

PHYSIOCHEMICAL SURVEY



(1) Determine your sample location/site. Since this is a physiochemical survey the reach does not have to be as long as a typical bio-survey reach. (2) Collect your water sample (in the deepest portion of the run) and analyze using the chemical tests you have available. You may use your collection container to observe watercolor and clarity and to determine water odors. (3) Determine discharge by using a velocity head rod, float, or flow-meter. (4) Sketch your reach and/or submit photographs with the survey. (5) Assess the surrounding land use conditions; and add any other comments that you feel are important for evaluating the conditions of your stream study site.

Stream name _____ Survey date _____
 Watershed _____ Station code _____
 Latitude _____ Longitude _____ Directions to site _____
 _____ Time _____

Survey completed by _____
 Affiliation _____ Email _____
 Mailing _____ Phone _____
 address _____

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.

<p>Water clarity</p> <p>Clear <input type="checkbox"/></p> <p>Murky <input type="checkbox"/></p> <p>Milky <input type="checkbox"/></p> <p>Muddy <input type="checkbox"/></p> <p>Other (describe) <input type="checkbox"/></p>	<p>Water color</p> <p>None <input type="checkbox"/></p> <p>Brown <input type="checkbox"/></p> <p>Black <input type="checkbox"/></p> <p>Orange/red <input type="checkbox"/></p> <p>Gray/White <input type="checkbox"/></p> <p>Green <input type="checkbox"/></p>	<p>Water/Sediment odor</p> <table border="0"> <tr> <td></td> <td style="text-align: center;">Sediment</td> <td style="text-align: center;">Water</td> </tr> <tr> <td>None <input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> <tr> <td>Fishy <input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> <tr> <td>Musky <input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> <tr> <td>Rotten egg <input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> <tr> <td>Sewage <input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> <tr> <td>Chemical <input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> </table>		Sediment	Water	None <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Fishy <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Musky <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Rotten egg <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Sewage <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Chemical <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<p>Surface foam</p> <p>None <input type="checkbox"/></p> <p>Slight <input type="checkbox"/></p> <p>Moderate <input type="checkbox"/></p> <p>High <input type="checkbox"/></p>
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<p>Algae color</p> <p>Light green <input type="checkbox"/></p> <p>Dark green <input type="checkbox"/></p> <p>Brown <input type="checkbox"/></p> <p>Other (describe) <input type="checkbox"/></p>	<p>Algae abundance</p> <p>None <input type="checkbox"/></p> <p>Scattered <input type="checkbox"/></p> <p>Moderate <input type="checkbox"/></p> <p>Heavy <input type="checkbox"/></p>	<p>Algae growth habit</p> <p>Even coating <input type="checkbox"/></p> <p>Hairy <input type="checkbox"/></p> <p>Matted <input type="checkbox"/></p> <p>Floating <input type="checkbox"/></p>	<p>Streambed color</p> <p>Brown <input type="checkbox"/></p> <p>Black <input type="checkbox"/></p> <p>Green <input type="checkbox"/></p> <p>White/gray <input type="checkbox"/></p> <p>Orange/red <input type="checkbox"/></p>
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Physical condition comments: _____

Weather conditions: _____

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			

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Land use comments _____

Is an odor or discharge present? (describe)
 Pipes?

Yes	No
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WATER CHEMISTRY: Uses the spaces below to record the results of your water analysis; attach additional sheets if necessary. Always include your units of measurement and describe the method/kit you used. Indicate if analysis was completed in the field or lab.

Conditions	Result	Units	Field	Lab	Additional comments
Temperature (°C/°F)					
pH					
Conductivity					
Dissolved oxygen					
Acidity					
Alkalinity					
Hardness					
Sulfates					
Aluminum					
Iron					
Manganese					
Other metals (list)					
Nitrites					
Nitrates					
Phosphates					
Total dissolved solids					
Salinity/Chlorides					
Turbidity					
Fecal coliform					
Other analysis (list)					

Name and location of lab: _____
 Sample number(s) _____

PHOTOGRAPH and SKETCH YOUR STUDY REACH: Use the space below to draw your study reach. Indicate the direction of flow, north, sample locations and important features. Photographs are an excellent tracking tool. Take at least two photos of your site.

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DISCHARGE: Use the velocity head rod, float method, stage or a flow-meter to determine your stream's velocity. Choose the best area, which is usually a **RUN**; relatively straight section of the channel having fast moving water with little or no breaks (protruding rocks) in the surface. Stretch a tape across the stream to measure the width, and choose at least **five-positions** to measure the depth if you're using the float or VHR; more if using a flow-meter. Use the spaces below to record your data. If you do not measure discharge always measure your channels dimensions in a run, and estimate the water level.

Average stream width (feet) _____

Water level

Dry
 Low
 Normal
 High

Indicate the method you used

Float method
 Velocity head rod
 Flow meter

Rise (inches)	Velocity	Rise (inches)	Velocity
1/4	1.2	2 3/4	3.8
1/2	1.6	3	4.0
3/4	2.0	3 1/4	4.2
1	2.3	3 1/2	4.3
1 1/4	2.6	3 3/4	4.5
1 1/2	2.8	4	4.6
1 3/4	3.1	4 1/4	4.8
2	3.3	4 1/2	4.9
2 1/4	3.5	4 3/4	5.0
2 1/2	3.7	5	5.2

Use the table below to record your discharge measurements

Tape position	Depth (ft)	Rise (inches)	Float time (seconds)	Velocity (ft/second)	Discharge (cfs)
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
Totals/Averages					

Use the calculation to the right if you determined discharge using a float method or the velocity head rod.

$$\text{Stream width} \times \text{Average depth} \times \text{Average velocity} = \text{Average discharge}$$

Float distance (feet) _____

= Average discharge _____ cfs

Additional comments _____

Submit the original or a clear copy of this survey to:

WV Dept. of Environmental Protection
 Save Our Streams Program
 601 57th Street, SE, Charleston, WV 25304

To learn more visit the program's web page at: <http://www.dep.wv.gov/sos>