Mix the contents of the ampoule by turning it up and down several times, allowing the bubble to travel from end to end each time.
2. Wipe all liquid from the outside of the ampoule.



Step 4

1. Wait 2 minutes for color development.

Step 5

1. With the sun (or another light source) shining on the comparator (rack of colored tubes) from directly above, place the dissolved oxygen ampoule between the color standards for viewing. It is important that the ampoule be compared by placing it on both sides of the color standard tube before deciding that it is darker, lighter or equal to the color standard.
2. Record the concentration of the best color match.

In Utah:
The minimum concentration for coldwater fish is 6.5 mg/l.
The minimum concentration for warmwater fish is 5.5 mg/l.

Turbidity Sampling Instructions

Step 1 – Collect your sample

1. Dip the tube into the water at your sampling site and fill to the top. Be careful to sample flowing water and not the stream bottom. Do not stand upstream from the area you are sampling.

Time – 2 minutes
Persons – 1
Materials – Turbidity Tube

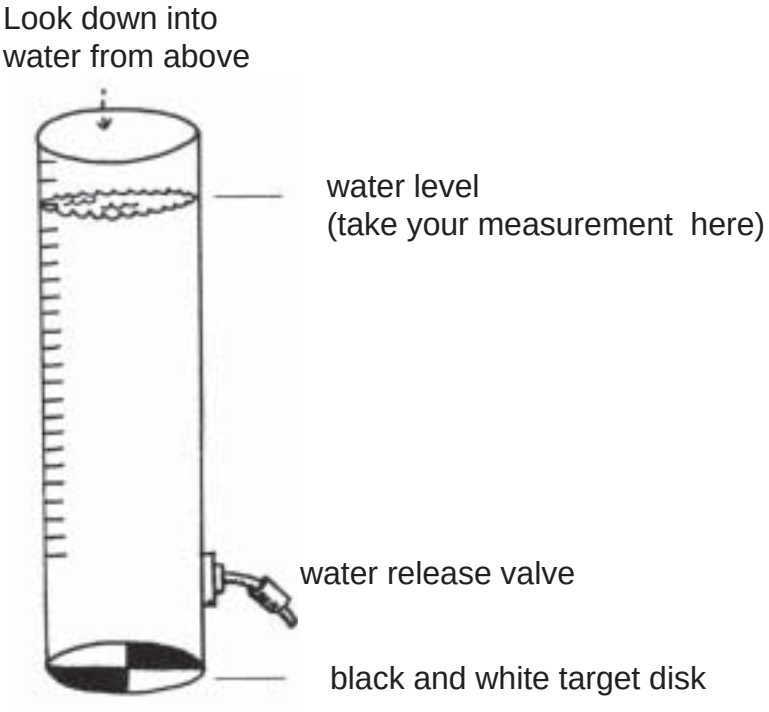
Step 2 – Take your measurement

(see figure below for help)

1. Take your filled turbidity tube to a shaded spot. If there is no shade, use your body to block the sun from shining on the tube.
2. With your hand over the opening, shake the tube vigorously. This will help to re-suspend any sediment that has settled to the bottom.
3. Look down through the tube toward the target disk on the bottom of the tube.
   - If the disk is visible, record the water level in centimeters (cm).
   - If the disk is not visible, slowly release water from the release valve until the disk becomes visible. Record the water level in centimeters (cm) on the student worksheet.

Step 3 – Convert from centimeters (cm) to turbidty units (NTUs)

1. Match your turbidity measurement in centimeters to the corresponding NTUs using the conversion chart on the back of this page. Record on the student worksheet.



Turbidity Conversion Chart

Turbidity Conversion Chart	
Distance from bottom of tube (cm)	**NTUs**
< 6	> 240
6 to 7	240
7 to 8	185
8 to 9	150
9 to 10	120
10 to 12	100
12 to 14	90
14 to 16	65
16 to 19	50
19 to 21	40
21 to 24	35
24 to 26	30
26 to 29	27
29 to 31	24
31 to 34	21
34 to 36	19
36 to 39	17
39 to 41	15
41 to 44	14
44 to 46	13
46 to 49	12
49 to 51	11
51 to 54	10
54 to 58	9
58 to 60	8
Over the top	6

In Utah:
An increase of more than 10 NTUs is unacceptable for most waters in Utah. This increase can be over natural levels or from one location to another nearby downstream location.

Temperature Sampling Instructions

Time – 2 minutes
Persons – 1
Materials – Thermometer

Step 1

1. Dip the thermometer into a moving part of the stream or river.

2. Wait for the temperature to stop changing (at least 1 minute).

Step 2

1. Read the temperature and record on the student worksheet.

Converting Fahrenheit to Celsius: **°C = (5/9) x (°F - 32)**

Converting Celsius to Fahrenheit: **°F = [(9/5) x °C] + 32**

In Utah:
The maximum temperature allowed for warm water fisheries and aquatic wildlife is 27° C (81° F).

The maximum temperature allowed for cold water fisheries and aquatic wildlife is 20° C (68° F).