

WETLAND SURVEY DATA SHEET



(1) Determine your survey boundary. (2) Locate the wetland outlet, collect water samples and analyze using the chemical tests you have available. You may use your collection container to observe water-color and clarity and to determine water odors. (3) Estimate the water level. (4) In order to collect macroinvertebrates from a wetland you must use a multi-habitat approach in order to be representative; multiple samples (at least 10) should be collected throughout the area. Make sure to use the correct types of nets. (5) Evaluate the physical and habitat conditions; record information about known land use activities. (6) Sketch your wetland study area and submit photographs. (7) Include any other comments, data or other information that you feel is important for evaluating the conditions of your study area.

Water body name _____ Survey date _____
 Watershed _____ County _____
 Latitude _____ Longitude _____ Directions to site _____
 _____ Start time _____
 Survey completed by _____ Site code _____
 Affiliation _____ Email _____
 Mailing _____ Phone number _____
 address _____

WATER CHEMISTRY: Use the boxes below to record the results of your water chemistry analysis; attach additional sheets if necessary.

	Result	units		Result	units		Result	units
Temperature (C/F)			Conductivity			Alkalinity		
Dissolved oxygen			Nitrates			Iron		
pH			Phosphate			Fecal/E-coli		
Additional tests (describe and record results) _____								

PHYSICAL CONDITIONS: Use the check boxes below to describe the conditions that closely resemble those of your stream. The extra lines are provided to write in any additional comments. You may see more than one type of condition; if so, be sure to indicate these on your survey (check all that apply). If multiple conditions are observed, always indicate the most dominant condition. Note: If the condition you observe is not listed, describe it in the comment section.

Water clarity	Water color	Water odor	Surface foam
Clear	None	None	None
Murky	Brown	Fishy	Slight
Milky	Black	Musky	Moderate
Muddy	Orange/red	Rotten egg	High
Other (describe)	Gray/White	Sewage	
	Green	Chemical	

Algae color	Algae abundance	Algae growth habit	Sediment color and odor
Light green	None	Even coating	Brown
Dark green	Scattered	Hairy	Black
Brown	Moderate	Matted	Green
Other (describe)	Heavy	Floating	White/gray
			Orange/red

DESCRIBE THE SEDIMENT ODOR(S)

Physical condition comments: _____

Estimate the % of the wetland that is shaded	> 80	80 - 60	60 - 40	< 40
	Excellent	Good	Fair	Poor

Circle your estimate

HABITAT CONDITIONS: Rate the habitat conditions by choosing the best description for the survey area. Indicate your choice by writing **O**, **S**, **M** or **P** in the spaces provided.

Points	8	6	4	2
Water source	4 sources	3 sources	2 sources	1 source
	Optimal	Suboptimal	Marginal	Poor
Water level fluctuations	Fluctuation due to natural seasonal patterns	Natural hydrology partly modified by artificial controls	Water level controlled by damming of the outlet	Fluctuations extreme due to upstream dam release, stormwater etc.
	Optimal	Suboptimal	Marginal	Poor
Vegetation diversity and coverage	4 or more vegetation classes covering > 80% of the wetland	3 vegetation classes covering 50-80% of the wetland	2 vegetation classes covering 30-50% of the wetland	1 vegetation class covering < 30% of the wetland
	Optimal	Suboptimal	Marginal	Poor
Food sources for macroinvertebrates	Abundant macrophytes, periphyton, CPOM and FPOM	Common occurrences of macrophytes, periphyton, CPOM and FPOM	Limited amounts of macrophytes, periphyton, CPOM and FPOM	No macrophytes or periphyton, limited CPOM and FPOM
	Optimal	Suboptimal	Marginal	Poor
Sedimentation rate	No evidence of sedimentation	Evidence of sedimentation near inlets, drains and roads	Sand accumulation forming banks and bars	Sand accumulation smothering wetland vegetation
	Optimal	Suboptimal	Marginal	Poor
Substrate and soils	Sediments primarily silt/mud and organic soils	Sediments have equal quantities of gravel, sand, silt/mud and organic soils	Sediments primarily gravel and sand, with some silt/mud and organic soils	Sediments primarily gravel, cobble and sand with no silt/mud or organic soils
	Optimal	Suboptimal	Marginal	Poor
Total	> 38 (Optimal)	38 – 28 (Suboptimal)	28 – 18 (Marginal)	< 18 (Poor)

Habitat condition comments: _____

Weather conditions (current and past 48 hours): _____

LAND USE: Indicate the land uses that you believe may be having an impact on your stream station. Use the letters (**S**) streamside, (**M**) within ¼ mile and (**W**) somewhere in the watershed, to indicate the approximate location of the disturbance and the numbers (1) slight, (2) moderate or (3) high, to represent the level of disturbance.

Active construction		Pastureland		Single-family residences
Mountaintop mining		Cropland		Sub-urban developments
Deep mining		Intensive feedlots		Parking lots, strip-malls etc.
Abandoned mining		Unpaved Roads		Paved Roads
Logging		Trash dumps		Bridges
Oil and gas wells		Landfills		Other (describe)
Recreation (parks, trails etc.)		Industrial areas		

Land use comments _____ Pipes? Yes No

Describe the types of pipes observed and indicate if there is any discharge from the pipes. Also describe the color and odor of the discharge. _____

PHOTOGRAPH and **SKETCH YOUR STUDY AREA**: Use the space below or a separate piece of paper to draw your wetland survey area. Indicate the direction of flow, north, sample locations and important features of the reach. Photographs are an excellent method for tracking changes, especially changes related to the condition of the habitat. Choose a minimum of two permanent locations from which to take your photos. Submit your photos with your survey data sheet.

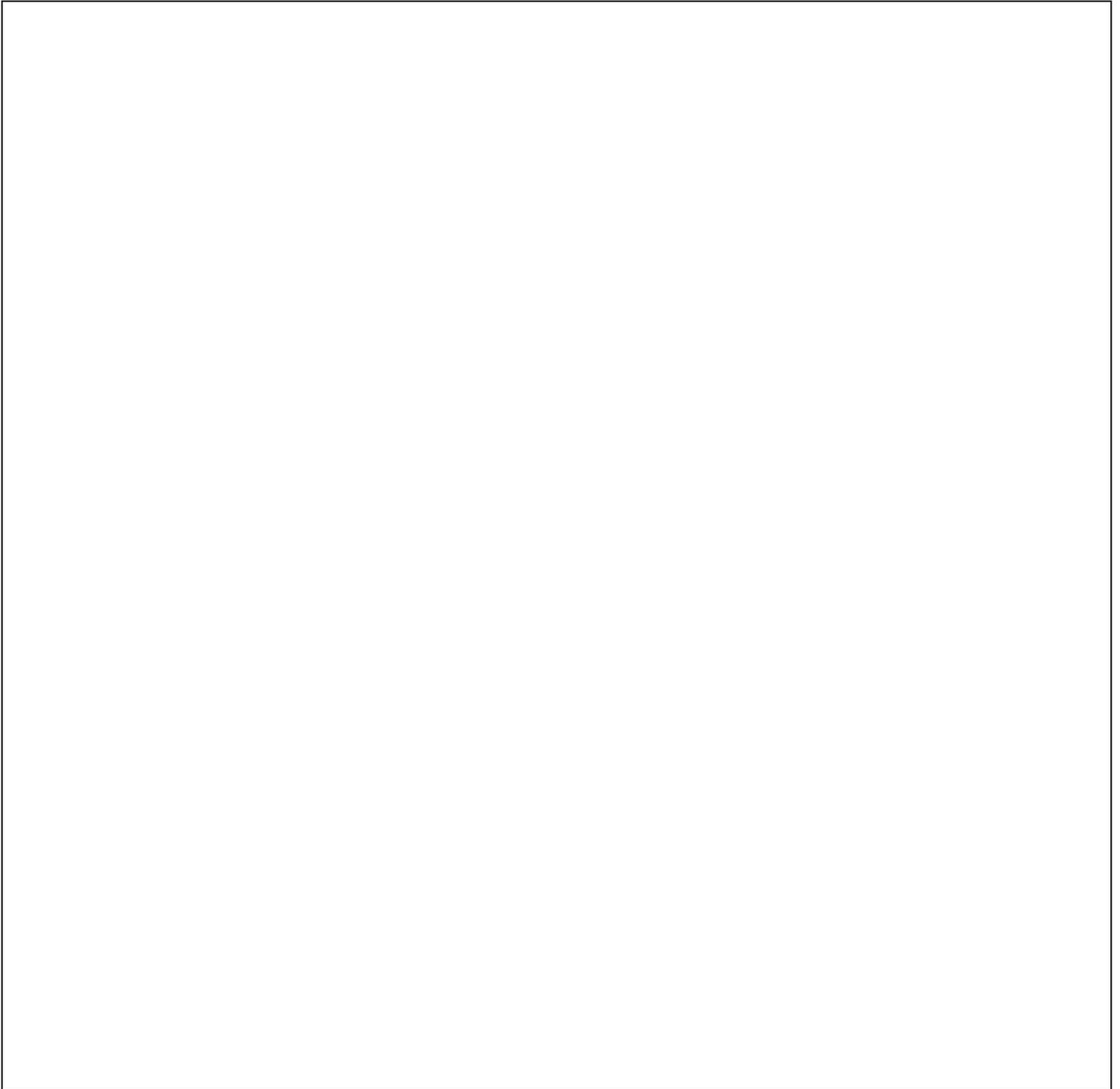
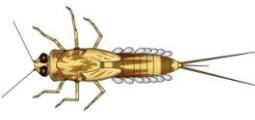
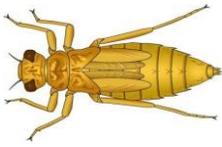
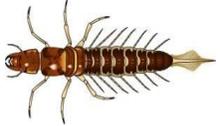
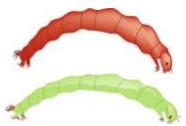
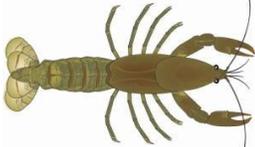
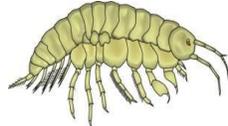
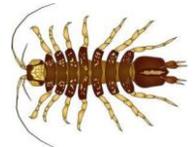
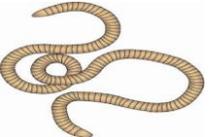
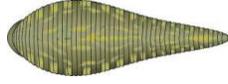


Photo descriptions: _____

BENTHIC MACROINVERTEBRATES

Use the table below to record information about your macroinvertebrate collections. Record their **abundance** using this code: **(A) > 50, (C) 5 – 50 and (R) < 5**. Also record the number of different kinds. The **# of kind's** box indicates groups in which multiple kinds (**FAMILIES**) are possible. Illustrations courtesy of the **Cacapon Institute**; Jennifer Gillies, artist

 Mayflies	# of kinds <input type="text"/>	 Caddisflies	Net-spinners # of kinds <input type="text"/>	 Caddisflies	Case-builders # of kinds <input type="text"/>
 Dragonflies	# of kinds <input type="text"/>	 Alderfly		 Beetles/Water bugs	# of kinds <input type="text"/>
 Damselflies	# of kinds <input type="text"/>	 Midges		 Other fly larva	# of kinds <input type="text"/>
 Crayfish		 Sideswimmer		 Aquatic sowbug	
 Clams	# of kinds <input type="text"/>	 Mussel		 Water mites	
 Operculate snails	# of kinds <input type="text"/>	 Non-operculate snails	# of kinds <input type="text"/>	 Flatworm	
 Aquatic worm	# of kinds <input type="text"/>	 Leech		Other (describe below)	# of kinds <input type="text"/>

Other aquatic life observed or collected: _____

NOTE: A SCIENTIFIC COLLECTION PERMIT FROM THE WVDNR IS REQUIRED FOR ALL AQUATIC COLLECTIONS.

BIOLOGICAL INTEGRITY: Convert the abundance rating into numbers using this code: (**A = 6; C = 3; R = 1**). Follow the instructions and use the table below to complete all the necessary calculations.

1. Multiply the abundance number by the tolerance to calculate the tolerance score. Add the entire tolerance score column and the relative abundance column. Divide the total tolerance by the relative abundance total. This calculation is called the **Biotic Index**.
2. Calculate the total number of kinds. This calculation is called the **Total Taxa**.
3. Calculate the total number of kinds from the beetles and true bugs, mayflies, dragonflies and damselflies and caddisflies by adding the kinds together. This calculation is called **CEOT Taxa**.
4. You will determine a point value for three (metric) calculations by comparing your calculated value to the values in the table. The point values from each calculation are added together to determine your overall stream score and rating. **Shaded boxes** indicate that multiple kinds are possible within the group.

Benthic macroinvertebrates	Abundance	Tolerance	Tolerance Score	Number of Kinds (Taxa)
Insect Groups				
Mayflies (Order Ephemeroptera)		3		
Case-building caddisflies (Order Trichoptera)		3		
Net-spinning caddisflies (Order Trichoptera)		4		
Dragonflies (Order Odonata ; sub-order Anisoptera)		4		
Damselflies (Order Odonata ; sub-order Zygoptera)		6		
Beetles/Water bugs (Orders Coleoptera and Hemiptera)		6		
Alderfly (Family Sialidae)		6		
Non-biting midge (Family Chironomidae)		8		
Other true flies (Order Diptera)		6		
Non-Insect Groups				
Water mite (Order Hydrachnida)		5		
Crayfish (Order Decapoda)		6		
Scud/Sideswimmer (Order Amphipoda)		5		
Aquatic sowbug (Order Isopoda)		7		
Operculate snails (Class Gastropoda ; sub-class Prosobranchia)		4		
Non-operculate snails (Class Gastropoda ; sub-class Pulmonata)		7		
Clams (Order Veneroidea)		6		
Mussel (Family Unionidae)		4		
Aquatic worm (Class Oligochaeta)		10		
Leech (Class Hirudinea)		10		
Flatworm (Class Turbellaria)		7		

Other invertebrates: _____

	Total Abundance	Total Tolerance	Total Taxa
	<input type="text"/>	<input type="text"/>	<input type="text"/>

Metrics	Calculated Values	Point Values	10	7	5	3
Total Taxa	<input type="text"/>	<input type="text"/>	> 18	18 - 12	11- 6	< 6
CEOT Taxa	<input type="text"/>	<input type="text"/>	> 10	10 - 7	6 - 3	< 3
Biotic Index	<input type="text"/>	<input type="text"/>	< 5.0	5.0 – 6.5	6.6 – 8.0	> 8.0
Total points						
Note: Include Hemipterans with the CEOT Taxa		Rating Scale	> 24 Optimal	24 - 19 Suboptimal	18 - 13 Marginal	< 13 Poor

Additional comments: _____

Average width _____ feet

Water Level

Low

Normal

High

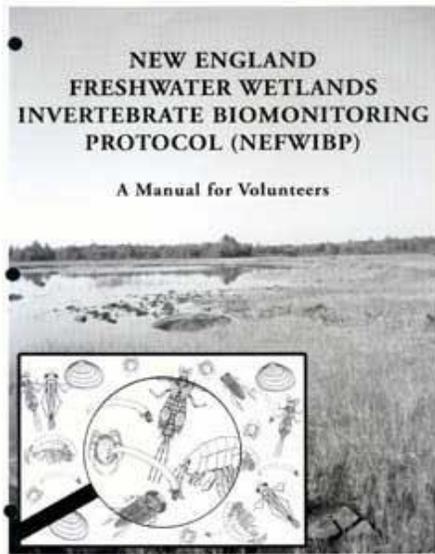
Dry

Current weather conditions: _____

Past 48-hours: _____

Submit a clear copy or the original data sheet to the coordinator at address below. If you submit the original, always keep a copy for your records.

WEST VIRGINIA DEPT. OF ENVIRONMENTAL PROTECTION
SAVE OUR STREAMS PROGRAM
601 57TH STREET, SE
CHARLESTON, WV 25304



The survey methods here are adapted from the "New England Freshwater Wetlands Invertebrate Biomonitoring Protocol (NEFWIBP)". WV Save Our Streams recommends that you purchase a copy of this manual to add to your reference collection. It is available from the University of Massachusetts Extension Service bookstore.

<http://umassextensionbookstore.com/catalog/>

Additional resources: http://el.ercd.usace.army.mil/emrrp/emris/emrishelp6/wetland_procedure_descriptions.htm