New Hampshire Fish and Game Department
Watershed Education Program (WEP) Water Quality Testing Protocol 2018

This Water Quality Testing Protocol can be used in conjunction with the NH Department of Environmental Services (DES) Volunteer Biological Assessment Program (VBAP, 2008). VBAP is a combination of macroinvertebrate pollution tolerance ranking and riparian habitat assessment.

The information provided with these directions:

- ✓ New Hampshire Fish and Game Department Watershed Education Program Water Quality Data Sheet
- ✓ Interpreting Volunteer River Assessment Program (VRAP) Water Quality Monitoring Parameters.
- ✓ Connection to the New Hampshire Science Curriculum Frameworks
- ✓ Watershed Education Program (WEP) flyer

Additional information can be obtained from:

- ✓ VBAP Protocol Manual 2008
- ✓ VBAP Data Sheets
- ✓ Macroinvertebrate Identifications

Directions for setting up Water Quality testing sites:
The water quality testing can be done in conjunction with the VBAP protocol. Measure out a 200' long section of the river. Water quality measurement will be taken at the beginning, in the middle, and at the end of the section. Readings/samples should be taken in the middle of the river in the middle of the water column. Write the measurements in the data sheet as directed below.

Directions for filling out the WEP Water Quality data sheet:
Fill out the water quality data sheet following the ***SAMPLE*** data sheet format (see example below for two different streams).

Fill in Stream name, Town, and Volunteer information. This information is essential if the data has to be checked for quality control.

There are 5 chemical water quality parameters to be measured. These are described in the ***Interpreting VRAP Water Quality Monitoring Parameters*** fact sheet. This interpretation is based on the Class A and B NH Surface Water Quality Standards. Use the following standards if assessing fish habitat water quality:

	pH	Dissolved Oxygen	Temperature
Cold water fish	6.0-7.5	> 5 mg/l	> 68 degrees F not tolerated
Warm water fish	6.0-8.0	>3 mg/l	> 68 degrees F is tolerated

For both cold and warm water fish, turbidity measurements should be < 50.0 NTU's, and conductivity measurements should be < 50.0 µSiemens.

Examples of cold water fish are salmon and trout; warm water fish are bass, perch, pickerel, other sunfish, etc.

The VBAP Biotic Score is part of the biological monitoring and can be used with these chemical parameters to do a complete study of the stream/river. Fill this in only if you are doing the VBAP. Follow the directions in the VBAP Protocol Manual 2008

Fill in the Date the sampling is done. Different times of the year and times of day will yield different results. In order to compare data from year to year, try to sample the same time of year each time.

Site location is numbered as 01, 02, 03 for the first, second and third sampling sites etc. followed by a hyphen and then the first three letters of the stream/river name.

Fill in each water quality parameter as measured in the appropriate columns. Be sure to calibrate the meters according to directions. Follow all directions for correct sampling with the meters or the chemical kits.

Value is the number that is measured for each parameter by the meter or the kit.

Meter/kit # is written on the case and helps pinpoint which meter or chemical kit is faulty if the reading is suspicious. Circle whichever tool is being used, meter or kit.

GPS Location is the latitude and longitude readings of the testing site locations. In order to draw comparisons with different data sets it is necessary to test the same locations with the same protocol each time. This also allows for exporting the data onto a GIS map for display and analysis and sharing between schools in the same watershed. Remember longitude readings are negative because we are in the western hemisphere.

Directions for Riparian Assessment: Follow the VBAP protocol manual.

Directions for VBAP (macroinvertebrate) Assessment: Follow the VBAP protocol manual and fill out the VBAP data sheets.

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Fish and Game's Conservation Education Program provides diverse educational experiences for everyone to increase their knowledge about fish and wildlife and to encourage them to spend more time and act responsibly outdoors. An engaged and informed public can help ensure high quality habitats and healthy wildlife.

New Hampshire Fish and Game Department
SAMPLE Watershed Education Program Water Quality Data Sheet

Stream Name: Samsquash River_____ Town: Utopia, NH_____

Volunteer Name(s): Fancy Waters & Briney Shrimp

Water Quality Parameter	Date	Site location	Value	Meter/Kit #
pH	5/5/10	01-SAM	6.2	10
Dissolved Oxygen (mg/l)	5/5/10	01-SAM	7.0	9
Temperature F or C	5/5/10	01-SAM	15.0	5
Conductivity (mS/cm)	5/5/10	01-SAM	10.0	4
Turbidity (NTU)	5/5/10	01-SAM	1.0	1
VBAP Biotic Score	5/5/10	01-SAM	3.3	

GPS Location for 01-SAM: 43.764341, -71.700658

Water Quality Parameter	Date	Site location	Value	Meter/Kit #
pH	5/5/10	02-SAM	6.1	10
Dissolved Oxygen (mg/l)	5/5/10	02-SAM	6.7	9
Temperature F or C	5/5/10	02-SAM	16.7	5
Conductivity (mS/cm)	5/5/10	02-SAM	11.0	4
Turbidity (NTU)	5/5/10	02-SAM	2.0	1
VBAP Biotic Score	5/5/10	02-SAM	3.1	

GPS Location for 02-SAM: 43.765345, -71.699658

Water Quality Parameter	Date	Site location	Value	Meter/Kit #
pH	5/5/10	03-SAM	6.0	10
Dissolved Oxygen (mg/l)	5/5/10	03-SAM	6.5	9
Temperature F or C	5/5/10	03-SAM	16.6	5
Conductivity (mS/cm)	5/5/10	03-SAM	12.0	4
Turbidity (NTU)	5/5/10	03-SAM	2.0	1
VBAP Biotic Score	5/5/10	03-SAM	3.0	

GPS Location for 03-SAM: 43.766912, -71.698983

New Hampshire Fish and Game Department
Watershed Education Program Water Quality Data Sheet

Stream Name: Pumpkinseed River Town: Fishville

Volunteer Name(s): Fancy Waters & Briney Shrimp

Water Quality Parameter	Date	Site location	Value	Meter/Kit #
pH	5/19/10	01-PUM	5.9	10
Dissolved Oxygen (mg/l)	5/19/10	01-PUM	5.3	9
Temperature F or C	5/19/10	01-PUM	18	5
Conductivity (mS/cm)	5/19/10	01-PUM	50.0	4
Turbidity (NTU)	5/19/10	01-PUM	10.0	1
VBAP Biotic Score	5/19/10	01-PUM	2.9	

GPS Location for 01-PUM: 43.760715, -71.703001

Water Quality Parameter	Date	Site location	Value	Meter/Kit #
pH	5/19/10	02-PUM	6.0	10
Dissolved Oxygen (mg/l)	5/19/10	02-PUM	6.3	9
Temperature F or C	5/19/10	02-PUM	18	5
Conductivity (mS/cm)	5/19/10	02-PUM	20.0	4
Turbidity (NTU)	5/19/10	02-PUM	5.0	1
VBAP Biotic Score	5/19/10	02-PUM	3.1	

GPS Location for 02-PUM: 43.762775, -71.697001

Water Quality Parameter	Date	Site location	Value	Meter/Kit #
pH	5/19/10	03-PUM	6.1	10
Dissolved Oxygen (mg/l)	5/19/10	03-PUM	6.3	9
Temperature F or C	5/19/10	03-PUM	18.7	5
Conductivity (mS/cm)	5/19/10	03-PUM	10.0	4
Turbidity (NTU)	5/19/10	03-PUM	1.0	1
VBAP Biotic Score	5/19/10	03-PUM	3.5	

GPS Location for 03-PUM: 43.768789, -71.688436