

Stream Observation Data Sheet

School Northern Garrett High School		Date 9/14/18
Stream Study Site Cove Run		
Teacher Keaton-Sisler	Group Members: Chyanne Gardner, Raegan Yutry, Taylor Dixon, Katelyn Weimer, Sophie Lewis, Arizona Thomas	
Latitude 39 degrees NORTH	Longitude -79 degrees WEST	
Weather		
Yesterday	Today	
Air Temperature 70° °C or °F	Air Temperature 65° °C or °F	
Cloud Cover clear ___ partly cloudy <input checked="" type="checkbox"/> cloudy <input checked="" type="checkbox"/>	Cloud Cover clear ___ partly cloudy ___ cloudy <input checked="" type="checkbox"/>	
Precipitation light	Precipitation light	
How could yesterday's weather affect today's field study? The water is high because of rain the past week.		

Macroinvertebrate Survey

<p>Collection method used: Kick-Seine or D-Net (circle).</p> <p>If using a kick-seine, collect samples 3 times.</p> <p>If using a D-net, collect 20 scoops and record the number of scoops taken from each of the habitat areas in the table →</p>	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2" style="text-align: center;">Benthic Habitat Sampled</th> </tr> <tr> <th style="width: 70%;">Habitat</th> <th style="width: 30%;"># scoops</th> </tr> </thead> <tbody> <tr><td>Riffle</td><td></td></tr> <tr><td>Rootwads/ woody debris/ leaf pack</td><td></td></tr> <tr><td>Submerged Vegetation</td><td></td></tr> <tr><td>Undercut Banks</td><td></td></tr> <tr><td>Other (specify):</td><td></td></tr> <tr> <td style="text-align: right;">TOTAL</td> <td style="text-align: center;">20</td> </tr> </tbody> </table>	Benthic Habitat Sampled		Habitat	# scoops	Riffle		Rootwads/ woody debris/ leaf pack		Submerged Vegetation		Undercut Banks		Other (specify):		TOTAL	20
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Check all of the macroinvertebrates that you find in your stream and calculate the stream's water quality rating [you may also record the number of each captured, but to calculate the rating at the bottom, only count each kind of animal once, regardless of the quantity found].

SENSITIVE to pollution		LESS SENSITIVE		TOLERANT of pollution			
✓		✓		✓			
<input checked="" type="checkbox"/>	Caddisflies (except net spinners)	<input checked="" type="checkbox"/>	Caddisflies, common net spinning	<input checked="" type="checkbox"/>	Crayfish		Aquatic worms
<input checked="" type="checkbox"/>	Mayflies	<input checked="" type="checkbox"/>	Dobsonflies		Scuds		Black flies
<input checked="" type="checkbox"/>	Stoneflies		Fishflies		Aquatic sowbugs		Midge flies
<input checked="" type="checkbox"/>	Watersnipe flies		Crane flies		Clams		Leeches
<input checked="" type="checkbox"/>	Riffle beetles		Damselflies		Mussels		Lunged snails
<input checked="" type="checkbox"/>	Water pennies		Dragonflies				
	Gilled snails		Alderflies				
5	# of check marks (# of kinds found)	3	# of check marks (# of kinds found) – count both columns under "less sensitive"	0	# of check marks (# of kinds found)		
5	# above x 3 = 15	3	# above x 2 = 6	0	# above x 1 = 0		

Now add up the numbers you calculated for all three categories, above, and write the total # here: 21

WATER QUALITY RATING – Circle the rating that corresponds to the total of your columns.

Excellent: > 22 **Good: 17 - 22** Fair: 11 - 16 Poor: < 11

Stream Habitat Assessment

Apparent Color of Water Clear

Odor of Water natural smell

Stream speed 0.7 m/s
(Flow rate)

Water Temperature 16°C

Characteristics for stream habitat assessment					
Characteristic	Excellent Score 4	Good Score 3	Fair Score 2	Poor Score 1	Site Score
Verge Vegetation	Vegetation present, Canopy intact	Vegetation and canopy nearly intact	Vegetation Disturbed	Cleared land or urban development	3
Bank Vegetation	Vegetation in undisturbed state	Vegetation slightly disturbed	Vegetation moderately disturbed	Vegetation severely disturbed	3
% Bare Soil On Bank	0 - 10%	11 - 40%	41 - 80%	81 - 100%	4
Bank Erosion	Stable, no sign of erosion	Very occasional local erosion	Some erosion evident	Severe bank failure; extensive cracking and fall-ins	3
Bank Slumping and movement	No movement	Slight movement on the bank	Moderate bank collapses	Severe bank failure; extensive cracking & fall-ins	3
Bends and Riffles	Bends present, 5-10 riffles in 10 meters, many snags	Bends present, 1-4 riffles in 10 meters, some snags	Occasional bend, 1-2 riffles in 50 meters, few snags	Straight channel, riffles/pools absent, no snags	4
Turbidity (JTU's)	0 - 10	11 - 40	41 - 150	>150	2
Aquatic Vegetation	Little vegetation - uncluttered look; fairly small numbers of many different kinds of plants	Moderate amounts of vegetation	Cluttered, weedy conditions; vegetation sometimes luxurious and green; seasonal algal blooms	Choked, weedy conditions, heavy algal blooms or no vegetation at all	4
Sediment Deposition	Less than 20% of stream bottom affected by extensive sediment deposition; minor accumulation of fine and coarse material at snags and little or no enlargement of islands or point bars	20-50% of stream bottom affected by extensive sediment deposition; moderate accumulation; substantial sediment movement during major storms; some new increase in bar formation	50-80% of stream bottom affected by extensive sediment deposition; pools shallow, heavily silted; embankments may be present on both banks; frequent and substantial sediment movement during storm events	>80% of stream bottom affected by extensive sediment deposition; heavy deposits; mud, silt, and/or sand in pools almost absent due to deposition	3
Total score					29

Stream Habitat Rating

- 32 - 36 = Excellent (Natural or virtually natural state)
- 23 - 31 = Good (Some alteration from natural state)
- 14 - 22 = Fair (Significant alteration from natural state)
- 0 - 13 = Poor (Very degraded habitat)

What rating did you give to your stream habitat? Good

Water Quality Testing

(1) Follow instructions provided with each test kit to test different parameters.

(2) Record your data here:

DATA	Dissolved Oxygen (DO) (mg/L)	Dissolved Oxygen (DO) % Saturation <i>See conversion chart</i>	pH	Phosphate (mg/L)	Nitrate (mg/L) $\frac{4.4}{17.6}$	Chloride (mg/L)	Transparency (cm)	Turbidity (JTU)	Conductivity ($\mu\text{s}/\text{cm}$)	Total Dissolved Solids (TDS) (mg/L)	Water Temperature ($^{\circ}\text{C}$)
Trial 1	8.4 mg/L	85%	6.5	~	4/17.6 mg/L	~	71 cm	31.6 JTU	974 $\mu\text{s}/\text{cm}$	60 mg/L	16 $^{\circ}\text{C}$
Trial 2				~		~					
Trial 3				~		~					

(3) Circle the corresponding value here:

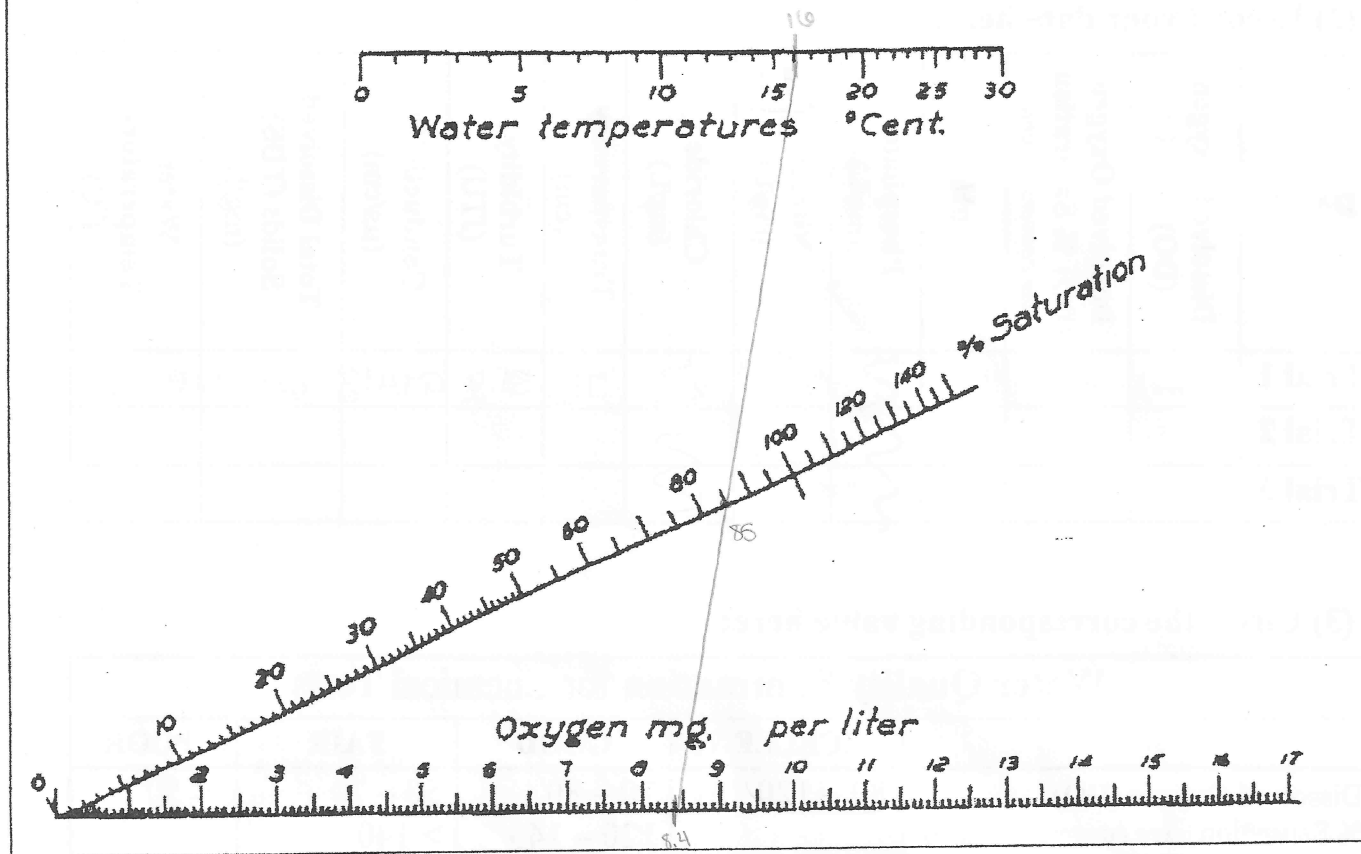
Water Quality Summation for Chemical Tests				
	EXCELLENT	GOOD	FAIR	POOR
Dissolved Oxygen (DO)	80 – 120	70 – 80	50 – 70	< 50
% Saturation (<i>see conversion chart</i>)		120 – 140	> 140	
pH (units)	7.0 – 7.5	6.5 – 7.0 7.5 – 8.5	5.5 – 6.5 8.5 – 9.0	< 5.5 > 9.0
Reactive Phosphate (PO_4X^3) (mg/L)	0 – 0.2	0.2 – 0.5	0.5 – 2.0	> 2.0
Nitrate (NO_3) (mg/L)	0 – 3	3 – 5	5 – 10	> 10
Chloride (Cl) (mg/L)	0 – 20	20 – 50	50 – 250	> 250
Transparency (cm)	> 65.0	65.0 – 35.0	35.0 – 15.5	< 15.5
Turbidity (JTU)	0 – 10	10 – 20	20 – 30	> 30
Total Dissolved Solids (mg/L)	0 – 150	150 – 250	250 – 350	> 350
Conductivity ($\mu\text{s}/\text{cm}$)	0 – 171	172 – 247	248 – 500	> 500

Based on your tests and observations, how would you rate water quality overall (e.g., if you had some excellent, some fair, mostly good, you might give an overall rating of good)? Circle your answer:

Overall Water Quality Rating: Excellent Good Fair Poor

[continued, next page]

FINDING THE PERCENT SATURATION OF DISSOLVED OXYGEN



To read this chart, use a straight edge. Place the straight edge on the mg/L of oxygen you have determined for your site, then place the other end of the straight edge on the water temperature you have measured. The point where the straight line passes through the line labeled "% Saturation" is your percent saturation.

Diagram reprinted with permission from M.K. Mitchell and W. B. Stapp, *Field Manual for Water Quality Monitoring*

Overall Stream Health Assessment

Write your ratings from all three of the above tests, here:

Based on your tests and observations, how would you rate the health of your stream overall?

	Excellent	Good	Fair	Poor
Macroinvertebrate Survey		✓		
Habitat Assessment		✓		
Water Quality Tests		✓		
Overall Stream Health		✓		