

# INTENSIVE BIOSURVEY: HABITAT ASSESSMENT

Stream Name: \_\_\_\_\_

County: \_\_\_\_\_ State: \_\_\_\_\_

Investigators: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

Site (description): \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Latitude: \_\_\_\_\_ Longitude: \_\_\_\_\_

Site or Map Number: \_\_\_\_\_

Date: \_\_\_\_\_ Time: \_\_\_\_\_

## Weather in past 24 hours:

- Storm (heavy rain)
- Rain (steady rain)
- Showers (intermittent rain)
- Overcast
- Clear/Sunny

## Weather now:

- Storm (heavy rain)
- Rain (steady rain)
- Showers (intermittent rain)
- Overcast
- Clear/Sunny

## Sketch of site

On your sketch, note features that affect stream habitat, such as: riffles, runs, pools, ditches, wetlands, dams, riprap, outfalls, tributaries, landscape features, logging paths, vegetation, and roads.

## GENERAL CHARACTERISTICS

### 1. Water appearance:

Page 92

- |                                |                                     |                                      |
|--------------------------------|-------------------------------------|--------------------------------------|
| <input type="checkbox"/> Clear | <input type="checkbox"/> Turbid     | <input type="checkbox"/> Orange      |
| <input type="checkbox"/> Milky | <input type="checkbox"/> Dark brown | <input type="checkbox"/> Greenish    |
| <input type="checkbox"/> Foamy | <input type="checkbox"/> Oily sheen | <input type="checkbox"/> Other _____ |

### 2. Water odor:

Page 92

- |                                   |                                      |                                |
|-----------------------------------|--------------------------------------|--------------------------------|
| <input type="checkbox"/> Sewage   | <input type="checkbox"/> Fishy       | <input type="checkbox"/> None  |
| <input type="checkbox"/> Chlorine | <input type="checkbox"/> Rotten eggs | <input type="checkbox"/> Other |

### 3. Water temperature:

Page 92

\_\_\_\_\_ °C or \_\_\_\_\_ °F

### 4. Approximate width of stream channel:

Page 93

\_\_\_\_\_ feet     Measured     Estimated

## LOCAL LAND USE

(within about 1/4 mile of the site; adjacent and upstream)

### 5. Land uses in the local watershed can potentially have an impact on a stream. Check "1" if present,

Page 93

"2" if clearly having an impact on the stream.

- | 1                        | 2                        | Residential              |
|--------------------------|--------------------------|--------------------------|
| <input type="checkbox"/> | <input type="checkbox"/> | Single-family housing    |
| <input type="checkbox"/> | <input type="checkbox"/> | Multifamily housing      |
| <input type="checkbox"/> | <input type="checkbox"/> | Lawns                    |
| <input type="checkbox"/> | <input type="checkbox"/> | Commercial/institutional |

- | 1                        | 2                        | Roads, etc.            |
|--------------------------|--------------------------|------------------------|
| <input type="checkbox"/> | <input type="checkbox"/> | Paved roads or bridges |
| <input type="checkbox"/> | <input type="checkbox"/> | Unpaved roads          |

- | 1                        | 2                        | Construction underway on:       |
|--------------------------|--------------------------|---------------------------------|
| <input type="checkbox"/> | <input type="checkbox"/> | Housing development             |
| <input type="checkbox"/> | <input type="checkbox"/> | Commercial development          |
| <input type="checkbox"/> | <input type="checkbox"/> | Road bridge construction/repair |

- | 1                        | 2                        | Agricultural                         |
|--------------------------|--------------------------|--------------------------------------|
| <input type="checkbox"/> | <input type="checkbox"/> | Grazing land                         |
| <input type="checkbox"/> | <input type="checkbox"/> | Feeding lots or animal holding areas |
| <input type="checkbox"/> | <input type="checkbox"/> | Cropland                             |
| <input type="checkbox"/> | <input type="checkbox"/> | Inactive agricultural land/fields    |

- | 1                        | 2                        | Recreation                |
|--------------------------|--------------------------|---------------------------|
| <input type="checkbox"/> | <input type="checkbox"/> | Power boating             |
| <input type="checkbox"/> | <input type="checkbox"/> | Golfing                   |
| <input type="checkbox"/> | <input type="checkbox"/> | Camping                   |
| <input type="checkbox"/> | <input type="checkbox"/> | Swimming/fishing/canoeing |
| <input type="checkbox"/> | <input type="checkbox"/> | Hiking/paths              |

- | 1                        | 2                        | Other                 |
|--------------------------|--------------------------|-----------------------|
| <input type="checkbox"/> | <input type="checkbox"/> | Mining or gravel pits |
| <input type="checkbox"/> | <input type="checkbox"/> | Logging               |
| <input type="checkbox"/> | <input type="checkbox"/> | Industry              |
| <input type="checkbox"/> | <input type="checkbox"/> | Oil and gas drilling  |
| <input type="checkbox"/> | <input type="checkbox"/> | Trash dump            |
| <input type="checkbox"/> | <input type="checkbox"/> | Landfills             |

HABITAT ASSESSMENT FIELD DATA SHEET

ROCKY BOTTOM SAMPLING

Habitat Parameter	Category			
	Optimal	Suboptimal	Marginal	Poor
<b>1. Attachment Sites for Macro-invertebrates</b> Page 93	Well developed riffle and run; riffle is as wide as stream and length extends 2 times the width of stream; cobbles predominate; boulders and gravel common.	Riffle is as wide as stream but length is less than 2 times width; cobbles less abundant; boulders and gravel common.	Run area may be lacking; riffle not as wide as stream and its length is less than 2 times the stream width; gravel or large boulders and bedrock prevalent; some cobbles present.	Riffles or run virtually nonexistent; large boulders and bedrock prevalent; cobbles lacking.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
<b>2. Embeddedness</b> Page 93	Fine sediment surrounds and fills in 0-25% of the living spaces around and in between the gravel, cobble, and boulders.	Fine sediment surrounds and fills in 25-50% of the living spaces around and in between the gravel, cobble, and boulders.	Fine sediment surrounds and fills in 50-75% of the living spaces around and in between the gravel, cobble, and boulders.	Fine sediment surrounds and fills in more than 75% of the living spaces around and in between the gravel, cobble, and boulders.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
<b>3. Shelter for Fish</b> Page 93	Snags, submerged logs, undercut banks, cobble and large rocks, or other stable habitat are found in over 50% of the site.	Snags, submerged logs, undercut banks, cobble and large rocks, or other stable habitat are found in over 30-50% of the site.	Snags, submerged logs, undercut banks, cobble and large rocks, or other stable habitat are found in over 10-30% of the site.	Snags, submerged logs, undercut banks, cobble and large rocks, or other stable habitat are found in less than 10% of the site.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
<b>4. Channel Alteration</b> Page 93	Stream straightening, dredging, artificial embankments, dams or bridge abutments absent or minimal; stream with meandering pattern.	Some stream straightening, dredging, artificial embankments or dams present, usually in areas of bridge abutments; no evidence of recent channel alteration activity.	Artificial embankments present to some extent on both banks; and 40 to 80% of stream site straightened, dredged, or otherwise altered.	Banks shored with gabion or cement; over 80% of the stream site straightened and disrupted.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
<b>5. Sediment Deposition</b> Page 94	Little or no enlargement of islands or point bars and less than 5% of the bottom affected by sediment deposition.	Some new increase in bar formation, mostly from coarse gravel; 5-30% of the bottom affected; slight deposition in pools.	Moderate deposition of new gravel, coarse sand on old and new bars; 30-60% of the bottom affected; sediment deposits at stream obstructions and bends; moderate deposition in pools.	Heavy deposits of fine material, increased bar development; more than 50% of the bottom affected; 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 0

**ROCKY BOTTOM SAMPLING**

Habitat Parameter	Category			
	Optimal	Suboptimal	Marginal	Poor
<b>6. Stream Velocity and Depth Combinations</b> Page 94	Slow (< 1 ft/s)/deep (> 1.5 ft); slow/shallow; fast/deep; fast/shallow combinations all present.	3 of the 4 velocity/depth combinations are present; fast current areas generally dominate.	Only 2 of the 4 velocity/depth combinations present. Score lower if fast current areas missing.	Dominated by 1 velocity/depth category (usually slow/shallow areas).
SCORE _____	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
<b>7. Channel Flow Status</b> Page 94	Water reaches base of both lower banks and minimal amount of channel substrate is exposed.	Water fills >75% of the available channel; <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 0
<b>8. Bank Vegetative Protection (score each bank)</b> Page 95 Note: determine left or right side by facing downstream	More than 90% of the streambank surfaces covered by natural vegetation, including trees, shrubs, or other plants; vegetative disruption through grazing or mowing, minimal or not evident; almost all plants allowed to grow naturally.	70-90% of the streambank surfaces covered by natural vegetation, but one class of plants is not well-represented; some vegetative disruption evident; more than one-half of the potential plant stubble height remaining.	50-70% of the streambank surfaces covered by vegetation; patches of bare soil or closely cropped vegetation common; less than one-half of the potential plant stubble height remaining.	Less than 50% of the streambank surfaces covered by vegetation; disruption of streambank vegetation is very high; vegetation has been removed to 2 inches or less in average stubble height.
SCORE _____ (LB) SCORE _____ (RB)	Left Bank 10 9 Right Bank 10 9	8 7 6 8 7 6	5 4 3 5 4 3	2 1 0 2 1 0
<b>9. Condition of Banks (score each bank)</b> Page 95	Banks stable; no evidence of erosion or bank failure; little potential for future problems.	Moderately stable; infrequent, small areas of erosion mostly healed over.	Moderately unstable; up to 60% of banks in site have areas of erosion; high erosion potential during floods.	Unstable; many eroded areas; "rew" areas frequent along straight sections and bends; obvious bank collapse or failure; 80-100% of bank has erosional scars.
SCORE _____ (LB) SCORE _____ (RB)	Left Bank 10 9 Right Bank 10 9	8 7 6 8 7 6	5 4 3 5 4 3	2 1 0 2 1 0
<b>10. Riparian Vegetative Zone Width (score each bank riparian zone)</b> Page 95	Width of riparian zone > 50 feet; no evidence of human activities (i.e., parking lots, roadbeds, clear cuts, mowed areas, or crops) within the riparian zone.	Width of riparian zone 35-40 feet.	Width of riparian zone 20-35 feet.	Width of riparian zone < 20 feet.
SCORE _____ (LR) SCORE _____ (RR)	Left Bank 10 9 Right Bank 10 9	8 7 6 8 7 6	5 4 3 5 4 3	2 1 0 2 1 0

Total Score \_\_\_\_\_

HABITAT ASSESSMENT FIELD DATA SHEET

MUDDY BOTTOM SAMPLING

Habitat Parameter	Category			
	Optimal	Suboptimal	Marginal	Poor
<p><b>1. Shelter for Fish and Macro-invertebrates</b></p> <p>Page 99</p>	Snags, submerged logs, undercut banks, rubble or other stable habitat found over 50% of the site; logs/snags are old fall.	Snags, submerged logs, undercut banks, rubble or other stable habitat found over 30-50% of the site; some old fall, but preponderance of new fall.	Snags, submerged logs, undercut banks, rubble or other stable habitat found over 10-30% of the site; appears unstable; some new fall.	Snags, submerged logs, undercut banks, rubble or other stable habitat found over less than 10% of the site; no old or new fall.
SCORE _____	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
<p><b>2. Pool Substrate Characterization</b></p> <p>Page 100</p>	Pools have mixture of substrate materials, with gravel and firm sand prevalent; root mats and submerged vegetation common.	Pools have mixture of soft sand, mud, or clay substrate; mud may be dominant; some root mats and submerged vegetation present.	Pools have all mud or clay or sand substrate, little or no root mat; no submerged vegetation.	Pools have hard pan clay or bedrock substrate; 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 0
<p><b>3. Pool Variability</b></p> <p>Page 100</p>	Even mix of large-shallow, large deep, small-shallow, small-deep pools.	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 0
<p><b>4. Channel Alteration</b></p> <p>Page 100</p>	Stream straightening, dredging, artificial embankments, dams or bridge abutments absent or minimal, stream with meandering pattern.	Some stream straightening, artificial embankments or dams present, usually in areas of bridge abutments; no evidence of recent channel alteration activity.	Artificial embankments present to some extent on both banks; and 40 to 80% of stream site straightened, dredged, or otherwise altered.	Banks shored with gabion or cement; over 80% of the stream site straightened and disrupted.
SCORE _____	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
<p><b>5. Sediment Deposition</b></p> <p>Page 100</p>	Less than 20% of stream bottom affected by extensive sediment deposition; minor accumulation of fine and coarse material at snags and submerged vegetation; little or no enlargement of islands or point bars.	20-50% of stream bottom affected by extensive sediment deposition; moderate accumulation; substantial sediment movement only during major storm event; some new increase in bar formation.	50-80% of stream bottom affected by extensive sediment deposition; pools silted; embankments may be present on both banks; frequent and substantial sediment movement during storm events.	Greater than 80% of stream bottom affected by extensive sediment deposition; heavy deposits; mud, silt, and/or sand in braided or nonbraided channels; pools almost absent due to deposition.
SCORE _____	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
<p><b>6. Channel Sinuosity</b></p> <p>Page 100</p>	The bends in the stream would increase the stream length 3 to 4 times longer than if it was in a straight line.	The bends in the stream would increase the stream length 2 to 3 times longer than if it was in a straight line.	The bends in the stream would increase the stream length 2 to 1 times longer than if it was in a straight line.	Channel straight; waterway has been channelized.
SCORE _____	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0

MUDDY BOTTOM SAMPLING

Habitat Parameter	Category			
	Optimal	Suboptimal	Marginal	Poor
<b>7. Channel Flow Status</b> Page 100 SCORE _____	Water reaches base of both lower banks and minimal amount of channel substrate is exposed.	Water fills >75% of the available channel; <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
	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
<b>8. Bank Vegetative Protection</b> Page 100 Note: determine left or right side by facing downstream SCORE _____ (LB) SCORE _____ (RB)	More than 90% of the streambank surfaces covered by native vegetation, including trees, understory shrubs, or non-woody macrophytes; vegetative disruption through grazing or mowing, minimal or not evident; almost all plants allowed to grow naturally.	70-90% of the streambank surfaces covered by native vegetation, but one class of plants is not well represented; some vegetative disruption evident; more than one-half of the potential plant stubble height remaining.	50-70% of the streambank surfaces covered by vegetation; patches of bare soil or closely cropped vegetation common; less than one-half of the potential plant stubble height remaining.	Less than 50% of the streambank surfaces covered by vegetation; disruption of streambank vegetation is very high; vegetation has been removed to 2 inches or less in average stubble height.
	Left Bank: 10 9 8 7 6 Right Bank: 10 9 8 7 6	8 7 6 8 7 6	5 4 3 5 4 3	2 1 0 2 1 0
<b>9. Condition of Banks</b> Page 100 SCORE _____ (LB) SCORE _____ (RB)	Banks stable; no evidence of erosion or bank failure; little potential for future problems.	Moderately stable; infrequent, small areas of erosion mostly healed over.	Moderately unstable; up to 80% of banks in with large areas of erosion; high erosion potential during floods.	Unstable; many eroded areas, "new" areas frequent along straight sections and bends; obvious bank collapse or failure, 50-100% of bank has eroded areas.
	Left Bank: 10 9 8 7 6 Right Bank: 10 9 8 7 6	8 7 6 8 7 6	5 4 3 5 4 3	2 1 0 2 1 0
<b>10. Riparian Vegetative Zone Width (score each bank riparian zone)</b> Page 100 SCORE _____ (LB) SCORE _____ (RB)	Width of riparian zone > 50 feet; human activities (i.e. parking lots, roadbeds, clear cuts, lawns, or crops) have not affected riparian zone.	Width of riparian zone 35-40 feet.	Width of riparian zone 20-35 feet.	Width of riparian zone < 20 feet.
	Left Bank: 10 9 8 7 6 Right Bank: 10 9 8 7 6	8 7 6 8 7 6	5 4 3 5 4 3	2 1 0 2 1 0

Total Score \_\_\_\_\_

## HABITAT ASSESSMENT GUIDE

Percent Similarity to Reference Score	Habitat Quality Category	General Attributes
> 90%	Excellent	Comparable to the best situation to be expected within an ecoregion. Excellent overall habitat structure conducive to supporting healthy biological community.
75-88%	Good	Habitat structure slightly impaired. Diverse instream habitat generally well-developed. Some degradation of riparian zone and banks. A small amount of channel alteration may be present.
60-73%	Fair	Loss of habitat compared to reference. Habitat is a major limiting factor to supporting a healthy biological community.
< 58%	Poor	Severe habitat alteration at all levels.

NOTE: If your score falls between ranges consider the site's habitat assessment results and chemical data, if available, in making your decision.

### ***Overall Assessment:***

Page 106

- Excellent
- Good
- Fair
- Poor

### **COMMENTS:**