1.2a Stream Physical Characterization and Habitat Assessment

SECTION 1 Location Identification

STREAM NAME:	LOCATION:
WATERSHED:	STREAM CLASS:
LATITUDE:	LONGITUDE:
FORM COMPLETED BY:	DATE: TIME: AM/PM

SECTION 2. Weather Conditions

Now	Weather Condition	Past 24 hours
☐	storm (heavy rain)	☐
☐	rain (steady rain)	☐
☐	showers (on/off rain)	☐
____ %	% cloud cover	____ %
☐	clear/sunny sky	☐

Has there been a storm/heavy rain the past 7 days?

☐ Yes ☐ No ☐ Don't Know

Air Temperature: _____ºF

Other weather conditions that could affect stream flow:

SECTION 3. Physical Characteristics

SURROUNDING LANDUSE

Indicate the dominant land use type for the watershed upstream of your sampling site.

☐ Forest ☐ Commercial
☐ Field/Pasture ☐ Industrial
☐ Agricultural ☐ Other:
☐ Residential

STREAM BANK VEGETATION

(18 meter buffer on both sides)
Indicate the dominant plant type near the stream.

☐ Trees ☐ Shrub
☐ Grasses ☐ Herbaceous

Estimate the width of the plant cover (look downstream to determine left and right sides)

Left Bank _____m Right Bank _____m

INSTREAM FEATURES

Reach Length: _____ m
Average Stream Width: _____ m
Average Stream Depth: _____m
Water Temperature: _____ ºF
Stream Velocity: _____m/s

Canopy Cover:

☐ Mostly Open ☐ Partially Covered ☐ Mostly Covered

Morphology Type: Give the percent of each in the stream reach

Riffle _____% Run/Glide_____ %Pool _____%

SUBSTRATE COMPONENTS
(Should add up to 100%)

Substrate Type	% of Streambed
Clay/Silt	
Sand	
Gravel	
Cobble	
Boulder	
Bedrock	

Additional Notes:

SECTION 4: Site Map

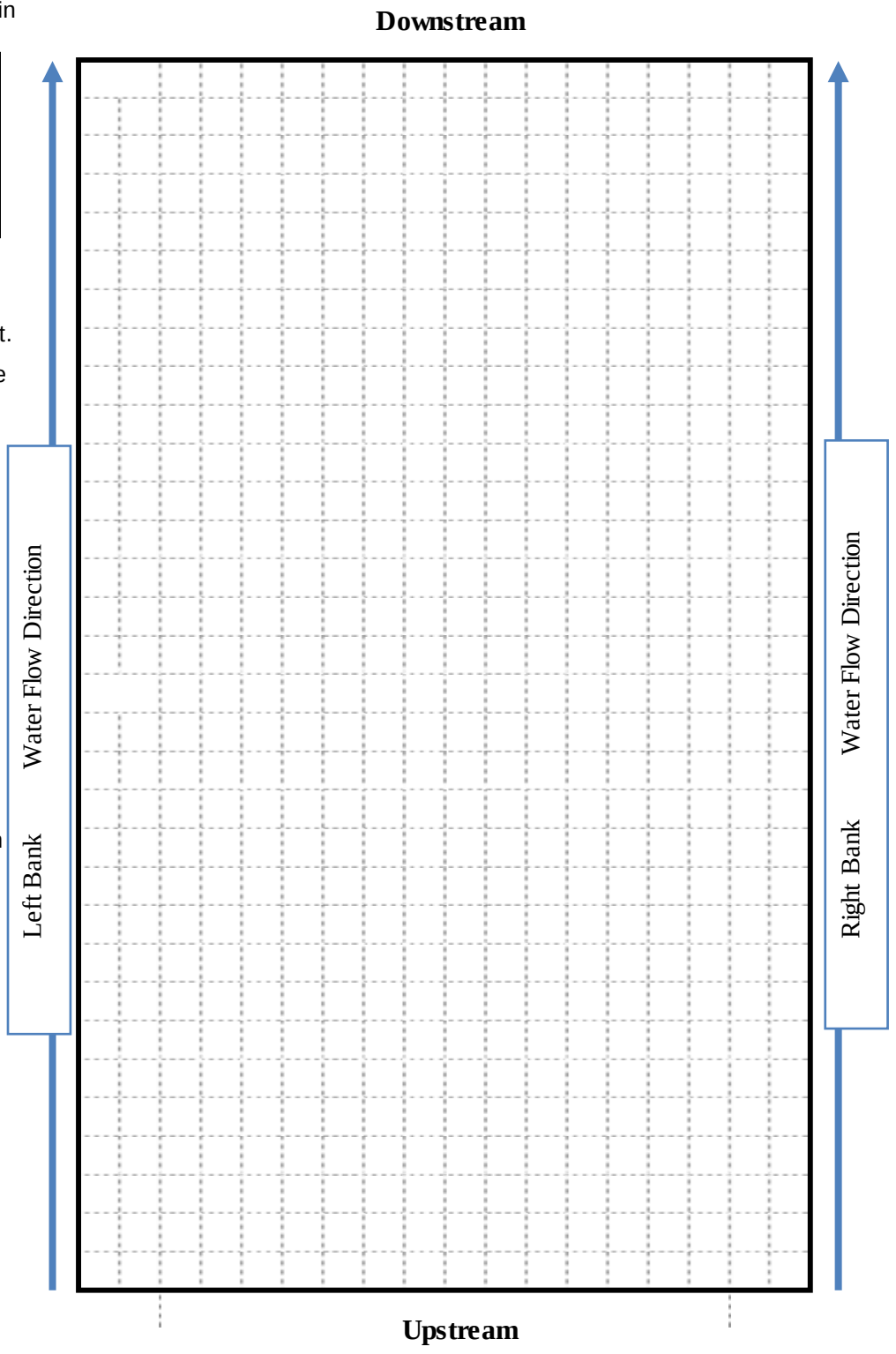
Draw a map of the site and indicate the areas sampled. Include enough detail that another person could find the site again! You can also take photographs at attach them

Draw an arrow pointing north in the box:

Include any of the following features where they are present.

- Large trunks/branches in the water
- Vegetation's (Trees, shrubs, grass, other plants)
- Riffles
- Pools
- Runs/Glides
- Areas of erosion
- Roads
- Fences
- Parking lots
- Buildings
- Possible sources of pollution
- Any other notable features

Notes:



SECTION 5: Habitat Assessment

STREAM TYPE: ☐ Riffle-Run ☐ Pool-Glide					
Parameter	**Stream Types Assessed**	**Condition Category**			
		Optimal	**Suboptimal**	**Marginal**	**Poor**
1. Instream Habitat Structures	**All Streams**	Greater than 70% for riffle-run stream or 50% for pool-glide streams of stream has of fallen trees, submerged logs, undercut banks, gravel/cobble streambed or other stable habitat. Fallen trees and logs have been in the stream for a few years (no green leaves/branches) and are not being moved downriver by the current.	40-70% for riffle-run streams or 30-50% for low gradient streams stable habitat listed in Optimal Category. Has additional substrate in the form of new fallen logs/trees may be rated at top of category.	20-40% for riffle-run or 10-30% for pool-glide streams mix of stable habitat listed in Optimal Category. Habitat may be low quality with evidence of streambed disturbances and/or movement of fallen trees/logs.	Less than 20% riffle-run or 10% for pool-glide streams stable habitat; lack of habitat is obvious; fallen trees, logs, and streambed are unstable or lacking.
	SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1
2. Streambed	**Riffle-Run**	Gravel, cobble, and boulder particles are 0- 25% surrounded by fine sediment. Multiple layers of cobble provides diversity of habitat space.	Gravel, cobble, and boulder particles are 25-50% surrounded by fine sediment.	Gravel, cobble, and boulder particles are 50-75% surrounded by fine sediment.	Gravel, cobble, and boulder particles are more than 75% surrounded by fine sediment.
	SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1
	Pool-Glide	Mixture of substrate materials, with gravel and firm sand prevalent; root mats and submerged vegetation common.	Mixture of soft sand, mud, or clay; mud may be dominant; some root mats and submerged vegetation present.	All mud or clay or sand bottom; little or no root mat; no submerged vegetation.	Hardened clay or bedrock; no root mat or vegetation.
	SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1
3. Water Column Variability	**Riffle-Run**	All velocity/depth regimes present (1) slow-deep, (2) slow-shallow, (3) fast-deep, (4) fast-shallow.	Only 3 of the 4 regimes present (if fast-shallow is missing, score lower than if missing other regimes).	Only 2 of the 4 habitat regimes present (if fast-shallow or slow-shallow are missing, score low).	Dominated by 1 velocity/depth regime (usually slow-deep).
	SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1
	Pool-Glide	Even mix of all four pool types: (1) large- shallow, (2) large-deep, (3) small-shallow, (4) small-deep pools present.	Majority of pools large-deep; very few shallow.	Shallow pools much more prevalent than deep pools.	Majority of pools small-shallow or pools absent.
	SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1
4. Sediment Deposition	**All Streams**	Little or no enlargement of islands or point bars and less than 5% for riffle-run streams or less than 20% for pool-glide streams) of the bottom affected by sediment deposition.	Some new increase in bar formation, mostly from gravel, sand or fine sediment; 5-30% riffle-run streams or 20-50% for pool-glide streams of the bottom affected; slight deposition in pools.	Moderate deposition of new gravel, sand or fine sediment on old and new bars; 30-50% for riffle-run streams or 50-80% for pool-glide streams of the bottom affected; sediment deposits at obstructions, constrictions, and bends; moderate deposition of pools prevalent.	Heavy deposits of fine material, increased bar development; more than 50% for riffle-run streams or 80% for pool-glide streams of the bottom changing frequently; pools almost absent due to substantial sediment deposition.
	SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1
5. Channel Flow Status	**All Streams**	Water reaches base of both lower banks, and minimal amount of channel substrate is exposed.	Water fills more than 75% of the available channel; or less than 25% of channel substrate is exposed.	Water fills 25-75% of the available channel, and/or riffle substrates are mostly exposed.	Very little water in channel and mostly present as standing pools.
	SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1

Parameter	Stream Types Assessed	Condition Category																			
		Optimal					Suboptimal					Marginal					Poor				
6. Channel Alteration	**All Streams**	Channelization or dredging absent or minimal; stream with normal pattern.					Some channelization present, usually in areas of bridge abutments; evidence of past channelization, i.e., dredging, (greater than past 20 yr) may be present, but recent channelization is not present.					Channelization may be extensive; embankments or shoring structures present on both banks; and 40 to 80% of stream reach channelized and disrupted.					Banks shored with gabion or cement; over 80% of the stream reach channelized and disrupted. Instream habitat greatly altered or removed entirely.				
	SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
7. Stream Diversity	**Riffle-Run**	Riffles are frequent; distance between riffles divided by width of the stream is 7 or less. A variety of habitat is key. In streams where riffles are continuous, boulders or other large, natural obstruction is important.					Occurrence of riffles infrequent; distance between riffles divided by the width of the stream ranges from 7 to 15.					Occasional riffle or bend; bottom contours provide some habitat; distance between riffles divided by the width of the stream ranges from 15 to 25.					Generally all flat water or shallow riffles; poor habitat; distance between riffles divided by the width of the stream is greater than 25.				
	SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
	Pool-Glide	Actual stream length divided by the straight-line measurement is 3 or more					Actual stream length divided by the straight-line measurement is between 2 and 3.					Actual stream length divided by the straight-line measurement is between 1 and 2.					Channel is straight; Both measurements are the same or very similar.				
	SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
8. Bank Stability Score both left bank (LB) and right bank (RB)	**All Streams** Note: determine left or right side by facing downstream	Banks are stable; evidence of erosion or bank failure absent or minimal; little potential for future problems. Less than 5% of bank affected.					Moderately stable; infrequent, small areas of erosion mostly healed over. 5-30% of bank in reach has areas of erosion.					Moderately unstable; 30-60% of bank in reach has areas of erosion; high erosion potential during floods.					Unstable; many eroded areas; "raw" areas frequent along straight sections and bends; obvious bank sloughing; 60-100% of bank has erosional scars.				
	LB SCORE	10		9			8		7		6	5		4		3	2		1		
	RB SCORE	10		9			8		7		6	5		4		3	2		1		
9. Vegetative Protection Score both left bank (LB) and right bank (RB)	**All Streams** Note: determine left or right side by facing downstream	More than 90% of the streambank covered by native vegetation, including trees, shrubs, or plants; vegetative disruption through grazing or mowing is minimal or not evident; almost all plants are growing naturally.					70-90% of the streambank surfaces covered by native vegetation, but one class (trees, shrubs, or plants) is not well- represented; Some vegetation shows signs that it has been impacted by humans or grazing but this is not preventing plant growth greatly.					50-70% of the streambank surfaces covered by vegetation; plant growth has been impacted by human activity or grazing, patches of bare soil or closely cropped vegetation common..					Less than 50% of the streambank surface is covered by vegetation; disruption vegetation is very high; vegetation has been removed to 5 centimeters or less in average stubble height.				
	LB SCORE	10		9			8		7		6	5		4		3	2		1		
	RB SCORE	10		9			8		7		6	5		4		3	2		1		
10. Riparian Vegetative Zone Width Score both left bank (LB) and right bank (RB)	**All Streams** Note: determine left or right side by facing downstream	Width of riparian zone is greater than 18 meters; human activities (i.e., parking lots, roadbeds, clear-cuts, lawns, or crops) do not impacted zone.					Width of riparian zone 12- 18 meters; human activities have impacted zone only minimally.					Width of riparian zone 6- 12 meters; human activities have impacted zone a great deal.					Width of riparian zone is less than 6 meters: little or no riparian vegetation due to human activities.				
	LB SCORE	10		9			8		7		6	5		4		3	2		1		
	RB SCORE	10		9			8		7		6	5		4		3	2		1		

Overall Condition Category	Score Range
Optimal	400-301
Suboptimal	300-201
Marginal	200-101
Poor	100-13

Total Score: _____

Overall Condition Category: _____

Write down additional notes on possible negative impacts or beneficial features you see in or near the stream.

Procedures adapted from

Barbour, Michael & Gerritsen, Jeroen & Snyder, Blaine & Stribling, James. (1999). Rapid bioassessment protocols for use in streams and wadable rivers: Periphyton, benthic invertebrates and fish. Second Edition. United States Environmental Protection Agency, Office of Water, EPA 841-B-99-002

MiCorps Volunteer Stream Monitoring Procedures. August 2006. Prepared by: Jo Latimore, Huron River Watershed Council. Michigan Clean Water Corps. Surface Water Quality Division Michigan Department of Environmental Quality

Qualitative Biological and Habitat Survey Protocols for Wadeable Streams and Rivers (WB-SWAS-051)/ Effective, Effective Date 1990, Revision Date December 2008. Michigan Department of Environmental Quality Water Bureau Policy and Procedures.