STREAM HABITAT ASSESSMENT FORM

Stream Name:

Location:
Circle One: Monitoring *Upstream* –or— *Downstream* of road?

Date:_____ Collection Start Time: _____ (AM / PM)

Site ID: _____ County & Township: _____

Major Watershed: Flint River Watershed HUC Code (if known): _____

Latitude: (if known) _____ Longitude: (if known) _____

Monitoring Team:

Name(s) of Person(s) Completing Datasheet : _____

Name(s) of Person(s) Collecting :

_____ _____

Other Team Members: _____

I. Macro invertebrate Collection:

Check the habitats that were sampled. Make sure you are sampling **all** habitats present.

_____ Riffles _____ Large Rocks _____ Submerged Wood/Woody debris

_____ Overhanging Vegetation _____ Leaf Packs _____ Other/Describe Below:

_____Rooted Aquatic Plants _____ Pools _____

_____ Runs _____ Eddys _____

_____ Undercut banks/Overhanging Vegetation _____

Did you see any: **Live Crayfish?** --or-- **Large Clams?** (*Crayfish & Clams are Not Collected, just counted.)*

( ) No, ( ) Yes ( ) No, ( ) Yes -- If yes, remember to include them in the assessment at end.

How many crayfish? _____ How many live clams? _____

Collection: Finish Time: _____ (AM / PM)

Comments: *Were other wildlife present, including fish? If yes, please list what was seen and how many. Possible pollution sources can also be listed here.*

II. Flow Measurement

To take a correct stream flow measurement, face upstream in a straightaway with your partner 12 feet *downstream*. Throw your float at least 10 feet *upstream* from where you stand (away from your partner). This allows the float to fully accelerate by the time it reaches you. Begin timing once it reaches you. Stop when it reaches your partner.

Flow Measurement Data

Measurements	**Width (feet)** Measuring River Width	**Depth (feet)**				**Flow Measurement Data**	
		1/4 Way Into Stream	**Middle of Stream**	**3/4 Across Stream**	**Average depth**	**Time (sec)**	**Distance (feet)** *(always 12 feet)*
1							
2							
3							
Results - *Office Use only*	Average width:	Overall Average depth:				Average Flow:	

EXAMPLE: *Measurement Data*

Measurement	Width (ft)	Depth (ft)				Time (sec)	Distance (feet)
		1	2	3	4		
1	25	1.7	2.1	2.2	2	12.0	10
2	24	2.2	2.3	2.4	2.3	15.0	10
3	21	2.0	1.8	1.7	1.83	13.0	10

Average stream width and depth:

- Stream width is the distance from the water's edge on one side of the stream to the other side.

- Monitors shall take three measurements of width and depth at random straightaways along the 300 foot long sampling area, avoiding sand bars, curves, and debris.

III. Bank Height

Vertical banks higher than 3 feet are usually unstable, while banks less than 1 foot, especially with overhang, provide good habitat for fish. Undercut bank angles (<90°) often improve the habitat. While doing the transects, measure the bank heights and record the angle of the bank as indicated on the data sheet. Left/right banks are identified by looking **downstream**.

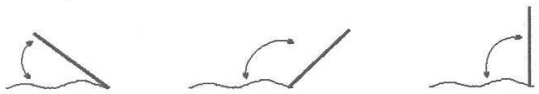
Data use: Calculate the percentage of banks with acute (undercut), obtuse, and right angles. Right angles indicate higher erosive potential, while acute angle improve the habitat structure of a stream.

%_____ Acute (Undercut)

%_____ Obtuse

%_____ Right

Sketch examples:



Undercut (Acute) Obtuse Right

A. Bank stability and erosion			
Summarize the extent of erosion along <u>each bank separately</u> on a scale of 1 through 10, by circling a value below. Left/right banks are identified by looking downstream.			
Excellent	Good	Marginal	Poor
Banks Stable. No evidence of erosion or bank failure. Little potential for problems during floods. < 5% of bank affected.	Moderately stable. Small areas of erosion. Slight potential for problems in extreme floods. 5-30% of bank in reach has areas of erosion.	Moderately unstable. Erosional areas occur frequently and are somewhat large. High erosion potential during floods. 30-60% of banks in reach are eroded.	Unstable. Many eroded areas. > 60% banks eroded. Raw areas frequent along straight sections and bends. Bank sloughing obvious.
LEFT BANK 10 - 9	LEFT BANK 8 - 7 - 6	LEFT BANK 5 - 4 - 3	LEFT BANK 2 - 1 - 0
RIGHT BANK 10 - 9	RIGHT BANK 8 - 7 - 6	RIGHT BANK 5 - 4 - 3	RIGHT BANK 2 - 1 - 0

B. Riparian Zone

1. Left Bank (looking downstream)

Circle those land-use types you can see from this stream reach:

Wetlands Forest Residential Lawn Park Shrub, Old Field Agriculture

Construction Commercial Industrial Highways Golf Course Road Other

_____

1. Right Bank (looking downstream)

Circle those land-use types you can see from this stream reach:

Wetlands Forest Residential Lawn Park Shrub, Old Field Agriculture

Construction Commercial Industrial Highways Golf Course Road Other

_____

3. Summarize the size and quality of the riparian zone along each bank separately on a scale of 1 through 10 by circling a value below:

Excellent	Good	Marginal	Poor
Width of riparian zone >150 feet, dominated by vegetation, including trees, understory shrubs, or non-woody macrophytes or wetlands; vegetative disruption through grazing or mowing minimal not evident; almost all plants allowed to grow naturally.	Width of riparian zone 75-150 feet; human activities have impacted zone only minimally.	Width of riparian zone 10-75 feet; human activities have impacted zone a great deal.	Width of riparian zone, 10 feet; little or no riparian vegetation due to human activities.
Left bank = 10 9	Left bank = 8 7 6	Left bank = 5 4 3	Left bank = 2 1 0
Right bank = 10 9	Right bank = 8 7 6	Right bank = 5 4 3	Right bank = 2 1 0

IV. Stream and Riparian Habitat

C. General Information

Circle *one or more answer as appropriate*

1	Event Conditions	Rain	Sunny	Windy	Other:	
2	Channel Condition (Stream shape constrained through human activity?)	Natural	Recovering	Maintained		
3	Has this stream been channelized (stream shape constrained through human activity)?	Yes, currently	Yes, sometime in the past	No		
4	Estimate of current stream flow	Dry	Stagnant	Low	Medium	High
5	Highest water mark (In feet above the current level.)	<1	1-3	3-5	5-10	>10
6	Estimate of turbidity	Clear	Slightly Turbid (can vaguely see to bottom)		Turbid (cannot see to bottom)	
7	Is there a sheen or oil slick visible on the surface of the water?	Yes	No			
8	If yes to # 7, does the sheen break up when poked with a stick?	**Yes** (sheen is most likely **natural**)		**No** (sheen could be **artificial**)		
9	Is there foam present on the surface of the water?	Yes	No			
10	If yes to #9, does the foam feel gritty or slippery? (please circle one)	**Gritty –** foam is most likely natural		**Slippery –** foam is most likely artificial		
11	If the water **smells**, please describe:					
12	Water Temperature (°C)					
13	Air Temperature (°C)					
14	Has it rained in the last 5 days?	Yes	No	If yes, approximate the number of inches:		

D. Plant Community

Estimate the percentage of stream covered by overhanging vegetation (near the water) _____%

Estimate the percentage of stream covered by overhanging tree canopy _____%

Using the given scale below, estimate the relative abundance of the following types of vegetation present:

Plants in Stream				Plants on Bank and in Riparian Zone			
Algae on Surfaces of Rocks or Plants		Filamentous Algae (Streamers)		Shrubs		Trees	
Macrophytes (Standing Plants)		Other		Grasses		Other	

Scale: 0 = Absent,1 = Rare, 2 = Common, 3 = Abundant, 4= Dominant

E. Streambed Substrate

Estimate percent of stream bed composed of the following substrate, and percent embedded for larger substrate

Substrate type	**Size**	**Percent of stream bed**	**Percent Embeded**
Boulder	>10” diameter		
Cobble	2.5 – 10” diameter		
Gravel	0.1 – 2.5” diameter		
Sand	Course grain		
Fines (Silt/Detritus/Muck)	Fine grain/organic matter		
Hardpan/Bedrock	Solid clay/rock surface		
Artificial	Man-made		
Other (specify)			

E. Streambed Substrate

Estimate percent of stream bed composed of the following substrate.

If group will take transects and pebble counts, record the measured percentages.

Substrate type	*Size*	*Percentage*
Boulder	>10" diameter	
Cobble	2.5 - 10" diameter	
Gravel	0.1 - 2.5" diameter	
Sand	coarse grain	
Fines: Silt/Detritus/Muck	fine grain/organic matter	
Hardpan/Bedrock	solid clay/rock surface	
Artificial	man-made	
Other (specify)		

F. Substrate Embeddedness

Do you have Gravel, Cobble, or Boulders in your stream?

( ) Yes ( ) No

Please list what percentage they are embedded

Boulder _____ %
Cobble _____ %
Gravel _____ %

V. Sources of Degradation

Severity: S – slight (0-25%); M – moderate (26-75%); H – high (76-100%) Clarify below if necessary							
Crop Related Sources	S	M	H	Signs of cows/horses/etc. using or crossing the stream	S	M	H
Grazing Related Sources	S	M	H	On-site Wastewater Systems	S	M	H
Intensive Animal Feeding Operations	S	M	H	Silviculture (Forestry)	S	M	H
Highway/Road/Bridge Maintenance and Runoff	S	M	H	Resource Extraction (Mining)	S	M	H
Channelization	S	M	H	Recreational/Tourism Activities (general)	S	M	H
Dredging	S	M	H	• Golf Courses	S	M	H
Removal of Riparian Vegetation	S	M	H	• Marinas/Recreational Boating (water releases)	S	M	H
Bank and Shoreline Erosion/ Modification/Destruction	S	M	H	• Marinas/Recreational Boating (bank or shoreline erosion)	S	M	H
Flow Regulation/ Modification (Hydrology)	S	M	H	Debris in Water	S	M	H
Land Disposal	S	M	H	Debris in Trees	S	M	H
Urban Runoff	S	M	H	Trash in trees along bank	S	M	H
Impoundment –Dam (natural or man-made)	S	M	H	Industrial Point Source	S	M	H
Construction: Highway, Road, Bridge, Culvert	S	M	H	Municipal Point Source	S	M	H
Construction: Land Development	S	M	H	Source(s) Unknown	S	M	H
Natural Sources	S	M	H				

VI. Stream Map

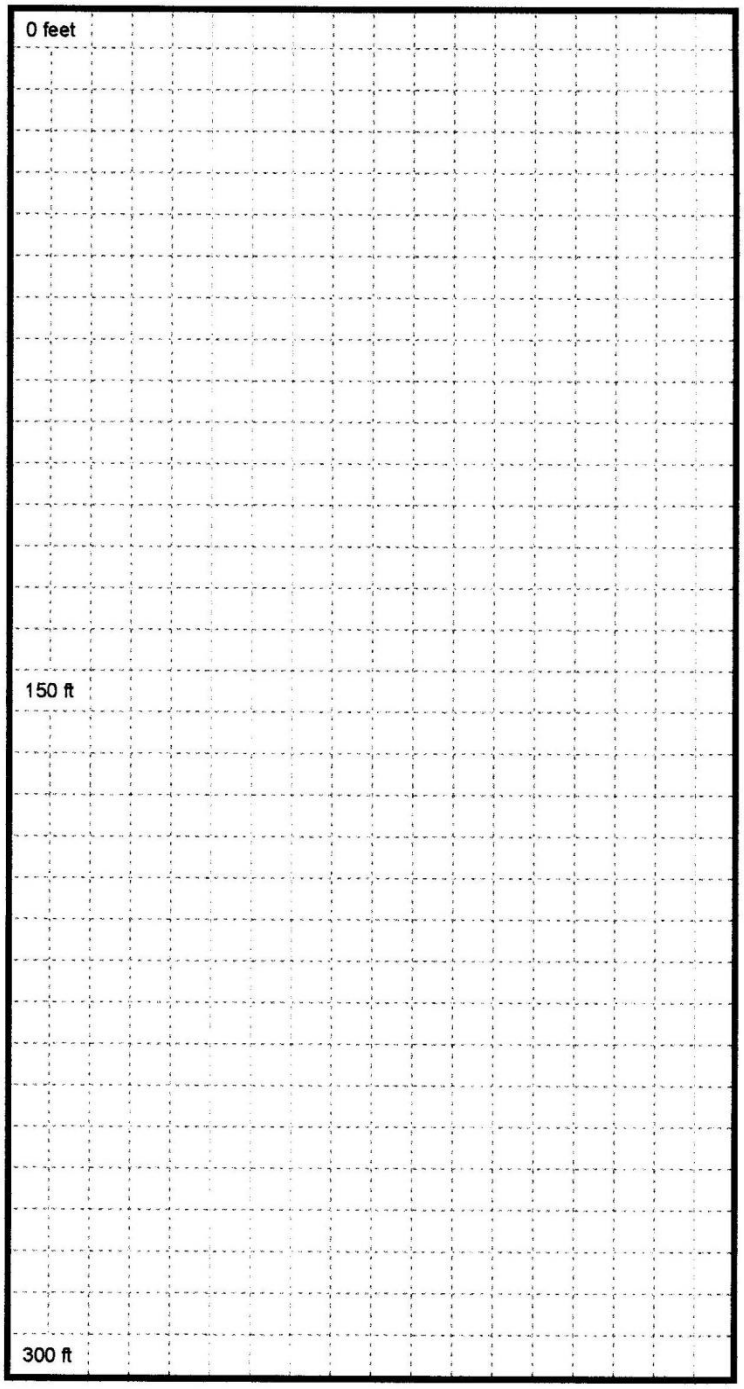
Site Sketch

Stream Name:_____ Location:_____

Date:_____ Drawn by:_____

Draw a bird's-eye view of the study site. Include enough detail that you can easily find the site again! Include the following items in the sketch:

- Direction of water flow
- Which way is north
- Large wood in the water
- Vegetation
- Bank features
- Areas of erosion
- Riffles
- Pools
- Location of road
- Trees
- Fences
- Parking lots
- Buildings
- Any other notable features



I. Procedure

1. Riffles Riffles are areas with shallow, rapid flow where the water surface "ripples". Because water is moving rapidly over rocks, these areas tend to have lots of oxygen, and lots of food particles moving by for invertebrates to eat. That is why this is the most diverse habitat.

R.1 Sample both the fastest and slowest moving areas of the riffle. Begin at the downstream end of the reach to be sampled and work upstream. The keeps the working area undisturbed.

R.2 With the net opening facing upstream, place the bottom of the net flush on the stream bottom immediately downstream of the riffle. Do not scoop the substrate with the net! Position the handle perpendicular to the stream flow.

R.3 While one person (the "netter") holds the net, another person (the "collector") picks up large rocks (2 inch or greater diameter) within a 1 foot by 1 foot area directly in front of the net opening and gently rubs them in the net opening to remove any clinging organisms. Be sure to hold the rock under the water in front of the net so that flowing water will carry the materials into the net opening. Place (do not toss) the cleaned rocks outside the sampling area.

R.4 When all the rocks (or as many as possible) are removed from the sample area, the "collector" stands approximately one foot upstream of the net opening and kicks the stream bed vigorously to dislodge any remaining organisms into the net. Kick down approximately two inches into the substrate for one to two minutes while moving toward the net.

2. Leaf Packs Look in the stream for leaves that are about four to six months old. These old leaf packs are dark brown and slightly decomposed. Only a handful of leaves is necessary.

L.1 Begin at the downstream end of the reach to be sampled and work upstream. This keeps the working area undisturbed.

L.2 With the net opening facing downstream, place the bottom of the net flush on the stream bottom immediately downstream from the leaf pack. Position the handle perpendicular to the stream flow.

L.3 Gently shake the leaf pack in the water to release some of the organisms, then quickly scoop up the net, capturing both the organisms and the leaf pack in the net.

Tree Roots, Snag Areas, and Submerged Logs Snags are accumulations of debris caught or "snagged" by logs or boulders lodged in the stream current. Caddisflies, stoneflies, riffle beetles, and midges commonly inhabit these areas.

T.1 Select an area on the tree roots, snap, or submerged logs which is approximately 3 feet by 3 feet in size. Begin at the downstream end of the reach to be sampled and work upstream. This keeps the working area undisturbed.

T.2 Scrape the surface of the tree roots, logs, or other debris with the net while on the downstream side of the snag. You can also disturb such surfaces by scraping them with your foot or large stick, or by pulling off some of the bark to get at the organisms hiding underneath. In all cases, be sure the net is positioned downstream from the snag, so that dislodged material floats into the net.

T.3 You may remove a log from the water to better sample from it, but be sure to replace it when you are done.

Undercut Bank Undercut banks are areas where moving water has cut out vertical or nearly vertical banks, just below the surface of the water. In such areas you will find overhanging vegetation and submerged root mats that harbor dragonflies, damselflies, and crayfish.

U.1 Place the net below the surface under the overhanging vegetation.

U.2 Move the net in a bottom – up motion, jabbing at the bank five times in a row to loosen organisms.