

Knox County Adopt-A-Watershed Benthic Macroinvertebrate Data Reporting Form

Watershed: _____ Teacher: _____ Course/Block/Period: _____	Data Collectors (include first/last names & any class/investigative team name): _____ _____																			
Date: _____	Time of Sampling: _____																			
Stream Name: _____ Stream Mile Marker: _____ Location (specific road directions to the site & its location on stream – include landmarks. Example: 100 ft. below crossroads of Main and Second Streets): _____ _____																				
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th style="width: 30%;">Weather</th> <th style="width: 40%;">Site Observations</th> <th style="width: 30%;">Physical Measurements</th> </tr> <tr> <td style="vertical-align: top;"> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th style="width: 50%;">Weather in past 24 hrs</th> <th style="width: 50%;">Weather now</th> </tr> <tr> <td style="vertical-align: top;"> <input type="checkbox"/> Storm (heavy rain) <input type="checkbox"/> Rain (steady rain) <input type="checkbox"/> Showers (intermittent rain) <input type="checkbox"/> Overcast <input type="checkbox"/> Clear/Sunny </td> <td style="vertical-align: top;"> <input type="checkbox"/> Storm (heavy rain) <input type="checkbox"/> Rain (steady rain) <input type="checkbox"/> Showers (intermittent rain) <input type="checkbox"/> Overcast <input type="checkbox"/> Clear/Sunny </td> </tr> </table> </td> <td style="vertical-align: top;"> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th style="width: 50%;">Water Odors</th> <th style="width: 50%;">Water Color Appearance</th> </tr> <tr> <td style="vertical-align: top;"> <i>Check all that apply</i> <input type="checkbox"/> Normal <input type="checkbox"/> Sewage <input type="checkbox"/> Petroleum <input type="checkbox"/> Chemical <input type="checkbox"/> Other: _____ </td> <td style="vertical-align: top;"> <i>Check all that apply</i> <input type="checkbox"/> No unusual color <input type="checkbox"/> Multi-colored (oily sheen) <input type="checkbox"/> Brown/muddy <input type="checkbox"/> Milky/white <input type="checkbox"/> Foam/Suds <input type="checkbox"/> Other: _____ </td> </tr> </table> </td> <td style="vertical-align: top;"> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th style="width: 100%;">Algae</th> </tr> <tr> <td style="vertical-align: top;"> <i>Check all that apply</i> <input type="checkbox"/> Minimal growth <input type="checkbox"/> Covers substrate <input type="checkbox"/> Floating in spots <input type="checkbox"/> Thick mats </td> </tr> </table> </td> </tr> <tr> <td colspan="3" style="vertical-align: top;"> Physical Measurements Water Temperature: ____ °C Turbidity: _____ (cm) Flow: _____ ft³/s (attach stream flow calculations) </td> </tr> </table>		Weather	Site Observations	Physical Measurements	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th style="width: 50%;">Weather in past 24 hrs</th> <th style="width: 50%;">Weather now</th> </tr> <tr> <td style="vertical-align: top;"> <input type="checkbox"/> Storm (heavy rain) <input type="checkbox"/> Rain (steady rain) <input type="checkbox"/> Showers (intermittent rain) <input type="checkbox"/> Overcast <input type="checkbox"/> Clear/Sunny </td> <td style="vertical-align: top;"> <input type="checkbox"/> Storm (heavy rain) <input type="checkbox"/> Rain (steady rain) <input type="checkbox"/> Showers (intermittent rain) <input type="checkbox"/> Overcast <input type="checkbox"/> Clear/Sunny </td> </tr> </table>	Weather in past 24 hrs	Weather now	<input type="checkbox"/> Storm (heavy rain) <input type="checkbox"/> Rain (steady rain) <input type="checkbox"/> Showers (intermittent rain) <input type="checkbox"/> Overcast <input type="checkbox"/> Clear/Sunny	<input type="checkbox"/> Storm (heavy rain) <input type="checkbox"/> Rain (steady rain) <input type="checkbox"/> Showers (intermittent rain) <input type="checkbox"/> Overcast <input type="checkbox"/> Clear/Sunny	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th style="width: 50%;">Water Odors</th> <th style="width: 50%;">Water Color Appearance</th> </tr> <tr> <td style="vertical-align: top;"> <i>Check all that apply</i> <input type="checkbox"/> Normal <input type="checkbox"/> Sewage <input type="checkbox"/> Petroleum <input type="checkbox"/> Chemical <input type="checkbox"/> Other: _____ </td> <td style="vertical-align: top;"> <i>Check all that apply</i> <input type="checkbox"/> No unusual color <input type="checkbox"/> Multi-colored (oily sheen) <input type="checkbox"/> Brown/muddy <input type="checkbox"/> Milky/white <input type="checkbox"/> Foam/Suds <input type="checkbox"/> Other: _____ </td> </tr> </table>	Water Odors	Water Color Appearance	<i>Check all that apply</i> <input type="checkbox"/> Normal <input type="checkbox"/> Sewage <input type="checkbox"/> Petroleum <input type="checkbox"/> Chemical <input type="checkbox"/> Other: _____	<i>Check all that apply</i> <input type="checkbox"/> No unusual color <input type="checkbox"/> Multi-colored (oily sheen) <input type="checkbox"/> Brown/muddy <input type="checkbox"/> Milky/white <input type="checkbox"/> Foam/Suds <input type="checkbox"/> Other: _____	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th style="width: 100%;">Algae</th> </tr> <tr> <td style="vertical-align: top;"> <i>Check all that apply</i> <input type="checkbox"/> Minimal growth <input type="checkbox"/> Covers substrate <input type="checkbox"/> Floating in spots <input type="checkbox"/> Thick mats </td> </tr> </table>	Algae	<i>Check all that apply</i> <input type="checkbox"/> Minimal growth <input type="checkbox"/> Covers substrate <input type="checkbox"/> Floating in spots <input type="checkbox"/> Thick mats	Physical Measurements Water Temperature: ____ °C Turbidity: _____ (cm) Flow: _____ ft ³ /s (attach stream flow calculations)		
Weather	Site Observations	Physical Measurements																		
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th style="width: 50%;">Weather in past 24 hrs</th> <th style="width: 50%;">Weather now</th> </tr> <tr> <td style="vertical-align: top;"> <input type="checkbox"/> Storm (heavy rain) <input type="checkbox"/> Rain (steady rain) <input type="checkbox"/> Showers (intermittent rain) <input type="checkbox"/> Overcast <input type="checkbox"/> Clear/Sunny </td> <td style="vertical-align: top;"> <input type="checkbox"/> Storm (heavy rain) <input type="checkbox"/> Rain (steady rain) <input type="checkbox"/> Showers (intermittent rain) <input type="checkbox"/> Overcast <input type="checkbox"/> Clear/Sunny </td> </tr> </table>	Weather in past 24 hrs	Weather now	<input type="checkbox"/> Storm (heavy rain) <input type="checkbox"/> Rain (steady rain) <input type="checkbox"/> Showers (intermittent rain) <input type="checkbox"/> Overcast <input type="checkbox"/> Clear/Sunny	<input type="checkbox"/> Storm (heavy rain) <input type="checkbox"/> Rain (steady rain) <input type="checkbox"/> Showers (intermittent rain) <input type="checkbox"/> Overcast <input type="checkbox"/> Clear/Sunny	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th style="width: 50%;">Water Odors</th> <th style="width: 50%;">Water Color Appearance</th> </tr> <tr> <td style="vertical-align: top;"> <i>Check all that apply</i> <input type="checkbox"/> Normal <input type="checkbox"/> Sewage <input type="checkbox"/> Petroleum <input type="checkbox"/> Chemical <input type="checkbox"/> Other: _____ </td> <td style="vertical-align: top;"> <i>Check all that apply</i> <input type="checkbox"/> No unusual color <input type="checkbox"/> Multi-colored (oily sheen) <input type="checkbox"/> Brown/muddy <input type="checkbox"/> Milky/white <input type="checkbox"/> Foam/Suds <input type="checkbox"/> Other: _____ </td> </tr> </table>	Water Odors	Water Color Appearance	<i>Check all that apply</i> <input type="checkbox"/> Normal <input type="checkbox"/> Sewage <input type="checkbox"/> Petroleum <input type="checkbox"/> Chemical <input type="checkbox"/> Other: _____	<i>Check all that apply</i> <input type="checkbox"/> No unusual color <input type="checkbox"/> Multi-colored (oily sheen) <input type="checkbox"/> Brown/muddy <input type="checkbox"/> Milky/white <input type="checkbox"/> Foam/Suds <input type="checkbox"/> Other: _____	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th style="width: 100%;">Algae</th> </tr> <tr> <td style="vertical-align: top;"> <i>Check all that apply</i> <input type="checkbox"/> Minimal growth <input type="checkbox"/> Covers substrate <input type="checkbox"/> Floating in spots <input type="checkbox"/> Thick mats </td> </tr> </table>	Algae	<i>Check all that apply</i> <input type="checkbox"/> Minimal growth <input type="checkbox"/> Covers substrate <input type="checkbox"/> Floating in spots <input type="checkbox"/> Thick mats								
Weather in past 24 hrs	Weather now																			
<input type="checkbox"/> Storm (heavy rain) <input type="checkbox"/> Rain (steady rain) <input type="checkbox"/> Showers (intermittent rain) <input type="checkbox"/> Overcast <input type="checkbox"/> Clear/Sunny	<input type="checkbox"/> Storm (heavy rain) <input type="checkbox"/> Rain (steady rain) <input type="checkbox"/> Showers (intermittent rain) <input type="checkbox"/> Overcast <input type="checkbox"/> Clear/Sunny																			
Water Odors	Water Color Appearance																			
<i>Check all that apply</i> <input type="checkbox"/> Normal <input type="checkbox"/> Sewage <input type="checkbox"/> Petroleum <input type="checkbox"/> Chemical <input type="checkbox"/> Other: _____	<i>Check all that apply</i> <input type="checkbox"/> No unusual color <input type="checkbox"/> Multi-colored (oily sheen) <input type="checkbox"/> Brown/muddy <input type="checkbox"/> Milky/white <input type="checkbox"/> Foam/Suds <input type="checkbox"/> Other: _____																			
Algae																				
<i>Check all that apply</i> <input type="checkbox"/> Minimal growth <input type="checkbox"/> Covers substrate <input type="checkbox"/> Floating in spots <input type="checkbox"/> Thick mats																				
Physical Measurements Water Temperature: ____ °C Turbidity: _____ (cm) Flow: _____ ft ³ /s (attach stream flow calculations)																				
Site Observations (Describe any notable physical (e.g., bends in stream; eroded banks) and/or biological (e.g., lacks riparian cover; recently cut trees) features _____ _____																				
Notes from the Field (Include any tentative interpretations about the macroinvertebrate results based on field observations) _____ _____																				

Method Used (Select One): ! Rocky Bottom

! Muddy Bottom

Macroinvertebrate Identification, Count, and Categorization

First, **identify** and **count** the number of macroinvertebrates in your sample, and then **categorize** them according to their abundance using the following letter codes:

F (few) = 1 - 9 organisms

C (common) = 10 - 99 organisms

A (abundant) = 100 plus organisms.

Group I
Sensitive

Group II
Somewhat Sensitive

Group III
Tolerant

# Found	Categorize F,C, or A
_____ Caddisfly Larvae	_____
_____ Hellgrammites	_____
_____ Mayfly Nymphs	_____
_____ Gilled Snails	_____
_____ Riffle Beetle Adult	_____
_____ Stonefly Nymphs	_____
_____ Water Penny Larvae	_____

# Found	F,C, or A
_____ Beetle Larvae	_____
_____ Clams	_____
_____ Crane Fly Larvae	_____
_____ Crayfish	_____
_____ Damselfly Nymphs	_____
_____ Scuds	_____
_____ Sowbugs	_____
_____ Fishfly Larvae	_____
_____ Alderfly Larvae	_____
_____ Dragon Fly Nymph	_____
_____ Watersnipe Larvae	_____

# Found	F,C, or A
_____ Aquatic Worms	_____
_____ Blackfly Larvae	_____
_____ Leeches	_____
_____ Midge Larvae	_____
_____ Snails	_____

Group Index Value Calculations

First, **add** the number of *like codes* found in each group above, then **multiply** each by their weighting factor and finally **total** the group's abundance category scores to obtain the group index value.

Group I: Sensitive

<u>Letter Codes</u>	<u>Weighting Factor</u>	<u>Category Score</u>
# of "F"s	_____ x 5.0	= _____
# of "C"s	_____ x 5.6	= _____
# of "A"s	_____ x 5.3	= _____

Group II: Somewhat Sensitive

<u>Letter Codes</u>	<u>Weighting Factor</u>	<u>Category Score</u>
# of "F"s	_____ x 3.2	= _____
# of "C"s	_____ x 3.4	= _____
# of "A"s	_____ x 3.0	= _____

Group III: Tolerant

<u>Letter Codes</u>	<u>Weighting Factor</u>	<u>Category Score</u>
# of "F"s	_____ x 1.2	= _____
# of "C"s	_____ x 1.1	= _____
# of "A"s	_____ x 1.0	= _____

Group I Index Value: _____

Group II Index Value: _____

Group III Index Value: _____

Water Quality Score Calculations

To calculate the water quality score for the stream site, add together the index values for each group.

Group I Index Value	_____
Group II Index Value	_____
Group III Index Value	_____
TOTAL:	_____

Water Quality Rating

Compare your total score to the number ranges to determine your stream site water quality.

- Excellent (>39)
- Good (39-26)
- Fair (25.9-17)
- Poor (<17)