Technical Memorandum 3-1

Aquatic Macroinvertebrates Upstream of Englebright Reservoir

Attachment 3-1D

Scanned Field Data Sheets

Yuba River Development Project
FERC Project No. 2246

April 2013

SWAMP Stream Habitat Characterization Form — FULL VERSION — Revision Date: February 9th, 2011

REACH DOCUMENTATION

Standard Reach Length (wetted width ≤ 10 m) = 150 m. Distance between transects = 15 m
Alternate Reach Length (wetted width >10 m) = 250 m. Distance between transects = 25 m

Project Name: YCWA	Date: 07 / 11 / 2012 Sample Collection Time: 925
Stream Name: N. YUBA	Site Name/ Description: N. YUBA ABV MYR
Site Code: YCBM1-1	Crew Members: C. VERNIER, M. ASHENFELTER, C. WISEMAN
Latitude (actual – decimal degrees): 660285	datum: NAD83 / other:
Longitude (actual – decimal degrees): 4359441	GPS Device: GARMIN 60

AMBIENT WATER QUALITY MEASUREMENTS

turbidity and silica are optional; calibration date required

Temp (Deg C)	19.3	pH	7.4	Alkalinity (mg/L)	—	Turbidity (ntu)	3.6
		cal. date				cal. date	
Dissolved O² (mg/L)	8.3	Specific Conduct (uS/cm)	70	Salinity (ppt)	—	Silica (mg/L)	—
cal. date		cal. date		cal. date		cal. date	

REACH LENGTH

Actual Length (m) (see reach length guidelines at top of form): 250

Explanation: >10m

DISCHARGE MEASUREMENTS

1st measurement = left bank (looking downstream)

check if discharge measurements not possible (explain in field notes section) ☐

VELOCITY AREA METHOD (preferred)

cal. date: 5.4 cfs — Transect Width (m): ≈20

	Distance from Left Bank (cm)	Depth (cm)	Velocity (ft/sec)		Distance from Left Bank (cm)	Depth (cm)	Velocity (ft/sec)
1	0	0	0	11	−10	0	0
2	1	.4	.51	12	−11	0	0
3	2	.6	2.13	13	−12	0	0
4	3	.2	2.05	14	(.2) 13	.4	.5
5	4	.6	2.04	15	−14	0	0
6	5	.5	.68	16	(.132) 15	.2	.66
7	6	.2	.45	17	(.142) 16	.7	.72
8	7	0	0	18	(.212) 17	.4	.53
9	8	.2	.66	19	(.38) 18	.5	.76
10	9	0	0	20	−19	0	0

.204 .278 .141 .424 .134 .109 — .132

BUOYANT OBJECT METHOD (use ONLY if velocity area method not possible)

	Float 1	Float 2	Float 3
Distance (m)			
Float Time (sec)			

Float Reach Cross Section

width (m) depth(cm)	Upper Section	Middle Section	Lower Section
Width			
Depth 1			
Depth 2			
Depth 3			
Depth 4			
Depth 5			

NOTABLE FIELD CONDITIONS (check one box per topic)

Evidence of recent rainfall (enough to increase surface runoff)	NO	X	minimal		>10% flow increase	
Evidence of fires in reach or immediately upstream (<500 m)	NO	X	< 1 year		< 5 years	
Dominant landuse/ landcover in area surrounding reach	Agriculture		Forest	X	Rangeland	
	Urban/ Industrial		Suburb/Town		Other	

ADDITIONAL COBBLE EMBEDDEDNESS MEASURES

(carry over from transect forms if needed to attain target count of 25; measure in %)

1	2	3	4	5	6	7	8	9	10	11	12	13
0	5	0	15	10	20	30	40	10	15	50	40	30
14	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**	**25**	
25	50	55	0	10	20							

NOTE - site started .05mi DS of GPS point to fit site into best available habitat, ability & get samples

Site Code: Date: __/__/ 2011

SLOPE and BEARING FORM (transect based - for Full PHAB only)

AUTOLEVEL ☒ CLINOMETER ☐ HANDLEVEL ☐ OTHER ☐

Starting Transect	MAIN SEGMENT (record percent of inter-transect distance in each segment if supplemental segments are used)					SUPPLEMENTAL SEGMENT (record percent of inter-transect distance in each segment if supplemental segments are used)				
	Stadia rod measurements	Slope (%) or Elevation Difference cm ☐ % ☒	Segment Length (m)	Bearing (0°-359°)	Percent of Total Length (%)	Stadia rod measurements	Slope or Elevation Difference cm ☐ % ☐	Segment Length (m)	Bearing (0°-359°)	Percent of Total Length (%)
K										
J		5	25		10					
I		2								
H		3								
G	boulder blocking	—								
F		5								
E		1								
D		2								
C		—								
B		1								
A		1								
additional calculation area										

ADDITIONAL HABITAT CHARACTERIZATION

High Gradient ☐ Low Gradient ☐

Parameter	Optimal	Suboptimal	Marginal	Poor
Epifaunal Substrate/ Cover	Greater than 70% of substrate favorable for epifaunal colonization and fish cover (50% for low-gradient streams); mix of submerged logs, undercut banks, cobble or other stable habitat	40-70% mix of stable habitat (30-50% for low-gradient streams); well-suited for full colonization potential	20-40% mix of stable habitat (10-30% in low-gradient streams); substrate frequently disturbed or removed	Less than 20% stable habitat (10% in low-gradient streams); lack of habitat is obvious; substrate unstable or lacking
Score:	20 19 18 17 16	(15) 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
Sediment Deposition	Little or no enlargement of islands or point bars and less than 5% of the bottom affected by sediment deposition (<20% in low-gradient streams)	Some new increase in bar formation, mostly from gravel, sand, or fine sediment; 5-30% of the bottom affected (20-50% in low-gradient streams)	Moderate deposition of new gravel, sand, or fine sediment on bars; 30-50% of the bottom affected (50 - 80% in low-gradient streams)	Heavy deposits of fine material, increased bar development; more than 50% of the bottom changing frequently (>80% in low-gradient streams)
Score:	20 19 18 17 16	15 (14) 13 12 11	10 9 8 7 6	5 4 3 2 1 0
Channel Alteration	Channelization or dredging absent or minimal; stream with normal pattern	Some channelization present, (e.g., bridge abutments); evidence of past channelization (> 20yrs) may be present but recent channelization not present	Channelization may be extensive; embankments or shoring structures present on both banks; 40 to 80% of stream reach disrupted	Banks shored with gabian 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 0

SWAMP Stream Habitat Characterization Form FULL VERSION Revision Date: February 9th, 2011

Site Code:	Site Name: NYR abv MYR	Date: __/__/2011
Wetted Width (m): 18	Bankfull Width (m): 25 / Bankfull Height (m): 3m	**Transect A**

Transect Substrates

Position	Dist from LB (m)	Depth (cm)	mm/ size class	% Cobble Embed.	CPOM	Microalgae Thickness Code	Macroalgae Attached	Macroalgae Unattached	Macrophytes
Left Bank	0	64	COB	0	(P) A	2	(P) A D	(P) A D	P (A) D
Left Center	4.5	70	BLD	—	P (A)	2	(P) A D	P (A) D	P (A) D
Center	9	55	BLD	—	(P) A	2	(P) A D	P (A) D	P (A) D
Right Center	13.5	66	BLD	—	(P) A	2	(P) A D	P (A) D	P (A) D
Right Bank	17.5	24	BLD	—	P (A)	2	(P) A D	P (A) D	P (A) D

Note: Substrate sizes can be recorded either as direct measures of the median axis of each particle or one of the size class categories listed on the supplemental page (direct measurements preferred)

Microalgae Thickness Codes
0 = No microalgae present. Feels rough, not slimy;
1 = Present but not visible. Feels slimy;
2 = Present and visible but <1mm. Rubbing fingers on surface produces a brownish tint on them, scraping leaves visible trail.
3 = 1-5mm;
4 = 5-20mm;
5 = >20mm;
UD = Cannot determine if microalgae present, substrate too small or covered with silt (formerly Z code)
D = Dry, not assessed

Riparian Vegetation (facing downstream)

0 = Absent (0%) 3 = Heavy (40-75%)
1 = Sparse (<10%) 4 = Very Heavy (>75%)
2 = Moderate (10-40%)

Vegetation Class	Left Bank	Right Bank
Upper Canopy (>5 m high)		
Trees and saplings >5 m high	0 (1) 2 3 4	0 (1) 2 3 4
Lower Canopy (0.5 m-5 m high)		
All vegetation 0.5 m to 5 m	0 (1) 2 3 4	0 (1) 2 3 4
Ground Cover (<0.5 m high)		
Woody shrubs & saplings <0.5 m	0 (1) 2 3 4	0 (1) 2 3 4
Herbs/ grasses	(0) 1 2 3 4	(0) 1 2 3 4
Barren, bare soil/ duff	0 1 2 3 (4)	0 1 2 3 (4)

Instream Habitat Complexity

0 = Absent (0%)
1 = Sparse (<10%)
2 = Moderate (10-40%)
3 = Heavy (40-75%)
4 = Very Heavy (>75%)

Filamentous Algae	0 (1) 2 3 4
Aquatic Macrophytes/ Emergent Vegetation	(0) 1 2 3 4
Boulders	0 1 (2) 3 4
Woody Debris >0.3 m	(0) 1 2 3 4
Woody Debris <0.3 m	(0) 1 2 3 4
Undercut Banks	(0) 1 2 3 4
Overhang. Vegetation	(0) 1 2 3 4
Live Tree Roots	(0) 1 2 3 4
Artificial Structures	(0) 1 2 3 4

Densiometer Readings (0-17)

count covered dots

Center Left	0
Center Upstream	0
Center Right	0
Center Downstream	0
Optional	
Left Bank	X
Right Bank	X

Human Influence (circle only the closest to wetted channel)

0 = Not Present;
B = On Bank;
C = Between Bank & 10m from Channel;
P = >10m+<50m from Channel;
Channel (record Yes or No)

	Left Bank	Channel	Right Bank
Walls/ Rip-rap/ Dams	P C B (0)	Y (N)	(0) B C P
Buildings	P C B (0)	Y N	(0) B C P
Pavement/ Cleared Lot	P C B (0)		(0) B C P
Road/ Railroad	P C B (0)	Y N	(0) B C P
Pipes (Inlet/ Outlet)	P C B (0)	Y N	(0) B C P
Landfill/ Trash	P C B (0)	Y N	(0) B C P
Park/ Lawn	P C B (0)		(0) B C P
Row Crop	P C B (0)		(0) B C P
Pasture/ Range	P C B (0)		(0) B C P
Logging Operations	P C B (0)		(0) B C P
Mining Activity	P C B (0)	Y N	(0) B C P
Vegetation Management	P C B (0)		(0) B C P
Bridges/ Abutments	P C B (0)	Y N	(0) B C P
Orchards/ Vineyards	P C B (0)		(0) B C P

Bank Stability

(score zone 5m upstream and 5m downstream of transect between bankfull - wetted width)

Left Bank	eroded	vulnerable	(stable)
Right Bank	eroded	vulnerable	(stable)

TAKE PHOTOGRAPHS

(check box if taken & record photo code)

Downstream **(optional)** ☒
167

Upstream **(required)** ☒
168

Inter-Transect: AB

Wetted Width (m): 18

Inter-Transect Substrates

Position	Dist from LB (m)	Depth (cm)	mm/ size class	% Cobble Embed	CPOM	Microalgae Thickness Code	Macroalgae Attached	Macroalgae Unattached	Macrophytes
Left Bank	.5	208	BLD	—	P (A)	3	(P) A D	P (A) D	P (A) D
Left Center	4.5	210			P A	|	P A D	P A D	P A D
Center	9	180			P A	|	P A D	P A D	P A D
Right Center	13.5	72	BLD	—	P A	|	P A D	P A D	P A D
Right Bank	~~13.5~~	~~180~~	COB	20	P (A)	|	P A D	P A D	P A D

Note: Substrate sizes can be recorded either as direct measures of the median axis of each particle or one of the size class categories listed on the supplemental page (direct measurements preferred)

Microalgae Thickness Codes
0 = No microalgae present. Feels rough, not slimy.
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3 = 1-5mm.
4 = 5-20mm.
5 = >20mm.
UD = Cannot determine if microalgae present, substrate too small or covered with silt (formerly Z code).
D = Dry, not assessed

Flow Habitats

Channel Type	%
Cascade/Falls	
Rapid	
Riffle	
Run	
Glide	
Pool	100
Dry	

SWAMP Stream Habitat Characterization Form FULL VERSION Revision Date: February 9th, 2011

Site Code:	Site Name: NYR abv MTR	Date: __/__/2011
Wetted Width (m): 18	Bankfull Width (m): 23	Bankfull Height (m): 1.5

Transect B

Transect Substrates

Position	Dist from LB (m)	Depth (cm)	mm/ size class	% Cobble Embed.	CPOM	Microalgae Thickness Code	Macroalgae Attached	Macroalgae Unattached	Macrophytes
Left Bank	.5	37	GravS	0	P (A)	3	(P) A D	(P) A D	P (A) D
Left Center	4.5	91	BLD	—	P A		P A D	P A D	P A D
Center	9	89	BLD	—	P A		P A D	P A D	P A D
Right Center	13.5	180	BLD	—	P A		P A D	P A D	P A D
Right Bank	17.5	205	BLD	—	P A		P A D	P A D	P A D

Note: Substrate sizes can be recorded either as direct measures of the median axis of each particle or one of the size class categories listed on the supplemental page (direct measurements preferred)

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D = Dry, not assessed

Riparian Vegetation (facing downstream)

0 = Absent (0%) 3 = Heavy (40-75%)
1 = Sparse (<10%) 4 = Very Heavy (>75%)
2 = Moderate (10-40%)

Vegetation Class	Left Bank	Right Bank
Upper Canopy (>5 m high)		
Trees and saplings >5 m high	(0) 1 2 3 4	(0) 1 2 3 4
Lower Canopy (0.5 m-5 m high)		
All vegetation 0.5 m to 5 m	(0) 1 2 3 4	(0) 1 2 3 4
Ground Cover (<0.5 m high)		
Woody shrubs & saplings <0.5 m	0 (1) 2 3 4	(0) 1 2 3 4
Herbs/ grasses	(0) 1 2 3 4	(0) 1 2 3 4
Barren, bare soil/ duff	0 1 2 3 (4)	0 1 2 3 (4)

Instream Habitat Complexity

0 = Absent (0%)
1 = Sparse (<10%)
2 = Moderate (10-40%)
3 = Heavy (40-75%)
4 = Very Heavy (>75%)

Filamentous Algae	(0) 1 2 3 4
Aquatic Macrophytes/ Emergent Vegetation	(0) 1 2 3 4
Boulders	0 1 2 (3) 4
Woody Debris >0.3 m	(0) 1 2 3 4
Woody Debris <0.3 m	(0) 1 2 3 4
Undercut Banks	(0) 1 2 3 4
Overhang. Vegetation	(0) 1 2 3 4
Live Tree Roots	(0) 1 2 3 4
Artificial Structures	(0) 1 2 3 4

Densiometer Readings (0-17)

count covered dots

Center Left	0
Center Upstream	0
Center Right	0
Center Downstream	0
Optional	
Left Bank	—
Right Bank	—

Human Influence

(circle only the closest to wetted channel)

0 = Not Present;
B = On Bank;
C = Between Bank & 10m from Channel;
P = >10m+<50m from Channel;
Channel (record Yes or No)

	Left Bank	Channel	Right Bank
Walls/ Rip-rap/ Dams	P C B (0)	Y (N)	(0) B C P
Buildings	P C B 0	Y N	0 B C P
Pavement/ Cleared Lot	P C B 0		0 B C P
Road/ Railroad	P C B 0	Y N	0 B C P
Pipes (Inlet/ Outlet)	P C B 0	Y N	0 B C P
Landfill/ Trash	P C B 0	Y N	0 B C P
Park/ Lawn	P C B 0		0 B C P
Row Crop	P C B 0		0 B C P
Pasture/ Range	P C B 0		0 B C P
Logging Operations	P C B 0		0 B C P
Mining Activity	P C B 0	Y N	0 B C P
Vegetation Management	P C B 0		0 B C P
Bridges/ Abutments	P C B 0	Y N	0 B C P
Orchards/ Vineyards	P C B 0		0 B C P

Bank Stability

(score zone 5m upstream and 5m downstream of transect between bankfull - wetted width)

Left Bank	eroded	vulnerable	(stable)
Right Bank	eroded	vulnerable	(stable)

Inter-Transect: BC

Wetted Width (m): 6

Inter-Transect Substrates

Position	Dist from LB (m)	Depth (cm)	mm/ size class	% Cobble Embed	CPOM	Microalgae Thickness Code	Macroalgae Attached	Macroalgae Unattached	Macrophytes
Left Bank	.5	16	COB	0	P (A)	2	P (A) D	P A D	P (A) D
Left Center	2	24	BLD	—	P A	2	(P) A D	P (A) D	P A D
Center	4	51	BLD	—	P A	2	(P) A D	P (A) D	P A D
Right Center	6	10	BLD	—	P A	2	P (A) D	P (A) D	P A D
Right Bank	7.5	3	COB	10	P A	2	P (A) D	P (A) D	P A D
	Note: Substrate sizes can be recorded either as direct measures of the median axis of each particle or one of the size class categories listed on the supplemental page (direct measurements preferred)								

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3 = 1-5mm;
4 = 5-20mm;
5 = >20mm;
UD = Cannot determine if microalgae present, substrate too small or covered with silt (formerly Z code);
D = Dry, not assessed

FLOW HABITATS

Channel Type	%
Cascade/ Falls	10
Rapid	
Riffle	
Run	
Glide	
Pool	90
Dry	

SWAMP Stream Habitat Characterization Form — FULL VERSION — Revision Date: February 9th, 2011

Site Code:	Site Name: NYR abv MYR	Date: ___/___/2011
Wetted Width (m): 10	Bankfull Width (m): 22	Bankfull Height (m): 1.5

Transect C

Transect Substrates

Position	Dist from LB (m)	Depth (cm)	mm/ size class	% Cobble Embed.	CPOM	Microalgae Thickness Code	Macroalgae Attached	Macroalgae Unattached	Macrophytes
Left Bank	1.5	48	GB	30	P (A)	3	P (A) D	P (A) D	P (A) D
Left Center	2.5	91	BLD	—	(P) A		(P) A D	P A D	P A D
Center	5	72	COB	10	P (A)		(P) A D	P A D	P A D
Right Center	7.5	66	BLD	—	P (A)		(P) A D	P A D	P A D
Right Bank	9.5	36	COB	40	P (A)		(P) A D	(P) A D	P A D

Note: Substrate sizes can be recorded either as direct measures of the median axis of each particle or one of the size class categories listed on the supplemental page (direct measurements preferred)

Microalgae Thickness Codes
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3 = 1-5mm;
4 = 5-20mm;
5 = >20mm;
UD = Cannot determine if microalgae present, substrate too small or covered with silt (formerly Z code).
D = Dry, not assessed

Riparian Vegetation (facing downstream)

0 = Absent (0%) 3 = Heavy (40-75%)
1 = Sparse (<10%) 4 = Very Heavy (>75%)
2 = Moderate (10-40%)

Vegetation Class	Left Bank	Right Bank
Upper Canopy (>5 m high)		
Trees and saplings >5 m high	(0) 1 2 3 4	(0) 1 2 3 4
Lower Canopy (0.5 m-5 m high)		
All vegetation 0.5 m to 5 m	(0) 1 2 3 4	(0) 1 2 3 4
Ground Cover (<0.5 m high)		
Woody shrubs & saplings <0.5 m	(0) 1 2 3 4	(0) 1 2 3 4
Herbs/ grasses	(0) 1 2 3 4	(0) 1 2 3 4
Barren, bare soil/ duff	0 1 2 3 (4)	0 1 2 3 (4)

Instream Habitat Complexity

0 = Absent (0%)
1 = Sparse (<10%)
2 = Moderate (10-40%)
3 = Heavy (40-75%)
4 = Very Heavy (>75%)

Filamentous Algae	(0) 1 2 3 4
Aquatic Macrophytes/ Emergent Vegetation	(0) 1 2 3 4
Boulders	0 1 2 (3) 4
Woody Debris >0.3 m	(0) 1 2 3 4
Woody Debris <0.3 m	0 1 2 3 4
Undercut Banks	0 1 2 3 4
Overhang. Vegetation	0 1 2 3 4
Live Tree Roots	0 1 2 3 4
Artificial Structures	0 1 2 3 4

Densiometer Readings (0-17)
count covered dots

Center Left	0
Center Upstream	1
Center Right	1
Center Downstream	1
Optional	
Left Bank	—
Right Bank	—

Human Influence (circle only the closest to wetted channel)

0 = Not Present;
B = On Bank;
C = Between Bank & 10m from Channel;
P = >10m+<50m from Channel;
Channel (record Yes or No)

	Left Bank	Channel	Right Bank
Walls/ Rip-rap/ Dams	P C B (0)	Y (N)	(0) B C P
Buildings	P C B 0	Y N	0 B C P
Pavement/ Cleared Lot	P C B 0		0 B C P
Road/ Railroad	P C B 0	Y N	0 B C P
Pipes (Inlet/ Outlet)	P C B 0	Y N	0 B C P
Landfill/ Trash	P C B 0	Y N	0 B C P
Park/ Lawn	P C B 0		0 B C P
Row Crop	P C B 0		0 B C P
Pasture/ Range	P C B 0		0 B C P
Logging Operations	P C B 0		0 B C P
Mining Activity	P C B 0	Y N	0 B C P
Vegetation Management	P C B 0		0 B C P
Bridges/ Abutments	P C B 0	Y N	0 B C P
Orchards/ Vineyards	P C B 0		0 B C P

Bank Stability

(Assess 20m upstream and 5m downstream of transect between bankfull - wetted width)

Left Bank	eroded	vulnerable	(stable)
Right Bank	eroded	vulnerable	(stable)

Inter-Transect: CD

Wetted Width (m): 12

Inter-Transect Substrates

Position	Dist from LB (m)	Depth (cm)	mm/ size class	% Cobble Embed.	CPOM	Microalgae Thickness Code	Macroalgae Attached	Macroalgae Unattached	Macrophytes
Left Bank	.5	9	COB	0	P (A)	3	(P) A D	P (A) D	P (A) D
Left Center	3	57	BLD	—	P (A)	3	(P) A D	P (A) D	P (A) D
Center	6	0	BLD	—	P (A)	0	P (A) D	P (A) D	P (A) D
Right Center	9	11	BED	—	P (A)	3	P (A) D	P (A) D	P (A) D
Right Bank	11.5	0	BLD	—	P (A)	0	P (A) D	P (A) D	P (A) D
	Note: Substrate sizes can be recorded either as direct measures of the median axis of each particle or one of the size class categories listed on the supplemental page (direct measurements preferred)								

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3 = 1-5mm;
4 = 5-20mm;
5 = >20mm;
UD = Cannot determine if microalgae present, substrate too small or covered with silt (formerly Z code);
D = Dry, not assessed

Flow Habitats

Channel Type	%
Cascade/Falls	20
Rapid	
Riffle	
Run	
Glide	
Pool	80
Dry	

SWAMP Stream Habitat Characterization Form FULL VERSION Revision Date: February 9th, 2011

Site Code:	Site Name: N4R abv M4R	Date: __/__/2011
Wetted Width (m): 12	Bankfull Width (m): 15	Bankfull Height (m): 3

Transect D

Transect Substrates

Position	Dist from LB (m)	Depth (cm)	mm/ size class	% Cobble Embed.	CPOM	Microalgae Thickness Code	Macroalgae Attached	Macroalgae Unattached	Macrophytes
Left Bank	.5	18	CB	10	(P) A	3	P (A) D	P (A) D	P (A) D
Left Center	3	49	CB	30	P (A)	2	P (A) D	P (A) D	P (A) D
Center	6	15	BLD	—	(P) A	3	P (A) D	P (A) D	P (A) D
Right Center	9	0	BLD	—	(P) A	2	P (A) D	P (A) D	P (A) D
Right Bank	11.5	12	COB	30	P (A)	0	P (A) D	P (A) D	P (A) D
	Note: Substrate sizes can be recorded either as direct measures of the median axis of each particle or one of the size class categories listed on the supplemental page (direct measurements preferred)								

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0 = No microalgae present. Feels rough, not slimy;
1 = Present but not visible. Feels slimy;
2 = Present and visible but <1mm. Rubbing fingers on surface produces a brownish tint on them; scraping leaves visible trail;
3 = 1-5mm;
4 = 5-20mm;
5 = >20mm;
UD = Cannot determine if microalgae present... substrate too small or covered with silt (formerly Z code);
D = Dry, not assessed

Riparian Vegetation
(facing downstream)

0 = Absent (0%) 3 = Heavy (40-75%)
1 = Sparse (<10%) 4 = Very Heavy (>75%)
2 = Moderate (10-40%)

Vegetation Class	Left Bank	Right Bank
Upper Canopy (>5 m high)		
Trees and saplings >5 m high	(0) 1 2 3 4	(0) 1 2 3 4
Lower Canopy (0.5 m-5 m high)		
All vegetation 0.5 m to 5 m	(0) 1 2 3 4	(0) 1 2 3 4
Ground Cover (<0.5 m high)		
Woody shrubs & saplings <0.5 m	0 (1) 2 3 4	(0) 1 2 3 4
Herbs/ grasses	(0) 1 2 3 4	(0) 1 2 3 4
Barren, bare soil/ duff	0 1 2 3 (4)	0 1 2 3 (4)

Instream Habitat Complexity

0 = Absent (0%)
1 = Sparse (<10%)
2 = Moderate (10-40%)
3 = Heavy (40-75%)
4 = Very Heavy (>75%)

Filamentous Algae	(0) 1 2 3 4
Aquatic Macrophytes/ Emergent Vegetation	(0) 1 2 3 4
Boulders	0 1 2 (3) (4)
Woody Debris >0.3 m	(0) 1 2 3 4
Woody Debris <0.3 m	0 (1) 2 3 4
Undercut Banks	(0) 1 2 3 4
Overhang. Vegetation	(0) 1 2 3 4
Live Tree Roots	(0) 1 2 3 4
Artificial Structures	(0) 1 2 3 4

Densiometer Readings (0-17)
count covered dots

Center Left	0
Center Upstream	2
Center Right	0
Center Downstream	3
Optional	
Left Bank	5
Right Bank	2

Human Influence
(circle only the closest to wetted channel)

0 = Not Present;
B = On Bank;
C = Between Bank & 10m from Channel;
P = >10m+<50m from Channel;
Channel (record Yes or No)

	Left Bank	Channel	Right Bank
Walls/ Rip-rap/ Dams	P C B (0)	Y (N)	(0) B C P
Buildings	P C B (0)	Y N	(0) B C P
Pavement/ Cleared Lot	P C B (0)		(0) B C P
Road/ Railroad	P C B (0)	Y N	(0) B C P
Pipes (Inlet/ Outlet)	P C B (0)	Y N	(0) B C P
Landfill/ Trash	P C B (0)	Y N	(0) B C P
Park/ Lawn	P C B (0)		(0) B C P
Row Crop	P C B (0)		(0) B C P
Pasture/ Range	P C B (0)		(0) B C P
Logging Operations	P C B (0)		(0) B C P
Mining Activity	P C B (0)	Y N	(0) B C P
Vegetation Management	P C B (0)		(0) B C P
Bridges/ Abutments	P C B (0)	Y N	(0) B C P
Orchards/ Vineyards	P C B (0)		(0) B C P

Bank Stability
(score zone 5m upstream and 5m downstream of transect between bankfull - wetted width)

Left Bank	eroded	vulnerable	(stable)
Right Bank	eroded	vulnerable	(stable)

Inter-Transect: DE

Wetted Width (m): 10

Inter-Transect Substrates

Position	Dist from LB (m)	Depth (cm)	mm/ size class	% Cobble Embed.	CPOM	Microalgae Thickness Code	Macroalgae Attached	Macroalgae Unattached	Macrophytes
Left Bank	.5	78	COB	30	(P) A	2	P (A) D	P (A) D	P (A) D
Left Center	2.5	32	BLD	—	P (A)	2	P (A) D	P (A) D	P (A) D
Center	5	0	BLD	—	P (A)	0	P (A) D	P (A) D	P (A) D
Right Center	7.5	0	BLD	—	P (A)	0	P (A) D	P (A) D	P (A) D
Right Bank	9.5	18	COB	0	(P) A	2	P (A) D	P (A) D	P (A) D
	Note: Substrate sizes can be recorded either as direct measures of the median axis of each particle or one of the size class categories listed on the supplemental page (direct measurements preferred)								

Microalgae Thickness Codes
0 = No microalgae present; Feels rough, not slimy;
1 = Present but not visible. Feels slimy;
2 = Present and visible but <1mm; Rubbing fingers on surface produces a brownish tint on them, scraping leaves visible trail.
3 = 1-5mm;
4 = 5-20mm;
5 = >20mm;
UD = Cannot determine if microalgae present, substrate too small or covered with silt (formerly Z code).
D = Dry, not assessed

Flow Habitats

(% between transects, total = 100%)

Channel Type	%
Cascade/Falls	
Rapid	
Riffle	10
Run	
Glide	
Pool	90
Dry	

SWAMP Stream Habitat Characterization Form FULL VERSION Revision Date: February 9th, 2011

Site Code:	Site Name: NYR abv MYR	Date: ___/___/2011
Wetted Width (m): 8	Bankfull Width (m): 12 / Bankfull Height (m): 2	**Transect E**

Transect Substrates

Position	Dist from LB (m)	Depth (cm)	mm/ size class	% Cobble Embed.	CPOM	Microalgae Thickness Code	Macroalgae Attached	Macroalgae Unattached	Macrophytes
Left Bank	.5	29	CG	—	(P) A	3	(P) A D	P (A) D	P (A) D
Left Center	2	81	COB	20	P (A)	3	(P) A D	P (A) D	P (A) D
Center	4	118	COB	60	P (A)	3	(P) A D	P (A) D	P (A) D
Right Center	6	122	BLD	—	P (A)	2	(P) A D	P (A) D	P (A) D
Right Bank	7.5	153	CG	—	P (A)	2	P (A) D	P (A) D	P (A) D

Note: Substrate sizes can be recorded either as direct measures of the median axis of each particle or one of the size class categories listed on the supplemental page (direct measurements preferred)

Microalgae Thickness Codes
0 = No microalgae present. Feels rough, not slimy;
1 = Present but not visible. Feels slimy;
2 = Present and visible but <1mm. Rubbing fingers on surface produces a brownish tint on them, scraping leaves visible trail;
3 = 1-5mm;
4 = 5-20mm;
5 = >20mm;
UD = Cannot determine if microalgae present, substrate too small or covered with silt (formerly Z code);
D = Dry, not assessed

RIPARIAN VEGETATION (facing downstream)
0 = Absent (0%) 3 = Heavy (40-75%)
1 = Sparse (<10%) 4 = Very Heavy (>75%)
2 = Moderate (10-40%)

Vegetation Class	Left Bank	Right Bank
Upper Canopy (>5 m high)		
Trees and saplings >5 m high	(0) 1 2 3 4	(0) 1 2 3 4
Lower Canopy (0.5 m-5 m high)		
All vegetation 0.5 m to 5 m	(0) 1 2 3 4	(0) 1 2 3 4
Ground Cover (<0.5 m high)		
Woody shrubs & saplings <0.5 m	0 (1) 2 3 4	0 (1) 2 3 4
Herbs/ grasses	0 (1) 2 3 4	0 1 (2) 3 4
Barren, bare soil/ duff	0 1 2 3 (4)	0 1 2 3 (4)

INSTREAM HABITAT COMPLEXITY
0 = Absent (0%)
1 = Sparse (<10%)
2 = Moderate (10-40%)
3 = Heavy (40-75%)
4 = Very Heavy (>75%)

Filamentous Algae	(0) 1 2 3 4
Aquatic Macrophytes/ Emergent Vegetation	(0) 1 2 3 4
Boulders	0 1 (2) 3 4
Woody Debris >0.3 m	(0) 1 2 3 4
Woody Debris <0.3 m	(0) 1 2 3 4
Undercut Banks	(0) 1 2 3 4
Overhang. Vegetation	(0) 1 2 3 4
Live Tree Roots	(0) 1 2 3 4
Artificial Structures	(0) 1 2 3 4

DENSIOMETER READINGS (0-17)
count covered dots

Center Left	2
Center Upstream	0
Center Right	1
Center Downstream	6
Optional	
Left Bank	—
Right Bank	—

HUMAN INFLUENCE (circle only the closest to wetted channel)
0 = Not Present;
B = On Bank;
C = Between Bank & 10m from Channel;
P = >10m+<50m from Channel;
Channel (record Yes or No)

	Left Bank	Channel	Right Bank
Walls/ Rip-rap/ Dams	P C B (0)	Y (N)	(0) B C P
Buildings	P C B 0	Y N	0 B C P
Pavement/ Cleared Lot	P C B 0		0 B C P
Road/ Railroad	P C B 0	Y N	0 B C P
Pipes (Inlet/ Outlet)	P C B 0	Y N	0 B C P
Landfill/ Trash	P C B 0	Y N	0 B C P
Park/ Lawn	P C B 0		0 B C P
Row Crop	P C B 0		0 B C P
Pasture/ Range	P C B 0		0 B C P
Logging Operations	P C B 0		0 B C P
Mining Activity	P C B 0	Y N	0 B C P
Vegetation Management	P C B 0		0 B C P
Bridges/ Abutments	P C B 0	Y N	0 B C P
Orchards/ Vineyards	P C B 0		0 B C P

BANK STABILITY
Assess zone 50 upstream and downstream of transect between channel & wetted width

Left Bank	eroded	vulnerable	stable
Right Bank	eroded	vulnerable	stable

Inter-Transect: EF

Wetted Width (m): 20

Inter-Transect Substrates

Position	Dist from LB (m)	Depth (cm)	mm/ size class	% Cobble Embed.	CPOM	Microalgae Thickness Code	Macroalgae Attached	Macroalgae Unattached	Macrophytes
Left Bank	.5	200	BLD	—	P (A)	2	P (A) D	P (A) D	P (A) D
Left Center	5	160	SAND	—	P (A)	0	P (A) D	P (A) D	P (A) D
Center	10	97	FG	—	P (A)	2	(P) A D	P (A) D	P (A) D
Right Center	15	69	COBB	0	(P) A	3	(P) A D	P (A) D	P (A) D
Right Bank	19.5	34	FG	—	(P) A	1	P (A) D	P (A) D	P (A) D

Note: Substrate sizes can be recorded either as direct measures of the median axis of each particle or one of the size class categories listed on the supplemental page (direct measurements preferred)

Microalgae Thickness Codes
0 = No microalgae present. Feels rough, not slimy.
1 = Present but not visible. Feels slimy.
2 = Present and visible but <1mm. Rubbing fingers on surface produces a brownish tint on them, scraping leaves visible trail.
3 = 1-5mm.
4 = 5-20mm.
5 = >20mm.
UD = Cannot determine if microalgae present, substrate too small or covered with silt (formerly Z code).
D = Dry, not assessed

FLOW HABITATS
(% agreement should be 100%)

Channel Type	%
Cascade/Falls	
Rapid	
Riffle	
Run	
Glide	
Pool	100
Dry	

Site Code:	Site Name: NYE abv MYE	Date: __/__/2011
Wetted Width (m): 7.5	Bankfull Width (m): 13	Bankfull Height (m): 2.5

Transect F

Transect Substrates

Position	Dist from LB (m)	Depth (cm)	mm/ size class	% Cobble Embed.	CPOM	Microalgae Thickness Code	Macroalgae Attached	Macroalgae Unattached	Macrophytes
Left Bank	.5	25	FG	—	(P) A	1	P (A) D	P (A) D	P (A) D
Left Center	1.5	29	SND	—	(P) A	3	P (A) D	P (A) D	P (A) D
Center	3.5	44	CG	—	P (A)	1	P (A) D	P (A) D	P (A) D
Right Center	5	0	BLD	—	P (A)	2	P (A) D	P (A) D	P (A) D
Right Bank	6.5	15	BLD	—	P (A)	2	P (A) D	P (A) D	P (A) D
	Note: Substrate sizes can be recorded either as direct measures of the median axis of each particle or one of the size class categories listed on the supplemental page (direct measurements preferred)								

Microalgae Thickness Codes
0 = No microalgae present. Feels rough, not slimy;
1 = Present but not visible. Feels slimy;
2 = Present and visible but <1mm; Rubbing fingers on surface produces a brownish tint on them, scraping leaves visible trail;
3 = 1-5mm;
4 = 5-20mm;
5 = >20mm;
UD = Cannot determine if microalgae present, substrate too small or covered with silt (formerly Z code);
D = Dry, not assessed

Riparian Vegetation
(facing downstream)

0 = Absent (0%) 3 = Heavy (40-75%)
1 = Sparse (<10%) 4 = Very Heavy (>75%)
2 = Moderate (10-40%)

Vegetation Class	Left Bank	Right Bank
Upper Canopy (>5 m high)		
Trees and saplings >5 m high	(0) 1 2 3 4	(0) 1 2 3 4
Lower Canopy (0.5 m-5 m high)		
All vegetation 0.5 m to 5 m	(0) 1 2 3 4	(0) 1 2 3 4
Ground Cover (<0.5 m high)		
Woody shrubs & saplings <0.5 m	0 (1) 2 3 4	0 (1) 2 3 4
Herbs/ grasses	(0) 1 2 3 4	(0) 1 2 3 4
Barren, bare soil/ duff	0 1 2 3 (4)	0 1 2 3 (4)

Instream Habitat Complexity

0 = Absent (0%)
1 = Sparse (<10%)
2 = Moderate (10-40%)
3 = Heavy (40-75%)
4 = Very Heavy (>75%)

Filamentous Algae	(0) 1 2 3 4
Aquatic Macrophytes/ Emergent Vegetation	(0) 1 2 3 4
Boulders	0 1 (2) 3 4
Woody Debris >0.3 m	(0) 1 2 3 4
Woody Debris <0.3 m	(0) 1 2 3 4
Undercut Banks	(0) 1 2 3 4
Overhang. Vegetation	(0) 1 2 3 4
Live Tree Roots	(0) 1 2 3 4
Artificial Structures	(0) 1 2 3 4

Densiometer Readings (0-17)
count covered dots

Center Left	4
Center Upstream	0
Center Right	1
Center Downstream	0
Optional	
Left Bank	—
Right Bank	—

Human Influence
(circle only the closest to wetted channel)

0 = Not Present;
B = On Bank;
C = Between Bank & 10m from Channel;
P = >10m+<50m from Channel;
Channel (record Yes or No)

	Left Bank	Channel	Right Bank
Walls/ Rip-rap/ Dams	P C B (0)	Y (N)	(0) B C P
Buildings	P C B (0)	Y N	(0) B C P
Pavement/ Cleared Lot	P C B (0)		(0) B C P
Road/ Railroad	P C B (0)	Y N	(0) B C P
Pipes (Inlet/ Outlet)	P C B (0)	Y N	(0) B C P
Landfill/ Trash	P C B (0)	Y N	(0) B C P
Park/ Lawn	P C B (0)		(0) B C P
Row Crop	P C B (0)		(0) B C P
Pasture/ Range	P C B (0)		(0) B C P
Logging Operations	P C B (0)		(0) B C P
Mining Activity	P C B (0)	Y N	(0) B C P
Vegetation Management	P C B (0)		(0) B C P
Bridges/ Abutments	P C B (0)	Y N	(0) B C P
Orchards/ Vineyards	P C B (0)		(0) B C P

Bank Stability
(score zone 5m upstream and 5m downstream of transect between bankfull - wetted width)

Left Bank	eroded	vulnerable	(stable)
Right Bank	eroded	vulnerable	(stable)

TAKE PHOTOGRAPHS
(check box if taken & record photo code)

Downstream (**required**) 169	☒
Upstream (**required**) 170	☒

Inter-Transect: FG

Wetted Width (m): 4.5

Inter-Transect Substrates

Position	Dist from LB (m)	Depth (cm)	mm/ size class	% Cobble Embed.	CPOM	Microalgae Thickness Code	Macroalgae Attached	Macroalgae Unattached	Macrophytes
Left Bank	.5	30	COB	10	P (A)	1	P (A) D	P (A) D	P (A) D
Left Center	2	54	BLD	—	P (A)	2	P (A) D	P (A) D	P (A) D
Center	2.5	35	BLD	—	P (A)	2	P (A) D	P (A) D	P (A) D
Right Center	3	90	BLD	—	P (A)	1	P (A) D	P (A) D	P (A) D
Right Bank	3.5	28	BLD	—	P (A)	3	P (A) D	P (A) D	P (A) D
	Note: Substrate sizes can be recorded either as direct measures of the median axis of each particle or one of the size class categories listed on the supplemental page (direct measurements preferred)								

Microalgae Thickness Codes
0 = No microalgae present. Feels rough, not slimy.
1 = Present but not visible. Feels slimy.
2 = Present and visible but <1mm. Rubbing fingers on surface produces a brownish tint on them, scraping leaves visible trail.
3 = 1-5mm.
4 = 5-20mm.
5 = >20mm.
UD = Cannot determine if microalgae present, substrate too small or covered with silt (formerly Z code).
D = Dry, not assessed

Flow Habitats (% Select transect flow habitats)

Channel Type	%
Cascade/Falls	30
Rapid	
Riffle	
Run	
Glide	70
Pool	
Dry	

SWAMP Stream Habitat Characterization Form FULL VERSION Revision Date: February 9th, 2011

Site Code:	Site Name: N4R abv M4R	Date: __/__/2011
Wetted Width (m): 2	Bankfull Width (m): 20	Bankfull Height (m): 1.5

Transect G

Transect Substrates

Position	Dist from LB (m)	Depth (cm)	mm/ size class	% Cobble Embed.	CPOM	Microalgae Thickness Code	Macroalgae Attached	Macroalgae Unattached	Macrophytes
Left Bank	.5	7	COB	0	P (A)	1	P (A) D	P (A) D	P (A) D
Left Center	.75	11	COB	30	P (A)	2	P (A) D	P (A) D	P (A) D
Center	1	25	COB	0	P (A)	1	P (A) D	P (A) D	P (A) D
Right Center	1.5	35	BLD	—	P (A)	0	P (A) D	P (A) D	P (A) D
Right Bank	1.75	23	BLD	—	P (A)	0	P (A) D	P (A) D	P (A) D
	Note: Substrate sizes can be recorded either as direct measures of the median axis of each particle or one of the size class categories listed on the supplemental page (direct measurements preferred)								

Microalgae Thickness Codes
0 = No microalgae present, Feels rough, not slimy;
1 = Present but not visible, Feels slimy;
2 = Present and visible but <1mm, Rubbing fingers on surface produces a brownish tint on them, scraping leaves visible trail;
3 = 1-5mm;
4 = 5-20mm;
5 = >20mm;
UD = Cannot determine if microalgae present, substrate too small or covered with silt (formerly Z code)
D = Dry, not assessed

Riparian Vegetation
(facing downstream)

0 = Absent (0%) 3 = Heavy (40-75%)
1 = Sparse (<10%) 4 = Very Heavy (>75%)
2 = Moderate (10-40%)

Vegetation Class	Left Bank	Right Bank
Upper Canopy (>5 m high)		
Trees and saplings >5 m high	(0) 1 2 3 4	(0) 1 2 3 4
Lower Canopy (0.5 m-5 m high)		
All vegetation 0.5 m to 5 m	(0) 1 2 3 4	(0) 1 2 3 4
Ground Cover (<0.5 m high)		
Woody shrubs & saplings <0.5 m	0 (1) 2 3 4	0 (1) 2 3 4
Herbs/ grasses	0 (1) 2 3 4	0 (1) 2 3 4
Barren, bare soil/ duff	0 1 2 3 (4)	0 1 2 3 (4)

Instream Habitat Complexity

0 = Absent (0%)
1 = Sparse (<10%)
2 = Moderate (10-40%)
3 = Heavy (40-75%)
4 = Very Heavy (>75%)

Filamentous Algae	(0) 1 2 3 4
Aquatic Macrophytes/ Emergent Vegetation	(0) 1 2 3 4
Boulders	0 1 2 (3) 4
Woody Debris >0.3 m	(0) 1 2 3 4
Woody Debris <0.3 m	(0) 1 2 3 4
Undercut Banks	(0) 1 2 3 4
Overhang. Vegetation	(0) 1 2 3 4
Live Tree Roots	(0) 1 2 3 4
Artificial Structures	(0) 1 2 3 4

Densiometer Readings (0-17)
count covered dots

Center Left	0
Center Upstream	0
Center Right	2
Center Downstream	0
Optional	
Left Bank	1
Right Bank	

Human Influence
(circle only the closest to wetted channel)

0 = Not Present;
B = On Bank;
C = Between Bank & 10m from Channel;
P = >10m+<50m from Channel;
Channel (record Yes or No)

	Left Bank	Channel	Right Bank
Walls/ Rip-rap/ Dams	P C B (0)	Y (N)	(0) B C P
Buildings	P C B 0	Y N	0 B C P
Pavement/ Cleared Lot	P C B 0		0 B C P
Road/ Railroad	P C B 0	Y N	0 B C P
Pipes (Inlet/ Outlet)	P C B 0	Y N	0 B C P
Landfill/ Trash	P C B 0	Y N	0 B C P
Park/ Lawn	P C B 0		0 B C P
Row Crop	P C B 0		0 B C P
Pasture/ Range	P C B 0		0 B C P
Logging Operations	P C B 0		0 B C P
Mining Activity	P C B 0	Y N	0 B C P
Vegetation Management	P C B 0		0 B C P
Bridges/ Abutments	P C B 0	Y N	0 B C P
Orchards/ Vineyards	P C B 0		0 B C P

Bank Stability
(score zone 5m upstream and 5m downstream of transect between bankfull - wetted width)

Left Bank	eroded	vulnerable	stable
Right Bank	eroded	vulnerable	stable

Inter-Transect: GH

Wetted Width (m): 8

Inter-Transect Substrates

Position	Dist from LB (m)	Depth (cm)	mm/ size class	% Cobble Embed	CPOM	Microalgae Thickness Code	Macroalgae Attached	Macroalgae Unattached	Macrophytes
Left Bank	1.5	43	COB	0	P (A)	0	P (A) D	P (A) D	P (A) D
Left Center	2	23	FB	—	P (A)	0	P (A) D	P (A) D	P (A) D
Center	4	32	CB	—	P (A)	1	P (A) D	P (A) D	P (A) D
Right Center	6	29	CB	—	P (A)	2	P (A) D	P (A) D	P (A) D
Right Bank	7.8	35	COB	20	P (A)	1	P (A) D	P (A) D	P (A) D

Note: Substrate sizes can be recorded either as direct measures of the median axis of each particle or one of the size class categories listed on the supplemental page (direct measurements preferred).

Microalgae Thickness Codes
0 = No microalgae present. Feels rough, not slimy;
1 = Present but not visible. Feels slimy;
2 = Present and visible but <1mm. Rubbing fingers on surface produces a brownish tint on them; scraping leaves visible trail;
3 = 1-5mm;
4 = 5-20mm;
5 = >20mm;
UD = Cannot determine if microalgae present, substrate too small or covered with silt (formerly Z code);
D = Dry, not assessed

Flow Habitats

(% between transects, visual estimate)

Channel Type	%
Cascade/Falls	20
Rapid	
Riffle	20
Run	
Glide	20
Pool	40
Dry	

Site Code:	Site Name: NYR abv MYR		Date: ___/___/2011
Wetted Width (m): 3.5	Bankfull Width (m): 15	Bankfull Height (m): 1.5	**Transect H**

Transect Substrates

Position	Dist from LB (m)	Depth (cm)	mm/ size class	% Cobble Embed.	CPOM	Microalgae Thickness Code	Macroalgae Attached	Macroalgae Unattached	Macrophytes
Left Bank	.5	12	COB	0	P (A)	2	P (A) D	P (A) D	P (A) D
Left Center	1	17	BLD	—	P (A)	3	(P) A D	P (A) D	P (A) D
Center	1.5	23	BLD	—	P (A)	2	P (A) D	P (A) D	P (A) D
Right Center	2.5	1	BLD	—	P (A)	2	P (A) D	P (A) D	P (A) D
Right Bank	3	10	BLD	—	P (A)	1	P (A) D	P (A) D	P (A) D

Note: Substrate sizes can be recorded either as direct measures of the median axis of each particle or one of the size class categories listed on the supplemental page (direct measurements preferred)

Microalgae Thickness Codes
0 = No microalgae present, Feels rough, not slimy;
1 = Present but not visible, Feels slimy;
2 = Present and visible but <1mm; Rubbing fingers on surface produces a brownish tint on them, scraping leaves visible trail;
3 = 1-5mm;
4 = 5-20mm;
5 = >20mm;
UD = Cannot determine if microalgae present, substrate too small or covered with silt (formerly Z code)
D = Dry, not assessed

Riparian Vegetation (facing downstream)

0 = Absent (0%) 1 = Sparse (<10%) 2 = Moderate (10-40%) 3 = Heavy (40-75%) 4 = Very Heavy (>75%)

Vegetation Class	Left Bank	Right Bank
Upper Canopy (>5 m high)		
Trees and saplings >5 m high	(0) 1 2 3 4	(0) 1 2 3 4
Lower Canopy (0.5 m-5 m high)		
All vegetation 0.5 m to 5 m	(0) 1 2 3 4	(0) 1 2 3 4
Ground Cover (<0.5 m high)		
Woody shrubs & saplings <0.5 m	0 1 (2) 3 4	(0) 1 2 3 4
Herbs/ grasses	(0) 1 2 3 4	(0) 1 2 3 4
Barren, bare soil/ duff	0 1 2 3 (4)	0 1 2 3 (4)

Instream Habitat Complexity

0 = Absent (0%) 1 = Sparse (<10%) 2 = Moderate (10-40%) 3 = Heavy (40-75%) 4 = Very Heavy (>75%)

Filamentous Algae	(0) 1 2 3 4
Aquatic Macrophytes/ Emergent Vegetation	(0) 1 2 3 4
Boulders	0 1 (2) 3 4
Woody Debris >0.3 m	(0) 1 2 3 4
Woody Debris <0.3 m	(0) 1 2 3 4
Undercut Banks	(0) 1 2 3 4
Overhang. Vegetation	(0) 1 2 3 4
Live Tree Roots	(0) 1 2 3 4
Artificial Structures	(0) 1 2 3 4

Densiometer Readings (0-17)

count covered dots

Center Left	3
Center Upstream	0
Center Right	2
Center Downstream	0
Optional	
Left Bank	—
Right Bank	—

Human Influence

(circle only the closest to wetted channel)

0 = Not Present;
B = On Bank;
C = Between Bank & 10m from Channel;
P = >10m+<50m from Channel;
Channel (record Yes or No)

	Left Bank	Channel	Right Bank
Walls/ Rip-rap/ Dams	P C B (0)	Y (N)	(0) B C P
Buildings	P C B (0)	Y (N)	(0) B C P
Pavement/ Cleared Lot	P C B (0)		(0) B C P
Road/ Railroad	P C B (0)	Y (N)	(0) B C P
Pipes (Inlet/ Outlet)	P C B (0)	Y (N)	(0) B C P
Landfill/ Trash	P C B (0)	Y (N)	(0) B C P
Park/ Lawn	P C B (0)		(0) B C P
Row Crop	P C B (0)		(0) B C P
Pasture/ Range	P C B (0)		(0) B C P
Logging Operations	P C B (0)		(0) B C P
Mining Activity	P C B (0)	Y (N)	(0) B C P
Vegetation Management	P C B (0)		(0) B C P
Bridges/ Abutments	P C B (0)	Y (N)	(0) B C P
Orchards/ Vineyards	P C B (0)		(0) B C P

Bank Stability

(score zone 5m upstream and 5m downstream of transect between bankfull - wetted width)

Left Bank	eroded	vulnerable	(stable)
Right Bank	eroded	vulnerable	(stable)

Inter-Transect: HI

Wetted Width (m): 12

Inter-Transect Substrates

Position	Dist from LB (m)	Depth (cm)	mm/ size class	% Cobble Embed.	CPOM	Microalgae Thickness Code	Macroalgae Attached	Macroalgae Unattached	Macrophytes
Left Bank	.5	11	COB	40	(P) A	2	P (A) D	P (A) D	P (A) D
Left Center	3	41	BLD	—	P (A)	2	P (A) D	P (A) D	P (A) D
Center	6	65	BLD	—	P (A)	3	P (A) D	P (A) D	P (A) D
Right Center	9	85	FG	—	P (A)	—	P (A) D	P (A) D	P (A) D
Right Bank	11.5	41	BLD	—	P (A)	3	P (A) D	P (A) D	P (A) D
	Note: Substrate sizes can be recorded either as direct measures of the median axis of each particle or one of the size class categories listed on the supplemental page (direct measurements preferred)								

Microalgae Thickness Codes
0 = No microalgae present. Feels rough, not slimy;
1 = Present but not visible. Feels slimy;
2 = Present and visible but <1mm. Rubbing fingers on surface produces a brownish tint on them, scraping leaves visible trail.
3 = 1-5mm;
4 = 5-20mm;
5 = >20mm;
UD = Cannot determine if microalgae present, substrate too small or covered with silt (formerly Z code).
D = Dry, not assessed

Flow Habitats

Channel Type	%
Cascade/Falls	
Rapid	
Riffle	10
Run	
Glide	
Pool	90
Dry	

SWAMP Stream Habitat Characterization Form FULL VERSION Revision Date: February 9th, 2011

Site Code:	Site Name: NYR abv MYR	Date: ___/___/2011
Wetted Width (m): 5	Bankfull Width (m): 21	Bankfull Height (m): 2

Transect I

Transect Substrates

Position	Dist from LB (m)	Depth (cm)	mm/ size class	% Cobble Embed	CPOM	Microalgae Thickness Code	Macroalgae Attached	Macroalgae Unattached	Macrophytes
Left Bank	1.5	12	BLD	—	(P) A	2	P (A) D	P (A) D	P (A) D
Left Center	2	12	BLD	—	P (A)	2	P (A) D	P (A) D	P (A) D
Center	2.5	21	BLD	—	P (A)	1	P (A) D	P (A) D	P (A) D
Right Center	3.5	5	BLD	—	(P) A	1	P (A) D	P (A) D	P (A) D
Right Bank	4.5	0	BLD	—	(P) A	2	(P) A D	P (A) D	P (A) D

Note: Substrate sizes can be recorded either as direct measures of the median axis of each particle or one of the size class categories listed on the supplemental page (direct measurements preferred)

Microalgae Thickness Codes
0 = No microalgae present. Feels rough, not slimy;
1 = Present but not visible. Feels slimy;
2 = Present and visible but <1mm. Rubbing fingers on surface produces a brownish tint on them, scraping leaves visible trail;
3 = 1-5mm;
4 = 5-20mm;
5 = >20mm;
UD = Cannot determine if microalgae present, substrate too small or covered with silt (formerly Z code);
D = Dry, not assessed

Riparian Vegetation (facing downstream)

0 = Absent (0%) 3 = Heavy (40-75%)
1 = Sparse (<10%) 4 = Very Heavy (>75%)
2 = Moderate (10-40%)

Vegetation Class	Left Bank	Right Bank
Upper Canopy (>5 m high)		
Trees and saplings >5 m high	(0) 1 2 3 4	(0) 1 2 3 4
Lower Canopy (0.5 m-5 m high)		
All vegetation 0.5 m to 5 m	(0) 1 2 3 4	(0) 1 2 3 4
Ground Cover (<0.5 m high)		
Woody shrubs & saplings <0.5 m	0 1 (2) 3 4	0 (1) 2 3 4
Herbs/ grasses	(0) 1 2 3 4	(0) 1 2 3 4
Barren, bare soil/ duff	0 1 2 3 (4)	0 1 2 3 (4)

Instream Habitat Complexity

0 = Absent (0%)
1 = Sparse (<10%)
2 = Moderate (10-40%)
3 = Heavy (40-75%)
4 = Very Heavy (>75%)

Filamentous Algae	(0) 1 2 3 4
Aquatic Macrophytes/ Emergent Vegetation	(0) 1 2 3 4
Boulders	0 1 (2) 3 4
Woody Debris >0.3 m	(0) 1 2 3 4
Woody Debris <0.3 m	(0) 1 2 3 4
Undercut Banks	(0) 1 2 3 4
Overhang. Vegetation	(0) 1 2 3 4
Live Tree Roots	(0) 1 2 3 4
Artificial Structures	(0) 1 2 3 4

Densiometer Readings (0-17)

count covered dots

Center Left	0
Center Upstream	0
Center Right	2
Center Downstream	0
Optional	
Left Bank	—
Right Bank	—

Human Influence (circle only the closest to wetted channel)

0 = Not Present;
B = On Bank;
C = Between Bank & 10m from Channel;
P = >10m+<50m from Channel;
Channel (record Yes or No)

	Left Bank	Channel	Right Bank
Walls/ Rip-rap/ Dams	P C B (0)	Y (N)	(0) B C P
Buildings	P C B (0)	Y N	(0) B C P
Pavement/ Cleared Lot	P C B (0)		(0) B C P
Road/ Railroad	P C B (0)	Y N	(0) B C P
Pipes (Inlet/ Outlet)	P C B (0)	Y N	(0) B C P
Landfill/ Trash	P C B (0)	Y N	(0) B C P
Park/ Lawn	P C B (0)		(0) B C P
Row Crop	P C B (0)		(0) B C P
Pasture/ Range	P C B (0)		(0) B C P
Logging Operations	P C B (0)		(0) B C P
Mining Activity	P C B (0)	Y N	(0) B C P
Vegetation Management	P C B (0)		(0) B C P
Bridges/ Abutments	P C B (0)	Y N	(0) B C P
Orchards/ Vineyards	P C B (0)		(0) B C P

Bank Stability

(score zone 5m upstream and 5m downstream of transect between bankfull - wetted width)

Left Bank	eroded	vulnerable	(stable)
Right Bank	eroded	vulnerable	(stable)

Inter-Transect: IJ

Wetted Width (m): 14

Inter-Transect Substrates

Position	Dist from LB (m)	Depth (cm)	mm/ size class	% Cobble Embed.	CPOM	Microalgae Thickness Code	Macroalgae Attached	Macroalgae Unattached	Macrophytes
Left Bank	.5	35	BLD	—	P (A)	3	P (A) D	P (A) D	P (A) D
Left Center	3.5	56	COB	20	P (A)	2	P (A) D	P (A) D	P (A) D
Center	7	88	BLD	—	P (A)	2	P (A) D	P (A) D	P (A) D
Right Center	10.5	85	BED	—	P (A)	3	P (A) D	P (A) D	P (A) D
Right Bank	13.5	60	BLD	—	(P) A	4 3	P (A) D	P (A) D	P A D

Note: Substrate sizes can be recorded either as direct measures of the median axis of each particle or one of the size class categories listed on the supplemental page (direct measurements preferred)

Microalgae Thickness Codes
0 = No microalgae present. Feels rough, not slimy;
1 = Present but not visible. Feels slimy;
2 = Present and visible but <1mm. Rubbing fingers on surface produces a brownish tint on them, scraping leaves visible trail;
3 = 1-5mm;
4 = 5-20mm;
5 = >20mm;
UD = Cannot determine if microalgae present, substrate too small or covered with silt (formerly Z code);
D = Dry, not assessed

Flow Habitats

Channel Type	%
Cascade/ Falls	
Rapid	
Riffle	10
Run	
Glide	
Pool	90
Dry	

SWAMP Stream Habitat Characterization Form *FULL VERSION* *Revision Date: February 9th, 2011*

Site Code:	Site Name: NYE abv MYR	Date: __/__/2011
Wetted Width (m): 13	Bankfull Width (m): 18 / Bankfull Height (m): 1.5	**Transect J**

Transect Substrates

Position	Dist from LB (m)	Depth (cm)	mm/ size class	% Cobble Embed.	CPOM	Microalgae Thickness Code	Macroalgae Attached	Macroalgae Unattached	Macrophytes
Left Bank	.5	16	COB	30	(P) A	2	P (A) D	P (A) D	P (A) D
Left Center	3	29	COB	0	P (A)	3	P (A) D	P (A) D	P (A) D
Center	6.5	0	BED	—	P (A)	2	(P) A D	P (A) D	(P) A D
Right Center	9.5	58	BLD	—	(P) A	2	(P) A D	P (A) D	P (A) D
Right Bank	12.5	32	COB	0	(P) A	2	(P) A D	P (A) D	P (A) D
	Note: Substrate sizes can be recorded either as direct measures of the median axis of each particle or one of the size class categories listed on the supplemental page (direct measurements preferred).								

Microalgae Thickness Codes
0 = No microalgae present. Feels rough, not slimy;
1 = Present but not visible. Feels slimy;
2 = Present and visible but <1mm. Rubbing fingers on surface produces a brownish tint on them, scraping leaves visible trail;
3 = 1-5mm;
4 = 5-20mm;
5 = >20mm;
UD = Cannot determine if microalgae present, substrate too small or covered with silt (formerly Z code);
D = Dry, not assessed

RIPARIAN VEGETATION (facing downstream)
0 = Absent (0%) 3 = Heavy (40-75%)
1 = Sparse (<10%) 4 = Very Heavy (>75%)
2 = Moderate (10-40%)

Vegetation Class	Left Bank	Right Bank
Upper Canopy (>5 m high)		
Trees and saplings >5 m high	(0) 1 2 3 4	(0) 1 2 3 4
Lower Canopy (0.5 m-5 m high)		
All vegetation 0.5 m to 5 m	0 1 2 3 4	0 1 2 3 4
Ground Cover (<0.5 m high)		
Woody shrubs & saplings <0.5 m	0 (1) 2 3 4	0 (1) 2 3 4
Herbs/ grasses	0 (1) 2 3 4	0 (1) 2 3 4
Barren, bare soil/ duff	0 1 2 3 (4)	0 1 2 3 (4)

INSTREAM HABITAT COMPLEXITY
0 = Absent (0%)
1 = Sparse (<10%)
2 = Moderate (10-40%)
3 = Heavy (40-75%)
4 = Very Heavy (>75%)

Filamentous Algae	(0) 1 2 3 4
Aquatic Macrophytes/ Emergent Vegetation	(0) 1 2 3 4
Boulders	0 1 2 (3) 4
Woody Debris >0.3 m	(0) 1 2 3 4
Woody Debris <0.3 m	0 (1) 2 3 4
Undercut Banks	(0) 1 2 3 4
Overhang. Vegetation	(0) 1 2 3 4
Live Tree Roots	(0) 1 2 3 4
Artificial Structures	(0) 1 2 3 4

DENSIOMETER READINGS (0-17)
count covered dots

Center Left	5
Center Upstream	1
Center Right	6
Center Downstream	6
Optional	
Left Bank	—
Right Bank	—

HUMAN INFLUENCE (circle only the closest to wetted channel)
0 = Not Present;
B = On Bank;
C = Between Bank & 10m from Channel;
P = >10m+<50m from Channel;
Channel (record Yes or No)

	Left Bank	Channel	Right Bank
Walls/ Rip-rap/ Dams	P C B (0)	Y (N)	(0) B C P
Buildings	P C B 0	Y N	0 B C P
Pavement/ Cleared Lot	P C B 0		0 B C P
Road/ Railroad	P C B 0	Y N	0 B C P
Pipes (Inlet/ Outlet)	P C B 0	Y N	0 B C P
Landfill/ Trash	P C B 0	Y N	0 B C P
Park/ Lawn	P C B 0		0 B C P
Row Crop	P C B 0		0 B C P
Pasture/ Range	P C B 0		0 B C P
Logging Operations	P C B 0		0 B C P
Mining Activity	P C B 0	(N)	0 B C P
Vegetation Management	P C B 0		0 B C P
Bridges/ Abutments	P C B 0	Y N	0 B C P
Orchards/ Vineyards	P C B 0		0 B C P

BANK STABILITY
(assess along 5m upstream and 5m downstream of transect between bankfull width)

Left Bank	eroded	vulnerable	(stable)
Right Bank	eroded	vulnerable	(stable)

Inter-Transect: JK

Wetted Width (m): 4

Inter-Transect Substrates

Position	Dist from LB (m)	Depth (cm)	mm/ size class	% Cobble Embed.	CPOM	Microalgae Thickness Code	Macroalgae Attached	Macroalgae Unattached	Macrophytes
Left Bank	.5	5	BLD	—	P A	2	P (A) D	P (A) D	P (A) D
Left Center	1	19	GOB	0	P (A)	3	P (A) D	P (A) D	P (A) D
Center	2	19	GOB	30	P (A)	2	P (A) D	P (A) D	P (A) D
Right Center	3	17	GOB	0	P (A)	2	P (A) D	P (A) D	P (A) D
Right Bank	3.5	15	F6	—	P (A)	0	P (A) D	P (A) D	P (A) D

Note: Substrate sizes can be recorded either as direct measures of the median axis of each particle or one of the size class categories listed on the supplemental page (direct measurements preferred)

Microalgae Thickness Codes
0 = No microalgae present. Feels rough, not slimy;
1 = Present but not visible. Feels slimy;
2 = Present and visible but <1mm. Rubbing fingers on surface produces a brownish tint on them, scraping leaves visible trail;
3 = 1-5mm;
4 = 5-20mm;
5 = >20mm;
UD = Cannot determine if microalgae present, substrate too small or covered with silt (formerly Z code).
D = Dry, not assessed

Flow Habitats

Channel Type	%
Cascade/ Falls	
Rapid	
Riffle	60
Run	
Glide	
Pool	40
Dry	

SWAMP Stream Habitat Characterization Form FULL VERSION Revision Date: February 9th, 2011

Site Code:	Site Name: NTR abv MYR	Date: ___/___/2011
Wetted Width (m): 8	Bankfull Width (m):	Bankfull Height (m):

Transect K

Transect Substrates

Position	Dist from LB (m)	Depth (cm)	mm/ size class	% Cobble Embed.	CPOM	Microalgae Thickness Code	Macroalgae Attached	Macroalgae Unattached	Macrophytes
Left Bank	.5	14	BLD	—	P (A)	3	(P) A D	P (A) D	P (A) D
Left Center	2	21	BED	—	P (A)	3	(P) A D	P (A) D	P (A) D
Center	4	22	BLD	—	P (A)	2	P (A) D	P (A) D	P (A) D
Right Center	6	22	BLD	—	P (A)	2	P (A) D	P (A) D	P (A) D
Right Bank	7.5	11	BLD	—	(P) A		P A D	P A D	P (A) D
	Note: Substrate sizes can be recorded either as direct measures of the median axis of each particle or one of the size class categories listed on the supplemental page (direct measurements preferred)								

Microalgae Thickness Codes
0 = No microalgae present. Feels rough, not slimy;
1 = Present but not visible. Feels slimy;
2 = Present and visible but <1mm. Rubbing fingers on surface produces a brownish tint on them, scraping leaves visible trail;
3 = 1-5mm;
4 = 5-20mm;
5 = >20mm;
U = Cannot determine if microalgae present, substrate too small or covered with silt (formerly Z code);
D = Dry, not assessed

Riparian Vegetation
(facing downstream)

0 = Absent (0%) 3 = Heavy (40-75%)
1 = Sparse (<10%) 4 = Very Heavy (>75%)
2 = Moderate (10-40%)

Vegetation Class	Left Bank	Right Bank
Upper Canopy (>5 m high)		
Trees and saplings >5 m high	0 (1) 2 3 4	0 (1) 2 3 4
Lower Canopy (0.5 m-5 m high)		
All vegetation 0.5 m to 5 m	0 (1) 2 3 4	0 1 (2) 3 4
Ground Cover (<0.5 m high)		
Woody shrubs & saplings <0.5 m	0 (1) 2 3 4	(0) 1 2 3 4
Herbs/ grasses	0 1 (2) 3 4	0 1 2 (3) 4
Barren, bare soil/ duff	0 1 2 3 (4)	0 1 2 3 (4)

Instream Habitat Complexity

0 = Absent (0%)
1 = Sparse (<10%)
2 = Moderate (10-40%)
3 = Heavy (40-75%)
4 = Very Heavy (>75%)

Filamentous Algae	(0) 1 2 3 4
Aquatic Macrophytes/ Emergent Vegetation	(0) 1 2 3 4
Boulders	0 1 (2) 3 4
Woody Debris >0.3 m	(0) 1 2 3 4
Woody Debris <0.3 m	(0) 1 2 3 4
Undercut Banks	(0) 1 2 3 4
Overhang. Vegetation	(0) 1 2 3 4
Live Tree Roots	(0) 1 2 3 4
Artificial Structures	(0) 1 2 3 4

Densiometer Readings (0-17)
count covered dots

Center Left	6
Center Upstream	2
Center Right	0
Center Downstream	8
Optional	
Left Bank	—
Right Bank	—

Human Influence
(circle only the closest to wetted channel)

0 = Not Present;
B = On Bank;
C = Between Bank & 10m from Channel;
P = >10m+<50m from Channel;
Channel (record Yes or No)

	Left Bank	Channel	Right Bank
Walls/ Rip-rap/ Dams	P C B (0)	Y (N)	(0) B C P
Buildings	P C B (0)	Y N	(0) B C P
Pavement/ Cleared Lot	P C B (0)		(0) B C P
Road/ Railroad	P C B (0)	Y N	(0) B C P
Pipes (Inlet/ Outlet)	P C B (0)	Y N	(0) B C P
Landfill/ Trash	P C B (0)	Y N	(0) B C P
Park/ Lawn	P C B (0)		(0) B C P
Row Crop	P C B (0)		(0) B C P
Pasture/ Range	P C B (0)		(0) B C P
Logging Operations	P C B (0)		(0) B C P
Mining Activity	P C B (0)	Y N	(0) B C P
Vegetation Management	P C B (0)		(0) B C P
Bridges/ Abutments	P C B (0)	Y N	(0) B C P
Orchards/ Vineyards	P C B (0)		(0) B C P

Bank Stability
(score zone 5m upstream and 5m downstream of transect between bankfull - wetted width)

Left Bank	eroded	vulnerable	(stable)
Right Bank	eroded	vulnerable	(stable)

TAKE PHOTOGRAPHS
(check box if taken & record photo code)

Downstream (**required**) ☒
171

Upstream (**optional**) ☒
172

Site Code:	Date: ___/___/ 2011

FULL FORM

BENTHIC INVERTEBRATE SAMPLES

Collection Method (indicate standard or margin-center-margin)			Replicate	# jars
RWB (standard)	**RWB** (MCM)	**TRC**	1	
RWB (standard)	**RWB** (MCM)	**TRC**	2	
RWB (standard)	**RWB** (MCM)	**TRC**		
RWB (standard)	**RWB** (MCM)	**TRC**		

Field Notes/ Comments:

Chemistry Equipment ID

Analyte	Equipment
pH	
temperature	
dissolved oxygen	
specific conductance	
salinity	
alkalinity	
turbidity	
silica	
Velocity	

ALGAE SAMPLES

Collection Method (circle one or write new method if applicable)	SWAMP EMAP	SWAMP EMAP	SWAMP EMAP	SWAMP EMAP
Collection Device (sum # of transects per device)	Rep. 1	Rep. 2	Rep.	Rep.
Rubber Delimiter (area=12.6cm^2)				
PVC Delimiter (area=12.6cm^2)				
Syringe Scrubber (area=5.3cm^2)				
Other area=				
Number of transects sampled (0-11)				
Composite Volume (mL)				
Assemblage ID volume **(diatoms)** (50 mL tube)				
Assemblage ID volume **(soft algae)** (50 mL tube)				
Check if Qualitative Algae sample was collected with soft algae/diatom sample (required even if macroalgae not visible)	☐	☐	☐	☐
Check if a water chem. **integrated** sample was collected (chl, AFDM)	☐	☐	☐	☐
Chlorophyll a volume use GF/F filter (25 mL **(preferred volume)**				
Ash Free Dry Mass (AFDM) volume use GF/F filter (25 mL **(preferred vol)**				

Water and Sediment Chemistry Samples

Check if a WATER chemistry **grab** sample was collected (nutrients, SSC, etc.)	☐
Check if a DUPLICATE WATER chemistry **grab** sample was collected	☐
Check if a SEDIMENT chemistry sample was collected	☐
Check if a DUPLICATE SEDIMENT chemistry sample was collected	☐

Sediment Collection Device: SCOOP CORE GRAB

Material: Stainless Steel Polyethylene Polycarbonate Other

Sediment Collection Depth (cm): 2 or 5

Create Lab Collection records for each checked box for integrated and grab water chemistry samples

ADDITIONAL PHOTOGRAPHS

Description	Photo Code	Description	Photo Code

Flow Habitat Type	DESCRIPTION
Cascades	Short, high gradient drop in stream bed elevation often accompanied by boulders and considerable turbulence
Falls	High gradient drop in elevation of the stream bed associated with an abrupt change in the bedrock
Rapids	Sections of stream with swiftly flowing water and considerable surface turbulence. Rapids tend to have larger substrate sizes than riffles
Riffles	Shallow sections where the water flows over coarse stream bed particles that create mild to moderate surface turbulence; (< 0.5 m deep, > 0.3 m/s).
Runs	Long, relatively straight, low-gradient sections without flow obstructions. The stream bed is typically even and the water flows faster than it does in a pool; (> 0.5 m deep, > 0.3 m/s). A **step-run** is a series of runs separated by short riffles or flow obstructions that cause discontinuous breaks in slope
Glides	A section of stream with little or no turbulence, but faster velocity than pools; (< 0.5 m deep, < 0.3 m/s)
Pools	A reach of stream that is characterized by deep, low-velocity water and a smooth surface; (> 0.5 m deep, < 0.3 m/s)

Size Class Code	Size Class Range	Size Class Description	Common Size Reference
RS	> 4 m	bedrock, smooth	larger than a car
RR	> 4 m	bedrock, rough	larger than a car
XB	1 - 4 m	boulder, large	meter stick to car
SB	25 cm - 1.0 m	boulder, small	basketball to meter stick
CB	64 - 250 mm	cobble	tennis ball to basketball
GC	16 - 64 mm	gravel, coarse	marble to tennis ball
GF	2 – 16 mm	gravel, fine	ladybug to marble
SA	0.06 – 2 mm	sand	gritty to ladybug
FN	< 0.06 mm	fines	not gritty
HP	< 0.06 mm	hardpan (consolidated fines)	
WD	NA	wood	
RC	NA	concrete/ asphalt	
OT	NA	other	

BANK STABILITY Although this measure of the degree of erosive potential is subjective, it can provide clues to the erosive potential of the banks within the reach. Assign the category whose description best fits the conditions in the area between the wetted channel and bankfull channel (see figure below)	
Eroded	Banks show obvious signs of erosion from the current or previous water year; banks are usually bare or nearly bare
Vulnerable	Banks have some vegetative protection (usually annual growth), but not enough to prevent erosion during flooding
Stable	Bank vegetation has well-developed roots that protect banks from erosion; alternately, bedrock or artificial structures (e.g., concrete/ rip-rap) prevent bank erosion

CPOM/ COBBLE EMBEDDEDNESS

CPOM: Record presence (P) or absence (A) of coarse particulate organic matter (>1.0 mm particles) within 1 cm of each substrate particle

Cobble Embeddedness: Visually estimate % embedded by fine particles (record to nearest 5%)

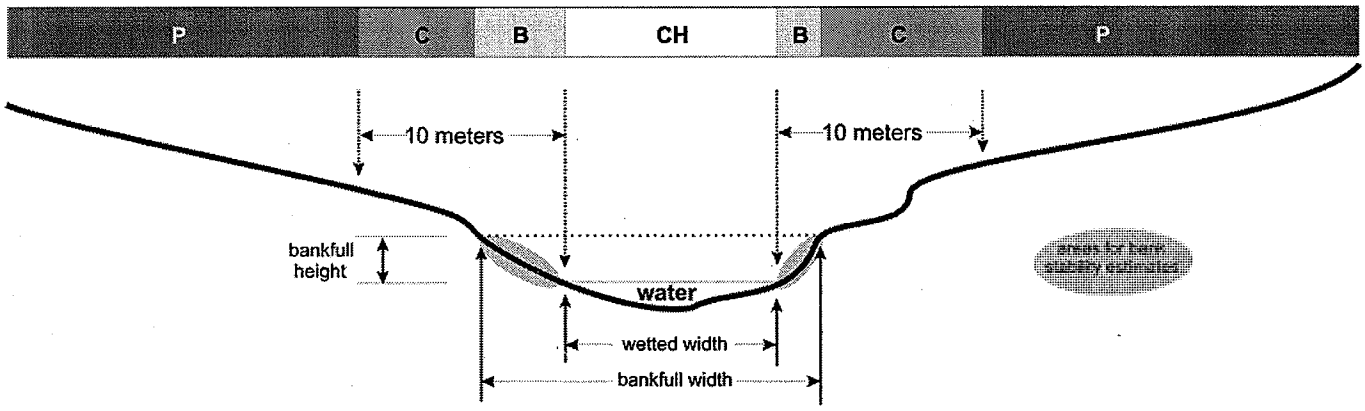


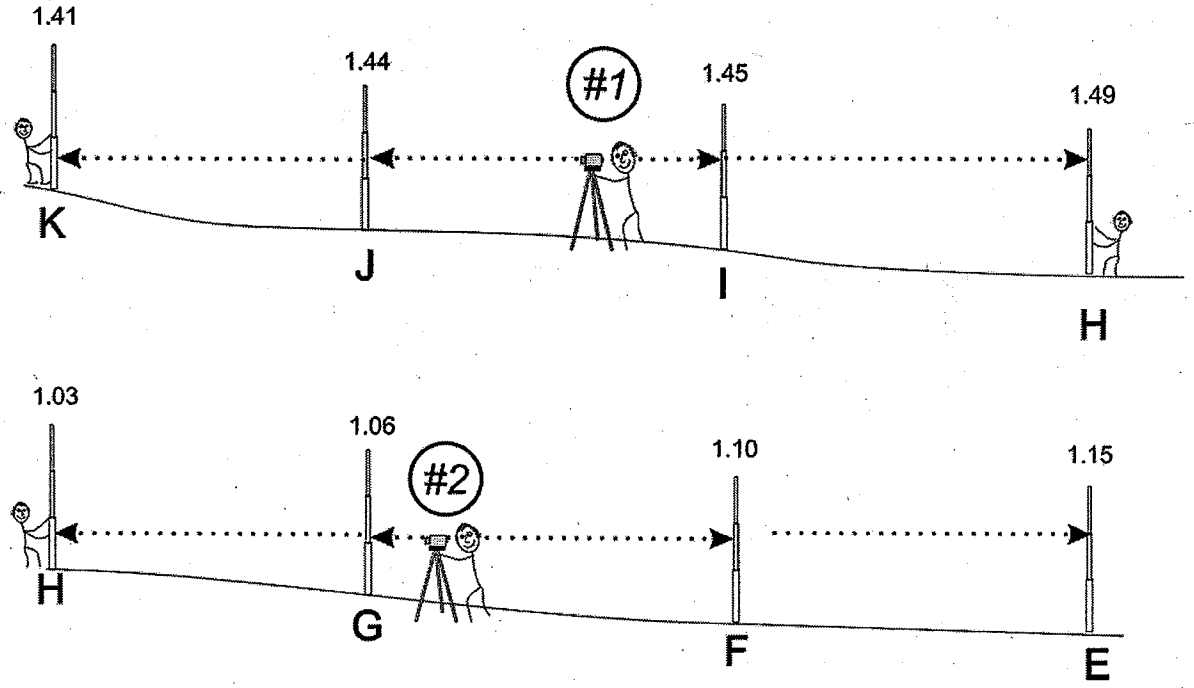
Figure 1. Cross-sectional diagram of stream transect indicating regions for assessing human influence measures:

- The measurement zone extends 5 meters upstream and 5 meters downstream of each transect
- Record one category for each bank and for the wetted channel (3 values possible)
- In reaches with wide banks, region "C" may be entirely overlapped by region "B"; in these cases, circle "B"
- Region "P" extends from 10 meters to the distance that can be seen from the channel, but not greater than 50 m

SLOPE and BEARING FORM — EXAMPLE

AUTOLEVEL	X
CLINOMETER	
HANDLEVEL	

Starting Transect	MAIN SEGMENT (record percent of inter-transect distance in each segment if supplemental segments are used)						SUPPLEMENTAL SEGMENT (record percent of inter-transect distance in each segment if supplemental segments are used)					
	Stadia rod measurements		Slope (%) or Elevation Difference cm ■ % □	Segment Length (m)	Bearing (0°-359°)	Percent of Total Length (%)	Stadia rod measurements		Slope or Elevation Difference cm □ % □	Segment Length (m)	Bearing (0°-359°)	Percent of Total Length (%)
K	1.41											
J	1.44		3	15	140	100						
I	1.45		1	15	145	100						
H	1.49	1.03	4	15	150	100						
G		1.06	3	15	143	100						
F		1.10	4	15	187	100						
E		1.15	5	15	195	100						



1. Level the autolevel at Position #1
2. Place base of stadia rod at water level every time
3. Sight to stadia rod at Transect K, then Transect J
4. Rotate scope and sight to Transects I and H.
5. Move level to Position #2 and re-level
6. Re-sight to stadia rod at Transect H, then Transect G
7. Rotate scope and sight to Transects F and E

Note: Sites will vary in the number of separate level positions needed to survey the reach.

SWAMP Stream Habitat Characterization Form *FULL VERSION* *Revision Date: February 9th, 2011*

REACH DOCUMENTATION

Standard Reach Length (wetted width ≤ 10 m) = 150 m Distance between transects = 15 m
Alternate Reach Length (wetted width >10 m) = 250 m Distance between transects = 25 m

Project Name: YCWA	Date: 7 / 13 / 2011 Sample Collection Time: 930
Stream Name: ~~BMI-2~~ Oregon Creek	Site Name/ Description: Oregon Creek below Log Cabin
Site Code: YCBMI-2	Crew Members: Ashenfelter, Vertrei, Wiseman
Latitude (actual – decimal degrees): 667042	datum: NAD83 other:
Longitude (actual – decimal degrees): 43667183	GPS Device: Garmin 60

Top UTM

AMBIENT WATER QUALITY MEASUREMENTS

turbidity and pH are reference calibration date required

Temp (Deg C)	20.4	pH	7.7	Alkalinity (mg/L)	—	Turbidity (ntu)	0.0
		cal. date				cal. date	
Dissolved O2 (mg/L)	7.9	Specific Conduct (uS/cm)	128	Salinity (ppt)	—	Silica (mg/L)	—
cal. date		cal. date		cal. date		cal. date	

REACH LENGTH

Actual Length (m) *(see reach length guidelines at top of form)*	150

Explanation: <10 m

DISCHARGE MEASUREMENTS

1st measurement = left bank (looking downstream)

check if discharge measurements not possible (explain in field notes section) ☐

VELOCITY AREA METHOD (preferred)

cal. date 6.8 Transect Width (m):

	Distance from Left Bank (cm)	Depth (cm)	Velocity (ft/sec)		Distance from Left Bank (cm)	Depth (cm)	Velocity (ft/sec)
1	1	0	0	11	11	1.8	.11
2	2	.1	0	12	12	1.6	.15
3	3	.9	.18	13	13	1.6	.47
4	4	1.1	.12	14	14	1.6	.15
5	5	.9	.4	15	15	1.5	.33
6	6	1	.39	16	16	1.2	.141
7	7	.9	.29	17	17	1.2	.37
8	8	1.5	.39	18	18	1.2	.26
9	9	1.6	.04	19	19	1.2	.27
10	10	1.5	.35	20	20	.5	.09

BUOYANT OBJECT METHOD (use ONLY if velocity area method not possible)

	Float 1	Float 2	Float 3
Distance (m)			
Float Time (sec)			

Float Reach Cross Section

width (m) depth(cm)	Upper Section	Middle Section	Lower Section
Width			
Depth 1			
Depth 2			
Depth 3			
Depth 4			
Depth 5			

NOTABLE FIELD CONDITIONS (check one box per type)

Evidence of recent rainfall (enough to increase surface runoff)	NO	X	minimal		>10% flow increase	
Evidence of fires in reach or immediately upstream (<500 m)	NO	X	< 1 year		< 5 years	
Dominant landuse/ landcover in area surrounding reach	Agriculture		Forest		Rangeland	
	Urban/ Industrial		Suburb/Town		Other	

ADDITIONAL COBBLE EMBEDDEDNESS MEASURES

(carry over from transect forms if needed to attain target count of 25; measure in %)

1	2	3	4	5	6	7	8	9	10	11	12	13
30	50	40	10	5	30	30	50	60	20	15	10	45
14	15	16	17	18	19	20	21	22	23	24	25	

Site Code:	Date: __ / __ / 2011

SLOPE and BEARING FORM (transect based - for Full PHAB only)

AUTOLEVEL
CLINOMETER
HANDLEVEL
OTHER

Starting Transect	MAIN SEGMENT (record percent of inter-transect distance in each segment if supplemental segments are used)					SUPPLEMENTAL SEGMENT (record percent of inter-transect distance in each segment if supplemental segments are used)				
	Stadia rod measurements	Slope (%) or Elevation Difference cm ☐ % ▨	Segment Length (m)	Bearing (0°-359°)	Percent of Total Length (%)	Stadia rod measurements	Slope or Elevation Difference cm ☐ % ▨	Segment Length (m)	Bearing (0°-359°)	Percent of Total Length (%)
K										
J		3	15		10					
I		3								
H		5								
G		6								
F		2								
E		1								
D		1								
C		5								
B		8								
A		0								
additional calculation area										

ADDITIONAL HABITAT CHARACTERIZATION

High Gradient ▨ Low Gradient ☐

Parameter	Optimal	Suboptimal	Marginal	Poor
Epifaunal Substrate/ Cover	Greater than 70% of substrate favorable for epifaunal colonization and fish cover (50% for low-gradient streams); mix of submerged logs, undercut banks, cobble or other stable habitat	40-70% mix of stable habitat (30-50% for low-gradient streams); well-suited for full colonization potential	20-40% mix of stable habitat (10-30% in low-gradient streams); substrate frequently disturbed or removed	Less than 20% stable habitat (10% in low-gradient streams); lack of habitat is obvious; substrate unstable or lacking
Score:	20 19 18 17 (16)	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
Sediment Deposition	Little or no enlargement of islands or point bars and less than 5% of the bottom affected by sediment deposition (<20% in low-gradient streams)	Some new increase in bar formation, mostly from gravel, sand, or fine sediment; 5-30% of the bottom affected (20-50% in low-gradient streams)	Moderate deposition of new gravel, sand, or fine sediment on bars; 30-50% of the bottom affected (50 - 80% in low-gradient streams)	Heavy deposits of fine material, increased bar development; more than 50% of the bottom changing frequently (>80% in low-gradient streams)
Score:	20 19 18 17 16	15 (14) 13 12 11	10 9 8 7 6	5 4 3 2 1 0
Channel Alteration	Channelization or dredging absent or minimal; stream with normal pattern	Some channelization present, (e.g., bridge abutments); evidence of past channelization (> 20yrs) may be present but recent channelization not present	Channelization may be extensive; embankments or shoring structures present on both banks; 40 to 80% of stream reach disrupted	Banks shored with gabian 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 0

SWAMP Stream Habitat Characterization Form FULL VERSION Revision Date: February 9th, 2011

Site Code:	Site Name: Or. Cr. blw LCD	Date: ___/___/2011
Wetted Width (m): 5	Bankfull Width (m): 8	Bankfull Height (m): 1.5

Transect A

Transect Substrates

Position	Dist from LB (m)	Depth (cm)	mm/ size class	% Cobble Embed.	CPOM	Microalgae Thickness Code	Macroalgae Attached	Macroalgae Unattached	Macrophytes
Left Bank	.5	7	CB	—	P (A)	1	P (A) D	P (A) D	P (A) D
Left Center	1.5	60	BED	—	P (A)	0	P (A) D	P (A) D	P (A) D
Center	2.5	42	BED	—	P (A)	0	P (A) D	P (A) D	P (A) D
Right Center	3.5	22	BED	—	P (A)	0	P (A) D	P (A) D	P (A) D
Right Bank	4.5	22	BED	—	P (A)	0	P (A) D	P (A) D	(P) A D

Note: Substrate sizes can be recorded either as direct measures of the median axis of each particle or one of the size class categories listed on the supplemental page (direct measurements preferred)

Microalgae Thickness Codes
0 = No microalgae present. Feels rough, not slimy;
1 = Present but not visible. Feels slimy;
2 = Present and visible but <1mm. Rubbing fingers on surface produces a brownish tint on them, scraping leaves visible trail;
3 = 1-5mm;
4 = 5-20mm;
5 = >20mm;
UD = Cannot determine if microalgae present, substrate too small or covered with silt (formerly Z code);
D = Dry, not assessed

Riparian Vegetation (facing downstream)

0 = Absent (0%) 3 = Heavy (40-75%)
1 = Sparse (<10%) 4 = Very Heavy (>75%)
2 = Moderate (10-40%)

Vegetation Class	Left Bank	Right Bank
Upper Canopy (>5 m high)		
Trees and saplings >5 m high	0 1 (2) 3 4	0 (1) 2 3 4
Lower Canopy (0.5 m-5 m high)		
All vegetation 0.5 m to 5 m	(0) 1 2 3 4	0 (1) 2 3 4
Ground Cover (<0.5 m high)		
Woody shrubs & saplings <0.5 m	(0) 1 2 3 4	0 (1) 2 3 4
Herbs/ grasses	0 1 (2) 3 4	0 1 (2) 3 4
Barren, bare soil/ duff	0 1 2 3 (4)	0 1 2 3 (4)

Instream Habitat Complexity

0 = Absent (0%)
1 = Sparse (<10%)
2 = Moderate (10-40%)
3 = Heavy (40-75%)
4 = Very Heavy (>75%)

Filamentous Algae	(0) 1 2 3 4
Aquatic Macrophytes/ Emergent Vegetation	(0) 1 2 3 4
Boulders	0 1 (2) 3 4
Woody Debris >0.3 m	(0) 1 2 3 4
Woody Debris <0.3 m	0 (1) 2 3 4
Undercut Banks	0 (1) 2 3 4
Overhang. Vegetation	0 (1) 2 3 4
Live Tree Roots	0 (1) 2 3 4
Artificial Structures	(0) 1 2 3 4

Densiometer Readings (0-17)

count covered dots

Center Left	16
Center Upstream	15
Center Right	14
Center Downstream	16
Optional	
Left Bank	—
Right Bank	—

Human Influence (circle only the closest to wetted channel)

0 = Not Present;
B = On Bank;
C = Between Bank & 10m from Channel;
P = >10m+<50m from Channel;
Channel (record Yes or No)

	Left Bank	Channel	Right Bank
Walls/ Rip-rap/ Dams	P C B (0)	Y (N)	(0) B C P
Buildings	P C B (0)	Y (N)	(0) B C P
Pavement/ Cleared Lot	P C B (0)		(0) B C P
Road/ Railroad	P C B (0)	Y (N)	(0) B C P
Pipes (Inlet/ Outlet)	P C B (0)	Y (N)	(0) B C P
Landfill/ Trash	P C B (0)	Y (N)	(0) B C P
Park/ Lawn	P C B (0)		(0) B C P
Row Crop	P C B (0)		(0) B C P
Pasture/ Range	P C B (0)		(0) B C P
Logging Operations	P C B (0)		(0) B C P
Mining Activity	P C B (0)	Y (N)	(0) B C P
Vegetation Management	P C B (0)		(0) B C P
Bridges/ Abutments	P C B (0)	Y (N)	(0) B C P
Orchards/ Vineyards	P C B (0)		(0) B C P

Bank Stability

(score using 5m upstream and 5m downstream of transect between bankfull width)

Left Bank	eroded	vulnerable	(stable)
Right Bank	eroded	vulnerable	(stable)

TAKE PHOTOGRAPHS

(check box if taken & record photo code)

Downstream (optional) ☒
181

Upstream (required) ☒
182

Inter-Transect: AB

Wetted Width (m): 25

Inter-Transect Substrates

Position	Dist from LB (m)	Depth (cm)	mm/ size class	% Cobble Embed.	CPOM	Microalgae Thickness Code	Macroalgae Attached	Macroalgae Unattached	Macrophytes
Left Bank	5 17	COB			P (A)	0	P (A) D	P (A) D	P (A) D
Left Center	6 180	BED	—		P (A)	UD	P A D	P A D	P A D
Center	125 230		—		P A		P A D	P A D	P A D
Right Center	185 250		—		P A		P A D	P A D	P A D
Right Bank	245 280		—		P A		P A D	P A D	P A D

est deep pool

Note: Substrate sizes can be recorded either as direct measures of the median axis of each particle or one of the size class categories listed on the supplemental page (direct measurements preferred)

Microalgae Thickness Codes
0 = No microalgae present. Feels rough, not slimy.
1 = Present but not visible. Feels slimy.
2 = Present and visible but <1mm; Rubbing fingers on surface produces a brownish tint on them, scraping leaves visible trail.
3 = 1-5mm;
4 = 5-20mm;
5 = >20mm;
UD = Cannot determine if microalgae present, substrate too small or covered with silt (formerly Z code).
D = Dry, not assessed

Flow Habitats

Channel Type	%
Cascade/ Falls	10
Rapid	
Riffle	
Run	
Glide	
Pool	90
Dry	

SWAMP Stream Habitat Characterization Form FULL VERSION Revision Date: February 9th, 2011

Site Code:	Site Name: O.C. blw LCD	Date: ___/___/2011
Wetted Width (m): 25	Bankfull Width (m): 30	Bankfull Height (m): 1.5

Transect B

Transect Substrates

Position	Dist from LB (m)	Depth (cm)	mm/ size class	% Cobble Embed.	CPOM	Microalgae Thickness Code	Macroalgae Attached	Macroalgae Unattached	Macrophytes
Left Bank	.5	21	SND	—	P (A)	0	P (A) D	P (A) D	P (A) D
Left Center	6	92	BLD	—	P (A)	0	P A D	P A D	P A D
Center	12.5	190	BED	—	P (A)	UD	P A D	P A D	P A D
Right Center	18.5	220	|	—	P (A)	|	P A D	P A D	P A D
Right Bank	24.5	260	|	—	P A	|	P A D	P A D	P A D

est pool

Note: Substrate sizes can be recorded either as direct measures of the median axis of each particle or one of the size class categories listed on the supplemental page (direct measurements preferred)

Microalgae Thickness Codes
0 = No microalgae present. Feels rough, not slimy;
1 = Present but not visible. Feels slimy;
2 = Present and visible but <1mm; Rubbing fingers on surface produces a brownish tint on them, scraping leaves visible trail;
3 = 1-5mm;
4 = 5-20mm;
5 = >20mm;
UD = Cannot determine if microalgae present, substrate too small or covered with silt (formerly Z code);
D = Dry, not assessed

Riparian Vegetation (facing downstream)

0 = Absent (0%) 3 = Heavy (40-75%)
1 = Sparse (<10%) 4 = Very Heavy (>75%)
2 = Moderate (10-40%)

Vegetation Class	Left Bank	Right Bank
Upper Canopy (>5 m high)		
Trees and saplings >5 m high	0 1 (2) 3 4	(0) 1 2 3 4
Lower Canopy (0.5 m-5 m high)		
All vegetation 0.5 m to 5 m	0 1 (2) 3 4	0 (1) 2 3 4
Ground Cover (<0.5 m high)		
Woody shrubs & saplings <0.5 m	0 (1) 2 3 4	0 (1) 2 3 4
Herbs/ grasses	0 1 2 (3) 4	0 (1) 2 3 4
Barren, bare soil/ duff	0 1 (2) 3 4	0 1 2 3 (4)

Instream Habitat Complexity

0 = Absent (0%)
1 = Sparse (<10%)
2 = Moderate (10-40%)
3 = Heavy (40-75%)
4 = Very Heavy (>75%)

Filamentous Algae	(0) 1 2 3 4
Aquatic Macrophytes/ Emergent Vegetation	0 (1) 2 3 4
Boulders	0 1 (2) 3 4
Woody Debris >0.3 m	0 (1) 2 3 4
Woody Debris <0.3 m	0 (1) 2 3 4
Undercut Banks	0 1 (2) 3 4
Overhang. Vegetation	0 (1) 2 3 4
Live Tree Roots	(0) 1 2 3 4
Artificial Structures	(0) 1 2 3 4

Densiometer Readings (0-17)

count covered dots

Center Left	15
Center Upstream	12
Center Right	10
Center Downstream	9
Optional	
Left Bank	—
Right Bank	—

Human Influence (circle only the closest to wetted channel)

0 = Not Present;
B = On Bank;
C = Between Bank & 10m from Channel;
P = >10m<50m from Channel;
Channel (record Yes or No)

	Left Bank	Channel	Right Bank
Walls/ Rip-rap/ Dams	P C B (0)	Y (N)	(0) B C P
Buildings	P C B 0	Y N	0 B C P
Pavement/ Cleared Lot	P C B 0		0 B C P
Road/ Railroad	P C B 0	Y N	0 B C P
Pipes (Inlet/ Outlet)	P C B 0	Y N	0 B C P
Landfill/ Trash	P C B 0	Y N	0 B C P
Park/ Lawn	P C B 0		0 B C P
Row Crop	P C B 0		0 B C P
Pasture/ Range	P C B 0		0 B C P
Logging Operations	P C B 0		0 B C P
Mining Activity	P C B 0	Y N	0 B C P
Vegetation Management	P C B 0		0 B C P
Bridges/ Abutments	P C B 0	Y N	0 B C P
Orchards/ Vineyards	P C B 0		0 B C P

Bank Stability

Score zone 5m upstream and 5m downstream of transect between bankfull wetted width

Left Bank	eroded	vulnerable	(stable)
Right Bank	eroded	vulnerable	(stable)

Inter-Transect: BC

Wetted Width (m): 4.5

Inter-Transect Substrates

Position	Dist from LB (m)	Depth (cm)	mm/ size class	% Cobble Embed	CPOM	Microalgae Thickness Code	Macroalgae Attached	Macroalgae Unattached	Macrophytes
Left Bank	.5	12	C6	—	P (A)	0	P (A) D	P (A) D	P (A) D
Left Center	1.5	30	COB	0	(P) A		P A D	P A D	P A D
Center	2.5	50	BLD	—	P (A)		P A D	P A D	P A D
Right Center	3.5	50	1	—	P (A)		P A D	P A D	P A D
Right Bank	4.5	12	1	—	(P) A		P A D	P A D	P A D

Note: Substrate sizes can be recorded either as direct measures of the median axis of each particle or one of the size class categories listed on the supplemental page (direct measurements preferred).

Microalgae Thickness Codes
0 = No microalgae present. Feels rough, not slimy.
1 = Present but not visible. Feels slimy.
2 = Present and visible but <1mm; Rubbing fingers on surface produces a brownish tint on them, scraping leaves visible trail.
3 = 1-5mm.
4 = 5-20mm.
5 = >20mm.
UD = Cannot determine if microalgae present, substrate too small or covered with silt (formerly Z code).
D = Dry, not assessed

Flow Habitats

Channel Type	%
Cascade/Falls	10
Rapid	
Run	
Glide	30
Pool	60
Dry	

SWAMP Stream Habitat Characterization Form **FULL VERSION** *Revision Date: February 9th, 2011*

Site Code:	Site Name: Or Cr blw LCD	Date: ___/___/2011
Wetted Width (m): 3.5	Bankfull Width (m): 7	Bankfull Height (m): 1.0

Transect C

Transect Substrates

Position	Dist from LB (m)	Depth (cm)	mm/ size class	% Cobble Embed.	CPOM	Microalgae Thickness Code	Macroalgae Attached	Macroalgae Unattached	Macrophytes
Left Bank	.5	6.5	COB	0	(P) A	1	P (A) D	P (A) D	P (A) D
Left Center	1.75	34	BLD	—	P A	—	P (A) D	P (A) D	P (A) D
Center	1.05	31	BED	—	P (A)	•	P (A) D	P (A) D	P (A) D
Right Center	2.25	25	BED	—	P (A)	0	P (A) D	P (A) D	P (A) D
Right Bank	3	11	BED	—	P A	0	P (A) D	P (A) D	P (A) D

Note: Substrate sizes can be recorded either as direct measures of the median axis of each particle or one of the size class categories listed on the supplemental page (direct measurements preferred)

Microalgae Thickness Codes
0 = No microalgae present. Feels rough, not slimy;
1 = Present but not visible. Feels slimy;
2 = Present and visible but <1mm; Rubbing fingers on surface produces a brownish tint on them, scraping leaves visible trail;
3 = 1-5mm;
4 = 5-20mm;
5 = >20mm;
UD = Cannot determine if microalgae present, substrate too small or covered with silt (formerly Z code);
D = Dry, not assessed

Riparian Vegetation (facing downstream)

0 = Absent (0%) 3 = Heavy (40-75%)
1 = Sparse (<10%) 4 = Very Heavy (>75%)
2 = Moderate (10-40%)

Vegetation Class	Left Bank	Right Bank
Upper Canopy (>5 m high)		
Trees and saplings >5 m high	0 (1) 2 3 4	0 1 2 (3) 4
Lower Canopy (0.5 m-5 m high)		
All vegetation 0.5 m to 5 m	0 (1) 2 3 4	0 1 (2) 3 4
Ground Cover (<0.5 m high)		
Woody shrubs & saplings <0.5 m	0 1 (2) 3 4	0 1 (2) 3 4
Herbs/ grasses	0 1 (2) 3 4	0 (1) 2 3 4
Barren, bare soil/ duff	0 1 2 (3) 4	0 1 2 (3) 4

Instream Habitat Complexity

0 = Absent (0%)
1 = Sparse (<10%)
2 = Moderate (10-40%)
3 = Heavy (40-75%)
4 = Very Heavy (>75%)

Filamentous Algae	(0) 1 2 3 4
Aquatic Macrophytes/ Emergent Vegetation	(0) 1 2 3 4
Boulders	0 (1) 2 3 4
Woody Debris >0.3 m	(0) 1 2 3 4
Woody Debris <0.3 m	(0) 1 2 3 4
Undercut Banks	0 (1) 2 3 4
Overhang. Vegetation	0 (2) 3 4
Live Tree Roots	(0) 1 2 3 4
Artificial Structures	(0) 1 2 3 4

Densiometer Readings (0-17)

count covered dots

Center Left	7
Center Upstream	16
Center Right	17
Center Downstream	16
Optional	
Left Bank	—
Right Bank	—

Human Influence (circle only the closest to wetted channel)

0 = Not Present;
B = On Bank;
C = Between Bank & 10m from Channel;
P = >10m+<50m from Channel;
Channel (record Yes or No)

	Left Bank	Channel	Right Bank
Walls/ Rip-rap/ Dams	P C B (0)	Y (N)	(0) B C P
Buildings	P C B (0)	Y N	(0) B C P
Pavement/ Cleared Lot	P C B (0)		(0) B C P
Road/ Railroad	P C B (0)	Y N	(0) B C P
Pipes (Inlet/ Outlet)	P C B (0)	Y N	(0) B C P
Landfill/ Trash	P C B (0)	Y N	(0) B C P
Park/ Lawn	P C B (0)		(0) B C P
Row Crop	P C B (0)		(0) B C P
Pasture/ Range	P C B (0)		(0) B C P
Logging Operations	P C B (0)		(0) B C P
Mining Activity	P C B (0)	Y N	(0) B C P
Vegetation Management	P C B (0)		(0) B C P
Bridges/ Abutments	P C B (0)	Y N	(0) B C P
Orchards/ Vineyards	P C B (0)		(0) B C P

Bank Stability

(score zone 5m upstream and 5m downstream of transect between bankfull - wetted width)

Left Bank	eroded	vulnerable	(stable)
Right Bank	eroded	vulnerable	(stable)

Inter-Transect: CD

Wetted Width (m): 4

Inter-Transect Substrates

Position	Dist from LB (m)	Depth (cm)	mm/ size class	% Cobble Embed.	CPOM	Microalgae Thickness Code	Macroalgae Attached	Macroalgae Unattached	Macrophytes
Left Bank	.5	15	COB	0	P (A)	0	P (A) D	P (A) D	P (A) D
Left Center	1	31	BLD	—	P (A)	1	P A D	P A D	P A D
Center	2	60	BLD	—	P A	1	P A D	P A D	P A D
Right Center	3	57	1	—	P A	1	P A D	P A D	P A D
Right Bank	3.5	18	BLD	—	P A	1	P A D	P A D	P A D
	Note: Substrate sizes can be recorded either as direct measures of the median axis of each particle or one of the size class categories listed on the supplemental page (direct measurements preferred)								

Microalgae Thickness Codes
0 = No microalgae present. Feels rough, not slimy.
1 = Present but not visible. Feels slimy.
2 = Present and visible but <1mm. Rubbing fingers on surface produces a brownish tint on them, scraping leaves visible trail.
3 = 1-5mm.
4 = 5-20mm.
5 = >20mm.
UD = Cannot determine if microalgae present, substrate too small or covered with silt (formerly Z code).
D = Dry, not assessed.

Flow Habitats
(% between transects, sum = 100%)

Channel Type	%
Cascade/Falls	10
Rapid	
Riffle	20
Run	70
Glide	
Pool	
Dry	

Site Code:	Site Name: OC blw. LCD	Date: ___/___/2011
Wetted Width (m): 3.5	Bankfull Width (m): 7	Bankfull Height (m): 1.5
		Transect D

Transect Substrates

Position	Dist from LB (m)	Depth (cm)	mm/ size class	% Cobble Embed.	CPOM	Microalgae Thickness Code	Macroalgae Attached	Macroalgae Unattached	Macrophytes
Left Bank	.5	18	COB	0	P A	0	P A D	P A D	P A D
Left Center	.75	34	CB	0	P A	1	P A D	P A D	P A D
Center	1.5	38	COB	10	P A	0	P A D	P A D	P A D
Right Center	2.25	2	BED	—	P A	1	P A D	P A D	P A D
Right Bank	3	12	BLD	—	P A	0	P A D	P A D	P A D

Note: Substrate sizes can be recorded either as direct measures of the median axis of each particle or one of the size class categories listed on the supplemental page (direct measurements preferred).

Microalgae Thickness Codes
0 = No microalgae present. Feels rough, not slimy;
1 = Present but not visible. Feels slimy;
2 = Present and visible but <1mm; Rubbing fingers on surface produces a brownish tint on them, scraping leaves visible trail.
3 = 1-5mm;
4 = 5-20mm;
5 = >20mm;
UD = Cannot determine if microalgae present, substrate too small or covered with silt (formerly Z code).
D = Dry, not assessed

Riparian Vegetation (facing downstream)

0 = Absent (0%); 1 = Sparse (<10%); 2 = Moderate (10-40%); 3 = Heavy (40-75%); 4 = Very Heavy (>75%)

Vegetation Class	Left Bank	Right Bank
Upper Canopy (>5 m high)		
Trees and saplings >5 m high	0 1 (2) 3 4	0 1 (2) 3 4
Lower Canopy (0.5 m-5 m high)		
All vegetation 0.5 m to 5 m	0 1 2 (3) 4	0 1 (2) 3 4
Ground Cover (<0.5 m high)		
Woody shrubs & saplings <0.5 m	0 (1) 2 3 4	0 1 (2) 3 4
Herbs/ grasses	0 1 2 (3) 4	0 1 2 (3) 4
Barren, bare soil/ duff	0 1 (2) 3 4	0 1 (2) 3 4

Instream Habitat Complexity

0 = Absent (0%); 1 = Sparse (<10%); 2 = Moderate (10-40%); 3 = Heavy (40-75%); 4 = Very Heavy (>75%)

Habitat	Score
Filamentous Algae	(0) 1 2 3 4
Aquatic Macrophytes/ Emergent Vegetation	(0) 1 2 3 4
Boulders	0 (1) 2 3 4
Woody Debris >0.3 m	(0) 1 2 3 4
Woody Debris <0.3 m	(0) 1 2 3 4
Undercut Banks	0 (1) 2 3 4
Overhang. Vegetation	0 1 (2) 3 4
Live Tree Roots	(0) 1 2 3 4
Artificial Structures	(0) 1 2 3 4

Densiometer Readings (0-17)
count covered dots

Position	Reading
Center Left	13
Center Upstream	17
Center Right	15
Center Downstream	14
Optional	
Left Bank	—
Right Bank	—

Human Influence
(circle only the closest to wetted channel)

0 = Not Present; B = On Bank; C = Between Bank & 10m from Channel; P = >10m+<50m from Channel; Channel (record Yes or No)

	Left Bank	Channel	Right Bank
Walls/ Rip-rap/ Dams	P (C) B 0	Y (N)	(0) B C P
Buildings	P C B (0)	Y (N)	(0) B C P
Pavement/ Cleared Lot	P C B (0)		(0) B C P
Road/ Railroad	P C B (0)	Y (N)	(0) B C P
Pipes (Inlet/ Outlet)	P C B (0)	Y (N)	(0) B C P
Landfill/ Trash	P C B (0)	Y (N)	(0) B C P
Park/ Lawn	P C B (0)		(0) B C P
Row Crop	P C B (0)		(0) B C P
Pasture/ Range	P C B (0)		(0) B C P
Logging Operations	P C B (0)		(0) B C P
Mining Activity	P C B (0)	Y (N)	(0) B C P
Vegetation Management	P C B (0)		(0) B C P
Bridges/ Abutments	P C B (0)	Y (N)	(0) B C P
Orchards/ Vineyards	P C B (0)		(0) B C P

Bank Stability
(score zone 5m upstream and 5m downstream of transect between bankfull - wetted width)

Left Bank	eroded	vulnerable	(stable)
Right Bank	eroded	vulnerable	(stable)

Inter-Transect: DE

Wetted Width (m): 4.5

Inter-Transect Substrates

Position	Dist from LB (m)	Depth (cm)	mm/ size class	% Cobble Embed	CPOM	Microalgae Thickness Code	Macroalgae Attached	Macroalgae Unattached	Macrophytes
Left Bank	.5	12	COB	10	P (A)	0	P (A) D	P (A) D	P (A) D
Left Center	1.5	20	COB	20	P (A)	1	P (A) D	P (A) D	P (A) D
Center	2.5	63	BLD	—	P (A)	1	P (A) D	P (A) D	P (A) D
Right Center	3.5	52	CB	—	P (A)	0	P (A) D	P (A) D	P (A) D
Right Bank	4.5	29	BED	—	P (A)	0	P (A) D	P (A) D	P (A) D

Note: Substrate sizes can be recorded either as direct measures of the median axis of each particle or one of the size class categories listed on the supplemental page (direct measurements preferred)

Microalgae Thickness Codes
0 = No microalgae present. Feels rough, not slimy;
1 = Present but not visible. Feels slimy;
2 = Present and visible but <1mm. Rubbing fingers on surface produces a brownish tint on them, scraping leaves visible trail;
3 = 1-5mm;
4 = 5-20mm;
5 = >20mm;
UD = Cannot determine if microalgae present, substrate too small or covered with silt (formerly Z code);
D = Dry, not assessed

Flow Habitats

Channel Type	%
Cascade/ Falls	10
Rapid	
Riffle	
Run	40
Glide	10
Pool	40
Dry	

SWAMP Stream Habitat Characterization Form FULL VERSION Revision Date: February 9th, 2011

Site Code:	Site Name: OC blw LCD	Date: __ __ / __ __ / 2011
Wetted Width (m): 5.5	Bankfull Width (m): 9.5	Bankfull Height (m): 1.0

Transect E

Transect Substrates

Position	Dist from LB (m)	Depth (cm)	mm/ size class	% Cobble Embed.	CPOM	Microalgae Thickness Code	Macroalgae Attached	Macroalgae Unattached	Macrophytes
Left Bank	.5	4	COB	20	(P) A	1 2	P (A) D	P (A) D	P (A) D
Left Center	1.5	16	COB	10	P (A)	1	P (A) D	P (A) D	P (A) D
Center	2.5	41	CB	—	P A		P A D	P A D	P A D
Right Center	3.5	40	BLD	—	(P) A	2	P (A) D	P (A) D	P (A) D
Right Bank	4.5	8	BED	—	P (A)	1	P (A) D	P (A) D	P (A) D

Note: Substrate sizes can be recorded either as direct measures of the median axis of each particle or one of the size class categories listed on the supplemental page (direct measurements preferred)

Microalgae Thickness Codes
0 = No microalgae present. Feels rough, not slimy;
1 = Present but not visible. Feels slimy;
2 = Present and visible but <1mm; Rubbing fingers on surface produces a brownish tint on them, scraping leaves visible trail;
3 = 1-5mm;
4 = 5-20mm;
5 = >20mm;
UD = Cannot determine if microalgae present, substrate too small or covered with silt (formerly Z code);
D = Dry, not assessed

Riparian Vegetation (facing downstream)

0 = Absent (0%) 3 = Heavy (40-75%)
1 = Sparse (<10%) 4 = Very Heavy (>75%)
2 = Moderate (10-40%)

Vegetation Class	Left Bank	Right Bank
Upper Canopy (>5 m high)		
Trees and saplings >5 m high	0 1 (2) 3 4	0 (1) 2 3 4
Lower Canopy (0.5 m-5 m high)		
All vegetation 0.5 m to 5 m	0 1 (2) 3 4	0 1 (2) 3 4
Ground Cover (<0.5 m high)		
Woody shrubs & saplings <0.5 m	0 1 2 (3) 4	0 1 2 (3) 4
Herbs/ grasses	0 (1) 2 3 4	0 1 (2) 3 4
Barren, bare soil/ duff	0 1 (2) 3 4	0 1 2 (3) 4

Instream Habitat Complexity

0 = Absent (0%)
1 = Sparse (<10%)
2 = Moderate (10-40%)
3 = Heavy (40-75%)
4 = Very Heavy (>75%)

Filamentous Algae	(0) 1 2 3 4
Aquatic Macrophytes/ Emergent Vegetation	(0) 1 2 3 4
Boulders	0 (1) 2 3 4
Woody Debris >0.3 m	(0) 1 2 3 4
Woody Debris <0.3 m	(0) 1 2 3 4
Undercut Banks	(0) 1 2 3 4
Overhang. Vegetation	0 (1) 2 3 4
Live Tree Roots	(0) 1 2 3 4
Artificial Structures	(0) 1 2 3 4

Densiometer Readings (0-17)

count covered dots

Center Left	17
Center Upstream	9
Center Right	10
Center Downstream	12
Optional	
Left Bank	—
Right Bank	—

Human Influence (circle only the closest to wetted channel)

0 = Not Present;
B = On Bank;
C = Between Bank & 10m from Channel;
P = >10m+<50m from Channel;
Channel (record Yes or No)

	Left Bank	Channel	Right Bank
Walls/ Rip-rap/ Dams	P C B (0)	Y (N)	(0) B C P
Buildings	P C B (0)	Y (N)	(0) B C P
Pavement/ Cleared Lot	P C B (0)		(0) B C P
Road/ Railroad	P C B (0)	Y (N)	(0) B C P
Pipes (Inlet/ Outlet)	P C B (0)	Y (N)	(0) B C P
Landfill/ Trash	P C B (0)	Y (N)	(0) B C P
Park/ Lawn	P C B (0)		(0) B C P
Row Crop	P C B (0)		(0) B C P
Pasture/ Range	P C B (0)		(0) B C P
Logging Operations	P C B (0)		(0) B C P
Mining Activity	P C B (0)	Y (N)	(0) B C P
Vegetation Management	P C B (0)		(0) B C P
Bridges/ Abutments	P C B (0)	Y (N)	(0) B C P
Orchards/ Vineyards	P C B (0)		(0) B C P

Bank Stability

(score zone 5m upstream and 5m downstream of transect between bankfull - wetted width)

Left Bank	eroded	vulnerable	(stable)
Right Bank	eroded	vulnerable	(stable)

Inter-Transect: EF

Wetted Width (m): 4

Inter-Transect Substrates

Position	Dist from LB (m)	Depth (cm)	mm/ size class	% Cobble Embed.	CPOM	Microalgae Thickness Code	Macroalgae Attached	Macroalgae Unattached	Macrophytes
Left Bank	.5	24	COB	80	(P) A	1	P (A) D	P (A) D	P (A) D
Left Center	1	56	BED	—	P (A)	1	P (A) D	P (A) D	P (A) D
Center	2	49	COB	0	P (A)	2	P (A) D	P (A) D	P (A) D
Right Center	3	47	SAND	—	P (A)	0	P (A) D	P (A) D	P (A) D
Right Bank	3.5	7	BED	—	P (A)	1	P (A) D	P (A) D	P (A) D

Note: Substrate sizes can be recorded either as direct measures of the median axis of each particle or one of the size class categories listed on the supplemental page (direct measurements preferred)

Microalgae Thickness Codes
0 = No microalgae present. Feels rough, not slimy;
1 = Present but not visible. Feels slimy;
2 = Present and visible but <1mm. Rubbing fingers on surface produces a brownish tint on them, scraping leaves visible trail;
3 = 1-5mm;
4 = 5-20mm;
5 = >20mm;
UD = Cannot determine if microalgae present, substrate too small or covered with silt (formerly Z code);
D = Dry, not assessed

Flow Habitats (% between transects, total = 100%)

Channel Type	%
Cascade/Falls	
Rapid	
Riffle	
Run	100
Glide	
Pool	
Dry	

Site Code:	Site Name: OC blw LCD	Date: __/__/2011
Wetted Width (m): 4	Bankfull Width (m): 7 / Bankfull Height (m): 1.5	**Transect F**

Transect Substrates

Position	Dist from LB (m)	Depth (cm)	mm/ size class	% Cobble Embed.	CPOM	Microalgae Thickness Code	Macroalgae Attached	Macroalgae Unattached	Macrophytes
Left Bank	.5	11	CG	—	P	1	A	A	A
Left Center	1	9	COB	10	A	2	A	A	A
Center	2	46	COB	60	P	2	A	A	A
Right Center	3	48	BLD	—	A	1	A	A	A
Right Bank	3.5	12	CG	—	A	0	A	A	A

Note: Substrate sizes can be recorded either as direct measures of the median axis of each particle or one of the size class categories listed on the supplemental page (direct measurements preferred)

Microalgae Thickness Codes
0 = No microalgae present. Feels rough, not slimy;
1 = Present but not visible. Feels slimy;
2 = Present and visible but <1mm; Rubbing fingers on surface produces a brownish tint on them, scraping leaves visible trail;
3 = 1-5mm;
4 = 5-20mm;
5 = >20mm;
UD = Cannot determine if microalgae present, substrate too small or covered with silt (formerly Z code).
D = Dry, not assessed

Riparian Vegetation (facing downstream)

0 = Absent (0%); 1 = Sparse (<10%); 2 = Moderate (10-40%); 3 = Heavy (40-75%); 4 = Very Heavy (>75%)

Vegetation Class	Left Bank	Right Bank
Upper Canopy (>5 m high)		
Trees and saplings >5 m high	2	2
Lower Canopy (0.5 m-5 m high)		
All vegetation 0.5 m to 5 m	1	1
Ground Cover (<0.5 m high)		
Woody shrubs & saplings <0.5 m	3	2
Herbs/ grasses	1	1
Barren, bare soil/ duff	2	3

Instream Habitat Complexity

0 = Absent (0%); 1 = Sparse (<10%); 2 = Moderate (10-40%); 3 = Heavy (40-75%); 4 = Very Heavy (>75%)

Category	Score
Filamentous Algae	0
Aquatic Macrophytes/ Emergent Vegetation	0
Boulders	1
Woody Debris >0.3 m	0
Woody Debris <0.3 m	0
Undercut Banks	1
Overhang. Vegetation	2
Live Tree Roots	0
Artificial Structures	0

Densiometer Readings (0-17)

count covered dots

Position	Reading
Center Left	16
Center Upstream	6
Center Right	17
Center Downstream	5
Optional	
Left Bank	—
Right Bank	—

Human Influence (circle only the closest to wetted channel)

0 = Not Present; B = On Bank; C = Between Bank & 10m from Channel; P = >10m+<50m from Channel; Channel (record Yes or No)

Human Influence	Left Bank	Channel	Right Bank
Walls/ Rip-rap/ Dams	0	N	0
Buildings	0	N	0
Pavement/ Cleared Lot	0		0
Road/ Railroad	0	N	0
Pipes (Inlet/ Outlet)	0	N	0
Landfill/ Trash	0	N	0
Park/ Lawn	0		0
Row Crop	0		0
Pasture/ Range	0		0
Logging Operations	0		0
Mining Activity	0	N	0
Vegetation Management	0		0
Bridges/ Abutments	0	N	0
Orchards/ Vineyards	0		0

Bank Stability

(score zone 5m upstream and 5m downstream of transect between bankfull - wetted width)

Bank	Rating
Left Bank	stable
Right Bank	stable

TAKE PHOTOGRAPHS

(check box if taken & record photo code)

- Downstream (required) ☒ 183
- Upstream (required) ☒ 184

Inter-Transect: FG

Wetted Width (m): 3

Inter-Transect Substrates

Position	Dist from LB (m)	Depth (cm)	mm/ size class	% Cobble Embed.	CPOM	Microalgae Thickness Code	Macroalgae Attached	Macroalgae Unattached	Macrophytes
Left Bank	1.5	41	COB	20	P A	2	P A D	P A D	P A D
Left Center	.75	31	BLD	—	P A	1	P A D	P A D	P A D
Center	1.5	50	COB	30	P A	0	P A D	P A D	P A D
Right Center	2.25	47	COB	10	P A	2	P A D	P A D	P A D
Right Bank	2.5	14	COB	20	P A	1	P A D	P A D	P A D

Note: Substrate sizes can be recorded either as direct measures of the median axis of each particle or one of the size class categories listed on the supplemental page (direct measurements preferred)

Microalgae Thickness Codes
0 = No microalgae present. Feels rough, not slimy;
1 = Present but not visible. Feels slimy;
2 = Present and visible but <1mm. Rubbing fingers on surface produces a brownish tint on them, scraping leaves visible trail;
3 = 1-5mm;
4 = 5-20mm;
5 = >20mm;
UD = Cannot determine if microalgae present, substrate too small or covered with silt (formerly Z code);
D = Dry, not assessed

FLOW HABITATS

Channel Type	%
Cascade/Falls	
Rapid	
Riffle	
Run	60
Glide	
Pool	40
Dry	

30 run
30 step run

SWAMP Stream Habitat Characterization Form *FULL VERSION* *Revision Date: February 9th, 2011*

Site Code:	Site Name: Oc blw LCD	Date: __ __ / __ __ / 2011
Wetted Width (m): 4	Bankfull Width (m): 7.5	Bankfull Height (m): 1.5

Transect G

Transect Substrates

Position	Dist from LB (m)	Depth (cm)	mm/ size class	% Cobble Embed.	CPOM	Microalgae Thickness Code	Macroalgae Attached	Macroalgae Unattached	Macrophytes
Left Bank	.5	2	BLD	—	(P) A	6	P (A) D	P (A) D	P (A) D
Left Center	1	0	BLD	—	P (A)	0	P (A) D	P (A) D	P (A) D
Center	2	38	BLD	—	P (A)	1	P (A) D	P (A) D	P (A) D
Right Center	3	32	COB	30	(P) A	0	P (A) D	P (A) D	P (A) D
Right Bank	3.5	7	BED	—	P (A)	1	P (A) D	P (A) D	P (A) D
	Note: Substrate sizes can be recorded either as direct measures of the median axis of each particle or one of the size class categories listed on the supplemental page (direct measurements preferred)								

Microalgae Thickness Codes
0 = No microalgae present. Feels rough, not slimy;
1 = Present but not visible. Feels slimy;
2 = Present and visible but <1mm; Rubbing fingers on surface produces a brownish tint on them, scraping leaves visible trail;
3 = 1-5mm;
4 = 5-20mm;
5 = >20mm;
UD = Cannot determine if microalgae present, substrate too small or covered with silt (formerly Z code);
D = Dry, not assessed

Riparian Vegetation
(facing downstream)

0 = Absent (0%) 3 = Heavy (40-75%)
1 = Sparse (<10%) 4 = Very Heavy (>75%)
2 = Moderate (10-40%)

Vegetation Class	Left Bank	Right Bank
Upper Canopy (>5 m high)		
Trees and saplings >5 m high	0 (1) 2 3 4	0 1 (2) 3 4
Lower Canopy (0.5 m-5 m high)		
All vegetation 0.5 m to 5 m	0 (1) 2 3 4	0 (1) 2 3 4
Ground Cover (<0.5 m high)		
Woody shrubs & saplings <0.5 m	0 1 (2) 3 4	0 (1) 2 3 4
Herbs/ grasses	0 1 (2) 3 4	0 1 (2) 3 4
Barren, bare soil/ duff	0 1 (2) 3 4	0 1 2 3 (4)

Instream Habitat Complexity

0 = Absent (0%)
1 = Sparse (<10%)
2 = Moderate (10-40%)
3 = Heavy (40-75%)
4 = Very Heavy (>75%)

Filamentous Algae	(0) 1 2 3 4
Aquatic Macrophytes/ Emergent Vegetation	(0) 1 2 3 4
Boulders	0 1 2 (3) 4
Woody Debris >0.3 m	(0) 1 2 3 4
Woody Debris <0.3 m	(0) 1 2 3 4
Undercut Banks	0 (1) 2 3 4
Overhang. Vegetation	0 (1) 2 3 4
Live Tree Roots	(0) 1 2 3 4
Artificial Structures	(0) 1 2 3 4

Densiometer Readings (0-17)
count covered dots

Center Left	14
Center Upstream	9
Center Right	10
Center Downstream	6
Optional	
Left Bank	—
Right Bank	—

Human Influence
(circle only the closest to wetted channel)

0 = Not Present;
B = On Bank;
C = Between Bank & 10m from Channel;
P = >10m+<50m from Channel;
Channel (record Yes or No)

	Left Bank	Channel	Right Bank
Walls/ Rip-rap/ Dams	P C B (0)	Y (N)	(0) B C P
Buildings	P C B 0	Y N	0 B C P
Pavement/ Cleared Lot	P C B 0		0 B C P
Road/ Railroad	P C B 0	Y N	0 B C P
Pipes (Inlet/ Outlet)	P C B 0	Y N	0 B C P
Landfill/ Trash	P C B 0	Y N	0 B C P
Park/ Lawn	P C B 0		0 B C P
Row Crop	P C B 0		0 B C P
Pasture/ Range	P C B 0		0 B C P
Logging Operations	P C B 0		0 B C P
Mining Activity	P C B 0	Y N	0 B C P
Vegetation Management	P C B 0		0 B C P
Bridges/ Abutments	P C B 0	Y N	0 B C P
Orchards/ Vineyards	P C B 0		0 B C P

Bank Stability
(score zone 5m upstream and 5m downstream of transect between bankfull - wetted width)

Left Bank	eroded	vulnerable	(stable)
Right Bank	eroded	vulnerable	(stable)

Inter-Transect: GH

Wetted Width (m): 3.5

Inter-Transect Substrates

Position	Dist from LB (m)	Depth (cm)	mm/ size class	% Cobble Embed.	CPOM	Microalgae Thickness Code	Macroalgae Attached	Macroalgae Unattached	Macrophytes
Left Bank	.5	10	BED	—	P (A)	0	P (A) D	P (A) D	P (A) D
Left Center	.75	12	CG	—	P (A)	1	P (A) D	P (A) D	P (A) D
Center	1.75	23	COB	70	P (A)	1	P (A) D	P (A) D	P (A) D
Right Center	2.5	52	COB		P (A)	0	P (A) D	P (A) D	P (A) D
Right Bank	3	14	BED	—	P (A)	2	P (A) D	P (A) D	P (A) D

Note: Substrate sizes can be recorded either as direct measures of the median axis of each particle or one of the size class categories listed on the supplemental page (direct measurements preferred).

Microalgae Thickness Codes
0 = No microalgae present. Feels rough, not slimy;
1 = Present but not visible. Feels slimy;
2 = Present and visible but <1mm; Rubbing fingers on surface produces a brownish tint on them, scraping leaves visible trail;
3 = 1-5mm;
4 = 5-20mm;
5 = >20mm;
UD = Cannot determine if microalgae present, substrate too small or covered with silt (formerly Z code);
D = Dry, not assessed

Flow Habitats

Channel Type	%
Cascade/ Falls	
Rapid	
Riffle	96
Run	10
Glide	
Pool	
Dry	

tributary btw GH + G

RBA- cold water compared to O.C.

Site Code:	Site Name: OC blw LCD		Date: ___/___/2011
Wetted Width (m): 3	Bankfull Width (m): 12	Bankfull Height (m): 1.5	**Transect H**

Transect Substrates

Position	Dist from LB (m)	Depth (cm)	mm/ size class	% Cobble Embed.	CPOM	Microalgae Thickness Code	Macroalgae Attached	Macroalgae Unattached	Macrophytes
Left Bank	.5	21	BED	—	P (A)	0	P (A) D	P (A) D	P (A) D
Left Center	1	27	BLD	—	P (A)	1	P (A) D	P (A) D	P (A) D
Center	1.5	30	COB	30	P (A)	1	P (A) D	P (A) D	P (A) D
Right Center	2	21	CG	—	P (A)	0	P (A) D	P (A) D	P (A) D
Right Bank	2.5	18	BLD	—	P (A)	0	P (A) D	P (A) D	P (A) D

Note: Substrate sizes can be recorded either as direct measures of the median axis of each particle or one of the size class categories listed on the supplemental page (direct measurements preferred)

Microalgae Thickness Codes
- 0 = No microalgae present. Feels rough, not slimy;
- 1 = Present but not visible. Feels slimy;
- 2 = Present and visible but <1mm; Rubbing fingers on surface produces a brownish tint on them, scraping leaves visible trail;
- 3 = 1-5mm;
- 4 = 5-20mm;
- 5 = >20mm;
- UD = Cannot determine if microalgae present, substrate too small or covered with silt (formerly Z code).
- D = Dry, not assessed.

Riparian Vegetation (facing downstream)

0 = Absent (0%); 1 = Sparse (<10%); 2 = Moderate (10-40%); 3 = Heavy (40-75%); 4 = Very Heavy (>75%)

Vegetation Class	Left Bank	Right Bank
Upper Canopy (>5 m high)		
Trees and saplings >5 m high	0 1 (2) 3 4	0 1 (2) 3 4
Lower Canopy (0.5 m-5 m high)		
All vegetation 0.5 m to 5 m	0 (1) 2 3 4	0 1 (2) 3 4
Ground Cover (<0.5 m high)		
Woody shrubs & saplings <0.5 m	0 1 (2) 3 4	0 1 (2) 3 4
Herbs/ grasses	0 1 2 (3) 4	0 1 (2) 3 4
Barren, bare soil/ duff	0 1 (2) 3 4	0 1 2 (3) 4

Instream Habitat Complexity

0 = Absent (0%); 1 = Sparse (<10%); 2 = Moderate (10-40%); 3 = Heavy (40-75%); 4 = Very Heavy (>75%)

Filamentous Algae	(0) 1 2 3 4
Aquatic Macrophytes/ Emergent Vegetation	(0) 1 2 3 4
Boulders	0 (1) 2 3 4
Woody Debris >0.3 m	(0) 1 2 3 4
Woody Debris <0.3 m	(0) 1 2 3 4
Undercut Banks	(0) 1 2 3 4
Overhang. Vegetation	0 (1) 2 3 4
Live Tree Roots	(0) 1 2 3 4
Artificial Structures	(0) 1 2 3 4

Densiometer Readings (0-17)
count covered dots

Center Left	16
Center Upstream	6
Center Right	5
Center Downstream	7
Optional	
Left Bank	—
Right Bank	—

Human Influence (circle only the closest to wetted channel)

0 = Not Present; B = On Bank; C = Between Bank & 10m from Channel; P = >10m+<50m from Channel; Channel (record Yes or No)

	Left Bank	Channel	Right Bank
Walls/ Rip-rap/ Dams	P C B (0)	Y (N)	(0) B C P
Buildings	P C B (0)	Y (N)	(0) B C P
Pavement/ Cleared Lot	P C B (0)		(0) B C P
Road/ Railroad	P C B (0)	Y (N)	(0) B C P
Pipes (Inlet/ Outlet)	P C B (0)	Y (N)	(0) B C P
Landfill/ Trash	P C B (0)	Y (N)	(0) B C P
Park/ Lawn	P C B (0)		(0) B C P
Row Crop	P C B (0)		(0) B C P
Pasture/ Range	P C B (0)		(0) B C P
Logging Operations	P C B (0)		(0) B C P
Mining Activity	P C B (0)	Y (N)	(0) B C P
Vegetation Management	P C B (0)		(0) B C P
Bridges/ Abutments	P C B (0)	Y (N)	(0) B C P
Orchards/ Vineyards	P C B (0)		(0) B C P

Bank Stability
(score zone 5m upstream and 5m downstream of transect between bankfull - wetted width)

Left Bank	eroded	vulnerable	(stable)
Right Bank	eroded	vulnerable	(stable)

Inter-Transect: HI

Wetted Width (m): 6

Inter-Transect Substrates

Position	Dist from LB (m)	Depth (cm)	mm/ size class	% Cobble Embed.	CPOM	Microalgae Thickness Code	Macroalgae Attached	Macroalgae Unattached	Macrophytes
Left Bank	.5	10	BED	—	(P) A	1	P (A) D	P (A) D	P (A) D
Left Center	1.5	19	COB	10	P (A)	1	P (A) D	P (A) D	P (A) D
Center	3	9	BLD	—	(P) A	0	P (A) D	P (A) D	P (A) D
Right Center	4.5	35	COB	50	(P) A	2	P (A) D	P (A) D	P (A) D
Right Bank	5.5	9	COB	20	(P) A	2	P (A) D	P (A) D	P (A) D
	Note: Substrate sizes can be recorded either as direct measures of the median axis of each particle or one of the size class categories listed on the supplemental page (direct measurements preferred)								

Microalgae Thickness Codes
0 = No microalgae present. Feels rough, not slimy;
1 = Present but not visible. Feels slimy;
2 = Present and visible but <1mm. Rubbing fingers on surface produces a brownish tint on them, scraping leaves visible trail.
3 = 1-5mm;
4 = 5-20mm;
5 = >20mm;
UD = Cannot determine if microalgae present, substrate too small or covered with silt (formerly Z code)
D = Dry, not assessed

Flow Habitats

Channel Type	%
Cascade/Falls	
Rapid	
Riffle	
Run	20 — step run
Glide	
Pool	80
Dry	

SWAMP Stream Habitat Characterization Form *FULL VERSION* *Revision Date: February 9th, 2011*

Site Code:	Site Name: OC blw LCO		Date: ___/___/2011
Wetted Width (m): 8	Bankfull Width (m): 14	Bankfull Height (m): 1.5	**Transect 1**

Transect Substrates

Position	Dist from LB (m)	Depth (cm)	mm/ size class	% Cobble Embed.	CPOM	Microalgae Thickness Code	Macroalgae Attached	Macroalgae Unattached	Macrophytes
Left Bank	.5	13	COB	20	(P) A	2	P (A) D	P (A) D	P (A) D
Left Center	2	0	BLD	—	(P) A	3	(P) A D	P (A) D	P (A) D
Center	4	40	CG	—	P (A)	0	P (A) D	P (A) D	P (A) D
Right Center	6	25	COB	0	P (A)	1	P (A) D	P (A) D	P (A) D
Right Bank	7.5	15	BLD	—	(P) A	1	P (A) D	P (A) D	P (A) D

Note: Substrate sizes can be recorded either as direct measures of the median axis of each particle or one of the size class categories listed on the supplemental page (direct measurements preferred)

Microalgae Thickness Codes
0 = No microalgae present. Feels rough, not slimy;
1 = Present but not visible. Feels slimy;
2 = Present and visible but <1mm. Rubbing fingers on surface produces a brownish tint on them, scraping leaves visible trail.
3 = 1-5mm;
4 = 5-20mm;
5 = >20mm;
UD = Cannot determine if microalgae present, substrate too small or covered with silt (formerly Z code)
D = Dry, not assessed

Riparian Vegetation
(facing downstream)

0 = Absent (0%) 3 = Heavy (40-75%)
1 = Sparse (<10%) 4 = Very Heavy (>75%)
2 = Moderate (10-40%)

Vegetation Class	Left Bank	Right Bank
Upper Canopy (>5 m high)		
Trees and saplings >5 m high	(0) 1 2 3 4	0 (1) 2 3 4
Lower Canopy (0.5 m-5 m high)		
All vegetation 0.5 m to 5 m	0 1 (2) 3 4	0 1 (2) 3 4
Ground Cover (<0.5 m high)		
Woody shrubs & saplings <0.5 m	0 1 (2) 3 4	0 (1) 2 3 4
Herbs/ grasses	0 1 (2) 3 4	0 1 2 (3) 4
Barren, bare soil/ duff	0 1 (2) 3 4	0 1 (2) 3 4

Instream Habitat Complexity

0 = Absent (0%)
1 = Sparse (<10%)
2 = Moderate (10-40%)
3 = Heavy (40-75%)
4 = Very Heavy (>75%)

Filamentous Algae	(0) 1 2 3 4
Aquatic Macrophytes/ Emergent Vegetation	0 1 (2) 3 4
Boulders	0 (1) 2 3 4
Woody Debris >0.3 m	(0) 1 2 3 4
Woody Debris <0.3 m	(0) 1 2 3 4
Undercut Banks	0 (1) 2 3 4
Overhang. Vegetation	0 (1) (2) 3 4
Live Tree Roots	(0) 1 2 3 4
Artificial Structures	(0) 1 2 3 4

Densiometer Readings (0-17)
count covered dots

Center Left	16
Center Upstream	13
Center Right	15
Center Downstream	15
Optional	
Left Bank	—
Right Bank	—

Human Influence
(circle only the closest to wetted channel)

0 = Not Present;
B = On Bank;
C = Between Bank & 10m from Channel;
P = >10m+<50m from Channel;
Channel (record Yes or No)

	Left Bank	Channel	Right Bank
Walls/ Rip-rap/ Dams	P C B (0)	Y (N)	(0) B C P
Buildings	P C B (0)	Y N	(0) B C P
Pavement/ Cleared Lot	P C B (0)		(0) B C P
Road/ Railroad	P C B (0)	Y N	(0) B C P
Pipes (Inlet/ Outlet)	P C B (0)	Y N	(0) B C P
Landfill/ Trash	P C B (0)	Y N	(0) B C P
Park/ Lawn	P C B (0)		(0) B C P
Row Crop	P C B (0)		(0) B C P
Pasture/ Range	P C B (0)		(0) B C P
Logging Operations	P C B (0)		(0) B C P
Mining Activity	P C B (0)	Y N	(0) B C P
Vegetation Management	P C B (0)		(0) B C P
Bridges/ Abutments	P C B (0)	Y N	(0) B C P
Orchards/ Vineyards	P C B (0)		(0) B C P

Bank Stability

Left Bank	eroded	vulnerable	(stable)
Right Bank	eroded	vulnerable	(stable)

Inter-Transect: IJ

Wetted Width (m): 4.5

Inter-Transect Substrates

Position	Dist from LB (m)	Depth (cm)	mm/ size class	% Cobble Embed.	CPOM	Microalgae Thickness Code	Macroalgae Attached	Macroalgae Unattached	Macrophytes
Left Bank	.5	20	COB	30	(P) A	2	P (A) D	P (A) D	P (A) D
Left Center	1.5	31	[illegible]	—	P (A)	1	P (A) D	P (A) D	P (A) D
Center	2.5	0	BLD	—	(P) A	0	P (A) D	P (A) D	P (A) D
Right Center	3.5	13	COB	0	P (A)	0	P (A) D	P (A) D	P (A) D
Right Bank	4	13	BLD	—	(P) A	1	P (A) D	P (A) D	P (A) D

Note: Substrate sizes can be recorded either as direct measures of the median axis of each particle or one of the size class categories listed on the supplemental page (direct measurements preferred)

Microalgae Thickness Codes
0 = No microalgae present. Feels rough, not slimy;
1 = Present but not visible. Feels slimy;
2 = Present and visible but <1mm; Rubbing fingers on surface produces a brownish tint on them, scraping leaves visible trail;
3 = 1-5mm;
4 = 5-20mm;
5 = >20mm;
UD = Cannot determine if microalgae present, substrate too small or covered with silt (formerly Z code);
D = Dry, not assessed

Flow Habitats

Channel Type	%
Cascade/ Falls	
Rapid	
Riffle	60
Run	
Glide	40
Pool	
Dry	

SWAMP Stream Habitat Characterization Form — FULL VERSION — Revision Date: February 9th, 2011

Site Code:	Site Name: OC blw LCD	Date: ___/___/2011
Wetted Width (m): 5	Bankfull Width (m): 8	Bankfull Height (m): 1.0

Transect J

Transect Substrates

Position	Dist from LB (m)	Depth (cm)	mm/ size class	% Cobble Embed.	CPOM	Microalgae Thickness Code	Macroalgae Attached	Macroalgae Unattached	Macrophytes
Left Bank	.5	12	BLD	—	P (A)	1	P (A) D	P (A) D	P (A) D
Left Center	1.5	20	COB	10	P (A)	2	P (A) D	P (A) D	P (A) D
Center	2.5	22	BLD	—	(P) A	1	P (A) D	P A D	P (A) D
Right Center	3.5	26	COB	10	P (A)	0	P (A) D	P A D	P (A) D
Right Bank	4.5	17	CG	—	(P) A	2	P (A) D	P (A) D	P (A) D

Note: Substrate sizes can be recorded either as direct measures of the median axis of each particle or one of the size class categories listed on the supplemental page (direct measurements preferred)

Microalgae Thickness Codes
0 = No microalgae present. Feels rough, not slimy;
1 = Present but not visible. Feels slimy;
2 = Present and visible but <1mm. Rubbing fingers on surface produces a brownish tint on them, scraping leaves visible trail.
3 = 1-5mm;
4 = 5-20mm;
5 = >20mm;
UD = Cannot determine if microalgae present, substrate too small or covered with silt (formerly Z code).
D = Dry, not assessed

Riparian Vegetation (facing downstream)

0 = Absent (0%) 3 = Heavy (40-75%)
1 = Sparse (<10%) 4 = Very Heavy (>75%)
2 = Moderate (10-40%)

Vegetation Class	Left Bank	Right Bank
Upper Canopy (>5 m high)		
Trees and saplings >5 m high	0 (1) 2 3 4	0 1 (2) 3 4
Lower Canopy (0.5 m-5 m high)		
All vegetation 0.5 m to 5 m	0 (1) 2 3 4	0 (1) 2 3 4
Ground Cover (<0.5 m high)		
Woody shrubs & saplings <0.5 m	0 1 (2) 3 4	0 1 (2) 3 4
Herbs/ grasses	0 1 2 (3) 4	0 (1) 2 3 4
Barren, bare soil/ duff	0 (1) 2 3 4	0 1 2 (3) 4

Instream Habitat Complexity

0 = Absent (0%)
1 = Sparse (<10%)
2 = Moderate (10-40%)
3 = Heavy (40-75%)
4 = Very Heavy (>75%)

Filamentous Algae	(0) 1 2 3 4
Aquatic Macrophytes/ Emergent Vegetation	0 (1) 2 3 4
Boulders	0 (1) 2 3 4
Woody Debris >0.3 m	(0) 1 2 3 4
Woody Debris <0.3 m	(0) 1 2 3 4
Undercut Banks	0 (1) 2 3 4
Overhang. Vegetation	0 (1) 2 3 4
Live Tree Roots	(0) 1 2 3 4
Artificial Structures	(0) 1 2 3 4

Densiometer Readings (0-17)

count covered dots

Center Left	17
Center Upstream	11
Center Right	16
Center Downstream	9
Optional	
Left Bank	—
Right Bank	—

Human Influence (circle only the closest to wetted channel)

0 = Not Present;
B = On Bank;
C = Between Bank & 10m from Channel;
P = >10m<50m from Channel;
Channel (record Yes or No)

	Left Bank	Channel	Right Bank
Walls/ Rip-rap/ Dams	P C B (0)	Y (N)	(0) B C P
Buildings	P C B 0	Y N	0 B C P
Pavement/ Cleared Lot	P C B 0		0 B C P
Road/ Railroad	P C B 0	Y N	0 B C P
Pipes (Inlet/ Outlet)	P C B 0	Y N	0 B C P
Landfill/ Trash	P C B 0	Y N	0 B C P
Park/ Lawn	P C B 0		0 B C P
Row Crop	P C B 0		0 B C P
Pasture/ Range	P C B 0		0 B C P
Logging Operations	P C B 0		0 B C P
Mining Activity	P C B 0	Y N	0 B C P
Vegetation Management	P C B 0		0 B C P
Bridges/ Abutments	P C B 0	Y N	0 B C P
Orchards/ Vineyards	P C B 0		0 B C P

Bank Stability

(score along the upstream and left bank section of transect between bankfull marked width)

Left Bank	eroded	vulnerable	(stable)
Right Bank	eroded	vulnerable	(stable)

Inter-Transect: JK

Wetted Width (m): 4.5

Inter-Transect Substrates

Position	Dist from LB (m)	Depth (cm)	mm/ size class	% Cobble Embed.	CPOM	Microalgae Thickness Code	Macroalgae Attached	Macroalgae Unattached	Macrophytes
Left Bank	1.5	8	COB	5	(P) A	2	P (A) D	P (A) D	P (A) D
Left Center	1.5	0	BLD	—	(P) A	2	P (A) D	P (A) D	P (A) D
Center	2.5	29	COB	10	P (A)	1	P (A) D	P (A) D	P (A) D
Right Center	3.5	20	CG	—	P (A)	1	P (A) D	P (A) D	P (A) D
Right Bank	4.25	4.5	COB	70	(P) A	2	P (A) D	P (A) D	P (A) D
	Note: Substrate sizes can be recorded either as direct measures of the median axis of each particle or one of the size class categories listed on the supplemental page (direct measurements preferred)								

Microalgae Thickness Codes
0 = No microalgae present. Feels rough, not slimy.
1 = Present but not visible. Feels slimy.
2 = Present and visible but <1mm; Rubbing fingers on surface produces a brownish tint on them; scraping leaves visible trail.
3 = 1-5mm.
4 = 5-20mm.
5 = >20mm.
UD = Cannot determine if microalgae present, substrate too small or covered with silt (formerly Z code).
D = Dry, not assessed

Flow Habitats (% between transects, visual ocular)	
Channel Type	%
Cascade/ Falls	
Rapid	
Riffle	40
Run	60
Glide	
Pool	
Dry	

SWAMP Stream Habitat Characterization Form FULL VERSION Revision Date: February 9th, 2011

Site Code:	Site Name: OC blw LCD	Date: ___/___/2011
Wetted Width (m): 5	Bankfull Width (m): 9.5 / Bankfull Height (m): 1.5	**Transect K**

Transect Substrates

Position	Dist from LB (m)	Depth (cm)	mm/ size class	% Cobble Embed.	CPOM	Microalgae Thickness Code	Macroalgae Attached	Macroalgae Unattached	Macrophytes
Left Bank	.5	30	CG	—	P (A)	0	P (A) D	P (A) D	P (A) D
Left Center	1.5	17	COB	0	(P) A	2	P (A) D	P (A) D	P (A) D
Center	2.5	24	BLD	—	(P) A	0	P (A) D	P (A) D	P (A) D
Right Center	3.5	22	BLD	—	P (A)	0	P (A) D	P (A) D	P (A) D
Right Bank	4.5	7	COB	20	(P) A	2	P (A) D	P (A) D	P (A) D

Note: Substrate sizes can be recorded either as direct measures of the median axis of each particle or one of the size class categories listed on the supplemental page (direct measurements preferred)

Microalgae Thickness Codes
0 = No microalgae present. Feels rough, not slimy;
1 = Present but not visible. Feels slimy;
2 = Present and visible but <1mm; Rubbing fingers on surface produces a brownish tint on them, scraping leaves visible trail;
3 = 1-5mm;
4 = 5-20mm;
5 = >20mm;
U = Cannot determine if microalgae present, substrate too small or covered with silt (formerly Z code);
D = Dry, not assessed

Riparian Vegetation (facing downstream)

0 = Absent (0%) 3 = Heavy (40-75%)
1 = Sparse (<10%) 4 = Very Heavy (>75%)
2 = Moderate (10-40%)

Vegetation Class	Left Bank	Right Bank
Upper Canopy (>5 m high)		
Trees and saplings >5 m high	0 (1) 2 3 4	0 1 (2) 3 4
Lower Canopy (0.5 m-5 m high)		
All vegetation 0.5 m to 5 m	0 1 2 (3) 4	0 (1) 2 3 4
Ground Cover (<0.5 m high)		
Woody shrubs & saplings <0.5 m	0 1 (2) 3 4	0 1 (2) 3 4
Herbs/ grasses	0 1 (2) 3 4	0 (1) 2 3 4
Barren, bare soil/ duff	0 1 (2) 3 4	0 1 (2) 3 4

Instream Habitat Complexity

0 = Absent (0%)
1 = Sparse (<10%)
2 = Moderate (10-40%)
3 = Heavy (40-75%)
4 = Very Heavy (>75%)

Filamentous Algae	(0) 1 2 3 4
Aquatic Macrophytes/ Emergent Vegetation	0 (1) 2 3 4
Boulders	0 1 (2) 3 4
Woody Debris >0.3 m	0 (1) 2 3 4
Woody Debris <0.3 m	(0) 1 2 3 4
Undercut Banks	(0) 1 2 3 4
Overhang. Vegetation	0 (1) 2 3 4
Live Tree Roots	(0) 1 2 3 4
Artificial Structures	(0) 1 2 3 4

Densiometer Readings (0-17)

count covered dots

Center Left	15
Center Upstream	16
Center Right	13
Center Downstream	14
Optional	
Left Bank	—
Right Bank	—

Human Influence (circle only the closest to wetted channel)

0 = Not Present;
B = On Bank;
C = Between Bank & 10m from Channel;
P = >10m+<50m from Channel;
Channel (record Yes or No)

	Left Bank	Channel	Right Bank
Walls/ Rip-rap/ Dams	P C B (0)	Y (N)	(0) B C P
Buildings	P C B (0)	Y N	(0) B C P
Pavement/ Cleared Lot	P C B (0)		(0) B C P
Road/ Railroad	P C B (0)	Y N	(0) B C P
Pipes (Inlet/ Outlet)	P C B (0)	Y N	(0) B C P
Landfill/ Trash	P C B (0)	Y N	(0) B C P
Park/ Lawn	P C B (0)		(0) B C P
Row Crop	P C B (0)		(0) B C P
Pasture/ Range	P C B (0)		(0) B C P
Logging Operations	P C B (0)		(0) B C P
Mining Activity	P C B (0)	Y N	(0) B C P
Vegetation Management	P C B (0)		(0) B C P
Bridges/ Abutments	P C B (0)	Y N	(0) B C P
Orchards/ Vineyards	P C B (0)		(0) B C P

Bank Stability

(Assess zone 5 m upstream and 5m downstream of transect between bankfull - wetted width)

Left Bank	eroded	vulnerable	(stable)
Right Bank	eroded	vulnerable	(stable)

TAKE PHOTOGRAPHS (check box if taken & record photo code)

Downstream (**required**)	☒ 189
Upstream (**optional**)	☒ 190

Site Code:	Date: ____/____/ 2011

FULL FORM

BENTHIC INVERTEBRATE SAMPLES

Collection Method (indicate standard or margin-center-margin)			Replicate	# jars
RWB (standard)	**RWB** (MCM)	**TRC**	**1**	
RWB (standard)	**RWB** (MCM)	**TRC**	**2**	
RWB (standard)	**RWB** (MCM)	**TRC**		
RWB (standard)	**RWB** (MCM)	**TRC**		

Field Notes/ Comments:

Chemistry Equipment ID

Analyte	Equipment
pH	
temperature	
dissolved oxygen	
specific conductance	
salinity	
alkalinity	
turbidity	
silica	
Velocity	

ALGAE SAMPLES

Collection Method (circle one or write new method if applicable)	SWAMP EMAP	SWAMP EMAP	SWAMP EMAP	SWAMP EMAP
Collection Device (sum # of transects per device)	**Rep. 1**	**Rep. 2**	**Rep.**	**Rep.**
Rubber Delimiter (area=12.6cm^2)				
PVC Delimiter (area=12.6cm^2)				
Syringe Scrubber (area=5.3cm^2)				
Other area=				
Number of transects sampled (0-11)				
Composite Volume (mL)				
Assemblage ID volume **(diatoms)** (50 mL tube)				
Assemblage ID volume **(soft algae)** (50 mL tube)				
Check if Qualitative Algae sample was collected with soft algae/diatom sample (required even if macroalgae not visible)	☐	☐	☐	☐
Check if a water chem. **integrated** sample was collected (chl, AFDM)	☐	☐	☐	☐
Chlorophyll a volume use GF/F filter (25 mL **(preferred volume)**				
Ash Free Dry Mass (AFDM) volume use GF/F filter (25 mL **(preferred vol)**				

Water and Sediment Chemistry Samples

Check if a WATER chemistry **grab** sample was collected (nutrients, SSC, etc.)	☐
Check if a DUPLICATE WATER chemistry **grab** sample was collected	☐
Check if a SEDIMENT chemistry sample was collected	☐
Check if a DUPLICATE SEDIMENT chemistry sample was collected	☐

Sediment Collection Device: SCOOP CORE GRAB

Material: Stainless Steel Polyethylene Polycarbonate Other

Sediment Collection Depth (cm): 2 or 5

Create Lab Collection records for each checked box for integrated and grab water chemistry samples

ADDITIONAL PHOTOGRAPHS

Description	Photo Code	Description	Photo Code

Flow Habitat Type	DESCRIPTION
Cascades	Short, high gradient drop in stream bed elevation often accompanied by boulders and considerable turbulence
Falls	High gradient drop in elevation of the stream bed associated with an abrupt change in the bedrock
Rapids	Sections of stream with swiftly flowing water and considerable surface turbulence. Rapids tend to have larger substrate sizes than riffles
Riffles	Shallow sections where the water flows over coarse stream bed particles that create mild to moderate surface turbulence; (< 0.5 m deep, > 0.3 m/s).
Runs	Long, relatively straight, low-gradient sections without flow obstructions. The stream bed is typically even and the water flows faster than it does in a pool; (> 0.5 m deep, > 0.3 m/s). A **step-run** is a series of runs separated by short riffles or flow obstructions that cause discontinuous breaks in slope
Glides	A section of stream with little or no turbulence, but faster velocity than pools; (< 0.5 m deep, < 0.3 m/s)
Pools	A reach of stream that is characterized by deep, low-velocity water and a smooth surface; (> 0.5 m deep, < 0.3 m/s)

Size Class Code	Size Class Range	Size Class Description	Common Size Reference
RS	> 4 m	bedrock, smooth	larger than a car
RR	> 4 m	bedrock, rough	larger than a car
XB	1 - 4 m	boulder, large	meter stick to car
SB	25 cm - 1.0 m	boulder, small	basketball to meter stick
CB	64 - 250 mm	cobble	tennis ball to basketball
GC	16 - 64 mm	gravel, coarse	marble to tennis ball
GF	2 – 16 mm	gravel, fine	ladybug to marble
SA	0.06 – 2 mm	sand	gritty to ladybug
FN	< 0.06 mm	fines	not gritty
HP	< 0.06 mm	hardpan (consolidated fines)	
WD	NA	wood	
RC	NA	concrete/ asphalt	
OT	NA	other	

BANK STABILITY Although this measure of the degree of erosive potential is subjective, it can provide clues to the erosive potential of the banks within the reach. Assign the category whose description best fits the conditions in the area between the wetted channel and bankfull channel (see figure below)	
Eroded	Banks show obvious signs of erosion from the current or previous water year; banks are usually bare or nearly bare
Vulnerable	Banks have some vegetative protection (usually annual growth), but not enough to prevent erosion during flooding
Stable	Bank vegetation has well-developed roots that protect banks from erosion; alternately, bedrock or artificial structures (e.g., concrete/ rip-rap) prevent bank erosion

CPOM/ COBBLE EMBEDDEDNESS

CPOM: Record presence (P) or absence (A) of coarse particulate organic matter (>1.0 mm particles) within 1 cm of each substrate particle

Cobble Embeddedness: Visually estimate % embedded by fine particles (record to nearest 5%)

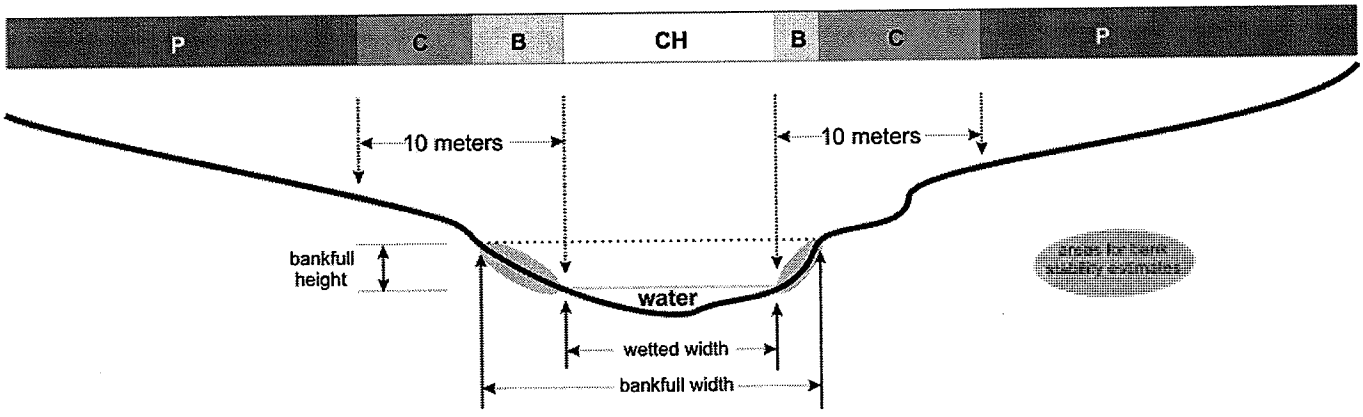


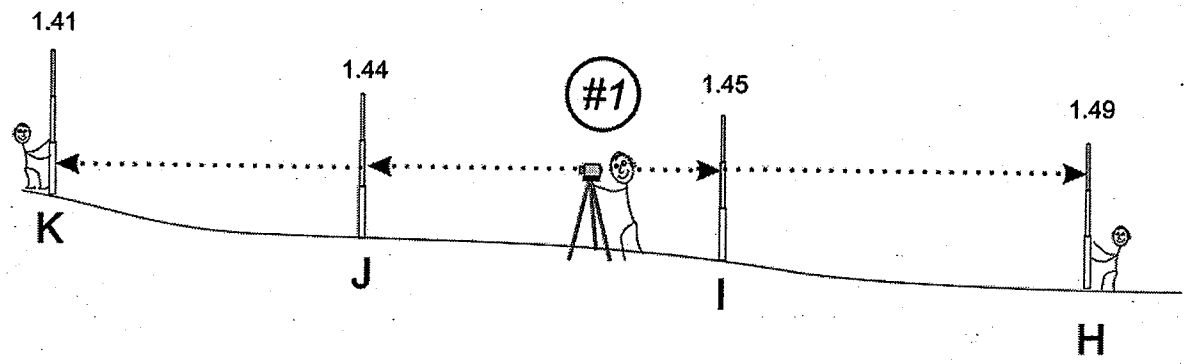
Figure 1. Cross-sectional diagram of stream transect indicating regions for assessing human influence measures:

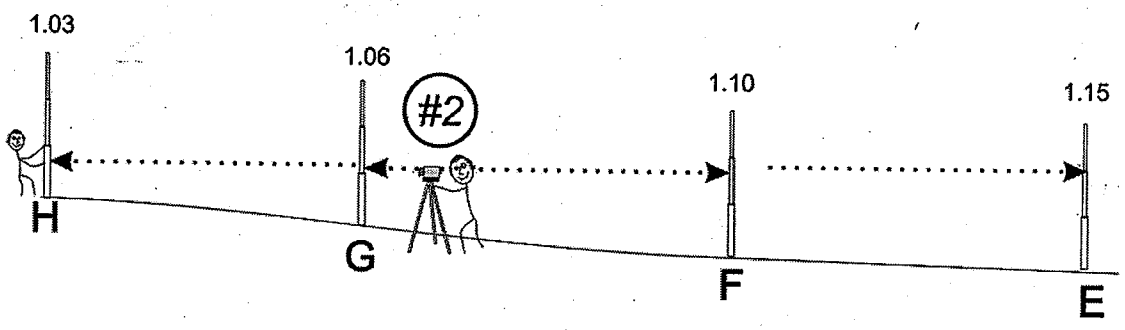
- The measurement zone extends 5 meters upstream and 5 meters downstream of each transect
- Record one category for each bank and for the wetted channel (3 values possible)
- In reaches with wide banks, region "C" may be entirely overlapped by region "B"; in these cases, circle "B"
- Region "P" extends from 10 meters to the distance that can be seen from the channel, but not greater than 50 m

SLOPE and BEARING FORM — EXAMPLE

AUTOLEVEL	X
CLINOMETER	
HANDLEVEL	

Starting Transect	MAIN SEGMENT (record percent of inter-transect distance in each segment if supplemental segments are used)						SUPPLEMENTAL SEGMENT (record percent of inter-transect distance in each segment if supplemental segments are used)					
	Stadia rod measurements		Slope (%) or Elevation Difference cm ■ % □	Segment Length (m)	Bearing (0°-359°)	Percent of Total Length (%)	Stadia rod measurements		Slope or Elevation Difference cm □ % □	Segment Length (m)	Bearing (0°-359°)	Percent of Total Length (%)
K	1.41											
J	1.44		3	15	140	100						
I	1.45		1	15	145	100						
H	1.49	1.03	4	15	150	100						
G		1.06	3	15	143	100						
F		1.10	4	15	187	100						
E		1.15	5	15	195	100						





1. Level the autolevel at Position #1
2. Place base of stadia rod at water level every time
3. Sight to stadia rod at Transect K, then Transect J
4. Rotate scope and sight to Transects I and H.
5. Move level to Position #2 and re-level
6. Re-sight to stadia rod at Transect H, then Transect G
7. Rotate scope and sight to Transects F and E

Note: Sites will vary in the number of separate level positions needed to survey the reach.

SWAMP Stream Habitat Characterization Form — FULL VERSION — Revision Date: February 9th, 2011

REACH DOCUMENTATION

Standard Reach Length (wetted width ≤ 10 m) = 150 m Distance between transects = 15 m
Alternate Reach Length (wetted width >10 m) = 250 m Distance between transects = 25 m

Project Name: YCWA	Date: 7 / 10 / 2012 Sample Collection Time: 1330
Stream Name: OREGON CREEK	Site Name/ Description: Or. Cr. abv MYR
Site Code: YCBM1-3	Crew Members: C. VanAcer, M. Ashenfelter, C. Wiseman
Latitude (actual – decimal degrees): 665218	datum: NAD83 other:
Longitude (actual – decimal degrees): 4362699 (Bottom UTM)	GPS Device: GARMIN 60

AMBIENT WATER QUALITY MEASUREMENTS

turbidity and silica are optional; calibration date required

Temp (Deg C)	19.6	pH	8.1	Alkalinity (mg/L)	—	Turbidity (ntu)	0
		cal. date				cal. date	
Dissolved O^2 (mg/L)	8.3	Specific Conduct (uS/cm)	132	Salinity (ppt)	—	Silica (mg/L)	-
cal. date		cal. date		cal. date		cal. date	

REACH LENGTH

Actual Length (m) *(see reach length guidelines at top of form)*	150
Explanation:	<10 m avg @ low flow

DISCHARGE MEASUREMENTS

1st measurement = left bank (looking downstream)

check if discharge measurements not possible (explain in field notes section) ☐

VELOCITY AREA METHOD (preferred)

cal. date: Transect Width: 26

	Distance from Left Bank (ft)	Depth (ft)	Velocity (ft/sec)		Distance from Left Bank (ft)	Depth (ft)	Velocity (ft/sec)
1	0	0	0	11	(.216) 20	.3	.72
2	2	1.4	.06	12	22	0	0
3	4	1.6	.4	13	(.125) 24	.5	.125
4	6	1.7	.135	14	26	0	0
5	8	1.4	.45	15			
6	10	1.0	.136	16			
7	12	.6	.62	17	[8.2 cfs]		
8	14	1.1	0.1	18			
9	16	.4	1.24	19			
10	18	.4	1.15	20			

(.084, .164, .595, .163, .136, .372, .11, .496, .146)

BUOYANT OBJECT METHOD (use ONLY if velocity area method not possible)

	Float 1	Float 2	Float 3
Distance (m)			
Float Time (sec)			

Float Reach Cross Section

width (m) depth(cm)	Upper Section	Middle Section	Lower Section
Width			
Depth 1			
Depth 2			
Depth 3			
Depth 4			
Depth 5			

NOTABLE FIELD CONDITIONS (check one box per topic)

Evidence of recent rainfall (enough to increase surface runoff)	NO	X	minimal		>10% flow increase	
Evidence of fires in reach or immediately upstream (<500 m)	NO	X	< 1 year		< 5 years	
Dominant landuse/ landcover in area surrounding reach	Agriculture		Forest	X	Rangeland	
	Urban/ Industrial		Suburb/Town		Other	

ADDITIONAL COBBLE EMBEDDEDNESS MEASURES

(carry over from transect forms if needed to attain target count of 25; measure in %)

1	2	3	4	5	6	7	8	9	10	11	12	13
30	50	60	20	10	0	30	70	70	50	40	10	10
14	15	16	17	18	19	20	21	22	23	24	25	

Site Code: Date: ___/___/ 2011

SLOPE and BEARING FORM (transect based - for Full PHAB only)

AUTOLEVEL ☐ CLINOMETER ☐ HANDLEVEL ☐ OTHER ☐

Starting Transect	MAIN SEGMENT (record percent of inter-transect distance in each segment if supplemental segments are used)					SUPPLEMENTAL SEGMENT (record percent of inter-transect distance in each segment if supplemental segments are used)				
	Stadia rod measurements	Slope (%) or Elevation Difference cm ☐ % ☒	Segment Length (m)	Bearing (0°-359°)	Percent of Total Length (%)	Stadia rod measurements	Slope or Elevation Difference cm ☐ % ☐	Segment Length (m)	Bearing (0°-359°)	Percent of Total Length (%)
K										
J		0	15		10					
I		15								
H		7								
G		5								
F		1								
E		.5								
D		2								
C		4								
B		2								
A		5								
additional calculation area										

ADDITIONAL HABITAT CHARACTERIZATION

High Gradient ☐ Low Gradient ☐

Parameter	Optimal	Suboptimal	Marginal	Poor
Epifaunal Substrate/ Cover	Greater than 70% of substrate favorable for epifaunal colonization and fish cover (50% for low-gradient streams); mix of submerged logs, undercut banks, cobble or other stable habitat	40-70% mix of stable habitat (30-50% for low-gradient streams); well-suited for full colonization potential	20-40% mix of stable habitat (10-30% in low-gradient streams); substrate frequently disturbed or removed	Less than 20% stable habitat (10% in low-gradient streams); lack of habitat is obvious; substrate unstable or lacking
Score:	20 19 18 17 16	(15) 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
Sediment Deposition	Little or no enlargement of islands or point bars and less than 5% of the bottom affected by sediment deposition (<20% in low-gradient streams)	Some new increase in bar formation, mostly from gravel, sand, or fine sediment; 5-30% of the bottom affected (20-50% in low-gradient streams)	Moderate deposition of new gravel, sand, or fine sediment on bars; 30-50% of the bottom affected (50 - 80% in low-gradient streams)	Heavy deposits of fine material, increased bar development; more than 50% of the bottom changing frequently (>80% in low-gradient streams)
Score:	20 19 18 17 16	15 14 13 12 11	(10) 9 8 7 6	5 4 3 2 1 0
Channel Alteration	Channelization or dredging absent or minimal; stream with normal pattern	Some channelization present, (e.g., bridge abutments); evidence of past channelization (> 20yrs) may be present but recent channelization not present	Channelization may be extensive; embankments or shoring structures present on both banks; 40 to 80% of stream reach disrupted	Banks shored with gabian 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 0

SWAMP Stream Habitat Characterization Form — FULL VERSION — Revision Date: February 9th, 2011

Site Code:	Site Name: BC abv MYR	Date: ___/___/2011
Wetted Width (m): 9.5	Bankfull Width (m): 13	Bankfull Height (m): ~~3~~ 3m

Transect A

Transect Substrates

Position	Dist from LB (m)	Depth (cm)	mm/ size class	% Cobble Embed.	CPOM	Microalgae Thickness Code	Macroalgae Attached	Macroalgae Unattached	Macrophytes
Left Bank	.5	53	BLD	—	(P) A	2	(P) A D	P (A) D	P (A) D
Left Center	2	71	BLD	—	P (A)	2	(P) A D	P (A) D	P (A) D
Center	4	51	COB	30	P A	2	P A D	P A D	P A D
Right Center	6	6	BLD	—	P (A)	1	P (A) D	P (A) D	P (A) D
Right Bank	9	12	GV	—	P (A)		P A D	P A D	P A D
	Note: Substrate sizes can be recorded either as direct measures of the median axis of each particle or one of the size class categories listed on the supplemental page (direct measurements preferred)								

Microalgae Thickness Codes
0 = No microalgae present. Feels rough, not slimy;
1 = Present but not visible. Feels slimy;
2 = Present and visible but <1mm. Rubbing fingers on surface produces a brownish tint on them, scraping leaves visible trail;
3 = 1-5mm;
4 = 5-20mm;
5 = >20mm;
UD = Cannot determine if microalgae present, substrate too small or covered with silt (formerly Z code);
D = Dry, not assessed

Riparian Vegetation (facing downstream)

0 = Absent (0%) 3 = Heavy (40-75%)
1 = Sparse (<10%) 4 = Very Heavy (>75%)
2 = Moderate (10-40%)

Vegetation Class	Left Bank	Right Bank
Upper Canopy (>5 m high)		
Trees and saplings >5 m high	0 1 2 (3) 4	0 1 2 (3) 4
Lower Canopy (0.5 m-5 m high)		
All vegetation 0.5 m to 5 m	0 1 (2) 3 4	0 1 (2) 3 4
Ground Cover (<0.5 m high)		
Woody shrubs & saplings <0.5 m	0 1 (2) 3 4	0 (1) 2 3 4
Herbs/ grasses	0 1 (2) 3 4	0 1 (2) 3 4
Barren, bare soil/ duff	0 1 2 (3) 4	0 1 2 (3) 4

Instream Habitat Complexity

0 = Absent (0%)
1 = Sparse (<10%)
2 = Moderate (10-40%)
3 = Heavy (40-75%)
4 = Very Heavy (>75%)

Filamentous Algae	(0) 1 2 3 4
Aquatic Macrophytes/ Emergent Vegetation	(0) 1 2 3 4
Boulders	0 1 2 (3) 4
Woody Debris >0.3 m	(0) 1 2 3 4
Woody Debris <0.3 m	(0) 1 2 3 4
Undercut Banks	(0) 1 2 3 4
Overhang. Vegetation	0 (1) 2 3 4
Live Tree Roots	(0) 1 2 3 4
Artificial Structures	(0) 1 2 3 4

Densiometer Readings (0-17)

count covered dots

Center Left	17
Center Upstream	10
Center Right	8
Center Downstream	17
Optional	
Left Bank	1
Right Bank	1

Human Influence

(circle only the closest to wetted channel)

0 = Not Present;
B = On Bank;
C = Between Bank & 10m from Channel;
P = >10m+<50m from Channel;
Channel (record Yes or No)

	Left Bank	Channel	Right Bank
Walls/ Rip-rap/ Dams	P C B (0)	Y (N)	(0) B C P
Buildings	P C B (0)	Y N	(0) B C P
Pavement/ Cleared Lot	P C B (0)		(0) B C P
Road/ Railroad	P C B (0)	Y N	(0) B C P
Pipes (Inlet/ Outlet)	P C B (0)	Y N	(0) B C P
Landfill/ Trash	P C B (0)	Y N	(0) B C P
Park/ Lawn	P C B (0)		(0) B C P
Row Crop	P C B (0)		(0) B C P
Pasture/ Range	P C B (0)		(0) B C P
Logging Operations	P C B (0)		(0) B C P
Mining Activity	P C B (0)	Y N	(0) B C P
Vegetation Management	P C B (0)		(0) B C P
Bridges/ Abutments	P C B (0)	Y N	(0) B C P
Orchards/ Vineyards	P C B (0)		(0) B C P

Bank Stability

(score using 5m upstream and 5m downstream of transect between bankfull widths)

Left Bank	eroded	vulnerable	(stable)
Right Bank	eroded	vulnerable	(stable)

TAKE PHOTOGRAPHS

(check box if taken & record photo code)

Downstream **(optional)** ☒ 161

Upstream **(required)** ☒ 162

Inter-Transect: AB

Wetted Width (m): 2

Inter-Transect Substrates

Position	Dist from LB (m)	Depth (cm)	mm/ size class	% Cobble Embed	CPOM	Microalgae Thickness Code	Macroalgae Attached	Macroalgae Unattached	Macrophytes
Left Bank	.5	32	BED		P (A)	1	P A D	P A D	P A D
Left Center	.75	59	BED	—	P (A)	1	P (A) D	P (A) D	P (A) D
Center	1	99	SAND	—	P (A)	0	P (A) D	P (A) D	P (A) D
Right Center	1.25	59	BED	—	P (A)	1	P (A) D	P (A) D	P (A) D
Right Bank	1.5	31	BED	—	P (A)	1	P (A) D	P (A) D	P (A) D

Note: Substrate sizes can be recorded either as direct measures of the median axis of each particle or one of the size class categories listed on the supplemental page (direct measurements preferred)

Microalgae Thickness Codes
0 = No microalgae present. Feels rough, not slimy.
1 = Present but not visible. Feels slimy.
2 = Present and visible but <1mm. Rubbing fingers on surface produces a brownish tint on them, scraping leaves visible trail.
3 = 1-5mm.
4 = 5-20mm.
5 = >20mm.
UD = Cannot determine if microalgae present, substrate too small or covered with silt (formerly Z code).
D = Dry, not assessed

Flow Habitats
(% between transects totaling 100)

Channel Type	%
Cascade/Falls	
Rapid	
Riffle	
Run	
Glide	
Pool	100
Dry	

SWAMP Stream Habitat Characterization Form FULL VERSION Revision Date: February 9th, 2011

Site Code:	Site Name: Dr. Cr. abv MYR	Date: ___/___/2011
Wetted Width (m): 10	Bankfull Width (m): 14	Bankfull Height (m): 1.5

Transect B

Transect Substrates

Position	Dist from LB (m)	Depth (cm)	mm/ size class	% Cobble Embed.	CPOM	Microalgae Thickness Code	Macroalgae Attached	Macroalgae Unattached	Macrophytes
Left Bank	1.5	55	CG GRAD	—	P (A)	2 (3) 4	P (A) D	P (A) D	P (A) D
Left Center	2.5	14	BLD	—	P (A)	1	(P) A D	P (A) D	P (A) D
Center	5	24	CG	—	P (A)	1	P (A) D	P (A) D	P (A) D
Right Center	7.5	0	BLD	—	(P) A	1	(P) A D	P (A) D	(P) A D
Right Bank	9.5	2	CG	—	(P) A	0 2	(P) (3) D	P (A) D	P (A) D

Note: Substrate sizes can be recorded either as direct measures of the median axis of each particle or one of the size class categories listed on the supplemental page (direct measurements preferred)

Microalgae Thickness Codes
0 = No microalgae present. Feels rough, not slimy;
1 = Present but not visible. Feels slimy;
2 = Present and visible but <1mm. Rubbing fingers on surface produces a brownish tint on them, scraping leaves visible trail.
3 = 1-5mm;
4 = 5-20mm;
5 = >20mm;
UD = Cannot determine if microalgae present, substrate too small or covered with silt (formerly Z code);
D = Dry, not assessed

Riparian Vegetation
(facing downstream)

0 = Absent (0%) 3 = Heavy (40-75%)
1 = Sparse (<10%) 4 = Very Heavy (>75%)
2 = Moderate (10-40%)

Vegetation Class	Left Bank	Right Bank
Upper Canopy (>5 m high)		
Trees and saplings >5 m high	0 1 (2) 3 4	0 1 2 (3) 4
Lower Canopy (0.5 m-5 m high)		
All vegetation 0.5 m to 5 m	0 1 2 (3) 4	0 1 2 (3) 4
Ground Cover (<0.5 m high)		
Woody shrubs & saplings <0.5 m	0 1 2 (3) 4	0 1 2 (3) 4
Herbs/ grasses	0 (1) 2 3 4	0 (1) 2 3 4
Barren, bare soil/ duff	0 1 (2) 3 4	0 1 (2) 3 4

Instream Habitat Complexity

0 = Absent (0%)
1 = Sparse (<10%)
2 = Moderate (10-40%)
3 = Heavy (40-75%)
4 = Very Heavy (>75%)

Filamentous Algae	(0) 1 2 3 4
Aquatic Macrophytes/ Emergent Vegetation	0 (1) 2 3 4
Boulders	0 1 2 (3) 4
Woody Debris >0.3 m	0 (1) 2 3 4
Woody Debris <0.3 m	0 (1) 2 3 4
Undercut Banks	(0) 1 2 3 4
Overhang. Vegetation	0 1 (2) 3 4
Live Tree Roots	(0) 1 2 3 4
Artificial Structures	(0) 1 2 3 4

Densiometer Readings (0-17)
count covered dots

Center Left	14
Center Upstream	9
Center Right	11
Center Downstream	7
Optional	
Left Bank	
Right Bank	1

Human Influence
(circle only the closest to wetted channel)

0 = Not Present;
B = On Bank;
C = Between Bank & 10m from Channel;
P = >10m+<50m from Channel;
Channel (record Yes or No)

	Left Bank	Channel	Right Bank
Walls/ Rip-rap/ Dams	P C B (0)	Y (N)	(0) B C P
Buildings	P C B 0	Y N	0 B C P
Pavement/ Cleared Lot	P C B 0		0 B C P
Road/ Railroad	P C B 0	Y N	0 B C P
Pipes (Inlet/ Outlet)	P C B 0	Y N	0 B C P
Landfill/ Trash	P C B 0	Y N	0 B C P
Park/ Lawn	P C B 0		0 B C P
Row Crop	P C B 0		0 B C P
Pasture/ Range	P C B 0		0 B C P
Logging Operations	P C B 0		0 B C P
Mining Activity	P C B 0	Y N	0 B C P
Vegetation Management	P C B 0		0 B C P
Bridges/ Abutments	P C B 0	Y N	0 B C P
Orchards/ Vineyards	P C B 0		0 B C P

Bank Stability
(score zone 5m upstream and 5m downstream of transect between bankfull - wetted width)

Left Bank	eroded	vulnerable	(stable)
Right Bank	eroded	vulnerable	(stable)

Inter-Transect: BC

Wetted Width (m): 8

Inter-Transect Substrates

Position	Dist from LB (m)	Depth (cm)	mm/ size class	% Cobble Embed.	CPOM	Microalgae Thickness Code	Macroalgae Attached	Macroalgae Unattached	Macrophytes
Left Bank	.5	29	BED	—	P (A)	2	P (A) D	P (A) D	P (A) D
Left Center	2	82	BLD	—	P (A)	1	P (A) D	P (A) D	P (A) D
Center	4	87	BLD	—	P (A)	1	P (A) D	P (A) D	P (A) D
Right Center	6	77	CB	—	P (A)	0	P (A) D	P (A) D	P (A) D
Right Bank	7.5	47	CB	—	P (A)	0	P (A) D	P (A) D	P (A) D

Note: Substrate sizes can be recorded either as direct measures of the median axis of each particle or one of the size class categories listed on the supplemental page (direct measurements preferred)

Microalgae Thickness Codes
0 = No microalgae present. Feels rough, not slimy;
1 = Present but not visible. Feels slimy;
2 = Present and visible but <1mm; Rubbing fingers on surface produces a brownish tint on them, scraping leaves visible trail;
3 = 1-5mm;
4 = 5-20mm;
5 = >20mm;
UD = Cannot determine if microalgae present, substrate too small or covered with silt (formerly Z code).
D = Dry, not assessed

Flow Habitats (% between transects, total = 100)

Channel Type	%
Cascade/Falls	
Rapid	
Riffle	20
Run	
Glide	
Pool	80
Dry	

SWAMP Stream Habitat Characterization Form FULL VERSION Revision Date: February 9th, 2011

Site Code:	Site Name: ~~BEI~~ OC abv MYR	Date: ___/___/2011
Wetted Width (m): 7.5	Bankfull Width (m): 13	Bankfull Height (m): 2.5

Transect C

Transect Substrates

Position	Dist from LB (m)	Depth (cm)	mm/ size class	% Cobble Embed.	CPOM	Microalgae Thickness Code	Macroalgae Attached	Macroalgae Unattached	Macrophytes
Left Bank	1.5	90	BED	—	P (A)	2	P (A) D	P (A) D	P (A) D
Left Center	2	37	BLD	—	P (A)	0	P (A) D	P (A) D	P (A) D
Center	4	31	CB	25	P (A)	2	(P) A D	P (A) D	P (A) D
Right Center	6	55	CG	—	P (A)	0	P (A) D	P (A) D	P (A) D
Right Bank	7	0	BED	—	(P) A	1	P (A) D	P (A) D	P (A) D

Note: Substrate sizes can be recorded either as direct measures of the median axis of each particle or one of the size class categories listed on the supplemental page (direct measurements preferred)

Microalgae Thickness Codes
0 = No microalgae present, Feels rough, not slimy;
1 = Present but not visible, Feels slimy;
2 = Present and visible but <1mm; Rubbing fingers on surface produces a brownish tint on them; scraping leaves visible trail.
3 = 1-5mm;
4 = 5-20mm;
5 = >20mm;
UD = Cannot determine if microalgae present, substrate too small or covered with silt (formerly Z code).
D = Dry, not assessed

Riparian Vegetation (facing downstream)

0 = Absent (0%) 3 = Heavy (40-75%)
1 = Sparse (<10%) 4 = Very Heavy (>75%)
2 = Moderate (10-40%)

Vegetation Class	Left Bank	Right Bank
Upper Canopy (>5 m high)		
Trees and saplings >5 m high	0 1 2 (3) 4	0 1 2 (3) 4
Lower Canopy (0.5 m-5 m high)		
All vegetation 0.5 m to 5 m	0 1 2 (3) 4	0 1 2 (3) 4
Ground Cover (<0.5 m high)		
Woody shrubs & saplings <0.5 m	0 1 (2) 3 4	0 (1) 2 3 4
Herbs/ grasses	0 (1) 2 3 4	0 1 (2) 3 4
Barren, bare soil/ duff	0 1 2 (3) 4	0 1 2 (3) 4

Instream Habitat Complexity

0 = Absent (0%)
1 = Sparse (<10%)
2 = Moderate (10-40%)
3 = Heavy (40-75%)
4 = Very Heavy (>75%)

Filamentous Algae	(0) 1 2 3 4
Aquatic Macrophytes/ Emergent Vegetation	(0) 1 2 3 4
Boulders	0 1 2 (3) 4
Woody Debris >0.3 m	0 (1) 2 3 4
Woody Debris <0.3 m	0 (1) 2 3 4
Undercut Banks	0 (1) 2 3 4
Overhang. Vegetation	0 (1) 2 3 4
Live Tree Roots	(0) 1 2 3 4
Artificial Structures	(0) 1 2 3 4

Densiometer Readings (0-17)

count covered dots

Center Left	17
Center Upstream	13
Center Right	7
Center Downstream	8
Optional	
Left Bank	1
Right Bank	1

Human Influence (circle only the closest to wetted channel)

0 = Not Present;
B = On Bank;
C = Between Bank & 10m from Channel;
P = >10m+<50m from Channel;
Channel (record Yes or No)

	Left Bank	Channel	Right Bank
Walls/ Rip-rap/ Dams	P C B (0)	Y (N)	(0) B C P
Buildings	P C B 0	Y N	0 B C P
Pavement/ Cleared Lot	P C B 0		0 B C P
Road/ Railroad	P C B 0	Y N	0 B C P
Pipes (Inlet/ Outlet)	P C B 0	Y N	0 B C P
Landfill/ Trash	P C B 0	Y N	0 B C P
Park/ Lawn	P C B 0		0 B C P
Row Crop	P C B 0		0 B C P
Pasture/ Range	P C B 0		0 B C P
Logging Operations	P C B 0		0 B C P
Mining Activity	P C B 0	Y N	0 B C P
Vegetation Management	P C B 0		0 B C P
Bridges/ Abutments	P C B 0	Y N	0 B C P
Orchards/ Vineyards	P C B 0		0 B C P

Bank Stability

(score zone 5m upstream and 5m downstream of transect between bankfull - wetted width)

Left Bank	eroded	vulnerable	(stable)
Right Bank	eroded	vulnerable	(stable)

Inter-Transect: CD

Wetted Width (m): 8

Inter-Transect Substrates

Position	Dist from LB (m)	Depth (cm)	mm/ size class	% Cobble Embed.	CPOM	Microalgae Thickness Code	Macroalgae Attached	Macroalgae Unattached	Macrophytes
Left Bank	.5	90	COB	0	(P) A	0	P (A) D	P (A) D	P (A) D
Left Center	2	28	BLD	—	P (A)	1	P (A) D	P (A) D	P (A) D
Center	4	26	COB	35	P A		P A D	P A D	P A D
Right Center	6	0	BLD	—	(P) A	2	(P) A D	P (A) D	P (A) D
Right Bank	7.5	10	COB	20	(P) A	1	(P) A D	P (A) D	(P) A D
	Note: Substrate sizes can be recorded either as direct measures of the median axis of each particle or one of the size class categories listed on the supplemental page (direct measurements preferred)								

Microalgae Thickness Codes
0 = No microalgae present. Feels rough, not slimy;
1 = Present but not visible. Feels slimy;
2 = Present and visible but <1mm. Rubbing fingers on surface produces a brownish tint on them, scraping leaves visible trail;
3 = 1-5mm;
4 = 5-20mm;
5 = >20mm;
UD = Cannot determine if microalgae present, substrate too small or covered with silt (formerly Z code);
D = Dry, not assessed

Flow Habitats (% between morphological units)	
Channel Type	%
Cascade/ Falls	
Rapid	
Riffle	80
Run	
Glide	20
Pool	
Dry	

SWAMP Stream Habitat Characterization Form FULL VERSION Revision Date: February 9th, 2011

Site Code:	Site Name: OC abu MYR	Date: ___/___/2011
Wetted Width (m): 5	Bankfull Width (m): 9	Bankfull Height (m): 1.5

Transect D

Transect Substrates

Position	Dist from LB (m)	Depth (cm)	mm/ size class	% Cobble Embed.	CPOM	Microalgae Thickness Code	Macroalgae Attached	Macroalgae Unattached	Macrophytes
Left Bank	.5	45	FG	—	(P) A	0	P (A) D	P (A) D	P (A) D
Left Center	1.5	54	SND	—	P (A)	2	P (A) D	P (A) D	P (A) D
Center	2.5	57	CB	70	(P) A	1	P (A) D	P (A) D	P (A) D
Right Center	4	48	SND	—	P (A)	2	P (A) D	P (A) D	P (A) D
Right Bank	4.5	10	BED	—	(P) A	2	P (A) D	P (A) D	P (A) D

Note: Substrate sizes can be recorded either as direct measures of the median axis of each particle or one of the size class categories listed on the supplemental page (direct measurements preferred)

Microalgae Thickness Codes
0 = No microalgae present. Feels rough, not slimy;
1 = Present but not visible. Feels slimy;
2 = Present and visible but <1mm. Rubbing fingers on surface produces a brownish tint on them, scraping leaves visible trail.
3 = 1-5mm;
4 = 5-20mm;
5 = >20mm;
UD = Cannot determine if microalgae present, substrate too small or covered with silt (formerly Z code).
D = Dry, not assessed

Riparian Vegetation
(facing downstream)

0 = Absent (0%) 3 = Heavy (40-75%)
1 = Sparse (<10%) 4 = Very Heavy (>75%)
2 = Moderate (10-40%)

Vegetation Class	Left Bank	Right Bank
Upper Canopy (>5 m high)		
Trees and saplings >5 m high	0 1 2 (3) 4	0 1 2 (3) 4
Lower Canopy (0.5 m-5 m high)		
All vegetation 0.5 m to 5 m	0 1 2 (3) 4	0 1 2 (3) 4
Ground Cover (<0.5 m high)		
Woody shrubs & saplings <0.5 m	0 1 (2) 3 4	0 1 (2) 3 4
Herbs/ grasses	0 (1) 2 3 4	0 (1) 2 3 4
Barren, bare soil/ duff	0 1 2 (3) 4	0 1 2 3 (4)

Instream Habitat Complexity

0 = Absent (0%)
1 = Sparse (<10%)
2 = Moderate (10-40%)
3 = Heavy (40-75%)
4 = Very Heavy (>75%)

Filamentous Algae	(0) 1 2 3 4
Aquatic Macrophytes/ Emergent Vegetation	(0) 1 2 3 4
Boulders	0 1 2 (3) 4
Woody Debris >0.3 m	0 (1) 2 3 4
Woody Debris <0.3 m	0 (1) 2 3 4
Undercut Banks	0 (1) 2 3 4
Overhang. Vegetation	(0) 1 2 3 4
Live Tree Roots	(0) 1 2 3 4
Artificial Structures	(0) 1 2 3 4

Densiometer Readings (0-17)
count covered dots

Center Left	15
Center Upstream	9
Center Right	11
Center Downstream	7
Optional	
Left Bank	
Right Bank	1

Human Influence
(circle only the closest to wetted channel)

0 = Not Present;
B = On Bank;
C = Between Bank & 10m from Channel;
P = >10m+<50m from Channel;
Channel (record Yes or No)

	Left Bank	Channel	Right Bank
Walls/ Rip-rap/ Dams	P C B (0)	Y (N)	(0) B C P
Buildings	P C B (0)	Y N	(0) B C P
Pavement/ Cleared Lot	P C B (0)		(0) B C P
Road/ Railroad	P C B (0)	Y N	(0) B C P
Pipes (Inlet/ Outlet)	P C B (0)	Y N	(0) B C P
Landfill/ Trash	P C B (0)	Y N	(0) B C P
Park/ Lawn	P C B (0)		(0) B C P
Row Crop	P C B (0)		(0) B C P
Pasture/ Range	P C B (0)		(0) B C P
Logging Operations	P C B (0)		(0) B C P
Mining Activity	P C B (0)	Y N	(0) B C P
Vegetation Management	P C B (0)		(0) B C P
Bridges/ Abutments	P C B (0)	Y N	(0) B C P
Orchards/ Vineyards	P C B (0)		(0) B C P

Bank Stability
(score zone 5m upstream and 5m downstream of transect between bankfull - wetted width)

Left Bank	eroded	vulnerable	(stable)
Right Bank	eroded	vulnerable	(stable)

Inter-Transect: DE

Wetted Width (m): 6

Inter-Transect Substrates

Position	Dist from LB (m)	Depth (cm)	mm/ size class	% Cobble Embed.	CPOM	Microalgae Thickness Code	Macroalgae Attached	Macroalgae Unattached	Macrophytes
Left Bank	.5	24	FG	—	(P) A	0 &	(P) (A) D	P (A) D	P (A) D
Left Center	1.5	27	CB	15	P (A)	1	P (A) D	P (A) D	P (A) D
Center	3	45	CB	65	P (A)	0	P (A) D	P (A) D	P (A) D
Right Center	4.5	18	BLD	—	(P) A	1	P (A) D	P (A) D	(P) A D
Right Bank	5.5	0	COB	50	(P) A	1	P (A) D	P (A) D	(P) A D
	Note: Substrate sizes can be recorded either as direct measures of the median axis of each particle or one of the size class categories listed on the supplemental page (direct measurements preferred)								

Microalgae Thickness Codes
0 = No microalgae present. Feels rough, not slimy;
1 = Present but not visible. Feels slimy;
2 = Present and visible but <1mm. Rubbing fingers on surface produces a brownish tint on them, scraping leaves visible trail;
3 = 1-5mm;
4 = 5-20mm;
5 = >20mm;
UD = Cannot determine if microalgae present, substrate too small or covered with silt (formerly Z code);
D = Dry, not assessed

Flow Habitats

Channel Type	%
Cascade/Falls	
Rapid	
Riffle	20
Run	
Glide	
Pool	80
Dry	

SWAMP Stream Habitat Characterization Form FULL VERSION Revision Date: February 9th, 2011

Site Code:	Site Name: OC abv MYR	Date: ___/___/2011
Wetted Width (m): 8	Bankfull Width (m): 13	Bankfull Height (m): 1.8

Transect E

Transect Substrates

Position	Dist from LB (m)	Depth (cm)	mm/ size class	% Cobble Embed.	CPOM	Microalgae Thickness Code	Macroalgae Attached	Macroalgae Unattached	Macrophytes
Left Bank	.5	44	SAND	—	(P) A	0	P (A) D	P (A) D	P (A) D
Left Center	2	58	BED	—	P (A)	1	P (A) D	P (A) D	P (A) D
Center	4	96	EG	—	P (A)	0	P (A) D	P (A) D	P (A) D
Right Center	6	32	BLD	—	(P) A	2	P (A) D	P (A) D	P (A) D
Right Bank	7.5	5	BED	—	(P) A	2	(P) A D	P (A) D	P (A) D

Note: Substrate sizes can be recorded either as direct measures of the median axis of each particle or one of the size class categories listed on the supplemental page (direct measurements preferred)

Microalgae Thickness Codes
0 = No microalgae present. Feels rough, not slimy;
1 = Present but not visible. Feels slimy;
2 = Present and visible but <1mm. Rubbing fingers on surface produces a brownish tint on them, scraping leaves visible trail.
3 = 1-5mm;
4 = 5-20mm;
5 = >20mm;
UD = Cannot determine if microalgae present, substrate too small or covered with silt (formerly Z code).
D = Dry, not assessed

Riparian Vegetation (facing downstream)

0 = Absent (0%) 3 = Heavy (40-75%)
1 = Sparse (<10%) 4 = Very Heavy (>75%)
2 = Moderate (10-40%)

Vegetation Class	Left Bank	Right Bank
Upper Canopy (>5 m high)		
Trees and saplings >5 m high	0 1 2 (3) 4	0 1 2 (3) 4
Lower Canopy (0.5 m-5 m high)		
All vegetation 0.5 m to 5 m	0 1 2 (3) 4	0 1 2 (3) 4
Ground Cover (<0.5 m high)		
Woody shrubs & saplings <0.5 m	0 1 (2) 3 4	0 1 (2) 3 4
Herbs/ grasses	0 (1) 2 3 4	0 (1) 2 3 4
Barren, bare soil/ duff	0 1 2 (3) 4	0 1 2 3 (4)

Instream Habitat Complexity

0 = Absent (0%)
1 = Sparse (<10%)
2 = Moderate (10-40%)
3 = Heavy (40-75%)
4 = Very Heavy (>75%)

Filamentous Algae	(0) 1 2 3 4
Aquatic Macrophytes/ Emergent Vegetation	(0) 1 2 3 4
Boulders	0 1 2 (3) 4
Woody Debris >0.3 m	0 (1) 2 3 4
Woody Debris <0.3 m	0 (1) 2 3 4
Undercut Banks	0 (1) 2 3 4
Overhang. Vegetation	0 (1) 2 3 4
Live Tree Roots	(0) 1 2 3 4
Artificial Structures	(0) 1 2 3 4

Densiometer Readings (0-17)

count covered dots

Center Left	17
Center Upstream	17
Center Right	17
Center Downstream	17
Optional	
Left Bank	
Right Bank	

Human Influence (circle only the closest to wetted channel)

0 = Not Present;
B = On Bank;
C = Between Bank & 10m from Channel;
P = >10m+<50m from Channel;
Channel (record Yes or No)

	Left Bank	Channel	Right Bank
Walls/ Rip-rap/ Dams	P C B (0)	Y (N)	(0) B C P
Buildings	P C B 0	Y N	0 B C P
Pavement/ Cleared Lot	P C B 0		0 B C P
Road/ Railroad	P C B 0	Y N	0 B C P
Pipes (Inlet/ Outlet)	P C B 0	Y N	0 B C P
Landfill/ Trash	P C B 0	Y N	0 B C P
Park/ Lawn	P C B 0		0 B C P
Row Crop	P C B 0		0 B C P
Pasture/ Range	P C B 0		0 B C P
Logging Operations	P C B 0		0 B C P
Mining Activity	P C B 0	Y N	0 B C P
Vegetation Management	P C B 0		0 B C P
Bridges/ Abutments	P C B 0	Y N	0 B C P
Orchards/ Vineyards	P C B 0		0 B C P

Bank Stability

(look at 5m upstream and 5m downstream of transect between bankfull - wetted width)

Left Bank	eroded	vulnerable	(stable)
Right Bank	eroded	vulnerable	(stable)

bedrock

Inter-Transect: EF

Wetted Width (m): 5.5

Inter-Transect Substrates

Position	Dist from LB (m)	Depth (cm)	mm/ size class	% Cobble Embed	CPOM	Microalgae Thickness Code	Macroalgae Attached	Macroalgae Unattached	Macrophytes
Left Bank	.5	34	COB	20	(P) A	2	P (A) D	P (A) D	P (A) D
Left Center	1.5	50	BLD	—	(P) A	1	P (A) D	P (A) D	P (A) D
Center	3	60	COB	30	(P) A	2	P (A) D	P (A) D	P (A) D
Right Center	4.5	35	BLD	—	P (A)	1	P (A) D	P (A) D	P (A) D
Right Bank	5	21	BLD	—	(P) A	2	P (A) D	P (A) D	P (A) D
	Note: Substrate sizes can be recorded either as direct measures of the median axis of each particle or one of the size class categories listed on the supplemental page (direct measurements preferred)								

Microalgae Thickness Codes

0 = No microalgae present. Feels rough, not slimy;
1 = Present but not visible. Feels slimy;
2 = Present and visible but <1mm; Rubbing fingers on surface produces a brownish tint on them; scraping leaves visible trail;
3 = 1-5mm;
4 = 5-20mm;
5 = >20mm;
UD = Cannot determine if microalgae present, substrate too small or covered with silt (formerly Z code);
D = Dry; not assessed

Flow Habitats

Channel Type	%
Cascade/ Falls	
Rapid	
Riffle	
Run	
Glide	10
Pool	90
Dry	

SWAMP Stream Habitat Characterization Form FULL VERSION Revision Date: February 9th, 2011

Site Code:	Site Name: OC abv MYR	Date: ___/___/2011
Wetted Width (m): 4	Bankfull Width (m): 10	Bankfull Height (m): 2.5

Transect F

Transect Substrates

Position	Dist from LB (m)	Depth (cm)	mm/ size class	% Cobble Embed.	CPOM	Microalgae Thickness Code	Macroalgae Attached	Macroalgae Unattached	Macrophytes
Left Bank	.5	36	SAND	—	P (A)	0	P (A) D	P (A) D	P (A) D
Left Center	1	49	BLD	—	P (A)	2	P (A) D	P (A) D	P (A) D
Center	2	58	FG	—	(P) A	0	P (A) D	P (A) D	P (A) D
Right Center	3	10	BLD	—	(P) A	1	P (A) D	P (A) D	P (A) D
Right Bank	3.5	78	COB	10	P (A)	1	P (A) D	P (A) D	P (A) D

Note: Substrate sizes can be recorded either as direct measures of the median axis of each particle or one of the size class categories listed on the supplemental page (direct measurements preferred)

Microalgae Thickness Codes
0 = No microalgae present. Feels rough, not slimy;
1 = Present but not visible. Feels slimy;
2 = Present and visible but <1mm; Rubbing fingers on surface produces a brownish tint on them, scraping leaves visible trail;
3 = 1-5mm;
4 = 5-20mm;
5 = >20mm;
UD = Cannot determine if microalgae present, substrate too small or covered with silt (formerly Z code);
D = Dry, not assessed

Riparian Vegetation (facing downstream)

0 = Absent (0%) 3 = Heavy (40-75%)
1 = Sparse (<10%) 4 = Very Heavy (>75%)
2 = Moderate (10-40%)

Vegetation Class	Left Bank	Right Bank
Upper Canopy (>5 m high)		
Trees and saplings >5 m high	0 1 (2) 3 4	0 1 (2) 3 4
Lower Canopy (0.5 m-5 m high)		
All vegetation 0.5 m to 5 m	0 1 (2) 3 4	0 1 (2) 3 4
Ground Cover (<0.5 m high)		
Woody shrubs & saplings <0.5 m	0 (1) 2 3 4	0 (1) 2 3 4
Herbs/ grasses	0 1 2 (3) 4	0 (1) 2 3 4
Barren, bare soil/ duff	0 1 2 (3) 4	0 1 2 3 (4)

Instream Habitat Complexity

0 = Absent (0%)
1 = Sparse (<10%)
2 = Moderate (10-40%)
3 = Heavy (40-75%)
4 = Very Heavy (>75%)

Filamentous Algae	(0) 1 2 3 4
Aquatic Macrophytes/ Emergent Vegetation	0 (1) 2 3 4
Boulders	0 1 2 (3) 4
Woody Debris >0.3 m	0 (1) 2 3 4
Woody Debris <0.3 m	0 (1) 2 3 4
Undercut Banks	(0) 1 2 3 4
Overhang. Vegetation	0 1 (2) 3 4
Live Tree Roots	(0) 1 2 3 4
Artificial Structures	(0) 1 2 3 4

Densiometer Readings (0-17)

count covered dots

Center Left	15
Center Upstream	9
Center Right	12
Center Downstream	8
Optional	
Left Bank	
Right Bank	1

Human Influence (circle only the closest to wetted channel)

0 = Not Present;
B = On Bank;
C = Between Bank & 10m from Channel;
P = >10m+<50m from Channel;
Channel (record Yes or No)

	Left Bank	Channel	Right Bank
Walls/ Rip-rap/ Dams	P C B (0)	Y (N)	(0) B C P
Buildings	P C B (0)	Y (N)	(0) B C P
Pavement/ Cleared Lot	P C B (0)		(0) B C P
Road/ Railroad	P C B (0)	Y (N)	(0) B C P
Pipes (Inlet/ Outlet)	P C B (0)	Y (N)	(0) B C P
Landfill/ Trash	P C B (0)	Y (N)	(0) B C P
Park/ Lawn	P C B (0)		(0) B C P
Row Crop	P C B (0)		(0) B C P
Pasture/ Range	P C B (0)		(0) B C P
Logging Operations	P C B (0)		(0) B C P
Mining Activity	P C B (0)	Y (N)	(0) B C P
Vegetation Management	P C B (0)		(0) B C P
Bridges/ Abutments	P C B (0)	Y (N)	(0) B C P
Orchards/ Vineyards	P C B (0)		(0) B C P

Bank Stability

(score over 50m reach and 5m downstream of transect between bankfull - wetted width)

Left Bank	eroded	vulnerable	(stable)
Right Bank	eroded	vulnerable	(stable)

TAKE PHOTOGRAPHS

(check box if taken & record photo code)

Downstream **(required)** ☒
163

Upstream **(required)** ☒
164

Inter-Transect: FG

Wetted Width (m): 7

Inter-Transect Substrates

Position	Dist from LB (m)	Depth (cm)	mm/ size class	% Cobble Embed.	CPOM	Microalgae Thickness Code	Macroalgae Attached	Macroalgae Unattached	Macrophytes
Left Bank	.5	36	SAND	—	(P) A	0	P (A) D	P (A) D	P (A) D
Left Center	2	35	SAND	—	(P) A	0	P (A) D	P (A) D	P (A) D
Center	3.5	91	SAND	—	(P) A	0	P (A) D	P (A) D	P (A) D
Right Center	5.5	57	BED	—	P (A)	1	P (A) D	P (A) D	P (A) D
Right Bank	6.5	10	COB	5	(P) A	1	P (A) D	P (A) D	P (A) D
	Note: Substrate sizes can be recorded either as direct measures of the median axis of each particle or one of the size class categories listed on the supplemental page (direct measurements preferred)								

Microalgae Thickness Codes
0 = No microalgae present. Feels rough, not slimy;
1 = Present but not visible. Feels slimy;
2 = Present and visible but <1mm. Rubbing fingers on surface produces a brownish tint on them, scraping leaves visible trail;
3 = 1-5mm;
4 = 5-20mm;
5 = >20mm;
UD = Cannot determine if microalgae present, substrate too small or covered with silt (formerly Z code);
D = Dry, not assessed

Flow Habitats
(% wetted benefits, must = 100)

Channel Type	%
Cascade/ Falls	
Rapid	
Riffle	
Run	
Glide	
Pool	100
Dry	

Site Code:	Site Name: OC 3v MYR	Date: __/__/2011
Wetted Width (m): 4.5	Bankfull Width (m): 7.5	Bankfull Height (m): 1

Transect G

Transect Substrates

Position	Dist from LB (m)	Depth (cm)	mm/ size class	% Cobble Embed.	CPOM	Microalgae Thickness Code	Macroalgae Attached	Macroalgae Unattached	Macrophytes
Left Bank	.5	14	BLD	—	(P) A	1	P (A) D	P (A) D	P (A) D
Left Center	1	70	GRB	10	(P) A	2	(P) A D	P (A) D	P (A) D
Center	2.5	79	BLD	—	(P) A	2	P (A) D	P (A) D	P (A) D
Right Center	3.5	60	BED	—	P (A)	0	P (A) D	P (A) D	P (A) D
Right Bank	4	54	BED	—	P (A)	0	P (A) D	P (A) D	P (A) D
	Note: Substrate sizes can be recorded either as direct measures of the median axis of each particle or one of the size class categories listed on the supplemental page (direct measurements preferred)								

Microalgae Thickness Codes
0 = No microalgae present. Feels rough, not slimy;
1 = Present but not visible. Feels slimy;
2 = Present and visible but <1mm. Rubbing fingers on surface produces a brownish tint on them, scraping leaves visible trail.
3 = 1-5mm;
4 = 5-20mm;
5 = >20mm;
UD = Cannot determine if microalgae present, substrate too small or covered with silt (formerly Z code);
D = Dry, not assessed.

Riparian Vegetation
(facing downstream)

0 = Absent (0%) 3 = Heavy (40-75%)
1 = Sparse (<10%) 4 = Very Heavy (>75%)
2 = Moderate (10-40%)

Vegetation Class	Left Bank	Right Bank
Upper Canopy (>5 m high)		
Trees and saplings >5 m high	0 1 2 (3) 4	0 1 2 (3) 4
Lower Canopy (0.5 m-5 m high)		
All vegetation 0.5 m to 5 m	0 1 (2) 3 4	0 1 (2) 3 4
Ground Cover (<0.5 m high)		
Woody shrubs & saplings <0.5 m	0 (1) 2 3 4	0 (1) 2 3 4
Herbs/ grasses	0 1 (2) 3 4	0 1 (2) 3 4
Barren, bare soil/ duff	0 1 2 3 (4)	0 1 2 3 (4)

Instream Habitat Complexity

0 = Absent (0%)
1 = Sparse (<10%)
2 = Moderate (10-40%)
3 = Heavy (40-75%)
4 = Very Heavy (>75%)

Filamentous Algae	(0) 1 2 3 4
Aquatic Macrophytes/ Emergent Vegetation	(0) 1 2 3 4
Boulders	0 1 2 (3) 4
Woody Debris >0.3 m	(0) 1 2 3 4
Woody Debris <0.3 m	0 (1) 2 3 4
Undercut Banks	0 (1) 2 3 4
Overhang. Vegetation	0 (1) 2 3 4
Live Tree Roots	(0) 1 2 3 4
Artificial Structures	(0) 1 2 3 4

Densiometer Readings (0-17)
count covered dots

Center Left	15
Center Upstream	8
Center Right	11
Center Downstream	5
Optional	
Left Bank	X
Right Bank	

Human Influence
(circle only the closest to wetted channel)

0 = Not Present;
B = On Bank;
C = Between Bank & 10m from Channel;
P = >10m+<50m from Channel;
Channel (record Yes or No)

	Left Bank	Channel	Right Bank
Walls/ Rip-rap/ Dams	P C B (0)	Y (N)	(0) B C P
Buildings	P C B (0)	Y N	(0) B C P
Pavement/ Cleared Lot	P C B (0)		(0) B C P
Road/ Railroad	P C B (0)	Y N	(0) B C P
Pipes (Inlet/ Outlet)	P C B (0)	Y N	(0) B C P
Landfill/ Trash	P C B (0)	Y N	(0) B C P
Park/ Lawn	P C B (0)		(0) B C P
Row Crop	P C B (0)		(0) B C P
Pasture/ Range	P C B (0)		(0) B C P
Logging Operations	P C B (0)		(0) B C P
Mining Activity	P C B (0)	Y N	(0) B C P
Vegetation Management	P C B (0)		(0) B C P
Bridges/ Abutments	P C B (0)	Y N	(0) B C P
Orchards/ Vineyards	P C B (0)		(0) B C P

Bank Stability
(score zone 5m upstream and 5m downstream of transect between bankfull - wetted width)

Left Bank	eroded	vulnerable	(stable)
Right Bank	eroded	vulnerable	(stable)

Inter-Transect: GH

Wetted Width (m): 3,5

Inter-Transect Substrates

Position	Dist from LB (m)	Depth (cm)	mm/ size class	% Cobble Embed.	CPOM	Microalgae Thickness Code	Macroalgae Attached	Macroalgae Unattached	Macrophytes
Left Bank	0.5	21	EG	—	(P) A	1	P (A) D	P (A) D	P (A) D
Left Center	1	30	CG	—	(P) A	0	P (A) D	P (A) D	P (A) D
Center	2	52	SAND	—	P (A)	0	P (A) D	P (A) D	P (A) D
Right Center	3	0	BLD	—	(P) A	2	(P) A D	P (A) D	P (A) D
Right Bank	3.25	30	BED	—	(P) A	2	(P) A D	P (A) D	P (A) D
	Note: Substrate sizes can be recorded either as direct measures of the median axis of each particle or one of the size class categories listed on the supplemental page (direct measurements preferred)								

Microalgae Thickness Codes

0 = No microalgae present. Feels rough, not slimy;
1 = Present but not visible. Feels slimy;
2 = Present and visible but <1mm. Rubbing fingers on surface produces a brownish tint on them, scraping leaves visible trail;
3 = 1-5mm;
4 = 5-20mm;
5 = >20mm;
UD = Cannot determine if microalgae present, substrate too small or covered with silt (formerly Z code);
D = Dry, not assessed

FLOW HABITATS
(% Flow in transects, sum = 100%)

Channel Type	%
Cascade/Falls	
Rapid	
Riffle	30
Run	20
Glide	
Pool	50
Dry	

SWAMP Stream Habitat Characterization Form FULL VERSION Revision Date: February 9th, 2011

Site Code:	Site Name: OC abv MYR	Date: ___/___/2011
Wetted Width (m): 4	Bankfull Width (m): 7	Bankfull Height (m): 1.5

Transect H

Transect Substrates

Position	Dist from LB (m)	Depth (cm)	mm/ size class	% Cobble Embed	CPOM	Microalgae Thickness Code	Macroalgae Attached	Macroalgae Unattached	Macrophytes
Left Bank	.5	17	COB	10	(P) A	2	P (A) D	P (A) D	P (A) D
Left Center	1	36	BLD	—	P (A)	1	P (A) D	P (A) D	P (A) D
Center	2	0	COB	40	(P) A	1	P (A) D	P (A) D	P (A) D
Right Center	3	0	BLD	—	(P) A	2	(P) A D	P (A) D	P (A) D
Right Bank	3.5	15	FG		P A		P A D	P A D	P A D

Note: Substrate sizes can be recorded either as direct measures of the median axis of each particle or one of the size class categories listed on the supplemental page (direct measurements preferred)

Microalgae Thickness Codes
0 = No microalgae present. Feels rough, not slimy;
1 = Present but not visible. Feels slimy;
2 = Present and visible but <1mm. Rubbing fingers on surface produces a brownish tint on them, scraping leaves visible trail.
3 = 1-5mm;
4 = 5-20mm;
5 = >20mm;
UD = Cannot determine if microalgae present, substrate too small or covered with silt (formerly Z code).
D = Dry, not assessed

Riparian Vegetation (facing downstream)

0 = Absent (0%) 3 = Heavy (40-75%)
1 = Sparse (<10%) 4 = Very Heavy (>75%)
2 = Moderate (10-40%)

Vegetation Class	Left Bank	Right Bank
Upper Canopy (>5 m high)		
Trees and saplings >5 m high	0 1 2 (3) 4	0 1 (2) 3 4
Lower Canopy (0.5 m-5 m high)		
All vegetation 0.5 m to 5 m	0 (1) 2 3 4	0 (1) 2 3 4
Ground Cover (<0.5 m high)		
Woody shrubs & saplings <0.5 m	0 (1) 2 3 4	0 (1) 2 3 4
Herbs/ grasses	0 1 (2) 3 4	0 (1) 2 (3) 4
Barren, bare soil/ duff	0 1 2 (3) 4	0 1 2 3 (4)

Instream Habitat Complexity

0 = Absent (0%)
1 = Sparse (<10%)
2 = Moderate (10-40%)
3 = Heavy (40-75%)
4 = Very Heavy (>75%)

Filamentous Algae	(0) 1 2 3 4
Aquatic Macrophytes/ Emergent Vegetation	0 (1) 2 3 4
Boulders	0 1 2 (3) 4
Woody Debris >0.3 m	0 (1) 2 3 4
Woody Debris <0.3 m	0 (1) 2 3 4
Undercut Banks	(0) 1 2 3 4
Overhang. Vegetation	0 1 (2) 3 4
Live Tree Roots	0 (1) 2 3 4
Artificial Structures	(0) 1 2 3 4

Densiometer Readings (0-17)

count covered dots

Center Left	17
Center Upstream	15
Center Right	17
Center Downstream	11
Optional	
Left Bank	5
Right Bank	3

Human Influence (circle only the closest to wetted channel)

0 = Not Present;
B = On Bank;
C = Between Bank & 10m from Channel;
P = >10m+<50m from Channel;
Channel (record Yes or No)

	Left Bank	Channel	Right Bank
Walls/ Rip-rap/ Dams	P C B (0)	Y (N)	(0) B C P
Buildings	P C B (0)	Y N	(0) B C P
Pavement/ Cleared Lot	P C B (0)		(0) B C P
Road/ Railroad	P C B (0)	Y N	(0) B C P
Pipes (Inlet/ Outlet)	P C B (0)	Y N	(0) B C P
Landfill/ Trash	P C B (0)	Y N	(0) B C P
Park/ Lawn	P C B (0)		(0) B C P
Row Crop	P C B (0)		(0) B C P
Pasture/ Range	P C B (0)		(0) B C P
Logging Operations	P C B (0)		(0) B C P
Mining Activity	P C B (0)	Y N	(0) B C P
Vegetation Management	P C B (0)		(0) B C P
Bridges/ Abutments	P C B (0)	Y N	(0) B C P
Orchards/ Vineyards	P C B (0)		(0) B C P

Bank Stability

(observe 20-30 m upstream and 5m downstream of transect between bankfull wetted width)

Left Bank	eroded	vulnerable	(stable)
Right Bank	eroded	vulnerable	(stable)

Inter-Transect: HI

Wetted Width (m): 3

Inter-Transect Substrates

Position	Dist from LB (m)	Depth (cm)	mm/ size class	% Cobble Embed.	CPOM	Microalgae Thickness Code	Macroalgae Attached	Macroalgae Unattached	Macrophytes
Left Bank	.5	29	FG	—	(P) A	0	P (A) D	P (A) D	(P) A D
Left Center	1	31	BLD	—	P (A)	1	P (A) D	P (A) D	P (A) D
Center	1.5	3	COB	30	(P) A	1	P (A) D	P (A) D	P (A) D
Right Center	2	1	BLD	—	(P) A	2	(P) A D	P (A) D	P (A) D
Right Bank	2.5	15	COB	50	(P) A	1	P (A) D	P (A) D	(P) A D
	Note: Substrate sizes can be recorded either as direct measures of the median axis of each particle or one of the size class categories listed on the supplemental page (direct measurements preferred).								

Microalgae Thickness Codes
0 = No microalgae present. Feels rough, not slimy;
1 = Present but not visible. Feels slimy;
2 = Present and visible but <1mm; Rubbing fingers on surface produces a brownish tint on them, scraping leaves visible trail;
3 = 1-5mm;
4 = 5-20mm;
5 = >20mm;
UD = Cannot determine if microalgae present, substrate too small or covered with silt (formerly Z code);
D = Dry, not assessed

Flow Habitats
(% between transects Lab-Trib)

Channel Type	%
Cascade/Falls	
Rapid	
Riffle	100
Run	
Glide	
Pool	
Dry	

SWAMP Stream Habitat Characterization Form FULL VERSION Revision Date: February 9th, 2011

Site Code:	Site Name: (6)C abu MYR	Date: 07/10/2012 12
Wetted Width (m): 11	Bankfull Width (m): 15 / Bankfull Height (m): 1m	**Transect 1**

Transect Substrates

Position	Dist from LB (m)	Depth (cm)	mm/ size class	% Cobble Embed.	CPOM	Microalgae Thickness Code	Macroalgae Attached	Macroalgae Unattached	Macrophytes
Left Bank	.5	28	BLD	—	(P) A	2	(P) A D	P (A) D	P (A) D
Left Center	3	39	COB	30	P A	0	P (A) D	P (A) D	P (A) D
Center	5.5	18	BLD	—	(P) A	2	P A D	P (A) D	P (A) D
Right Center	8.5	50	BLD	—	P (A)	0	P (A) D	P (A) D	P (A) D
Right Bank	10.5	47	CB	—	P (A)	0	P (A) D	P (A) D	P (A) D

Note: Substrate sizes can be recorded either as direct measures of the median axis of each particle or one of the size class categories listed on the supplemental page (direct measurements preferred)

Microalgae Thickness Codes
0 = No microalgae present. Feels rough, not slimy;
1 = Present but not visible. Feels slimy;
2 = Present and visible but <1mm. Rubbing fingers on surface produces a brownish tint on them, scraping leaves visible trail;
3 = 1-5mm;
4 = 5-20mm;
5 = >20mm;
UD = Cannot determine if microalgae present, substrate too small or covered with silt (formerly Z code);
D = Dry, not assessed

RIPARIAN VEGETATION (facing downstream)
0 = Absent (0%) 3 = Heavy (40-75%)
1 = Sparse (<10%) 4 = Very Heavy (>75%)
2 = Moderate (10-40%)

Vegetation Class	Left Bank	Right Bank
Upper Canopy (>5 m high)		
Trees and saplings >5 m high	0 1 (2) 3 4	0 1 (2) 3 4
Lower Canopy (0.5 m-5 m high)		
All vegetation 0.5 m to 5 m	(0) 2 3 4	0 (1) 2 3 4
Ground Cover (<0.5 m high)		
Woody shrubs & saplings <0.5 m	0 1 (2) 3 4	(0) 1 2 3 4
Herbs/ grasses	0 (1) 2 3 4	0 (1) 2 3 4
Barren, bare soil/ duff	0 1 2 3 (4)	0 1 2 3 (4)

INSTREAM HABITAT COMPLEXITY
0 = Absent (0%)
1 = Sparse (<10%)
2 = Moderate (10-40%)
3 = Heavy (40-75%)
4 = Very Heavy (>75%)

Filamentous Algae	(0) 1 2 3 4
Aquatic Macrophytes/ Emergent Vegetation	0 (1) 2 3 4
Boulders	0 1 2 (3) 4
Woody Debris >0.3 m	(0) 1 2 3 4
Woody Debris <0.3 m	0 (1) 2 3 4
Undercut Banks	(0) 1 2 3 4
Overhang. Vegetation	0 1 (2) 3 4
Live Tree Roots	(0) 1 2 3 4
Artificial Structures	(0) 1 2 3 4

DENSIOMETER READINGS (0-17)
count covered dots

Center Left	16
Center Upstream	17
Center Right	11
Center Downstream	12
Optional	
Left Bank	5
Right Bank	2

HUMAN INFLUENCE (circle only the closest to wetted channel)
0 = Not Present;
B = On Bank;
C = Between Bank & 10m from Channel;
P = >10m+<50m from Channel;
Channel (record Yes or No)

	Left Bank	Channel	Right Bank
Walls/ Rip-rap/ Dams	P C B (0)	Y (N)	(0) B C P
Buildings	P C B 0	Y N	0 B C P
Pavement/ Cleared Lot	P C B 0		0 B C P
Road/ Railroad	P C B 0	Y N	0 B C P
Pipes (Inlet/ Outlet)	P C B 0	Y N	0 B C P
Landfill/ Trash	P C B 0	Y N	0 B C P
Park/ Lawn	P C B 0		0 B C P
Row Crop	P C B 0		0 B C P
Pasture/ Range	P C B 0		0 B C P
Logging Operations	P C B 0		0 B C P
Mining Activity	P C B 0	Y N	0 B C P
Vegetation Management	P C B 0		0 B C P
Bridges/ Abutments	P C B 0	Y N	0 B C P
Orchards/ Vineyards	P C B 0		0 B C P

BANK STABILITY
(Score zone 5m upstream and 5m downstream of transect between bankfull + wetted width)

Left Bank	eroded	vulnerable	(stable)
Right Bank	eroded	vulnerable	(stable)

Inter-Transect: IJ

Wetted Width (m): 4.5

Inter-Transect Substrates

Position	Dist from LB (m)	Depth (cm)	mm/ size class	% Cobble Embed.	CPOM	Microalgae Thickness Code	Macroalgae Attached	Macroalgae Unattached	Macrophytes
Left Bank	.5	22	BLD	—	(P) A	2	P (A) D	P (A) D	P (A) D
Left Center	1.5	44	SAND	—	P (A)	0	P (A) D	P (A) D	P (A) D
Center	2.5	55	SAND	—	(P) A	0	P (A) D	P (A) D	P (A) D
Right Center	3.5	20	BLD	—	(P) A	2	P (A) D	P (A) D	P (A) D
Right Bank	4.5	35	COB	70	P (A)	1	P (A) D	P (A) D	P (A) D
	Note: Substrate sizes can be recorded either as direct measures of the median axis of each particle or one of the size class categories listed on the supplemental page (direct measurements preferred)								

Microalgae Thickness Codes
0 = No microalgae present. Feels rough, not slimy;
1 = Present but not visible. Feels slimy;
2 = Present and visible but <1mm; Rubbing fingers on surface produces a brownish tint on them, scraping leaves visible trail;
3 = 1-5mm;
4 = 5-20mm;
5 = >20mm;
UD = Cannot determine if microalgae present, substrate too small or covered with silt (formerly Z code);
D = Dry, not assessed

Flow Habitats

Channel Type	%
Cascade/Falls	
Rapid	
Riffle	
Run	100
Glide	
Pool	
Dry	

SWAMP Stream Habitat Characterization Form — FULL VERSION — Revision Date: February 9th, 2011

Site Code:	Site Name: OC abv MYR	Date: 07/10/2012
Wetted Width (m): 5.5	Bankfull Width (m): 13	Bankfull Height (m): 2

Transect J

Transect Substrates

Position	Dist from LB (m)	Depth (cm)	mm/ size class	% Cobble Embed.	CPOM	Microalgae Thickness Code	Macroalgae Attached	Macroalgae Unattached	Macrophytes
Left Bank	.5	58	SND	—	(P) A	0	P (A) D	P (A) D	P (A) D
Left Center	1	36	COB	30	P (A)	2	P (A) D	P (A) D	P (A) D
Center	2.5	36	FG	—	P (A)	0	P (A) D	P (A) D	P (A) D
Right Center	3.5	23	COB	10	P (A)	2	P (A) D	P (A) D	P (A) D
Right Bank	5.0	6	SAND	—	(P) A	0	P (A) D	P (A) D	P (A) D
	Note: Substrate sizes can be recorded either as direct measures of the median axis of each particle or one of the size class categories listed on the supplemental page (direct measurements preferred)								

Microalgae Thickness Codes
0 = No microalgae present. Feels rough, not slimy;
1 = Present but not visible. Feels slimy;
2 = Present and visible but <1mm; Rubbing fingers on surface produces a brownish tint on them, scraping leaves visible trail;
3 = 1-5mm;
4 = 5-20mm;
5 = >20mm;
UD = Cannot determine if microalgae present, substrate too small or covered with silt (formerly Z code);
D = Dry, not assessed

Riparian Vegetation (facing downstream)

0 = Absent (0%) 3 = Heavy (40-75%)
1 = Sparse (<10%) 4 = Very Heavy (>75%)
2 = Moderate (10-40%)

Vegetation Class	Left Bank	Right Bank
Upper Canopy (>5 m high)		
Trees and saplings >5 m high	0 1 2 3 (4)	0 1 (2) 3 4
Lower Canopy (0.5 m-5 m high)		
All vegetation 0.5 m to 5 m	0 1 (2) 3 4	0 1 (2) 3 4
Ground Cover (<0.5 m high)		
Woody shrubs & saplings <0.5 m	0 1 (2) 3 4	0 (1) 2 3 4
Herbs/ grasses	0 (1) 2 3 4	0 1 (2) 3 4
Barren, bare soil/ duff	0 1 2 (3) 4	0 1 2 (3) 4

Instream Habitat Complexity

0 = Absent (0%)
1 = Sparse (<10%)
2 = Moderate (10-40%)
3 = Heavy (40-75%)
4 = Very Heavy (>75%)

Filamentous Algae	(0) 1 2 3 4
Aquatic Macrophytes/ Emergent Vegetation	(0) 1 2 3 4
Boulders	0 1 (2) 3 4
Woody Debris >0.3 m	(0) 1 2 3 4
Woody Debris <0.3 m	(0) 1 2 3 4
Undercut Banks	0 (1) 2 3 4
Overhang. Vegetation	0 (1) 2 3 4
Live Tree Roots	(0) 1 2 3 4
Artificial Structures	(0) 1 2 3 4

Densiometer Readings (0-17)

count covered dots

Center Left	17
Center Upstream	9
Center Right	16
Center Downstream	7
Optional	
Left Bank	X
Right Bank	X

Human Influence (circle only the closest to wetted channel)

0 = Not Present;
B = On Bank;
C = Between Bank & 10m from Channel;
P = >10m+<50m from Channel;
Channel (record Yes or No)

	Left Bank	Channel	Right Bank
Walls/ Rip-rap/ Dams	P C B (0)	Y (N)	(0) B C P
Buildings	P C B (0)	Y N	(0) B C P
Pavement/ Cleared Lot	P C B (0)		(0) B C P
Road/ Railroad	P C B (0)	Y N	(0) B C P
Pipes (Inlet/ Outlet)	P C B (0)	Y N	(0) B C P
Landfill/ Trash	P C B (0)	Y N	(0) B C P
Park/ Lawn	P C B (0)		(0) B C P
Row Crop	P C B (0)		(0) B C P
Pasture/ Range	P C B (0)		(0) B C P
Logging Operations	P C B (0)		(0) B C P
Mining Activity	P C B (0)	Y N	(0) B C P
Vegetation Management	P C B (0)		(0) B C P
Bridges/ Abutments	P C B (0)	Y N	(0) B C P
Orchards/ Vineyards	P C B (0)		(0) B C P

Bank Stability

(assess up to 5m upstream and 5m downstream of transect between bankfull widths)

Left Bank	eroded	vulnerable	(stable)
Right Bank	eroded	vulnerable	(stable)

Inter-Transect: JK

Wetted Width (m): 4.0

Inter-Transect Substrates

Position	Dist from LB (m)	Depth (cm)	mm/ size class	% Cobble Embed.	CPOM	Microalgae Thickness Code	Macroalgae Attached	Macroalgae Unattached	Macrophytes
Left Bank	.5	38	SAND	—	P A	0	P (A) D	P (A) D	P (A) D
Left Center	1	35	COB	70	P (A)	1	P (A) D	P (A) D	P (A) D
Center	2	23	COB	50	P (A)	0	P (A) D	P (A) D	P (A) D
Right Center	3	17	COB	90	P (A)	0	P (A) D	P (A) D	P (A) D
Right Bank	3.5	16	SAND	—	P A	0	P (A) D	P (A) D	P (A) D

Note: Substrate sizes can be recorded either as direct measures of the median axis of each particle or one of the size class categories listed on the supplemental page (direct measurements preferred)

Microalgae Thickness Codes
0 = No microalgae present. Feels rough, not slimy;
1 = Present but not visible. Feels slimy;
2 = Present and visible but <1mm; Rubbing fingers on surface produces a brownish tint on them, scraping leaves visible trail;
3 = 1-5mm;
4 = 5-20mm;
5 = >20mm;
UD = Cannot determine if microalgae present, substrate too small or covered with silt (formerly Z code);
D = Dry, not assessed

Flow Habitats

(% relative to reach length)

Channel Type	%
Cascade/ Falls	
Rapid	
Riffle	
Run	10
Glide	90
Pool	
Dry	

SWAMP Stream Habitat Characterization Form — FULL VERSION — Revision Date: February 9th, 2011

Site Code:	Site Name: OC abv MYR	Date: 07/10/2016 2
Wetted Width (m): 5.5	Bankfull Width (m): 8	Bankfull Height (m): .5m

Transect K

Transect Substrates

Position	Dist from LB (m)	Depth (cm)	mm/ size class	% Cobble Embed	CPOM	Microalgae Thickness Code	Macroalgae Attached	Macroalgae Unattached	Macrophytes
Left Bank	.5	24	COB	75	(P) A	1	P (A) D	P (A) D	P (A) D
Left Center	1	31	SAND	—	(P) A	0	P (A) D	P (A) D	P (A) D
Center	2.5	0	BLD	—	(P) A	0	P (A) D	P (A) D	P (A) D
Right Center	3.5	21	CG	—	P (A)	1	P (A) D	P (A) D	P (A) D
Right Bank	5	7	CG	—	(P) A	0	P (A) D	P (A) D	P (A) D

Note: Substrate sizes can be recorded either as direct measures of the median axis of each particle or one of the size class categories listed on the supplemental page (direct measurements preferred)

Microalgae Thickness Codes
0 = No microalgae present. Feels rough, not slimy;
1 = Present but not visible. Feels slimy;
2 = Present and visible but <1mm. Rubbing fingers on surface produces a brownish tint on them, scraping leaves visible trail;
3 = 1-5mm;
4 = 5-20mm;
5 = >20mm;
U = Cannot determine if microalgae present, substrate too small or covered with silt (formerly Z code);
D = Dry, not assessed

Riparian Vegetation (facing downstream)

0 = Absent (0%) 3 = Heavy (40-75%)
1 = Sparse (<10%) 4 = Very Heavy (>75%)
2 = Moderate (10-40%)

Vegetation Class	Left Bank	Right Bank
Upper Canopy (>5 m high)		
Trees and saplings >5 m high	0 1 2 (3) 4	0 1 2 3 (4)
Lower Canopy (0.5 m-5 m high)		
All vegetation 0.5 m to 5 m	0 1 (2) 3 4	0 1 (2) 3 4
Ground Cover (<0.5 m high)		
Woody shrubs & saplings <0.5 m	0 1 (2) 3 4	0 1 (2) 3 4
Herbs/ grasses	0 1 (2) 3 4	0 (1) 2 3 4
Barren, bare soil/ duff	0 1 2 (3) 4	0 1 2 3 (4)

Instream Habitat Complexity

0 = Absent (0%)
1 = Sparse (<10%)
2 = Moderate (10-40%)
3 = Heavy (40-75%)
4 = Very Heavy (>75%)

Filamentous Algae	(0) 1 2 3 4
Aquatic Macrophytes/ Emergent Vegetation	(0) 1 2 3 4
Boulders	0 (1) 2 3 4
Woody Debris >0.3 m	(0) 1 2 3 4
Woody Debris <0.3 m	(0) 1 2 3 4
Undercut Banks	(0) 1 2 3 4
Overhang. Vegetation	0 (1) 2 3 4
Live Tree Roots	(0) 1 2 3 4
Artificial Structures	(0) 1 2 3 4

Densiometer Readings (0-17)
count covered dots

Center Left	16
Center Upstream	15
Center Right	15
Center Downstream	14
Optional	
Left Bank	X
Right Bank	X

Human Influence
(circle only the closest to wetted channel)

0 = Not Present;
B = On Bank;
C = Between Bank & 10m from Channel;
P = >10m+<50m from Channel;
Channel (record Yes or No)

	Left Bank	Channel	Right Bank
Walls/ Rip-rap/ Dams	P C B (0)	Y (N)	(0) B C P
Buildings	P C B 0	Y N	0 B C P
Pavement/ Cleared Lot	P C B 0		0 B C P
Road/ Railroad	P C B 0	Y N	0 B C P
Pipes (Inlet/ Outlet)	P C B 0	Y N	0 B C P
Landfill/ Trash	P C B 0	Y N	0 B C P
Park/ Lawn	P C B 0		0 B C P
Row Crop	P C B 0		0 B C P
Pasture/ Range	P C B 0		0 B C P
Logging Operations	P C B 0		0 B C P
Mining Activity	P C B 0	Y N	0 B C P
Vegetation Management	P C B 0		0 B C P
Bridges/ Abutments	P C B 0	Y N	0 B C P
Orchards/ Vineyards	P C B 0		0 B C P

Bank Stability
(score zone 5m upstream and 5m downstream of transect between bankfull - wetted width)

Left Bank	eroded	vulnerable	stable
Right Bank	eroded	vulnerable	stable

TAKE PHOTOGRAPHS
(check box if taken & record photo code)

Downstream (**required**)	X
165	
Upstream (**optional**)	X
166	

Site Code:	Date: __ __ / __ __ / 2011

FULL FORM

BENTHIC INVERTEBRATE SAMPLES

Collection Method (indicate standard or margin-center-margin)			Replicate	# jars
RWB (standard)	**RWB** (MCM)	**TRC**	1	
RWB (standard)	**RWB** (MCM)	**TRC**	2	
RWB (standard)	**RWB** (MCM)	**TRC**		
RWB (standard)	**RWB** (MCM)	**TRC**		

Field Notes/ Comments:

Chemistry Equipment ID

Analyte	Equipment
pH	
temperature	
dissolved oxygen	
specific conductance	
salinity	
alkalinity	
turbidity	
silica	
Velocity	

ALGAE SAMPLES

Collection Method (circle one or write new method if applicable)	SWAMP EMAP	SWAMP EMAP	SWAMP EMAP	SWAMP EMAP
Collection Device (sum # of transects per device)	**Rep. 1**	**Rep. 2**	**Rep.**	**Rep.**
Rubber Delimiter (area=12.6cm^2)				
PVC Delimiter (area=12.6cm^2)				
Syringe Scrubber (area=5.3cm^2)				
Other area=				
Number of transects sampled (0-11)				
Composite Volume (mL)				
Assemblage ID volume **(diatoms)** (50 mL tube)				
Assemblage ID volume **(soft algae)** (50 mL tube)				
Check if Qualitative Algae sample was collected with soft algae/diatom sample (required even if macroalgae not visible)	☐	☐	☐	☐
Check if a water chem. **integrated** sample was collected (chl, AFDM)	☐	☐	☐	☐
Chlorophyll a volume use GF/F filter (25 mL **(preferred volume)**				
Ash Free Dry Mass (AFDM) volume use GF/F filter (25 mL **(preferred vol)**				

Water and Sediment Chemistry Samples

Check if a WATER chemistry **grab** sample was collected (nutrients, SSC, etc.)	☐
Check if a DUPLICATE WATER chemistry **grab** sample was collected	☐
Check if a SEDIMENT chemistry sample was collected	☐
Check if a DUPLICATE SEDIMENT chemistry sample was collected	☐

Sediment Collection Device: SCOOP CORE GRAB

Material: Stainless Steel Polyethylene Polycarbonate Other

Sediment Collection Depth (cm): 2 or 5

Create Lab Collection records for each checked box for integrated and grab water chemistry samples

ADDITIONAL PHOTOGRAPHS

Description	Photo Code	Description	Photo Code

Flow Habitat Type	DESCRIPTION
Cascades	Short, high gradient drop in stream bed elevation often accompanied by boulders and considerable turbulence
Falls	High gradient drop in elevation of the stream bed associated with an abrupt change in the bedrock
Rapids	Sections of stream with swiftly flowing water and considerable surface turbulence. Rapids tend to have larger substrate sizes than riffles
Riffles	Shallow sections where the water flows over coarse stream bed particles that create mild to moderate surface turbulence; (< 0.5 m deep, > 0.3 m/s).
Runs	Long, relatively straight, low-gradient sections without flow obstructions. The stream bed is typically even and the water flows faster than it does in a pool; (> 0.5 m deep, > 0.3 m/s). A **step-run** is a series of runs separated by short riffles or flow obstructions that cause discontinuous breaks in slope
Glides	A section of stream with little or no turbulence, but faster velocity than pools; (< 0.5 m deep, < 0.3 m/s)
Pools	A reach of stream that is characterized by deep, low-velocity water and a smooth surface; (> 0.5 m deep, < 0.3 m/s)

Size Class Code	Size Class Range	Size Class Description	Common Size Reference
RS	> 4 m	bedrock, smooth	larger than a car
RR	> 4 m	bedrock, rough	larger than a car
XB	1 - 4 m	boulder, large	meter stick to car
SB	25 cm - 1.0 m	boulder, small	basketball to meter stick
CB	64 - 250 mm	cobble	tennis ball to basketball
GC	16 - 64 mm	gravel, coarse	marble to tennis ball
GF	2 – 16 mm	gravel, fine	ladybug to marble
SA	0.06 – 2 mm	sand	gritty to ladybug
FN	< 0.06 mm	fines	not gritty
HP	< 0.06 mm	hardpan (consolidated fines)	
WD	NA	wood	
RC	NA	concrete/ asphalt	
OT	NA	other	

BANK STABILITY Although this measure of the degree of erosive potential is subjective, it can provide clues to the erosive potential of the banks within the reach. Assign the category whose description best fits the conditions in the area between the wetted channel and bankfull channel (see figure below)	
Eroded	Banks show obvious signs of erosion from the current or previous water year; banks are usually bare or nearly bare
Vulnerable	Banks have some vegetative protection (usually annual growth), but not enough to prevent erosion during flooding
Stable	Bank vegetation has well-developed roots that protect banks from erosion; alternately, bedrock or artificial structures (e.g., concrete/ rip-rap) prevent bank erosion

CPOM/ COBBLE EMBEDDEDNESS

CPOM: Record presence (P) or absence (A) of coarse particulate organic matter (>1.0 mm particles) within 1 cm of each substrate particle

Cobble Embeddedness: Visually estimate % embedded by fine particles (record to nearest 5%)

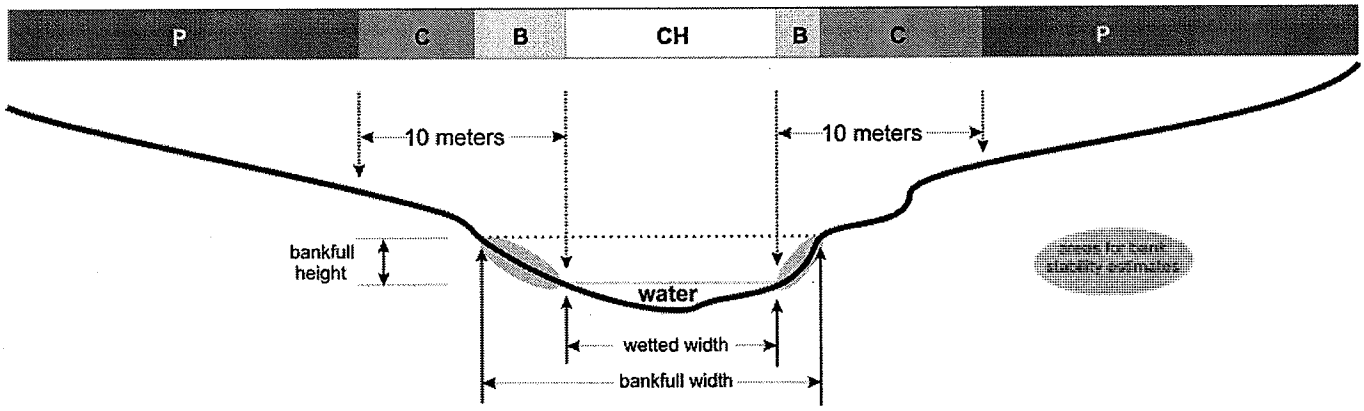


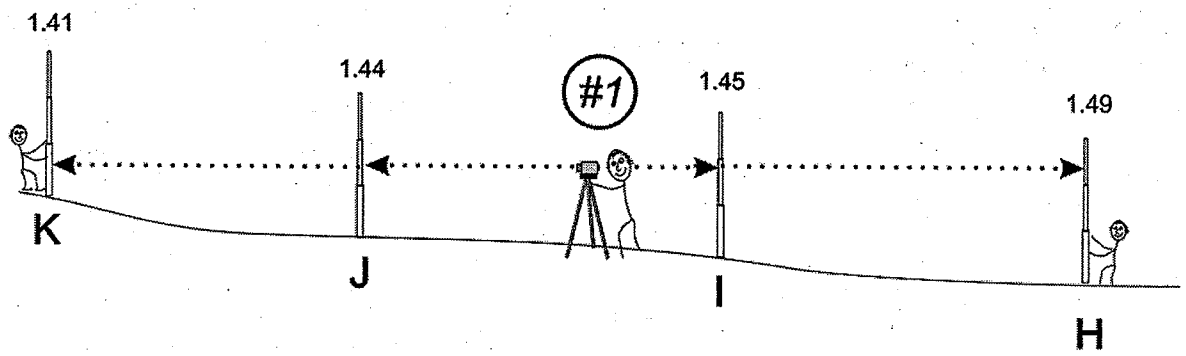
Figure 1. Cross-sectional diagram of stream transect indicating regions for assessing human influence measures:

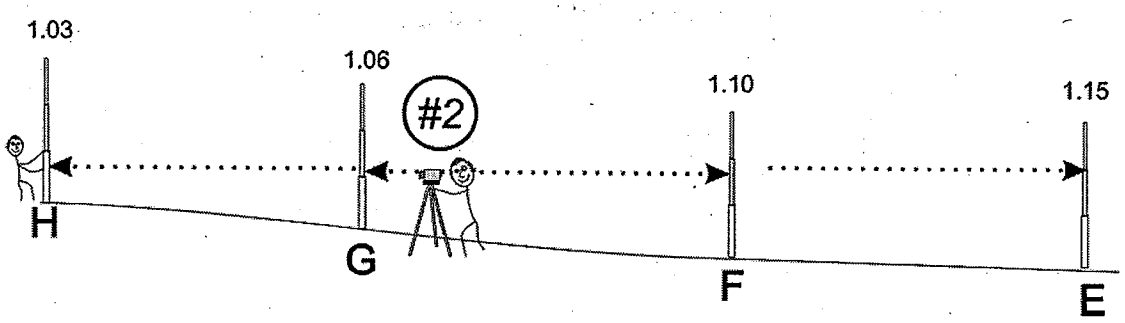
- The measurement zone extends 5 meters upstream and 5 meters downstream of each transect
- Record one category for each bank and for the wetted channel (3 values possible)
- In reaches with wide banks, region "C" may be entirely overlapped by region "B"; in these cases, circle "B"
- Region "P" extends from 10 meters to the distance that can be seen from the channel, but not greater than 50 m

SLOPE and BEARING FORM — EXAMPLE

	X
AUTOLEVEL	
CLINOMETER	
HANDLEVEL	

Starting Transect	MAIN SEGMENT (record percent of inter-transect distance in each segment if supplemental segments are used)						SUPPLEMENTAL SEGMENT (record percent of inter-transect distance in each segment if supplemental segments are used)				
	Stadia rod measurements		Slope (%) or Elevation Difference cm ■ % □	Segment Length (m)	Bearing (0°-359°)	Percent of Total Length (%)	Stadia rod measurements		Slope or Elevation Difference cm □ % □	Segment Length (m)	Bearing (0°-359°)	Percent of Total Length (%)
K	1.41											
J	1.44		3	15	140	100						
I	1.45		1	15	145	100						
H	1.49	1.03	4	15	150	100						
G		1.06	3	15	143	100						
F		1.10	4	15	187	100						
E		1.15	5	15	195	100						





1. Level the autolevel at Position #1
2. Place base of stadia rod at water level every time
3. Sight to stadia rod at Transect K, then Transect J
4. Rotate scope and sight to Transects I and H.
5. Move level to Position #2 and re-level
6. Re-sight to stadia rod at Transect H, then Transect G
7. Rotate scope and sight to Transects F and E

Note: Sites will vary in the number of separate level positions needed to survey the reach.

SWAMP Stream Habitat Characterization Form FULL VERSION Revision Date: February 9th, 2011

REACH DOCUMENTATION

Standard Reach Length (wetted width ≤ 10 m) = 150 m Distance between transects = 15 m
Alternate Reach Length (wetted width >10 m) = 250 m Distance between transects = 25 m

Project Name:	YCWA	Date:	7 / 10 / 2012
Stream Name:	MIDDLE YUBA	Sample Collection Time:	0800
Site Code:	YCBMI-4	Site Name/ Description:	ABV OREGON CREEK
TOP Latitude (actual – ~~decimal degrees~~):	0665429	Crew Members:	C. VERNUCCI, M. ASHENFELTER, C. WISEMAN
UTM Longitude (actual – ~~decimal degrees~~):	4362184	datum: NAD83 / other:	GPS Device: GARMIN 60

AMBIENT WATER QUALITY MEASUREMENTS

turbidity and silica are optional; calibration date required

Temp (Deg C)	21.0	pH	7.6	Alkalinity (mg/L)	—	Turbidity (ntu)	0
		cal. date				cal. date	
Dissolved O^2 (mg/L)	7.6	Specific Conduct (uS/cm)	121	Salinity (ppt)	—	Silica (mg/L)	—
cal. date		cal. date		cal. date		cal. date	

REACH LENGTH

Actual Length (m) *(see reach length guidelines at top of form)*	250
Explanation:	—

DISCHARGE MEASUREMENTS

1st measurement = left bank (looking downstream)

check if discharge measurements not possible (explain in field notes section) ☐

VELOCITY AREA METHOD (preferred)

cal. date: Transect Width (m):

	Distance from Left Bank (~~ft~~)	Depth (~~ft~~) m	Velocity (ft/sec)		Distance from Left Bank (cm)	Depth (cm)	Velocity (ft/sec)
1	0	0	0	11	30	2.0	1.5
2	3	.2	.1	12	33	1.3	1.70
3	6	.3	1.05	13	36	0	0
4	9	.4	1.62	14	39	0	0
5	12	1	.84	15	42	.4	.38
6	15	1.2	.5	16	45	0	0
7	18	.2	.69	17	48	0	0
8	21	1	.1	18	51	.3	.2
9	24	.2	1.53	19	54	.2	.1
10	27	.8	2.59	20	57	0	0

BUOYANT OBJECT METHOD (use ONLY if ~~velocity area method not possible~~)

	Float 1	Float 2	Float 3
Distance (m)			
Float Time (sec)			

Float Reach Cross Section

width (m) depth(cm)	Upper Section	Middle Section	Lower Section
Width			
Depth 1			
Depth 2			
Depth 3			
Depth 4			
Depth 5			

NOTABLE FIELD CONDITIONS (check one box per topic)

Evidence of recent rainfall (enough to increase surface runoff)	NO	X	minimal		>10% flow increase	
Evidence of fires in reach or immediately upstream (<500 m)	NO	X	< 1 year		< 5 years	
Dominant landuse/ landcover in area surrounding reach	Agriculture		Forest	X	Rangeland	
	Urban/ Industrial		Suburb/Town		Other	

ADDITIONAL COBBLE EMBEDDEDNESS MEASURES

(carry over from transect forms if needed to attain target count of 25; measure in %)

1	2	3	4	5	6	7	8	9	10	11	12	13
30	20	30	10	50	0	40	20	60	30	0	80	70
14	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**	**25**	
80	50	60	30	0	60	40	70	90	10	20	50	

Site Code: Date: / / 2011

SLOPE and BEARING FORM (transect based - for Full PHAB only)

AUTOLEVEL ☐ CLINOMETER ☒ HANDLEVEL ☐ OTHER ☐

Starting Transect	MAIN SEGMENT (record percent of inter-transect distance in each segment if supplemental segments are used)					SUPPLEMENTAL SEGMENT (record percent of inter-transect distance in each segment if supplemental segments are used)				
	Stadia rod measurements	Slope (%) or Elevation Difference cm ☐ % ☒	Segment Length (m)	Bearing (0°-359°)	Percent of Total Length (%)	Stadia rod measurements	Slope or Elevation Difference cm ☐ % ☐	Segment Length (m)	Bearing (0°-359°)	Percent of Total Length (%)
K										
J		2	25		10					
I		0	↓		↓					
H		.5								
G		0								
F		2								
E		.5								
D		0								
C		.5								
B		1								
A		.5								
additional calculation area										

ADDITIONAL HABITAT CHARACTERIZATION

High Gradient ☐ Low Gradient ☒

Parameter	Optimal	Suboptimal	Marginal	Poor
Epifaunal Substrate/ Cover	Greater than 70% of substrate favorable for epifaunal colonization and fish cover (50% for low-gradient streams); mix of submerged logs, undercut banks, cobble or other stable habitat	40-70% mix of stable habitat (30-50% for low-gradient streams); well-suited for full colonization potential	20-40% mix of stable habitat (10-30% in low-gradient streams); substrate frequently disturbed or removed	Less than 20% stable habitat (10% in low-gradient streams); lack of habitat is obvious; substrate unstable or lacking
Score:	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
Sediment Deposition	Little or no enlargement of islands or point bars and less than 5% of the bottom affected by sediment deposition (<20% in low-gradient streams)	Some new increase in bar formation, mostly from gravel, sand, or fine sediment; 5-30% of the bottom affected (20-50% in low-gradient streams)	Moderate deposition of new gravel, sand, or fine sediment on bars; 30-50% of the bottom affected (50 - 80% in low-gradient streams)	Heavy deposits of fine material, increased bar development; more than 50% of the bottom changing frequently (>80% in low-gradient streams)
Score:	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
Channel Alteration	Channelization or dredging absent or minimal; stream with normal pattern	Some channelization present, (e.g., bridge abutments); evidence of past channelization (> 20yrs) may be present but recent channelization not present	Channelization may be extensive; embankments or shoring structures present on both banks; 40 to 80% of stream reach disrupted	Banks shored with gabian 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 0

SWAMP Stream Habitat Characterization Form FULL VERSION Revision Date: February 9th, 2011

Site Code:	Site Name: MYR abv OC	Date: ___/___/2011
Wetted Width (m): 18	Bankfull Width (m): 25	Bankfull Height (m): 1.5

Transect A

Transect Substrates

Position	Dist from LB (m)	Depth (cm)	mm/ size class	% Cobble Embed.	CPOM	Microalgae Thickness Code	Macroalgae Attached	Macroalgae Unattached	Macrophytes
Left Bank	0	13	CB	0	(P) A	1	P (A) D	P (A) D	P (A) D
Left Center	4.5	51	BLD	—	P (A)	1	P (A) D	P (A) D	P (A) D
Center	9	40	CB	0	P (A)	2	P (A) D	P (A) D	P (A) D
Right Center	13.5	50	COB	10	P (A)	2	P (A) D	P (A) D	P (A) D
Right Bank	17.5	~~85~~	BLD	—	P (A)	1	P (A) D	P (A) D	P (A) D
	Note: Substrate sizes can be recorded either as direct measures of the median axis of each particle or one of the size class categories listed on the supplemental page (direct measurements preferred)								

Microalgae Thickness Codes
0 = No microalgae present. Feels rough, not slimy;
1 = Present but not visible. Feels slimy;
2 = Present and visible but <1mm. Rubbing fingers on surface produces a brownish tint on them, scraping leaves visible trail;
3 = 1-5mm;
4 = 5-20mm;
5 = >20mm;
UD = Cannot determine if microalgae present, substrate too small or covered with silt (formerly Z code)
D = Dry, not assessed

RIPARIAN VEGETATION (facing downstream)
0 = Absent (0%) 3 = Heavy (40-75%)
1 = Sparse (<10%) 4 = Very Heavy (>75%)
2 = Moderate (10-40%)

Vegetation Class	Left Bank	Right Bank
Upper Canopy (>5 m high)		
Trees and saplings >5 m high	0 1 (2) 3 4	0 1 (2) 3 4
Lower Canopy (0.5 m-5 m high)		
All vegetation 0.5 m to 5 m	0 1 (2) 3 4	0 1 (2) 3 4
Ground Cover (<0.5 m high)		
Woody shrubs & saplings <0.5 m	0 (1) 2 (3) 4	0 (1) 2 3 4
Herbs/ grasses	0 1 (2) 3 4	0 1 (2) 3 4
Barren, bare soil/ duff	0 1 2 3 (4)	0 1 2 3 (4)

INSTREAM HABITAT COMPLEXITY
0 = Absent (0%)
1 = Sparse (<10%)
2 = Moderate (10-40%)
3 = Heavy (40-75%)
4 = Very Heavy (>75%)

Filamentous Algae	(0) 1 2 3 4
Aquatic Macrophytes/ Emergent Vegetation	(0) 1 2 3 4
Boulders	0 1 2 (3) 4
Woody Debris >0.3 m	(0) 1 2 3 4
Woody Debris <0.3 m	(0) 1 2 3 4
Undercut Banks	(0) 1 2 3 4
Overhang. Vegetation	0 (1) 2 3 4
Live Tree Roots	0 (1) 2 3 4
Artificial Structures	(0) 1 2 3 4

DENSIOMETER READINGS (0-17)
count covered dots

Center Left	5
Center Upstream	11
Center Right	17
Center Downstream	10
Optional	
Left Bank	
Right Bank	

HUMAN INFLUENCE (circle only the closest to wetted channel)
0 = Not Present;
B = On Bank;
C = Between Bank & 10m from Channel;
P = >10m+<50m from Channel;
Channel (record Yes or No)

	Left Bank	Channel	Right Bank
Walls/ Rip-rap/ Dams	P C B (0)	Y (N)	(0) B C P
Buildings	P C B (0)	Y N	(0) B C P
Pavement/ Cleared Lot	P C B (0)		(0) B C P
Road/ Railroad	P C B (0)	Y N	(0) B C P
Pipes (Inlet/ Outlet)	P C B (0)	Y N	(0) B C P
Landfill/ Trash	P C (B) 0	(Y) N	0 (B) C P
Park/ Lawn	P C B (0)		(0) B C P
Row Crop	P C B (0)		(0) B C P
Pasture/ Range	P C B (0)		(0) B C P
Logging Operations	P C B (0)		(0) B C P
Mining Activity	P C (B) 0	(Y) N	0 (B) C P
Vegetation Management	P C B (0)		(0) B C P
Bridges/ Abutments	P C B (0)	Y (N)	(0) B C P
Orchards/ Vineyards	P C B (0)		(0) B C P

BANK STABILITY
(Score only 5m upstream and 5m downstream of transect between bankfull - wetted width)

Left Bank	eroded	vulnerable	(stable)
Right Bank	eroded	(vulnerable)	stable

TAKE PHOTOGRAPHS
(check box if taken & record photo code)

Downstream (**optional**) ☑
152

Upstream (**required**) ☑
153

Inter-Transect: AB

Wetted Width (m): 18

Inter-Transect Substrates

Position	Dist from LB (m)	Depth (cm)	mm/ size class	% Cobble Embed.	CPOM	Microalgae Thickness Code	Macroalgae Attached	Macroalgae Unattached	Macrophytes
Left Bank	1.5	24	CB	0	(P) A	0	P (A) D	P (A) D	P (A) D
Left Center	4.5	49	CB	0	P (A)	2	P (A) D	P (A) D	P (A) D
Center	9	62	CB	0	P (A)	1	P (A) D	P (A) D	P (A) D
Right Center	13.5	0	BLD	—	(P) A	0	P (A) D	P (A) D	P (A) D
Right Bank	17.5	30	CB	70	P (A)	1	P (A) D	P (A) D	P (A) D
	Note: Substrate sizes can be recorded either as direct measures of the median axis of each particle or one of the size class categories listed on the supplemental page (direct measurements preferred)								

Microalgae Thickness Codes
0 = No microalgae present, Feels rough, not slimy;
1 = Present but not visible, Feels slimy;
2 = Present and visible but <1mm; Rubbing fingers on surface produces a brownish tint on them, scraping leaves visible trail;
3 = 1-5mm;
4 = 5-20mm;
5 = >20mm;
UD = Cannot determine if microalgae present, substrate too small or covered with silt (formerly Z code);
D = Dry, not assessed

Flow Habitats

(% between transects, must total 100)

Channel Type	%
Cascade/ Falls	
Rapid	
Riffle	50
Run	
Glide	
Pool	50
Dry	

SWAMP Stream Habitat Characterization Form FULL VERSION Revision Date: February 9th, 2011

Site Code:	Site Name: Myr abv OC	Date: ___/___/2011
Wetted Width (m): 16	Bankfull Width (m): 25	Bankfull Height (m): 1

Transect B

Transect Substrates

Position	Dist from LB (m)	Depth (cm)	mm/ size class	% Cobble Embed.	CPOM	Microalgae Thickness Code	Macroalgae Attached	Macroalgae Unattached	Macrophytes
Left Bank	.5	32	CG	—	(P) A	1	P (A) D	P (A) D	P (A) D
Left Center	4	32	BLD	—	(P) A	2	P (A) D	P (A) D	P (A) D
Center	8	36	CB	50	P (A)	1	P (A) D	P (A) D	P (A) D
Right Center	12	15	BLD	—	P (A)	2	P (A) D	P (A) D	P (A) D
Right Bank	15.5	.5	BLD	—	P (A)	2	P (A) D	P (A) D	P (A) D

Note: Substrate sizes can be recorded either as direct measures of the median axis of each particle or one of the size class categories listed on the supplemental page (direct measurements preferred)

Microalgae Thickness Codes
0 = No microalgae present. Feels rough, not slimy;
1 = Present but not visible. Feels slimy;
2 = Present and visible but <1mm; Rubbing fingers on surface produces a brownish tint on them, scraping leaves visible trail;
3 = 1-5mm;
4 = 5-20mm;
5 = >20mm;
UD = Cannot determine if microalgae present, substrate too small or covered with silt (formerly Z code);
D = Dry, not assessed

Riparian Vegetation (facing downstream)

0 = Absent (0%) 3 = Heavy (40-75%)
1 = Sparse (<10%) 4 = Very Heavy (>75%)
2 = Moderate (10-40%)

Vegetation Class	Left Bank	Right Bank
Upper Canopy (>5 m high)		
Trees and saplings >5 m high	(0) 1 2 3 4	0 1 (2) 3 4
Lower Canopy (0.5 m-5 m high)		
All vegetation 0.5 m to 5 m	0 (1) 2 3 4	0 1 (2) 3 4
Ground Cover (<0.5 m high)		
Woody shrubs & saplings <0.5 m	0 1 (2) 3 4	0 1 (2) 3 4
Herbs/ grasses	0 1 2 (3) 4	0 1 2 (3) 4
Barren, bare soil/ duff	0 1 2 (3) 4	0 1 2 (3) 4

Instream Habitat Complexity

0 = Absent (0%)
1 = Sparse (<10%)
2 = Moderate (10-40%)
3 = Heavy (40-75%)
4 = Very Heavy (>75%)

Filamentous Algae	(0) 1 2 3 4
Aquatic Macrophytes/ Emergent Vegetation	(0) 1 2 3 4
Boulders	0 1 2 (3) 4
Woody Debris >0.3 m	(0) 1 2 3 4
Woody Debris <0.3 m	0 (1) 2 3 4
Undercut Banks	(0) 1 2 3 4
Overhang. Vegetation	0 (1) 2 3 4
Live Tree Roots	(0) 1 2 3 4
Artificial Structures	(0) 1 2 3 4

Densiometer Readings (0-17)
count covered dots

Center Left	3
Center Upstream	0
Center Right	10
Center Downstream	5
Optional	
Left Bank	—
Right Bank	—

Human Influence (circle only the closest to wetted channel)

0 = Not Present;
B = On Bank;
C = Between Bank & 10m from Channel;
P = >10m+<50m from Channel;
Channel (record Yes or No)

	Left Bank	Channel	Right Bank
Walls/ Rip-rap/ Dams	P C B (0)	Y (N)	(0) B C P
Buildings	P C B 0	Y N	0 B C P
Pavement/ Cleared Lot	P C B 0		0 B C P
Road/ Railroad	P C B 0	Y N	0 B C P
Pipes (Inlet/ Outlet)	P C B 0	Y N	0 B C P
Landfill/ Trash	P C B 0	Y N	0 B C P
Park/ Lawn	P C B 0		0 B C P
Row Crop	P C B 0		0 B C P
Pasture/ Range	P C B 0		0 B C P
Logging Operations	P C B 0		0 B C P
Mining Activity	P C (B) 0	(Y) N	0 (B) C P
Vegetation Management	P C B (0)		(0) B C P
Bridges/ Abutments	P C B 0	Y (N)	0 B C P
Orchards/ Vineyards	P C B 0		0 B C P

Bank Stability

Assess zone 5m upstream and 5m downstream of transect between bankfull wetted width

Left Bank	eroded	vulnerable	(stable)
Right Bank	eroded	vulnerable	(stable)

Inter-Transect: BC

Wetted Width (m): 18

Inter-Transect Substrates

Position	Dist from LB (m)	Depth (cm)	mm/ size class	% Cobble Embed.	CPOM	Microalgae Thickness Code	Macroalgae Attached	Macroalgae Unattached	Macrophytes
Left Bank	.5	17	CB	0	P (A)	2	P (A) D	P (A) D	P (A) D
Left Center	4.5	27	BLD	—	P (A)	2	(P) A D	P (A) D	P (A) D
Center	9	52	BLD	—	P (A)	2	(P) A D	P (A) D	P (A) D
Right Center	13.5	23	CB	70	P (A)	1	P (A) D	P (A) D	P (A) D
Right Bank	17.5	0	BLD	—	(P) A	1	P (A) D	P (A) D	P (A) D
	Note: Substrate sizes can be recorded either as direct measures of the median axis of each particle or one of the size class categories listed on the supplemental page (direct measurements preferred)								

Microalgae Thickness Codes
0 = No microalgae present. Feels rough, not slimy.
1 = Present but not visible. Feels slimy.
2 = Present and visible but <1mm. Rubbing fingers on surface produces a brownish tint on them, scraping leaves visible trail.
3 = 1-5mm.
4 = 5-20mm.
5 = >20mm.
UD = Cannot determine if microalgae present, substrate too small or covered with silt (formerly Z code).
D = Dry, not assessed

Flow Habitats

Channel Type	%
Cascade/Falls	
Rapid	
Riffle	20
Run	70
Glide	
Pool	10
Dry	

SWAMP Stream Habitat Characterization Form *FULL VERSION* *Revision Date: February 9th, 2011*

Site Code:	Site Name: MTE abv OC		Date: ___/___/2011
Wetted Width (m): 16	Bankfull Width (m): 30	Bankfull Height (m): 2	**Transect C**

Transect Substrates

Position	Dist from LB (m)	Depth (cm)	mm/ size class	% Cobble Embed.	CPOM	Microalgae Thickness Code	Macroalgae Attached	Macroalgae Unattached	Macrophytes
Left Bank	.5	22	COB	0	(P) A	1	P (A) D	P (A) D	P (A) D
Left Center	4	39	CG	—	P (A)	0	P (A) D	P (A) D	P (A) D
Center	8	31	COB	20	P (A)	1	P (A) D	P (A) D	P (A) D
Right Center	12	0	BLD	—	(P) A	1	P (A) D	P (A) D	P (A) D
Right Bank	15.5	0	BLD	—	(P) A	0	P (A) D	P (A) D	P (A) D
	Note: Substrate sizes can be recorded either as direct measures of the median axis of each particle or one of the size class categories listed on the supplemental page (direct measurements preferred)								

Microalgae Thickness Codes
0 = No microalgae present. Feels rough, not slimy;
1 = Present but not visible. Feels slimy;
2 = Present and visible but <1mm. Rubbing fingers on surface produces a brownish tint on them, scraping leaves visible trail.
3 = 1-5mm;
4 = 5-20mm;
5 = >20mm;
UD = Cannot determine if microalgae present, substrate too small or covered with silt (formerly Z code)
D = Dry, not assessed

RIPARIAN VEGETATION (facing downstream)
0 = Absent (0%) 3 = Heavy (40-75%)
1 = Sparse (<10%) 4 = Very Heavy (>75%)
2 = Moderate (10-40%)

Vegetation Class	Left Bank	Right Bank
Upper Canopy (>5 m high)		
Trees and saplings >5 m high	0 (1) 2 3 4	0 1 2 (3) 4
Lower Canopy (0.5 m-5 m high)		
All vegetation 0.5 m to 5 m	0 1 (2) 3 4	0 1 2 (3) 4
Ground Cover (<0.5 m high)		
Woody shrubs & saplings <0.5 m	0 1 (2) 3 4	0 1 (2) 3 4
Herbs/ grasses	0 1 (2) 3 4	0 1 (2) 3 4
Barren, bare soil/ duff	0 1 2 (3) 4	0 1 2 (3) 4

INSTREAM HABITAT COMPLEXITY
0 = Absent (0%)
1 = Sparse (<10%)
2 = Moderate (10-40%)
3 = Heavy (40-75%)
4 = Very Heavy (>75%)

Filamentous Algae	(0) 1 2 3 4
Aquatic Macrophytes/ Emergent Vegetation	(0) 1 2 3 4
Boulders	0 1 (2) 3 4
Woody Debris >0.3 m	(0) 1 2 3 4
Woody Debris <0.3 m	0 (1) 2 3 4
Undercut Banks	(0) 1 2 3 4
Overhang. Vegetation	0 (1) 2 3 4
Live Tree Roots	(0) 1 2 3 4
Artificial Structures	(0) 1 2 3 4

DENSIOMETER READINGS (0-17) *count covered dots*

Center Left	2
Center Upstream	1
Center Right	17
Center Downstream	2
Optional	
Left Bank	—
Right Bank	—

HUMAN INFLUENCE (circle only the closest to wetted channel)
0 = Not Present;
B = On Bank;
C = Between Bank & 10m from Channel;
P = >10m+<50m from Channel;
Channel (record Yes or No)

	Left Bank	Channel	Right Bank
Walls/ Rip-rap/ Dams	P C B (0)	Y (N)	(0) B C P
Buildings	P C B (0)	Y N	(0) B C P
Pavement/ Cleared Lot	P C B (0)		(0) B C P
Road/ Railroad	P C B (0)	Y N	(0) B C P
Pipes (Inlet/ Outlet)	P C B (0)	Y N	(0) B C P
Landfill/ Trash	P C B (0)	Y N	(0) B C P
Park/ Lawn	P C B (0)		(0) B C P
Row Crop	P C B (0)		(0) B C P
Pasture/ Range	P C B (0)		(0) B C P
Logging Operations	P C B (0)		(0) B C P
Mining Activity	P C B (0)	(Y) N	0 (B) C P
Vegetation Management	P C B (0)		(0) B C P
Bridges/ Abutments	P C B (0)	Y (N)	(0) B C P
Orchards/ Vineyards	P C B (0)		(0) B C P

BANK STABILITY
(Assess up to 5m upstream and 5m downstream of transect between bankfull - wetted width)

Left Bank	eroded	vulnerable	(stable)
Right Bank	eroded	(vulnerable)	stable

Inter-Transect: CD

Wetted Width (m): 14

Inter-Transect Substrates

Position	Dist from LB (m)	Depth (cm)	mm/ size class	% Cobble Embed.	CPOM	Microalgae Thickness Code	Macroalgae Attached	Macroalgae Unattached	Macrophytes
Left Bank	.5	44	BLD	—	P (A)	2	P (A) D	P (A) D	P (A) D
Left Center	3.5	62	BLD	—	P (A)	2	(P) A D	P (A) D	P (A) D
Center	7	69	COB	10	P (A)	1	P (A) D	P (A) D	P (A) D
Right Center	10.5	10	CB	0	P (A)	1	P (A) D	P (A) D	P (A) D
Right Bank	13.5	0	BLD	—	(P) A	2	P (A) D	P (A) D	P (A) D
	Note: Substrate sizes can be recorded either as direct measures of the median axis of each particle or one of the size class categories listed on the supplemental page (direct measurements preferred)								

Microalgae Thickness Codes
0 = No microalgae present. Feels rough, not slimy;
1 = Present but not visible. Feels slimy;
2 = Present and visible but <1mm; Rubbing fingers on surface produces a brownish tint on them, scraping leaves visible trail;
3 = 1-5mm;
4 = 5-20mm;
5 = >20mm;
UD = Cannot determine if microalgae present, substrate too small or covered with silt (formerly Z code);
D = Dry, not assessed

FLOW HABITATS
(% Between Inter-Transect Areas)

Channel Type	%
Cascade/ Falls	
Rapid	
Riffle	30
Run	40
Glide	
Pool	30
Dry	

SWAMP Stream Habitat Characterization Form *FULL VERSION* *Revision Date: February 9th, 2011*

Site Code:	Site Name: MYR wbu OC	Date: __ __ / __ __ / 2011
Wetted Width (m): 14	Bankfull Width (m): 18	Bankfull Height (m): .5

Transect D

Transect Substrates

Position	Dist from LB (m)	Depth (cm)	mm/ size class	% Cobble Embed.	CPOM	Microalgae Thickness Code	Macroalgae Attached	Macroalgae Unattached	Macrophytes
Left Bank	.5	33	CG	—	(P) A	2	(P) A D	P (A) D	(P) A D
Left Center	3.5	91	BLD	—	P (A)	1	P (A) D	P (A) D	P (A) D
Center	7	78	CB	10	P (A)	0	P (A) D	P (A) D	P (A) D
Right Center	10.5	24	BLD	—	(P) A	1	P (A) D	P (A) D	P (A) D
Right Bank	13.5	40	COB	70	(P) A	1	P (A) D	P (A) D	P (A) D

Note: Substrate sizes can be recorded either as direct measures of the median axis of each particle or one of the size class categories listed on the supplemental page (direct measurements preferred)

Microalgae Thickness Codes
0 = No microalgae present. Feels rough, not slimy;
1 = Present but not visible. Feels slimy;
2 = Present and visible but <1mm. Rubbing fingers on surface produces a brownish tint on them, scraping leaves visible trail;
3 = 1-5mm;
4 = 5-20mm;
5 = >20mm;
UD = Cannot determine if microalgae present, substrate too small or covered with silt (formerly Z code);
D = Dry, not assessed

RIPARIAN VEGETATION (facing downstream)
0 = Absent (0%) 3 = Heavy (40-75%)
1 = Sparse (<10%) 4 = Very Heavy (>75%)
2 = Moderate (10-40%)

Vegetation Class	Left Bank	Right Bank
Upper Canopy (>5 m high)		
Trees and saplings >5 m high	0 1 (2) 3 4	0 1 2 (3) 4
Lower Canopy (0.5 m-5 m high)		
All vegetation 0.5 m to 5 m	0 1 2 (3) 4	0 1 2 (3) 4
Ground Cover (<0.5 m high)		
Woody shrubs & saplings <0.5 m	0 1 2 (3) 4	0 1 2 (3) 4
Herbs/ grasses	0 1 (2) 3 4	0 (1) 2 3 4
Barren, bare soil/ duff	0 (1) 2 3 4	0 1 (2) 3 4

INSTREAM HABITAT COMPLEXITY
0 = Absent (0%)
1 = Sparse (<10%)
2 = Moderate (10-40%)
3 = Heavy (40-75%)
4 = Very Heavy (>75%)

Filamentous Algae	(0) 1 2 3 4
Aquatic Macrophytes/ Emergent Vegetation	(0) 1 2 3 4
Boulders	0 1 (2) 3 4
Woody Debris >0.3 m	(0) 1 2 3 4
Woody Debris <0.3 m	0 (1) 2 3 4
Undercut Banks	(0) 1 2 3 4
Overhang. Vegetation	0 (1) 2 3 4
Live Tree Roots	(0) 1 2 3 4
Artificial Structures	(0) 1 2 3 4

DENSIOMETER READINGS (0-17)
count covered dots

Center Left	0
Center Upstream	1
Center Right	10
Center Downstream	2
Optional	
Left Bank	—
Right Bank	—

HUMAN INFLUENCE (circle only the closest to wetted channel)
0 = Not Present;
B = On Bank;
C = Between Bank & 10m from Channel;
P = >10m+<50m from Channel;
Channel (record Yes or No)

	Left Bank	Channel	Right Bank
Walls/ Rip-rap/ Dams	P C B (0)	Y (N)	(0) B C P
Buildings	P C B (0)	Y N	(0) B C P
Pavement/ Cleared Lot	P C B (0)		(0) B C P
Road/ Railroad	P C B (0)	Y N	(0) B C P
Pipes (Inlet/ Outlet)	P C B (0)	Y N	(0) B C P
Landfill/ Trash	P C B (0)	Y N	(0) B C P
Park/ Lawn	P C B (0)		(0) B C P
Row Crop	P C B (0)		(0) B C P
Pasture/ Range	P C B (0)		(0) B C P
Logging Operations	P C B (0)		(0) B C P
Mining Activity	P C B (0)	(Y) N	0 (B) C P
Vegetation Management	P C B (0)		(0) B C P
Bridges/ Abutments	P C B (0)	Y (N)	(0) B C P
Orchards/ Vineyards	P C B (0)		(0) B C P

BANK STABILITY
(score zone 5m upstream and 5m downstream of transect between banks - actual width)

Left Bank	eroded	vulnerable	(stable)
Right Bank	eroded	vulnerable	(stable)

Inter-Transect: DE

Wetted Width (m): 15

Inter-Transect Substrates

Position	Dist from LB (m)	Depth (cm)	mm/ size class	% Cobble Embed.	CPOM	Microalgae Thickness Code	Macroalgae Attached	Macroalgae Unattached	Macrophytes
Left Bank	1.5	77	BLD	—	(P) A	1	(P) A D	P (A) D	P (A) D
Left Center	4	69	COB	0	P (A)	1	P (A) D	P (A) D	P (A) D
Center	7.5	0	BLD	—	P (A)	2	P (A) D	P (A) D	P (A) D
Right Center	11.5	29	BLD	—	(P) A	0	P (A) D	P (A) D	P (A) D
Right Bank	14.5	16	CB	—	(P) A	0	P (A) D	P (A) D	P (A) D

Note: Substrate sizes can be recorded either as direct measures of the median axis of each particle or one of the size class categories listed on the supplemental page (direct measurements preferred).

Microalgae Thickness Codes
0 = No microalgae present, Feels rough, not slimy;
1 = Present but not visible, Feels slimy;
2 = Present and visible but <1mm; Rubbing fingers on surface produces a brownish tint on them, scraping leaves visible trail;
3 = 1-5mm;
4 = 5-20mm;
5 = >20mm;
UD = Cannot determine if microalgae present, substrate too small or covered with silt (formerly Z code);
D = Dry, not assessed

Flow Habitats (% based on wetted width)	
Channel Type	%
Cascade/Falls	
Rapid	
Riffle	
Run	30
Glide	
Pool	70
Dry	

SWAMP Stream Habitat Characterization Form FULL VERSION Revision Date: February 9th, 2011

Site Code:	Site Name: MYK abu OC	Date: __ __ / __ __ / 2011
Wetted Width (m): 14	Bankfull Width (m): 40 / Bankfull Height (m): 2.5	**Transect E**

Transect Substrates

Position	Dist from LB (m)	Depth (cm)	mm/ size class	% Cobble Embed.	CPOM	Microalgae Thickness Code	Macroalgae Attached	Macroalgae Unattached	Macrophytes
Left Bank	.5	60	BLD	—	(P) A	2	(P) A D	P (A) D	P (A) D
Left Center	3.5	82	CG	—	(P) A	0	P (A) D	P (A) D	P (A) D
Center	7	102	BLO	—	P (A)	0	P (A) D	P (A) D	P (A) D
Right Center	10.5	6	BLD	—	P (A)	0	P (A) D	P (A) D	P (A) D
Right Bank	13.5	10	BLD	—	(P) A	1	P (A) D	P (A) D	P (A) D

Note: Substrate sizes can be recorded either as direct measures of the median axis of each particle or one of the size class categories listed on the supplemental page (direct measurements preferred).

Microalgae Thickness Codes
0 = No microalgae present. Feels rough, not slimy;
1 = Present but not visible. Feels slimy;
2 = Present and visible but <1mm. Rubbing fingers on surface produces a brownish tint on them, scraping leaves visible trail;
3 = 1-5mm;
4 = 5-20mm;
5 = >20mm;
UD = Cannot determine if microalgae present, substrate too small or covered with silt (formerly Z code);
D = Dry, not assessed

Riparian Vegetation (facing downstream)

0 = Absent (0%) 3 = Heavy (40-75%)
1 = Sparse (<10%) 4 = Very Heavy (>75%)
2 = Moderate (10-40%)

Vegetation Class	Left Bank	Right Bank
Upper Canopy (>5 m high)		
Trees and saplings >5 m high	(0) 1 2 3 4	0 1 2 3 4
Lower Canopy (0.5 m-5 m high)		
All vegetation 0.5 m to 5 m	0 1 2 3 (4)	0 1 2 3 4
Ground Cover (<0.5 m high)		
Woody shrubs & saplings <0.5 m	0 1 (2) 3 4	0 1 (2) 3 4
Herbs/ grasses	0 (1) 2 3 4	0 (1) 2 3 4
Barren, bare soil/ duff	0 1 2 (3) 4	0 1 2 (3) 4

Instream Habitat Complexity

0 = Absent (0%)
1 = Sparse (<10%)
2 = Moderate (10-40%)
3 = Heavy (40-75%)
4 = Very Heavy (>75%)

Filamentous Algae	(0) 1 2 3 4
Aquatic Macrophytes/ Emergent Vegetation	(0) 1 2 3 4
Boulders	0 1 2 (3) 4
Woody Debris >0.3 m	(0) 1 2 3 4
Woody Debris <0.3 m	0 (1) 2 3 4
Undercut Banks	0 (1) 2 3 4
Overhang. Vegetation	0 (1) 2 3 4
Live Tree Roots	(0) 1 2 3 4
Artificial Structures	(0) 1 2 3 4

Densiometer Readings (0-17)

count covered dots

Center Left	10
Center Upstream	0
Center Right	10
Center Downstream	0
Optional	
Left Bank	—
Right Bank	—

Human Influence (circle only the closest to wetted channel)

0 = Not Present;
B = On Bank;
C = Between Bank & 10m from Channel;
P = >10m+<50m from Channel;
Channel (record Yes or No)

	Left Bank	Channel	Right Bank
Walls/ Rip-rap/ Dams	P C B (0)	Y (N)	(0) B C P
Buildings	P C B 0	Y N	0 B C P
Pavement/ Cleared Lot	P C B 0		0 B C P
Road/ Railroad	P C B 0	Y N	0 B C P
Pipes (Inlet/ Outlet)	P C B 0	Y N	0 B C P
Landfill/ Trash	P C B 0	Y N	0 B C P
Park/ Lawn	P C B 0		0 B C P
Row Crop	P C B 0		0 B C P
Pasture/ Range	P C B 0		0 B C P
Logging Operations	P C B 0		0 B C P
Mining Activity	P C B 0	Y N	0 B C P
Vegetation Management	P C B 0		0 B C P
Bridges/ Abutments	P C B 0	Y N	0 B C P
Orchards/ Vineyards	P C B 0		0 B C P

Bank Stability

Locate zone 3m upstream and 3m downstream of transect between bankfull width flags

Left Bank	eroded	vulnerable	(stable)
Right Bank	eroded	vulnerable	(stable)

Inter-Transect: EF

Wetted Width (m): 16

Inter-Transect Substrates

Position	Dist from LB (m)	Depth (cm)	mm/ size class	% Cobble Embed.	CPOM	Microalgae Thickness Code	Macroalgae Attached	Macroalgae Unattached	Macrophytes
Left Bank	.5	29	BLD	—	(P) A	2	P (A) D	P (A) D	(P) A D
Left Center	4	63	CB	5	P (A)	0	P (A) D	P (A) D	P (A) D
Center	8	84	CB	10	P (A)	1	P (A) D	P (A) D	P (A) D
Right Center	12	65	BLD	—	P (A)	1	P (A) D	P (A) D	P (A) D
Right Bank	15.5	10	CB	0	(P) A	2	P (A) D	P (A) D	P (A) D
	Note: Substrate sizes can be recorded either as direct measures of the median axis of each particle or one of the size class categories listed on the supplemental page (direct measurements preferred)								

Microalgae Thickness Codes
0 = No microalgae present. Feels rough, not slimy;
1 = Present but not visible. Feels slimy;
2 = Present and visible but <1mm. Rubbing fingers on surface produces a brownish tint on them, scraping leaves visible trail;
3 = 1-5mm;
4 = 5-20mm;
5 = >20mm;
UD = Cannot determine if microalgae present, substrate too small or covered with silt (formerly Z code);
D = Dry, not assessed

Flow Habitats (% Estimates for each Inter-Transect)	
Channel Type	%
Cascade/ Falls	
Rapid	
Riffle	
Run	10
Glide	
Pool	90
Dry	

SWAMP Stream Habitat Characterization Form FULL VERSION Revision Date: February 9th, 2011

Site Code:	Site Name: MTR abv OC	Date: __/__/2011
Wetted Width (m): 14	Bankfull Width (m): 20	Bankfull Height (m): 1.5

Transect F

Transect Substrates

Position	Dist from LB (m)	Depth (cm)	mm/ size class	% Cobble Embed.	CPOM	Microalgae Thickness Code	Macroalgae Attached	Macroalgae Unattached	Macrophytes
Left Bank	.5	32	BLD	—	(P) A	2	P (A) D	P (A) D	P (A) D
Left Center	3.5	46	BLD	—	P (A)	2	P (A) D	P (A) D	P (A) D
Center	7	6	BLD	—	(P) A	1	P (A) D	P (A) D	P (A) D
Right Center	10.5	55	COB	80	P (A)	0	P (A) D	P (A) D	P (A) D
Right Bank	13.5	51	SND	—	(P) A	0	P (A) D	P (A) D	P (A) D

Note: Substrate sizes can be recorded either as direct measures of the median axis of each particle or one of the size class categories listed on the supplemental page (direct measurements preferred)

Microalgae Thickness Codes
0 = No microalgae present. Feels rough, not slimy;
1 = Present but not visible. Feels slimy;
2 = Present and visible but <1mm. Rubbing fingers on surface produces a brownish tint on them, scraping leaves visible trail;
3 = 1-5mm;
4 = 5-20mm;
5 = >20mm;
UD = Cannot determine if microalgae present, substrate too small or covered with silt (formerly Z code);
D = Dry, not assessed

RIPARIAN VEGETATION (facing downstream)
0 = Absent (0%) 3 = Heavy (40-75%)
1 = Sparse (<10%) 4 = Very Heavy (>75%)
2 = Moderate (10-40%)

Vegetation Class	Left Bank	Right Bank
Upper Canopy (>5 m high)		
Trees and saplings >5 m high	0 1 (2) 3 4	0 1 2 (3) 4
Lower Canopy (0.5 m-5 m high)		
All vegetation 0.5 m to 5 m	0 1 2 3 (4)	0 1 2 3 (4)
Ground Cover (<0.5 m high)		
Woody shrubs & saplings <0.5 m	0 1 2 (3) 4	0 1 2 (3) 4
Herbs/ grasses	0 (1) 2 3 4	0 1 (2) 3 4
Barren, bare soil/ duff	0 1 (2) 3 4	0 (1) 2 3 4

INSTREAM HABITAT COMPLEXITY
0 = Absent (0%)
1 = Sparse (<10%)
2 = Moderate (10-40%)
3 = Heavy (40-75%)
4 = Very Heavy (>75%)

Filamentous Algae	(0) 1 2 3 4
Aquatic Macrophytes/ Emergent Vegetation	(0) 1 2 3 4
Boulders	0 1 (2) 3 4
Woody Debris >0.3 m	0 (1) 2 3 4
Woody Debris <0.3 m	(0) 1 2 3 4
Undercut Banks	(0) 1 2 3 4
Overhang. Vegetation	0 (1) 2 3 4
Live Tree Roots	(0) 1 2 3 4
Artificial Structures	(0) 1 2 3 4

DENSIOMETER READINGS (0-17)
count covered dots

Center Left	5
Center Upstream	0
Center Right	9
Center Downstream	1
Optional	
Left Bank	—
Right Bank	—

HUMAN INFLUENCE (circle only the closest to wetted channel)
0 = Not Present;
B = On Bank;
C = Between Bank & 10m from Channel;
P = >10m+<50m from Channel;
Channel (record Yes or No)

	Left Bank	Channel	Right Bank
Walls/ Rip-rap/ Dams	P C B (0)	Y (N)	(0) B C P
Buildings	P C B 0	Y N	0 B C P
Pavement/ Cleared Lot	P C B 0		0 B C P
Road/ Railroad	P C B 0	Y N	0 B C P
Pipes (Inlet/ Outlet)	P C B 0	Y N	0 B C P
Landfill/ Trash	P C B 0	Y N	0 B C P
Park/ Lawn	P C B 0		0 B C P
Row Crop	P C B 0		0 B C P
Pasture/ Range	P C B 0		0 B C P
Logging Operations	P C B 0		0 B C P
Mining Activity	P C B 0	Y N	0 B C P
Vegetation Management	P C B 0		0 B C P
Bridges/ Abutments	P C B 0	Y N	0 B C P
Orchards/ Vineyards	P C B 0		0 B C P

BANK STABILITY
[score on the left bank and on the right bank of transect between bankfull width]

Left Bank	eroded	vulnerable	(stable)
Right Bank	eroded	vulnerable	(stable)

TAKE PHOTOGRAPHS
(check box if taken & record photo code)

Downstream (**required**) ☒
154

Upstream (**required**) ☒
155

Inter-Transect: FG

Wetted Width (m): 12

Inter-Transect Substrates

Position	Dist from LB (m)	Depth (cm)	mm/ size class	% Cobble Embed.	CPOM	Microalgae Thickness Code	Macroalgae Attached	Macroalgae Unattached	Macrophytes
Left Bank	.5	16	CB	0	(P) A	1	P (A) D	P (A) D	P (A) D
Left Center	3	33	CB	0	P (A)	1	P (A) D	P (A) D	P (A) D
Center	6	67	BLD	—	P (A)	0	P (A) D	P (A) D	P (A) D
Right Center	9	48	CB	70	P (A)	0	P (A) D	P (A) D	P (A) D
Right Bank	11.5	11	BLD	—	(P) A	0	P (A) D	P (A) D	P (A) D
	Note: Substrate sizes can be recorded either as direct measures of the median axis of each particle or one of the size class categories listed on the supplemental page (direct measurements preferred)								

Microalgae Thickness Codes

0 = No microalgae present. Feels rough, not slimy;
1 = Present but not visible. Feels slimy;
2 = Present and visible but <1mm. Rubbing fingers on surface produces a brownish tint on them, scraping leaves visible trail;
3 = 1-5mm;
4 = 5-20mm;
5 = >20mm;
UD = Cannot determine if microalgae present, substrate too small or covered with silt (formerly Z code)
D = Dry, not assessed

Flow Habitats

Channel Type	%
Cascade/Falls	
Rapid	
Riffle	50
Run	20
Glide	
Pool	30
Dry	

SWAMP Stream Habitat Characterization Form *FULL VERSION* *Revision Date: February 9th, 2011*

Site Code:	Site Name: MYB abv Or. Cr.	Date: 07/10/2012
Wetted Width (m): 15	Bankfull Width (m): 30	Bankfull Height (m): 3

Transect G

Transect Substrates

Position	Dist from LB (m)	Depth (cm)	mm/ size class	% Cobble Embed.	CPOM	Microalgae Thickness Code	Macroalgae Attached	Macroalgae Unattached	Macrophytes
Left Bank	.5	46	COB	40	(P) A	2	P (A) D	P (A) D	(P) A D
Left Center	4	57	COB	0	P (A)	1	P (A) D	P (A) D	P (A) D
Center	7.5	79	SAND	—	P (A)	0	P (A) D	P (A) D	P (A) D
Right Center	11.5	54	BLD	—	P (A)	1	P (A) D	P (A) D	P (A) D
Right Bank	14.5	31	COB	20	(P) A	2	P (A) D	P (A) D	P (A) D

Note: Substrate sizes can be recorded either as direct measures of the median axis of each particle or one of the size class categories listed on the supplemental page (direct measurements preferred)

Microalgae Thickness Codes
0 = No microalgae present. Feels rough, not slimy;
1 = Present but not visible. Feels slimy;
2 = Present and visible but <1mm; Rubbing fingers on surface produces a brownish tint on them, scraping leaves visible trail;
3 = 1-5mm;
4 = 5-20mm;
5 = >20mm;
UD = Cannot determine if microalgae present, substrate too small or covered with silt (formerly Z code);
D = Dry, not assessed

RIPARIAN VEGETATION (facing downstream)
0 = Absent (0%) 3 = Heavy (40-75%)
1 = Sparse (<10%) 4 = Very Heavy (>75%)
2 = Moderate (10-40%)

Vegetation Class	Left Bank	Right Bank
Upper Canopy (>5 m high)		
Trees and saplings >5 m high	0 1 (2) 3 4	0 1 2 (3) 4
Lower Canopy (0.5 m-5 m high)		
All vegetation 0.5 m to 5 m	0 1 2 (3) 4	0 1 2 (3) 4
Ground Cover (<0.5 m high)		
Woody shrubs & saplings <0.5 m	0 1 2 (3) 4	0 1 2 (3) 4
Herbs/ grasses	0 (1) 2 3 4	0 1 (2) 3 4
Barren, bare soil/ duff	0 1 2 (3) 4	0 (1) 2 3 4

INSTREAM HABITAT COMPLEXITY
0 = Absent (0%)
1 = Sparse (<10%)
2 = Moderate (10-40%)
3 = Heavy (40-75%)
4 = Very Heavy (>75%)

Filamentous Algae	(0) 1 2 3 4
Aquatic Macrophytes/ Emergent Vegetation	(0) 1 2 3 4
Boulders	0 1 2 (3) 4
Woody Debris >0.3 m	0 1 (2) 3 4
Woody Debris <0.3 m	0 1 (2) 3 4
Undercut Banks	(0) 1 2 3 4
Overhang. Vegetation	0 (1) 2 3 4
Live Tree Roots	0 (1) 2 3 4
Artificial Structures	(0) 1 2 3 4

DENSIOMETER READINGS (0-17)
count covered dots

Center Left	3
Center Upstream	2
Center Right	5
Center Downstream	0
Optional	
Left Bank	—
Right Bank	—

HUMAN INFLUENCE (circle only the closest to wetted channel)
0 = Not Present;
B = On Bank;
C = Between Bank & 10m from Channel;
P = >10m+<50m from Channel;
Channel (record Yes or No)

	Left Bank	Channel	Right Bank
Walls/ Rip-rap/ Dams	P C B (0)	Y (N)	(0) B C P
Buildings	P C B 0	Y N	0 B C P
Pavement/ Cleared Lot	P C B 0		0 B C P
Road/ Railroad	P C B 0	Y N	0 B C P
Pipes (Inlet/ Outlet)	P C B 0	Y N	0 B C P
Landfill/ Trash	P C B 0	Y N	0 B C P
Park/ Lawn	P C B 0		0 B C P
Row Crop	P C B 0		0 B C P
Pasture/ Range	P C B 0		0 B C P
Logging Operations	P C B 0		0 B C P
Mining Activity	P C B 0	Y N	0 B C P
Vegetation Management	P C B 0		0 B C P
Bridges/ Abutments	P C B 0	Y N	0 B C P
Orchards/ Vineyards	P C B 0		0 B C P

BANK STABILITY
(score zone 5m upstream and 5m downstream of transect between bankfull - wetted width)

Left Bank	eroded	vulnerable	(stable)
Right Bank	eroded	vulnerable	(stable)

Inter-Transect: GH

Wetted Width (m): 14

Inter-Transect Substrates

Position	Dist from LB (m)	Depth (cm)	mm/ size class	% Cobble Embed.	CPOM	Microalgae Thickness Code	Macroalgae Attached	Macroalgae Unattached	Macrophytes
Left Bank	.5	20	15	—	(P) A	1	P (A) D	P (A) D	P (A) D
Left Center	3.5	42	CB	30	P (A)	0	P (A) D	P (A) D	P (A) D
Center	7	60	CG	—	(P) A	1	P (A) D	P (A) D	P (A) D
Right Center	10.5	31	BLD	—	P (A)	1	P (A) D	P (A) D	P (A) D
Right Bank	13.5	9	CG	—	(P) A	1	P (A) D	P (A) D	P (A) D
	Note: Substrate sizes can be recorded either as direct measures of the median axis of each particle or one of the size class categories listed on the supplemental page (direct measurements preferred)								

Microalgae Thickness Codes
0 = No microalgae present. Feels rough, not slimy;
1 = Present but not visible. Feels slimy;
2 = Present and visible but <1mm; Rubbing fingers on surface produces a brownish tint on them, scraping leaves visible trail;
3 = 1-5mm;
4 = 5-20mm;
5 = >20mm;
UD = Cannot determine if microalgae present, substrate too small or covered with silt (formerly Z code);
D = Dry, not assessed

Flow Habitats

(% between transect from LB)

Channel Type	%
Cascade/Falls	
Rapid	
Riffle	40
Run	
Glide	
Pool	60
Dry	

SWAMP Stream Habitat Characterization Form FULL VERSION Revision Date: February 9th, 2011

Site Code:	Site Name: MTR abv Or. Cr.	Date: __/__/2011
Wetted Width (m): 16	Bankfull Width (m): 20	Bankfull Height (m): .5

Transect H

Transect Substrates

Position	Dist from LB (m)	Depth (cm)	mm/ size class	% Cobble Embed.	CPOM	Microalgae Thickness Code	Macroalgae Attached	Macroalgae Unattached	Macrophytes
Left Bank	.5	70	CG	—	(P) A	2	(P) A D	P (A) D	(P) A D
Left Center	4	42	COB	70	P (A)	1	P (A) D	P (A) D	P (A) D
Center	8	78	SAND	—	P (A)	0	P (A) D	P (A) D	P (A) D
Right Center	12	68	SAND	—	(P) A	0	P (A) D	P (A) D	P (A) D
Right Bank	15.5	17	COB	10	(P) A	2	P (A) D	P (A) D	P (A) D

Note: Substrate sizes can be recorded either as direct measures of the median axis of each particle or one of the size class categories listed on the supplemental page (direct measurements preferred)

Microalgae Thickness Codes
0 = No microalgae present. Feels rough, not slimy.
1 = Present but not visible. Feels slimy.
2 = Present and visible but <1mm. Rubbing fingers on surface produces a brownish tint on them, scraping leaves visible trail.
3 = 1-5mm;
4 = 5-20mm;
5 = >20mm;
UD = Cannot determine if microalgae present, substrate too small or covered with silt (formerly Z code).
D = Dry, not assessed.

Riparian Vegetation (facing downstream)

0 = Absent (0%) 3 = Heavy (40-75%)
1 = Sparse (<10%) 4 = Very Heavy (>75%)
2 = Moderate (10-40%)

Vegetation Class	Left Bank	Right Bank
Upper Canopy (>5 m high)		
Trees and saplings >5 m high	(0) 1 2 3 4	0 (1) 2 3 4
Lower Canopy (0.5 m-5 m high)		
All vegetation 0.5 m to 5 m	0 1 (2) 3 4	0 1 (2) 3 4
Ground Cover (<0.5 m high)		
Woody shrubs & saplings <0.5 m	0 (1) 2 3 4	0 1 (2) 3 4
Herbs/ grasses	0 (1) 2 3 4	0 (1) 2 3 4
Barren, bare soil/ duff	0 1 2 3 (4)	0 1 2 (3) 4

Instream Habitat Complexity

0 = Absent (0%)
1 = Sparse (<10%)
2 = Moderate (10-40%)
3 = Heavy (40-75%)
4 = Very Heavy (>75%)

Filamentous Algae	(0) 1 2 3 4
Aquatic Macrophytes/ Emergent Vegetation	(0) 1 2 3 4
Boulders	0 (1) 2 3 4
Woody Debris >0.3 m	(0) 1 2 3 4
Woody Debris <0.3 m	(0) 1 2 3 4
Undercut Banks	(0) 1 2 3 4
Overhang. Vegetation	0 (1) 2 3 4
Live Tree Roots	0 (1) 2 3 4
Artificial Structures	(0) 1 2 3 4

Densiometer Readings (0-17)

count covered dots

Center Left	8
Center Upstream	5
Center Right	8
Center Downstream	0
Optional	
Left Bank	—
Right Bank	—

Human Influence

(circle only the closest to wetted channel)

0 = Not Present;
B = On Bank;
C = Between Bank & 10m from Channel;
P = >10m+<50m from Channel;
Channel (record Yes or No)

	Left Bank	Channel	Right Bank
Walls/ Rip-rap/ Dams	P C B (0)	Y (N)	(0) B C P
Buildings	P C B (0)	Y N	(0) B C P
Pavement/ Cleared Lot	P C B (0)		(0) B C P
Road/ Railroad	P C B (0)	Y N	(0) B C P
Pipes (Inlet/ Outlet)	P C B (0)	Y N	(0) B C P
Landfill/ Trash	P C B (0)	Y N	(0) B C P
Park/ Lawn	P C B (0)		(0) B C P
Row Crop	P C B (0)		(0) B C P
Pasture/ Range	P C B (0)		(0) B C P
Logging Operations	P C B (0)		(0) B C P
Mining Activity	P C B (0)	Y N	(0) B C P
Vegetation Management	P C B (0)		(0) B C P
Bridges/ Abutments	P C B (0)	Y N	(0) B C P
Orchards/ Vineyards	P C B (0)		(0) B C P

Bank Stability

(look at the left and right banks of the stream between transects - within reach)

	eroded	vulnerable	stable
Left Bank			
Right Bank	eroded	vulnerable	(stable)

FYLF
tadpoles

Inter-Transect: HI

Wetted Width (m): 16

Inter-Transect Substrates

Position	Dist from LB (m)	Depth (cm)	mm/ size class	% Cobble Embed.	CPOM	Microalgae Thickness Code	Macroalgae Attached	Macroalgae Unattached	Macrophytes
Left Bank	.5	23	COB	40	(P) A	2	P (A) D	P (A) D	(P) A D
Left Center	4	78	COB	80	(P) A	1	P (A) D	P (A) D	P (A) D
Center	8	103	SAND	—	P (A)	0	P (A) D	P (A) D	P (A) D
Right Center	12	120	SAND	—	P (A)	0	P (A) D	P (A) D	P (A) D
Right Bank	15.5	~~143~~ 143	SAND	—	(P) A	0	P (A) D	P (A) D	P (A) D

Note: Substrate sizes can be recorded either as direct measures of the median axis of each particle or one of the size class categories listed on the supplemental page (direct measurements preferred)

Microalgae Thickness Codes
0 = No microalgae present. Feels rough, not slimy;
1 = Present but not visible. Feels slimy;
2 = Present and visible but <1mm. Rubbing fingers on surface produces a brownish tint on them, scraping leaves visible trail;
3 = 1-5mm;
4 = 5-20mm;
5 = >20mm;
UD = Cannot determine if microalgae present, substrate too small or covered with silt (formerly Z code);
D = Dry, not assessed

FLOW HABITATS

(% based on transect length)

Channel Type	%
Cascade/Falls	
Rapid	
Riffle	
Run	
Glide	
Pool	160
Dry	

SWAMP Stream Habitat Characterization Form — FULL VERSION — Revision Date: February 9th, 2011

Site Code:	Site Name: MYR abv Or. Cr.	Date: __/__/2011
Wetted Width (m): 18	Bankfull Width (m): 20	Bankfull Height (m): .5

Transect I

Transect Substrates

Position	Dist from LB (m)	Depth (cm)	mm/ size class	% Cobble Embed.	CPOM	Microalgae Thickness Code	Macroalgae Attached	Macroalgae Unattached	Macrophytes
Left Bank	1.5	34	SAND	—	(P) A	0	P (A) D	P (A) D	(P) A D
Left Center	4.5	205	SAND	—	P (A)		P A D	P A D	P A D
Center	9	210	BLD	—	P (A)	1	P (A) D	P (A) D	P (A) D
Right Center	13.5	133	BLD	—	P (A)	1	P (A) D	P (A) D	P (A) D
Right Bank	17.5	15	SAND	—	(P) A	0	P (A) D	P (A) D	P (A) D

Note: Substrate sizes can be recorded either as direct measures of the median axis of each particle or one of the size class categories listed on the supplemental page (direct measurements preferred).

Microalgae Thickness Codes
0 = No microalgae present. Feels rough, not slimy;
1 = Present but not visible. Feels slimy;
2 = Present and visible but <1mm. Rubbing fingers on surface produces a brownish tint on them, scraping leaves visible trail.
3 = 1-5mm;
4 = 5-20mm;
5 = >20mm;
UD = Cannot determine if microalgae present, substrate too small or covered with silt (formerly Z code).
D = Dry, not assessed

Riparian Vegetation (facing downstream)

0 = Absent (0%) 3 = Heavy (40-75%)
1 = Sparse (<10%) 4 = Very Heavy (>75%)
2 = Moderate (10-40%)

Vegetation Class	Left Bank	Right Bank
Upper Canopy (>5 m high)		
Trees and saplings >5 m high	0 1 2 (3) 4	0 1 2 (3) 4
Lower Canopy (0.5 m-5 m high)		
All vegetation 0.5 m to 5 m	0 1 (2) 3 4	0 1 (2) 3 4
Ground Cover (<0.5 m high)		
Woody shrubs & saplings <0.5 m	0 1 2 (3) 4	0 1 (2) 3 4
Herbs/ grasses	0 (1) 2 3 4	0 (1) 2 3 4
Barren, bare soil/ duff	0 1 (2) 3 4	0 1 2 (3) 4

Instream Habitat Complexity

0 = Absent (0%)
1 = Sparse (<10%)
2 = Moderate (10-40%)
3 = Heavy (40-75%)
4 = Very Heavy (>75%)

Filamentous Algae	(0) 1 2 3 4
Aquatic Macrophytes/ Emergent Vegetation	(0) 1 2 3 4
Boulders	0 (1) 2 3 4
Woody Debris >0.3 m	(0) 1 2 3 4
Woody Debris <0.3 m	0 (1) 2 3 4
Undercut Banks	0 (1) 2 3 4
Overhang. Vegetation	(0) 1 2 3 4
Live Tree Roots	(0) 1 2 3 4
Artificial Structures	(0) 1 2 3 4

Densiometer Readings (0-17)
count covered dots

Center Left	0
Center Upstream	2
Center Right	12
Center Downstream	0
Optional	
Left Bank	—
Right Bank	—

Human Influence
(circle only the closest to wetted channel)

0 = Not Present;
B = On Bank;
C = Between Bank & 10m from Channel;
P = >10m+<50m from Channel;
Channel (record Yes or No)

	Left Bank	Channel	Right Bank
Walls/ Rip-rap/ Dams	P C B (0)	Y (N)	(0) B C P
Buildings	P C B (0)	Y (N)	(0) B C P
Pavement/ Cleared Lot	P C B (0)		(0) B C P
Road/ Railroad	P C B (0)	Y (N)	(0) B C P
Pipes (Inlet/ Outlet)	P C B (0)	Y (N)	(0) B C P
Landfill/ Trash	P C B (0)	Y (N)	(0) B C P
Park/ Lawn	P C B (0)		(0) B C P
Row Crop	P C B (0)		(0) B C P
Pasture/ Range	P C B (0)		(0) B C P
Logging Operations	P C B (0)		(0) B C P
Mining Activity	P C B (0)	Y (N)	(0) B C P
Vegetation Management	P C B (0)		(0) B C P
Bridges/ Abutments	P C B (0)	Y (N)	(0) B C P
Orchards/ Vineyards	P C B (0)		(0) B C P

Bank Stability
(score zone 5m upstream and 5m downstream of transect between bankfull - wetted width)

Left Bank	eroded	vulnerable	(stable)
Right Bank	eroded	vulnerable	(stable)

Inter-Transect: IJ

Wetted Width (m): 17

Inter-Transect Substrates

Position	Dist from LB (m)	Depth (cm)	mm/ size class	% Cobble Embed.	CPOM	Microalgae Thickness Code	Macroalgae Attached	Macroalgae Unattached	Macrophytes
Left Bank	.5	75	BED	—	(P) A	2	P (A) D	P (A) D	(P) A D
Left Center	5	250	BED	—	(P) A	1	P (A) D	P (A) D	(P) A D
Center	8.5	105	SAND	—	(P) A	0	P (A) D	P (A) D	P (A) D
Right Center	13.5	110	SAND	—	(P) A	0	P (A) D	P (A) D	P (A) D
Right Bank	16.5	50	SAND	—	(P) A	0	P (A) D	P (A) D	P (A) D
	Note: Substrate sizes can be recorded either as direct measures of the median axis of each particle or one of the size class categories listed on the supplemental page (direct measurements preferred)								

Microalgae Thickness Codes
0 = No microalgae present. Feels rough, not slimy;
1 = Present but not visible. Feels slimy;
2 = Present and visible but <1mm; Rubbing fingers on surface produces a brownish tint on them; scraping leaves visible trail;
3 = 1-5mm;
4 = 5-20mm;
5 = >20mm;
UD = Cannot determine if microalgae present, substrate too small or covered with silt (formerly Z code);
D = Dry, not assessed

Flow Habitats

Channel Type	%
Cascade/Falls	
Rapid	
Riffle	
Run	
Glide	
Pool	160
Dry	

SWAMP Stream Habitat Characterization Form FULL VERSION Revision Date: February 9th, 2011

Site Code:	Site Name: MTR abv Or Cr.	Date: ___/___/2011
Wetted Width (m): 15	Bankfull Width (m): 20	Bankfull Height (m): 1.5

Transect J

Transect Substrates

Position	Dist from LB (m)	Depth (cm)	mm/ size class	% Cobble Embed.	CPOM	Microalgae Thickness Code	Macroalgae Attached	Macroalgae Unattached	Macrophytes
Left Bank	15	240	COB	30	P A		P A D	P A D	P A D
Left Center	12.5	121	SAND	—	P (A)	0	P (A) D	P (A) D	P (A) D
Center	7.5	99	FG	—	P (A)	0	P (A) D	P (A) D	P (A) D
Right Center	10.5	83	COB	30	(P) A	2	P (A) D	P (A) D	P (A) D
Right Bank	14.5	46	SAND	—	(P) A	0	P (A) D	P (A) D	(P) A D

Note: Substrate sizes can be recorded either as direct measures of the median axis of each particle or one of the size class categories listed on the supplemental page (direct measurements preferred)

Microalgae Thickness Codes
0 = No microalgae present, Feels rough, not slimy;
1 = Present but not visible, Feels slimy;
2 = Present and visible but <1mm; Rubbing fingers on surface produces a brownish tint on them, scraping leaves visible trail;
3 = 1-5mm;
4 = 5-20mm;
5 = >20mm;
UD = Cannot determine if microalgae present, substrate too small or covered with silt (formerly Z code).
D = Dry, not assessed

Riparian Vegetation (facing downstream)

0 = Absent (0%) 3 = Heavy (40-75%)
1 = Sparse (<10%) 4 = Very Heavy (>75%)
2 = Moderate (10-40%)

Vegetation Class	Left Bank	Right Bank
Upper Canopy (>5 m high)		
Trees and saplings >5 m high	0 (1) 2 3 4	0 1 (2) 3 4
Lower Canopy (0.5 m-5 m high)		
All vegetation 0.5 m to 5 m	0 (1) 2 3 4	0 1 (2) 3 4
Ground Cover (<0.5 m high)		
Woody shrubs & saplings <0.5 m	0 (1) 2 3 4	0 1 (2) 3 4
Herbs/ grasses	0 (1) 2 3 4	0 1 (2) 3 4
Barren, bare soil/ duff	0 1 2 3 (4)	0 1 (2) 3 4

Instream Habitat Complexity

0 = Absent (0%)
1 = Sparse (<10%)
2 = Moderate (10-40%)
3 = Heavy (40-75%)
4 = Very Heavy (>75%)

Filamentous Algae	(0) 1 2 3 4
Aquatic Macrophytes/ Emergent Vegetation	(0) 1 2 3 4
Boulders	0 (1) 2 3 4
Woody Debris >0.3 m	(0) 1 2 3 4
Woody Debris <0.3 m	0 (1) 2 3 4
Undercut Banks	(0) 1 2 3 4
Overhang. Vegetation	0 (1) 2 3 4
Live Tree Roots	(0) 1 2 3 4
Artificial Structures	(0) 1 2 3 4

Densiometer Readings (0-17)

count covered dots

Center Left	9
Center Upstream	2
Center Right	13
Center Downstream	0
Optional	
Left Bank	—
Right Bank	—

Human Influence (circle only the closest to wetted channel)

0 = Not Present;
B = On Bank;
C = Between Bank & 10m from Channel;
P = >10m+<50m from Channel;
Channel (record Yes or No)

	Left Bank	Channel	Right Bank
Walls/ Rip-rap/ Dams	P C B (0)	Y (N)	(0) B C P
Buildings	P C B 0	Y N	0 B C P
Pavement/ Cleared Lot	P C B 0		0 B C P
Road/ Railroad	P C B 0	Y N	0 B C P
Pipes (Inlet/ Outlet)	P C B 0	Y N	0 B C P
Landfill/ Trash	P C B 0	Y N	0 B C P
Park/ Lawn	P C B 0		0 B C P
Row Crop	P C B 0		0 B C P
Pasture/ Range	P C B 0		0 B C P
Logging Operations	P C B 0		0 B C P
Mining Activity	P C B 0	Y N	0 B C P
Vegetation Management	P C B 0		0 B C P
Bridges/ Abutments	P C B 0	Y N	0 B C P
Orchards/ Vineyards	P C B 0		0 B C P

Bank Stability

Assess within 5m upstream and 5m downstream of transect between banks (i.e., wetted width)

Left Bank	eroded	vulnerable	(stable)
Right Bank	eroded	vulnerable	(stable)

Inter-Transect: JK

Wetted Width (m): 10

Inter-Transect Substrates

Position	Dist from LB (m)	Depth (cm)	mm/ size class	% Cobble Embed.	CPOM	Microalgae Thickness Code	Macroalgae Attached	Macroalgae Unattached	Macrophytes
Left Bank	.5	99	BED	—	P (A)	1	(P) A D	P (A) D	P (A) D
Left Center	2.5	0	BLD	—	P (A)	2	(P) A D	P (A) D	P (A) D
Center	5	67	CB	70	P (A)	1	P (A) D	P (A) D	P (A) D
Right Center	7.5	0	BLD	—	P (A)	1	P (A) D	P (A) D	P (A) D
Right Bank	9.5	3	CB	10	P (A)	1	P (A) D	P (A) D	P (A) D
	Note: Substrate sizes can be recorded either as direct measures of the median axis of each particle or one of the size class categories listed on the supplemental page (direct measurements preferred).								

Microalgae Thickness Codes
0 = No microalgae present. Feels rough, not slimy.
1 = Present but not visible. Feels slimy.
2 = Present and visible but <1mm. Rubbing fingers on surface produces a brownish tint on them, scraping leaves visible trail.
3 = 1-5mm.
4 = 5-20mm.
5 = >20mm.
UD = Cannot determine if microalgae present, substrate too small or covered with silt (formerly Z code).
D = Dry, not assessed

Flow Habitats

Channel Type	%
Cascade/ Falls	
Rapid	
Riffle	20
Run	20
Glide	
Pool	60
Dry	

SWAMP Stream Habitat Characterization Form FULL VERSION Revision Date: February 9th, 2011

Site Code:	Site Name: MYR abv Or. Cr.	Date: ___/___/2011
Wetted Width (m): 13	Bankfull Width (m): 25	Bankfull Height (m): 1.5

Transect K

Transect Substrates

Position	Dist from LB (m)	Depth (cm)	mm/ size class	% Cobble Embed.	CPOM	Microalgae Thickness Code	Macroalgae Attached	Macroalgae Unattached	Macrophytes
Left Bank	.5	27	CG	—	(P) A	0	P (A) D	P (A) D	P (A) D
Left Center	3	29	~~CB~~ SEB	(1)	(P) A	2	(P) A D	P (A) D	P (A) D
Center	6.5	30	CB	20	P (A)	1	P (A) D	P (A) D	P (A) D
Right Center	9.5	0	BLD	—	P (A)	1	P (A) D	P (A) D	P (A) D
Right Bank	12.5	10	CB	30	(P) A	1	P (A) D	P (A) D	P (A) D

Note: Substrate sizes can be recorded either as direct measures of the median axis of each particle or one of the size class categories listed on the supplemental page (direct measurements preferred)

Microalgae Thickness Codes
0 = No microalgae present. Feels rough, not slimy;
1 = Present but not visible. Feels slimy;
2 = Present and visible but <1mm. Rubbing fingers on surface produces a brownish tint on them, scraping leaves visible trail;
3 = 1-5mm;
4 = 5-20mm;
5 = >20mm;
U = Cannot determine if microalgae present, substrate too small or covered with silt (formerly Z code);
D = Dry, not assessed

Riparian Vegetation (facing downstream)

0 = Absent (0%) 3 = Heavy (40-75%)
1 = Sparse (<10%) 4 = Very Heavy (>75%)
2 = Moderate (10-40%)

Vegetation Class	Left Bank	Right Bank
Upper Canopy (>5 m high)		
Trees and saplings >5 m high	0 (1) 2 3 4	0 1 (2) 3 4
Lower Canopy (0.5 m-5 m high)		
All vegetation 0.5 m to 5 m	0 1 (2) 3 4	0 1 (2) 3 4
Ground Cover (<0.5 m high)		
Woody shrubs & saplings <0.5 m	0 1 2 (3) 4	0 1 2 (3) 4
Herbs/ grasses	0 (1) 2 3 4	0 (1) 2 3 4
Barren, bare soil/ duff	0 1 (2) 3 4	0 1 (2) 3 4

Instream Habitat Complexity

0 = Absent (0%)
1 = Sparse (<10%)
2 = Moderate (10-40%)
3 = Heavy (40-75%)
4 = Very Heavy (>75%)

Filamentous Algae	(0) 1 2 3 4
Aquatic Macrophytes/ Emergent Vegetation	(0) 1 2 3 4
Boulders	0 1 (2) 3 4
Woody Debris >0.3 m	(0) 1 2 3 4
Woody Debris <0.3 m	0 (1) 2 3 4
Undercut Banks	(0) 1 2 3 4
Overhang. Vegetation	(0) 1 2 3 4
Live Tree Roots	(0) 1 2 3 4
Artificial Structures	(0) 1 2 3 4

Densiometer Readings (0-17)
count covered dots

Center Left	12
Center Upstream	3
Center Right	8
Center Downstream	0
Optional	
Left Bank	X
Right Bank	X

Human Influence
(circle only the closest to wetted channel)

0 = Not Present;
B = On Bank;
C = Between Bank & 10m from Channel;
P = >10m+<50m from Channel;
Channel (record Yes or No)

	Left Bank	Channel	Right Bank
Walls/ Rip-rap/ Dams	P C B (0)	Y (N)	(0) B C P
Buildings	P C B 0	Y N	0 B C P
Pavement/ Cleared Lot	P C B 0		0 B C P
Road/ Railroad	P C B 0	Y N	0 B C P
Pipes (Inlet/ Outlet)	P C B 0	Y N	0 B C P
Landfill/ Trash	P C B 0	Y N	0 B C P
Park/ Lawn	P C B 0		0 B C P
Row Crop	P C B 0		0 B C P
Pasture/ Range	P C B 0		0 B C P
Logging Operations	P C B 0		0 B C P
Mining Activity	P C B 0	Y N	0 B C P
Vegetation Management	P C B 0		0 B C P
Bridges/ Abutments	P C B 0	Y N	0 B C P
Orchards/ Vineyards	P C B 0		0 B C P

Bank Stability

Assess zone 5m upstream and 5m downstream of transect between points 3 - marked earlier

Left Bank	eroded	vulnerable	(stable)
Right Bank	eroded	vulnerable	(stable)

TAKE PHOTOGRAPHS
(check box if taken & record photo code)

Downstream (**required**) ☒
159

Upstream (**optional**) ☒
160

Site Code:	Date: ___/___/2011

FULL FORM

BENTHIC INVERTEBRATE SAMPLES

Collection Method (indicate standard or margin-center-margin)			Replicate	# jars
RWB (standard)	**RWB** (MCM)	**TRC**	1	
RWB (standard)	**RWB** (MCM)	**TRC**	2	
RWB (standard)	**RWB** (MCM)	**TRC**		
RWB (standard)	**RWB** (MCM)	**TRC**		

Field Notes/ Comments:

Chemistry Equipment ID

Analyte	Equipment
pH	
temperature	
dissolved oxygen	
specific conductance	
salinity	
alkalinity	
turbidity	
silica	
Velocity	

ALGAE SAMPLES

Collection Method (circle one or write new method if applicable)	SWAMP EMAP	SWAMP EMAP	SWAMP EMAP	SWAMP EMAP
Collection Device (sum # of transects per device)	Rep. 1	Rep. 2	Rep.	Rep.
Rubber Delimiter (area=12.6cm^2)				
PVC Delimiter (area=12.6cm^2)				
Syringe Scrubber (area=5.3cm^2)				
Other area=				
Number of transects sampled (0-11)				
Composite Volume (mL)				
Assemblage ID volume **(diatoms)** (50 mL tube)				
Assemblage ID volume **(soft algae)** (50 mL tube)				
Check if Qualitative Algae sample was collected with soft algae/diatom sample (required even if macroalgae not visible)	☐	☐	☐	☐
Check if a water chem. **integrated** sample was collected (chl, AFDM)	☐	☐	☐	☐
Chlorophyll a volume use GF/F filter (25 mL **(preferred volume)**				
Ash Free Dry Mass (AFDM) volume use GF/F filter (25 mL **(preferred vol)**				

Water and Sediment Chemistry Samples

Check if a WATER chemistry **grab** sample was collected (nutrients, SSC, etc.)	☐
Check if a DUPLICATE WATER chemistry **grab** sample was collected	☐
Check if a SEDIMENT chemistry sample was collected	☐
Check if a DUPLICATE SEDIMENT chemistry sample was collected	☐

Sediment Collection Device: SCOOP CORE GRAB

Material: Stainless Steel Polyethylene Polycarbonate Other

Sediment Collection Depth (cm): 2 or 5

Create Lab Collection records for each checked box for integrated and grab water chemistry samples

ADDITIONAL PHOTOGRAPHS

Description	Photo Code	Description	Photo Code

Flow Habitat Type	DESCRIPTION
Cascades	Short, high gradient drop in stream bed elevation often accompanied by boulders and considerable turbulence
Falls	High gradient drop in elevation of the stream bed associated with an abrupt change in the bedrock
Rapids	Sections of stream with swiftly flowing water and considerable surface turbulence. Rapids tend to have larger substrate sizes than riffles
Riffles	Shallow sections where the water flows over coarse stream bed particles that create mild to moderate surface turbulence; (< 0.5 m deep, > 0.3 m/s).
Runs	Long, relatively straight, low-gradient sections without flow obstructions. The stream bed is typically even and the water flows faster than it does in a pool; (> 0.5 m deep, > 0.3 m/s). A **step-run** is a series of runs separated by short riffles or flow obstructions that cause discontinuous breaks in slope
Glides	A section of stream with little or no turbulence, but faster velocity than pools; (< 0.5 m deep, < 0.3 m/s)
Pools	A reach of stream that is characterized by deep, low-velocity water and a smooth surface; (> 0.5 m deep, < 0.3 m/s)

Size Class Code	Size Class Range	Size Class Description	Common Size Reference
RS	> 4 m	bedrock, smooth	larger than a car
RR	> 4 m	bedrock, rough	larger than a car
XB	1 - 4 m	boulder, large	meter stick to car
SB	25 cm - 1.0 m	boulder, small	basketball to meter stick
CB	64 - 250 mm	cobble	tennis ball to basketball
GC	16 - 64 mm	gravel, coarse	marble to tennis ball
GF	2 – 16 mm	gravel, fine	ladybug to marble
SA	0.06 – 2 mm	sand	gritty to ladybug
FN	< 0.06 mm	fines	not gritty
HP	< 0.06 mm	hardpan (consolidated fines)	
WD	NA	wood	
RC	NA	concrete/ asphalt	
OT	NA	other	

BANK STABILITY

Although this measure of the degree of erosive potential is subjective, it can provide clues to the erosive potential of the banks within the reach. Assign the category whose description best fits the conditions in the area between the wetted channel and bankfull channel (see figure below)

Eroded	Banks show obvious signs of erosion from the current or previous water year; banks are usually bare or nearly bare
Vulnerable	Banks have some vegetative protection (usually annual growth), but not enough to prevent erosion during flooding
Stable	Bank vegetation has well-developed roots that protect banks from erosion; alternately, bedrock or artificial structures (e.g., concrete/ rip-rap) prevent bank erosion

CPOM/ COBBLE EMBEDDEDNESS

CPOM: Record presence (P) or absence (A) of coarse particulate organic matter (>1.0 mm particles) within 1 cm of each substrate particle

Cobble Embeddedness: Visually estimate % embedded by fine particles (record to nearest 5%)

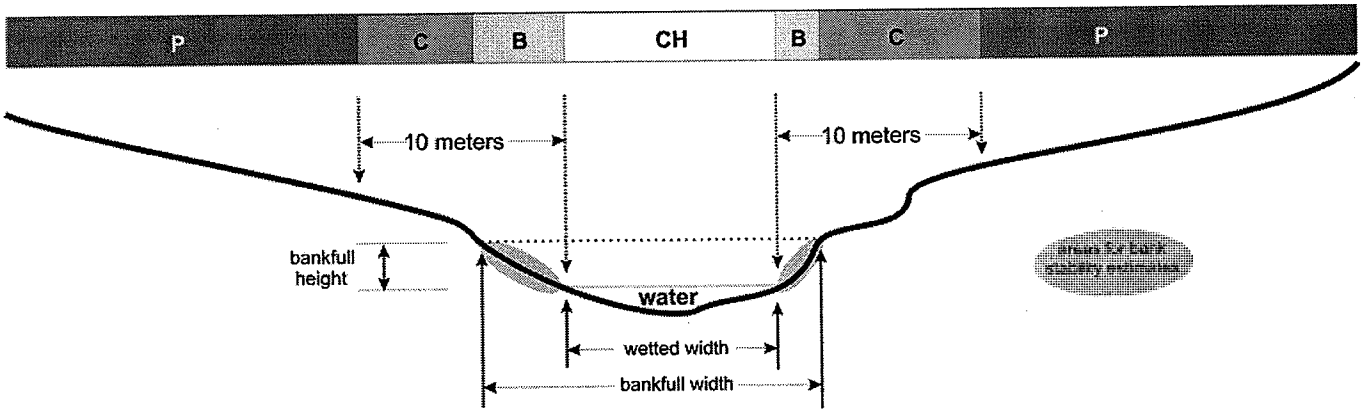


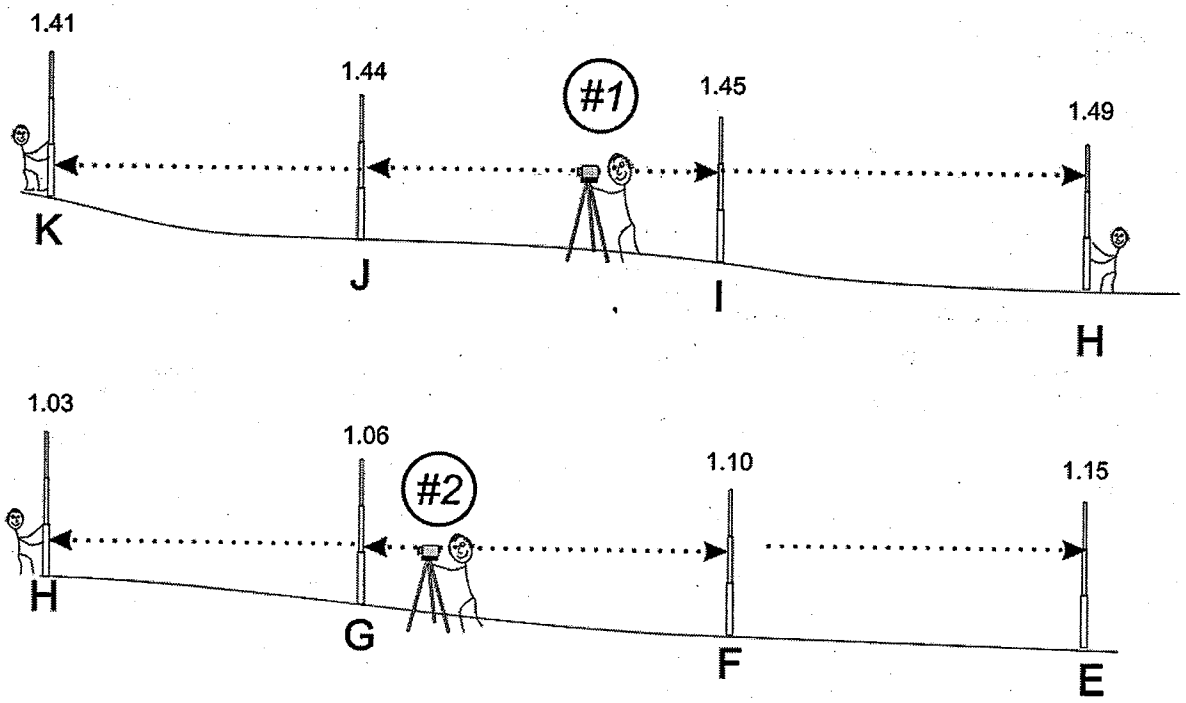
Figure 1. Cross-sectional diagram of stream transect indicating regions for assessing human influence measures:

- The measurement zone extends 5 meters upstream and 5 meters downstream of each transect
- Record one category for each bank and for the wetted channel (3 values possible)
- In reaches with wide banks, region "C" may be entirely overlapped by region "B"; in these cases, circle "B"
- Region "P" extends from 10 meters to the distance that can be seen from the channel, but not greater than 50 m

SLOPE and BEARING FORM — EXAMPLE

AUTOLEVEL	X
CLINOMETER	
HANDLEVEL	

Starting Transect	MAIN SEGMENT (record percent of inter-transect distance in each segment if supplemental segments are used)						SUPPLEMENTAL SEGMENT (record percent of inter-transect distance in each segment if supplemental segments are used)				
	Stadia rod measurements		Slope (%) or Elevation Difference cm ■ % □	Segment Length (m)	Bearing (0°-359°)	Percent of Total Length (%)	Stadia rod measurements		Slope or Elevation Difference cm □ % □	Segment Length (m)	Bearing (0°-359°)	Percent of Total Length (%)
K	1.41											
J	1.44		3	15	140	100						
I	1.45		1	15	145	100						
H	1.49	1.03	4	15	150	100						
G		1.06	3	15	143	100						
F		1.10	4	15	187	100						
E		1.15	5	15	195	100						



1. Level the autolevel at Position #1
2. Place base of stadia rod at water level every time
3. Sight to stadia rod at Transect K, then Transect J
4. Rotate scope and sight to Transects I and H.
5. Move level to Position #2 and re-level
6. Re-sight to stadia rod at Transect H, then Transect G
7. Rotate scope and sight to Transects F and E

Note: Sites will vary in the number of separate level positions needed to survey the reach.

UTM TOP = 0664918, 4362238

SWAMP Stream Habitat Characterization Form FULL VERSION *Revision Date: February 9th, 2011*

REACH DOCUMENTATION

Standard Reach Length (wetted width ≤ 10 m) = 150 m Distance between transects = 15 m
Alternate Reach Length (wetted width >10 m) = 250 m Distance between transects = 25 m

Project Name: YCWA	Date: 7 / 9 / 2012 Sample Collection Time: 0900
Stream Name: MYR ~~Oregon~~	Site Name/ Description: MYR below Or. Cr.
Site Code: YCBMI-5	Crew Members: C. Vertucci, M. Ashentelter C. Wiseman
Latitude (actual – ~~decimal degrees~~): °N 0664899 (UTM bottom)	datum: NAD83 other:
Longitude (actual – ~~decimal degrees~~): °W 4362044	GPS Device: GARMIN 60

AMBIENT WATER QUALITY MEASUREMENTS

turbidity and silica are optional; calibration date required

Temp (Deg C)	20.6	pH	6.3	Alkalinity (mg/L)	—	Turbidity (ntu)	
		cal. date				cal. date	
Dissolved O^2 (mg/L)	7.7	Specific Conduct (uS/cm)	124	Salinity (ppt)	—	Silica (mg/L)	—
cal. date		cal. date		cal. date		cal. date	

REACH LENGTH

Actual Length (m) *(see reach length guidelines at top of form)*	250
Explanation:	—

DISCHARGE MEASUREMENTS

1st measurement = left bank (looking downstream)

check if discharge measurements not possible (explain in field notes section) ☐

VELOCITY AREA METHOD (preferred)

cal. date: Transect Width (m):

	Distance from Left Bank (~~cm~~)	Depth (~~cm~~)	Velocity (ft/sec)		Distance from Left Bank (cm)	Depth (cm)	Velocity (ft/sec)
1	0	0	0	11	50	0	0
2	5	.3	.43	12	55	.6	.69
3	10	1.4	.22	13	60	.6	.24
4	15	1.2	.191	14	65	.6	.26
5	20	1.6	1.08	15	70	.3	.93
6	25	1.0	1.02	16	75	0	0
7	30	.5	.8	17	80	0	0
8	35	.5	.16	18	85	.4	.1
9	40	.9	.53	19	90	.5	.65
10	45	.9	.44	20	95	1	1.42

BUOYANT OBJECT METHOD (use ONLY if velocity area method not possible)

	Float 1	Float 2	Float 3
Distance (m)			
Float Time (sec)			

Float Reach Cross Section

width (m) depth(cm)	Upper Section	Middle Section	Lower Section
Width			
Depth 1			
Depth 2			
Depth 3			
Depth 4			
Depth 5			

NOTABLE FIELD CONDITIONS (check one box per topic)

Evidence of recent rainfall (enough to increase surface runoff)	NO	X	minimal		>10% flow increase	
Evidence of fires in reach or immediately upstream (<500 m)	NO	X	< 1 year		< 5 years	
Dominant landuse/ landcover in area surrounding reach	Agriculture		Forest	X	Rangeland	
	Urban/ Industrial		Suburb/Town		Other	

ADDITIONAL COBBLE EMBEDDEDNESS MEASURES

(carry over from transect forms if needed to attain target count of 25; measure in %)

1	2	3	4	5	6	7	8	9	10	11	12	13
20	10	5	0	30	35	50	55	15	25	30	10	35
14	15	16	17	18	19	20	21	22	23	24	25	
60	40	15	0	10	25	30						

NOTE! TOP OF SITE WENT INTO DEEP, ALTERED POOL BY HWY 49. SHIFTED TRANSECTS 50M DS OF ORIGINAL "BOTTOM"

Site Code: Date: 07/09/2012

SLOPE and BEARING FORM (transect based - for Full PHAB only)

AUTOLEVEL [X] CLINOMETER [ ] HANDLEVEL [ ] OTHER [ ]

Starting Transect	MAIN SEGMENT (record percent of inter-transect distance in each segment if supplemental segments are used)					SUPPLEMENTAL SEGMENT (record percent of inter-transect distance in each segment if supplemental segments are used)				
	Stadia rod measurements	Slope (%) or Elevation Difference cm [ ] % [X]	Segment Length (m)	Bearing (0°-359°)	Percent of Total Length (%)	Stadia rod measurements	Slope or Elevation Difference cm [ ] % [ ]	Segment Length (m)	Bearing (0°-359°)	Percent of Total Length (%)
K										
J		1.5	25		10					
I		.5	25		10					
H		0	25		10					
G		.5	25		10					
F		1	25		10					
E		1	25		10					
D		.5	25		10					
C		.5	25		10					
B		0	25		10					
A		0	25		10					
additional calculation area										

ADDITIONAL HABITAT CHARACTERIZATION

High Gradient [ ] Low Gradient [✓]

Parameter	Optimal	Suboptimal	Marginal	Poor
Epifaunal Substrate/ Cover	Greater than 70% of substrate favorable for epifaunal colonization and fish cover (50% for low-gradient streams); mix of submerged logs, undercut banks, cobble or other stable habitat	40-70% mix of stable habitat (30-50% for low-gradient streams); well-suited for full colonization potential	20-40% mix of stable habitat (10-30% in low-gradient streams); substrate frequently disturbed or removed	Less than 20% stable habitat (10% in low-gradient streams); lack of habitat is obvious; substrate unstable or lacking
Score:	20 19 18 17 16	(15) 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
Sediment Deposition	Little or no enlargement of islands or point bars and less than 5% of the bottom affected by sediment deposition (<20% in low-gradient streams)	Some new increase in bar formation, mostly from gravel, sand, or fine sediment; 5-30% of the bottom affected (20-50% in low-gradient streams)	Moderate deposition of new gravel, sand, or fine sediment on bars; 30-50% of the bottom affected (50 - 80% in low-gradient streams)	Heavy deposits of fine material, increased bar development; more than 50% of the bottom changing frequently (>80% in low-gradient streams)
Score:	20 19 18 17 16	15 14 13 12 11	10 (9) 8 7 6	5 4 3 2 1 0
Channel Alteration	Channelization or dredging absent or minimal; stream with normal pattern	Some channelization present, (e.g., bridge abutments); evidence of past channelization (> 20yrs) may be present but recent channelization not present	Channelization may be extensive; embankments or shoring structures present on both banks; 40 to 80% of stream reach disrupted	Banks shored with gabian 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 0

SWAMP Stream Habitat Characterization Form FULL VERSION Revision Date: February 9th, 2011

Site Code:	Site Name: MYR blw OC	Date: 07/09/2012
Wetted Width (m): 35 m	Bankfull Width (m): 50 / Bankfull Height (m): 1.5	**Transect A**

Transect Substrates

Position	Dist from LB (m)	Depth (cm)	mm/ size class	% Cobble Embed.	CPOM	Microalgae Thickness Code	Macroalgae Attached	Macroalgae Unattached	Macrophytes
Left Bank	.5	73	170	70	(P) A	0	P (A) D	P (A) D	(P) A D
Left Center	8.5	109	65	40	P (A)	0	P (A) D	P (A) D	P (A) D
Center	17.5	46	SAN	0	(P) A	0	P (A) D	P (A) D	P A D
Right Center	26.0	35	SAND	0	(P) A	0	P (A) D	P (A) D	P (A) D
Right Bank	34.5	23	SAND	0	(P) A	0	P (A) D	P (A) D	(P) A D
	Note: Substrate sizes can be recorded either as direct measures of the median axis of each particle or one of the size class categories listed on the supplemental page (direct measurements preferred)								

Microalgae Thickness Codes
0 = No microalgae present. Feels rough, not slimy;
1 = Present but not visible. Feels slimy;
2 = Present and visible but <1mm. Rubbing fingers on surface produces a brownish tint on them, scraping leaves visible trail;
3 = 1-5mm;
4 = 5-20mm;
5 = >20mm;
UD = Cannot determine if microalgae present, substrate too small or covered with silt (formerly Z code);
D = Dry, not assessed

RIPARIAN VEGETATION (facing downstream)
0 = Absent (0%) 3 = Heavy (40-75%)
1 = Sparse (<10%) 4 = Very Heavy (>75%)
2 = Moderate (10-40%)

Vegetation Class	Left Bank	Right Bank
Upper Canopy (>5 m high)		
Trees and saplings >5 m high	0 1 2 3 (4)	0 1 2 3 (4)
Lower Canopy (0.5 m-5 m high)		
All vegetation 0.5 m to 5 m	0 1 2 3 (4)	0 1 2 (3) 4
Ground Cover (<0.5 m high)		
Woody shrubs & saplings <0.5 m	0 1 2 3 (4)	0 1 2 (3) 4
Herbs/ grasses	0 (1) 2 3 4	0 1 (2) 3 4
Barren, bare soil/ duff	0 1 2 3 (4)	0 1 2 3 (4)

INSTREAM HABITAT COMPLEXITY
0 = Absent (0%)
1 = Sparse (<10%)
2 = Moderate (10-40%)
3 = Heavy (40-75%)
4 = Very Heavy (>75%)

Filamentous Algae	(0) 1 2 3 4
Aquatic Macrophytes/ Emergent Vegetation	0 (1) 2 3 4
Boulders	0 (1) 2 3 4
Woody Debris >0.3 m	(0) 1 2 3 4
Woody Debris <0.3 m	0 (1) 2 3 4
Undercut Banks	(0) 1 2 3 4
Overhang. Vegetation	0 (1) 2 3 4
Live Tree Roots	0 (1) 2 3 4
Artificial Structures	(0) 1 2 3 4

DENSIOMETER READINGS (0-17)
count covered dots

Center Left	4
Center Upstream	0
Center Right	2
Center Downstream	0
Optional	
Left Bank	X
Right Bank	X

HUMAN INFLUENCE (circle only the closest to wetted channel)
0 = Not Present;
B = On Bank;
C = Between Bank & 10m from Channel;
P = >10m+<50m from Channel;
Channel (record Yes or No)

	Left Bank	Channel	Right Bank
Walls/ Rip-rap/ Dams	P C B (0)	Y (N)	(0) B C P
Buildings	P C B (0)	Y (N)	(0) B C P
Pavement/ Cleared Lot	P C B (0)		(0) B C P
Road/ Railroad	(P) C B 0	Y (N)	(0) B C P
Pipes (Inlet/ Outlet)	P C B (0)	Y (N)	(0) B C P
Landfill/ Trash	P C B (0)	Y (N)	(0) B C P
Park/ Lawn	P C B (0)		(0) B C P
Row Crop	P C B (0)		(0) B C P
Pasture/ Range	P C B (0)		(0) B C P
Logging Operations	P C B (0)		(0) B C P
Mining Activity	P C B (0)	Y (N)	(0) B C P
Vegetation Management	P C B (0)		(0) B C P
Bridges/ Abutments	P C B (0)	Y (N)	(0) B C P
Orchards/ Vineyards	P C B (0)		(0) B C P

BANK STABILITY
Assess each 5m reach from 5m upstream and 5m downstream of transect between bankfull width

Left Bank	eroded	vulnerable	(stable)
Right Bank	eroded	vulnerable	(stable)

TAKE PHOTOGRAPHS
(check box if taken & record photo code)

Downstream (**optional**) ☑
145

Upstream (**required**) ☑
146

Inter-Transect: AB

Wetted Width (m): 35m

Inter-Transect Substrates

Position	Dist from LB (m)	Depth (cm)	mm/ size class	% Cobble Embed.	CPOM	Microalgae Thickness Code	Macroalgae Attached	Macroalgae Unattached	Macrophytes
Left Bank	.5	31	32	50	(P) A	2	P (A) D	P (A) D	(P) A D
Left Center	8.5	111	60	20	P (A)	0	P (A) D	P (A) D	P (A) D
Center	17	49	BLD	90	(P) A	3	P (A) D	P (A) D	P (A) D
Right Center	25.5	35	SAND	-	(P) A	0	P (A) D	P (A) D	P (A) D
Right Bank	34.5	20	COB	30	(P) A	0	P (A) D	P (A) D	(P) A D
	Note: Substrate sizes can be recorded either as direct measures of the median axis of each particle or one of the size class categories listed on the supplemental page (direct measurements preferred)								

Microalgae Thickness Codes
0 = No microalgae present. Feels rough, not slimy;
1 = Present but not visible. Feels slimy;
2 = Present and visible but <1mm; Rubbing fingers on surface produces a brownish tint on them, scraping leaves visible trail.
3 = 1-5mm;
4 = 5-20mm;
5 = >20mm;
UD = Cannot determine if microalgae present, substrate too small or covered with silt (formerly Z code);
D = Dry, not assessed

FLOW HABITATS

Channel Type	%
Cascade/ Falls	-
Rapid	-
Riffle	-
Run	30
Glide	40
Pool	30
Dry	-

SWAMP Stream Habitat Characterization Form — FULL VERSION — Revision Date: February 9th, 2011

Site Code:	Site Name: M4E blw Or. Cr	Date: 07/09/2012
Wetted Width (m): 35	Bankfull Width (m): 50	Bankfull Height (m): 1.5

Transect B

Transect Substrates

Position	Dist from LB (m)	Depth (cm)	mm/ size class	% Cobble Embed.	CPOM	Microalgae Thickness Code	Macroalgae Attached	Macroalgae Unattached	Macrophytes
Left Bank	1.5	37	490	0	(P) A	2	P (A) D	P (A) D	P (A) D
Left Center	8.5	81	140	40	P (A)	0	P (A) D	P (A) D	P (A) D
Center	17	58	64	60	(P) A	2	P (A) D	P (A) D	P (A) D
Right Center	25.5	29	gravel	—	P (A)	0	P (A) D	P (A) D	P (A) D
Right Bank	34.5	26	gravel	—	(P) A	0	P (A) D	P (A) D	(P) A D

Note: Substrate sizes can be recorded either as direct measures of the median axis of each particle or one of the size class categories listed on the supplemental page (direct measurements preferred)

Microalgae Thickness Codes
0 = No microalgae present. Feels rough, not slimy;
1 = Present but not visible. Feels slimy;
2 = Present and visible but <1mm. Rubbing fingers on surface produces a brownish tint on them, scraping leaves visible trail;
3 = 1-5mm;
4 = 5-20mm;
5 = >20mm;
UD = Cannot determine if microalgae present, substrate too small or covered with silt (formerly Z code);
D = Dry, not assessed

Riparian Vegetation (facing downstream)

0 = Absent (0%) 3 = Heavy (40-75%)
1 = Sparse (<10%) 4 = Very Heavy (>75%)
2 = Moderate (10-40%)

Vegetation Class	Left Bank	Right Bank
Upper Canopy (>5 m high)		
Trees and saplings >5 m high	0 1 2 3 (4)	0 1 2 3 (4)
Lower Canopy (0.5 m-5 m high)		
All vegetation 0.5 m to 5 m	0 1 2 3 (4)	0 1 2 3 (4)
Ground Cover (<0.5 m high)		
Woody shrubs & saplings <0.5 m	0 1 2 (3) 4	0 1 2 (3) 4
Herbs/ grasses	0 1 2 (3) 4	0 1 (2) 3 4
Barren, bare soil/ duff	0 1 (2) 3 4	0 1 (2) 3 4

Instream Habitat Complexity

0 = Absent (0%)
1 = Sparse (<10%)
2 = Moderate (10-40%)
3 = Heavy (40-75%)
4 = Very Heavy (>75%)

Filamentous Algae	(0) 1 2 3 4
Aquatic Macrophytes/ Emergent Vegetation	0 (1) 2 3 4
Boulders	0 1 (2) 3 4
Woody Debris >0.3 m	(0) 1 2 3 4
Woody Debris <0.3 m	0 (1) 2 3 4
Undercut Banks	(0) 1 2 3 4
Overhang. Vegetation	0 (1) 2 3 4
Live Tree Roots	(0) 1 2 3 4
Artificial Structures	(0) 1 2 3 4

Densiometer Readings (0-17)

count covered dots

Center Left	6
Center Upstream	0
Center Right	0
Center Downstream	0
Optional	
Left Bank	
Right Bank	1

Human Influence (circle only the closest to wetted channel)

0 = Not Present;
B = On Bank;
C = Between Bank & 10m from Channel;
P = >10m+<50m from Channel;
Channel (record Yes or No)

	Left Bank	Channel	Right Bank
Walls/ Rip-rap/ Dams	P C B (0)	Y (N)	(0) B C P
Buildings	P C B (0)	Y N	(0) B C P
Pavement/ Cleared Lot	P C B (0)		(0) B C P
Road/ Railroad	P C B (0)	Y N	(0) B C P
Pipes (Inlet/ Outlet)	P C B (0)	Y N	(0) B C P
Landfill/ Trash	P C B (0)	Y N	(0) B C P
Park/ Lawn	P C B (0)		(0) B C P
Row Crop	P C B (0)		(0) B C P
Pasture/ Range	P C B (0)		(0) B C P
Logging Operations	P C B (0)		(0) B C P
Mining Activity	P C B (0)	Y N	(0) B C P
Vegetation Management	P C B (0)		(0) B C P
Bridges/ Abutments	P C B (0)	Y N	(0) B C P
Orchards/ Vineyards	P C B (0)		(0) B C P

Bank Stability

Score one for between and one for outside of transect between bankfull vertical walls

Left Bank	eroded	vulnerable	(stable)
Right Bank	eroded	vulnerable	(stable)

Inter-Transect: BC

Wetted Width (m): 35

Inter-Transect Substrates

Position	Dist from LB (m)	Depth (cm)	mm/ size class	% Cobble Embed.	CPOM	Microalgae Thickness Code	Macroalgae Attached	Macroalgae Unattached	Macrophytes
Left Bank	.5	45	SAND	—	(P) A	0	P (A) D	P (A) D	(P) A D
Left Center	8.5	96	SS	70	(P) A	2	P (A) D	P (A) D	P (A) D
Center	17	35	SO	40	(P) A	2	P (A) D	P (A) D	P (A) D
Right Center	25.5	20	SLD	—	P (A)	0	P (A) D	P (A) D	(P) A D
Right Bank	34.5	10	LOB	50	(P) A	2	P (A) D	P (A) D	(P) A D
	Note: Substrate sizes can be recorded either as direct measures of the median axis of each particle or one of the size class categories listed on the supplemental page (direct measurements preferred).								

Microalgae Thickness Codes

0 = No microalgae present. Feels rough, not slimy;
1 = Present but not visible. Feels slimy;
2 = Present and visible but <1mm; Rubbing fingers on surface produces a brownish tint on them, scraping leaves visible trail;
3 = 1-5mm;
4 = 5-20mm;
5 = >20mm;
UD = Cannot determine if microalgae present, substrate too small or covered with silt (formerly Z code);
D = Dry, not assessed

Flow Habitats

(% between transects, total = 100%)

Channel Type	%
Cascade/ Falls	
Rapid	
Riffle	10
Run	40
Glide	30
Pool	20
Dry	

SWAMP Stream Habitat Characterization Form *FULL VERSION* *Revision Date: February 9th, 2011*

Site Code:	Site Name: MYK b/w Or. Cr.	Date: 07/09/2012
Wetted Width (m): 30	Bankfull Width (m): 50	Bankfull Height (m): 1.5
		Transect C

Transect Substrates

Position	Dist from LB (m)	Depth (cm)	mm/ size class	% Cobble Embed.	CPOM	Microalgae Thickness Code	Macroalgae Attached	Macroalgae Unattached	Macrophytes
Left Bank	.5	66	12	—	(P) A	0	P (A) D	P (A) D	(P) A D
Left Center	7.5	84	SAND	—	(P) A	0	P (A) D	P (A) D	(P) A D
Center	15	28	70	0	P (A)	1	P (A) D	P (A) D	P (A) D
Right Center	22.5	2	SAND	—	P (A)	0	P (A) D	P (A) D	P (A) D
Right Bank	29.5	22	cob	15	(P) A	0	P (A) D	P (A) D	(P) A D
	Note: Substrate sizes can be recorded either as direct measures of the median axis of each particle or one of the size class categories listed on the supplemental page (direct measurements preferred)								

Microalgae Thickness Codes
0 = No microalgae present, Feels rough, not slimy;
1 = Present but not visible, Feels slimy;
2 = Present and visible but <1mm; Rubbing fingers on surface produces a brownish tint on them, scraping leaves visible trail;
3 = 1-5mm;
4 = 5-20mm;
5 = >20mm;
UD = Cannot determine if microalgae present, substrate too small or covered with silt (formerly Z code);
D = Dry, not assessed

RIPARIAN VEGETATION (facing downstream)

0 = Absent (0%) 3 = Heavy (40-75%)
1 = Sparse (<10%) 4 = Very Heavy (>75%)
2 = Moderate (10-40%)

Vegetation Class	Left Bank	Right Bank
Upper Canopy (>5 m high)		
Trees and saplings >5 m high	0 1 2 3 (4)	0 1 2 (3) 4
Lower Canopy (0.5 m-5 m high)		
All vegetation 0.5 m to 5 m	0 1 2 (3) 4	0 1 2 3 (4)
Ground Cover (<0.5 m high)		
Woody shrubs & saplings <0.5 m	0 1 2 (3) 4	0 1 2 3 (4)
Herbs/ grasses	0 1 (2) 3 4	0 1 2 (3) 4
Barren, bare soil/ duff	0 1 2 3 (4)	0 1 (2) 3 4

INSTREAM HABITAT COMPLEXITY

0 = Absent (0%)
1 = Sparse (<10%)
2 = Moderate (10-40%)
3 = Heavy (40-75%)
4 = Very Heavy (>75%)

Filamentous Algae	(0) 1 2 3 4
Aquatic Macrophytes/ Emergent Vegetation	0 1 (2) 3 4
Boulders	0 1 (2) 3 4
Woody Debris >0.3 m	0 (1) 2 3 4
Woody Debris <0.3 m	0 (1) 2 3 4
Undercut Banks	0 (1) 2 3 4
Overhang. Vegetation	0 1 (2) 3 4
Live Tree Roots	0 (1) 2 3 4
Artificial Structures	(0) 1 2 3 4

DENSIOMETER READINGS (0-17)
count covered dots

Center Left	6
Center Upstream	1
Center Right	6
Center Downstream	0
Optional	
Left Bank	X
Right Bank	X

HUMAN INFLUENCE (circle only the closest to wetted channel)

0 = Not Present;
B = On Bank;
C = Between Bank & 10m from Channel;
P = >10m+<50m from Channel;
Channel (record Yes or No)

	Left Bank	Channel	Right Bank
Walls/ Rip-rap/ Dams	P C B (0)	Y (N)	(0) B C P
Buildings	P C B (0)	Y (N)	(0) B C P
Pavement/ Cleared Lot	P C B (0)		(0) B C P
Road/ Railroad	P C B (0)	Y (N)	(0) B C P
Pipes (Inlet/ Outlet)	P C B (0)	Y (N)	(0) B C P
Landfill/ Trash	P C B (0)	Y (N)	(0) B C P
Park/ Lawn	P C B (0)		(0) B C P
Row Crop	P C B (0)		(0) B C P
Pasture/ Range	P C B (0)		(0) B C P
Logging Operations	P C B (0)		(0) B C P
Mining Activity	P C B (0)	Y N	(0) B C P
Vegetation Management	P C B (0)		(0) B C P
Bridges/ Abutments	P C B (0)	Y N	(0) B C P
Orchards/ Vineyards	P C B (0)		(0) B C P

BANK STABILITY
Score zone 5m upstream and 5m downstream of transect between bankfull - wetted width

Left Bank	eroded	vulnerable	(stable)
Right Bank	eroded	vulnerable	(stable)

Inter-Transect: CD

Wetted Width (m): 32 m

Inter-Transect Substrates

Position	Dist from LB (m)	Depth (cm)	mm/ size class	% Cobble Embed.	CPOM	Microalgae Thickness Code	Macroalgae Attached	Macroalgae Unattached	Macrophytes
Left Bank	.5	36	SND BLD	—	(P) A	2	P (A) D	P (A) D	(P) A D
Left Center	9	26	COB	5	P A	2	P (A) D	P (A) D	P (A) D
Center	18	21	100	20	(P) A	1	P (A) D	P (A) D	P (A) D
Right Center	27	9	BLD	—	P (A)	1	P A D	P A D	P A D
Right Bank	31.5	20	COB	30	P A		P A D	P A D	P A D
	Note: Substrate sizes can be recorded either as direct measures of the median axis of each particle or one of the size class categories listed on the supplemental page (direct measurements preferred)								

Microalgae Thickness Codes
0 = No microalgae present. Feels rough, not slimy;
1 = Present but not visible. Feels slimy;
2 = Present and visible but <1mm. Rubbing fingers on surface produces a brownish tint on them, scraping leaves visible trail;
3 = 1-5mm;
4 = 5-20mm;
5 = >20mm;
UD = Cannot determine if microalgae present, substrate too small or covered with silt (formerly Z code);
D = Dry, not assessed

FLOW HABITATS
(% of each transect type / total)

Channel Type	%
Cascade/ Falls	
Rapid	
Riffle	80
Run	10
Glide	10
Pool	
Dry	

SWAMP Stream Habitat Characterization Form FULL VERSION Revision Date: February 9th, 2011

Site Code:	Site Name: MYR blw Or. Cr.	Date: 07/09/2012
Wetted Width (m): 32 m	Bankfull Width (m): 45	Bankfull Height (m): 1.0

Transect D

Transect Substrates

Position	Dist from LB (m)	Depth (cm)	mm/ size class	% Cobble Embed.	CPOM	Microalgae Thickness Code	Macroalgae Attached	Macroalgae Unattached	Macrophytes
Left Bank	.5	29	CG	—	P A	1	P (A) D	P (A) D	P (A) D
Left Center	9	38	COB	0	P (A)	1	P (A) D	P (A) D	P (A) D
Center	18	18	COB	20	P (A)	1	P (A) D	P (A) D	P (A) D
Right Center	27	17	CG	—	P (A)	1	P (A) D	P (A) D	P (A) D
Right Bank	31.5	2	BLD	—	P (A)	0	P (A) D	P (A) D	P (A) D
	Note: Substrate sizes can be recorded either as direct measures of the median axis of each particle or one of the size class categories listed on the supplemental page (direct measurements preferred)								

Microalgae Thickness Codes
0 = No microalgae present. Feels rough, not slimy;
1 = Present but not visible. Feels slimy;
2 = Present and visible but <1mm. Rubbing fingers on surface produces a brownish tint on them, scraping leaves visible trail.
3 = 1-5mm;
4 = 5-20mm;
5 = >20mm;
UD = Cannot determine if microalgae present, substrate too small or covered with silt (formerly Z code);
D = Dry, not assessed

Riparian Vegetation
(facing downstream)

0 = Absent (0%) 3 = Heavy (40-75%)
1 = Sparse (<10%) 4 = Very Heavy (>75%)
2 = Moderate (10-40%)

Vegetation Class	Left Bank	Right Bank
Upper Canopy (>5 m high)		
Trees and saplings >5 m high	0 1 2 (3) 4	0 1 2 (3) 4
Lower Canopy (0.5 m-5 m high)		
All vegetation 0.5 m to 5 m	0 1 2 3 (4)	0 1 2 3 (4)
Ground Cover (<0.5 m high)		
Woody shrubs & saplings <0.5 m	0 1 2 (3) 4	0 1 2 (3) 4
Herbs/ grasses	0 1 (2) 3 4	0 1 2 (3) 4
Barren, bare soil/ duff	0 1 2 (3) 4	0 1 (2) 3 4

Instream Habitat Complexity

0 = Absent (0%)
1 = Sparse (<10%)
2 = Moderate (10-40%)
3 = Heavy (40-75%)
4 = Very Heavy (>75%)

Filamentous Algae	(0) 1 2 3 4
Aquatic Macrophytes/ Emergent Vegetation	0 1 (2) 3 4
Boulders	0 1 (2) 3 4
Woody Debris >0.3 m	(0) 1 2 3 4
Woody Debris <0.3 m	0 (1) 2 3 4
Undercut Banks	0 (1) 2 3 4
Overhang. Vegetation	0 1 (2) 3 4
Live Tree Roots	0 (1) 2 3 4
Artificial Structures	(0) 1 2 3 4

Densiometer Readings (0-17)
count covered dots

Center Left	6
Center Upstream	2
Center Right	2
Center Downstream	0
Optional	
Left Bank	X
Right Bank	X

Human Influence
(circle only the closest to wetted channel)

0 = Not Present;
B = On Bank;
C = Between Bank & 10m from Channel;
P = >10m+<50m from Channel;
Channel (record Yes or No)

	Left Bank	Channel	Right Bank
Walls/ Rip-rap/ Dams	P C B (0)	Y (N)	(0) B C P
Buildings	P C B (0)	Y (N)	(0) B C P
Pavement/ Cleared Lot	P C B (0)		(0) B C P
Road/ Railroad	P C B (0)	Y (N)	(0) B C P
Pipes (Inlet/ Outlet)	P C B (0)	Y (N)	(0) B C P
Landfill/ Trash	P C B (0)	Y (N)	(0) B C P
Park/ Lawn	P C B (0)		(0) B C P
Row Crop	P C B (0)		(0) B C P
Pasture/ Range	P C B (0)		(0) B C P
Logging Operations	P C B (0)		(0) B C P
Mining Activity	P C B (0)	Y (N)	(0) B C P
Vegetation Management	P C B (0)		(0) B C P
Bridges/ Abutments	P C B (0)	Y (N)	(0) B C P
Orchards/ Vineyards	P C B (0)		(0) B C P

Bank Stability

Assess zone 3m lateral and vertical dimension of transect between bankfull - wetted width

Left Bank	eroded	vulnerable	(stable)
Right Bank	eroded	vulnerable	(stable)

Inter-Transect: DE

Wetted Width (m): 30 m

Inter-Transect Substrates

Position	Dist from LB (m)	Depth (cm)	min/ size class	% Cobble Embed	CPOM	Microalgae Thickness Code	Macroalgae Attached	Macroalgae Unattached	Macrophytes
Left Bank	5	28	CG	—	(P) A	0	P (A) D	(P) A D	(P) A D
Left Center	7.5	14	EOB	0	(P) A	2	P (A) D	P (A) D	P (A) D
Center	15	29	CG	—	P (A)	0	P (A) D	P (A) D	P (A) D
Right Center	22.5	17	2BD BLD	—	(P) A	1	P (A) D	P (A) D	P (A) D
Right Bank	29.5	3	CG	—	P (A)	0	P (A) D	P (A) D	P (A) D
	Note: Substrate sizes can be recorded either as direct measures of the median axis of each particle or one of the size class categories listed on the supplemental page (direct measurements preferred)								

Microalgae Thickness Codes

0 = No microalgae present. Feels rough, not slimy;
1 = Present but not visible. Feels slimy;
2 = Present and visible but <1mm. Rubbing fingers on surface produces a brownish tint on them, scraping leaves visible trail;
3 = 1-5mm;
4 = 5-20mm;
5 = >20mm;
UD = Cannot determine if microalgae present, substrate too small or covered with silt (formerly Z code);
D = Dry, not assessed

FLOW HABITATS (% between transects, estimate to 5%)	
Channel Type	%
Cascade/ Falls	
Rapid	
Riffle	50
Run	10
Glide	10
Pool	
Dry	

SWAMP Stream Habitat Characterization Form FULL VERSION Revision Date: February 9th, 2011

Site Code:	Site Name: MYR blw Or. Cr.	Date: 07/09/2012
Wetted Width (m): 32	Bankfull Width (m): 45 / Bankfull Height (m): 1.5	**Transect E**

Transect Substrates

Position	Dist from LB (m)	Depth (cm)	mm/ size class	% Cobble Embed.	CPOM	Microalgae Thickness Code	Macroalgae Attached	Macroalgae Unattached	Macrophytes
Left Bank	5	20	COB	60	P (A)	1	P (A) D	P (A) D	P (A) D
Left Center	9	32	BLD	—	P (A)	2	P (A) D	P (A) D	P (A) D
Center	18	19	COB	40	P (A)	2	P (A) D	P (A) D	P (A) D
Right Center	27	40	COB	25	P (A)	1	P (A) D	P (A) D	P (A) D
Right Bank	31.5	18	5mm	—	P (A)	1	P (A) D	P (A) D	P (A) D

Note: Substrate sizes can be recorded either as direct measures of the median axis of each particle or one of the size class categories listed on the supplemental page (direct measurements preferred)

Microalgae Thickness Codes
0 = No microalgae present. Feels rough, not slimy;
1 = Present but not visible. Feels slimy;
2 = Present and visible but <1mm. Rubbing fingers on surface produces a brownish tint on them, scraping leaves visible trail.
3 = 1-5mm;
4 = 5-20mm;
5 = >20mm;
UD = Cannot determine if microalgae present, substrate too small or covered with silt (formerly Z code).
D = Dry, not assessed

Riparian Vegetation (facing downstream)
0 = Absent (0%) 3 = Heavy (40-75%)
1 = Sparse (<10%) 4 = Very Heavy (>75%)
2 = Moderate (10-40%)

Vegetation Class	Left Bank	Right Bank
Upper Canopy (>5 m high)		
Trees and saplings >5 m high	0 1 (2) 3 4	0 1 (2) 3 4
Lower Canopy (0.5 m-5 m high)		
All vegetation 0.5 m to 5 m	0 1 2 (3) 4	0 1 2 (3) 4
Ground Cover (<0.5 m high)		
Woody shrubs & saplings <0.5 m	0 1 2 (3) 4	0 1 2 (3) 4
Herbs/ grasses	0 (1) 2 3 4	0 1 (2) 3 4
Barren, bare soil/ duff	0 1 (2) 3 4	0 (1) 2 3 4

Instream Habitat Complexity
0 = Absent (0%)
1 = Sparse (<10%)
2 = Moderate (10-40%)
3 = Heavy (40-75%)
4 = Very Heavy (>75%)

Filamentous Algae	(0) 1 2 3 4
Aquatic Macrophytes/ Emergent Vegetation	0 (1) 2 3 4
Boulders	0 1 (2) 3 4
Woody Debris >0.3 m	0 (1) 2 3 4
Woody Debris <0.3 m	0 (1) 2 3 4
Undercut Banks	(0) 1 2 3 4
Overhang. Vegetation	0 (1) 2 3 4
Live Tree Roots	0 (1) 2 3 4
Artificial Structures	0 (1) 2 3 4

Densiometer Readings (0-17) *count covered dots*

Center Left	2
Center Upstream	1
Center Right	0
Center Downstream	0
Optional	
Left Bank	—
Right Bank	—

Human Influence (circle only the closest to wetted channel)
0 = Not Present;
B = On Bank;
C = Between Bank & 10m from Channel;
P = >10m+<50m from Channel;
Channel (record Yes or No)

	Left Bank	Channel	Right Bank
Walls/ Rip-rap/ Dams	P C B (0)	(Y) N	(0) B C P
Buildings	P C B 0	Y (N)	0 B C P
Pavement/ Cleared Lot	P C B 0		0 B C P
Road/ Railroad	(P) C B 0	Y (N)	0 B C P
Pipes (Inlet/ Outlet)	P C B (0)	Y (N)	0 B C P
Landfill/ Trash	P C B 0	Y (N)	0 B C P
Park/ Lawn	P C B 0		0 B C P
Row Crop	P C B 0		0 B C P
Pasture/ Range	P C B 0		0 B C P
Logging Operations	P C B 0		0 B C P
Mining Activity	P C B 0	Y (N)	0 B C P
Vegetation Management	P C B 0		0 B C P
Bridges/ Abutments	P C B 0	Y (N)	0 B C P
Orchards/ Vineyards	P C B 0		0 B C P

Bank Stability
(Score over a 5m upstream and 5m downstream of transect, between bankfull - wetted width)

Left Bank	eroded	vulnerable	(stable)
Right Bank	eroded	vulnerable	(stable)

Inter-Transect: EF

Wetted Width (m): 30

Inter-Transect Substrates

Position	Dist from LB (m)	Depth (cm)	mm/ size class	% Cobble Embed.	CPOM	Microalgae Thickness Code	Macroalgae Attached	Macroalgae Unattached	Macrophytes
Left Bank	.5	34	CG	—	(P) A	1	P (A) D	P (A) D	P (A) D
Left Center	7.5	28	COB	50	(P) A	0	P A D	P A D	P A D
Center	15	11	COB	50	(P) A	1	P (A) D	P (A) D	P (A) D
Right Center	22.5	37	CG	—	P (A)	0	P (A) D	P (A) D	P (A) D
Right Bank	29.5	17	COB	10	(P) A	1	P (A) D	P (A) D	P (A) D
	Note: Substrate sizes can be recorded either as direct measures of the median axis of each particle or one of the size class categories listed on the supplemental page (direct measurements preferred)								

Microalgae Thickness Codes
0 = No microalgae present. Feels rough, not slimy;
1 = Present but not visible. Feels slimy;
2 = Present and visible but <1mm; Rubbing fingers on surface produces a brownish tint on them, scraping leaves visible trail.
3 = 1-5mm;
4 = 5-20mm;
5 = >20mm;
UD = Cannot determine if microalgae present, substrate too small or covered with silt (formerly Z code).
D = Dry, not assessed

Flow Habitats (Inter-transect estimates)	
Channel Type	%
Cascade/ Falls	
Rapid	
Riffle	50
Run	25
Glide	25
Pool	
Dry	

SWAMP Stream Habitat Characterization Form FULL VERSION Revision Date: February 9th, 2011

Site Code:	Site Name: MYR blw Or. Cr.		Date: 07/09/2011
Wetted Width (m): 28m	Bankfull Width (m): 35	Bankfull Height (m): 1.0	**Transect F**

Transect Substrates

Position	Dist from LB (m)	Depth (cm)	mm/ size class	% Cobble Embed.	CPOM	Microalgae Thickness Code	Macroalgae Attached	Macroalgae Unattached	Macrophytes
Left Bank	.5	30	BLD	—	(P) A	1	P (A) D	P (A) D	P (A) D
Left Center	7	47	BLD	—	(P) A	1	P (A) D	P (A) D	P (A) D
Center	14	10	COB	50	(P) A	2	P (A) D	P (A) D	P (A) D
Right Center	21	2	COB	40	P (A)	1	P (A) D	P (A) D	P (A) D
Right Bank	27.5	11	COB	30	(P) A	1	P (A) D	P (A) D	P (A) D

Note: Substrate sizes can be recorded either as direct measures of the median axis of each particle or one of the size class categories listed on the supplemental page (direct measurements preferred)

Microalgae Thickness Codes
0 = No microalgae present. Feels rough, not slimy;
1 = Present but not visible. Feels slimy;
2 = Present and visible but <1mm. Rubbing fingers on surface produces a brownish tint on them, scraping leaves visible trail;
3 = 1-5mm;
4 = 5-20mm;
5 = >20mm;
UD = Cannot determine if microalgae present: substrate too small or covered with silt (formerly Z code);
D = Dry, not assessed

RIPARIAN VEGETATION (facing downstream)
0 = Absent (0%) 3 = Heavy (40-75%)
1 = Sparse (<10%) 4 = Very Heavy (>75%)
2 = Moderate (10-40%)

Vegetation Class	Left Bank	Right Bank
Upper Canopy (>5 m high)		
Trees and saplings >5 m high	0 1 2 3 (4)	0 1 2 3 (4)
Lower Canopy (0.5 m-5 m high)		
All vegetation 0.5 m to 5 m	0 1 2 (3) 4	0 1 2 (3) 4
Ground Cover (<0.5 m high)		
Woody shrubs & saplings <0.5 m	0 1 (2) 3 4	0 1 2 (3) 4
Herbs/ grasses	0 1 2 (3) 4	0 1 (2) 3 4
Barren, bare soil/ duff	0 1 (2) 3 4	0 1 2 (3) 4

INSTREAM HABITAT COMPLEXITY
0 = Absent (0%)
1 = Sparse (<10%)
2 = Moderate (10-40%)
3 = Heavy (40-75%)
4 = Very Heavy (>75%)

Filamentous Algae	(0) 1 2 3 4
Aquatic Macrophytes/ Emergent Vegetation	0 (1) 2 3 4
Boulders	0 1 (2) 3 4
Woody Debris >0.3 m	0 (1) 2 3 4
Woody Debris <0.3 m	0 (1) 2 3 4
Undercut Banks	0 (1) 2 3 4
Overhang. Vegetation	0 1 (2) 3 4
Live Tree Roots	(0) 1 2 3 4
Artificial Structures	(0) 1 2 3 4

DENSIOMETER READINGS (0-17)
count covered dots

Center Left	2
Center Upstream	1
Center Right	3
Center Downstream	0
Optional	
Left Bank	—
Right Bank	—

HUMAN INFLUENCE (circle only the closest to wetted channel)
0 = Not Present;
B = On Bank;
C = Between Bank & 10m from Channel;
P = >10m+<50m from Channel;
Channel (record Yes or No)

	Left Bank	Channel	Right Bank
Walls/ Rip-rap/ Dams	P C B (0)	Y (N)	(0) B C P
Buildings	P C B 0	Y N	0 B C P
Pavement/ Cleared Lot	P C B 0		0 B C P
Road/ Railroad	P C B 0	Y N	0 B C P
Pipes (Inlet/ Outlet)	P C B 0	Y N	0 B C P
Landfill/ Trash	P C B 0	Y N	0 B C P
Park/ Lawn	P C B 0		0 B C P
Row Crop	P C B 0		0 B C P
Pasture/ Range	P C B 0		0 B C P
Logging Operations	P C B 0		0 B C P
Mining Activity	P C B 0	Y N	0 B C P
Vegetation Management	P C B 0		0 B C P
Bridges/ Abutments	P C B 0	Y N	0 B C P
Orchards/ Vineyards	P C B 0		0 B C P

BANK STABILITY
(score 20 m upstream and 20 m downstream of transect between bankfull edges each)

Left Bank	eroded	vulnerable	(stable)
Right Bank	eroded	vulnerable	(stable)

147 – Kick sample photo op

TAKE PHOTOGRAPHS
(check box if taken & record photo code)

Downstream (**required**)	☑ 148
Upstream (**required**)	☐ 149

Inter-Transect: FG

Wetted Width (m): 30

Inter-Transect Substrates

Position	Dist. from LB (m)	Depth (cm)	mm/ size class	% Cobble Embed.	CPOM	Microalgae Thickness Code	Macroalgae Attached	Macroalgae Unattached	Macrophytes
Left Bank	1.5	28	BLD	—	(P) A	1	P (A) D	P (A) D	P (A) D
Left Center	7.5	39	COB	20	(P) A	2	P (A) D	P (A) D	(P) A D
Center	15	22	COB	30	P (A)	1	P (A) D	P (A) D	(P) A D
Right Center	22.5	14	BLD	—	P (A)	1	P (A) D	P (A) D	P (A) D
Right Bank	29.5	41	CG	—	P (A)	0	P (A) D	P (A) D	P (A) D
	Note: Substrate sizes can be recorded either as direct measures of the median axis of each particle or one of the size class categories listed on the supplemental page (direct measurements preferred)								

Microalgae Thickness Codes:
0 = No microalgae present; Feels rough, not slimy;
1 = Present but not visible; Feels slimy;
2 = Present and visible but <1mm; Rubbing fingers on surface produces a brownish tint on them, scraping leaves visible trail;
3 = 1-5mm;
4 = 5-20mm;
5 = >20mm;
UD = Cannot determine if microalgae present, substrate too small or covered with silt (formerly Z code);
D = Dry, not assessed

Flow Habitats (% based on wetted width)	
Channel Type	%
Cascade/ Falls	
Rapid	
Riffle	80
Run	10
Glide	10
Pool	
Dry	

SWAMP Stream Habitat Characterization Form FULL VERSION Revision Date: February 9th, 2011

Site Code:	Site Name: MYR blw Or. Cr	Date: 07/09/2012
Wetted Width (m): 26	Bankfull Width (m): 35	Bankfull Height (m): 1.0

Transect G

Transect Substrates

Position	Dist from LB (m)	Depth (cm)	mm/ size class	% Cobble Embed.	CPOM	Microalgae Thickness Code	Macroalgae Attached	Macroalgae Unattached	Macrophytes
Left Bank	.5	60	BLD	—	P (A)	0	P (A) D	P (A) D	P (A) D
Left Center	6.5	62	BLD	—	(P) A	1	P (A) D	P (A) D	P (A) D
Center	13				P A		P A D	P A D	P A D
Right Center	19.5	47	CG	—	(P) A	0	P (A) D	P (A) D	(P) A D
Right Bank	25.5	4	BLD	—	(P) A	1	P (A) D	P (A) D	(P) A D

Note: Substrate sizes can be recorded either as direct measures of the median axis of each particle or one of the size class categories listed on the supplemental page (direct measurements preferred)

Microalgae Thickness Codes
0 = No microalgae present, Feels rough, not slimy;
1 = Present but not visible, Feels slimy;
2 = Present and visible but <1mm; Rubbing fingers on surface produces a brownish tint on them, scraping leaves visible trail;
3 = 1-5mm;
4 = 5-20mm;
5 = >20mm;
UD = Cannot determine if microalgae present, substrate too small or covered with silt (formerly Z code);
D = Dry, not assessed

Riparian Vegetation (facing downstream)

0 = Absent (0%) 3 = Heavy (40-75%)
1 = Sparse (<10%) 4 = Very Heavy (>75%)
2 = Moderate (10-40%)

Vegetation Class	Left Bank	Right Bank
Upper Canopy (>5 m high)		
Trees and saplings >5 m high	0 1 2 (3) 4	0 1 2 (3) 4
Lower Canopy (0.5 m-5 m high)		
All vegetation 0.5 m to 5 m	0 1 2 (3) 4	0 1 2 (3) 4
Ground Cover (<0.5 m high)		
Woody shrubs & saplings <0.5 m	0 1 (2) 3 4	0 1 2 (3) 4
Herbs/ grasses	0 1 (2) 3 4	0 1 (2) 3 4
Barren, bare soil/ duff	0 1 2 (3) 4	0 (1) 2 3 4

Instream Habitat Complexity

0 = Absent (0%)
1 = Sparse (<10%)
2 = Moderate (10-40%)
3 = Heavy (40-75%)
4 = Very Heavy (>75%)

Filamentous Algae	(0) 1 2 3 4
Aquatic Macrophytes/ Emergent Vegetation	0 1 (2) 3 4
Boulders	0 1 (2) 3 4
Woody Debris >0.3 m	0 (1) 2 3 4
Woody Debris <0.3 m	0 (1) 2 3 4
Undercut Banks	0 (1) (2) 3 4
Overhang. Vegetation	0 (1) 2 3 4
Live Tree Roots	0 (1) 2 3 4
Artificial Structures	(0) 1 2 3 4

Densiometer Readings (0-17)

count covered dots

Center Left	5
Center Upstream	2
Center Right	3
Center Downstream	0
Optional	
Left Bank	—
Right Bank	—

Human Influence (circle only the closest to wetted channel)

0 = Not Present;
B = On Bank;
C = Between Bank & 10m from Channel;
P = >10m+<50m from Channel;
Channel (record Yes or No)

	Left Bank	Channel	Right Bank
Walls/ Rip-rap/ Dams	P C B (0)	Y (N)	(0) B C P
Buildings	P C B 0	Y N	0 B C P
Pavement/ Cleared Lot	P C B 0		0 B C P
Road/ Railroad	P C B 0	Y N	0 B C P
Pipes (Inlet/ Outlet)	P C B 0	Y N	0 B C P
Landfill/ Trash	P C B 0	Y N	0 B C P
Park/ Lawn	P C B 0		0 B C P
Row Crop	P C B 0		0 B C P
Pasture/ Range	P C B 0		0 B C P
Logging Operations	P C B 0		0 B C P
Mining Activity	P C B 0	Y N	0 B C P
Vegetation Management	P C B 0		0 B C P
Bridges/ Abutments	P C B 0	Y N	0 B C P
Orchards/ Vineyards	P C B 0		0 B C P

Bank Stability

(assess entire 5m upstream and 5m downstream of transect between bankfull widths each)

Left Bank	eroded	vulnerable	(stable)
Right Bank	eroded	vulnerable	(stable)

Inter-Transect: GH

Wetted Width (m): 32 m

Inter-Transect Substrates

Position	Dist from LB (m)	Depth (cm)	mm/ size class	% Cobble Embed.	CPOM	Microalgae Thickness Code	Macroalgae Attached	Macroalgae Unattached	Macrophytes
Left Bank	.5	34	BLD	—	(P) A	2	P (A) D	P (A) D	P (A) D
Left Center	8	26	BLD	—	(P) A	1	(P) A D	P (A) D	P (A) D
Center	16	20	BLD	—	P (A)	0	P (A) D	P (A) D	P (A) D
Right Center	24	14	COB	15	(P) A	1	P (A) D	P (A) D	P (A) D
Right Bank	31.5	7	COB	50	(P) A	1	P (A) D	P (A) D	P (A) D
	Note: Substrate sizes can be recorded either as direct measures of the median axis of each particle or one of the size class categories listed on the supplemental page (direct measurements preferred)								

Microalgae Thickness Codes
0 = No microalgae present. Feels rough, not slimy;
1 = Present but not visible. Feels slimy;
2 = Present and visible but <1mm. Rubbing fingers on surface produces a brownish tint on them, scraping leaves visible trail.
3 = 1-5mm;
4 = 5-20mm;
5 = >20mm;
UD = Cannot determine if microalgae present, substrate too small or covered with silt (formerly Z code)
D = Dry, not assessed

Flow Habitats
(% between transects; must = 100%)

Channel Type	%
Cascade/Falls	
Rapid	
Riffle	50
Run	30
Glide	20
Pool	10
Dry	

SWAMP Stream Habitat Characterization Form FULL VERSION Revision Date: February 9th, 2011

Site Code:	Site Name: MYR blw Or. Cr	Date: 07/09/2012
Wetted Width (m): 31 m	Bankfull Width (m): 40	Bankfull Height (m): 1.5

Transect H

Transect Substrates

Position	Dist from LB (m)	Depth (cm)	mm/ size class	% Cobble Embed.	CPOM	Microalgae Thickness Code	Macroalgae Attached	Macroalgae Unattached	Macrophytes
Left Bank	.5	66	BLD	—	P (A)	0	P (A) D	P (A) D	P (A) D
Left Center	8	71	BLD	—	P (A)	2	P (A) D	P (A) D	P (A) D
Center	15.5	3	SAND	—	(P) A	0	P (A) D	P (A) D	(P) (A) D
Right Center	23.5	0	BLD	—	P (A)	1	P (A) D	P (A) D	P (A) D
Right Bank	30.5	5	CG	—	(P) A	0	P (A) D	P (A) D	P (A) D

Note: Substrate sizes can be recorded either as direct measures of the median axis of each particle or one of the size class categories listed on the supplemental page (direct measurements preferred)

Microalgae Thickness Codes
0 = No microalgae present. Feels rough, not slimy;
1 = Present but not visible. Feels slimy;
2 = Present and visible but <1mm. Rubbing fingers on surface produces a brownish tint on them, scraping leaves visible trail.
3 = 1-5mm;
4 = 5-20mm;
5 = >20mm;
UD = Cannot determine if microalgae present, substrate too small or covered with silt (formerly Z code).
D = Dry, not assessed

RIPARIAN VEGETATION (facing downstream)
0 = Absent (0%) 3 = Heavy (40-75%)
1 = Sparse (<10%) 4 = Very Heavy (>75%)
2 = Moderate (10-40%)

Vegetation Class	Left Bank	Right Bank
Upper Canopy (>5 m high)		
Trees and saplings >5 m high	0 1 2 (3) 4	0 1 (2) 3 4
Lower Canopy (0.5 m-5 m high)		
All vegetation 0.5 m to 5 m	0 1 (2) 3 4	0 1 (2) 3 4
Ground Cover (<0.5 m high)		
Woody shrubs & saplings <0.5 m	0 1 (2) 3 4	0 1 2 (3) 4
Herbs/ grasses	0 1 (2) 3 4	0 1 (2) 3 4
Barren, bare soil/ duff	0 1 2 (3) 4	0 1 2 (3) 4

INSTREAM HABITAT COMPLEXITY
0 = Absent (0%)
1 = Sparse (<10%)
2 = Moderate (10-40%)
3 = Heavy (40-75%)
4 = Very Heavy (>75%)

Filamentous Algae	(0) 1 2 3 4
Aquatic Macrophytes/ Emergent Vegetation	0 (1) 2 3 4
Boulders	0 1 (2) 3 4
Woody Debris >0.3 m	0 (1) 2 3 4
Woody Debris <0.3 m	0 (1) 2 3 4
Undercut Banks	(0) 1 2 3 4
Overhang. Vegetation	0 (1) 2 3 4
Live Tree Roots	(0) 1 2 3 4
Artificial Structures	0 (1) 2 3 4

DENSIOMETER READINGS (0-17)
count covered dots

Center Left	8
Center Upstream	2
Center Right	6
Center Downstream	1
Optional	
Left Bank	—
Right Bank	—

HUMAN INFLUENCE (circle only the closest to wetted channel)
0 = Not Present;
B = On Bank;
C = Between Bank & 10m from Channel;
P = >10m+<50m from Channel;
Channel (record Yes or No)

	Left Bank	Channel	Right Bank
Walls/ Rip-rap/ Dams	(P) (C) (B) 0	(Y) N	(0) B C P
Buildings	P C B (0)	Y (N)	(0) B C P
Pavement/ Cleared Lot	P C B (0)		(0) B C P
Road/ Railroad	(P) C B 0	Y N	(0) B C P
Pipes (Inlet/ Outlet)	P C B (0)	Y N	(0) B C P
Landfill/ Trash	P C B (0)	Y N	(0) B C P
Park/ Lawn	P C B (0)		(0) B C P
Row Crop	P C B (0)		(0) B C P
Pasture/ Range	P C B (0)		(0) B C P
Logging Operations	P C B (0)		(0) B C P
Mining Activity	P C B (0)	Y N	(0) B C P
Vegetation Management	P C B (0)		(0) B C P
Bridges/ Abutments	P C B (0)	Y N	(0) B C P
Orchards/ Vineyards	P C B (0)		(0) B C P

BANK STABILITY
[illegible]

Left Bank	eroded	vulnerable	(stable)
Right Bank	eroded	vulnerable	(stable)

Inter-Transect: HI

Wetted Width (m): 25

Inter-Transect Substrates

Position	Dist from LB (m)	Depth (cm)	mm/ size class	% Cobble Embed.	CPOM	Microalgae Thickness Code	Macroalgae Attached	Macroalgae Unattached	Macrophytes
Left Bank	.5	48	BLD	—	(P) A	0	P (A) D	P (A) D	P (A) D
Left Center	6	77	COB	15	(P) A	1	P (A) D	P (A) D	P (A) D
Center	12.5	10	SAND	—	(P) A	0	P (A) D	P (A) D	P (A) D
Right Center	18.5	28	COB	40	P (A)	0	P (A) D	P (A) D	P (A) D
Right Bank	24.5	1	COB	20	(P) A	1	P (A) D	P (A) D	P (A) D

Note: Substrate sizes can be recorded either as direct measures of the median axis of each particle or one of the size class categories listed on the supplemental page (direct measurements preferred).

Microalgae Thickness Codes
0 = No microalgae present. Feels rough, not slimy.
1 = Present but not visible. Feels slimy.
2 = Present and visible but <1mm. Rubbing fingers on surface produces a brownish tint on them, scraping leaves visible trail.
3 = 1-5mm.
4 = 5-20mm.
5 = >20mm.
UD = Cannot determine if microalgae present, substrate too small or covered with silt (formerly Z code).
D = Dry, not assessed

Flow Habitats

Channel Type	%
Cascade/Falls	
Rapid	
Riffle	
Run	40
Glide	30
Pool	30
Dry	

SWAMP Stream Habitat Characterization Form FULL VERSION Revision Date: February 9th, 2011

Site Code:	Site Name: MTC blw Or. Cr	Date: 07/09/2012
Wetted Width (m): 20	Bankfull Width (m): 35	Bankfull Height (m): 1 —

Transect 1

Transect Substrates

Position	Dist from LB (m)	Depth (cm)	mm/ size class	% Cobble Embed	CPOM	Microalgae Thickness Code	Macroalgae Attached	Macroalgae Unattached	Macrophytes
Left Bank	.5	67	CB	60	(P) A	1	P (A) D	P (A) D	(P) A D
Left Center	5	72	BLD	—	P (A)	1	P (A) D	P (A) D	P (A) D
Center	10				P A		P A D	P A D	P A D
Right Center	15	18	COB	30	P (A)	1	P (A) D	P (A) D	P (A) D
Right Bank	19.5	0	BLD	—	(P) A	0	P (A) D	P (A) D	P (A) D

Note: Substrate sizes can be recorded either as direct measures of the median axis of each particle or one of the size class categories listed on the supplemental page (direct measurements preferred)

Microalgae Thickness Codes
0 = No microalgae present. Feels rough, not slimy;
1 = Present but not visible. Feels slimy;
2 = Present and visible but <1mm. Rubbing fingers on surface produces a brownish tint on them, scraping leaves visible trail;
3 = 1-5mm;
4 = 5-20mm;
5 = >20mm;
UD = Cannot determine if microalgae present, substrate too small or covered with silt (formerly Z code);
D = Dry, not assessed

Riparian Vegetation (facing downstream)

0 = Absent (0%) 3 = Heavy (40-75%)
1 = Sparse (<10%) 4 = Very Heavy (>75%)
2 = Moderate (10-40%)

Vegetation Class	Left Bank	Right Bank
Upper Canopy (>5 m high)		
Trees and saplings >5 m high	0 1 2 3 (4)	0 1 2 3 (4)
Lower Canopy (0.5 m-5 m high)		
All vegetation 0.5 m to 5 m	0 1 2 (3) 4	0 1 2 (3) 4
Ground Cover (<0.5 m high)		
Woody shrubs & saplings <0.5 m	0 1 2 (3) 4	0 1 2 (3) 4
Herbs/ grasses	0 1 (2) 3 4	0 1 (2) 3 4
Barren, bare soil/ duff	0 (1) 2 3 4	0 1 (2) 3 4

Instream Habitat Complexity

0 = Absent (0%)
1 = Sparse (<10%)
2 = Moderate (10-40%)
3 = Heavy (40-75%)
4 = Very Heavy (>75%)

Filamentous Algae	(0) 1 2 3 4
Aquatic Macrophytes/ Emergent Vegetation	0 (1) 2 3 4
Boulders	0 1 (2) 3 4
Woody Debris >0.3 m	0 1 (2) 3 4
Woody Debris <0.3 m	0 1 (2) 3 4
Undercut Banks	0 (1) 2 3 4
Overhang. Vegetation	0 (1) 2 3 4
Live Tree Roots	(0) 1 2 3 4
Artificial Structures	(0) 1 2 3 4

Densiometer Readings (0-17)

count covered dots

Center Left	16
Center Upstream	3
Center Right	6
Center Downstream	0
Optional	
Left Bank	—
Right Bank	—

Human Influence (circle only the closest to wetted channel)

0 = Not Present;
B = On Bank;
C = Between Bank & 10m from Channel;
P = >10m+<50m from Channel;
Channel (record Yes or No)

	Left Bank	Channel	Right Bank
Walls/ Rip-rap/ Dams	P C (B) 0	(Y) N	(0) B C P
Buildings	P C B (0)	Y (N)	(0) B C P
Pavement/ Cleared Lot	P C B (0)		(0) B C P
Road/ Railroad	(P) C B 0	Y N	(0) B C P
Pipes (Inlet/ Outlet)	P C B (0)	Y N	(0) B C P
Landfill/ Trash	P C B (0)	Y N	(0) B C P
Park/ Lawn	P C B (0)		(0) B C P
Row Crop	P C B (0)		(0) B C P
Pasture/ Range	P C B (0)		(0) B C P
Logging Operations	P C B (0)		(0) B C P
Mining Activity	P C B (0)	Y N	(0) B C P
Vegetation Management	P C B (0)		(0) B C P
Bridges/ Abutments	P C B (0)	Y N	(0) B C P
Orchards/ Vineyards	P C B (0)		(0) B C P

Bank Stability

(score zone 5m upstream and 5m downstream of transect between low flow - wetted width)

Left Bank	eroded	vulnerable	(stable)
Right Bank	eroded	vulnerable	(stable)

Inter-Transect: IJ

Wetted Width (m): 20

Inter-Transect Substrates

Position	Dist from LB (m)	Depth (cm)	mm/ size class	% Cobble Embed.	CPOM	Microalgae Thickness Code	Macroalgae Attached	Macroalgae Unattached	Macrophytes
Left Bank	.5	23	CB	5	(P) A	1	P (A) D	P (A) D	(P) A D
Left Center	5	66	CB	0	P (A)	2	P (A) D	P (A) D	P (A) D
Center	10	90	GC	—	(P) A	0	P (A) D	P (A) D	P (A) D
Right Center	15	29	CB	0	P (A)	1	P (A) D	P (A) D	P (A) D
Right Bank	19.5	5	CB	10	P (A)	1	P (A) D	P (A) D	P (A) D

Note: Substrate sizes can be recorded either as direct measures of the median axis of each particle or one of the size class categories listed on the supplemental page (direct measurements preferred)

Microalgae Thickness Codes
0 = No microalgae present. Feels rough, not slimy.
1 = Present but not visible. Feels slimy.
2 = Present and visible but <1mm. Rubbing fingers on surface produces a brownish tint on them, scraping leaves visible trail.
3 = 1-5mm.
4 = 5-20mm.
5 = >20mm.
UD = Cannot determine if microalgae present, substrate too small or covered with silt (formerly Z code).
D = Dry, not assessed

Flow Habitats

Channel Type	%
Cascade/ Falls	
Rapid	
Riffle	20
Run	20
Glide	30
Pool	30
Dry	

SWAMP Stream Habitat Characterization Form *FULL VERSION* *Revision Date: February 9th, 2011*

Site Code:	Site Name: MYR blw Or. Cr.		Date: 07/09/2012
Wetted Width (m): 15	Bankfull Width (m): 25	Bankfull Height (m): 1.5	**Transect J**

Transect Substrates

Position	Dist from LB (m)	Depth (cm)	mm/ size class	% Cobble Embed.	CPOM	Microalgae Thickness Code	Macroalgae Attached	Macroalgae Unattached	Macrophytes
Left Bank	.5	44	COB	50	(P) A	2	P (A) D	P (A) D	(P) A D
Left Center	4	16	COB	0	P (A)	0	P (A) D	P (A) D	P (A) D
Center	7.5	28	COB	0	P (A)	1	P (A) D	P (A) D	P (A) D
Right Center	11.5	39	CG	0	P (A)	0	P (A) D	P (A) D	P (A) D
Right Bank	14.5	5	CG	50	(P) A	0	P (A) D	P (A) D	P (A) D

Note: Substrate sizes can be recorded either as direct measures of the median axis of each particle or one of the size class categories listed on the supplemental page (direct measurements preferred)

Microalgae Thickness Codes
0 = No microalgae present; Feels rough, not slimy;
1 = Present but not visible, Feels slimy;
2 = Present and visible but <1mm; Rubbing fingers on surface produces a brownish tint on them, scraping leaves visible trail.
3 = 1-5mm;
4 = 5-20mm;
5 = >20mm;
UD = Cannot determine if microalgae present, substrate too small or covered with silt (formerly Z code).
D = Dry, not assessed

Riparian Vegetation (facing downstream)

0 = Absent (0%) 1 = Sparse (<10%) 2 = Moderate (10-40%) 3 = Heavy (40-75%) 4 = Very Heavy (>75%)

Vegetation Class	Left Bank	Right Bank
Upper Canopy (>5 m high)		
Trees and saplings >5 m high	0 (1) 2 3 4	0 1 2 3 4
Lower Canopy (0.5 m-5 m high)		
All vegetation 0.5 m to 5 m	0 1 2 (3) 4	0 1 2 3 4
Ground Cover (<0.5 m high)		
Woody shrubs & saplings <0.5 m	0 (1) 2 3 4	0 1 2 3 4
Herbs/ grasses	0 1 (2) 3 4	0 1 2 3 4
Barren, bare soil/ duff	0 1 2 3 (4)	0 1 2 3 4

Instream Habitat Complexity

0 = Absent (0%) 1 = Sparse (<10%) 2 = Moderate (10-40%) 3 = Heavy (40-75%) 4 = Very Heavy (>75%)

Filamentous Algae	(0) 1 2 3 4
Aquatic Macrophytes/ Emergent Vegetation	0 (1) 2 3 4
Boulders	0 1 (2) 3 4
Woody Debris >0.3 m	0 1 (2) 3 4
Woody Debris <0.3 m	0 1 (2) 3 4
Undercut Banks	(0) 1 2 3 4
Overhang. Vegetation	0 (1) 2 3 4
Live Tree Roots	(0) 1 2 3 4
Artificial Structures	0 1 (2) 3 4

Densiometer Readings (0-17)

count covered dots

Center Left	9
Center Upstream	0
Center Right	6
Center Downstream	0
Optional	
Left Bank	—
Right Bank	—

Human Influence (circle only the closest to wetted channel)

0 = Not Present; B = On Bank; C = Between Bank & 10m from Channel; P = >10m+<50m from Channel; Channel (record Yes or No)

	Left Bank	Channel	Right Bank
Walls/ Rip-rap/ Dams	P C (B) 0	(Y) N	(0) B C P
Buildings	P C B (0)	Y (N)	(0) B C P
Pavement/ Cleared Lot	P C B (0)		(0) B C P
Road/ Railroad	P (C) B 0	Y (N)	(0) B C P
Pipes (Inlet/ Outlet)	P C B (0)	Y (N)	(0) B C P
Landfill/ Trash	P C (B) 0	(Y) N	(0) B C P
Park/ Lawn	P C B (0)		(0) B C P
Row Crop	P C B (0)		(0) B C P
Pasture/ Range	P C B (0)		(0) B C P
Logging Operations	P C B (0)		(0) B C P
Mining Activity	P C B (0)	Y N	(0) B C P
Vegetation Management	P C B (0)		(0) B C P
Bridges/ Abutments	P C B (0)	Y N	(0) B C P
Orchards/ Vineyards	P C B (0)		(0) B C P

Bank Stability

Score zone 5m upstream and 5m downstream of transect between bankfull - wetted width

Left Bank	eroded	vulnerable	(stable)
Right Bank	eroded	vulnerable	(stable)

Inter-Transect: JK

Wetted Width (m): 32

Inter-Transect Substrates

Position	Dist from LB (m)	Depth (cm)	mm/ size class	% Cobble Embed.	CPOM	Microalgae Thickness Code	Macroalgae Attached	Macroalgae Unattached	Macrophytes
Left Bank	.5	38	BLD	—	(P) A	2	(P) A D	P (A) D	(P) A D
Left Center	8	22	CB	20	P (A)	0	P (A) D	P (A) D	P (A) D
Center	16	25	CB	30	(P) A	1	P (A) D	P (A) D	P (A) D
Right Center	24	8	BLD	—	(P) A	1	P (A) D	P (A) D	P (A) D
Right Bank	31.5	3	CB	0	(P) A	1	P (A) D	P (A) D	(P) A D
	Note: Substrate sizes can be recorded either as direct measures of the median axis of each particle or one of the size class categories listed on the supplemental page (direct measurements preferred)								

Microalgae Thickness Codes
0 = No microalgae present. Feels rough, not slimy;
1 = Present but not visible. Feels slimy;
2 = Present and visible but <1mm. Rubbing fingers on surface produces a brownish tint on them, scraping leaves visible trail.
3 = 1-5mm;
4 = 5-20mm;
5 = >20mm;
UD = Cannot determine if microalgae present, substrate too small or covered with silt (formerly Z code)
D = Dry; not assessed

Flow Habitats
(% between Cascade-Dry = 100%)

Channel Type	%
Cascade/ Falls	
Rapid	
Riffle	50
Run	20
Glide	20
Pool	10
Dry	

SWAMP Stream Habitat Characterization Form — FULL VERSION — Revision Date: February 9th, 2011

Site Code:	Site Name: MYR blw Or. Cr.	Date: 07/09/2012
Wetted Width (m): 32	Bankfull Width (m): 45	Bankfull Height (m): 2
		Transect K

Transect Substrates

Position	Dist from LB (m)	Depth (cm)	mm/ size class	% Cobble Embed.	CPOM	Microalgae Thickness Code	Macroalgae Attached	Macroalgae Unattached	Macrophytes
Left Bank	.5	24	BLD	—	(P) A	2	P (A) D	P (A) D	(P) A D
Left Center	8	73	COB	0	P (A)	1	P (A) D	P (A) D	P (A) D
Center	16	0	BLD	—	P (A)	1	P A D	P A D	P A D
Right Center	24	27	COB	15	P (A)	1	P (A) D	P (A) D	P (A) D
Right Bank	~~35~~	~~33~~	GR	—	(P) A	0	P (A) D	P (A) D	P (A) D

Note: Substrate sizes can be recorded either as direct measures of the median axis of each particle or one of the size class categories listed on the supplemental page (direct measurements preferred)

Microalgae Thickness Codes
0 = No microalgae present. Feels rough, not slimy;
1 = Present but not visible. Feels slimy;
2 = Present and visible but <1mm; Rubbing fingers on surface produces a brownish tint on them, scraping leaves visible trail;
3 = 1-5mm;
4 = 5-20mm;
5 = >20mm;
U = Cannot determine if microalgae present, substrate too small or covered with silt (formerly Z code);
D = Dry, not assessed

RIPARIAN VEGETATION (facing downstream)
0 = Absent (0%); 1 = Sparse (<10%); 2 = Moderate (10-40%); 3 = Heavy (40-75%); 4 = Very Heavy (>75%)

Vegetation Class	Left Bank	Right Bank
Upper Canopy (>5 m high)		
Trees and saplings >5 m high	0 1 2 3 (4)	0 1 (2) 3 4
Lower Canopy (0.5 m-5 m high)		
All vegetation 0.5 m to 5 m	0 1 2 3 (4)	0 1 2 (3) 4
Ground Cover (<0.5 m high)		
Woody shrubs & saplings <0.5 m	0 1 (2) 3 4	0 1 2 (3) 4
Herbs/ grasses	0 1 (2) 3 4	0 (1) 2 3 4
Barren, bare soil/ duff	0 (1) 2 3 4	0 1 (2) 3 4

INSTREAM HABITAT COMPLEXITY
0 = Absent (0%); 1 = Sparse (<10%); 2 = Moderate (10-40%); 3 = Heavy (40-75%); 4 = Very Heavy (>75%)

Filamentous Algae	(0) 1 2 3 4
Aquatic Macrophytes/ Emergent Vegetation	0 1 (2) 3 4
Boulders	0 1 (2) 3 4
Woody Debris >0.3 m	0 (1) 2 3 4
Woody Debris <0.3 m	0 (1) 2 3 4
Undercut Banks	0 (1) 2 3 4
Overhang. Vegetation	0 1 (2) 3 4
Live Tree Roots	0 (1) 2 3 4
Artificial Structures	(0) 1 2 3 4

DENSIOMETER READINGS (0-17) *count covered dots*

Center Left	8
Center Upstream	1
Center Right	5
Center Downstream	0
Optional	
Left Bank	5
Right Bank	2

HUMAN INFLUENCE (circle only the closest to wetted channel)
0 = Not Present; B = On Bank; C = Between Bank & 10m from Channel; P = >10m+<50m from Channel; Channel (record Yes or No)

	Left Bank	Channel	Right Bank
Walls/ Rip-rap/ Dams	P (C) B 0	(Y) N	(C) B C P
Buildings	P C B (0)	Y (N)	0 B C P
Pavement/ Cleared Lot	P C B (0)		0 B C P
Road/ Railroad	P (C) B 0	Y N	0 B C P
Pipes (Inlet/ Outlet)	P C B (0)	Y N	0 B C P
Landfill/ Trash	P C B (0)	Y N	0 B C P
Park/ Lawn	P C B (0)		0 B C P
Row Crop	P C B (0)		0 B C P
Pasture/ Range	P C B (0)		0 B C P
Logging Operations	P C B (0)		0 B C P
Mining Activity	P C B (0)	Y N	0 B C P
Vegetation Management	P C B (0)		0 B C P
Bridges/ Abutments	P C B (0)	Y N	0 B C P
Orchards/ Vineyards	P C B (0)		0 B C P

BANK STABILITY
(score zone 5m upstream and 5m downstream of transect between the wetted width)

Left Bank	eroded	vulnerable	(stable)
Right Bank	eroded	vulnerable	(stable)

TAKE PHOTOGRAPHS *(check box if taken & record photo code)*

Downstream (**required**)	☑ 151
Upstream (**optional**)	☑ 150

Site Code: Date: ___ / ___ / 2011

FULL FORM

BENTHIC INVERTEBRATE SAMPLES

Collection Method (indicate standard or margin-center-margin)			Replicate	# jars
RWB (standard)	RWB (MCM)	TRC	1	
RWB (standard)	RWB (MCM)	TRC	2	
RWB (standard)	RWB (MCM)	TRC		
RWB (standard)	RWB (MCM)	TRC		

Field Notes/ Comments:

Chemistry Equipment ID

Analyte	Equipment
pH	
temperature	
dissolved oxygen	
specific conductance	
salinity	
alkalinity	
turbidity	
silica	
Velocity	

ALGAE SAMPLES

Collection Method (circle one or write new method if applicable)	SWAMP EMAP	SWAMP EMAP	SWAMP EMAP	SWAMP EMAP
Collection Device (sum # of transects per device)	Rep. 1	Rep. 2	Rep.	Rep.
Rubber Delimiter (area=12.6cm^2)				
PVC Delimiter (area=12.6cm^2)				
Syringe Scrubber (area=5.3cm^2)				
Other area=				
Number of transects sampled (0-11)				
Composite Volume (mL)				
Assemblage ID volume **(diatoms)** (50 mL tube)				
Assemblage ID volume **(soft algae)** (50 mL tube)				
Check if Qualitative Algae sample was collected with soft algae/diatom sample (required even if macroalgae not visible)	☐	☐	☐	☐
Check if a water chem. **integrated** sample was collected (chl, AFDM)	☐	☐	☐	☐
Chlorophyll a volume use GF/F filter (25 mL **(preferred volume)**				
Ash Free Dry Mass (AFDM) volume use GF/F filter (25 mL **(preferred vol)**				

Water and Sediment Chemistry Samples

Check if a WATER chemistry **grab** sample was collected (nutrients, SSC, etc.)	☐
Check if a DUPLICATE WATER chemistry **grab** sample was collected	☐
Check if a SEDIMENT chemistry sample was collected	☐
Check if a DUPLICATE SEDIMENT chemistry sample was collected	☐
Sediment Collection Device: SCOOP CORE GRAB	
Material: Stainless Steel Polyethylene Polycarbonate Other	
Sediment Collection Depth (cm): 2 or 5	
Create Lab Collection records for each checked box for integrated and grab water chemistry samples	

ADDITIONAL PHOTOGRAPHS

Description	Photo Code	Description	Photo Code

Flow Habitat Type	DESCRIPTION
Cascades	Short, high gradient drop in stream bed elevation often accompanied by boulders and considerable turbulence
Falls	High gradient drop in elevation of the stream bed associated with an abrupt change in the bedrock
Rapids	Sections of stream with swiftly flowing water and considerable surface turbulence. Rapids tend to have larger substrate sizes than riffles
Riffles	Shallow sections where the water flows over coarse stream bed particles that create mild to moderate surface turbulence; (< 0.5 m deep, > 0.3 m/s).
Runs	Long, relatively straight, low-gradient sections without flow obstructions. The stream bed is typically even and the water flows faster than it does in a pool; (> 0.5 m deep, > 0.3 m/s). A **step-run** is a series of runs separated by short riffles or flow obstructions that cause discontinuous breaks in slope
Glides	A section of stream with little or no turbulence, but faster velocity than pools; (< 0.5 m deep, < 0.3 m/s)
Pools	A reach of stream that is characterized by deep, low-velocity water and a smooth surface; (> 0.5 m deep, < 0.3 m/s)

Size Class Code	Size Class Range	Size Class Description	Common Size Reference
RS	> 4 m	bedrock, smooth	larger than a car
RR	> 4 m	bedrock, rough	larger than a car
XB	1 - 4 m	boulder, large	meter stick to car
SB	25 cm - 1.0 m	boulder, small	basketball to meter stick
CB	64 - 250 mm	cobble	tennis ball to basketball
GC	16 - 64 mm	gravel, coarse	marble to tennis ball
GF	2 – 16 mm	gravel, fine	ladybug to marble
SA	0.06 – 2 mm	sand	gritty to ladybug
FN	< 0.06 mm	fines	not gritty
HP	< 0.06 mm	hardpan (consolidated fines)	
WD	NA	wood	
RC	NA	concrete/ asphalt	
OT	NA	other	

BANK STABILITY Although this measure of the degree of erosive potential is subjective, it can provide clues to the erosive potential of the banks within the reach. Assign the category whose description best fits the conditions in the area between the wetted channel and bankfull channel (see figure below)	
Eroded	Banks show obvious signs of erosion from the current or previous water year; banks are usually bare or nearly bare
Vulnerable	Banks have some vegetative protection (usually annual growth), but not enough to prevent erosion during flooding
Stable	Bank vegetation has well-developed roots that protect banks from erosion; alternately, bedrock or artificial structures (e.g., concrete/ rip-rap) prevent bank erosion

CPOM/ COBBLE EMBEDDEDNESS
CPOM: Record presence (P) or absence (A) of coarse particulate organic matter (>1.0 mm particles) within 1 cm of each substrate particle
Cobble Embeddedness: Visually estimate % embedded by fine particles (record to nearest 5%)

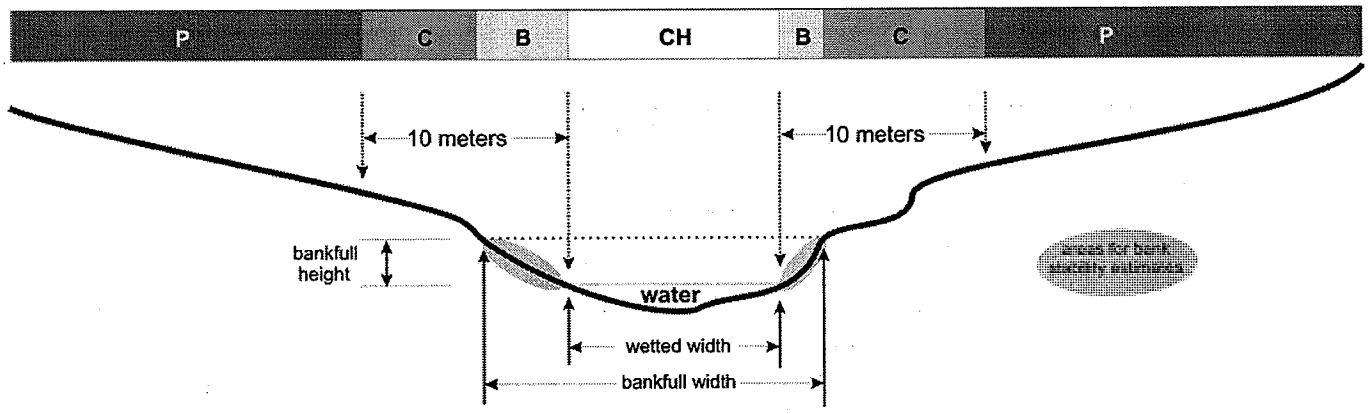


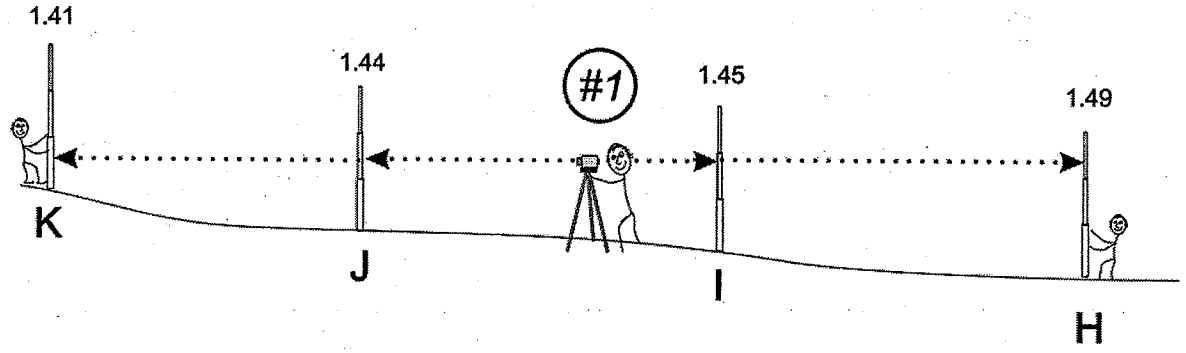
Figure 1. Cross-sectional diagram of stream transect indicating regions for assessing human influence measures:

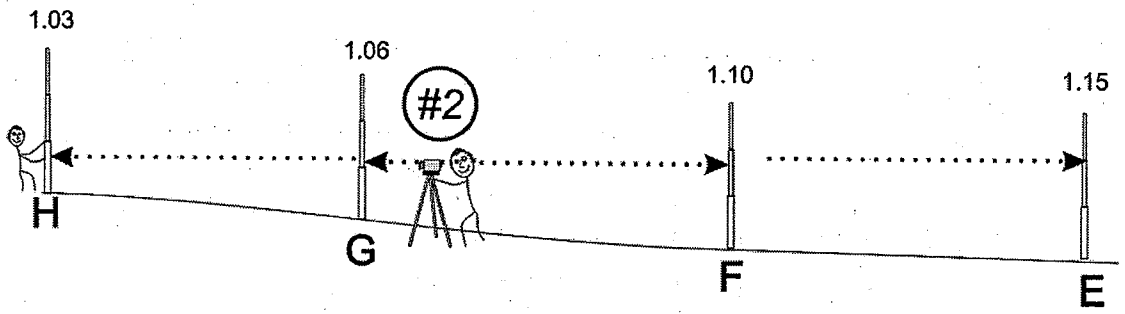
- The measurement zone extends 5 meters upstream and 5 meters downstream of each transect
- Record one category for each bank and for the wetted channel (3 values possible)
- In reaches with wide banks, region "C" may be entirely overlapped by region "B"; in these cases, circle "B"
- Region "P" extends from 10 meters to the distance that can be seen from the channel, but not greater than 50 m

SLOPE and BEARING FORM — EXAMPLE

AUTOLEVEL	X
CLINOMETER	
HANDLEVEL	

Starting Transect	MAIN SEGMENT (record percent of inter-transect distance in each segment if supplemental segments are used)						SUPPLEMENTAL SEGMENT (record percent of inter-transect distance in each segment if supplemental segments are used)					
	Stadia rod measurements		Slope (%) or Elevation Difference cm ■ % □	Segment Length (m)	Bearing (0°-359°)	Percent of Total Length (%)	Stadia rod measurements		Slope or Elevation Difference cm □ % □	Segment Length (m)	Bearing (0°-359°)	Percent of Total Length (%)
K	1.41											
J	1.44		3	15	140	100						
I	1.45		1	15	145	100						
H	1.49	1.03	4	15	150	100						
G		1.06	3	15	143	100						
F		1.10	4	15	187	100						
E		1.15	5	15	195	100						





1. Level the autolevel at Position #1
2. Place base of stadia rod at water level every time
3. Sight to stadia rod at Transect K, then Transect J
4. Rotate scope and sight to Transects I and H.
5. Move level to Position #2 and re-level
6. Re-sight to stadia rod at Transect H, then Transect G
7. Rotate scope and sight to Transects F and E

Note: Sites will vary in the number of separate level positions needed to survey the reach.

SWAMP Stream Habitat Characterization Form — FULL VERSION — Revision Date: February 9th, 2011

REACH DOCUMENTATION

Standard Reach Length (wetted width ≤ 10 m) = 150 m. Distance between transects = 15 m
Alternate Reach Length (wetted width >10 m) = 250 m. Distance between transects = 25 m

Project Name: YCWA	Date: 07 / 12 / 2012 — Sample Collection Time: 830
Stream Name: MIDDLE YUBA RIVER	Site Name/ Description: MIDDLE YUBA ABV NORTH YUBA
Site Code: YCBMI-6	Crew Members: K. Vertucci, M. Ashenfelter, C. Wiseman
Latitude (actual – decimal degrees): 660574 (UTM BOTTOM)	datum: NAD83 / other: — GPS Device: GARMIN 60
Longitude (actual – decimal degrees): 4359341	

AMBIENT WATER QUALITY MEASUREMENTS

turbidity and silica are optional; calibration date required

Temp (Deg C)	21.8	pH	7.1	Alkalinity (mg/L)	—	Turbidity (ntu)	0.0
		cal. date				cal. date	
Dissolved O^2 (mg/L)	8.1	Specific Conduct (uS/cm)	131	Salinity (ppt)	—	Silica (mg/L)	—
cal. date		cal. date		cal. date		cal. date	

REACH LENGTH

Actual Length (m) *(see reach length guidelines at top of form)*	250
Explanation:	>10m

DISCHARGE MEASUREMENTS

1st measurement = left bank (looking downstream)

check if discharge measurements not possible (explain in field notes section) ☐

VELOCITY AREA METHOD (preferred)

~~cal date~~ 49.1 cfs — ~~Transect Width (m)~~:

	Distance from Left Bank (cm)	Depth (cm)	Velocity (ft/sec)		Distance from Left Bank (cm)	Depth (cm)	Velocity (ft/sec)
1	3	.6	1.87	11	33	.9	.1
2	6	1.4	1.10	12	36	1.6	.19
3	9	1.4	3.38	13	39	2.0	.52
4	12	1.2	2.02	14	42	1.4	.08
5	15	1.1	1.4	15	45	1.5	.02
6	18	.9	.64	16	48	.5	.98
7	21	.3	1.81	17	51	2.4	.26
8	24	.9	.13	18	54	.2	.01
9	27	.2	1.45	19	57	0	0
10	30	.4	2.03	20			

BUOYANT OBJECT METHOD (use ONLY if velocity area method not possible)

	Float 1	Float 2	Float 3
Distance (m)			
Float Time (sec)			

Float Reach Cross Section

width (m) depth(cm)	Upper Section	Middle Section	Lower Section
Width			
Depth 1			
Depth 2			
Depth 3			
Depth 4			
Depth 5			

NOTABLE FIELD CONDITIONS (check one box per topic)

Evidence of recent rainfall (enough to increase surface runoff)	NO	X	minimal		>10% flow increase	
Evidence of fires in reach or immediately upstream (<500 m)	NO	X	< 1 year		< 5 years	
Dominant landuse/ landcover in area surrounding reach	Agriculture		Forest	X	Rangeland	
	Urban/ Industrial		Suburb/Town		Other	

ADDITIONAL COBBLE EMBEDDEDNESS MEASURES

(carry over from transect forms if needed to attain target count of 25; measure in %)

1	2	3	4	5	6	7	8	9	10	11	12	13
10	30	20	25	15	5	0	0	10	0	30	25	50
14	15	16	17	18	19	20	21	22	23	24	25	

NOTE: SITE BEGINS ABV CONFLUENCE POOL

Site Code: Date: ___/___/ 2011

SLOPE and BEARING FORM (transect based - for Full PHAB only)

AUTOLEVEL [X] CLINOMETER [ ] HANDLEVEL [ ] OTHER [ ]

Starting Transect	MAIN SEGMENT (record percent of inter-transect distance in each segment if supplemental segments are used)					SUPPLEMENTAL SEGMENT (record percent of inter-transect distance in each segment if supplemental segments are used)				
	Stadia rod measurements	Slope (%) or Elevation Difference cm ☐ % ☒	Segment Length (m)	Bearing (0°-359°)	Percent of Total Length (%)	Stadia rod measurements	Slope or Elevation Difference cm ☐ % ☐	Segment Length (m)	Bearing (0°-359°)	Percent of Total Length (%)
K										
J		4	25		10					
I		8								
H		4								
G		3								
F		5								
E	POOL	0								
D		0								
C		0								
B	1	2								
A		2								
additional calculation area										

ADDITIONAL HABITAT CHARACTERIZATION

High Gradient [X] Low Gradient [ ]

Parameter	Optimal	Suboptimal	Marginal	Poor
Epifaunal Substrate/ Cover	Greater than 70% of substrate favorable for epifaunal colonization and fish cover (50% for low-gradient streams); mix of submerged logs, undercut banks, cobble or other stable habitat	40-70% mix of stable habitat (30-50% for low-gradient streams); well-suited for full colonization potential	20-40% mix of stable habitat (10-30% in low-gradient streams); substrate frequently disturbed or removed	Less than 20% stable habitat (10% in low-gradient streams); lack of habitat is obvious; substrate unstable or lacking
Score:	20 19 18 17 (16)	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
Sediment Deposition	Little or no enlargement of islands or point bars and less than 5% of the bottom affected by sediment deposition (<20% in low-gradient streams)	Some new increase in bar formation, mostly from gravel, sand, or fine sediment; 5-30% of the bottom affected (20-50% in low-gradient streams)	Moderate deposition of new gravel, sand, or fine sediment on bars; 30-50% of the bottom affected (50 - 80% in low-gradient streams)	Heavy deposits of fine material, increased bar development; more than 50% of the bottom changing frequently (>80% in low-gradient streams)
Score:	20 19 18 17 16	15 (14) 13 12 11	10 9 8 7 6	5 4 3 2 1 0
Channel Alteration	Channelization or dredging absent or minimal; stream with normal pattern	Some channelization present, (e.g., bridge abutments); evidence of past channelization (> 20yrs) may be present but recent channelization not present	Channelization may be extensive; embankments or shoring structures present on both banks; 40 to 80% of stream reach disrupted	Banks shored with gabian 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 0

SWAMP Stream Habitat Characterization Form FULL VERSION Revision Date: February 9th, 2011

Site Code:	Site Name: MYR abv NYR	Date: ___/___/2011
Wetted Width (m): 18	Bankfull Width (m): 28	Bankfull Height (m): 1.5

Transect A

Transect Substrates

Position	Dist from LB (m)	Depth (cm)	mm/ size class	% Cobble Embed.	CPOM	Microalgae Thickness Code	Macroalgae Attached	Macroalgae Unattached	Macrophytes
Left Bank	.5	18	COB	0	P (A)	2	P (A) D	P (A) D	P (A) D
Left Center	4.5	39	COB	10	P (A)	3	P (A) D	P (A) D	P (A) D
Center	9	10	COB	20	P (A)	3	P (A) D	P (A) D	P (A) D
Right Center	13.5	24	BLD	—	P (A)	1	P (A) D	P (A) D	P (A) D
Right Bank	17.5	12	BLD	—	P (A)	1	P (A) D	P (A) D	P (A) D

Note: Substrate sizes can be recorded either as direct measures of the median axis of each particle or one of the size class categories listed on the supplemental page (direct measurements preferred)

Microalgae Thickness Codes
0 = No microalgae present. Feels rough, not slimy;
1 = Present but not visible. Feels slimy;
2 = Present and visible but <1mm. Rubbing fingers on surface produces a brownish tint on them, scraping leaves visible trail;
3 = 1-5mm;
4 = 5-20mm;
5 = >20mm;
UD = Cannot determine if microalgae present, substrate too small or covered with silt (formerly Z code);
D = Dry, not assessed

Riparian Vegetation
(facing downstream)

0 = Absent (0%) 3 = Heavy (40-75%)
1 = Sparse (<10%) 4 = Very Heavy (>75%)
2 = Moderate (10-40%)

Vegetation Class	Left Bank	Right Bank
Upper Canopy (>5 m high)		
Trees and saplings >5 m high	(0) 1 2 3 4	(0) 1 2 3 4
Lower Canopy (0.5 m-5 m high)		
All vegetation 0.5 m to 5 m	0 1 2 (3) 4	0 1 (2) 3 4
Ground Cover (<0.5 m high)		
Woody shrubs & saplings <0.5 m	0 1 (2) 3 4	0 1 (2) 3 4
Herbs/ grasses	0 (1) 2 3 4	0 (1) 2 3 4
Barren, bare soil/ duff	0 1 2 3 (4)	0 1 2 3 (4)

Instream Habitat Complexity

0 = Absent (0%)
1 = Sparse (<10%)
2 = Moderate (10-40%)
3 = Heavy (40-75%)
4 = Very Heavy (>75%)

Filamentous Algae	(0) 1 2 3 4
Aquatic Macrophytes/ Emergent Vegetation	0 (1) 2 3 4
Boulders	0 1 (2) 3 4
Woody Debris >0.3 m	(0) 1 2 3 4
Woody Debris <0.3 m	(0) 1 2 3 4
Undercut Banks	(0) 1 2 3 4
Overhang. Vegetation	(0) 1 2 3 4
Live Tree Roots	(0) 1 2 3 4
Artificial Structures	(0) 1 2 3 4

Densiometer Readings (0-17)
count covered dots

Center Left	7
Center Upstream	5
Center Right	3
Center Downstream	0
Optional	
Left Bank	—
Right Bank	—

Human Influence
(circle only the closest to wetted channel)

0 = Not Present;
B = On Bank;
C = Between Bank & 10m from Channel;
P = >10m+<50m from Channel;
Channel (record Yes or No)

	Left Bank	Channel	Right Bank
Walls/ Rip-rap/ Dams	P C B (0)	Y (N)	(0) B C P
Buildings	P C B (0)	Y N	(0) B C P
Pavement/ Cleared Lot	P C B (0)		(0) B C P
Road/ Railroad	P C B (0)	Y N	(0) B C P
Pipes (Inlet/ Outlet)	P C B (0)	Y N	(0) B C P
Landfill/ Trash	P C B (0)	Y N	(0) B C P
Park/ Lawn	P C B (0)		(0) B C P
Row Crop	P C B (0)		(0) B C P
Pasture/ Range	P C B (0)		(0) B C P
Logging Operations	P C B (0)		(0) B C P
Mining Activity	P C (B) (0)	Y N	(0) B C P
Vegetation Management	P C B (0)		(0) B C P
Bridges/ Abutments	P C B (0)	Y N	(0) B C P
Orchards/ Vineyards	P C B (0)		(0) B C P

Bank Stability
(score zone 5m upstream and 5m downstream of transect between bankfull - wetted width)

Left Bank	eroded	vulnerable	(stable)
Right Bank	eroded	vulnerable	(stable)

TAKE PHOTOGRAPHS
(check box if taken & record photo code)

Downstream (**optional**) ☒
173

Upstream (**required**) ☒
174

SWAMP Stream Habitat Characterization Form FULL VERSION Revision Date: February 9th, 2011

Inter-Transect: AB

Wetted Width (m): 1.8

Inter-Transect Substrates

Position	Dist from LB (m)	Depth (cm)	mm/ size class	% Cobble Embed.	CPOM	Microalgae Thickness Code	Macroalgae Attached	Macroalgae Unattached	Macrophytes
Left Bank	.5	39	SAND	—	(P) A	0	P (A) D	P (A) D	P (A) D
Left Center	7	35	COB	0	P (A)	2	(P) A D	P (A) D	P (A) D
Center	14	59	BLD	—	P (A)	2	(P) A D	P (A) D	P (A) D
Right Center	21	43	COB	60	P (A)	0	P (A) D	P (A) D	P (A) D
Right Bank	27.5	2	BLD	—	P (A)	1	P (A) D	P (A) D	P (A) D
	Note: Substrate sizes can be recorded either as direct measures of the median axis of each particle or one of the size class categories listed on the supplemental page (direct measurements preferred)								

Microalgae Thickness Codes
0 = No microalgae present, Feels rough, not slimy;
1 = Present but not visible, Feels slimy;
2 = Present and visible but <1mm; Rubbing fingers on surface produces a brownish tint on them, scraping leaves visible trail;
3 = 1-5mm;
4 = 5-20mm;
5 = >20mm;
UD = Cannot determine if microalgae present, substrate too small or covered with silt (formerly Z code);
D = Dry, not assessed

Flow Habitats
(% between transects, total=100%)

Channel Type	%
Cascade/Falls	
Rapid	
Riffle	40
Run	
Glide	20
Pool	40
Dry	

SWAMP Stream Habitat Characterization Form FULL VERSION Revision Date: February 9th, 2011

Site Code:	Site Name: MYR abv NYR	Date: __/__/2011
Wetted Width (m): 24	Bankfull Width (m): 30	Bankfull Height (m): 1.5

Transect B

Transect Substrates

Position	Dist from LB (m)	Depth (cm)	mm/ size class	% Cobble Embed.	CPOM	Microalgae Thickness Code	Macroalgae Attached	Macroalgae Unattached	Macrophytes
Left Bank	.5	20	COB	75	(P) A	1	P (A) D	P (A) D	P (A) D
Left Center	6	70	COB	50	P A	0	P (A) D	P (A) D	P (A) D
Center	12	136	BED	—	P (A)	0	P (A) D	P (A) D	P (A) D
Right Center	18	0	BED	—	P (A)	0	P (A) D	P (A) D	P (A) D
Right Bank	23.5	44	COB	60	P (A)	1	P (A) D	P (A) D	P (A) D

Note: Substrate sizes can be recorded either as direct measures of the median axis of each particle or one of the size class categories listed on the supplemental page (direct measurements preferred)

Microalgae Thickness Codes
0 = No microalgae present. Feels rough, not slimy;
1 = Present but not visible. Feels slimy;
2 = Present and visible but <1mm. Rubbing fingers on surface produces a brownish tint on them, scraping leaves visible trail.
3 = 1-5mm;
4 = 5-20mm;
5 = >20mm;
UD = Cannot determine if microalgae present, substrate too small or covered with silt (formerly Z code);
D = Dry, not assessed

Riparian Vegetation (facing downstream)

0 = Absent (0%) 3 = Heavy (40-75%)
1 = Sparse (<10%) 4 = Very Heavy (>75%)
2 = Moderate (10-40%)

Vegetation Class	Left Bank	Right Bank
Upper Canopy (>5 m high)		
Trees and saplings >5 m high	(0) 1 2 3 4	(0) 1 2 3 4
Lower Canopy (0.5 m-5 m high)		
All vegetation 0.5 m to 5 m	(0) 1 2 3 4	0 (1) 2 3 4
Ground Cover (<0.5 m high)		
Woody shrubs & saplings <0.5 m	0 (1) 2 3 4	0 (1) 2 3 4
Herbs/ grasses	0 1 (2) 3 4	0 (1) 2 3 4
Barren, bare soil/ duff	0 1 2 3 (4)	0 1 2 3 (4)

Instream Habitat Complexity

0 = Absent (0%)
1 = Sparse (<10%)
2 = Moderate (10-40%)
3 = Heavy (40-75%)
4 = Very Heavy (>75%)

Filamentous Algae	(0) 1 2 3 4
Aquatic Macrophytes/ Emergent Vegetation	(0) 1 2 3 4
Boulders	0 1 (2) 3 4
Woody Debris >0.3 m	(0) 1 2 3 4
Woody Debris <0.3 m	(0) 1 2 3 4
Undercut Banks	(0) 1 2 3 4
Overhang. Vegetation	(0) 1 2 3 4
Live Tree Roots	(0) 1 2 3 4
Artificial Structures	(0) 1 2 3 4

Densiometer Readings (0-17)

count covered dots

Center Left	3
Center Upstream	1
Center Right	7
Center Downstream	6
Optional	
Left Bank	—
Right Bank	—

Human Influence (circle only the closest to wetted channel)

0 = Not Present;
B = On Bank;
C = Between Bank & 10m from Channel;
P = >10m+<50m from Channel;
Channel (record Yes or No)

	Left Bank	Channel	Right Bank
Walls/ Rip-rap/ Dams	P C B (0)	Y (N)	(0) B C P
Buildings	P C B (0)	Y N	(0) B C P
Pavement/ Cleared Lot	P C B (0)		(0) B C P
Road/ Railroad	P C B (0)	Y N	(0) B C P
Pipes (Inlet/ Outlet)	P C B (0)	Y N	(0) B C P
Landfill/ Trash	P C B (0)	Y N	(0) B C P
Park/ Lawn	P C B (0)		(0) B C P
Row Crop	P C B (0)		(0) B C P
Pasture/ Range	P C B (0)		(0) B C P
Logging Operations	P C B (0)		(0) B C P
Mining Activity	P C (B) 0	Y N	(0) B C P
Vegetation Management	P C B (0)		(0) B C P
Bridges/ Abutments	P C B (0)	Y N	(0) B C P
Orchards/ Vineyards	P C B (0)		(0) B C P

Bank Stability

(circle one for upstream and for downstream of transect between bankfull - wetted width)

Left Bank	eroded	vulnerable	(stable)
Right Bank	eroded	vulnerable	(stable)

Inter-Transect: BC

Wetted Width (m): 18

Inter-Transect Substrates

Position	Dist from LB (m)	Depth (cm)	mm/ size class	% Cobble Embed	CPOM	Microalgae Thickness Code	Macroalgae Attached	Macroalgae Unattached	Macrophytes
Left Bank	.5	35	SAND	—	(P) A	0	P (A) D	P (A) D	P (A) D
Left Center	4.5	46	COB	30	P (A)	0	P (A) D	P (A) D	P (A) D
Center	9	64	BLD	—	(P) A	1	P (A) D	P (A) D	P (A) D
Right Center	13.5	178	BLD	—	P (A)	2	P (A) D	P (A) D	P (A) D
Right Bank	17.5	201	BLD	—	P (A)	0	P (A) D	P (A) D	P (A) D
	Note: Substrate sizes can be recorded either as direct measures of the median axis of each particle or one of the size class categories listed on the supplemental page (direct measurements preferred)								

Microalgae Thickness Codes
0 = No microalgae present. Feels rough, not slimy.
1 = Present but not visible. Feels slimy.
2 = Present and visible but <1mm; Rubbing fingers on surface produces a brownish tint on them, scraping leaves visible trail.
3 = 1-5mm.
4 = 5-20mm.
5 = >20mm.
UD = Cannot determine if microalgae present, substrate too small or covered with silt (formerly Z code).
D = Dry, not assessed

Flow Habitats

Channel Type	%
Cascade/ Falls	
Rapid	
Riffle	
Run	
Glide	
Pool	100
Dry	

SWAMP Stream Habitat Characterization Form — FULL VERSION — Revision Date: February 9th, 2011

Site Code:	Site Name: NYR abv NYR	Date: __ __ / __ __ / 2011
Wetted Width (m): 19	Bankfull Width (m): 21	Bankfull Height (m): 1

Transect C

Transect Substrates

Position	Dist from LB (m)	Depth (cm)	mm/ size class	% Cobble Embed.	CPOM	Microalgae Thickness Code	Macroalgae Attached	Macroalgae Unattached	Macrophytes
Left Bank	.5	30	SD	—	P A		P A D	P A D	P A D
Left Center	5	92	COB	80	P A	0	P A D	P A D	P A D
Center	9.5	98	COB	80	P A	2	P A D	P A D	P A D
Right Center	14.5	110	COB	60	P A	0	P A D	P A D	P A D
Right Bank	18.5	176	SLT	—	P A	1	P A D	P A D	P A D

Note: Substrate sizes can be recorded either as direct measures of the median axis of each particle or one of the size class categories listed on the supplemental page (direct measurements preferred).

Microalgae Thickness Codes
0 = No microalgae present. Feels rough, not slimy;
1 = Present but not visible. Feels slimy;
2 = Present and visible but <1mm; Rubbing fingers on surface produces a brownish tint on them; scraping leaves visible trail;
3 = 1-5mm;
4 = 5-20mm;
5 = >20mm;
UD = Cannot determine if microalgae present, substrate too small or covered with silt (formerly Z code).
D = Dry, not assessed

Riparian Vegetation (facing downstream)

0 = Absent (0%) 3 = Heavy (40-75%)
1 = Sparse (<10%) 4 = Very Heavy (>75%)
2 = Moderate (10-40%)

Vegetation Class	Left Bank	Right Bank
Upper Canopy (>5 m high)		
Trees and saplings >5 m high	0 1 2 3 4	0 1 2 3 4
Lower Canopy (0.5 m-5 m high)		
All vegetation 0.5 m to 5 m	0 1 2 3 4	0 1 2 3 4
Ground Cover (<0.5 m high)		
Woody shrubs & saplings <0.5 m	0 1 2 3 4	0 1 2 3 4
Herbs/ grasses	0 1 2 3 4	0 1 2 3 4
Barren, bare soil/ duff	0 1 2 3 4	0 1 2 3 4

Instream Habitat Complexity

0 = Absent (0%)
1 = Sparse (<10%)
2 = Moderate (10-40%)
3 = Heavy (40-75%)
4 = Very Heavy (>75%)

Filamentous Algae	0 1 2 3 4
Aquatic Macrophytes/ Emergent Vegetation	0 1 2 3 4
Boulders	0 1 2 3 4
Woody Debris >0.3 m	0 1 2 3 4
Woody Debris <0.3 m	0 1 2 3 4
Undercut Banks	0 1 2 3 4
Overhang. Vegetation	0 1 2 3 4
Live Tree Roots	0 1 2 3 4
Artificial Structures	0 1 2 3 4

Densiometer Readings (0-17)

count covered dots

Center Left	5
Center Upstream	4
Center Right	15
Center Downstream	2
Optional	
Left Bank	—
Right Bank	—

Human Influence (circle only the closest to wetted channel)

0 = Not Present;
B = On Bank;
C = Between Bank & 10m from Channel;
P = >10m+<50m from Channel;
Channel (record Yes or No)

	Left Bank	Channel	Right Bank
Walls/ Rip-rap/ Dams	P C B 0	Y N	0 B C P
Buildings	P C B 0	Y N	0 B C P
Pavement/ Cleared Lot	P C B 0		0 B C P
Road/ Railroad	P C B 0	Y N	0 B C P
Pipes (Inlet/ Outlet)	P C B 0	Y N	0 B C P
Landfill/ Trash	P C B 0	Y N	0 B C P
Park/ Lawn	P C B 0		0 B C P
Row Crop	P C B 0		0 B C P
Pasture/ Range	P C B 0		0 B C P
Logging Operations	P C B 0		0 B C P
Mining Activity	P C B 0	Y N	0 B C P
Vegetation Management	P C B 0		0 B C P
Bridges/ Abutments	P C B 0	Y N	0 B C P
Orchards/ Vineyards	P C B 0		0 B C P

Bank Stability

Notes on the 5m upstream and 5m downstream of transect between bankfull wetted width

Left Bank	eroded	vulnerable	stable
Right Bank	eroded	vulnerable	stable

Inter-Transect: CD

Wetted Width (m): 16

Inter-Transect Substrates

Position	Dist from LB (m)	Depth (cm)	mm/ size class	% Cobble Embed.	CPOM	Microalgae Thickness Code	Macroalgae Attached	Macroalgae Unattached	Macrophytes
Left Bank	.5	20	BED	—	P (A)	1	P (A) D	P (A) D	P (A) D
Left Center	4	112	BLD	—	P (A)	0	P (A) D	P (A) D	P (A) D
Center	8	115	BED	—	P (A)	0	P (A) D	P (A) D	P (A) D
Right Center	12	130	BLD	—	P (A)	1	P (A) D	P (A) D	P (A) D
Right Bank	15.5	145	BLD	—	P (A)	1	P (A) D	P (A) D	P (A) D

Note: Substrate sizes can be recorded either as direct measures of the median axis of each particle or one of the size class categories listed on the supplemental page (direct measurements preferred)

Microalgae Thickness Codes
0 = No microalgae present. Feels rough, not slimy;
1 = Present but not visible. Feels slimy;
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3 = 1-5mm;
4 = 5-20mm;
5 = >20mm;
UD = Cannot determine if microalgae present, substrate too small or covered with silt (formerly Z code);
D = Dry, not assessed.

Flow Habitats

(% between transects, must total 100)

Channel Type	%
Cascade/ Falls	
Rapid	
Riffle	
Run	
Glide	
Pool	100
Dry	

SWAMP Stream Habitat Characterization Form *FULL VERSION* *Revision Date: February 9th, 2011*

Site Code:	Site Name: MYR abv NYR	Date: ___/___/2011
Wetted Width (m): 14	Bankfull Width (m): 16 / Bankfull Height (m): 1.5	**Transect D**

Transect Substrates

Position	Dist from LB (m)	Depth (cm)	mm/ size class	% Cobble Embed.	CPOM	Microalgae Thickness Code	Macroalgae Attached	Macroalgae Unattached	Macrophytes
Left Bank	.5	16	BED	—	P (A)	1	P (A) D	P (A) D	P (A) D
Left Center	3.5	30	BED	—	P (A)	0	P (A) D	P (A) D	P (A) D
Center	7	48	BED	—	P (A)	0	P (A) D	P (A) D	P (A) D
Right Center	10.5	156	BED	—	P (A)	0	P (A) D	P (A) D	P (A) D
Right Bank	17.5	80	BED	—	P (A)	0	P (A) D	P (A) D	P (A) D
	Note: Substrate sizes can be recorded either as direct measures of the median axis of each particle or one of the size class categories listed on the supplemental page (direct measurements preferred)								

Microalgae Thickness Codes
0 = No microalgae present, Feels rough, not slimy;
1 = Present but not visible, Feels slimy;
2 = Present and visible but <1mm; Rubbing fingers on surface produces a brownish tint on them, scraping leaves visible trail;
3 = 1-5mm;
4 = 5-20mm;
5 = >20mm;
UD = Cannot determine if microalgae present, substrate too small or covered with silt (formerly Z code);
D = Dry, not assessed

RIPARIAN VEGETATION (facing downstream)
0 = Absent (0%) 3 = Heavy (40-75%)
1 = Sparse (<10%) 4 = Very Heavy (>75%)
2 = Moderate (10-40%)

Vegetation Class	Left Bank	Right Bank
Upper Canopy (>5 m high)		
Trees and saplings >5 m high	(0) 1 2 3 4	(0) 1 2 3 4
Lower Canopy (0.5 m-5 m high)		
All vegetation 0.5 m to 5 m	(0) 1 2 3 4	(0) 1 2 3 4
Ground Cover (<0.5 m high)		
Woody shrubs & saplings <0.5 m	0 (1) 2 3 4	0 (1) 2 3 4
Herbs/ grasses	0 (1) 2 3 4	(0) 1 2 3 4
Barren, bare soil/ duff	0 1 2 3 (4)	0 1 2 3 (4)

INSTREAM HABITAT COMPLEXITY
0 = Absent (0%)
1 = Sparse (<10%)
2 = Moderate (10-40%)
3 = Heavy (40-75%)
4 = Very Heavy (>75%)

Filamentous Algae	(0) 1 2 3 4
Aquatic Macrophytes/ Emergent Vegetation	(0) 1 2 3 4
Boulders	0 1 (2) 3 4
Woody Debris >0.3 m	(0) 1 2 3 4
Woody Debris <0.3 m	0 1 2 3 4
Undercut Banks	0 1 2 3 4
Overhang. Vegetation	0 1 2 3 4
Live Tree Roots	0 1 2 3 4
Artificial Structures	0 1 2 3 4

DENSIOMETER READINGS (0-17)
count covered dots

Center Left	5
Center Upstream	4
Center Right	12
Center Downstream	2
Optional	
Left Bank	—
Right Bank	—

HUMAN INFLUENCE (circle only the closest to wetted channel)
0 = Not Present;
B = On Bank;
C = Between Bank & 10m from Channel;
P = >10m+<50m from Channel;
Channel (record Yes or No)

	Left Bank	Channel	Right Bank
Walls/ Rip-rap/ Dams	P C B (0)	Y (N)	(0) B C P
Buildings	P C B 0	Y N	0 B C P
Pavement/ Cleared Lot	P C B 0		0 B C P
Road/ Railroad	P C B 0	Y N	0 B C P
Pipes (Inlet/ Outlet)	P C B 0	Y N	0 B C P
Landfill/ Trash	P C B 0	Y N	0 B C P
Park/ Lawn	P C B 0		0 B C P
Row Crop	P C B 0		0 B C P
Pasture/ Range	P C B 0		0 B C P
Logging Operations	P C B 0		0 B C P
Mining Activity	P C B 0	Y N	0 B C P
Vegetation Management	P C B 0		0 B C P
Bridges/ Abutments	P C B 0	Y N	0 B C P
Orchards/ Vineyards	P C B 0		0 B C P

BANK STABILITY
(score zone 5m upstream and 5m downstream of transect between bankfull - wetted width)

Left Bank	eroded	vulnerable	stable
Right Bank	eroded	vulnerable	stable

Inter-Transect: DE

Wetted Width (m): 14

Inter-Transect Substrates

Position	Dist from LB (m)	Depth (cm)	mm/ size class	% Cobble Embed.	CPOM	Microalgae Thickness Code	Macroalgae Attached	Macroalgae Unattached	Macrophytes
Left Bank	.5	18	BLD	—	P (A)	0	P (A) D	P (A) D	P (A) D
Left Center	3.5	102	BLD	—	P (A)	1	P (A) D	P (A) D	P (A) D
Center	7	125	FG	—	P (A)	0	P (A) D	P (A) D	P (A) D
Right Center	10.5	151	BLD	—	P (A)	0	P (A) D	P (A) D	P (A) D
Right Bank	13.5	169	BLD	—	P (A)	0	P (A) D	P (A) D	P (A) D
	Note: Substrate sizes can be recorded either as direct measures of the median axis of each particle or one of the size class categories listed on the supplemental page (direct measurements preferred)								

Microalgae Thickness Codes
0 = No microalgae present. Feels rough, not slimy;
1 = Present but not visible. Feels slimy;
2 = Present and visible but <1mm; Rubbing fingers on surface produces a brownish tint on them, scraping leaves visible trail;
3 = 1-5mm;
4 = 5-20mm;
5 = >20mm;
UD = Cannot determine if microalgae present, substrate too small or covered with silt (formerly Z code)
D = Dry, not assessed

FLOW HABITATS (Between transects add to 100%)	
Channel Type	%
Cascade/ Falls	
Rapid	
Riffle	
Run	
Glide	
Pool	100
Dry	

SWAMP Stream Habitat Characterization Form FULL VERSION Revision Date: February 9th, 2011

Site Code:	Site Name: MYR abv NYR	Date: ___/___/2011
Wetted Width (m): 15	Bankfull Width (m): 19	Bankfull Height (m): 1.5

Transect E

Transect Substrates

Position	Dist from LB (m)	Depth (cm)	mm/ size class	% Cobble Embed.	CPOM	Microalgae Thickness Code	Macroalgae Attached	Macroalgae Unattached	Macrophytes
Left Bank	.5	200	BLD	—	P (A)	2	P (A) D	P (A) D	P (A) D
Left Center	5	250	BED	—	P A	0	P A D	P A D	P A D
Center	7.5	300	BED	—	P A	2	P A D	P A D	P A D
Right Center	12.5	250	BLD	—	P A	0	P A D	P A D	P A D
Right Bank	14.5	200	BLD	—	P A	0	P A D	P A D	P A D

EST.

Note: Substrate sizes can be recorded either as direct measures of the median axis of each particle or one of the size class categories listed on the supplemental page (direct measurements preferred)

Microalgae Thickness Codes
0 = No microalgae present. Feels rough, not slimy;
1 = Present but not visible. Feels slimy;
2 = Present and visible but <1mm. Rubbing fingers on surface produces a brownish tint on them, scraping leaves visible trail;
3 = 1-5mm;
4 = 5-20mm;
5 = >20mm;
UD = Cannot determine if microalgae present, substrate too small or covered with silt (formerly Z code);
D = Dry, not assessed

Riparian Vegetation
(facing downstream)

0 = Absent (0%) 3 = Heavy (40-75%)
1 = Sparse (<10%) 4 = Very Heavy (>75%)
2 = Moderate (10-40%)

Vegetation Class	Left Bank	Right Bank
Upper Canopy (>5 m high)		
Trees and saplings >5 m high	(0) 1 2 3 4	(0) 1 2 3 4
Lower Canopy (0.5 m-5 m high)		
All vegetation 0.5 m to 5 m	0 (1) 2 3 4	(0) 1 2 3 4
Ground Cover (<0.5 m high)		
Woody shrubs & saplings <0.5 m	0 (0) 2 3 4	0 (1) 2 3 4
Herbs/ grasses	0 (1) 2 3 4	0 (1) 2 3 4
Barren, bare soil/ duff	0 1 2 3 (4)	0 1 2 3 (4)

Instream Habitat Complexity

0 = Absent (0%)
1 = Sparse (<10%)
2 = Moderate (10-40%)
3 = Heavy (40-75%)
4 = Very Heavy (>75%)

Filamentous Algae	(0) 1 2 3 4
Aquatic Macrophytes/ Emergent Vegetation	(0) 1 2 3 4
Boulders	0 (1) 2 3 4
Woody Debris >0.3 m	(0) 1 2 3 4
Woody Debris <0.3 m	0 1 2 3 4
Undercut Banks	0 1 2 3 4
Overhang. Vegetation	0 1 2 3 4
Live Tree Roots	0 1 2 3 4
Artificial Structures	0 1 2 3 4

Densiometer Readings (0-17)
count covered dots

Center Left	16
Center Upstream	7
Center Right	12
Center Downstream	3
Optional	
Left Bank	—
Right Bank	—

Human Influence
(circle only the closest to wetted channel)

0 = Not Present;
B = On Bank;
C = Between Bank & 10m from Channel;
P = >10m+<50m from Channel;
Channel (record Yes or No)

	Left Bank	Channel	Right Bank
Walls/ Rip-rap/ Dams	P C B (0)	Y (N)	(0) B C P
Buildings	P C B 0	Y N	0 B C P
Pavement/ Cleared Lot	P C B 0		0 B C P
Road/ Railroad	P C B 0	Y N	0 B C P
Pipes (Inlet/ Outlet)	P C B 0	Y N	0 B C P
Landfill/ Trash	P C B 0	Y N	0 B C P
Park/ Lawn	P C B 0		0 B C P
Row Crop	P C B 0		0 B C P
Pasture/ Range	P C B 0		0 B C P
Logging Operations	P C B 0		0 B C P
Mining Activity	P C B 0	Y N	0 B C P
Vegetation Management	P C B 0		0 B C P
Bridges/ Abutments	P C B 0	Y N	0 B C P
Orchards/ Vineyards	P C B 0		0 B C P

Bank Stability
(score zone 5m upstream and 5m downstream of transect between bankfull - wetted width)

Left Bank	eroded	vulnerable	stable
Right Bank	eroded	vulnerable	stable

Inter-Transect: EF

Wetted Width (m): 13

Inter-Transect Substrates

Position	Dist from LB (m)	Depth (cm)	mm/ size class	% Cobble Embed.	CPOM	Microalgae Thickness Code	Macroalgae Attached	Macroalgae Unattached	Macrophytes
Left Bank	1.5	31	BLD	—	P (A)	1	P (A) D	P (A) D	P (A) D
Left Center	3	60	BLD	—	P (A)	1	P (A) D	P (A) D	P (A) D
Center	6.5	200	BLD	—	P (A)	6	P (A) D	P (A) D	P (A) D
Right Center	9.5	220	BLD	—	P (A)	—	P (A) D	P (A) D	P (A) D
Right Bank	12.5	240	BLD	—	P (A)	—	P (A) D	P (A) D	P (A) D

Note: Substrate sizes can be recorded either as direct measures of the median axis of each particle or one of the size class categories listed on the supplemental page (direct measurements preferred)

Microalgae Thickness Codes
0 = No microalgae present. Feels rough, not slimy;
1 = Present but not visible. Feels slimy;
2 = Present and visible but <1mm. Rubbing fingers on surface produces a brownish tint on them, scraping leaves visible trail;
3 = 1-5mm;
4 = 5-20mm;
5 = >20mm;
UD = Cannot determine if microalgae present, substrate too small or covered with silt (formerly Z code);
D = Dry, not assessed

EF

Flow Habitats (% between consecutive LBs = 100%)	
Channel Type	%
Cascade/Falls	
Rapid	
Riffle	
Run	
Glide	
Pool	100
Dry	

SWAMP Stream Habitat Characterization Form — FULL VERSION — Revision Date: February 9th, 2011

Site Code:	Site Name: MTR ab NYR	Date: __ __ / __ __ / 2011
Wetted Width (m): 12	Bankfull Width (m): 13	Bankfull Height (m): 2

Transect F

Transect Substrates

Position	Dist from LB (m)	Depth (cm)	mm/ size class	% Cobble Embed.	CPOM	Microalgae Thickness Code	Macroalgae Attached	Macroalgae Unattached	Macrophytes
Left Bank	.5	8	COB	0	(P) A	0	P (A) D	P (A) D	(P) A D
Left Center	3	75	CG	—	P (A)	0	P (A) D	P (A) D	P (A) D
Center	6	180	BLD	—	P (A)	—	P (A) D	P (A) D	P (A) D
Right Center	9	200	BLD	—	P (A)	—	P (A) D	P (A) D	P (A) D
Right Bank	11.5	250	BLD	—	P (A)	—	P (A) D	P (A) D	P (A) D

Note: Substrate sizes can be recorded either as direct measures of the median axis of each particle or one of the size class categories listed on the supplemental page (direct measurements preferred)

Microalgae Thickness Codes
0 = No microalgae present, Feels rough, not slimy;
1 = Present but not visible, Feels slimy;
2 = Present and visible but <1mm; Rubbing fingers on surface produces a brownish tint on them, scraping leaves visible trail;
3 = 1-5mm;
4 = 5-20mm;
5 = >20mm;
UD = Cannot determine if microalgae present, substrate too small or covered with silt (formerly Z code);
D = Dry, not assessed

Riparian Vegetation (facing downstream)

0 = Absent (0%) 3 = Heavy (40-75%)
1 = Sparse (<10%) 4 = Very Heavy (>75%)
2 = Moderate (10-40%)

Vegetation Class	Left Bank	Right Bank
Upper Canopy (>5 m high)		
Trees and saplings >5 m high	(0) 1 2 3 4	(0) 1 2 3 4
Lower Canopy (0.5 m-5 m high)		
All vegetation 0.5 m to 5 m	(0) 1 2 3 4	(0) 1 2 3 4
Ground Cover (<0.5 m high)		
Woody shrubs & saplings <0.5 m	(0) 1 2 3 4	(0) 1 2 3 4
Herbs/ grasses	(0) 1 2 3 4	0 (0) 2 3 4
Barren, bare soil/ duff	0 1 2 3 (4)	0 1 2 3 (4)

Instream Habitat Complexity

0 = Absent (0%)
1 = Sparse (<10%)
2 = Moderate (10-40%)
3 = Heavy (40-75%)
4 = Very Heavy (>75%)

Filamentous Algae	(0) 1 2 3 4
Aquatic Macrophytes/ Emergent Vegetation	(0) 1 2 3 4
Boulders	0 1 (2) 3 4
Woody Debris >0.3 m	(0) 1 2 3 4
Woody Debris <0.3 m	(0) 1 2 3 4
Undercut Banks	(0) 1 2 3 4
Overhang. Vegetation	(0) 1 2 3 4
Live Tree Roots	(0) 1 2 3 4
Artificial Structures	(0) 1 2 3 4

Densiometer Readings (0-17)
count covered dots

Center Left	0
Center Upstream	5
Center Right	14
Center Downstream	4
Optional	
Left Bank	—
Right Bank	—

Human Influence (circle only the closest to wetted channel)

0 = Not Present;
B = On Bank;
C = Between Bank & 10m from Channel;
P = >10m+<50m from Channel;
Channel (record Yes or No)

	Left Bank	Channel	Right Bank
Walls/ Rip-rap/ Dams	P C B (0)	Y (N)	(0) B C P
Buildings	P C B 0	Y N	0 B C P
Pavement/ Cleared Lot	P C B 0		0 B C P
Road/ Railroad	P C B 0	Y N	0 B C P
Pipes (Inlet/ Outlet)	P C B 0	Y N	0 B C P
Landfill/ Trash	P C B 0	Y N	0 B C P
Park/ Lawn	P C B 0		0 B C P
Row Crop	P C B 0		0 B C P
Pasture/ Range	P C B 0		0 B C P
Logging Operations	P C B 0		0 B C P
Mining Activity	P C B 0	Y N	0 B C P
Vegetation Management	P C B 0		0 B C P
Bridges/ Abutments	P C B 0	Y N	0 B C P
Orchards/ Vineyards	P C B 0		0 B C P

Bank Stability

Rate the Left and Right Bank as eroded, vulnerable, or stable

Left Bank	eroded	vulnerable	(stable)
Right Bank	eroded	vulnerable	(stable)

TAKE PHOTOGRAPHS
(check box if taken & record photo code)

Downstream (required)	☑ 175
Upstream (required)	☑ 176

Inter-Transect: FG

Wetted Width (m): 14

Inter-Transect Substrates

Position	Dist. from LB (m)	Depth (cm)	mm/ size class	% Cobble Embed.	CPOM	Microalgae Thickness Code	Macroalgae Attached	Macroalgae Unattached	Macrophytes
Left Bank	.5	86	BED	—	P (A)	3	P (A) D	P (A) D	P (A) D
Left Center	3.5	50	CG	—	P (A)	1	P (A) D	P (A) D	P (A) D
Center	7	10	BED	—	P (A)	2	P (A) D	P (A) D	P (A) D
Right Center	10.5	69	BLD	—	P (A)	1	P (A) D	P (A) D	P (A) D
Right Bank	13.5	21	BED	—	P (A)	0	P (A) D	P (A) D	P (A) D

Note: Substrate sizes can be recorded either as direct measures of the median axis of each particle or one of the size class categories listed on the supplemental page (direct measurements preferred)

Microalgae Thickness Codes
0 = No microalgae present; Feels rough, not slimy;
1 = Present but not visible; Feels slimy;
2 = Present and visible but <1mm; Rubbing fingers on surface produces a brownish tint on them, scraping leaves visible trail.
3 = 1-5mm;
4 = 5-20mm;
5 = >20mm;
UD = Cannot determine if microalgae present, substrate too small or covered with silt (formerly Z code).
D = Dry, not assessed

Flow Habitats

Channel Type	%
Cascade/Falls	50
Rapid	
Riffle	
Run	
Glide	
Pool	50
Dry	

SWAMP Stream Habitat Characterization Form — FULL VERSION — Revision Date: February 9th, 2011

Site Code:	Site Name: NYR abv NYR	Date: ___/___/2011
Wetted Width (m): 14	Bankfull Width (m): 22	Bankfull Height (m): 1.5

Transect G

Transect Substrates

Position	Dist from LB (m)	Depth (cm)	mm/ size class	% Cobble Embed.	CPOM	Microalgae Thickness Code	Macroalgae Attached	Macroalgae Unattached	Macrophytes
Left Bank	.5	120	CG	—	P (A)	2	P (A) D	P (A) D	P (A) D
Left Center	3.5	71	BLD	—	P (A)	1	P A D	P A D	P A D
Center	7	0	BED	—	P (A)	0	P (A) D	P (A) D	P (A) D
Right Center	10.5	0	BED	—	P (A)	0	P (A) D	P (A) D	P (A) D
Right Bank	13.5	60	COB	10	P (A)	0	P (A) D	P (A) D	P (A) D

Note: Substrate sizes can be recorded either as direct measures of the median axis of each particle or one of the size class categories listed on the supplemental page (direct measurements preferred)

Microalgae Thickness Codes
0 = No microalgae present. Feels rough, not slimy;
1 = Present but not visible. Feels slimy;
2 = Present and visible but <1mm. Rubbing fingers on surface produces a brownish tint on them, scraping leaves visible trail.
3 = 1-5mm;
4 = 5-20mm;
5 = >20mm;
UD = Cannot determine if microalgae present, substrate too small or covered with silt (formerly Z code).
D = Dry, not assessed

Riparian Vegetation (facing downstream)

0 = Absent (0%) 3 = Heavy (40-75%)
1 = Sparse (<10%) 4 = Very Heavy (>75%)
2 = Moderate (10-40%)

Vegetation Class	Left Bank	Right Bank
Upper Canopy (>5 m high)		
Trees and saplings >5 m high	0 (1) 2 3 4	(0) 1 2 3 4
Lower Canopy (0.5 m-5 m high)		
All vegetation 0.5 m to 5 m	0 (1) 2 3 4	(0) 1 2 3 4
Ground Cover (<0.5 m high)		
Woody shrubs & saplings <0.5 m	0 (1) 2 3 4	(0) 1 2 3 4
Herbs/ grasses	0 (1) 2 3 4	(0) 1 2 3 4
Barren, bare soil/ duff	0 1 2 3 (4)	0 1 2 3 (4)

Instream Habitat Complexity

0 = Absent (0%)
1 = Sparse (<10%)
2 = Moderate (10-40%)
3 = Heavy (40-75%)
4 = Very Heavy (>75%)

Filamentous Algae	(0) 1 2 3 4
Aquatic Macrophytes/ Emergent Vegetation	(0) 1 2 3 4
Boulders	0 1 2 (3) 4
Woody Debris >0.3 m	0 1 2 3 4
Woody Debris <0.3 m	0 1 2 3 4
Undercut Banks	0 1 2 3 4
Overhang. Vegetation	0 1 2 3 4
Live Tree Roots	0 1 2 3 4
Artificial Structures	0 1 2 3 4

Densiometer Readings (0-17)
count covered dots

Center Left	9
Center Upstream	3
Center Right	10
Center Downstream	2
Optional	
Left Bank	—
Right Bank	—

Human Influence
(circle only the closest to wetted channel)

0 = Not Present;
B = On Bank;
C = Between Bank & 10m from Channel;
P = >10m+<50m from Channel;
Channel (record Yes or No)

	Left Bank	Channel	Right Bank
Walls/ Rip-rap/ Dams	P C B (0)	Y (N)	(0) B C P
Buildings	P C B 0	Y N	0 B C P
Pavement/ Cleared Lot	P C B 0		0 B C P
Road/ Railroad	P C B 0	Y N	0 B C P
Pipes (Inlet/ Outlet)	P C B 0	Y N	0 B C P
Landfill/ Trash	P C B 0	Y N	0 B C P
Park/ Lawn	P C B 0		0 B C P
Row Crop	P C B 0		0 B C P
Pasture/ Range	P C B 0		0 B C P
Logging Operations	P C B 0		0 B C P
Mining Activity	P C B 0	Y N	0 B C P
Vegetation Management	P C B 0		0 B C P
Bridges/ Abutments	P C B 0	Y N	0 B C P
Orchards/ Vineyards	P C B 0		0 B C P

Bank Stability

(assess zone 5m upstream and 5m downstream of the reach between the wetted widths)

Left Bank	eroded	vulnerable	(stable)
Right Bank	eroded	vulnerable	(stable)

Inter-Transect: GH

Wetted Width (m): 15

Inter-Transect Substrates

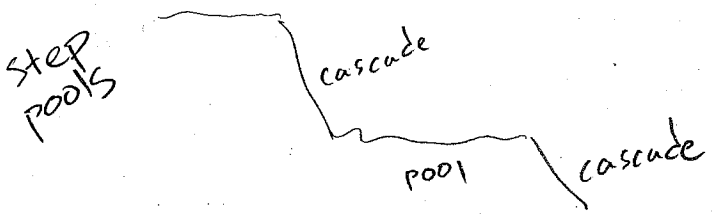
Position	Dist from LB (m)	Depth (cm)	mm/ size class	% Cobble Embed.	CPOM	Microalgae Thickness Code	Macroalgae Attached	Macroalgae Unattached	Macrophytes
Left Bank	~~0~~	9.5	CG	—	P (A)	2	P (A) D	P (A) D	P (A) D
Left Center	4	86	BLD	—	P (A)	1	(P) A D	P (A) D	P (A) D
Center	7.5	76	BLD	—	P (A)	0	P (A) D	P (A) D	P (A) D
Right Center	11.5	75	BED	—	P (A)	1	P (A) D	P (A) D	P (A) D
Right Bank	14.5	0	BED	—	P (A)	0	P (A) D	P (A) D	P (A) D

Note: Substrate sizes can be recorded either as direct measures of the median axis of each particle or one of the size class categories listed on the supplemental page (direct measurements preferred).

Microalgae Thickness Codes
0 = No microalgae present. Feels rough, not slimy;
1 = Present but not visible. Feels slimy;
2 = Present and visible but <1mm; Rubbing fingers on surface produces a brownish tint on them, scraping leaves visible trail;
3 = 1-5mm;
4 = 5-20mm;
5 = >20mm;
UD = Cannot determine if microalgae present, substrate too small or covered with silt (formerly Z code);
D = Dry, not assessed

Flow Habitats

Channel Type	%
Cascade/Falls	50
Rapid	
Riffle	
Run	
Glide	
Pool	50
Dry	



SWAMP Stream Habitat Characterization Form — FULL VERSION — Revision Date: February 9th, 2011

Site Code:	Site Name: MYR abu NYR	Date: ___/___/2011
Wetted Width (m): 12	Bankfull Width (m): 18	Bankfull Height (m): 1.5

Transect H

Transect Substrates

Position	Dist from LB (m)	Depth (cm)	mm/ size class	% Cobble Embed.	CPOM	Microalgae Thickness Code	Macroalgae Attached	Macroalgae Unattached	Macrophytes
Left Bank	.5	19	COB	20	P (A)	2	P (A) D	P (A) D	P (A) D
Left Center	3	0	BED	—	P A	0	P (A) D	P (A) D	P (A) D
Center	6	72	BLD	—	P (A)	0	P (A) D	P (A) D	P (A) D
Right Center	9	56	BLD	—	P (A)	93	P (A) D	P (A) D	P (A) D
Right Bank	11.5	18	CB	—	(P) A	0	P (A) D	P (A) D	P (A) D

Note: Substrate sizes can be recorded either as direct measures of the median axis of each particle or one of the size class categories listed on the supplemental page (direct measurements preferred).

Microalgae Thickness Codes
0 = No microalgae present. Feels rough, not slimy;
1 = Present but not visible. Feels slimy;
2 = Present and visible but <1mm; Rubbing fingers on surface produces a brownish tint on them, scraping leaves visible trail.
3 = 1-5mm;
4 = 5-20mm;
5 = >20mm;
UD = Cannot determine if microalgae present, substrate too small or covered with silt (formerly Z code).
D = Dry, not assessed

Riparian Vegetation (facing downstream)

0 = Absent (0%) 3 = Heavy (40-75%)
1 = Sparse (<10%) 4 = Very Heavy (>75%)
2 = Moderate (10-40%)

Vegetation Class	Left Bank	Right Bank
Upper Canopy (>5 m high)		
Trees and saplings >5 m high	(0) 1 2 3 4	(0) 1 2 3 4
Lower Canopy (0.5 m-5 m high)		
All vegetation 0.5 m to 5 m	(0) 1 2 3 4	(0) 1 2 3 4
Ground Cover (<0.5 m high)		
Woody shrubs & saplings <0.5 m	0 (1) 2 3 4	0 (1) 2 3 4
Herbs/ grasses	0 (1) 2 3 4	0 (1) 2 3 4
Barren, bare soil/ duff	0 1 2 3 (4)	0 1 2 3 (4)

Instream Habitat Complexity

0 = Absent (0%)
1 = Sparse (<10%)
2 = Moderate (10-40%)
3 = Heavy (40-75%)
4 = Very Heavy (>75%)

Filamentous Algae	(0) 1 2 3 4
Aquatic Macrophytes/ Emergent Vegetation	(0) 1 2 3 4
Boulders	0 1 (2) 3 4
Woody Debris >0.3 m	(0) 1 2 3 4
Woody Debris <0.3 m	0 1 2 3 4
Undercut Banks	0 1 2 3 4
Overhang. Vegetation	0 1 2 3 4
Live Tree Roots	0 1 2 3 4
Artificial Structures	0 1 2 3 4

Densiometer Readings (0-17)

count covered dots

Center Left	9
Center Upstream	3
Center Right	2
Center Downstream	2
Optional	
Left Bank	—
Right Bank	—

Human Influence (circle only the closest to wetted channel)

0 = Not Present;
B = On Bank;
C = Between Bank & 10m from Channel;
P = >10m+<50m from Channel;
Channel (record Yes or No)

	Left Bank	Channel	Right Bank
Walls/ Rip-rap/ Dams	P C B (0)	Y (N)	(0) B C P
Buildings	P C B 0	Y N	0 B C P
Pavement/ Cleared Lot	P C B 0		0 B C P
Road/ Railroad	P C B 0	Y N	0 B C P
Pipes (Inlet/ Outlet)	P C B 0	Y N	0 B C P
Landfill/ Trash	P C B 0	Y N	0 B C P
Park/ Lawn	P C B 0		0 B C P
Row Crop	P C B 0		0 B C P
Pasture/ Range	P C B 0		0 B C P
Logging Operations	P C B 0		0 B C P
Mining Activity	P C B 0	Y N	0 B C P
Vegetation Management	P C B 0		0 B C P
Bridges/ Abutments	P C B 0	Y N	0 B C P
Orchards/ Vineyards	P C B 0		0 B C P

Bank Stability

Score zone 5m upstream and 5m downstream of transect between canopy - water edge)

Left Bank	eroded	vulnerable	(stable)
Right Bank	eroded	vulnerable	(stable)

Inter-Transect: HI

Wetted Width (m): 20

Inter-Transect Substrates

Position	Dist from LB (m)	Depth (cm)	mm/ size class	% Cobble Embed.	CPOM	Microalgae Thickness Code	Macroalgae Attached	Macroalgae Unattached	Macrophytes
Left Bank	1.5	100	BRD	—	P (A)	1	P (A) D	P (A) D	P (A) D
Left Center	5	30	CG	—	P (A)	0	P (A) D	P (A) D	P (A) D
Center	10	50	COB	70	(P) A	2	P (A) D	P (A) D	P (A) D
Right Center	15	~~70~~ 135	~~COB~~ BRD	—	P (A)	1	P (A) D	P (A) D	P (A) D
Right Bank	19.5	34	COB	30	P (A)	0	P (A) D	P (A) D	P (A) D
	Note: Substrate sizes can be recorded either as direct measures of the median axis of each particle or one of the size class categories listed on the supplemental page (direct measurements preferred)								

Microalgae Thickness Codes
0 = No microalgae present. Feels rough, not slimy.
1 = Present but not visible. Feels slimy.
2 = Present and visible but <1mm. Rubbing fingers on surface produces a brownish tint on them, scraping leaves visible trail.
3 = 1-5mm.
4 = 5-20mm.
5 = >20mm.
UD = Cannot determine if microalgae present, substrate too small or covered with silt (formerly Z code).
D = Dry, not assessed.

Flow Habitats
(% based on transect segments)

Channel Type	%
Cascade/Falls	
Rapid	
Riffle	
Run	
Glide	50
Pool	50
Dry	

SWAMP Stream Habitat Characterization Form FULL VERSION Revision Date: February 9th, 2011

Site Code:	Site Name: M4R abv N4R	Date: __/__/2011
Wetted Width (m): 13	Bankfull Width (m): 18	Bankfull Height (m): 2

Transect 1

Transect Substrates

Position	Dist from LB (m)	Depth (cm)	mm/ size class	% Cobble Embed.	CPOM	Microalgae Thickness Code	Macroalgae Attached	Macroalgae Unattached	Macrophytes
Left Bank	.5	3	BED	—	P (A)	0	P (A) D	P (A) D	P (A) D
Left Center	3	0	BLD	—	P (A)	0	P (A) D	P (A) D	P (A) D
Center	6.5	101	BED	—	P (A)	0	P (A) D	P (A) D	P (A) D
Right Center	9.5	91	BLD	—	(P) A	2	(P) A D	P (A) D	P (A) D
Right Bank	12.5	38	COB	50	(P) A	2	(P) A D	P (A) D	P (A) D
	Note: Substrate sizes can be recorded either as direct measures of the median axis of each particle or one of the size class categories listed on the supplemental page (direct measurements preferred)								

Microalgae Thickness Codes
0 = No microalgae present. Feels rough, not slimy;
1 = Present but not visible. Feels slimy;
2 = Present and visible but <1mm. Rubbing fingers on surface produces a brownish tint on them, scraping leaves visible trail;
3 = 1-5mm;
4 = 5-20mm;
5 = >20mm;
UD = Cannot determine if microalgae present, substrate too small or covered with silt (formerly Z code);
D = Dry, not assessed

Riparian Vegetation (facing downstream)

0 = Absent (0%) 3 = Heavy (40-75%)
1 = Sparse (<10%) 4 = Very Heavy (>75%)
2 = Moderate (10-40%)

Vegetation Class	Left Bank	Right Bank
Upper Canopy (>5 m high)		
Trees and saplings >5 m high	(0) 1 2 3 4	(0) 1 2 3 4
Lower Canopy (0.5 m-5 m high)		
All vegetation 0.5 m to 5 m	(0) 1 2 3 4	(0) 1 2 3 4
Ground Cover (<0.5 m high)		
Woody shrubs & saplings <0.5 m	0 (1) 2 3 4	0 (1) 2 3 4
Herbs/ grasses	(0) 1 2 3 4	0 (1) 2 3 4
Barren, bare soil/ duff	0 1 2 3 (4)	0 1 2 3 (4)

Instream Habitat Complexity

0 = Absent (0%)
1 = Sparse (<10%)
2 = Moderate (10-40%)
3 = Heavy (40-75%)
4 = Very Heavy (>75%)

Filamentous Algae	(0) 1 2 3 4
Aquatic Macrophytes/ Emergent Vegetation	(0) 1 2 3 4
Boulders	0 1 (2) 3 4
Woody Debris >0.3 m	0 1 2 3 4
Woody Debris <0.3 m	(0) 1 2 3 4
Undercut Banks	0 1 2 3 4
Overhang. Vegetation	0 1 2 3 4
Live Tree Roots	0 1 2 3 4
Artificial Structures	0 1 2 3 4

Densiometer Readings (0-17)

count covered dots

Center Left	13
Center Upstream	2
Center Right	5
Center Downstream	5
Optional	
Left Bank	—
Right Bank	—

Human Influence (circle only the closest to wetted channel)

0 = Not Present;
B = On Bank;
C = Between Bank & 10m from Channel;
P = >10m+<50m from Channel;
Channel (record Yes or No)

	Left Bank	Channel	Right Bank
Walls/ Rip-rap/ Dams	P C B (0)	Y (N)	(0) B C P
Buildings	P C B (0)	Y N	(0) B C P
Pavement/ Cleared Lot	P C B (0)		(0) B C P
Road/ Railroad	P C B (0)	Y N	(0) B C P
Pipes (Inlet/ Outlet)	P C B (0)	Y N	(0) B C P
Landfill/ Trash	P C B (0)	Y N	(0) B C P
Park/ Lawn	P C B (0)		(0) B C P
Row Crop	P C B (0)		(0) B C P
Pasture/ Range	P C B (0)		(0) B C P
Logging Operations	P C B (0)		(0) B C P
Mining Activity	P C B (0)	Y N	(0) B C P
Vegetation Management	P C B (0)		(0) B C P
Bridges/ Abutments	P C B (0)	Y N	(0) B C P
Orchards/ Vineyards	P C B (0)		(0) B C P

Bank Stability

(score zone 5m upstream and 5m downstream of transect between bankfull - wetted width)

Left Bank	eroded	vulnerable	stable
Right Bank	eroded	vulnerable	stable

Inter-Transect: LJ

Wetted Width (m): 13.5

Inter-Transect Substrates

Position	Dist from LB (m)	Depth (cm)	mm/ size class	% Cobble Embed.	CPOM	Microalgae Thickness Code	Macroalgae Attached	Macroalgae Unattached	Macrophytes
Left Bank	.5	31	BLD	—	P (A)	0	P (A) D	P (A) D	P (A) D
Left Center	3.5	54	BED	—	P (A)	1	P (A) D	P (A) D	P (A) D
Center	7	0	BED	—	P (A)	0	P (A) D	P (A) D	P (A) D
Right Center	10.5	108	BLD	—	P (A)	1	P (A) D	P (A) D	P (A) D
Right Bank	13	33	BED	—	P (A)	2	P (A) D	P (A) D	P (A) D
	Note: Substrate sizes can be recorded either as direct measures of the median axis of each particle or one of the size class categories listed on the supplemental page (direct measurements preferred)								

Microalgae Thickness Codes
0 = No microalgae present. Feels rough, not slimy;
1 = Present but not visible. Feels slimy;
2 = Present and visible but <1mm. Rubbing fingers on surface produces a brownish tint on them, scraping leaves visible trail;
3 = 1-5mm;
4 = 5-20mm;
5 = >20mm;
UD = Cannot determine if microalgae present, substrate too small or covered with silt (formerly Z code);
D = Dry, not assessed

Flow Habitats (%)	
Channel Type	%
Cascade/Falls	20
Rapid	
Riffle	
Run	
Glide	40
Pool	40
Dry	

SWAMP Stream Habitat Characterization Form — FULL VERSION — Revision Date: February 9th, 2011

Site Code:	Site Name: MYP abv NYR	Date: __/__/2011
Wetted Width (m): 21	Bankfull Width (m): 28	Bankfull Height (m): 2.5

Transect J

Transect Substrates

Position	Dist from LB (m)	Depth (cm)	mm/ size class	% Cobble Embed.	CPOM	Microalgae Thickness Code	Macroalgae Attached	Macroalgae Unattached	Macrophytes
Left Bank	.5	23	BLD	—	(P) A	0	P (A) D	P (A) D	P (A) D
Left Center	5	59	COB	30	P (A)	2	P (A) D	P (A) D	P (A) D
Center	(7.5) 10.5	(A)	BED	—	(P) A	0	P (A) D	P (A) D	P (A) D
Right Center	15.5	64	BLD	—	P (A)	2	P (A) D	P (A) D	P (A) D
Right Bank	20.5	39	BLD	—	P (A)	0	P (A) D	P (A) D	P (A) D

Note: Substrate sizes can be recorded either as direct measures of the median axis of each particle or one of the size class categories listed on the supplemental page (direct measurements preferred).

Microalgae Thickness Codes
0 = No microalgae present. Feels rough, not slimy;
1 = Present but not visible. Feels slimy;
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3 = 1-5mm;
4 = 5-20mm;
5 = >20mm;
UD = Cannot determine if microalgae present, substrate too small or covered with silt (formerly Z code);
D = Dry, not assessed

Riparian Vegetation (facing downstream)

0 = Absent (0%) 3 = Heavy (40-75%)
1 = Sparse (<10%) 4 = Very Heavy (>75%)
2 = Moderate (10-40%)

Vegetation Class	Left Bank	Right Bank
Upper Canopy (>5 m high)		
Trees and saplings >5 m high	0 (1) (2) 3 4	0 (1) 2 3 4
Lower Canopy (0.5 m-5 m high)		
All vegetation 0.5 m to 5 m	0 1 (2) 3 4	0 (1) 2 3 4
Ground Cover (<0.5 m high)		
Woody shrubs & saplings <0.5 m	0 1 (2) 3 4	0 1 (2) 3 4
Herbs/ grasses	0 (1) 2 3 4	0 (1) 2 3 4
Barren, bare soil/ duff	0 1 2 3 (4)	0 1 2 3 (4)

Instream Habitat Complexity

0 = Absent (0%)
1 = Sparse (<10%)
2 = Moderate (10-40%)
3 = Heavy (40-75%)
4 = Very Heavy (>75%)

Filamentous Algae	(0) 1 2 3 4
Aquatic Macrophytes/ Emergent Vegetation	(0) 1 2 3 4
Boulders	0 1 2 (3) 4
Woody Debris >0.3 m	(0) 1 2 3 4
Woody Debris <0.3 m	0 1 2 3 4
Undercut Banks	0 1 2 3 4
Overhang. Vegetation	0 1 2 3 4
Live Tree Roots	0 1 2 3 4
Artificial Structures	0 1 2 3 4

Densiometer Readings (0-17)
count covered dots

Center Left	13
Center Upstream	2
Center Right	9
Center Downstream	2
Optional	
Left Bank	—
Right Bank	—

Human Influence (circle only the closest to wetted channel)

0 = Not Present;
B = On Bank;
C = Between Bank & 10m from Channel;
P = >10m+<50m from Channel;
Channel (record Yes or No)

	Left Bank	Channel	Right Bank
Walls/ Rip-rap/ Dams	P C B (0)	Y (N)	(0) B C P
Buildings	P C B 0	Y N	0 B C P
Pavement/ Cleared Lot	P C B 0		0 B C P
Road/ Railroad	P C B 0	Y N	0 B C P
Pipes (Inlet/ Outlet)	P C B 0	Y N	0 B C P
Landfill/ Trash	P C B 0	Y N	0 B C P
Park/ Lawn	P C B 0		0 B C P
Row Crop	P C B 0		0 B C P
Pasture/ Range	P C B 0		0 B C P
Logging Operations	P C B 0		0 B C P
Mining Activity	P C B 0	Y N	0 B C P
Vegetation Management	P C B 0		0 B C P
Bridges/ Abutments	P C B 0	Y N	0 B C P
Orchards/ Vineyards	P C B 0		0 B C P

Bank Stability

(observe up to 100m downstream and 50m downstream of transect between bankfull - wetted width)

Left Bank	eroded	vulnerable	(stable)
Right Bank	eroded	vulnerable	(stable)

Inter-Transect: JK

Wetted Width (m): 13

Inter-Transect Substrates

Position	Dist from LB (m)	Depth (cm)	mm/ size class	% Cobble Embed.	CPOM	Microalgae Thickness Code	Macroalgae Attached	Macroalgae Unattached	Macrophytes
Left Bank	.5	0	BLD	—	(P) A	0	P (A) D	P (A) D	P (A) D
Left Center	6	50	COB	40	P (A)	0	P (A) D	P (A) D	P (A) D
Center	11.5	51	COB	60	P (A)	2	P (A) D	P (A) D	P (A) D
Right Center	17.5	20	BLD	—	P (A)	0	(P) A D	P (A) D	P (A) D
Right Bank	21.5	9	CG	—	P (A)	0	P (A) D	P (A) D	P (A) D

Note: Substrate sizes can be recorded either as direct measures of the median axis of each particle or one of the size class categories listed on the supplemental page (direct measurements preferred)

Microalgae Thickness Codes
0 = No microalgae present. Feels rough, not slimy;
1 = Present but not visible. Feels slimy;
2 = Present and visible but <1mm. Rubbing fingers on surface produces a brownish tint on them, scraping leaves visible trail;
3 = 1-5mm;
4 = 5-20mm;
5 = >20mm;
UD = Cannot determine if microalgae present, substrate too small or covered with silt (formerly Z code);
D = Dry, not assessed

Flow Habitats
(% between transects, visual est.)

Channel Type	%
Cascade/ Falls	40
Rapid	
Riffle	
Run	40
Glide	
Pool	20
Dry	

SWAMP Stream Habitat Characterization Form FULL VERSION Revision Date: February 9th, 2011

Site Code:	Site Name: MYR abv NYR	Date: ___/___/2011
Wetted Width (m): 16	Bankfull Width (m): 25 / Bankfull Height (m): 1.5	**Transect K**

Transect Substrates

Position	Dist from LB (m)	Depth (cm)	mm/ size class	% Cobble Embed	CPOM	Microalgae Thickness Code	Macroalgae Attached	Macroalgae Unattached	Macrophytes
Left Bank	.5	38	COB	30	P (A)	6	P A D	P A D	P A D
Left Center	4	81	COB	80	(P) A	2	P (A) D	P (A) D	P (A) D
Center	8	112	COB	50	P (A)	2	P (A) D	P (A) D	P (A) D
Right Center	12	76	FB	—	P (A)	0	P (A) D	P (A) D	P (A) D
Right Bank	15.5	19	COB	70	(P) A	0	P (A) D	P (A) D	P (A) D

Note: Substrate sizes can be recorded either as direct measures of the median axis of each particle or one of the size class categories listed on the supplemental page (direct measurements preferred)

Microalgae Thickness Codes
0 = No microalgae present. Feels rough, not slimy;
1 = Present but not visible. Feels slimy;
2 = Present and visible but <1mm; Rubbing fingers on surface produces a brownish tint on them, scraping leaves visible trail;
3 = 1-5mm;
4 = 5-20mm;
5 = >20mm;
U = Cannot determine if microalgae present, substrate too small or covered with silt (formerly Z code);
D = Dry, not assessed

Riparian Vegetation (facing downstream)

0 = Absent (0%) 3 = Heavy (40-75%)
1 = Sparse (<10%) 4 = Very Heavy (>75%)
2 = Moderate (10-40%)

Vegetation Class	Left Bank	Right Bank
Upper Canopy (>5 m high)		
Trees and saplings >5 m high	(0) 1 2 3 4	(0) 1 2 3 4
Lower Canopy (0.5 m-5 m high)		
All vegetation 0.5 m to 5 m	0 1 (2) 3 4	(0) 1 2 3 4
Ground Cover (<0.5 m high)		
Woody shrubs & saplings <0.5 m	0 1 (2) 3 4	0 (1) 2 3 4
Herbs/ grasses	0 (1) 2 3 4	0 (1) 2 3 4
Barren, bare soil/ duff	0 1 2 3 (4)	0 1 2 3 (4)

Instream Habitat Complexity

0 = Absent (0%)
1 = Sparse (<10%)
2 = Moderate (10-40%)
3 = Heavy (40-75%)
4 = Very Heavy (>75%)

Filamentous Algae	(0) 1 2 3 4
Aquatic Macrophytes/ Emergent Vegetation	(0) 1 2 3 4
Boulders	0 1 (2) 3 4
Woody Debris >0.3 m	(0) 1 2 3 4
Woody Debris <0.3 m	(0) 1 2 3 4
Undercut Banks	(0) 1 2 3 4
Overhang. Vegetation	0 (1) 2 3 4
Live Tree Roots	(0) 1 2 3 4
Artificial Structures	(0) 1 2 3 4

Densiometer Readings (0-17)
count covered dots

Center Left	14
Center Upstream	6
Center Right	6
Center Downstream	3
Optional	
Left Bank	—
Right Bank	—

Human Influence (circle only the closest to wetted channel)

0 = Not Present;
B = On Bank;
C = Between Bank & 10m from Channel;
P = >10m+<50m from Channel;
Channel (record Yes or No)

	Left Bank	Channel	Right Bank
Walls/ Rip-rap/ Dams	P C B (0)	Y (N)	(0) B C P
Buildings	P C B 0	Y N	0 B C P
Pavement/ Cleared Lot	P C B 0		0 B C P
Road/ Railroad	P C B 0	Y N	0 B C P
Pipes (Inlet/ Outlet)	P C B 0	Y N	0 B C P
Landfill/ Trash	P C B 0	Y N	0 B C P
Park/ Lawn	P C B 0		0 B C P
Row Crop	P C B 0		0 B C P
Pasture/ Range	P C B 0		0 B C P
Logging Operations	P C B 0		0 B C P
Mining Activity	P C B 0	Y N	0 B C P
Vegetation Management	P C B 0		0 B C P
Bridges/ Abutments	P C B 0	Y N	0 B C P
Orchards/ Vineyards	P C B 0		0 B C P

Bank Stability

Inspect zone between 5m upstream and 5m downstream of transect between bankfull width (1 width)

Left Bank	eroded	vulnerable	(stable)
Right Bank	eroded	vulnerable	(stable)

TAKE PHOTOGRAPHS
(check box if taken & record photo code)

Downstream (**required**) ☒
177

Upstream (**optional**) ☒
178

Site Code:	Date: __ __ / __ __ / 2011

FULL FORM

BENTHIC INVERTEBRATE SAMPLES

Collection Method (indicate standard or margin-center-margin)			Replicate	# jars
RWB (standard)	**RWB** (MCM)	**TRC**	1	
RWB (standard)	**RWB** (MCM)	**TRC**	2	
RWB (standard)	**RWB** (MCM)	**TRC**		
RWB (standard)	**RWB** (MCM)	**TRC**		

Field Notes/ Comments:

Chemistry Equipment ID

Analyte	Equipment
pH	
temperature	
dissolved oxygen	
specific conductance	
salinity	
alkalinity	
turbidity	
silica	
Velocity	

ALGAE SAMPLES

Collection Method (circle one or write new method if applicable)	SWAMP EMAP	SWAMP EMAP	SWAMP EMAP	SWAMP EMAP
Collection Device (sum # of transects per device)	**Rep. 1**	**Rep. 2**	**Rep.**	**Rep.**
Rubber Delimiter (area=12.6cm^2)				
PVC Delimiter (area=12.6cm^2)				
Syringe Scrubber (area=5.3cm^2)				
Other area=				
Number of transects sampled (0-11)				
Composite Volume (mL)				
Assemblage ID volume **(diatoms)** (50 mL tube)				
Assemblage ID volume **(soft algae)** (50 mL tube)				
Check if Qualitative Algae sample was collected with soft algae/diatom sample (required even if macroalgae not visible)	☐	☐	☐	☐
Check if a water chem. **integrated** sample was collected (chl, AFDM)	☐	☐	☐	☐
Chlorophyll a volume use GF/F filter (25 mL **(preferred volume)**				
Ash Free Dry Mass (AFDM) volume use GF/F filter (25 mL **(preferred vol)**				

Water and Sediment Chemistry Samples

Check if a WATER chemistry **grab** sample was collected (nutrients, SSC, etc.)	☐
Check if a DUPLICATE WATER chemistry **grab** sample was collected	☐
Check if a SEDIMENT chemistry sample was collected	☐
Check if a DUPLICATE SEDIMENT chemistry sample was collected	☐

Sediment Collection Device: SCOOP CORE GRAB

Material: Stainless Steel Polyethylene Polycarbonate Other

Sediment Collection Depth (cm): 2 or 5

Create Lab Collection records for each checked box for integrated and grab water chemistry samples

ADDITIONAL PHOTOGRAPHS

Description	Photo Code	Description	Photo Code

Flow Habitat Type	DESCRIPTION
Cascades	Short, high gradient drop in stream bed elevation often accompanied by boulders and considerable turbulence
Falls	High gradient drop in elevation of the stream bed associated with an abrupt change in the bedrock
Rapids	Sections of stream with swiftly flowing water and considerable surface turbulence. Rapids tend to have larger substrate sizes than riffles
Riffles	Shallow sections where the water flows over coarse stream bed particles that create mild to moderate surface turbulence; (< 0.5 m deep, > 0.3 m/s).
Runs	Long, relatively straight, low-gradient sections without flow obstructions. The stream bed is typically even and the water flows faster than it does in a pool; (> 0.5 m deep, > 0.3 m/s). A **step-run** is a series of runs separated by short riffles or flow obstructions that cause discontinuous breaks in slope
Glides	A section of stream with little or no turbulence, but faster velocity than pools; (< 0.5 m deep, < 0.3 m/s)
Pools	A reach of stream that is characterized by deep, low-velocity water and a smooth surface; (> 0.5 m deep, < 0.3 m/s)

Size Class Code	Size Class Range	Size Class Description	Common Size Reference
RS	> 4 m	bedrock, smooth	larger than a car
RR	> 4 m	bedrock, rough	larger than a car
XB	1 - 4 m	boulder, large	meter stick to car
SB	25 cm - 1.0 m	boulder, small	basketball to meter stick
CB	64 - 250 mm	cobble	tennis ball to basketball
GC	16 - 64 mm	gravel, coarse	marble to tennis ball
GF	2 – 16 mm	gravel, fine	ladybug to marble
SA	0.06 – 2 mm	sand	gritty to ladybug
FN	< 0.06 mm	fines	not gritty
HP	< 0.06 mm	hardpan (consolidated fines)	
WD	NA	wood	
RC	NA	concrete/ asphalt	
OT	NA	other	

BANK STABILITY Although this measure of the degree of erosive potential is subjective, it can provide clues to the erosive potential of the banks within the reach. Assign the category whose description best fits the conditions in the area between the wetted channel and bankfull channel (see figure below)	
Eroded	Banks show obvious signs of erosion from the current or previous water year; banks are usually bare or nearly bare
Vulnerable	Banks have some vegetative protection (usually annual growth), but not enough to prevent erosion during flooding
Stable	Bank vegetation has well-developed roots that protect banks from erosion; alternately, bedrock or artificial structures (e.g., concrete/ rip-rap) prevent bank erosion

CPOM/ COBBLE EMBEDDEDNESS

CPOM: Record presence (P) or absence (A) of coarse particulate organic matter (>1.0 mm particles) within 1 cm of each substrate particle

Cobble Embeddedness: Visually estimate % embedded by fine particles (record to nearest 5%)

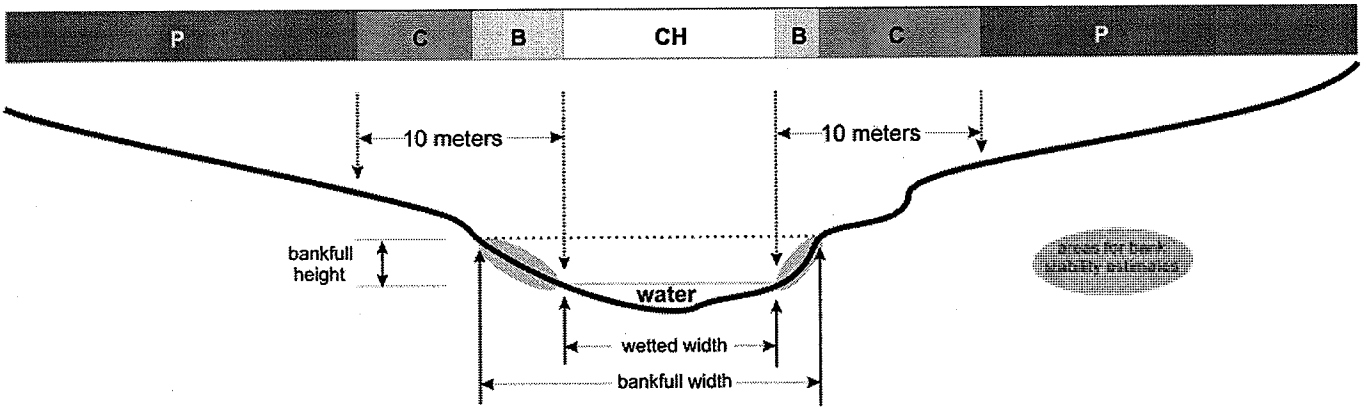


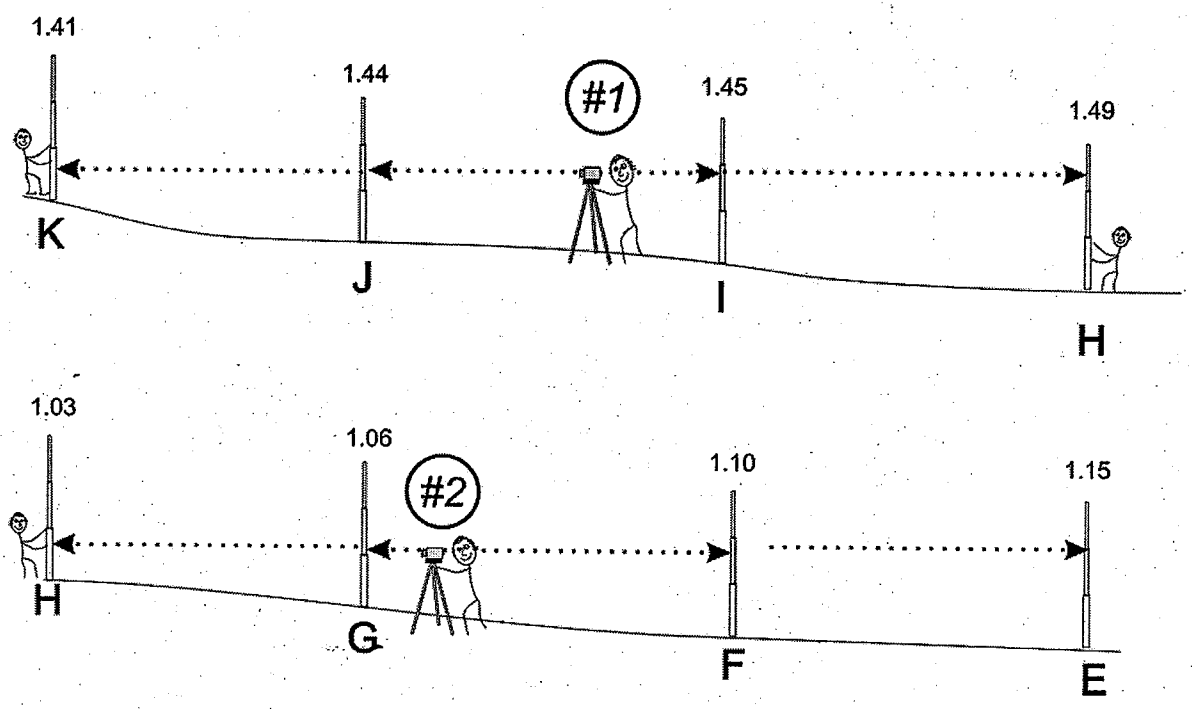
Figure 1. Cross-sectional diagram of stream transect indicating regions for assessing human influence measures:

- The measurement zone extends 5 meters upstream and 5 meters downstream of each transect
- Record one category for each bank and for the wetted channel (3 values possible)
- In reaches with wide banks, region "C" may be entirely overlapped by region "B"; in these cases, circle "B"
- Region "P" extends from 10 meters to the distance that can be seen from the channel, but not greater than 50 m

SLOPE and BEARING FORM — EXAMPLE

AUTOLEVEL	X
CLINOMETER	
HANDLEVEL	

Starting Transect	MAIN SEGMENT (record percent of inter-transect distance in each segment if supplemental segments are used)						SUPPLEMENTAL SEGMENT (record percent of inter-transect distance in each segment if supplemental segments are used)				
	Stadia rod measurements		Slope (%) or Elevation Difference cm ■ % □	Segment Length (m)	Bearing (0°-359°)	Percent of Total Length (%)	Stadia rod measurements		Slope or Elevation Difference cm □ % □	Segment Length (m)	Bearing (0°-359°)	Percent of Total Length (%)
K	1.41											
J	1.44		3	15	140	100						
I	1.45		1	15	145	100						
H	1.49	1.03	4	15	150	100						
G		1.06	3	15	143	100						
F		1.10	4	15	187	100						
E		1.15	5	15	195	100						



1. Level the autolevel at Position #1
2. Place base of stadia rod at water level every time
3. Sight to stadia rod at Transect K, then Transect J
4. Rotate scope and sight to Transects I and H.
5. Move level to Position #2 and re-level
6. Re-sight to stadia rod at Transect H, then Transect G
7. Rotate scope and sight to Transects F and E

Note: Sites will vary in the number of separate level positions needed to survey the reach.

SWAMP Stream Habitat Characterization Form — FULL VERSION — Revision Date: February 9th, 2011

REACH DOCUMENTATION

Standard Reach Length (wetted width ≤ 10 m) = 150 m Distance between transects = 15 m
Alternate Reach Length (wetted width >10 m) = 250 m Distance between transects = 25 m

Project Name: YCWA	Date: 7 / 14 / 2010 Sample Collection Time: 1230
Stream Name: YUBA RIVER	Site Name/ Description: YUBA ABV COLGATE
Site Code: YCBMI-7	Crew Members: C. Venucci, C. Wiseman, M. Ashenfelter
Latitude (actual – decimal degrees): UTM BOTTOM 656559	datum: NAD83 other:
Longitude (actual – decimal degrees): 4355374	GPS Device: GARMIN 60

AMBIENT WATER QUALITY MEASUREMENTS

turbidity and silica are optional; calibration date required

Temp (Deg C)	23.6	pH	8.2	Alkalinity (mg/L)	—	Turbidity (ntu)	0
		cal. date				cal. date	
Dissolved O² (mg/L)	7.7	Specific Conduct (uS/cm)	129	Salinity (ppt)	—	Silica (mg/L)	—
cal. date		cal. date		cal. date		cal. date	

REACH LENGTH

Actual Length (m) (see reach length guidelines at top of form)	250
Explanation:	>10 m

DISCHARGE MEASUREMENTS

1st measurement = left bank (looking downstream)

check if discharge measurements not possible (explain in field notes section) ☒

VELOCITY AREA METHOD (preferred)

cal. date 75 — Transect Width (m):

	Distance from Left Bank (cm)	Depth (cm)	Velocity (ft/sec)		Distance from Left Bank (cm)	Depth (cm)	Velocity (ft/sec)
1				11			
2	no flow taken			12			
3				13			
4				14			
5				15			
6	flow approx 75 cfs based on available gage data.			16			
7				17			
8				18			
9				19			
10				20			

BUOYANT OBJECT METHOD (use ONLY if velocity area method not possible)

	Float 1	Float 2	Float 3
Distance (m)			
Float Time (sec)			

Float Reach Cross Section

width (m) depth(cm)	Upper Section	Middle Section	Lower Section
Width			
Depth 1			
Depth 2			
Depth 3			
Depth 4			
Depth 5			

NOTABLE FIELD CONDITIONS (check one box per topic)

Evidence of recent rainfall (enough to increase surface runoff)	NO	X	minimal		>10% flow increase	
Evidence of fires in reach or immediately upstream (<500 m)	NO	X	< 1 year		< 5 years	
Dominant landuse/ landcover in area surrounding reach	Agriculture		Forest	X	Rangeland	
	Urban/ Industrial		Suburb/Town		Other	

ADDITIONAL COBBLE EMBEDDEDNESS MEASURES

(carry over from transect forms if needed to attain target count of 25; measure in %)

1	2	3	4	5	6	7	8	9	10	11	12	13
0	0	0	0	15	25	40	0	30	70	50	5	5
14	15	16	17	18	19	20	21	22	23	24	25	
5	10	15	0	0	5	10						

Site Code: Date: 07/14/2010

SLOPE and BEARING FORM (transect based - for Full PHAB only)

AUTOLEVEL
CLINOMETER ///
HANDLEVEL
OTHER

Starting Transect	MAIN SEGMENT (record percent of inter-transect distance in each segment if supplemental segments are used)					SUPPLEMENTAL SEGMENT (record percent of inter-transect distance in each segment if supplemental segments are used)				
	Stadia rod measurements	Slope (%) or Elevation Difference cm ☐ % ☒	Segment Length (m)	Bearing (0°-359°)	Percent of Total Length (%)	Stadia rod measurements	Slope or Elevation Difference cm ☐ % ☐	Segment Length (m)	Bearing (0°-359°)	Percent of Total Length (%)
K										
J		2	25		10					
I		0	↓		↓					
H		0								
G		5								
F		5								
E		0								
D		2								
C		11								
B		3								
A		2								
additional calculation area										

ADDITIONAL HABITAT CHARACTERIZATION

High Gradient ☒ Low Gradient ☐

Parameter	Optimal	Suboptimal	Marginal	Poor
Epifaunal Substrate/ Cover	Greater than 70% of substrate favorable for epifaunal colonization and fish cover (50% for low-gradient streams); mix of submerged logs, undercut banks, cobble or other stable habitat	40-70% mix of stable habitat (30-50% for low-gradient streams); well-suited for full colonization potential	20-40% mix of stable habitat (10-30% in low-gradient streams); substrate frequently disturbed or removed	Less than 20% stable habitat (10% in low-gradient streams); lack of habitat is obvious; substrate unstable or lacking
Score:	20 19 18 17 16	(15) 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
Sediment Deposition	Little or no enlargement of islands or point bars and less than 5% of the bottom affected by sediment deposition (<20% in low-gradient streams)	Some new increase in bar formation, mostly from gravel, sand, or fine sediment; 5-30% of the bottom affected (20-50% in low-gradient streams)	Moderate deposition of new gravel, sand, or fine sediment on bars; 30-50% of the bottom affected (50 - 80% in low-gradient streams)	Heavy deposits of fine material, increased bar development; more than 50% of the bottom changing frequently (>80% in low-gradient streams)
Score:	20 19 18 (17) 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
Channel Alteration	Channelization or dredging absent or minimal; stream with normal pattern	Some channelization present, (e.g., bridge abutments); evidence of past channelization (> 20yrs) may be present but recent channelization not present	Channelization may be extensive; embankments or shoring structures present on both banks; 40 to 80% of stream reach disrupted	Banks shored with gabian 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 0

SWAMP Stream Habitat Characterization Form FULL VERSION Revision Date: February 9th, 2011

Site Code:	Site Name: YR abv CPH	Date: 7/14/2012
Wetted Width (m): 15	Bankfull Width (m): 19	Bankfull Height (m):

Transect A

Transect Substrates

Position	Dist from LB (m)	Depth (cm)	mm/ size class	% Cobble Embed.	CPOM	Microalgae Thickness Code	Macroalgae Attached	Macroalgae Unattached	Macrophytes
Left Bank	.5	18	CG	—	P (A)	0	P (A) D	P (A) D	P (A) D
Left Center	4	70	COB	10	P (A)	1	P (A) D	P (A) D	P (A) D
Center	7.5	103	BLD	—	P (A)	1	P (A) D	P (A) D	P (A) D
Right Center	11.5	0	BED	—	P (A)	0	P (A) D	P (A) D	P (A) D
Right Bank	14.5	86	BED	—	P (A)	0	P (A) D	P (A) D	P (A) D

Note: Substrate sizes can be recorded either as direct measures of the median axis of each particle or one of the size class categories listed on the supplemental page (direct measurements preferred)

Microalgae Thickness Codes
0 = No microalgae present. Feels rough, not slimy;
1 = Present but not visible. Feels slimy;
2 = Present and visible but <1mm. Rubbing fingers on surface produces a brownish tint on them, scraping leaves visible trail;
3 = 1-5mm;
4 = 5-20mm;
5 = >20mm;
UD = Cannot determine if microalgae present, substrate too small or covered with silt (formerly Z code);
D = Dry, not assessed

RIPARIAN VEGETATION (facing downstream)
0 = Absent (0%) 3 = Heavy (40-75%)
1 = Sparse (<10%) 4 = Very Heavy (>75%)
2 = Moderate (10-40%)

Vegetation Class	Left Bank	Right Bank
Upper Canopy (>5 m high)		
Trees and saplings >5 m high	(0) 1 2 3 4	0 1 2 3 4
Lower Canopy (0.5 m-5 m high)		
All vegetation 0.5 m to 5 m	0 (1) 2 3 4	0 (1) 2 3 4
Ground Cover (<0.5 m high)		
Woody shrubs & saplings <0.5 m	(0) 1 2 3 4	0 (1) 2 3 4
Herbs/ grasses	(0) 1 2 3 4	0 (1) 2 3 4
Barren, bare soil/ duff	0 1 2 3 (4)	0 1 2 3 (4)

INSTREAM HABITAT COMPLEXITY
0 = Absent (0%)
1 = Sparse (<10%)
2 = Moderate (10-40%)
3 = Heavy (40-75%)
4 = Very Heavy (>75%)

Filamentous Algae	(0) 1 2 3 4
Aquatic Macrophytes/ Emergent Vegetation	(0) 1 2 3 4
Boulders	0 1 (2) 3 4
Woody Debris >0.3 m	(0) 1 2 3 4
Woody Debris <0.3 m	(0) 1 2 3 4
Undercut Banks	(0) 1 2 3 4
Overhang. Vegetation	(0) 1 2 3 4
Live Tree Roots	(0) 1 2 3 4
Artificial Structures	(0) 1 2 3 4

DENSIOMETER READINGS (0-17)
count covered dots

Center Left	8
Center Upstream	1
Center Right	8
Center Downstream	2
Optional	
Left Bank	—
Right Bank	—

HUMAN INFLUENCE (circle only the closest to wetted channel)
0 = Not Present;
B = On Bank;
C = Between Bank & 10m from Channel;
P = >10m+ <50m from Channel;
Channel (record Yes or No)

	Left Bank	Channel	Right Bank
Walls/ Rip-rap/ Dams	P C B (0)	Y (N)	(0) B C P
Buildings	P C B (0)	Y (N)	(0) B C P
Pavement/ Cleared Lot	P C B (0)		(0) B C P
Road/ Railroad	P C B (0)	Y (N)	(0) B C P
Pipes (Inlet/ Outlet)	P C B (0)	Y (N)	(0) B C P
Landfill/ Trash	P C (B) 0	(Y) N	(0) B C P
Park/ Lawn	P C B (0)		(0) B C P
Row Crop	P C B (0)		(0) B C P
Pasture/ Range	P C B (0)		(0) B C P
Logging Operations	P C B (0)		(0) B C P
Mining Activity	P C B (0)	Y (N)	(0) B C P
Vegetation Management	P C B (0)		(0) B C P
Bridges/ Abutments	P C B (0)	Y (N)	(0) B C P
Orchards/ Vineyards	P C B (0)		(0) B C P

BANK STABILITY
(Score 20' & 5m upstream and 5m downstream of transect between bankfull - wetted width)

Left Bank	eroded	vulnerable	(stable)
Right Bank	eroded	vulnerable	(stable)

TAKE PHOTOGRAPHS (check box if taken & record photo code)

Downstream (optional)	☒ 203
Upstream (required)	☒ 204

Inter-Transect: AB

Wetted Width (m): 16

Inter-Transect Substrates

Position	Dist from LB (m)	Depth (cm)	mm/ size class	% Cobble Embed.	CPOM	Microalgae Thickness Code	Macroalgae Attached	Macroalgae Unattached	Macrophytes
Left Bank	1.5	20	BED	—	P (A)	1	P A D	P (A) D	P (A) D
Left Center	4	108	BED	—	P (A)	0	P (A) D	P (A) D	P (A) D
Center	8	112	BED	~	P (A)	0	P (A) D	P (A) D	P (A) D
Right Center	12	128	BED	—	P (A)	0	P (A) D	P (A) D	P (A) D
Right Bank	15.5	19	CG	—	P (A)	0	P (A) D	P (A) D	P (A) D

Note: Substrate sizes can be recorded either as direct measures of the median axis of each particle or one of the size class categories listed on the supplemental page (direct measurements preferred)

Microalgae Thickness Codes
0 = No microalgae present. Feels rough, not slimy.
1 = Present but not visible. Feels slimy.
2 = Present and visible but <1mm; Rubbing fingers on surface produces a brownish tint on them, scraping leaves visible trail.
3 = 1-5mm.
4 = 5-20mm.
5 = >20mm.
UD = Cannot determine if microalgae present, substrate too small or covered with silt (formerly Z code).
D = Dry, not assessed

Flow Habitats

Channel Type	%
Cascade/Falls	
Rapid	
Riffle	
Run	100
Glide	
Pool	
Dry	

w/ some eddy

Site Code:	Site Name: YR abv CPH	Date: 07/14/2012
Wetted Width (m): 18	Bankfull Width (m): 24 / Bankfull Height (m): 1.5	**Transect B**

Transect Substrates

Position	Dist from LB (m)	Depth (cm)	mm/ size class	% Cobble Embed.	CPOM	Microalgae Thickness Code	Macroalgae Attached	Macroalgae Unattached	Macrophytes
Left Bank	.5	80	BED	—	P (A)	0	P (A) D	P (A) D	P (A) D
Left Center	4.5	107	BED	—	P (A)	0	P (A) D	P (A) D	P (A) D
Center	9	11	BLD	—	P (A)	1	P (A) D	P (A) D	P (A) D
Right Center	13.5	75	BLD	—	P (A)	0	P (A) D	P (A) D	P (A) D
Right Bank	17.5	86	BLD	—	P (A)	2	P (A) D	P (A) D	P (A) D

Note: Substrate sizes can be recorded either as direct measures of the median axis of each particle or one of the size class categories listed on the supplemental page (direct measurements preferred).

Microalgae Thickness Codes
0 = No microalgae present. Feels rough, not slimy;
1 = Present but not visible, Feels slimy;
2 = Present and visible but <1mm; Rubbing fingers on surface produces a brownish tint on them, scraping leaves visible trail.
3 = 1-5mm;
4 = 5-20mm;
5 = >20mm;
UD = Cannot determine if microalgae present, substrate too small or covered with silt (formerly Z code).
D = Dry, not assessed

Riparian Vegetation (facing downstream)

0 = Absent (0%) 1 = Sparse (<10%) 2 = Moderate (10-40%) 3 = Heavy (40-75%) 4 = Very Heavy (>75%)

Vegetation Class	Left Bank	Right Bank
Upper Canopy (>5 m high)		
Trees and saplings >5 m high	(0) 1 2 3 4	(0) 1 2 3 4
Lower Canopy (0.5 m-5 m high)		
All vegetation 0.5 m to 5 m	0 (1) 2 3 4	0 (1) 2 3 4
Ground Cover (<0.5 m high)		
Woody shrubs & saplings <0.5 m	0 (1) 2 3 4	0 (1) 2 3 4
Herbs/ grasses	0 (1) 2 3 4	0 (1) 2 3 4
Barren, bare soil/ duff	0 1 2 3 (4)	0 1 2 3 (4)

Instream Habitat Complexity

0 = Absent (0%) 1 = Sparse (<10%) 2 = Moderate (10-40%) 3 = Heavy (40-75%) 4 = Very Heavy (>75%)

Item	Score
Filamentous Algae	(0) 1 2 3 4
Aquatic Macrophytes/ Emergent Vegetation	(0) 1 2 3 4
Boulders	0 1 (2) 3 4
Woody Debris >0.3 m	(0) 1 2 3 4
Woody Debris <0.3 m	(0) 1 2 3 4
Undercut Banks	(0) 1 2 3 4
Overhang. Vegetation	(0) 1 2 3 4
Live Tree Roots	(0) 1 2 3 4
Artificial Structures	(0) 1 2 3 4

Densiometer Readings (0-17)

count covered dots

Position	Reading
Center Left	7
Center Upstream	1
Center Right	5
Center Downstream	6
Optional	
Left Bank	—
Right Bank	—

Human Influence (circle only the closest to wetted channel)

0 = Not Present; B = On Bank; C = Between Bank & 10m from Channel; P = >10m+<50m from Channel; Channel (record Yes or No)

Item	Left Bank	Channel	Right Bank
Walls/ Rip-rap/ Dams	P C B (0)	Y (N)	(0) B C P
Buildings	P C B 0	Y N	0 B C P
Pavement/ Cleared Lot	P C B 0		0 B C P
Road/ Railroad	P C B 0	Y N	0 B C P
Pipes (Inlet/ Outlet)	P C B 0	Y N	0 B C P
Landfill/ Trash	P C B 0	Y N	0 B C P
Park/ Lawn	P C B 0		0 B C P
Row Crop	P C B 0		0 B C P
Pasture/ Range	P C B 0		0 B C P
Logging Operations	P C B 0		0 B C P
Mining Activity	P C (B) 0	(Y) N	0 B C P
Vegetation Management	P C B 0		0 B C P
Bridges/ Abutments	P C B 0	Y N	0 B C P
Orchards/ Vineyards	P C B 0		0 B C P

Bank Stability

(score zone 5m upstream and 5m downstream of transect between bankfull - wetted width)

Bank			
Left Bank	eroded	vulnerable	(stable)
Right Bank	eroded	vulnerable	(stable)

Inter-Transect: BC

Wetted Width (m): 17

Inter-Transect Substrates

Position	Dist from LB (m)	Depth (cm)	mm/ size class	% Cobble Embed	CPOM	Microalgae Thickness Code	Macroalgae Attached	Macroalgae Unattached	Macrophytes
Left Bank	.5	25	BED	—	P (A)	0	(P) A D	P (A) D	P (A) D
Left Center	4	107	BED	—	P (A)	1	(P) A D	P (A) D	P (A) D
Center	8.5	0	BED	—	P (A)	0	P (A) D	P (A) D	P (A) D
Right Center	12.5	107	BED	—	P A	2	(P) A D	P (A) D	P (A) D
Right Bank	16.5	41	BED	—	P (A)	1	P (A) D	P (A) D	P A D
	Note: Substrate sizes can be recorded either as direct measures of the median axis of each particle or one of the size class categories listed on the supplemental page (direct measurements preferred)								

Microalgae Thickness Codes
0 = No microalgae present. Feels rough, not slimy.
1 = Present but not visible. Feels slimy.
2 = Present and visible but <1mm; Rubbing fingers on surface produces a brownish tint on them, scraping leaves visible trail.
3 = 1-5mm.
4 = 5-20mm.
5 = >20mm.
UD = Cannot determine if microalgae present, substrate too small or covered with silt (formerly Z code).
D = Dry, not assessed

Flow Habitats
(% wetted surface, total = 100%)

Channel Type	%
Cascade/ Falls	
Rapid	
Riffle	
Run	60
Glide	
Pool	40
Dry	

SWAMP Stream Habitat Characterization Form — FULL VERSION — Revision Date: February 9th, 2011

Site Code:	Site Name: YR abv CPH	Date: 07/14/2010 2
Wetted Width (m): 15	Bankfull Width (m): 18	Bankfull Height (m): 1.5
		Transect C

Transect Substrates

Position	Dist from LB (m)	Depth (cm)	mm/ size class	% Cobble Embed	CPOM	Microalgae Thickness Code	Macroalgae Attached	Macroalgae Unattached	Macrophytes
Left Bank	.5	21	BLD	—	P (A)	1	(P) A D	P (A) D	P (A) D
Left Center	4	143	COB	6	P (A)	0	P (A) D	P (A) D	P (A) D
Center	7.5	0	BLD	—	P (A)	0	P (A) D	P (A) D	P (A) D
Right Center	11.5	300	COB	10	P (A)	0	P (A) D	P (A) D	P (A) D
Right Bank	14.5	157	BLD	—	(P) A		P (A) D	P (A) D	P (A) D

Note: Substrate sizes can be recorded either as direct measures of the median axis of each particle or one of the size class categories listed on the supplemental page (direct measurements preferred)

Microalgae Thickness Codes
0 = No microalgae present. Feels rough, not slimy;
1 = Present but not visible. Feels slimy;
2 = Present and visible but <1mm; Rubbing fingers on surface produces a brownish tint on them, scraping leaves visible trail;
3 = 1-5mm;
4 = 5-20mm;
5 = >20mm;
UD = Cannot determine if microalgae present, substrate too small or covered with silt (formerly Z code);
D = Dry, not assessed

Riparian Vegetation (facing downstream)

0 = Absent (0%) 3 = Heavy (40-75%)
1 = Sparse (<10%) 4 = Very Heavy (>75%)
2 = Moderate (10-40%)

Vegetation Class	Left Bank	Right Bank
Upper Canopy (>5 m high)		
Trees and saplings >5 m high	(0) 1 2 3 4	(0) 1 2 3 4
Lower Canopy (0.5 m-5 m high)		
All vegetation 0.5 m to 5 m	(0) 1 2 3 4	(0) 1 2 3 4
Ground Cover (<0.5 m high)		
Woody shrubs & saplings <0.5 m	(0) 1 2 3 4	0 (1) 2 3 4
Herbs/ grasses	(0) 1 2 3 4	(0) 1 2 3 4
Barren, bare soil/ duff	0 1 2 3 (4)	0 1 2 3 (4)

Instream Habitat Complexity

0 = Absent (0%)
1 = Sparse (<10%)
2 = Moderate (10-40%)
3 = Heavy (40-75%)
4 = Very Heavy (>75%)

Filamentous Algae	(0) 1 2 3 4
Aquatic Macrophytes/ Emergent Vegetation	(0) 1 2 3 4
Boulders	0 1 (2) 3 4
Woody Debris >0.3 m	(0) 1 2 3 4
Woody Debris <0.3 m	(0) 1 2 3 4
Undercut Banks	(0) 1 2 3 4
Overhang. Vegetation	(0) 1 2 3 4
Live Tree Roots	(0) 1 2 3 4
Artificial Structures	(0) 1 2 3 4

Densiometer Readings (0-17)

count covered dots

Center Left	9 4
Center Upstream	0
Center Right	8
Center Downstream	6
Optional	
Left Bank	—
Right Bank	—

Human Influence (circle only the closest to wetted channel)

0 = Not Present;
B = On Bank;
C = Between Bank & 10m from Channel;
P = >10m+<50m from Channel;
Channel (record Yes or No)

	Left Bank	Channel	Right Bank
Walls/ Rip-rap/ Dams	P C B (0)	Y (N)	(0) B C P
Buildings	P C B 0	Y N	0 B C P
Pavement/ Cleared Lot	P C B 0		0 B C P
Road/ Railroad	P C B 0	Y N	0 B C P
Pipes (Inlet/ Outlet)	P C B 0	Y N	0 B C P
Landfill/ Trash	P C B 0	Y N	0 B C P
Park/ Lawn	P C B 0		0 B C P
Row Crop	P C B 0		0 B C P
Pasture/ Range	P C B 0		0 B C P
Logging Operations	P C B 0		0 B C P
Mining Activity	P C B 0	Y N	0 B C P
Vegetation Management	P C B 0		0 B C P
Bridges/ Abutments	P C B 0	Y N	0 B C P
Orchards/ Vineyards	P C B 0		0 B C P

Bank Stability

(score zone 5m upstream and 5m downstream of transect between last full - wetted width)

Left Bank	eroded	vulnerable	(stable)
Right Bank	eroded	vulnerable	(stable)

Inter-Transect: CD

Wetted Width (m): 14

Inter-Transect Substrates

Position	Dist from LB (m)	Depth (cm)	mm/ size class	% Cobble Embed	CPOM	Microalgae Thickness Code	Macroalgae Attached	Macroalgae Unattached	Macrophytes
Left Bank	.5	15	BED	—	P (A)	1	P (A) D	P (A) D	P (A) D
Left Center	3.5	0	BED	—	P (A)	2	(P) A D	P (A) D	P (A) D
Center	7	60	BED	—	P (A)	0	P (A) D	P (A) D	P (A) D
Right Center	10.5	138	BED	—	P (A)	2	(P) A D	P (A) D	P (A) D
Right Bank	17.5	52	BED	—	P (A)	2	(P) A D	P (A) D	P (A) D
	Note: Substrate sizes can be recorded either as direct measures of the median axis of each particle or one of the size class categories listed on the supplemental page (direct measurements preferred)								

Microalgae Thickness Codes
0 = No microalgae present. Feels rough, not slimy;
1 = Present but not visible. Feels slimy;
2 = Present and visible but <1mm; Rubbing fingers on surface produces a brownish tint on them; scraping leaves visible trail;
3 = 1-5mm;
4 = 5-20mm;
5 = >20mm;
UD = Cannot determine if microalgae present, substrate too small or covered with silt (formerly Z code);
D = Dry, not assessed

Flow Habitats

Channel Type	%
Cascade/Falls	80
Rapid	
Riffle	
Run	
Glide	
Pool	20
Dry	

SWAMP Stream Habitat Characterization Form FULL VERSION Revision Date: February 9th, 2011

Site Code:	Site Name: YR abv CPH	Date: __/__/2011
Wetted Width (m): 18	Bankfull Width (m): 25 / Bankfull Height (m): 1.5	**Transect D**

Transect Substrates

Position	Dist from LB (m)	Depth (cm)	mm/ size class	% Cobble Embed.	CPOM	Microalgae Thickness Code	Macroalgae Attached	Macroalgae Unattached	Macrophytes
Left Bank	.5	24	COB	0	P (A)	2	P (A) D	P (A) D	P (A) D
Left Center	4.5	65	COB	20	P A	0	(P) A D	P (A) D	P (A) D
Center	9	0	BED	—	P (A)	2	P (A) D	P (A) D	P (A) D
Right Center	13.5	106	COB	10	P (A)	2	(P) A D	P (A) D	P (A) D
Right Bank	17.5	126	BLD	—	P (A)	1	P (A) D	P (A) D	P (A) D

Note: Substrate sizes can be recorded either as direct measures of the median axis of each particle or one of the size class categories listed on the supplemental page (direct measurements preferred)

Microalgae Thickness Codes
0 = No microalgae present. Feels rough, not slimy;
1 = Present but not visible. Feels slimy;
2 = Present and visible but <1mm; Rubbing fingers on surface produces a brownish tint on them, scraping leaves visible trail.
3 = 1-5mm;
4 = 5-20mm;
5 = >20mm;
UD = Cannot determine if microalgae present, substrate too small or covered with silt (formerly Z code).
D = Dry, not assessed

RIPARIAN VEGETATION (facing downstream)
0 = Absent (0%) 3 = Heavy (40-75%)
1 = Sparse (<10%) 4 = Very Heavy (>75%)
2 = Moderate (10-40%)

Vegetation Class	Left Bank	Right Bank
Upper Canopy (>5 m high)		
Trees and saplings >5 m high	(0) 1 2 3 4	(0) 1 2 3 4
Lower Canopy (0.5 m-5 m high)		
All vegetation 0.5 m to 5 m	(0) 1 2 3 4	(0) 1 2 3 4
Ground Cover (<0.5 m high)		
Woody shrubs & saplings <0.5 m	0 1 (2) 3 4	0 (1) 2 3 4
Herbs/ grasses	0 (1) 2 3 4	0 (1) 2 3 4
Barren, bare soil/ duff	0 1 2 3 (4)	0 1 2 3 (4)

INSTREAM HABITAT COMPLEXITY
0 = Absent (0%)
1 = Sparse (<10%)
2 = Moderate (10-40%)
3 = Heavy (40-75%)
4 = Very Heavy (>75%)

Filamentous Algae	(0) 1 2 3 4
Aquatic Macrophytes/ Emergent Vegetation	(0) 1 2 3 4
Boulders	0 1 (2) 3 4
Woody Debris >0.3 m	(0) 1 2 3 4
Woody Debris <0.3 m	(0) 1 2 3 4
Undercut Banks	(0) 1 2 3 4
Overhang. Vegetation	(0) 1 2 3 4
Live Tree Roots	(0) 1 2 3 4
Artificial Structures	(0) 1 2 3 4

DENSIOMETER READINGS (0-17)
count covered dots

Center Left	1
Center Upstream	0
Center Right	8
Center Downstream	(0)
Optional	
Left Bank	—
Right Bank	—

HUMAN INFLUENCE (circle only the closest to wetted channel)
0 = Not Present;
B = On Bank;
C = Between Bank & 10m from Channel;
P = >10m+<50m from Channel;
Channel (record Yes or No)

	Left Bank	Channel	Right Bank
Walls/ Rip-rap/ Dams	P C B (0)	Y N	(0) B C P
Buildings	P C B (0)	Y N	(0) B C P
Pavement/ Cleared Lot	P C B (0)		(0) B C P
Road/ Railroad	P C B (0)	Y N	(0) B C P
Pipes (Inlet/ Outlet)	P C B (0)	Y N	(0) B C P
Landfill/ Trash	P C B (0)	(Y) N	(0) B C P
Park/ Lawn	P C B (0)		(0) B C P
Row Crop	P C B (0)		(0) B C P
Pasture/ Range	P C B (0)		(0) B C P
Logging Operations	P C B (0)		(0) B C P
Mining Activity	P C B (0)	Y N	(0) B C P
Vegetation Management	P C B (0)		(0) B C P
Bridges/ Abutments	P C B (0)	Y N	(0) B C P
Orchards/ Vineyards	P C B (0)		(0) B C P

BANK STABILITY
(score zone 5m upstream and 5m downstream of transect between bankfull - wetted width)

Left Bank	eroded	vulnerable	(stable)
Right Bank	eroded	vulnerable	(stable)

Inter-Transect: DE

Wetted Width (m): 16

Inter-Transect Substrates

Position	Dist from LB (m)	Depth (cm)	mm/ size class	% Cobble Embed.	CPOM	Microalgae Thickness Code	Macroalgae Attached	Macroalgae Unattached	Macrophytes
Left Bank	.5	19	CG	—	P (A)	2	P (A) D	P (A) D	P (A) D
Left Center	4	122	COB	0	P A	0	P (A) D	P A D	P A D
Center	8	0	BED	—	P A	0	P (A) D	P A D	P A D
Right Center	12	60	COB	0	P A	1	P (A) D	P A D	P A D
Right Bank	15.5	16	BED	—	P A	0	P (A) D	P A D	P A D
	Note: Substrate sizes can be recorded either as direct measures of the median axis of each particle or one of the size class categories listed on the supplemental page (direct measurements preferred)								

Microalgae Thickness Codes
0 = No microalgae present; Feels rough, not slimy;
1 = Present but not visible; Feels slimy;
2 = Present and visible but <1mm; Rubbing fingers on surface produces a brownish tint on them; scraping leaves visible trail;
3 = 1-5mm;
4 = 5-20mm;
5 = >20mm;
UD = Cannot determine if microalgae present, substrate too small or covered with silt (formerly Z code);
D = Dry; not assessed

Flow Habitats

Channel Type	%
Cascade/Falls	
Rapid	
Riffle	
Run	30
Glide	
Pool	70
Dry	

SWAMP Stream Habitat Characterization Form FULL VERSION Revision Date: February 9th, 2011

Site Code:	Site Name: YR abv CPH	Date: __/__/2011
Wetted Width (m): 17	Bankfull Width (m): 30 / Bankfull Height (m): 2.5	**Transect E**

Transect Substrates

Position	Dist from LB (m)	Depth (cm)	mm/ size class	% Cobble Embed.	CPOM	Microalgae Thickness Code	Macroalgae Attached	Macroalgae Unattached	Macrophytes
Left Bank	.5	59	COB	50	(P) A	2	(P) A D	P (A) D	P (A) D
Left Center	4	110	BLD	—	P (A)	1	P A D	P A D	P A D
Center	8.5	120	BLD	—	P (A)	1	P (A) D	P A D	P A D
Right Center	12.5	COB	BED	—	P (A)	1	P (A) D	P A D	P A D
Right Bank	16.5	62	BED	—	P (A)	1	P (A) D	P (A) D	P (A) D

Note: Substrate sizes can be recorded either as direct measures of the median axis of each particle or one of the size class categories listed on the supplemental page (direct measurements preferred)

Microalgae Thickness Codes
0 = No microalgae present. Feels rough, not slimy;
1 = Present but not visible. Feels slimy;
2 = Present and visible but <1mm; Rubbing fingers on surface produces a brownish tint on them, scraping leaves visible trail.
3 = 1-5mm;
4 = 5-20mm;
5 = >20mm;
UD = Cannot determine if microalgae present, substrate too small or covered with silt (formerly Z code);
D = Dry - not assessed

RIPARIAN VEGETATION (facing downstream)
0 = Absent (0%) 3 = Heavy (40-75%)
1 = Sparse (<10%) 4 = Very Heavy (>75%)
2 = Moderate (10-40%)

Vegetation Class	Left Bank	Right Bank
Upper Canopy (>5 m high)		
Trees and saplings >5 m high	0 (1) 2 3 4	0 (1) 2 3 4
Lower Canopy (0.5 m-5 m high)		
All vegetation 0.5 m to 5 m	0 1 2 3 4	(0) 1 2 3 4
Ground Cover (<0.5 m high)		
Woody shrubs & saplings <0.5 m	0 1 (2) 3 4	(0) 1 2 3 4
Herbs/ grasses	0 (1) 2 3 4	(0) 1 2 3 4
Barren, bare soil/ duff	0 1 2 3 (4)	0 1 2 3 (4)

INSTREAM HABITAT COMPLEXITY
0 = Absent (0%)
1 = Sparse (<10%)
2 = Moderate (10-40%)
3 = Heavy (40-75%)
4 = Very Heavy (>75%)

Filamentous Algae	(0) 1 2 3 4
Aquatic Macrophytes/ Emergent Vegetation	(0) 1 2 3 4
Boulders	0 1 (2) 3 4
Woody Debris >0.3 m	(0) 1 2 3 4
Woody Debris <0.3 m	(0) 1 2 3 4
Undercut Banks	(0) 1 2 3 4
Overhang. Vegetation	(0) 1 2 3 4
Live Tree Roots	(0) 1 2 3 4
Artificial Structures	(0) 1 2 3 4

DENSIOMETER READINGS (0-17)
count covered dots

Center Left	6
Center Upstream	0
Center Right	9
Center Downstream	0
Optional	
Left Bank	—
Right Bank	—

HUMAN INFLUENCE (circle only the closest to wetted channel)
0 = Not Present;
B = On Bank;
C = Between Bank & 10m from Channel;
P = >10m+<50m from Channel;
Channel (record Yes or No)

	Left Bank	Channel	Right Bank
Walls/ Rip-rap/ Dams	P C B (0)	Y (N)	(0) B C P
Buildings	P C B 0	Y N	0 B C P
Pavement/ Cleared Lot	P C B 0		0 B C P
Road/ Railroad	P C B 0	Y N	0 B C P
Pipes (Inlet/ Outlet)	P C B 0	Y N	0 B C P
Landfill/ Trash	P C B 0	Y N	0 B C P
Park/ Lawn	P C B 0		0 B C P
Row Crop	P C B 0		0 B C P
Pasture/ Range	P C B 0		0 B C P
Logging Operations	P C B 0		0 B C P
Mining Activity	P C (B) &	(Y) N	0 B C P
Vegetation Management	P C B 0		0 B C P
Bridges/ Abutments	P C B 0	Y N	0 B C P
Orchards/ Vineyards	P C B 0		0 B C P

BANK STABILITY
Assess over 5m upstream and 5m downstream of transect between bankfull - wetted width

Left Bank	eroded	vulnerable	(stable)
Right Bank	eroded	vulnerable	(stable)

Inter-Transect: EF

Wetted Width (m): 14

Inter-Transect Substrates

Position	Dist from LB (m)	Depth (cm)	mm/ size class	% Cobble Embed	CPOM	Microalgae Thickness Code	Macroalgae Attached	Macroalgae Unattached	Macrophytes
Left Bank	.5	56	BED	—	P (A)	1	P (A) D	P (A) D	P (A) D
Left Center	3.5	70	BED	—	P A	0	P (A) D	P (A) D	P (A) D
Center	7	94	BED	—	P A	0	P (A) D	P (A) D	P (A) D
Right Center	10.5	129	BED	—	P A	0	P (A) D	P (A) D	P (A) D
Right Bank	13.5	27	BED	—	P (A)	2	P (A) D	P (A) D	P (A) D

Note: Substrate sizes can be recorded either as direct measures of the median axis of each particle or one of the size class categories listed on the supplemental page (direct measurements preferred)

Microalgae Thickness Codes
0 = No microalgae present. Feels rough, not slimy;
1 = Present but not visible. Feels slimy;
2 = Present and visible but <1mm. Rubbing fingers on surface produces a brownish tint on them, scraping leaves visible trail.
3 = 1-5mm;
4 = 5-20mm;
5 = >20mm;
UD = Cannot determine if microalgae present substrate too small or covered with silt (formerly Z code)
D = Dry, not assessed

Flow Habitats
(% between transects, total = 100%)

Channel Type	%
Cascade/ Falls	
Rapid	
Riffle	
Run	
Glide	
Pool	100
Dry	

temp
staff gage 5.5

Site Code:	Site Name: YR abv CPH	Date: __/__/2011
Wetted Width (m): 16	Bankfull Width (m): 30	Bankfull Height (m): 1.5

Transect F

Transect Substrates

Position	Dist from LB (m)	Depth (cm)	mm/ size class	% Cobble Embed.	CPOM	Microalgae Thickness Code	Macroalgae Attached	Macroalgae Unattached	Macrophytes
Left Bank	.5	32	CG	—	P (A)	2	(P) A D	P (A) D	P (A) D
Left Center	4	44	BED	—	P (A)	1	P (A) D	P (A) D	P (A) D
Center	8	280	BED	—	P (A)	0	P (A) D	P (A) D	P (A) D
Right Center	12	78	BED	—	(P) A	0	P (A) D	P (A) D	P (A) D
Right Bank	15.5	17	COB		(P) A	2	(P) A D	P (A) D	P (A) D

Note: Substrate sizes can be recorded either as direct measures of the median axis of each particle or one of the size class categories listed on the supplemental page (direct measurements preferred)

Microalgae Thickness Codes
0 = No microalgae present. Feels rough, not slimy;
1 = Present but not visible. Feels slimy;
2 = Present and visible but <1mm. Rubbing fingers on surface produces a brownish tint on them, scraping leaves visible trail.
3 = 1-5mm;
4 = 5-20mm;
5 = >20mm;
UD = Cannot determine if microalgae present, substrate too small or covered with silt (formerly Z code).
D = Dry, not assessed

Riparian Vegetation
(facing downstream)

0 = Absent (0%) 3 = Heavy (40-75%)
1 = Sparse (<10%) 4 = Very Heavy (>75%)
2 = Moderate (10-40%)

Vegetation Class	Left Bank	Right Bank
Upper Canopy (>5 m high)		
Trees and saplings >5 m high	(0) 1 2 3 4	(0) 1 2 3 4
Lower Canopy (0.5 m-5 m high)		
All vegetation 0.5 m to 5 m	(0) 1 2 3 4	(0) 1 2 3 4
Ground Cover (<0.5 m high)		
Woody shrubs & saplings <0.5 m	0 (1) 2 3 4	0 (1) 2 3 4
Herbs/ grasses	0 (1) 2 3 4	0 (1) 2 3 4
Barren, bare soil/ duff	0 1 2 3 (4)	0 1 2 3 (4)

Instream Habitat Complexity

0 = Absent (0%)
1 = Sparse (<10%)
2 = Moderate (10-40%)
3 = Heavy (40-75%)
4 = Very Heavy (>75%)

Filamentous Algae	(0) 1 2 3 4
Aquatic Macrophytes/ Emergent Vegetation	(0) 1 2 3 4
Boulders	0 1 (2) 3 4
Woody Debris >0.3 m	(0) 1 2 3 4
Woody Debris <0.3 m	(0) 1 2 3 4
Undercut Banks	(0) 1 2 3 4
Overhang. Vegetation	(0) 1 2 3 4
Live Tree Roots	(0) 1 2 3 4
Artificial Structures	(0) 1 2 3 4

Densiometer Readings (0-17)
count covered dots

Center Left	7
Center Upstream	0
Center Right	9
Center Downstream	0
Optional	
Left Bank	—
Right Bank	—

Human Influence
(circle only the closest to wetted channel)

0 = Not Present;
B = On Bank;
C = Between Bank & 10m from Channel;
P = >10m+<50m from Channel;
Channel (record Yes or No)

	Left Bank	Channel	Right Bank
Walls/ Rip-rap/ Dams	P C B (0)	Y (N)	(0) B C P
Buildings	P C B 0	Y N	0 B C P
Pavement/ Cleared Lot	P C B 0		0 B C P
Road/ Railroad	P C B 0	Y N	0 B C P
Pipes (Inlet/ Outlet)	P C B 0	Y N	0 B C P
Landfill/ Trash	P C B 0	Y N	0 B C P
Park/ Lawn	P C B 0		0 B C P
Row Crop	P C B 0		0 B C P
Pasture/ Range	P C B 0		0 B C P
Logging Operations	P C B 0		0 B C P
Mining Activity	P C B 0	Y N	0 B C P
Vegetation Management	P C B 0		0 B C P
Bridges/ Abutments	P C B 0	Y N	0 B C P
Orchards/ Vineyards	P C B 0		0 B C P

Bank Stability

Score zone 5m upstream and 5m downstream of transect between bankfull - wetted width

Left Bank	eroded	vulnerable	(stable)
Right Bank	eroded	vulnerable	(stable)

TAKE PHOTOGRAPHS
(check box if taken & record photo code)

Downstream **(required)**	☑ 205
Upstream **(required)**	☑ 206

Inter-Transect: FG

Wetted Width (m): 14

Inter-Transect Substrates

Position	Dist from LB (m)	Depth (cm)	mm/ size class	% Cobble Embed.	CPOM	Microalgae Thickness Code	Macroalgae Attached	Macroalgae Unattached	Macrophytes
Left Bank	.5	32	COB	20	P A	1	P (A) D	P (A) D	P (A) D
Left Center	3.5	50	BED	—	P A	2	(P) A D	P (A) D	P A D
Center	7	66	COB	30	P (A)	1	P (A) D	P (A) D	P A D
Right Center	10.5	44	BED	—	P A	0	P (A) D	P A D	P A D
Right Bank	13.5	16	BED	—	P A	2	(P) A D	P A D	P (A) D
	Note: Substrate sizes can be recorded either as direct measures of the median axis of each particle or one of the size class categories listed on the supplemental page (direct measurements preferred).								

Microalgae Thickness Codes
0 = No microalgae present. Feels rough, not slimy;
1 = Present but not visible. Feels slimy.
2 = Present and visible but <1mm. Rubbing fingers on surface produces a brownish tint on them; scraping leaves visible trail.
3 = 1-5mm;
4 = 5-20mm;
5 = >20mm;
UD = Cannot determine if microalgae present, substrate too small or covered with silt (formerly Z code).
D = Dry, not assessed

Flow Habitats

Channel Type	%
Cascade/ Falls	90
Rapid	
Riffle	
Run	10
Glide	
Pool	50
Dry	

40

SWAMP Stream Habitat Characterization Form FULL VERSION Revision Date: February 9th, 2011

Site Code:	Site Name: YR abv CPH	Date: 07/14/2016 2
Wetted Width (m): 20	Bankfull Width (m): 40 / Bankfull Height (m): 3.5	**Transect G**

Transect Substrates

Position	Dist from LB (m)	Depth (cm)	mm/ size class	% Cobble Embed.	CPOM	Microalgae Thickness Code	Macroalgae Attached	Macroalgae Unattached	Macrophytes
Left Bank	1.5	32	COBB	20	P (A)	0	P (A) D	P (A) D	P (A) D
Left Center	5	19	BLD	—	P A	2	(0) A D	P A D	P A D
Center	10	0	BED	—	P A	0	P (A) D	P A D	P A D
Right Center	15				P A		P A D	P A D	P A D
Right Bank	19.5	51	BLD	—	P A	1	P (A) D	P A D	P A D

Note: Substrate sizes can be recorded either as direct measures of the median axis of each particle or one of the size class categories listed on the supplemental page (direct measurements preferred)

Microalgae Thickness Codes
0 = No microalgae present. Feels rough, not slimy;
1 = Present but not visible. Feels slimy;
2 = Present and visible but <1mm; Rubbing fingers on surface produces a brownish tint on them, scraping leaves visible trail;
3 = 1-5mm;
4 = 5-20mm;
5 = >20mm;
UD = Cannot determine if microalgae present, substrate too small or covered with silt (formerly Z code);
D = Dry, not assessed

Riparian Vegetation (facing downstream)

0 = Absent (0%) 3 = Heavy (40-75%)
1 = Sparse (<10%) 4 = Very Heavy (>75%)
2 = Moderate (10-40%)

Vegetation Class	Left Bank	Right Bank
Upper Canopy (>5 m high)		
Trees and saplings >5 m high	(0) 1 2 3 4	(0) 1 2 3 4
Lower Canopy (0.5 m-5 m high)		
All vegetation 0.5 m to 5 m	(0) 1 2 3 4	(0) 1 2 3 4
Ground Cover (<0.5 m high)		
Woody shrubs & saplings <0.5 m	0 (1) 2 3 4	(0) 1 2 3 4
Herbs/ grasses	0 (1) 2 3 4	0 (1) 2 3 4
Barren, bare soil/ duff	0 1 2 3 (4)	0 1 2 3 (4)

Instream Habitat Complexity

0 = Absent (0%)
1 = Sparse (<10%)
2 = Moderate (10-40%)
3 = Heavy (40-75%)
4 = Very Heavy (>75%)

Filamentous Algae	(0) 1 2 3 4
Aquatic Macrophytes/ Emergent Vegetation	(0) 1 2 3 4
Boulders	0 1 2 (3) 4
Woody Debris >0.3 m	(0) 1 2 3 4
Woody Debris <0.3 m	(0) 1 2 3 4
Undercut Banks	(0) 1 2 3 4
Overhang. Vegetation	(0) 1 2 3 4
Live Tree Roots	(0) 1 2 3 4
Artificial Structures	(0) 1 2 3 4

Densiometer Readings (0-17)
count covered dots

Center Left	5
Center Upstream	0
Center Right	4
Center Downstream	6
Optional	
Left Bank	—
Right Bank	—

Human Influence
(circle only the closest to wetted channel)

0 = Not Present;
B = On Bank;
C = Between Bank & 10m from Channel;
P = >10m+<50m from Channel;
Channel (record Yes or No)

	Left Bank	Channel	Right Bank
Walls/ Rip-rap/ Dams	P C B (0)	Y (N)	(0) B C P
Buildings	P C B 0	Y N	0 B C P
Pavement/ Cleared Lot	P C B 0		0 B C P
Road/ Railroad	P C B 0	Y N	0 B C P
Pipes (Inlet/ Outlet)	P C B 0	Y N	0 B C P
Landfill/ Trash	P C B 0	Y N	0 B C P
Park/ Lawn	P C B 0		0 B C P
Row Crop	P C B 0		0 B C P
Pasture/ Range	P C B 0		0 B C P
Logging Operations	P C B 0		0 B C P
Mining Activity	P C B 0	Y N	0 B C P
Vegetation Management	P C B 0		0 B C P
Bridges/ Abutments	P C B 0	Y N	0 B C P
Orchards/ Vineyards	P C B 0		0 B C P

Bank Stability

Upper zone 5m upstream and 5m downstream of transect between bankfull width

Left Bank	eroded	vulnerable	(stable)
Right Bank	eroded	vulnerable	(stable)

Inter-Transect: GH

Wetted Width (m): 17

Inter-Transect Substrates

Position	Dist from LB (m)	Depth (cm)	mm/ size class	% Cobble Embed.	CPOM	Microalgae Thickness Code	Macroalgae Attached	Macroalgae Unattached	Macrophytes
Left Bank	.5	13	BLD	—	P (A)	0	P (A) D	P (A) D	P (A) D
Left Center	4	0	BLD	—	P A	6	P (A) D	P A D	P A D
Center	8.5	760	COB	0	P A	2	P (A) D	P A D	P A D
Right Center	12.5	60	COB	30	P A	1	P (A) D	P A D	P A D
Right Bank	16.5	37	COB	0	P A	2	(P) A D	P A D	P A D

Note: Substrate sizes can be recorded either as direct measures of the median axis of each particle or one of the size class categories listed on the supplemental page (direct measurements preferred).

Microalgae Thickness Codes
0 = No microalgae present. Feels rough, not slimy;
1 = Present but not visible. Feels slimy;
2 = Present and visible but <1mm; Rubbing fingers on surface produces a brownish tint on them, scraping leaves visible trail;
3 = 1-5mm;
4 = 5-20mm;
5 = >20mm;
UD = Cannot determine if microalgae present, substrate too small or covered with silt (formerly Z code);
D = Dry, not assessed

Flow Habitats

(% based on riffle, run, pool)

Channel Type	%
Cascade/Falls	100
Rapid	
Riffle	
Run	
Glide	
Pool	
Dry	

SWAMP Stream Habitat Characterization Form *FULL VERSION* *Revision Date: February 9th, 2011*

Site Code:	Site Name: YR alw CPH	Date: __ __ / __ __ / 2011
Wetted Width (m): 21m	Bankfull Width (m): 38 / Bankfull Height (m): 2.5	**Transect H**

Transect Substrates

Position	Dist from LB (m)	Depth (cm)	mm/ size class	% Cobble Embed.	CPOM	Microalgae Thickness Code	Macroalgae Attached	Macroalgae Unattached	Macrophytes
Left Bank	.5	44	COB	0	P (A)	0	P (A) D	P A D	P A D
Left Center	6.5	19	COB	0	P (A)	0	(P) A D	P A D	P A D
Center	11	105	BLD	—	P (A)	1	P (A) D	P A D	P A D
Right Center	16.5	0	BLD	—	P (A)	0	P (A) D	P A D	P A D
Right Bank	20.5	15	BLD	—	P (A)	1	P (A) D	P (A) D	P A D
	Note: Substrate sizes can be recorded either as direct measures of the median axis of each particle or one of the size class categories listed on the supplemental page (direct measurements preferred)								

Microalgae Thickness Codes
0 = No microalgae present. Feels rough, not slimy;
1 = Present but not visible. Feels slimy;
2 = Present and visible but <1mm. Rubbing fingers on surface produces a brownish tint on them, scraping leaves visible trail;
3 = 1-5mm;
4 = 5-20mm;
5 = >20mm;
UD = Cannot determine if microalgae present, substrate too small or covered with silt (formerly Z code);
D = Dry, not assessed

Riparian Vegetation (facing downstream)
0 = Absent (0%) 3 = Heavy (40-75%)
1 = Sparse (<10%) 4 = Very Heavy (>75%)
2 = Moderate (10-40%)

Vegetation Class	Left Bank	Right Bank
Upper Canopy (>5 m high)		
Trees and saplings >5 m high	(0) 1 2 3 4	(0) 1 2 3 4
Lower Canopy (0.5 m-5 m high)		
All vegetation 0.5 m to 5 m	(0) 1 2 3 4	(0) 1 2 3 4
Ground Cover (<0.5 m high)		
Woody shrubs & saplings <0.5 m	0 (1) 2 3 4	0 (1) 2 3 4
Herbs/ grasses	0 1 (2) 3 4	(0) 1 2 3 4
Barren, bare soil/ duff	0 1 2 3 (4)	0 1 2 3 (4)

Instream Habitat Complexity
0 = Absent (0%)
1 = Sparse (<10%)
2 = Moderate (10-40%)
3 = Heavy (40-75%)
4 = Very Heavy (>75%)

Filamentous Algae	(0) 1 2 3 4
Aquatic Macrophytes/ Emergent Vegetation	(0) 1 2 3 4
Boulders	0 1 2 (3) 4
Woody Debris >0.3 m	(0) 1 2 3 4
Woody Debris <0.3 m	(0) 1 2 3 4
Undercut Banks	(0) 1 2 3 4
Overhang. Vegetation	(0) 1 2 3 4
Live Tree Roots	(0) 1 2 3 4
Artificial Structures	(0) 1 2 3 4

Densiometer Readings (0-17)
count covered dots

Center Left	5
Center Upstream	0
Center Right	4
Center Downstream	0
Optional	
Left Bank	—
Right Bank	—

Human Influence (circle only the closest to wetted channel)
0 = Not Present;
B = On Bank;
C = Between Bank & 10m from Channel;
P = >10m+<50m from Channel;
Channel (record Yes or No)

	Left Bank	Channel	Right Bank
Walls/ Rip-rap/ Dams	P C B (0)	Y (N)	(0) B C P
Buildings	P C B (0)	Y N	(0) B C P
Pavement/ Cleared Lot	P C B (0)		(0) B C P
Road/ Railroad	P C B (0)	Y N	(0) B C P
Pipes (Inlet/ Outlet)	P C B (0)	Y N	(0) B C P
Landfill/ Trash	P C B (0)	Y N	(0) B C P
Park/ Lawn	P C B (0)		(0) B C P
Row Crop	P C B (0)		(0) B C P
Pasture/ Range	P C B (0)		(0) B C P
Logging Operations	P C B (0)		(0) B C P
Mining Activity	P C B (0)	Y N	(0) B C P
Vegetation Management	P C B (0)		(0) B C P
Bridges/ Abutments	P C B (0)	Y N	(0) B C P
Orchards/ Vineyards	P C B (0)		(0) B C P

Bank Stability
(score zone 5m upstream and 5m downstream of transect between bankfull - wetted width)

Left Bank	eroded	vulnerable	(stable)
Right Bank	eroded	vulnerable	(stable)

Inter-Transect: HI

Wetted Width (m): 16

Inter-Transect Substrates

Position	Dist from LB (m)	Depth (cm)	mm/ size class	% Cobble Embed.	CPOM	Microalgae Thickness Code	Macroalgae Attached	Macroalgae Unattached	Macrophytes
Left Bank	.5	40	BLD	—	P (A)	2	P (A) D	P A D	P A D
Left Center	4	167	BLD	—	P (A)	1	P (A) D	P A D	P A D
Center	8	190	COB	0	P (A)	0	P (A) D	P A D	P A D
Right Center	12	89	COB	70	P (A)	2	P (A) D	P A D	P A D
Right Bank	15.5	22	COB	40	P (A)	0	(P) A D	P (A) D	P (A) D

Note: Substrate sizes can be recorded either as direct measures of the median axis of each particle or one of the size class categories listed on the supplemental page (direct measurements preferred)

Microalgae Thickness Codes
0 = No microalgae present. Feels rough, not slimy;
1 = Present but not visible. Feels slimy;
2 = Present and visible but <1mm; Rubbing fingers on surface produces a brownish tint on them, scraping leaves visible trail;
3 = 1-5mm;
4 = 5-20mm;
5 = >20mm;
UD = Cannot determine if microalgae present, substrate too small or covered with silt (formerly Z code);
D = Dry, not assessed

Flow Habitats

(% between transects, visual est.)

Channel Type	%
Cascade/ Falls	
Rapid	
Riffle	
Run	
Glide	
Pool	100
Dry	

SWAMP Stream Habitat Characterization Form *FULL VERSION* *Revision Date: February 9th, 2011*

Site Code:	Site Name: YR abv CPH	Date: __/__/2011
Wetted Width (m): 15	Bankfull Width (m): 35	Bankfull Height (m): 1.0

Transect I

Transect Substrates

Position	Dist from LB (m)	Depth (cm)	mm/ size class	% Cobble Embed.	CPOM	Microalgae Thickness Code	Macroalgae Attached	Macroalgae Unattached	Macrophytes
Left Bank	5	170	BED	—	P (A)	2	(P) A D	P (A) D	P A D
Left Center	4	57	BED	—	P A	1	P (A) D	P A D	P A D
Center	7.5	[illegible]	COB	70	P A	2	(P) A D	P A D	P A D
Right Center	11.5	150	BED	—	P (A)	0	P (A) D	P A D	P A D
Right Bank	14.5	32	COB	—	P (A)	0	P (A) D	P A D	P (A) D

Note: Substrate sizes can be recorded either as direct measures of the median axis of each particle or one of the size class categories listed on the supplemental page (direct measurements preferred)

Microalgae Thickness Codes
0 = No microalgae present; Feels rough, not slimy;
1 = Present but not visible; Feels slimy;
2 = Present and visible but <1mm; Rubbing fingers on surface produces a brownish tint on them, scraping leaves visible trail
3 = 1-5mm;
4 = 5-20mm;
5 = >20mm;
UD = Cannot determine if microalgae present, substrate too small or covered with silt (formerly Z code).
D = Dry, not assessed

Riparian Vegetation (facing downstream)

0 = Absent (0%) 1 = Sparse (<10%) 2 = Moderate (10-40%) 3 = Heavy (40-75%) 4 = Very Heavy (>75%)

Vegetation Class	Left Bank	Right Bank
Upper Canopy (>5 m high)		
Trees and saplings >5 m high	(0) 1 2 3 4	(0) 1 2 3 4
Lower Canopy (0.5 m-5 m high)		
All vegetation 0.5 m to 5 m	(0) 1 2 3 4	(0) 1 2 3 4
Ground Cover (<0.5 m high)		
Woody shrubs & saplings <0.5 m	0 (1) 2 3 4	0 (1) 2 3 4
Herbs/ grasses	0 (1) 2 3 4	(0) 1 2 3 4
Barren, bare soil/ duff	0 1 2 3 (4)	0 1 2 3 (4)

Instream Habitat Complexity

0 = Absent (0%) 1 = Sparse (<10%) 2 = Moderate (10-40%) 3 = Heavy (40-75%) 4 = Very Heavy (>75%)

Category	Score
Filamentous Algae	(0) 1 2 3 4
Aquatic Macrophytes/ Emergent Vegetation	(0) 1 2 3 4
Boulders	(0) 1 2 3 4
Woody Debris >0.3 m	(0) 1 2 3 4
Woody Debris <0.3 m	(0) 1 2 3 4
Undercut Banks	(0) 1 2 3 4
Overhang. Vegetation	(0) 1 2 3 4
Live Tree Roots	(0) 1 2 3 4
Artificial Structures	(0) 1 2 3 4

Densiometer Readings (0-17)

count covered dots

Position	Reading
Center Left	6
Center Upstream	0
Center Right	4
Center Downstream	0
Optional	
Left Bank	—
Right Bank	—

Human Influence (circle only the closest to wetted channel)

0 = Not Present; B = On Bank; C = Between Bank & 10m from Channel; P = >10m+<50m from Channel; Channel (record Yes or No)

	Left Bank	Channel	Right Bank
Walls/ Rip-rap/ Dams	P C B (0)	Y (N)	(0) B C P
Buildings	P C B 0	Y N	0 B C P
Pavement/ Cleared Lot	P C B 0		0 B C P
Road/ Railroad	P C B 0	Y N	0 B C P
Pipes (Inlet/ Outlet)	P C B 0	Y N	0 B C P
Landfill/ Trash	P C B 0	Y N	0 B C P
Park/ Lawn	P C B 0		0 B C P
Row Crop	P C B 0		0 B C P
Pasture/ Range	P C B 0		0 B C P
Logging Operations	P C B 0		0 B C P
Mining Activity	P C B 0	Y N	0 B (C) P
Vegetation Management	P C B 0		0 B C P
Bridges/ Abutments	P C B 0	Y N	0 B C P
Orchards/ Vineyards	P C B 0		0 B C P

Bank Stability

(score area 5m upstream and 5m downstream of transect between bankfull - wetted width)

Left Bank	eroded	vulnerable	(stable)
Right Bank	eroded	vulnerable	(stable)

Inter-Transect: IJ

Wetted Width (m): 14

Inter-Transect Substrates

Position	Dist from LB (m)	Depth (cm)	min/ size class	% Cobble Embed.	CPOM	Microalgae Thickness Code	Macroalgae Attached	Macroalgae Unattached	Macrophytes
Left Bank	.5	48	BED	—	P (A)	1	P (A) D	P (A) D	P A D
Left Center	3.5	205	BED	—	P (A)	1	P (A) D	P A D	P A D
Center	7	0	BED	0	P (A)	0	P (A) D	P A D	P A D
Right Center	10.5	91	BED	CG	P (A)	1	P (A) D	P A D	P A D
Right Bank	13.5	27	COBB	50	(P) A	2	(P) A D	(A) D	P (A) D
	Note: Substrate sizes can be recorded either as direct measures of the median axis of each particle or one of the size class categories listed on the supplemental page (direct measurements preferred).								

Microalgae Thickness Codes
0 = No microalgae present. Feels rough, not slimy;
1 = Present but not visible. Feels slimy;
2 = Present and visible but <1mm. Rubbing fingers on surface produces a brownish tint on them, scraping leaves visible trail;
3 = 1-5mm;
4 = 5-20mm;
5 = >20mm;
UD = Cannot determine if microalgae present, substrate too small or covered with silt (formerly Z code);
D = Dry, not assessed

Flow Habitats

Channel Type	%
Cascade/ Falls	
Rapid	
Riffle	
Run	
Glide	
Pool	100
Dry	

SWAMP Stream Habitat Characterization Form FULL VERSION Revision Date: February 9th, 2011

Site Code:	Site Name: TR abv CPH	Date: __ __ / __ __ / 2011
Wetted Width (m): 22	Bankfull Width (m): 47 / Bankfull Height (m): 1.5	**Transect J**

Transect Substrates

Position	Dist from LB (m)	Depth (cm)	mm/ size class	% Cobble Embed.	CPOM	Microalgae Thickness Code	Macroalgae Attached	Macroalgae Unattached	Macrophytes
Left Bank	.5	32	BED	—	P (A)	1	P (A) D	P (A) D	P (A) D
Left Center	5.5	114	CB	—	P A	2	P (A) D	P A D	P A D
Center	11	235	CB	—	P (A)	0	P (A) D	P A D	P A D
Right Center	16.5	108	COB	40	P (A)	0	P (A) D	P A D	P A D
Right Bank	21.5	60	CB	—	(P) A	0	P (A) D	P (A) D	P (A) D

Note: Substrate sizes can be recorded either as direct measures of the median axis of each particle or one of the size class categories listed on the supplemental page (direct measurements preferred)

Microalgae Thickness Codes
0 = No microalgae present. Feels rough, not slimy;
1 = Present but not visible. Feels slimy;
2 = Present and visible but <1mm; Rubbing fingers on surface produces a brownish tint on them, scraping leaves visible trail;
3 = 1-5mm;
4 = 5-20mm;
5 = >20mm;
UD = Cannot determine if microalgae present, substrate too small or covered with silt (formerly Z code);
D = Dry, not assessed

Riparian Vegetation (facing downstream)

0 = Absent (0%) 3 = Heavy (40-75%)
1 = Sparse (<10%) 4 = Very Heavy (>75%)
2 = Moderate (10-40%)

Vegetation Class	Left Bank	Right Bank
Upper Canopy (>5 m high)		
Trees and saplings >5 m high	(0) 1 2 3 4	(0) 1 2 3 4
Lower Canopy (0.5 m-5 m high)		
All vegetation 0.5 m to 5 m	(0) 1 2 3 4	(0) 1 2 3 4
Ground Cover (<0.5 m high)		
Woody shrubs & saplings <0.5 m	0 (1) 2 3 4	0 (1) 2 3 4
Herbs/ grasses	0 1 (2) 3 4	(0) 1 2 3 4
Barren, bare soil/ duff	0 1 2 3 (4)	0 1 2 3 (4)

Instream Habitat Complexity

0 = Absent (0%)
1 = Sparse (<10%)
2 = Moderate (10-40%)
3 = Heavy (40-75%)
4 = Very Heavy (>75%)

Filamentous Algae	(0) 1 2 3 4
Aquatic Macrophytes/ Emergent Vegetation	(0) 1 2 3 4
Boulders	0 1 (2) 3 4
Woody Debris >0.3 m	(0) 1 2 3 4
Woody Debris <0.3 m	(0) 1 2 3 4
Undercut Banks	(0) 1 2 3 4
Overhang. Vegetation	(0) 1 2 3 4
Live Tree Roots	(0) 1 2 3 4
Artificial Structures	(0) 1 2 3 4

Densiometer Readings (0-17)

count covered dots

Center Left	9
Center Upstream	2
Center Right	6
Center Downstream	0
Optional	
Left Bank	—
Right Bank	—

Human Influence (circle only the closest to wetted channel)

0 = Not Present;
B = On Bank;
C = Between Bank & 10m from Channel;
P = >10m+<50m from Channel;
Channel (record Yes or No)

	Left Bank	Channel	Right Bank
Walls/ Rip-rap/ Dams	P C B (0)	Y (N)	(0) B C P
Buildings	P C B (0)	Y N	0 B C P
Pavement/ Cleared Lot	P C B (0)		0 B C P
Road/ Railroad	P C B (0)	Y N	0 B C P
Pipes (Inlet/ Outlet)	P C B (0)	Y N	0 B C P
Landfill/ Trash	P C B (0)	Y N	0 B C P
Park/ Lawn	P C B (0)		0 B C P
Row Crop	P C B (0)		0 B C P
Pasture/ Range	P C B (0)		0 B C P
Logging Operations	P C B (0)		0 B C P
Mining Activity	P C B (0)	Y N	0 B C P
Vegetation Management	P C B (0)		0 B C P
Bridges/ Abutments	P C B (0)	Y N	0 B C P
Orchards/ Vineyards	P C B (0)		0 B C P

Bank Stability

(score zone 5m upstream and 5m downstream of transect between bankfull - wetted width)

Left Bank	eroded	vulnerable	(stable)
Right Bank	eroded	vulnerable	(stable)

Inter-Transect: JK

Wetted Width (m): 13

Inter-Transect Substrates

Position	Dist from LB (m)	Depth (cm)	mm/ size class	% Cobble Embed.	CPOM	Microalgae Thickness Code	Macroalgae Attached	Macroalgae Unattached	Macrophytes
Left Bank	.5	0	BLD	—	P (A)	0	P (A) D	P (A) D	P (A) D
Left Center	3	0	BLD	—	P (A)	0	P (A) D	P A D	P A D
Center	6.5	93	COB	0	P (A)	2	P (A) D	P A D	P A D
Right Center	9.5	0	BLD	—	P (A)	1	P (A) D	P A D	P A D
Right Bank	12.5	COB	12	15	P (A)	2	P (A) D	P A D	P A D
	Note: Substrate sizes can be recorded either as direct measures of the median axis of each particle or one of the size class categories listed on the supplemental page (direct measurements preferred)								

Microalgae Thickness Codes
0 = No microalgae present. Feels rough, not slimy;
1 = Present but not visible. Feels slimy;
2 = Present and visible but <1mm; Rubbing fingers on surface produces a brownish tint on them, scraping leaves visible trail;
3 = 1-5mm;
4 = 5-20mm;
5 = >20mm;
UD = Cannot determine if microalgae present, substrate too small or covered with silt (formerly Z code);
D = Dry; not assessed

FLOW HABITATS

Channel Type	%
Cascade/ Falls	30
Rapid	
Riffle	
Run	40
Glide	
Pool	30
Dry	

SWAMP Stream Habitat Characterization Form — FULL VERSION — Revision Date: February 9th, 2011

Site Code:	Site Name: YR abv CR4	Date: ___/___/2011
Wetted Width (m): 12	Bankfull Width (m): 50	Bankfull Height (m): 2

Transect K

Transect Substrates

Position	Dist from LB (m)	Depth (cm)	mm/ size class	% Cobble Embed.	CPOM	Microalgae Thickness Code	Macroalgae Attached	Macroalgae Unattached	Macrophytes
Left Bank	15	35	BED	—	P (A)	2	(P) A D	P (A) D	P (A) D
Left Center	3	77	BED	—	P (A)	2	(P) A D	P (A) D	P (A) D
Center	6	69	CG	—	P (A)	1	P (A) D	P A D	P A D
Right Center	9	78	COB	(0)	P (A)	2	P (A) D	P A D	P A D
Right Bank	11.5	26	COB	5	(P) (A)	2	P (A) D	P A D	P A D

Note: Substrate sizes can be recorded either as direct measures of the median axis of each particle or one of the size class categories listed on the supplemental page (direct measurements preferred)

Microalgae Thickness Codes
0 = No microalgae present; Feels rough, not slimy;
1 = Present but not visible. Feels slimy;
2 = Present and visible but <1mm; Rubbing fingers on surface produces a brownish tint on them, scraping leaves visible trail;
3 = 1-5mm;
4 = 5-20mm;
5 = >20mm;
U = Cannot determine if microalgae present, substrate too small or covered with silt (formerly Z code);
D = Dry, not assessed

Riparian Vegetation (facing downstream)

0 = Absent (0%); 1 = Sparse (<10%); 2 = Moderate (10-40%); 3 = Heavy (40-75%); 4 = Very Heavy (>75%)

Vegetation Class	Left Bank	Right Bank
Upper Canopy (>5 m high)		
Trees and saplings >5 m high	(0) 1 2 3 4	(0) 1 2 3 4
Lower Canopy (0.5 m-5 m high)		
All vegetation 0.5 m to 5 m	(0) 1 2 3 4	(0) 1 2 3 4
Ground Cover (<0.5 m high)		
Woody shrubs & saplings <0.5 m	0 1 (2) 3 4	0 (1) 2 3 4
Herbs/ grasses	0 (1) 2 3 4	(0) 1 2 3 4
Barren, bare soil/ duff	0 1 2 3 (4)	0 1 2 3 (4)

Instream Habitat Complexity

0 = Absent (0%); 1 = Sparse (<10%); 2 = Moderate (10-40%); 3 = Heavy (40-75%); 4 = Very Heavy (>75%)

Filamentous Algae	(0) 1 2 3 4
Aquatic Macrophytes/ Emergent Vegetation	(0) 1 2 3 4
Boulders	0 1 (2) 3 4
Woody Debris >0.3 m	(0) 1 2 3 4
Woody Debris <0.3 m	(0) 1 2 3 4
Undercut Banks	(0) 1 2 3 4
Overhang. Vegetation	(0) 1 2 3 4
Live Tree Roots	(0) 1 2 3 4
Artificial Structures	(0) 1 2 3 4

Densiometer Readings (0-17)

count covered dots

Center Left	6
Center Upstream	2
Center Right	3
Center Downstream	6
Optional	
Left Bank	—
Right Bank	—

Human Influence (circle only the closest to wetted channel)

0 = Not Present; B = On Bank; C = Between Bank & 10m from Channel; P = >10m+<50m from Channel; Channel (record Yes or No)

	Left Bank	Channel	Right Bank
Walls/ Rip-rap/ Dams	P C B (0)	Y (N)	(0) B C P
Buildings	P C B (0)	Y N	(0) B C P
Pavement/ Cleared Lot	P C B (0)		(0) B C P
Road/ Railroad	P C B (0)	Y N	(0) B C P
Pipes (Inlet/ Outlet)	P C B (0)	Y N	(0) B C P
Landfill/ Trash	P C B (0)	Y N	(0) B C P
Park/ Lawn	P C B (0)		(0) B C P
Row Crop	P C B (0)		(0) B C P
Pasture/ Range	P C B (0)		(0) B C P
Logging Operations	P C B (0)		(0) B C P
Mining Activity	P C B (0)	Y N	(0) B C P
Vegetation Management	P C B (0)		(0) B C P
Bridges/ Abutments	P C B (0)	Y N	(0) B C P
Orchards/ Vineyards	P C B (0)		(0) B C P

Bank Stability

Assess visual 5m upstream and 5m downstream of transect between channel - vegetated margin

Left Bank	eroded	vulnerable	(stable)
Right Bank	eroded	vulnerable	(stable)

TAKE PHOTOGRAPHS (check box if taken & record photo code)

Downstream (**required**)	☑ 207
Upstream (**optional**)	☑ 206

Site Code:	Date: ___/___/ 2011

FULL FORM

BENTHIC INVERTEBRATE SAMPLES

Collection Method (indicate standard or margin-center-margin)			Replicate	# jars
RWB (standard)	**RWB** (MCM)	**TRC**	1	
RWB (standard)	**RWB** (MCM)	**TRC**	2	
RWB (standard)	**RWB** (MCM)	**TRC**		
RWB (standard)	**RWB** (MCM)	**TRC**		

Field Notes/ Comments:

Chemistry Equipment ID

Analyte	Equipment
pH	
temperature	
dissolved oxygen	
specific conductance	
salinity	
alkalinity	
turbidity	
silica	
Velocity	

ALGAE SAMPLES

Collection Method (circle one or write new method if applicable)	SWAMP EMAP	SWAMP EMAP	SWAMP EMAP	SWAMP EMAP
Collection Device (sum # of transects per device)	**Rep. 1**	**Rep. 2**	**Rep.**	**Rep.**
Rubber Delimiter (area=12.6cm^2)				
PVC Delimiter (area=12.6cm^2)				
Syringe Scrubber (area=5.3cm^2)				
Other area=				
Number of transects sampled (0-11)				
Composite Volume (mL)				
Assemblage ID volume **(diatoms)** (50 mL tube)				
Assemblage ID volume **(soft algae)** (50 mL tube)				
Check if Qualitative Algae sample was collected with soft algae/diatom sample (required even if macroalgae not visible)	☐	☐	☐	☐
Check if a water chem. **integrated** sample was collected (chl, AFDM)	☐	☐	☐	☐
Chlorophyll a volume use GF/F filter (25 mL **(preferred volume)**				
Ash Free Dry Mass (AFDM) volume use GF/F filter (25 mL **(preferred vol)**				

Water and Sediment Chemistry Samples

Check if a WATER chemistry **grab** sample was collected (nutrients, SSC, etc.)	☐
Check if a DUPLICATE WATER chemistry **grab** sample was collected	☐
Check if a SEDIMENT chemistry sample was collected	☐
Check if a DUPLICATE SEDIMENT chemistry sample was collected	☐

Sediment Collection Device: SCOOP CORE GRAB

Material: Stainless Steel Polyethylene Polycarbonate Other

Sediment Collection Depth (cm): 2 or 5

Create Lab Collection records for each checked box for integrated and grab water chemistry samples

ADDITIONAL PHOTOGRAPHS

Description	Photo Code	Description	Photo Code

Flow Habitat Type	DESCRIPTION
Cascades	Short, high gradient drop in stream bed elevation often accompanied by boulders and considerable turbulence
Falls	High gradient drop in elevation of the stream bed associated with an abrupt change in the bedrock
Rapids	Sections of stream with swiftly flowing water and considerable surface turbulence. Rapids tend to have larger substrate sizes than riffles
Riffles	Shallow sections where the water flows over coarse stream bed particles that create mild to moderate surface turbulence; (< 0.5 m deep, > 0.3 m/s).
Runs	Long, relatively straight, low-gradient sections without flow obstructions. The stream bed is typically even and the water flows faster than it does in a pool; (> 0.5 m deep, > 0.3 m/s). A **step-run** is a series of runs separated by short riffles or flow obstructions that cause discontinuous breaks in slope
Glides	A section of stream with little or no turbulence, but faster velocity than pools; (< 0.5 m deep, < 0.3 m/s)
Pools	A reach of stream that is characterized by deep, low-velocity water and a smooth surface; (> 0.5 m deep, < 0.3 m/s)

Size Class Code	Size Class Range	Size Class Description	Common Size Reference
RS	> 4 m	bedrock, smooth	larger than a car
RR	> 4 m	bedrock, rough	larger than a car
XB	1 - 4 m	boulder, large	meter stick to car
SB	25 cm - 1.0 m	boulder, small	basketball to meter stick
CB	64 - 250 mm	cobble	tennis ball to basketball
GC	16 - 64 mm	gravel, coarse	marble to tennis ball
GF	2 – 16 mm	gravel, fine	ladybug to marble
SA	0.06 – 2 mm	sand	gritty to ladybug
FN	< 0.06 mm	fines	not gritty
HP	< 0.06 mm	hardpan (consolidated fines)	
WD	NA	wood	
RC	NA	concrete/ asphalt	
OT	NA	other	

BANK STABILITY Although this measure of the degree of erosive potential is subjective, it can provide clues to the erosive potential of the banks within the reach. Assign the category whose description best fits the conditions in the area between the wetted channel and bankfull channel (see figure below)	
Eroded	Banks show obvious signs of erosion from the current or previous water year; banks are usually bare or nearly bare
Vulnerable	Banks have some vegetative protection (usually annual growth), but not enough to prevent erosion during flooding
Stable	Bank vegetation has well-developed roots that protect banks from erosion; alternately, bedrock or artificial structures (e.g., concrete/ rip-rap) prevent bank erosion

CPOM/ COBBLE EMBEDDEDNESS

CPOM: Record presence (P) or absence (A) of coarse particulate organic matter (>1.0 mm particles) within 1 cm of each substrate particle

Cobble Embeddedness: Visually estimate % embedded by fine particles (record to nearest 5%)

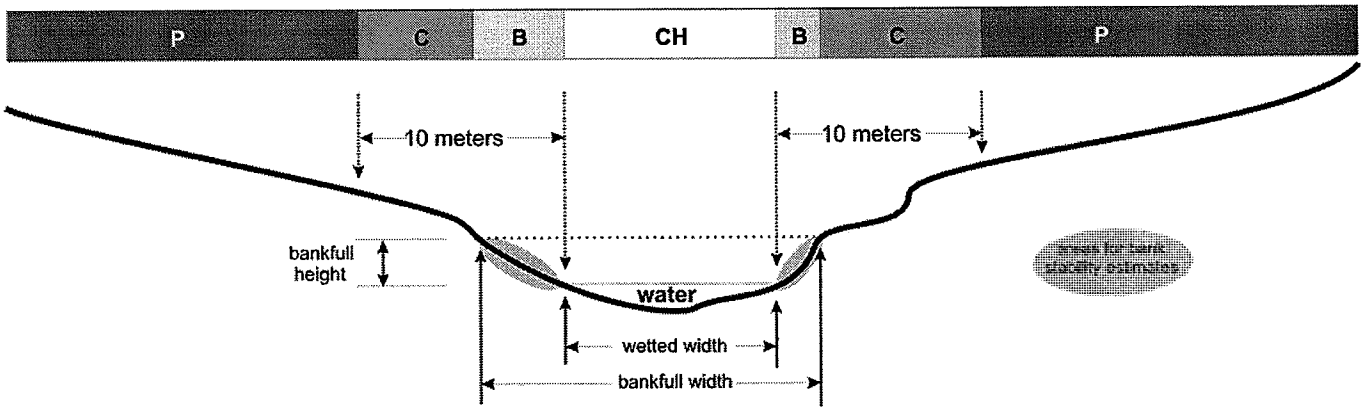


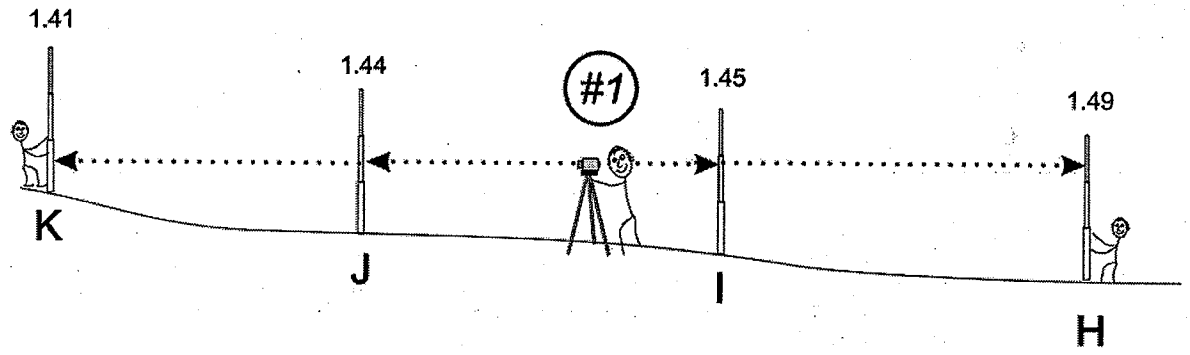
Figure 1. Cross-sectional diagram of stream transect indicating regions for assessing human influence measures:

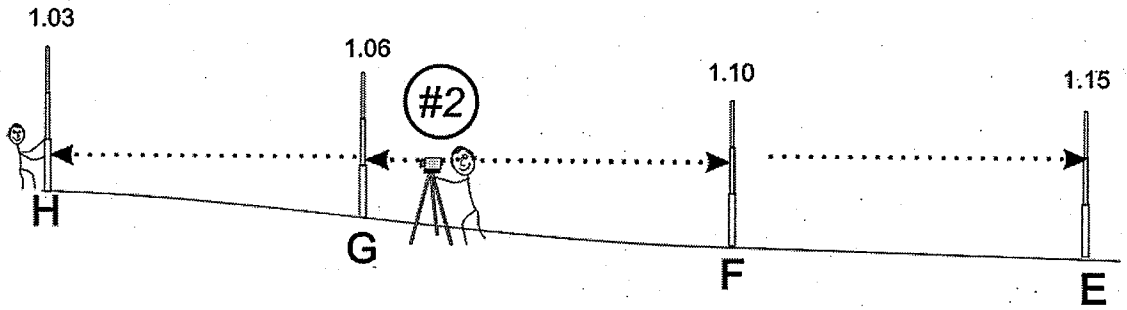
- The measurement zone extends 5 meters upstream and 5 meters downstream of each transect
- Record one category for each bank and for the wetted channel (3 values possible)
- In reaches with wide banks, region "C" may be entirely overlapped by region "B"; in these cases, circle "B"
- Region "P" extends from 10 meters to the distance that can be seen from the channel, but not greater than 50 m

SLOPE and BEARING FORM — EXAMPLE

AUTOLEVEL	X
CLINOMETER	
HANDLEVEL	

Starting Transect	MAIN SEGMENT (record percent of inter-transect distance in each segment if supplemental segments are used)						SUPPLEMENTAL SEGMENT (record percent of inter-transect distance in each segment if supplemental segments are used)				
	Stadia rod measurements		Slope (%) or Elevation Difference cm ■ % □	Segment Length (m)	Bearing (0°-359°)	Percent of Total Length (%)	Stadia rod measurements		Slope or Elevation Difference cm □ % □	Segment Length (m)	Bearing (0°-359°)	Percent of Total Length (%)
K	1.41											
J	1.44		3	15	140	100						
I	1.45		1	15	145	100						
H	1.49	1.03	4	15	150	100						
G		1.06	3	15	143	100						
F		1.10	4	15	187	100						
E		1.15	5	15	195	100						





1. Level the autolevel at Position #1
2. Place base of stadia rod at water level every time
3. Sight to stadia rod at Transect K, then Transect J
4. Rotate scope and sight to Transects I and H.
5. Move level to Position #2 and re-level
6. Re-sight to stadia rod at Transect H, then Transect G
7. Rotate scope and sight to Transects F and E

Note: Sites will vary in the number of separate level positions needed to survey the reach.

SWAMP Stream Habitat Characterization Form — FULL VERSION — Revision Date: February 9th, 2011

REACH DOCUMENTATION

Standard Reach Length (wetted width ≤ 10 m) = 150 m Distance between transects = 15 m
Alternate Reach Length (wetted width >10 m) = 250 m Distance between transects = 25 m

Project Name: YCWA	Date: 7 / 14 / 2012 Sample Collection Time: 800
Stream Name: YUBA RIVER	Site Name/ Description: YUBA BELOW COLGATE
Site Code: YCBM1-8	Crew Members: VerVeer, Ashenfelter, Wiseman
Latitude (actual – decimal degrees): 655396	datum: NAD83 other:
Longitude (actual – decimal degrees): 4354600	GPS Device: GARMIN 60

TOP UTM

AMBIENT WATER QUALITY MEASUREMENTS

turbidity and silica are optional; calibration date required

Temp (Deg C)	12.4	pH	7.7	Alkalinity (mg/L)	—	Turbidity (ntu)	0.0
		cal. date				cal. date	—
Dissolved O^2 (mg/L)	9.7	Specific Conduct (uS/cm)	82	Salinity (ppt)	—	Silica (mg/L)	—
cal. date		cal. date	—	cal. date		cal. date	

REACH LENGTH

Actual Length (m) *(see reach length guidelines at top of form)*	250
Explanation:	>10m wide

DISCHARGE MEASUREMENTS

1st measurement = left bank (looking downstream)

check if discharge measurements not possible (explain in field notes section) ☐

VELOCITY AREA METHOD (preferred)

cal. date 173.5 — Transect Width (m):

	Distance from Left Bank (cm)	Depth (cm)	Velocity (ft/sec)		Distance from Left Bank (cm)	Depth (cm)	Velocity (ft/sec)
1	95	0	0	11	4.0275	3.4	1.3 / 1.07
2	90	1.4	0.13	12	3.3840	2.6	1.24 / 1.4
3	85	2.2	0.13	13	2.7135	1.8	1.51
4	80	3.1	0.37 / .10	14	4.3630	2.9	1.64 / 1.37
5	75	2.4	.70	15	.3625	1.8	.2
6	70	1.2	.84	16	1.3920	1.5	.93
7	65	2.1	.89	17	1.8545	1.8	1.03
8	60	3.0	1.13 / .4	18	1.9810	1.5	1.32
9	55	2.6	.61 / 1.40	19	— 5	1.3	0
10	50	3.2	.89 / 1.64	20	— 0	0	0

0, .182, .286, .728, 1.68, 1.008, 1.87, 2.29, 2.61, 4

BUOYANT OBJECT METHOD (use ONLY if velocity area method not possible)

	Float 1	Float 2	Float 3
Distance (m)			
Float Time (sec)			

Float Reach Cross Section

width (m) depth(cm)	Upper Section	Middle Section	Lower Section
Width			
Depth 1			
Depth 2			
Depth 3			
Depth 4			
Depth 5			

NOTABLE FIELD CONDITIONS (check one box per topic)

Evidence of recent rainfall (enough to increase surface runoff)	NO	X	minimal		>10% flow increase	
Evidence of fires in reach or immediately upstream (<500 m)	NO	X	< 1 year		< 5 years	
Dominant landuse/ landcover in area surrounding reach	Agriculture		Forest	X	Rangeland	
	Urban/ Industrial		Suburb/Town		Other	

ADDITIONAL COBBLE EMBEDDEDNESS MEASURES

(carry over from transect forms if needed to attain target count of 25; measure in %)

1	2	3	4	5	6	7	8	9	10	11	12	13
10	15	30	60	65	80	20	15	50	50	40	10	10
14	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**	**25**	
5	0	20	15	15	30	20						

ISF team flow ≈ 200 cfs

173.5

Site Code: | Date: __ / __ / 2011

SLOPE and BEARING FORM (transect based - for Full PHAB only)

AUTOLEVEL ☒ CLINOMETER ☐ HANDLEVEL ☐ OTHER ☐

Starting Transect	MAIN SEGMENT (record percent of inter-transect distance in each segment if supplemental segments are used)					SUPPLEMENTAL SEGMENT (record percent of inter-transect distance in each segment if supplemental segments are used)				
	Stadia rod measurements	Slope (%) or Elevation Difference cm ☐ % ☒	Segment Length (m)	Bearing (0°-359°)	Percent of Total Length (%)	Stadia rod measurements	Slope or Elevation Difference cm ☐ % ☐	Segment Length (m)	Bearing (0°-359°)	Percent of Total Length (%)
K										
J		1	25		10					
I	no shot	—								
H		0								
G		3								
F		4								
E		2								
D		1								
C		2								
B		0								
A		0								
additional calculation area										

ADDITIONAL HABITAT CHARACTERIZATION

High Gradient ☒ Low Gradient ☐

Parameter	Optimal	Suboptimal	Marginal	Poor
Epifaunal Substrate/ Cover	Greater than 70% of substrate favorable for epifaunal colonization and fish cover (50% for low-gradient streams); mix of submerged logs, undercut banks, cobble or other stable habitat	40-70% mix of stable habitat (30-50% for low-gradient streams); well-suited for full colonization potential	20-40% mix of stable habitat (10-30% in low-gradient streams); substrate frequently disturbed or removed	Less than 20% stable habitat (10% in low-gradient streams); lack of habitat is obvious; substrate unstable or lacking
Score:	20 19 18 17 16	15 14 (13) 12 11	10 9 8 7 6	5 4 3 2 1 0
Sediment Deposition	Little or no enlargement of islands or point bars and less than 5% of the bottom affected by sediment deposition (<20% in low-gradient streams)	Some new increase in bar formation, mostly from gravel, sand, or fine sediment; 5-30% of the bottom affected (20-50% in low-gradient streams)	Moderate deposition of new gravel, sand, or fine sediment on bars; 30-50% of the bottom affected (50 - 80% in low-gradient streams)	Heavy deposits of fine material, increased bar development; more than 50% of the bottom changing frequently (>80% in low-gradient streams)
Score:	20 19 18 17 16	15 (14) 13 12 11	10 9 8 7 6	5 4 3 2 1 0
Channel Alteration	Channelization or dredging absent or minimal; stream with normal pattern	Some channelization present, (e.g., bridge abutments); evidence of past channelization (> 20yrs) may be present but recent channelization not present	Channelization may be extensive; embankments or shoring structures present on both banks; 40 to 80% of stream reach disrupted	Banks shored with gabian 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 0

Site Code:	Site Name: YR blw CPH	Date: __/__/2011
Wetted Width (m): 32	Bankfull Width (m): 38	Bankfull Height (m): 2

Transect A

Transect Substrates

Position	Dist from LB (m)	Depth (cm)	mm/ size class	% Cobble Embed.	CPOM	Microalgae Thickness Code	Macroalgae Attached	Macroalgae Unattached	Macrophytes
Left Bank	.5	72	COB	30	(P) A	3	P (A) D	P (A) D	P (A) D
Left Center	8	102	BLD	—	P (A)	2	(P) A D	P (A) D	P (A) D
Center	16	71	BLD	—	P (A)	2	(P) A D	P (A) D	P (A) D
Right Center	24	45	COB	50	(P) A	3	(P) A D	P (A) D	P (A) D
Right Bank	31.5	7.5	CG	—	(P) A	3	P (A) D	P (A) D	P (A) D

Note: Substrate sizes can be recorded either as direct measures of the median axis of each particle or one of the size class categories listed on the supplemental page (direct measurements preferred).

Microalgae Thickness Codes
0 = No microalgae present. Feels rough, not slimy;
1 = Present but not visible. Feels slimy;
2 = Present and visible but <1mm; Rubbing fingers on surface produces a brownish tint on them, scraping leaves visible trail;
3 = 1-5mm;
4 = 5-20mm;
5 = >20mm;
UD = Cannot determine if microalgae present, substrate too small or covered with silt (formerly Z code);
D = Dry, not assessed

Riparian Vegetation (facing downstream)

0 = Absent (0%); 1 = Sparse (<10%); 2 = Moderate (10-40%); 3 = Heavy (40-75%); 4 = Very Heavy (>75%)

Vegetation Class	Left Bank	Right Bank
Upper Canopy (>5 m high)		
Trees and saplings >5 m high	0 (1) 2 3 4	0 (1) 2 3 4
Lower Canopy (0.5 m-5 m high)		
All vegetation 0.5 m to 5 m	0 1 (2) 3 4	0 1 (2) 3 4
Ground Cover (<0.5 m high)		
Woody shrubs & saplings <0.5 m	0 (1) 2 3 4	0 1 (2) 3 4
Herbs/ grasses	0 1 2 (3) 4	0 1 2 (3) 4
Barren, bare soil/ duff	0 1 (2) 3 4	0 1 (2) 3 4

Instream Habitat Complexity

0 = Absent (0%); 1 = Sparse (<10%); 2 = Moderate (10-40%); 3 = Heavy (40-75%); 4 = Very Heavy (>75%)

Category	Score
Filamentous Algae	0 (1) 2 3 4
Aquatic Macrophytes/ Emergent Vegetation	(0) 1 2 3 4
Boulders	0 1 (2) 3 4
Woody Debris >0.3 m	(0) 1 2 3 4
Woody Debris <0.3 m	(0) 1 2 3 4
Undercut Banks	(0) 1 2 3 4
Overhang. Vegetation	0 (1) 2 3 4
Live Tree Roots	(0) 1 2 3 4
Artificial Structures	(0) 1 2 3 4

Densiometer Readings (0-17)
count covered dots

Position	Reading
Center Left	10
Center Upstream	7
Center Right	6
Center Downstream	11
Optional	
Left Bank	—
Right Bank	—

Human Influence (circle only the closest to wetted channel)

0 = Not Present; B = On Bank; C = Between Bank & 10m from Channel; P = >10m+<50m from Channel; Channel (record Yes or No)

	Left Bank	Channel	Right Bank
Walls/ Rip-rap/ Dams	P C B (0)	Y (N)	(0) B C P
Buildings	P C B (0)	Y (N)	(0) B C P
Pavement/ Cleared Lot	P C B (0)		(0) B C P
Road/ Railroad	P C B (0)	Y (N)	(0) B C P
Pipes (Inlet/ Outlet)	P C B (0)	Y (N)	(0) B C P
Landfill/ Trash	P C B (0)	Y (N)	(0) B C P
Park/ Lawn	P C B (0)		(0) B C P
Row Crop	P C B (0)		(0) B C P
Pasture/ Range	P C B (0)		(0) B C P
Logging Operations	P C B (0)		(0) B C P
Mining Activity	P C B (0)	Y (N)	(0) B C P
Vegetation Management	P C B (0)		(0) B C P
Bridges/ Abutments	P C B (0)	Y (N)	(0) B C P
Orchards/ Vineyards	P C B (0)		(0) B C P

Bank Stability
(score zone 5m upstream and 5m downstream of transect between bankfull - wetted width)

Left Bank	eroded	vulnerable	(stable)
Right Bank	eroded	vulnerable	(stable)

TAKE PHOTOGRAPHS
(check box if taken & record photo code)

Downstream (optional)	191	☑
Upstream (required)	192	☑

Inter-Transect: AB

Wetted Width (m): 32

Inter-Transect Substrates

Position	Dist from LB (m)	Depth (cm)	mm/ size class	% Cobble Embed.	CPOM	Microalgae Thickness Code	Macroalgae Attached	Macroalgae Unattached	Macrophytes
Left Bank	.5	10	COB	70	P (A)	3	P (A) D	P (A) D	P (A) D
Left Center	8	46	CG	—	P (A)	2	P (A) D	P (A) D	P (A) D
Center	16	88	BLD	—	P (A)	3	(P) A D	P (A) D	P (A) D
Right Center	24	101	BLD	—	P (A)	2	P (A) D	P (A) D	P (A) D
Right Bank	31.5	120	COB	60	(P) A	3	P (A) D	P (A) D	P (A) D
	Note: Substrate sizes can be recorded either as direct measures of the median axis of each particle or one of the size class categories listed on the supplemental page (direct measurements preferred)								

Microalgae Thickness Codes
0 = No microalgae present. Feels rough, not slimy;
1 = Present but not visible. Feels slimy;
2 = Present and visible but <1mm; Rubbing fingers on surface produces a brownish tint on them, scraping leaves visible trail;
3 = 1-5mm;
4 = 5-20mm;
5 = >20mm;
UD = Cannot determine if microalgae present, substrate too small or covered with silt (formerly Z code).
D = Dry, not assessed

Flow Habitats

Channel Type	%
Cascade/ Falls	
Rapid	
Riffle	
Run	
Glide	
Pool	100
Dry	

SWAMP Stream Habitat Characterization Form *FULL VERSION* *Revision Date: February 9th, 2011*

Site Code:	Site Name: Yuba blw Colgate	Date: ___/___/2011
Wetted Width (m): 31	Bankfull Width (m): 38 / Bankfull Height (m): 2	**Transect B**

Transect Substrates

Position	Dist from LB (m)	Depth (cm)	mm/ size class	% Cobble Embed.	CPOM	Microalgae Thickness Code	Macroalgae Attached	Macroalgae Unattached	Macrophytes
Left Bank	1.5	15	SAND	—	(P) A	1	P (A) D	P (A) D	P (A) D
Left Center	7.5	44	COB	30	P (A)	3	(P) A D	P (A) D	P (A) D
Center	15	102	CG	—	P (A)	2	P (A) D	P (A) D	P (A) D
Right Center	22.5	133	SAND	—	P (A)	3	(P) A D	P (A) D	P (A) D
Right Bank	30.5	51	COB	40	(P) A	3	P (A) D	P (A) D	P (A) D

Note: Substrate sizes can be recorded either as direct measures of the median axis of each particle or one of the size class categories listed on the supplemental page (direct measurements preferred)

Microalgae Thickness Codes
0 = No microalgae present. Feels rough, not slimy;
1 = Present but not visible. Feels slimy;
2 = Present and visible but <1mm. Rubbing fingers on surface produces a brownish tint on them, scraping leaves visible trail;
3 = 1-5mm;
4 = 5-20mm;
5 = >20mm;
UD = Cannot determine if microalgae present, substrate too small or covered with silt (formerly Z code);
D = Dry, not assessed

RIPARIAN VEGETATION (facing downstream)
0 = Absent (0%) 3 = Heavy (40-75%)
1 = Sparse (<10%) 4 = Very Heavy (>75%)
2 = Moderate (10-40%)

Vegetation Class	Left Bank	Right Bank
Upper Canopy (>5 m high)		
Trees and saplings >5 m high	0 (1) 2 3 4	0 (1) 2 3 4
Lower Canopy (0.5 m-5 m high)		
All vegetation 0.5 m to 5 m	0 1 (2) 3 4	0 1 (2) 3 4
Ground Cover (<0.5 m high)		
Woody shrubs & saplings <0.5 m	0 1 (2) 3 4	0 1 (2) 3 4
Herbs/ grasses	0 1 2 (3) 4	0 1 2 (3) 4
Barren, bare soil/ duff	0 1 (2) 3 4	0 1 (2) 3 4

INSTREAM HABITAT COMPLEXITY
0 = Absent (0%)
1 = Sparse (<10%)
2 = Moderate (10-40%)
3 = Heavy (40-75%)
4 = Very Heavy (>75%)

Filamentous Algae	(0) 1 2 3 4
Aquatic Macrophytes/ Emergent Vegetation	(0) 1 2 3 4
Boulders	0 1 (2) 3 4
Woody Debris >0.3 m	(0) 1 2 3 4
Woody Debris <0.3 m	(0) 1 2 3 4
Undercut Banks	0 (1) 2 3 4
Overhang. Vegetation	0 (1) 2 3 4
Live Tree Roots	(0) 1 2 3 4
Artificial Structures	(0) 1 2 3 4

DENSIOMETER READINGS (0-17)
count covered dots

Center Left	13
Center Upstream	6
Center Right	9
Center Downstream	8
Optional	
Left Bank	—
Right Bank	—

HUMAN INFLUENCE (circle only the closest to wetted channel)
0 = Not Present;
B = On Bank;
C = Between Bank & 10m from Channel;
P = >10m+<50m from Channel;
Channel (record Yes or No)

	Left Bank	Channel	Right Bank
Walls/ Rip-rap/ Dams	P C B (0)	Y (N)	(0) B C P
Buildings	P C B (0)	Y (N)	(0) B C P
Pavement/ Cleared Lot	P C B (0)		(0) B C P
Road/ Railroad	P C B (0)	Y (N)	(0) B C P
Pipes (Inlet/ Outlet)	P C B (0)	Y (N)	(0) B C P
Landfill/ Trash	P C B (0)	Y (N)	(0) B C P
Park/ Lawn	P C B (0)		(0) B C P
Row Crop	P C B (0)		(0) B C P
Pasture/ Range	P C B (0)		(0) B C P
Logging Operations	P C B (0)		(0) B C P
Mining Activity	P C B (0)	Y (N)	(0) B C P
Vegetation Management	P C B (0)		(0) B C P
Bridges/ Abutments	P C B (0)	Y (N)	(0) B C P
Orchards/ Vineyards	P C B (0)		(0) B C P

BANK STABILITY
(score zone 5m upstream and 5m downstream of transect between bankfull - wetted width)

Left Bank	eroded	vulnerable	(stable)
Right Bank	eroded	vulnerable	(stable)

Inter-Transect: BC

Wetted Width (m): 32

Inter-Transect Substrates

Position	Dist from LB (m)	Depth (cm)	mm/ size class	% Cobble Embed.	CPOM	Microalgae Thickness Code	Macroalgae Attached	Macroalgae Unattached	Macrophytes
Left Bank	.5	11	COB	30	P (A)	3	(P) A D	P (A) D	P (A) D
Left Center	8	44	CG	—	P (A)	0	P (A) D	P (A) D	P (A) D
Center	16	93	BLD	—	P (A)	3	(P) A D	P (A) D	P (A) D
Right Center	24	151	BLD	—	P A	2	P (A) D	P (A) D	P (A) D
Right Bank	31.5	26	BED	—	P (A)	3	P (A) D	P (A) D	P (A) D
	Note: Substrate sizes can be recorded either as direct measures of the median axis of each particle or one of the size class categories listed on the supplemental page (direct measurements preferred)								

Microalgae Thickness Codes

0 = No microalgae present. Feels rough, not slimy;
1 = Present but not visible. Feels slimy;
2 = Present and visible but <1mm; Rubbing fingers on surface produces a brownish tint on them, scraping leaves visible trail;
3 = 1-5mm;
4 = 5-20mm;
5 = >20mm;
UD = Cannot determine if microalgae present, substrate too small or covered with silt (formerly Z code);
D = Dry, not assessed

Flow Habitats

(% should sum to 100%)

Channel Type	%
Cascade/Falls	
Rapid	
Riffle	40
Run	
Glide	
Pool	60
Dry	

SWAMP Stream Habitat Characterization Form **FULL VERSION** *Revision Date: February 9th, 2011*

Site Code:	Site Name: Yuba blw CPH	Date: ___/___/2011
Wetted Width (m): 36	Bankfull Width (m): 44 / Bankfull Height (m): 3	**Transect C**

Transect Substrates

Position	Dist from LB (m)	Depth (cm)	mm/ size class	% Cobble Embed.	CPOM	Microalgae Thickness Code	Macroalgae Attached	Macroalgae Unattached	Macrophytes
Left Bank	.5	14	COB	20	P (A)	3	(P) A D	P (A) D	P (A) D
Left Center	9	53	SW	—	P (A)	2	P (A) D	P (A) D	P (A) D
Center	18	0	BED	—	P (A)	2	P (A) D	P (A) D	P (A) D
Right Center	27				P (A)		P A D	P A D	P A D
Right Bank	35.5	122	COB	70	P (A)	1	P (A) D	P (A) D	P (A) D
	Note: Substrate sizes can be recorded either as direct measures of the median axis of each particle or one of the size class categories listed on the supplemental page (direct measurements preferred)								

Microalgae Thickness Codes
0 = No microalgae present. Feels rough, not slimy;
1 = Present but not visible. Feels slimy;
2 = Present and visible but <1mm. Rubbing fingers on surface produces a brownish tint on them, scraping leaves visible trail;
3 = 1-5mm;
4 = 5-20mm;
5 = >20mm;
UD = Cannot determine if microalgae present, substrate too small or covered with silt (formerly Z code);
D = Dry, not assessed

RIPARIAN VEGETATION (facing downstream)
0 = Absent (0%) 3 = Heavy (40-75%)
1 = Sparse (<10%) 4 = Very Heavy (>75%)
2 = Moderate (10-40%)

Vegetation Class	Left Bank	Right Bank
Upper Canopy (>5 m high)		
Trees and saplings >5 m high	(0) 1 2 3 4	0 (1) 2 3 4
Lower Canopy (0.5 m-5 m high)		
All vegetation 0.5 m to 5 m	0 (1) 2 3 4	0 1 (2) 3 4
Ground Cover (<0.5 m high)		
Woody shrubs & saplings <0.5 m	0 1 (2) 3 4	0 1 (2) 3 4
Herbs/ grasses	0 1 (2) 3 4	0 (1) 2 3 4
Barren, bare soil/ duff	0 1 2 3 (4)	0 1 2 (3) (4)

INSTREAM HABITAT COMPLEXITY
0 = Absent (0%)
1 = Sparse (<10%)
2 = Moderate (10-40%)
3 = Heavy (40-75%)
4 = Very Heavy (>75%)

Filamentous Algae	(0) 1 2 3 4
Aquatic Macrophytes/ Emergent Vegetation	(0) 1 2 3 4
Boulders	0 1 (2) 3 4
Woody Debris >0.3 m	(0) 1 2 3 4
Woody Debris <0.3 m	(0) 1 2 3 4
Undercut Banks	0 (1) 2 3 4
Overhang. Vegetation	(0) (1) 2 3 4
Live Tree Roots	(0) 1 2 3 4
Artificial Structures	(0) 1 2 3 4

DENSIOMETER READINGS (0-17)
count covered dots

Center Left	6
Center Upstream	5
Center Right	6
Center Downstream	10
Optional	
Left Bank	—
Right Bank	—

HUMAN INFLUENCE (circle only the closest to wetted channel)
0 = Not Present;
B = On Bank;
C = Between Bank & 10m from Channel;
P = >10m+<50m from Channel;
Channel (record Yes or No)

	Left Bank	Channel	Right Bank
Walls/ Rip-rap/ Dams	P C B (0)	Y (N)	(0) B C P
Buildings	P C B (0)	Y (N)	(0) B C P
Pavement/ Cleared Lot	P C B (0)		(0) B C P
Road/ Railroad	P C B (0)	Y (N)	(0) B C P
Pipes (Inlet/ Outlet)	P C B (0)	Y (N)	(0) B C P
Landfill/ Trash	P C B (0)	Y (N)	(0) B C P
Park/ Lawn	P C B (0)		(0) B C P
Row Crop	P C B (0)		(0) B C P
Pasture/ Range	P C B (0)		(0) B C P
Logging Operations	P C B (0)		(0) B C P
Mining Activity	P C B (0)	Y (N)	(0) B C P
Vegetation Management	P C B (0)		(0) B C P
Bridges/ Abutments	P C B (0)	Y (N)	(0) B C P
Orchards/ Vineyards	P C B (0)		(0) B C P

BANK STABILITY
(score zone 5m upstream and 5m downstream of transect between bankfull - wetted width)

Left Bank	eroded	vulnerable	(stable)
Right Bank	eroded	vulnerable	(stable)

Inter-Transect: CD

Wetted Width (m): 21

Inter-Transect Substrates

Position	Dist from LB (m)	Depth (cm)	mm/ size class	% Cobble Embed	CPOM	Microalgae Thickness Code	Macroalgae Attached	Macroalgae Unattached	Macrophytes
Left Bank	.5	11	COB	0	P (A)	3	P (A) D	P (A) D	P (A) D
Left Center	5.5	77	COB	20	P A	3	P A D	P A D	P A D
Center	11	81	BLD	—	P A	2	P A D	P A D	P A D
Right Center	16.5	45	COB	70	P A	2	P A D	P A D	P A D
Right Bank	20.5	14	COB	40	P A	3	P (A) D	P (A) D	P (A) D
	Note: Substrate sizes can be recorded either as direct measures of the median axis of each particle or one of the size class categories listed on the supplemental page (direct measurements preferred)								

Microalgae Thickness Codes
0 = No microalgae present. Feels rough, not slimy;
1 = Present but not visible. Feels slimy;
2 = Present and visible but <1mm. Rubbing fingers on surface produces a brownish tint on them, scraping leaves visible trail.
3 = 1-5mm;
4 = 5-20mm;
5 = >20mm;
UD = Cannot determine if microalgae present, substrate too small or covered with silt (formerly Z code);
D = Dry, not assessed

FLOW HABITATS (% between transects, must = 100%)

Channel Type	%
Cascade/ Falls	
Rapid	
Riffle	70
Run	
Glide	
Pool	30
Dry	

Site Code:	Site Name: Yuba blw CP14	Date: ___/___/2011
Wetted Width (m): 20	Bankfull Width (m): 33	Bankfull Height (m): 2.5

Transect D

Transect Substrates

Position	Dist from LB (m)	Depth (cm)	mm/ size class	% Cobble Embed.	CPOM	Microalgae Thickness Code	Macroalgae Attached	Macroalgae Unattached	Macrophytes
Left Bank	5	15	COB	0	P (A)	2	P (A) D	P (A) D	P (A) D
Left Center	5	40	COB	30	P (A)	3	P (A) D	P (A) D	P (A) D
Center	10	99	BLD	—	P (A)	2	P (A) D	P (A) D	P (A) D
Right Center	15	68	BLD	—	P (A)	2	P (A) D	P (A) D	P (A) D
Right Bank	19.5	28	COB	20	P (A)	0	P (A) D	P (A) D	P (A) D

Note: Substrate sizes can be recorded either as direct measures of the median axis of each particle or one of the size class categories listed on the supplemental page (direct measurements preferred)

Microalgae Thickness Codes
0 = No microalgae present. Feels rough, not slimy;
1 = Present but not visible. Feels slimy;
2 = Present and visible but <1mm. Rubbing fingers on surface produces a brownish tint on them, scraping leaves visible trail.
3 = 1-5mm;
4 = 5-20mm;
5 = >20mm;
UD = Cannot determine if microalgae present, substrate too small or covered with silt (formerly Z code)
D = Dry, not assessed

Riparian Vegetation
(facing downstream)

0 = Absent (0%) 3 = Heavy (40-75%)
1 = Sparse (<10%) 4 = Very Heavy (>75%)
2 = Moderate (10-40%)

Vegetation Class	Left Bank	Right Bank
Upper Canopy (>5 m high)		
Trees and saplings >5 m high	0 1 (2) 3 4	(0) 1 2 3 4
Lower Canopy (0.5 m-5 m high)		
All vegetation 0.5 m to 5 m	0 (1) 2 3 4	0 (1) 2 3 4
Ground Cover (<0.5 m high)		
Woody shrubs & saplings <0.5 m	0 (1) (2) 3 4	0 1 (2) 3 4
Herbs/ grasses	0 (1) 2 3 4	0 (1) 2 3 4
Barren, bare soil/ duff	0 1 2 3 (4)	0 1 2 3 (4)

Instream Habitat Complexity

0 = Absent (0%)
1 = Sparse (<10%)
2 = Moderate (10-40%)
3 = Heavy (40-75%)
4 = Very Heavy (>75%)

Filamentous Algae	(0) 1 2 3 4
Aquatic Macrophytes/ Emergent Vegetation	(0) 1 2 3 4
Boulders	0 1 (2) 3 4
Woody Debris >0.3 m	(0) 1 2 3 4
Woody Debris <0.3 m	(0) 1 2 3 4
Undercut Banks	(0) 1 2 3 4
Overhang. Vegetation	(0) 1 2 3 4
Live Tree Roots	(0) 1 2 3 4
Artificial Structures	(0) 1 2 3 4

Densiometer Readings (0-17)
count covered dots

Center Left	7
Center Upstream	5
Center Right	10
Center Downstream	4
Optional	
Left Bank	—
Right Bank	—

Human Influence
(circle only the closest to wetted channel)

0 = Not Present;
B = On Bank;
C = Between Bank & 10m from Channel;
P = >10m+<50m from Channel;
Channel (record Yes or No)

	Left Bank	Channel	Right Bank
Walls/ Rip-rap/ Dams	P C B (0)	Y (N)	(0) B C P
Buildings	P C B (0)	Y N	(0) B C P
Pavement/ Cleared Lot	P C B (0)		(0) B C P
Road/ Railroad	P C B (0)	Y N	(0) B C P
Pipes (Inlet/ Outlet)	P C B (0)	Y N	(0) B C P
Landfill/ Trash	P C B (0)	Y N	(0) B C P
Park/ Lawn	P C B (0)		(0) B C P
Row Crop	P C B (0)		(0) B C P
Pasture/ Range	P C B (0)		(0) B C P
Logging Operations	P C B (0)		(0) B C P
Mining Activity	P C B (0)	Y N	(0) B C P
Vegetation Management	P C B (0)		(0) B C P
Bridges/ Abutments	P C B (0)	Y N	(0) B C P
Orchards/ Vineyards	P C B (0)		(0) B C P

Bank Stability
(score zone 5m upstream and 5m downstream of transect between bankfull - wetted width)

Left Bank	eroded	vulnerable	(stable)
Right Bank	eroded	vulnerable	(stable)

Inter-Transect: DE

Wetted Width (m): 18

Inter-Transect Substrates

Position	Dist from LB (m)	Depth (cm)	mm/ size class	% Cobble Embed.	CPOM	Microalgae Thickness Code	Macroalgae Attached	Macroalgae Unattached	Macrophytes
Left Bank	.5	18	COB	0	P (A)	2	(P) A D	P (A) D	P (A) D
Left Center	4.5	122	BLD	—	P (A)	2	P A D	P (A) D	P (A) D
Center	9	181	BLD	—	P (A)	3	P A D	P (A) D	P (A) D
Right Center	13.5	150	COB	30	P (A)	2	P A D	P (A) D	P (A) D
Right Bank	17.5	93	COB	70	P (A)	1	P (A) D	P (A) D	P (A) D
	Note: Substrate sizes can be recorded either as direct measures of the median axis of each particle or one of the size class categories listed on the supplemental page (direct measurements preferred)								

Microalgae Thickness Codes
0 = No microalgae present. Feels rough, not slimy;
1 = Present but not visible. Feels slimy;
2 = Present and visible but <1mm. Rubbing fingers on surface produces a brownish tint on them, scraping leaves visible trail;
3 = 1-5mm;
4 = 5-20mm;
5 = >20mm;
UD = Cannot determine if microalgae present, substrate too small or covered with silt (formerly Z code);
D = Dry, not assessed

Flow Habitats

(% between transects, total = 100%)

Channel Type	%
Cascade/Falls	
Rapid	
Riffle	100 — Deep
Run	
Glide	
Pool	
Dry	

SWAMP Stream Habitat Characterization Form *FULL VERSION* *Revision Date: February 9th, 2011*

Site Code:	Site Name: Yuba blw CPH	Date: ___ / ___ / 2011
Wetted Width (m): 17	Bankfull Width (m): 35 / Bankfull Height (m): 2	**Transect E**

Transect Substrates

Position	Dist from LB (m)	Depth (cm)	mm/ size class	% Cobble Embed.	CPOM	Microalgae Thickness Code	Macroalgae Attached	Macroalgae Unattached	Macrophytes
Left Bank	.5	21	COB	0	P (A)	3	P (A) D	P (A) D	P (A) D
Left Center	4.5	96	BLD	—	P A	3	P A D	P A D	P A D
Center	6.5	107	BLD	—	P A	2	P A D	P A D	P A D
Right Center	12.5	70	COB	0	P A	2	P A D	P A D	P A D
Right Bank	16.5	24	COB	10	P A	3	P A D	P A D	P A D

Note: Substrate sizes can be recorded either as direct measures of the median axis of each particle or one of the size class categories listed on the supplemental page (direct measurements preferred).

Microalgae Thickness Codes
0 = No microalgae present. Feels rough, not slimy;
1 = Present but not visible. Feels slimy;
2 = Present and visible but <1mm. Rubbing fingers on surface produces a brownish tint on them, scraping leaves visible trail;
3 = 1-5mm;
4 = 5-20mm;
5 = >20mm;
UD = Cannot determine if microalgae present, substrate too small or covered with silt (formerly Z code).
D = Dry, not assessed

RIPARIAN VEGETATION (facing downstream)
0 = Absent (0%) 3 = Heavy (40-75%)
1 = Sparse (<10%) 4 = Very Heavy (>75%)
2 = Moderate (10-40%)

Vegetation Class	Left Bank	Right Bank
Upper Canopy (>5 m high)		
Trees and saplings >5 m high	(0) 1 2 3 4	(0) 1 2 3 4
Lower Canopy (0.5 m-5 m high)		
All vegetation 0.5 m to 5 m	0 (1) 2 3 4	0 (1) 2 3 4
Ground Cover (<0.5 m high)		
Woody shrubs & saplings <0.5 m	0 (1) 2 3 4	0 (1) 2 3 4
Herbs/ grasses	0 (1) 2 3 4	0 1 (2) 3 4
Barren, bare soil/ duff	0 1 2 3 (4)	0 1 2 3 (4)

INSTREAM HABITAT COMPLEXITY
0 = Absent (0%)
1 = Sparse (<10%)
2 = Moderate (10-40%)
3 = Heavy (40-75%)
4 = Very Heavy (>75%)

Filamentous Algae	(0) 1 2 3 4
Aquatic Macrophytes/ Emergent Vegetation	(0) 1 2 3 4
Boulders	0 1 (2) 3 4
Woody Debris >0.3 m	(0) 1 2 3 4
Woody Debris <0.3 m	(0) 1 2 3 4
Undercut Banks	(0) 1 2 3 4
Overhang. Vegetation	(0) 1 2 3 4
Live Tree Roots	(0) 1 2 3 4
Artificial Structures	(0) 1 2 3 4

DENSIOMETER READINGS (0-17)
count covered dots

Center Left	6
Center Upstream	5
Center Right	3
Center Downstream	5
Optional	
Left Bank	1
Right Bank	1

HUMAN INFLUENCE (circle only the closest to wetted channel)
0 = Not Present;
B = On Bank;
C = Between Bank & 10m from Channel;
P = >10m+<50m from Channel;
Channel (record Yes or No)

	Left Bank	Channel	Right Bank
Walls/ Rip-rap/ Dams	P C B (0)	Y (N)	(0) B C P
Buildings	P C B (0)	Y (N)	(0) B C P
Pavement/ Cleared Lot	P C B (0)		(0) B C P
Road/ Railroad	P C B (0)	Y (N)	(0) B C P
Pipes (Inlet/ Outlet)	P C B (0)	Y (N)	(0) B C P
Landfill/ Trash	P C B (0)	Y (N)	(0) B C P
Park/ Lawn	P C B (0)		(0) B C P
Row Crop	P C B (0)		(0) B C P
Pasture/ Range	P C B (0)		(0) B C P
Logging Operations	P C B (0)		(0) B C P
Mining Activity	P C B (0)	Y (N)	(0) B C P
Vegetation Management	P C B (0)		(0) B C P
Bridges/ Abutments	P C B (0)	Y (N)	(0) B C P
Orchards/ Vineyards	P C B (0)		(0) B C P

BANK STABILITY
Score one for upstream and one downstream of transect between bankfull + wetted width

Left Bank	eroded	vulnerable	(stable)
Right Bank	eroded	vulnerable	(stable)

Inter-Transect: EF

Wetted Width (m): 15

Inter-Transect Substrates

Position	Dist from LB (m)	Depth (cm)	mm/ size class	% Cobble Embed	CPOM	Microalgae Thickness Code	Macroalgae Attached	Macroalgae Unattached	Macrophytes
Left Bank	.5	18	BLD	—	P (A)	0	(P) A D	P (A) D	P (A) D
Left Center	4	69	CB	—	P A	0	P A D	P A D	P A D
Center	7.5	89	BLD	—	P A	0	P A D	P A D	P A D
Right Center	11.5	54	COB	0	P A	0	P A D	P A D	P A D
Right Bank	14.5	28	COB	0	P A	2	P (A) D	P A D	P A D
	Note: Substrate sizes can be recorded either as direct measures of the median axis of each particle or one of the size class categories listed on the supplemental page (direct measurements preferred).								

Microalgae Thickness Codes
0 = No microalgae present. Feels rough, not slimy;
1 = Present but not visible. Feels slimy;
2 = Present and visible but <1mm; Rubbing fingers on surface produces a brownish tint on them, scraping leaves visible trail;
3 = 1-5mm;
4 = 5-20mm;
5 = >20mm;
UD = Cannot determine if microalgae present, substrate too small or covered with silt (formerly Z code).
D = Dry; not assessed

FLOW HABITATS (between transects LB – LB)

Channel Type	%
Cascade/ Falls	
Rapid	
Riffle	100
Run	
Glide	
Pool	
Dry	

SWAMP Stream Habitat Characterization Form FULL VERSION Revision Date: February 9th, 2011

Site Code:	Site Name: YR abv CPH	Date: ___/___/2011
Wetted Width (m): 14	Bankfull Width (m): 30	Bankfull Height (m): 1.5

Transect F

Transect Substrates

Position	Dist from LB (m)	Depth (cm)	mm/ size class	% Cobble Embed.	CPOM	Microalgae Thickness Code	Macroalgae Attached	Macroalgae Unattached	Macrophytes
Left Bank	.5	45	BLD	—	P (A)	3	(D) A D	P (A) D	P (A) D
Left Center	3.5	97	BLD	—	P A	2	(P) A D	P A D	P A D
Center	7	106	BLD	—	P A	2	P (A) D	P A D	P A D
Right Center	10.5	45	COB	30	P (A)	2	P (A) D	P A D	P A D
Right Bank	13.5	19	BLD	—	P (A)	2	P (A) D	P (A) D	P (A) D

Note: Substrate sizes can be recorded either as direct measures of the median axis of each particle or one of the size class categories listed on the supplemental page (direct measurements preferred)

Microalgae Thickness Codes
0 = No microalgae present. Feels rough, not slimy;
1 = Present but not visible. Feels slimy;
2 = Present and visible but <1mm. Rubbing fingers on surface produces a brownish tint on them, scraping leaves visible trail;
3 = 1-5mm;
4 = 5-20mm;
5 = >20mm;
UD = Cannot determine if microalgae present, substrate too small or covered with silt (formerly Z code);
D = Dry, not assessed

Riparian Vegetation (facing downstream)

0 = Absent (0%) 3 = Heavy (40-75%)
1 = Sparse (<10%) 4 = Very Heavy (>75%)
2 = Moderate (10-40%)

Vegetation Class	Left Bank	Right Bank
Upper Canopy (>5 m high)		
Trees and saplings >5 m high	(0) 1 2 3 4	(0) 1 2 3 4
Lower Canopy (0.5 m-5 m high)		
All vegetation 0.5 m to 5 m	(0) (1) 2 3 4	0 (1) 2 3 4
Ground Cover (<0.5 m high)		
Woody shrubs & saplings <0.5 m	0 (1) 2 3 4	0 (1) 2 3 4
Herbs/ grasses	0 1 (2) 3 4	0 1 (2) 3 4
Barren, bare soil/ duff	0 1 2 3 (4)	0 1 2 3 (4)

Instream Habitat Complexity

0 = Absent (0%)
1 = Sparse (<10%)
2 = Moderate (10-40%)
3 = Heavy (40-75%)
4 = Very Heavy (>75%)

Filamentous Algae	(0) 1 2 3 4
Aquatic Macrophytes/ Emergent Vegetation	(0) 1 2 3 4
Boulders	0 1 (2) 3 4
Woody Debris >0.3 m	(0) 1 2 3 4
Woody Debris <0.3 m	(0) 1 2 3 4
Undercut Banks	(0) 1 2 3 4
Overhang. Vegetation	0 (1) 2 3 4
Live Tree Roots	(0) 1 2 3 4
Artificial Structures	(0) 1 2 3 4

Densiometer Readings (0-17)

count covered dots

Center Left	6
Center Upstream	0
Center Right	3
Center Downstream	0
Optional	
Left Bank	—
Right Bank	—

Human Influence (circle only the closest to wetted channel)

0 = Not Present;
B = On Bank;
C = Between Bank & 10m from Channel;
P = >10m+<50m from Channel;
Channel (record Yes or No)

	Left Bank	Channel	Right Bank
Walls/ Rip-rap/ Dams	P C B (0)	Y (N)	(0) B C P
Buildings	P C B 0	Y N	0 B C P
Pavement/ Cleared Lot	P C B 0		0 B C P
Road/ Railroad	P C B 0	Y N	0 B C P
Pipes (Inlet/ Outlet)	P C B 0	Y N	0 B C P
Landfill/ Trash	P C B 0	Y N	0 B C P
Park/ Lawn	P C B 0		0 B C P
Row Crop	P C B 0		0 B C P
Pasture/ Range	P C B 0		0 B C P
Logging Operations	P C B 0		0 B C P
Mining Activity	P C B 0	Y N	0 B C P
Vegetation Management	P C B 0		0 B C P
Bridges/ Abutments	P C B 0	Y N	0 B C P
Orchards/ Vineyards	P C B 0		0 B C P

Bank Stability

(Score zone 5m upstream and 5m downstream of transect between bankfull - wetted width)

Left Bank	eroded	vulnerable	(stable)
Right Bank	eroded	vulnerable	(stable)

TAKE PHOTOGRAPHS

(check box if taken & record photo code)

Downstream **(required)** ☒ 193

Upstream **(required)** ☒ 194

Inter-Transect: FG

Wetted Width (m): 15

Inter-Transect Substrates

Position	Dist from LB (m)	Depth (cm)	mm/ size class	% Cobble Embed	CPOM	Microalgae Thickness Code	Macroalgae Attached	Macroalgae Unattached	Macrophytes
Left Bank	1.5	22	BLD	—	P (A)	2	(P) A D	P (A) D	P (A) D
Left Center	3	104	BLD	←	P A	3	P (A) D	P A D	P A D
Center	7.5	102	CG	~	P A	1	P (A) D	P A D	P A D
Right Center	10.5	66	BLD	~	P A	1	P (A) D	P A D	P A D
Right Bank	14.5	27	GOB	80	P A	0	P (A) D	P (A) D	P (A) D

Note: Substrate sizes can be recorded either as direct measures of the median axis of each particle or one of the size class categories listed on the supplemental page (direct measurements preferred)

Microalgae Thickness Codes
0 = No microalgae present. Feels rough, not slimy;
1 = Present but not visible. Feels slimy;
2 = Present and visible but <1mm. Rubbing fingers on surface produces a brownish tint on them, scraping leaves visible trail;
3 = 1-5mm;
4 = 5-20mm;
5 = >20mm;
UD = Cannot determine if microalgae present, substrate too small or covered with silt (formerly Z code);
D = Dry, not assessed

FLOW HABITATS
(% between transects, total = 100%)

Channel Type	%
Cascade/ Falls	10
Rapid	
Riffle	40
Run	10
Glide	
Pool	20 40
Dry	

SWAMP Stream Habitat Characterization Form FULL VERSION Revision Date: February 9th, 2011

Site Code:	Site Name: YR blw CP1+	Date: ___/___/2011
Wetted Width (m): 27	Bankfull Width (m): 36	Bankfull Height (m): 1.5

Transect G

Transect Substrates

Position	Dist from LB (m)	Depth (cm)	mm/ size class	% Cobble Embed.	CPOM	Microalgae Thickness Code	Macroalgae Attached	Macroalgae Unattached	Macrophytes
Left Bank	.5	12	BLD	—	P (A)	3	P (A) D	P (A) D	P (A) D
Left Center	6.5	111	BLD	—	P A	2	P (A) D	P A D	P A D
Center	13	87	BLD	—	P A	2	P A D	P A D	P A D
Right Center	19.5	40	COB	20	P A	0	P (A) D	P A D	P A D
Right Bank	26.5	24	COB	30	P A	2	P (A) D	P (A) D	P A D

Note: Substrate sizes can be recorded either as direct measures of the median axis of each particle or one of the size class categories listed on the supplemental page (direct measurements preferred)

Microalgae Thickness Codes
0 = No microalgae present. Feels rough, not slimy;
1 = Present but not visible. Feels slimy;
2 = Present and visible but <1mm; Rubbing fingers on surface produces a brownish tint on them, scraping leaves visible trail.
3 = 1-5mm;
4 = 5-20mm;
5 = >20mm;
UD = Cannot determine if microalgae present, substrate too small or covered with silt (formerly Z code);
D = Dry, not assessed

Riparian Vegetation (facing downstream)

0 = Absent (0%) 3 = Heavy (40-75%)
1 = Sparse (<10%) 4 = Very Heavy (>75%)
2 = Moderate (10-40%)

Vegetation Class	Left Bank	Right Bank
Upper Canopy (>5 m high)		
Trees and saplings >5 m high	(0) 1 2 3 4	(0) 1 2 3 4
Lower Canopy (0.5 m-5 m high)		
All vegetation 0.5 m to 5 m	(0) 1 2 3 4	(0) 1 2 3 4
Ground Cover (<0.5 m high)		
Woody shrubs & saplings <0.5 m	0 (1) 2 3 4	0 (1) 2 3 4
Herbs/ grasses	0 1 (2) 3 4	0 1 (2) 3 4
Barren, bare soil/ duff	0 1 2 3 (4)	0 1 2 3 (4)

Instream Habitat Complexity

0 = Absent (0%)
1 = Sparse (<10%)
2 = Moderate (10-40%)
3 = Heavy (40-75%)
4 = Very Heavy (>75%)

Filamentous Algae	(0) 1 2 3 4
Aquatic Macrophytes/ Emergent Vegetation	(0) 1 2 3 4
Boulders	0 1 (2) 3 4
Woody Debris >0.3 m	(0) 1 2 3 4
Woody Debris <0.3 m	(0) 1 2 3 4
Undercut Banks	(0) 1 2 3 4
Overhang. Vegetation	(0) 1 2 3 4
Live Tree Roots	(0) 1 2 3 4
Artificial Structures	(0) 1 2 3 4

Densiometer Readings (0-17)

count covered dots

Center Left	1
Center Upstream	0
Center Right	0
Center Downstream	1
Optional	
Left Bank	—
Right Bank	—

Human Influence (circle only the closest to wetted channel)

0 = Not Present;
B = On Bank;
C = Between Bank & 10m from Channel;
P = >10m+<50m from Channel;
Channel (record Yes or No)

	Left Bank	Channel	Right Bank
Walls/ Rip-rap/ Dams	P C B (0)	Y (N)	(0) B C P
Buildings	P C B (0)	Y N	(0) B C P
Pavement/ Cleared Lot	P C B (0)		(0) B C P
Road/ Railroad	P C B (0)	Y N	(0) B C P
Pipes (Inlet/ Outlet)	P C B (0)	Y N	(0) B C P
Landfill/ Trash	P C B (0)	Y N	(0) B C P
Park/ Lawn	P C B (0)		0 B C P
Row Crop	P C B (0)		0 B C P
Pasture/ Range	P C B (0)		0 B C P
Logging Operations	P C B (0)		0 B C P
Mining Activity	P C B (0)	Y N	0 B C P
Vegetation Management	P C B (0)		0 B C P
Bridges/ Abutments	P C B (0)	Y N	0 B C P
Orchards/ Vineyards	P C B (0)		0 B C P

Bank Stability

Assess bank for upstream and 5m downstream of the reach between bankfull width-2 width

Left Bank	eroded	vulnerable	(stable)
Right Bank	eroded	vulnerable	(stable)

Inter-Transect: GH

Wetted Width (m): 28

Inter-Transect Substrates

Position	Dist from LB (m)	Depth (cm)	mm/ size class	% Cobble Embed	CPOM	Microalgae Thickness Code	Macroalgae Attached	Macroalgae Unattached	Macrophytes
Left Bank	.5	32	BLD	—	P (A)	3	P A D	P A D	P (A) D
Left Center	7	118	BLD	—	P A	3	P A D	P A D	P A D
Center	14	87	BLD	—	P A	2	P A D	P A D	P A D
Right Center	21	34	COB	70	P A	1	P A D	P A D	P A D
Right Bank	27.5	15	COB	50	P A	0	P A D	P A D	P A D

Note: Substrate sizes can be recorded either as direct measures of the median axis of each particle or one of the size class categories listed on the supplemental page (direct measurements preferred)

Microalgae Thickness Codes
0 = No microalgae present. Feels rough, not slimy;
1 = Present but not visible. Feels slimy;
2 = Present and visible but <1mm. Rubbing fingers on surface produces a brownish tint on them, scraping leaves visible trail;
3 = 1-5mm;
4 = 5-20mm;
5 = >20mm;
UD = Cannot determine if microalgae present, substrate too small or covered with silt (formerly Z code);
D = Dry, not assessed

Flow Habitats

Channel Type	%
Cascade/ Falls	10
Rapid	
Riffle	40
Run	10
Glide	
Pool	80
Dry	

SWAMP Stream Habitat Characterization Form FULL VERSION Revision Date: February 9th, 2011

Site Code:	Site Name: YR blw CPH	Date: 07/14/2014 2
Wetted Width (m): 31	Bankfull Width (m): 36 Bankfull Height (m): 1.5	**Transect H**

Transect Substrates

Position	Dist from LB (m)	Depth (cm)	mm/ size class	% Cobble Embed	CPOM	Microalgae Thickness Code	Macroalgae Attached	Macroalgae Unattached	Macrophytes
Left Bank	5	34	BLD	—	P (A)	0	(P) A D	P (A) D	P (A) D
Left Center	7.5	131	BLD	—	P A	6	(P) A D	P A D	P A D
Center	15	158	BLD	—	P A	0	P (A) D	P A D	P A D
Right Center	22.5	70	BLD	—	P A	2	(P) A D	P A D	P A D
Right Bank	30.5	43	CG	—	P A	2	P (A) D	P A D	P A D

Note: Substrate sizes can be recorded either as direct measures of the median axis of each particle or one of the size class categories listed on the supplemental page (direct measurements preferred)

Microalgae Thickness Codes
0 = No microalgae present. Feels rough, not slimy;
1 = Present but not visible. Feels slimy;
2 = Present and visible but <1mm. Rubbing fingers on surface produces a brownish tint on them, scraping leaves visible trail;
3 = 1-5mm;
4 = 5-20mm;
5 = >20mm;
UD = Cannot determine if microalgae present, substrate too small or covered with silt (formerly 2 code);
D = Dry, not assessed

RIPARIAN VEGETATION (facing downstream)
0 = Absent (0%) 3 = Heavy (40-75%)
1 = Sparse (<10%) 4 = Very Heavy (>75%)
2 = Moderate (10-40%)

Vegetation Class	Left Bank	Right Bank
Upper Canopy (>5 m high)		
Trees and saplings >5 m high	(0) 1 2 3 4	(0) 1 2 3 4
Lower Canopy (0.5 m-5 m high)		
All vegetation 0.5 m to 5 m	0 1 (2) 3 4	0 (1) 2 3 4
Ground Cover (<0.5 m high)		
Woody shrubs & saplings <0.5 m	0 1 (2) 3 4	0 1 (2) 3 4
Herbs/ grasses	0 1 (2) 3 4	0 (1) 2 3 4
Barren, bare soil/ duff	0 1 2 3 (4)	0 1 2 3 (4)

INSTREAM HABITAT COMPLEXITY
0 = Absent (0%)
1 = Sparse (<10%)
2 = Moderate (10-40%)
3 = Heavy (40-75%)
4 = Very Heavy (>75%)

Filamentous Algae	(0) 1 2 3 4
Aquatic Macrophytes/ Emergent Vegetation	(0) 1 2 3 4
Boulders	0 (1) 2 3 4
Woody Debris >0.3 m	(0) 1 2 3 4
Woody Debris <0.3 m	(0) 1 2 3 4
Undercut Banks	(0) 1 2 3 4
Overhang. Vegetation	0 (1) 2 3 4
Live Tree Roots	(0) 1 2 3 4
Artificial Structures	(0) 1 2 3 4

DENSIOMETER READINGS (0-17)
count covered dots

Center Left	3
Center Upstream	0
Center Right	4
Center Downstream	8
Optional	
Left Bank	—
Right Bank	—

HUMAN INFLUENCE (circle only the closest to wetted channel)
0 = Not Present;
B = On Bank;
C = Between Bank & 10m from Channel;
P = >10m+<50m from Channel;
Channel (record Yes or No)

	Left Bank	Channel	Right Bank
Walls/ Rip-rap/ Dams	P C B (0)	Y (N)	(0) B C P
Buildings	P C B 0	Y N	0 B C P
Pavement/ Cleared Lot	P C B 0		0 B C P
Road/ Railroad	P C B 0	Y N	0 B C P
Pipes (Inlet/ Outlet)	P C B 0	Y N	0 B C P
Landfill/ Trash	P C B 0	Y N	0 B C P
Park/ Lawn	P C B 0		0 B C P
Row Crop	P C B 0		0 B C P
Pasture/ Range	P C B 0		0 B C P
Logging Operations	P C B 0		0 B C P
Mining Activity	P C B 0	Y N	0 B C P
Vegetation Management	P C B 0		0 B C P
Bridges/ Abutments	P C B 0	Y N	0 B C P
Orchards/ Vineyards	P C B 0		0 B C P

BANK STABILITY
(circle one for left and right bank and 5m downstream of transect between low flow – wetted width)

Left Bank	eroded	vulnerable	(stable)
Right Bank	eroded	vulnerable	(stable)

Inter-Transect: HI

Wetted Width (m): 27

Inter-Transect Substrates

Position	Dist from LB (m)	Depth (cm)	mm/ size class	% Cobble Embed	CPOM	Microalgae Thickness Code	Macroalgae Attached	Macroalgae Unattached	Macrophytes
Left Bank	15	27	BLD	—	(P) A	3	(P) A D	P (A) D	P (A) D
Left Center	7	97	BLD	—	P A	2	P (A) D	P A D	P A D
Center	14	115	BLD	—	P A	0	(P) A D	P A D	P A D
Right Center	21	70	BLD	—	P A	2	(P) A D	P A D	P A D
Right Bank	26.5	14	BLD	—	P A	2	(P) A D	P (A) D	P (A) D

Note: Substrate sizes can be recorded either as direct measures of the median axis of each particle or one of the size class categories listed on the supplemental page (direct measurements preferred)

Microalgae Thickness Codes
0 = No microalgae present. Feels rough, not slimy;
1 = Present but not visible. Feels slimy;
2 = Present and visible but <1mm; Rubbing fingers on surface produces a brownish tint on them, scraping leaves visible trail;
3 = 1-5mm;
4 = 5-20mm;
5 = >20mm;
UD = Cannot determine if microalgae present, substrate too small or covered with silt (formerly Z code);
D = Dry, not assessed

FLOW HABITATS

Channel Type	%
Cascade/Falls	
Rapid	
Riffle	
Run	10
Glide	
Pool	90
Dry	

Site Code:	Site Name: YR [illegible] blw CPH	Date: ___/___/2011
Wetted Width (m): 21	Bankfull Width (m): 25 / Bankfull Height (m): 1.5	**Transect 1**

Transect Substrates

Position	Dist from LB (m)	Depth (cm)	mm/ size class	% Cobble Embed.	CPOM	Microalgae Thickness Code	Macroalgae Attached	Macroalgae Unattached	Macrophytes
Left Bank	.5	52	BLD	—	(P) A	0	(P) A D	P (A) D	P (A) D
Left Center	5.5	89	BLD	—	P A	2	(P) A D	P A D	P A D
Center	11	197	BLD	—	P A	2	(P) A D	P A D	P A D
Right Center	16.5	89	SAND	—	P A	6	P (A) D	P A D	P A D
Right Bank	20.5	26	SAND	—	P (A)	0	P (A) D	P A D	P A D
	Note: Substrate sizes can be recorded either as direct measures of the median axis of each particle or one of the size class categories listed on the supplemental page (direct measurements preferred)								

Microalgae Thickness Codes
0 = No microalgae present. Feels rough, not slimy;
1 = Present but not visible. Feels slimy;
2 = Present and visible but <1mm. Rubbing fingers on surface produces a brownish tint on them, scraping leaves visible trail;
3 = 1-5mm;
4 = 5-20mm;
5 = >20mm;
UD = Cannot determine if microalgae present, substrate too small or covered with silt (formerly Z code);
D = Dry, not assessed

Riparian Vegetation (facing downstream)

0 = Absent (0%) 3 = Heavy (40-75%)
1 = Sparse (<10%) 4 = Very Heavy (>75%)
2 = Moderate (10-40%)

Vegetation Class	Left Bank	Right Bank
Upper Canopy (>5 m high)		
Trees and saplings >5 m high	0 (1) 2 3 4	0 (1) 2 3 4
Lower Canopy (0.5 m-5 m high)		
All vegetation 0.5 m to 5 m	0 (1) 2 3 4	0 (1) 2 3 4
Ground Cover (<0.5 m high)		
Woody shrubs & saplings <0.5 m	0 1 (2) 3 4	0 1 (2) 3 4
Herbs/ grasses	0 (1) 2 3 4	0 (1) 2 3 4
Barren, bare soil/ duff	0 1 2 3 (4)	0 1 2 3 (4)

Instream Habitat Complexity

0 = Absent (0%)
1 = Sparse (<10%)
2 = Moderate (10-40%)
3 = Heavy (40-75%)
4 = Very Heavy (>75%)

Filamentous Algae	(0) 1 2 3 4
Aquatic Macrophytes/ Emergent Vegetation	(0) 1 2 3 4
Boulders	0 (1) 2 3 4
Woody Debris >0.3 m	(0) 1 2 3 4
Woody Debris <0.3 m	(0) 1 2 3 4
Undercut Banks	(0) 1 2 3 4
Overhang. Vegetation	(0) 1 2 3 4
Live Tree Roots	(0) 1 2 3 4
Artificial Structures	(0) 1 2 3 4

Densiometer Readings (0-17)

count covered dots

Center Left	5
Center Upstream	6
Center Right	3
Center Downstream	2
Optional	
Left Bank	1
Right Bank	1

Human Influence

(circle only the closest to wetted channel)

0 = Not Present;
B = On Bank;
C = Between Bank & 10m from Channel;
P = >10m+<50m from Channel;
Channel (record Yes or No)

	Left Bank	Channel	Right Bank
Walls/ Rip-rap/ Dams	P C B (0)	Y (N)	(0) B C P
Buildings	P C B 0	Y N	0 B C P
Pavement/ Cleared Lot	P C B 0		0 B C P
Road/ Railroad	P C B 0	Y N	0 B C P
Pipes (Inlet/ Outlet)	P C B 0	Y N	0 B C P
Landfill/ Trash	P C B 0	Y N	0 B C P
Park/ Lawn	P C B 0		0 B C P
Row Crop	P C B 0		0 B C P
Pasture/ Range	P C B 0		0 B C P
Logging Operations	P C B 0		0 B C P
Mining Activity	P C B 0	Y N	0 B C P
Vegetation Management	P C B 0		0 B C P
Bridges/ Abutments	P C B 0	Y N	0 B C P
Orchards/ Vineyards	P C B 0		0 B C P

Bank Stability

Include zone 5m upstream and 5m downstream of transect between low-flow - wetted width

Left Bank	eroded	vulnerable	(stable)
Right Bank	eroded	vulnerable	(stable)

Inter-Transect: IJ

Wetted Width (m): 13.5

Inter-Transect Substrates

Position	Dist from LB (m)	Depth (cm)	mm/ size class	% Cobble Embed.	CPOM	Microalgae Thickness Code	Macroalgae Attached	Macroalgae Unattached	Macrophytes
Left Bank	.5	20	COB	0	P (A)	3	(P) A D	P (A) D	P (A) D
Left Center	6	66	COB	0	P (A)	2	(P) A D	P (A) D	P (A) D
Center	12	100	BLD	0	P (A)	3	P (A) D	P A D	P (A) D
Right Center	18	78	CG	—	P (A)	0	P (A) D	P (A) D	P (A) D
Right Bank	23	0	BLD	—	(P) A	2	(P) A D	P (A) D	P (A) D

Note: Substrate sizes can be recorded either as direct measures of the median axis of each particle or one of the size class categories listed on the supplemental page (direct measurements preferred)

Microalgae Thickness Codes
0 = No microalgae present. Feels rough, not slimy;
1 = Present but not visible. Feels slimy;
2 = Present and visible but <1mm. Rubbing fingers on surface produces a brownish tint on them; scraping leaves visible trail;
3 = 1-5mm;
4 = 5-20mm;
5 = >20mm;
UD = Cannot determine if microalgae present, substrate too small or covered with silt (formerly Z code);
D = Dry, not assessed

Flow Habitats

(% between transects, total = 100%)

Channel Type	%
Cascade/ Falls	
Rapid	
Riffle	80
Run	20
Glide	
Pool	
Dry	

Site Code:	Site Name: YR b/w CPH		Date: 07/14/2012
Wetted Width (m): 28	Bankfull Width (m): 45	Bankfull Height (m): 1.5	**Transect J**

Transect Substrates

Position	Dist from LB (m)	Depth (cm)	mm/ size class	% Cobble Embed.	CPOM	Microalgae Thickness Code	Macroalgae Attached	Macroalgae Unattached	Macrophytes
Left Bank	.5	18	COB	0	P (A)	2	(P) A D	P (A) D	P (A) D
Left Center	7	39	BW	~~0~~	P A	2	(P) A D	P A D	P A D
Center	14	67	BOD	—	P A	3	(P) A D	P A D	P A D
Right Center	21	17	BOD	—	P A	~~3~~ 4	(P) A D	P A D	P A D
Right Bank	27.5	0	BOD	—	P (A)	3	(P) A D	P (A) D	P (A) D

Note: Substrate sizes can be recorded either as direct measures of the median axis of each particle or one of the size class categories listed on the supplemental page (direct measurements preferred).

Microalgae Thickness Codes
- 0 = No microalgae present. Feels rough, not slimy;
- 1 = Present but not visible, Feels slimy;
- 2 = Present and visible but <1mm; Rubbing fingers on surface produces a brownish tint on them, scraping leaves visible trail.
- 3 = 1-5mm;
- 4 = 5-20mm;
- 5 = >20mm;
- UD = Cannot determine if microalgae present, substrate too small or covered with silt (formerly Z code).
- D = Dry, not assessed

RIPARIAN VEGETATION (facing downstream)

0 = Absent (0%), 1 = Sparse (<10%), 2 = Moderate (10-40%), 3 = Heavy (40-75%), 4 = Very Heavy (>75%)

Vegetation Class	Left Bank	Right Bank
Upper Canopy (>5 m high)		
Trees and saplings >5 m high	0 (1) 2 3 4	0 (1) 2 3 4
Lower Canopy (0.5 m-5 m high)		
All vegetation 0.5 m to 5 m	0 (1) 2 3 4	0 (1) 2 3 4
Ground Cover (<0.5 m high)		
Woody shrubs & saplings <0.5 m	0 1 (2) 3 4	0 1 (2) 3 4
Herbs/ grasses	0 (1) 2 3 4	0 (1) 2 3 4
Barren, bare soil/ duff	0 1 2 3 (4)	0 1 2 3 (4)

INSTREAM HABITAT COMPLEXITY

0 = Absent (0%), 1 = Sparse (<10%), 2 = Moderate (10-40%), 3 = Heavy (40-75%), 4 = Very Heavy (>75%)

Habitat	Score
Filamentous Algae	(0) 1 2 3 4
Aquatic Macrophytes/ Emergent Vegetation	(0) 1 2 3 4
Boulders	0 1 (2) 3 4
Woody Debris >0.3 m	(0) 1 2 3 4
Woody Debris <0.3 m	(0) 1 2 3 4
Undercut Banks	(0) 1 2 3 4
Overhang. Vegetation	(0) 1 2 3 4
Live Tree Roots	(0) 1 2 3 4
Artificial Structures	(0) 1 2 3 4

DENSIOMETER READINGS (0-17) *count covered dots*

Position	Reading
Center Left	1
Center Upstream	0
Center Right	2
Center Downstream	0
Optional	
Left Bank	—
Right Bank	—

HUMAN INFLUENCE (circle only the closest to wetted channel)

0 = Not Present; B = On Bank; C = Between Bank & 10m from Channel; P = >10m+<50m from Channel; Channel (record Yes or No)

	Left Bank	Channel	Right Bank
Walls/ Rip-rap/ Dams	P C B (0)	Y (N)	(0) B C P
Buildings	P C B 0	Y N	0 B C P
Pavement/ Cleared Lot	P C B 0		0 B C P
Road/ Railroad	P C B 0	Y N	0 B C P
Pipes (Inlet/ Outlet)	P C B 0	Y N	0 B C P
Landfill/ Trash	P C B 0	Y N	0 B C P
Park/ Lawn	P C B 0		0 B C P
Row Crop	P C B 0		0 B C P
Pasture/ Range	P C B 0		0 B C P
Logging Operations	P C B 0		0 B C P
Mining Activity	P C B 0	Y N	0 B C P
Vegetation Management	P C B 0		0 B C P
Bridges/ Abutments	P C B 0	Y N	0 B C P
Orchards/ Vineyards	P C B 0		0 B C P

BANK STABILITY

(score zone 5m upstream and 5m downstream of transect between bankfull - wetted width)

Left Bank	eroded	vulnerable	(stable)
Right Bank	eroded	vulnerable	(stable)

Inter-Transect: JK

Wetted Width (m): 29

Inter-Transect Substrates

Position	Dist from LB (m)	Depth (cm)	mm/ size class	% Cobble Embed.	CPOM	Microalgae Thickness Code	Macroalgae Attached	Macroalgae Unattached	Macrophytes
Left Bank	.5	11	COB	0	P (A)	2	(P) A D	P (A) D	P (A) D
Left Center	7.5	46	BLD	—	P A	(0)	(P) A D	P A D	P A D
Center	15	53	COB	40	P A	3	(P) A D	P A D	P A D
Right Center	22.5	30	CG	—	P A	0	P (A) D	P A D	P A D
Right Bank	28.5	23	COB	30	P A	2	(P) A D	P (A) D	P (A) D

Note: Substrate sizes can be recorded either as direct measures of the median axis of each particle or one of the size class categories listed on the supplemental page (direct measurements preferred)

Microalgae Thickness Codes
0 = No microalgae present. Feels rough, not slimy;
1 = Present but not visible. Feels slimy;
2 = Present and visible but <1mm. Rubbing fingers on surface produces a brownish tint on them, scraping leaves visible trail;
3 = 1-5mm;
4 = 5-20mm;
5 = >20mm;
UD = Cannot determine if microalgae present, substrate too small or covered with silt (formerly Z code);
D = Dry, not assessed

Flow Habitats

Channel Type	%
Cascade/ Falls	
Rapid	
Riffle	10
Run	
Glide	
Pool	90
Dry	

SWAMP Stream Habitat Characterization Form FULL VERSION Revision Date: February 9th, 2011

Site Code:	Site Name: YR blw CPH	Date: 07/17/2014 2
Wetted Width (m): 30	Bankfull Width (m): 38	Bankfull Height (m): 2m

Transect K

Transect Substrates

Position	Dist from LB (m)	Depth (cm)	mm/ size class	% Cobble Embed.	CPOM	Microalgae Thickness Code	Macroalgae Attached	Macroalgae Unattached	Macrophytes
Left Bank	.5	18	COB	0	P (A)	3	(P) A D	P (A) D	P (A) D
Left Center	7.5	60	CG	—	P A	0	P (A) D	P A D	P A D
Center	15	73	BLD	—	P A	3	(P) A D	P A D	P A D
Right Center	22.5	70	BLD	—	P A	2	(P) A D	P A D	P A D
Right Bank	29.5	18	FG	—	P (A)	1	P (A) D	P (A) D	P (A) D

Note: Substrate sizes can be recorded either as direct measures of the median axis of each particle or one of the size class categories listed on the supplemental page (direct measurements preferred)

Microalgae Thickness Codes
0 = No microalgae present. Feels rough, not slimy;
1 = Present but not visible. Feels slimy;
2 = Present and visible but <1mm; Rubbing fingers on surface produces a brownish tint on them, scraping leaves visible trail.
3 = 1-5mm;
4 = 5-20mm;
5 = >20mm;
U = Cannot determine if microalgae present, substrate too small or covered with silt (formerly Z code);
D = Dry, not assessed

Riparian Vegetation (facing downstream)

0 = Absent (0%) 3 = Heavy (40-75%)
1 = Sparse (<10%) 4 = Very Heavy (>75%)
2 = Moderate (10-40%)

Vegetation Class	Left Bank	Right Bank
Upper Canopy (>5 m high)		
Trees and saplings >5 m high	(0) 1 2 3 4	0 (1) 2 3 4
Lower Canopy (0.5 m-5 m high)		
All vegetation 0.5 m to 5 m	0 (1) 2 3 4	0 (1) 2 3 4
Ground Cover (<0.5 m high)		
Woody shrubs & saplings <0.5 m	0 1 (2) 3 4	0 1 (2) 3 4
Herbs/ grasses	0 (1) 2 3 4	0 1 (2) 3 4
Barren, bare soil/ duff	0 1 2 3 (4)	0 1 2 3 (4)

Instream Habitat Complexity

0 = Absent (0%)
1 = Sparse (<10%)
2 = Moderate (10-40%)
3 = Heavy (40-75%)
4 = Very Heavy (>75%)

Filamentous Algae	(0) 1 2 3 4
Aquatic Macrophytes/ Emergent Vegetation	(0) 1 2 3 4
Boulders	0 (1) 2 3 4
Woody Debris >0.3 m	(0) 1 2 3 4
Woody Debris <0.3 m	(0) 1 2 3 4
Undercut Banks	(0) 1 2 3 4
Overhang. Vegetation	(0) 1 2 3 4
Live Tree Roots	(0) 1 2 3 4
Artificial Structures	(0) 1 2 3 4

Densiometer Readings (0-17)

count covered dots

Center Left	2
Center Upstream	0
Center Right	1
Center Downstream	0
Optional	
Left Bank	—
Right Bank	—

Human Influence (circle only the closest to wetted channel)

0 = Not Present;
B = On Bank;
C = Between Bank & 10m from Channel;
P = >10m+<50m from Channel;
Channel (record Yes or No)

	Left Bank	Channel	Right Bank
Walls/ Rip-rap/ Dams	P C B (0)	Y (N)	(0) B C P
Buildings	P C B 0	Y N	0 B C P
Pavement/ Cleared Lot	P C B 0		0 B C P
Road/ Railroad	P C B 0	Y N	0 B C P
Pipes (Inlet/ Outlet)	P C B 0	Y N	0 B C P
Landfill/ Trash	P C B 0	Y N	0 B C P
Park/ Lawn	P C B 0		0 B C P
Row Crop	P C B 0		0 B C P
Pasture/ Range	P C B 0		0 B C P
Logging Operations	P C B 0		0 B C P
Mining Activity	P C B 0	Y N	0 B C P
Vegetation Management	P C B 0		0 B C P
Bridges/ Abutments	P C B 0	Y N	0 B C P
Orchards/ Vineyards	P C B 0		0 B C P

Bank Stability

(assess within 5m upstream and 5m downstream of transect between the Mid-Wetted width)

Left Bank	eroded	vulnerable	(stable)
Right Bank	eroded	vulnerable	(stable)

TAKE PHOTOGRAPHS

(check box if taken & record photo code)

Downstream (**required**) 195	☑
Upstream (**optional**) 196	☑

Site Code:	Date: ___ / ___ / 2011

FULL FORM

BENTHIC INVERTEBRATE SAMPLES

Collection Method (indicate standard or margin-center-margin)			Replicate	# jars
RWB (standard)	**RWB** (MCM)	**TRC**	1	
RWB (standard)	**RWB** (MCM)	**TRC**	2	
RWB (standard)	**RWB** (MCM)	**TRC**		
RWB (standard)	**RWB** (MCM)	**TRC**		

Field Notes/ Comments:

Chemistry Equipment ID

Analyte	Equipment
pH	
temperature	
dissolved oxygen	
specific conductance	
salinity	
alkalinity	
turbidity	
silica	
Velocity	

ALGAE SAMPLES

Collection Method (circle one or write new method if applicable)	SWAMP EMAP	SWAMP EMAP	SWAMP EMAP	SWAMP EMAP
Collection Device (sum # of transects per device)	**Rep. 1**	**Rep. 2**	**Rep.**	**Rep.**
Rubber Delimiter (area=12.6cm^2)				
PVC Delimiter (area=12.6cm^2)				
Syringe Scrubber (area=5.3cm^2)				
Other area=				
Number of transects sampled (0-11)				
Composite Volume (mL)				
Assemblage ID volume **(diatoms)** (50 mL tube)				
Assemblage ID volume **(soft algae)** (50 mL tube)				
Check if Qualitative Algae sample was collected with soft algae/diatom sample (required even if macroalgae not visible)	☐	☐	☐	☐
Check if a water chem. **integrated** sample was collected (chl, AFDM)	☐	☐	☐	☐
Chlorophyll a volume use GF/F filter (25 mL **(preferred volume)**				
Ash Free Dry Mass (AFDM) volume use GF/F filter (25 mL **(preferred vol)**				

Water and Sediment Chemistry Samples

Check if a WATER chemistry **grab** sample was collected (nutrients, SSC, etc.)	☐
Check if a DUPLICATE WATER chemistry **grab** sample was collected	☐
Check if a SEDIMENT chemistry sample was collected	☐
Check if a DUPLICATE SEDIMENT chemistry sample was collected	☐

Sediment Collection Device: SCOOP CORE GRAB

Material: Stainless Steel Polyethylene Polycarbonate Other

Sediment Collection Depth (cm): 2 or 5

Create Lab Collection records for each checked box for integrated and grab water chemistry samples

ADDITIONAL PHOTOGRAPHS

Description	Photo Code	Description	Photo Code

Flow Habitat Type	DESCRIPTION
Cascades	Short, high gradient drop in stream bed elevation often accompanied by boulders and considerable turbulence
Falls	High gradient drop in elevation of the stream bed associated with an abrupt change in the bedrock
Rapids	Sections of stream with swiftly flowing water and considerable surface turbulence. Rapids tend to have larger substrate sizes than riffles
Riffles	Shallow sections where the water flows over coarse stream bed particles that create mild to moderate surface turbulence; (< 0.5 m deep, > 0.3 m/s).
Runs	Long, relatively straight, low-gradient sections without flow obstructions. The stream bed is typically even and the water flows faster than it does in a pool; (> 0.5 m deep, > 0.3 m/s). A **step-run** is a series of runs separated by short riffles or flow obstructions that cause discontinuous breaks in slope
Glides	A section of stream with little or no turbulence, but faster velocity than pools; (< 0.5 m deep, < 0.3 m/s)
Pools	A reach of stream that is characterized by deep, low-velocity water and a smooth surface; (> 0.5 m deep, < 0.3 m/s)

Size Class Code	Size Class Range	Size Class Description	Common Size Reference
RS	> 4 m	bedrock, smooth	larger than a car
RR	> 4 m	bedrock, rough	larger than a car
XB	1 - 4 m	boulder, large	meter stick to car
SB	25 cm - 1.0 m	boulder, small	basketball to meter stick
CB	64 - 250 mm	cobble	tennis ball to basketball
GC	16 - 64 mm	gravel, coarse	marble to tennis ball
GF	2 – 16 mm	gravel, fine	ladybug to marble
SA	0.06 – 2 mm	sand	gritty to ladybug
FN	< 0.06 mm	fines	not gritty
HP	< 0.06 mm	hardpan (consolidated fines)	
WD	NA	wood	
RC	NA	concrete/ asphalt	
OT	NA	other	

BANK STABILITY Although this measure of the degree of erosive potential is subjective, it can provide clues to the erosive potential of the banks within the reach. Assign the category whose description best fits the conditions in the area between the wetted channel and bankfull channel (see figure below)	
Eroded	Banks show obvious signs of erosion from the current or previous water year; banks are usually bare or nearly bare
Vulnerable	Banks have some vegetative protection (usually annual growth), but not enough to prevent erosion during flooding
Stable	Bank vegetation has well-developed roots that protect banks from erosion; alternately, bedrock or artificial structures (e.g., concrete/ rip-rap) prevent bank erosion

CPOM/ COBBLE EMBEDDEDNESS
CPOM: Record presence (P) or absence (A) of coarse particulate organic matter (>1.0 mm particles) within 1 cm of each substrate particle
Cobble Embeddedness: Visually estimate % embedded by fine particles (record to nearest 5%)

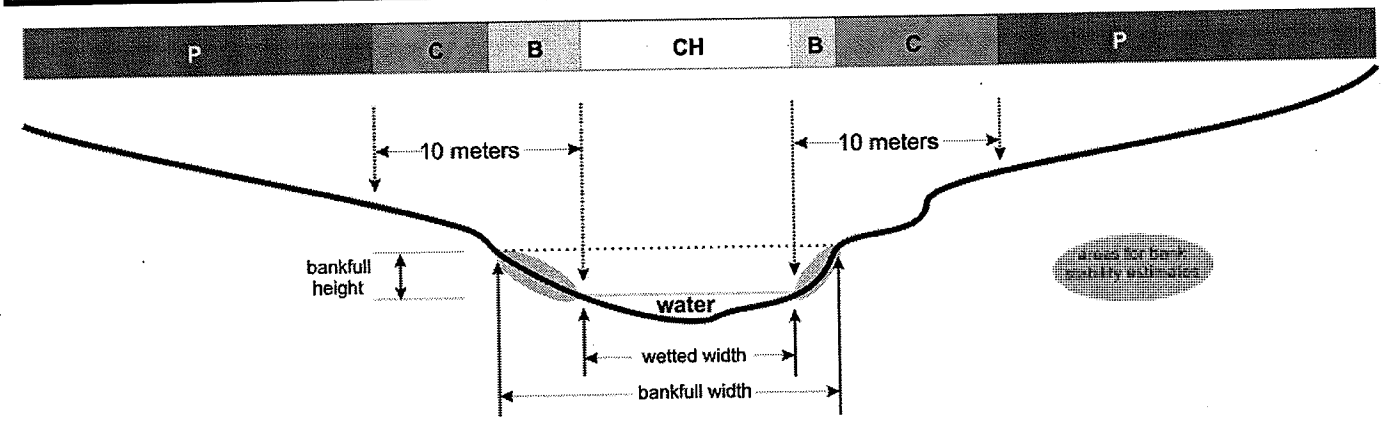


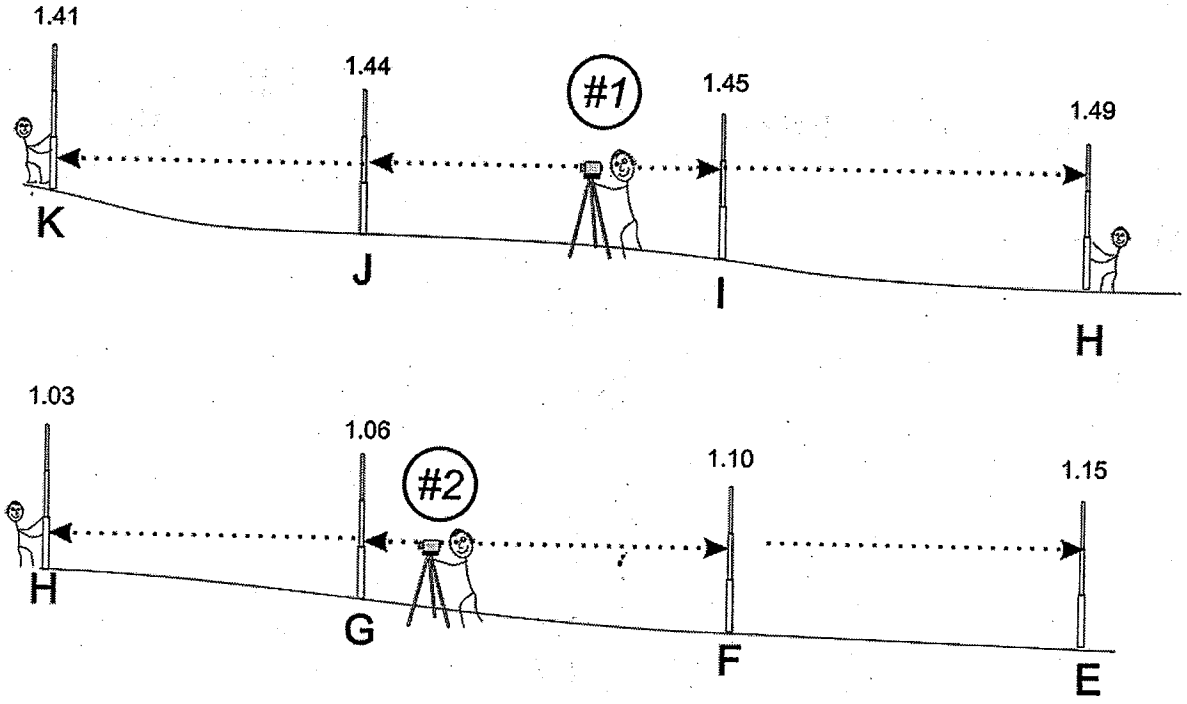
Figure 1. Cross-sectional diagram of stream transect indicating regions for assessing human influence measures:

- The measurement zone extends 5 meters upstream and 5 meters downstream of each transect
- Record one category for each bank and for the wetted channel (3 values possible)
- In reaches with wide banks, region "C" may be entirely overlapped by region "B"; in these cases, circle "B"
- Region "P" extends from 10 meters to the distance that can be seen from the channel, but not greater than 50 m

SLOPE and BEARING FORM — EXAMPLE

AUTOLEVEL	X
CLINOMETER	
HANDLEVEL	

Starting Transect	MAIN SEGMENT (record percent of inter-transect distance in each segment if supplemental segments are used)						SUPPLEMENTAL SEGMENT (record percent of inter-transect distance in each segment if supplemental segments are used)				
	Stadia rod measurements		Slope (%) or Elevation Difference cm ■ % □	Segment Length (m)	Bearing (0°-359°)	Percent of Total Length (%)	Stadia rod measurements		Slope or Elevation Difference cm □ % □	Segment Length (m)	Bearing (0°-359°)	Percent of Total Length (%)
K	1.41											
J	1.44		3	15	140	100						
I	1.45		1	15	145	100						
H	1.49	1.03	4	15	150	100						
G		1.06	3	15	143	100						
F		1.10	4	15	187	100						
E		1.15	5	15	195	100						



1. Level the autolevel at Position #1
2. Place base of stadia rod at water level every time
3. Sight to stadia rod at Transect K, then Transect J
4. Rotate scope and sight to Transects I and H.
5. Move level to Position #2 and re-level
6. Re-sight to stadia rod at Transect H, then Transect G
7. Rotate scope and sight to Transects F and E

Note: Sites will vary in the number of separate level positions needed to survey the reach.