

Advanced Stream Habitat Survey Field Data Sheet

(use a new data sheet for each reference site surveyed)

Module 2

104 2

Stream Name/Nearest Town: HOY CREEK / COQUITLAM		Date 18/09/09
Organization Name:		Watershed code
Contact Name:		Phone #
Crew Names: Thibault Doix		Stream Segment #
		Stream Section # 2
		Length Surveyed 54m

Upstream End Point

Mapsheets number	Type	Scale
Location (distance from known stream landmark, directions to benchmark) 0m D/S from Terry Fox Creek and side channel confluence		
Time: 9:30	Weather	<input checked="" type="radio"/> clear • shower (1-2.5 cm in 24 hr) • snow <input type="radio"/> overcast • storm (<2.5 cm in 24 hr) • rain on snow
Water turbidity (cm visibility) 40 cm	Temperature °C (leave thermometer 2 min.) air 5°C water 6°C	
Measurements taken every 0.5 m		
Bankfull Channel width 10.2 (m)	Average depth RB: 0.6 / LB: 0.7 (m)	
Wetted Channel width 3.6 (m)	Average depth 0.08 (m)	

Downstream End Point

Mapsheets number	Type	Scale
Location (distance from known stream landmark, directions to benchmark) 2m D/S from island		
Time: 11:00	Weather	<input checked="" type="radio"/> clear • shower (1-2.5 cm in 24 hr) • snow <input type="radio"/> overcast • storm (<2.5 cm in 24 hr) • rain on snow
Water turbidity (cm visibility) 40cm	Temperature °C (leave thermometer 2 min.) air 7°C water 6°C	
Measurements taken every 0.5 m		
Bankfull Channel width 5.6 (m)	Average depth RB: 0.9 / LB: 0.5 (m)	
Wetted Channel width 4.8 (m)	Average depth 0.22 (m)	

(Upstream) First and Last Measurements taken .1 m from streambank edge (Downstream)

Left Bank	.1	.6	1.1	1.6	2.1	2.6	3.1	3.5	Right Bank
Wetted Depth	2	5	7	10	16	15	12	1	Wetted Depth
Bankfull Depth	71	73	73	78	81	82	71	61	Bankfull Depth

Left Bank	.1	.6	1.1	1.6	2.1	2.6	3.1	3.5	Right Bank
Wetted Depth	2	20	30	31	28	27	19	16	Wetted Depth
Bankfull Depth	53	71	80	93	105	113	97	85	Bankfull Depth

Take measurements every 0.5m in streams less than 5m wide, every 1m in streams 5 to 15m

Section #2

1/5

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Module 2

Stream Name HOY CREEK	Date 18/02/09
Organization Name	Stream Segment # Section # 2
	Map Sheet #

STEP 1. BENCHMARK LOCATION

Directions to benchmark **30m Above Loughheed Highway, drainage on the right bank flowing under a small foot bridge**

STEP 2. CROSS-SECTIONAL SURVEY

Location relative to benchmark 4m above	Photos taken: (yes or no) Yes
Bankfull channel width (m) 4.6 m	Average bankfull depth (m) 0.6 m
Wetted channel width (m) 3.9 m	Average wetted depth (m) 0.12 m
Measurements taken every 0.5 metres	
Cross-sectional plot	

Left Bank	0.7	1.2	1.7	2.2	2.7	3.2	3.7	4.2	Right Bank
Wetted Depth	0.08	0.08	0.11	0.15	0.17	0.15	0.11	0.10	Wetted Depth
Bankfull Depth	0.69	0.68	0.73	0.80	0.83	0.78	0.72	0.70	Bankfull Depth

STEP 3. STREAM DISCHARGE

Cross-sectional area of wetted stream (m ²)	$\frac{4.6}{\text{wetted width}} \times \frac{0.12}{\text{average wetted depth}} = 0.552 \text{ (m}^2\text{)}$		
Average Time (sec)	$\frac{12.3 + 16.0 + 15.3 + 14.3 + 18.1}{\text{trial 1 trial 2 trial 3 trial 4 trial 5 total trials}} = 87 \div 5 = 17.4$		
Average Velocity (m/sec)	$\frac{5}{\text{length (m)}} \div \frac{17.4}{\text{average time (sec)}} = 0.28$		
Average Stream Discharge (m ³ /sec)	$\frac{0.552}{\text{cross sectional area (m}^2\text{)}} \times \frac{0.28}{\text{average velocity (m/sec)}} \times \frac{0.8}{\text{correction factor}} = 0.127$		
	Discharge (m³/sec)		

send the data to the Streamkeepers Database

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Module 2

Stream Name	HOY CREEK	Date	18/02/09
Organization Name		Stream Seg #	Section# 2
		Map Sheet #	

HOY 1

STEP 4.1 LONGITUDINAL SURVEY, MEASUREMENTS

Length of survey site (minimum 12 times the bankfull width)	Minimum 48 (m)	Actual 54 (m)	Photos (yes, no)
Upstream survey boundary (m upstream of benchmark)	Minimum 24 (m)	Actual 23 (m)	
Downstream boundary (m downstream of benchmark)	Minimum 24 (m)	Actual 31 (m)	

* distance upstream (Up) of benchmark

habitat unit type (pool or riffle)	bottom of habitat unit*	top of habitat unit*	length of habitat unit (m)	% slope	Photo Frame #
Riffle	0 Up	4 Up	4		
Pool/Glide	4 Up	17 Up	13		
Riffle	17 Up	23 Up	6		
	Up	Up			
	Up	Up			
	Up	Up			
	Up	Up			

* distance downstream (Dn) of benchmark in metres

habitat unit type (pool or riffle)	top of habitat unit*	bottom of habitat unit*	length of habitat unit (m)	% slope	Photo Frame #
Riffle	0 Dn	6 Dn	6		
Pool	6 Dn	22 Dn	16		
Riffle	22 Dn	25 Dn	3		
Pool	25 Dn	31 Dn	6		
	Dn	Dn			
	Dn	Dn			
	Dn	Dn			

Section #2

3/5

Advanced Stream Habitat Survey Field Data Sheet

HOY 1

(use a new data sheet for each reference site surveyed)

Module 2: (con't)

Stream Name HOY CREEK	Date 18/02/03
Stream segment and section #'s Section 2	

STEP 4.2 LONGITUDINAL SURVEY, HABITAT QUALITY

1. Streambed material Collect 25 samples (cm)		% fines (<0.2cm) - ladybug size and smaller % gravel(0.2-5 cm) - ladybug to tennis ball % cobble (5-25cm) - tennis ball to basketball % boulder (>25cm) - bigger then a basketball with definable edges % bedrock - slab of rock	Fines = <u>50</u> % Gravel = <u>49</u> % Cobble = <u>1</u> % Boulder = <u>0</u> % Bedrock = <u>0</u> % Cobble + Boulder = <u>1</u> % Total = <u>1</u> %
1 5 8 4 15 0 22 4 2 2 9 3 16 0 23 2 3 3 10 1 17 2 24 1 4 6 11 3 18 0 25 3 5 2 12 4 19 0.5 6 0 13 5 20 3 7 0 14 5 21 2	2. % embeddedness - cover of gravel and cobble by fine sediment <u>30</u> %		
3. Instream cover LWD <u>3m</u> Rooted cutbank <u>16m</u>	# pieces LWD <u>2</u> # rooted cutbanks <u>3</u> = _____ + _____ = _____ total cover (length of reference site ÷ bankfull width) instream cover		
4. Percent pool habitat survey site slope <u>4°</u> total length of reference site (m) <u>54m</u>	total length of pools (m) <u>35m</u> % pool habitat <u>65%</u>		
5. Off channel habitat (if present, describe habitat type, size, and whether it is seasonal or year-round)	description <u>2 side channels</u> <u>1 seasonal; 1 permanent</u>	PRESENT ABSENT	
6. Bank stability (left or right bank facing downstream) # active bank crosion bank stabiiization # slides reaching the channel	# of sites and length of bank affected (m) LEFT BANK RIGHT BANK # active bank crosion: <u>0</u> <u>#4/21m</u> bank stabiiization: <u>0</u> <u>0</u> # slides reaching the channel: <u>0</u> <u>#1/2m</u>		
7. Length of bank with no vegetation (m)	LEFT BANK <u>0 m</u>	RIGHT BANK <u>0 m</u>	
8. Overhead canopy	% bankfull channel covered by overhanging branches	<u>30%</u>	
9. Riparian zone type and amount of vegetation	# of channel widths coniferous trees deciduous trees shrubs grasses	<u>> 10</u> none <input type="checkbox"/> few <input checked="" type="checkbox"/> many <input type="checkbox"/> none <input type="checkbox"/> few <input type="checkbox"/> many <input checked="" type="checkbox"/> none <input type="checkbox"/> few <input type="checkbox"/> many <input checked="" type="checkbox"/> none <input checked="" type="checkbox"/> few <input type="checkbox"/> many <input type="checkbox"/>	
Adjacent land use and impacts <u>trail on the RB ≈ 5 m from top of RB</u>			

Section #2

4/5

Advanced Stream Habitat Survey Field Data Sheet

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Module 2 (con't)

Stream Name	HOY CREEK	Date	18/02/09
Stream segment and section #'s	SECTION #2		

STEP 5 HABITAT ASSESSMENT (the score in bold, estimate a value within the range listed)

Characteristic	Results	Good	Acceptable	Marginal	Poor	Score
1: Streambed material: % boulder and cobble	1	15 - 20 50%	10 - 15 30-50%	5 - 10 10-30%	0 - 5 <10%	1
2: Embeddedness:	30	15 - 20 25-0%	10 - 15 50-25%	5 - 10 75-50%	0 - 5 >75%	14
3: Instream cover:	5	15 - 20 >3	10 - 15 2 to 3	5 - 10 1 to 2	0 - 5 <1	17
4: % Pool Habitat <2% stream slope 2-5% stream slope >5% stream slope	65%	11 - 15 >60% pool >50% pool >40% pool	7 - 11 50-60% 40-50% 30-40%	3 - 7 40-50% 30-40% 20-30%	0 - 3 <40% <30% <20%	11
5: Off-channel habitat: ponds, side channels with protection from flood flows		11 - 15 year round, good protection	7 - 11 seasonal, good protection	3 - 7 seasonal, minimal protection	0 - 3 little or none, no protection	15
6: Bank stability stability evidence of erosion or bank failure (see note 1)		11 - 15 stable none	7 - 11 moderately stable some	3 - 7 moderately unstable some	0 - 3 unstable lots	6
7. Bank vegetation: % stream bank covered by vegetation	100	8 - 10 >90%	5 - 8 70-90%	2 - 5 50-70%	0 - 2 and <50%	10
8. Overhead canopy: % bankfull channel overhung by trees and shrubs	30	8 - 10 >30%	5 - 8 20-30%	2 - 5 10-20%	0 - 2 0-10%	8
9. Riparian zone: # bankfull channels wide trees and shrubs		8 - 10 2 or more abundant on whole floodplain	5 - 8 1 to 2 good species mix	2 - 5 <1 common, few species	0 - 2 0 sparse or absent	9
TOTAL SCORE		102 - 135	66 - 102	30 - 66	0 - 30	91

Note 1: The evidence of erosion or bank failure changes from **Good** (intact banks) to **Acceptable** (healed or banks stabilized) to **Marginal** (active erosion or extensive bank stabilization) to **Poor** (many actively eroding areas or upslope slides reaching channel).

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Module 2

Stream Name/Nearest Town: HOY CREEK / COQUITLAM		Date 18/02/09
Organization Name:		Watershed code 1
Contact Name:		Phone #
Crew Names: Thibault Doix		Stream Segment #
		Stream Section # 4
		Length Surveyed 54m

Upstream End Point

Mapsheets number	Type	Scale
Location (distance from known stream landmark, directions to benchmark) End point above big Rock. Flash tape on the RB (fallen tree)		
Time: 2:00 PM Weather	<input checked="" type="radio"/> clear	<input type="radio"/> shower (1-2.5 cm in 24 hr) <input type="radio"/> snow <input type="radio"/> overcast <input type="radio"/> storm (<2.5 cm in 24 hr) <input type="radio"/> rain on snow
Water turbidity (cm visibility) 40 cm	Temperature °C (leave thermometer 2 min.) air 9 water 5°C	
Measurements taken every 0.5 m		
Bankfull Channel width 5.6 (m)	Average depth RB:0.7 / LB:0.7 (m)	
Wetted Channel width 3.1 (m)	Average depth 0.12 (m)	

Downstream End Point

Mapsheets number	Type	Scale
Location (distance from known stream landmark, directions to benchmark) Above LB tributary, flash tap in a tree on the LB.		
Time: 1:00 pm Weather	<input checked="" type="radio"/> clear	<input type="radio"/> shower (1-2.5 cm in 24 hr) <input type="radio"/> snow <input type="radio"/> overcast <input type="radio"/> storm (<2.5 cm in 24 hr) <input type="radio"/> rain on snow
Water turbidity (cm visibility) 40 cm	Temperature °C (leave thermometer 2 min.) air 9 water 5°C	
Measurements taken every 0.5 m		
Bankfull Channel width 6 (m)	Average depth RB:0.6 / LB:0.5 (m)	
Wetted Channel width 3 (m)	Average depth 0.10 (m)	

(Upstream) First and Last Measurements taken .1 m from streambank edge (Downstream)

Left Bank	0.1	0.6	1.1	1.6	2.1	2.6	3.0	Right Bank
Wetted Depth	4	13	15	18	14	12	5	Wetted Depth
Bankfull Depth	74	83	85	89	84	82	75	Bankfull Depth

Left Bank	.1	.6	1.1	1.6	2.1	2.6	2.9	Right Bank
Wetted Depth	7	12	13	10	11	9	8	Wetted Depth
Bankfull Depth	57	63	64	63	65	69	68	Bankfull Depth

Take measurements every 0.5m in streams less than 5m wide, every 1m in streams 5 to 15m

Page of

Section # **4** **1/5**
Saw 1 American Dipper

HOY3

Advanced Stream Habitat Survey Field Data Sheet

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Module 2

Stream Name HOYCREEK	Date 18/02/09
Organization Name	Stream Segment # Section # 4
	Map Sheet #

STEP 1. BENCHMARK LOCATION

Directions to benchmark
35 m above South Hoy, drainage on the LB (Boggy depression)

STEP 2. CROSS-SECTIONAL SURVEY

Location relative to benchmark	15 m above benchmark	Photos taken: (yes or no)	Yes
Bankfull channel width (m)	6.5	Average bankfull depth (m)	RP: 0.6 / LB: 1m
Wetted channel width (m)	3.7	Average wetted depth (m)	
Measurements taken every	0.5 metres		
Cross-sectional plot			

Left Bank	0.1	0.6	1.1	1.6	2.1	2.6	3.1	3.6	Right Bank
Wetted Depth	7	6	12	15	15	15	12	7	Wetted Depth
Bankfull Depth	1.06	0.99	0.95	0.92	0.88	0.83	0.75	0.67	Bankfull Depth

STEP 3. STREAM DISCHARGE

Cross-sectional area of wetted stream (m ²)	$\frac{3.7}{\text{wetted width}} \times \frac{0.11}{\text{average wetted depth}} = 0.407 \text{ (m}^2\text{)}$		
Average Time (sec)	$\frac{[21.3 + 26.6 + 28.3 + 28.7 + 25.2]}{\text{trial 1 trial 2 trial 3 trial 4 trial 5 total trials}} = \frac{140.1}{5} = 28.02$		
Average Velocity (m/sec)	$\frac{10}{\text{length (m)}} \div \frac{28.02}{\text{average time (sec)}} = \frac{0.357}{\text{Average Velocity (m/sec)}}$		
Average Stream Discharge (m ³ /sec)	$\frac{0.407}{\text{cross sectional area (m}^2\text{)}} \times \frac{0.357}{\text{average velocity (m/sec)}} \times \frac{0.8}{\text{correction factor}} = \frac{0.116}{\text{Discharge (m}^3\text{/sec)}}$		

Section #4 2/5

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Module 2

Stream Name HOY CREEK	Date 18/02/09
Organization Name	Stream Seg # Section# 4
	Map Sheet #

STEP 4.1 LONGITUDINAL SURVEY, MEASUREMENTS

Length of survey site (minimum 12 times the bankfull width)	Minimum 42 (m)	Actual 53.5 (m)	Photos (yes, no)
Upstream survey boundary (m upstream of benchmark)	Minimum 21 (m)	Actual 27 (m)	Yes
Downstream boundary (m downstream of benchmark)	Minimum 21 (m)	Actual 26.5 (m)	Yes

* distance **upstream** (Up) of benchmark

habitat unit type (pool or riffle)	bottom of habitat unit*	top of habitat unit*	length of habitat unit (m)	% slope	Photo Frame #
Pool	0 Up	9 Up	9		
Riffle	9 Up	27 Up	18		
	Up	Up			
	Up	Up			
	Up	Up			
	Up	Up			
	Up	Up			

* distance **downstream** (Dn) of benchmark in metres

habitat unit type (pool or riffle)	top of habitat unit*	bottom of habitat unit*	length of habitat unit (m)	% slope	Photo Frame #
Riffle	0 Dn	8 Dn	8		
Pool	8 Dn	12.5 Dn	4.5		
Riffle	12.5 Dn	26.5 Dn	14		
	Dn	Dn			
	Dn	Dn			
	Dn	Dn			
	Dn	Dn			

Section #4 3/5

Advanced Stream Habitat Survey Field Data Sheet

(use a new data sheet for each reference site surveyed)

Module 2 (con't)

Stream Name HOY CREEK	Date 18/02/09
Stream segment and section #'s SECTION 4	

STEP 5 HABITAT ASSESSMENT (the score in bold, estimate a value within the range listed)

Characteristic	Results	Good	Acceptable	Marginal	Poor	Score
1: Streambed material: % boulder and cobble	89%	15 - 20 50%	10 - 15 30-50%	5 - 10 10-30%	0 - 5 <10%	17
2: Embeddedness:	20%	15 - 20 25-0%	10 - 15 50-25%	5 - 10 75-50%	0 - 5 >75%	16
3: Instream cover:	4	15 - 20 >3	10 - 15 2 to 3	5 - 10 1 to 2	0 - 5 <1	16
4: % Pool Habitat <2% stream slope 2-5% stream slope >5% stream slope	25%	11 - 15 >60% pool >50% pool >40% pool	7 - 11 50-60% 40-50% 30-40%	3 - 7 40-50% 30-40% 20-30%	0 - 3 <40% <30% <20%	3
5: Off-channel habitat: ponds, side channels with protection from flood flows		11 - 15 year round, good protection	7 - 11 seasonal, good protection	3 - 7 seasonal, minimal protection	0 - 3 little or none, no protection	10
6: Bank stability stability evidence of erosion or bank failure (see note 1)		11 - 15 stable none	7 - 11 moderately stable some	3 - 7 moderately unstable some	0 - 3 unstable lots	9
7. Bank vegetation: % stream bank covered by vegetation	100%	8 - 10 >90%	5 - 8 70-90%	2 - 5 50-70%	0 - 2 and <50%	10
8. Overhead canopy: % bankfull channel overhung by trees and shrubs	80%	8 - 10 >30%	5 - 8 20-30%	2 - 5 10-20%	0 - 2 0-10%	10
9. Riparian zone: # bankfull channels wide trees and shrubs	> 10	8 - 10 2 or more abundant on whole floodplain	5 - 8 1 to 2 good species mix	2 - 5 <1 common, few species	0 - 2 0 sparse or absent	9
TOTAL SCORE		102 - 135	66 - 102	30 - 66	0 - 30	100

Note 1: The evidence of erosion or bank failure changes from **Good** (intact banks) to **Acceptable** (healed or banks stabilized) to **Marginal** (active erosion or extensive bank stabilization) to **Poor** (many actively eroding areas or upslope slides reaching channel).

Section #4 5/5.