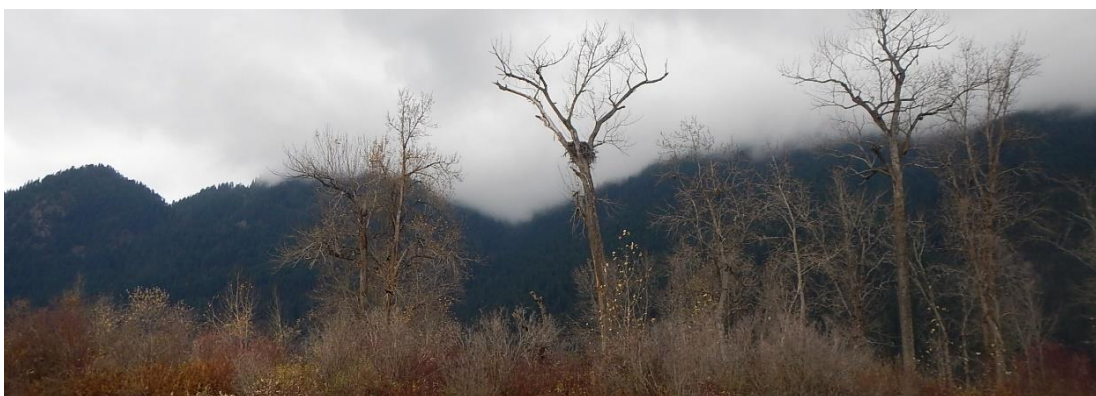


EAGLE RIVER

Inventory, Mapping, and Aquatic Habitat Index



Prepared for and In Partnership with:

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October 2015



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A Living Document – Version 1.0

Prepared For and In Partnership With:

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INFORMATION DISCLAIMER

The results contained in this report are based upon data collected during a single season inventory. Biological systems respond differently both in space and time. For this reason, the assumptions contained within the text are based upon field results, previously published material on the subject, and airphoto interpretation. The material in this report attempts to account for some of the variability between years and in space by using safe assumptions and a conservative approach. Data in this assessment was not analyzed statistically and no inferences about statistical significance are made if the word significant is used. Use of or reliance upon biological conclusions made in this report is the responsibility of the party using the information. Neither Ecoscape Environmental Consultants Ltd., nor the authors of this report or Sexqeltekemc te Secwepemc is liable for accidental mistakes, omissions, or errors made in preparation of this report because best attempts were made to verify the accuracy and completeness of data collected, analyzed, and presented.

This is intended as a “*Living Document*”. In so being, it may be continually edited and updated and may evolve and be expanded as needed, and serve a different purpose over time.



TABLE OF CONTENTS

ACKNOWLEDGEMENTS	I
TABLE OF CONTENTS	III
1.0 INTRODUCTION.....	1
1.1 Project Background	2
2.0 RIVER INVENTORY MAPPING	4
2.1 Pre-Field / Start-up	4
2.3 RIM Adapted SHIM/FIM for Large River Systems.....	5
2.3.1 Centerline Survey	5
2.3.2 Left and Right Bank Mapping (adapted SHIM-FIM).....	7
2.3.3 Feature Mapping	9
2.3.4 Key Fisheries Zones.....	9
2.4 Instream Morphology and Habitat Feature Polygonization.....	9
2.5 Riparian Polygonization.....	10
2.6 Data Processing and Quality Assurance and Control	13
2.7 Photo Log.....	14
3.0 EAGLE RIVER KEY FISH SPECIES	14
3.1 Kokanee	15
3.2 Sockeye Salmon	16
3.3 Rainbow Trout	17
3.4 Steelhead.....	19
3.5 Coho Salmon.....	20
3.6 Chinook Salmon	23
3.7 Pink Salmon	24
3.8 Bull Trout	25
3.9 Dolly Varden	26
3.10 Westslope Cutthroat Trout.....	27
4.0 AQUATIC HABITAT INDEX	28
4.1 Instream Polygon Scoring Matrix	28
4.2 Riparian Polygon Scoring Matrix	31
4.3 AHI Logic, Calibration, and Ranking.....	33
4.3.1 Centerline – Instream Zone AHI Logic	34
4.3.2 River Bank – Riparian Band AHI Logic.....	35
4.4 Restoration and Segment Prioritization Analysis	36
5.0 INVENTORY SUMMARY OF RESULTS	37
5.1 Stream Primary Character	37
5.1.1 Shore Type Relative Distribution	37
5.1.2 Landuse Relative Distribution.....	39



5.1.3	River Bank Level of Impact.....	42
5.2	Stream Channel and Hydraulic Character	43
5.3	Fish Habitat.....	44
5.4	Modifications.....	48
5.5	Bank Stability and Erosion	50
5.6	Eagle River Condition Score.....	52
6.0	AQUATIC HABITAT INDEX RESULTS.....	53
6.1	The River.....	53
6.2	The Banks.....	55
6.3	Restoration Analysis and Priorities.....	57
7.0	DISCUSSION	59
8.0	CLOSURE.....	61
	REFERENCES	62

LIST OF TABLES

Table 1.	Overview of river centerline data fields collected using the Trimble data dictionary.....	6
Table 2.	Level of Impact rating criteria for Eagle River Inventory and Mapping.	7
Table 3.	Overview of data collected for right and left bank segments during the field inventory.	8
Table 4.	Overview of watercourse and habitat attributes that were collected using the Data Dictionary developed for this project (Adapted from Module 3, Mason and Knight, 2001). The complete data dictionary can be found in Appendix D.	9
Table 5.	Hydraulic and instream habitat feature classes assigned to Eagle River and associated low flood and wetland polygons	10
Table 6.	Broad vegetation communities (Habitat Types) used for classification of stratified polygons occurring along the Eagle River (100-m band) from Victor Lake to Shuswap Lake (Adapted from Mackenzie and Moran (2004) and Lloyd et al. (1990).	11
Table 7.	Site qualifiers assigned to each polygon (Table 6) to reflect the estimated level of disturbance and habitat quality and condition.	13
Table 8.	Fisheries relative habitat values (RHV) and weighted scores for aquatic and riparian habitat features.	29
Table 9.	Weighted scores for mapped salmonid holding areas (DFO 2014).	30
Table 10.	Relative value and weighted scores for mapped salmonid (Chinook, Sockeye, Coho) spawning areas and use intensity (DFO 2014). Assigned values are applied to the matrix based on the relative abundance spawning area polygons attribute to the total instream reach area.	30
Table 11.	Relative value and weighted scores for mapped instream substrate composition.	30
Table 12.	Ecological category: riparian habitat unit rating matrix (relative habitat value).....	32
Table 13.	The parameters and logic for the Centerline of the Eagle River.....	34
Table 14.	The parameters and logic for the banks of the Eagle River	35
Table 15.	Salmon aerial cover of spawning habitat in the Eagle River.....	46
Table 16.	Summary of anthropogenic features and modifications catalogued during the Eagle River Inventory Mapping.	48
Table 17.	Summary of river bank integrity and erosion along the Eagle River.	50



Table 18. Summary of prominent erosion by bank segment.	51
Table 19. Level of impact rating / condition score for the Eagle River.	52
Table 20. Relative AHI rank distribution (by length) of the Eagle River.	53
Table 21. Relative AHI rank distribution (by length) of the right bank (looking downstream) of the Eagle River.....	55
Table 22. Summary of priority bank segments extracted from the AHI Restoration analysis. High priority sites are in bold.	57

LIST OF FIGURES

Figure 1. Relative weighting of life history and habitat attributes for instream AHI scores.	31
Figure 2. Relative distribution of shore types along the left and right bank of the Eagle River.	37
Figure 3. Relative landuse distribution of along the left and right bank of the Eagle River. The total length of the left (LB) and right river banks (RB) was 87 km and 85 km respectively.	39
Figure 4. Level of impact category distribution on the left and right bank of the Eagle River.	42
Figure 5. Eagle River hydraulic class distribution over the 83 km river length (centerline length).	43
Figure 6. Relative distribution of key habitat elements mapped during the Eagle River inventory. Percentage values shown in the illustration represent the estimated spatial coverage of respective features over the total instream area (~hectares).	45
Figure 7. Centerline/reach AHI scores and AHI Rank values (Low/Moderate/High/Very High).	53
Figure 8. Scaled profile of the Eagle River illustrating the of centerline/reach AHI scores.	54
Figure 9. Left bank segment AHI scores.	56
Figure 10. Right bank segment AHI scores.	56
Figure 11. Left bank potential AHI score differential (Potential bank AHI scores - Current AHI score) based on the results of the restoration analysis.	58
Figure 12. Right bank potential AHI score differential (Potential bank AHI scores - Current AHI score) based on the results of the restoration analysis.	58

MAPS

Map Set 1	Riparian Habitat, Hydraulic, and Instream feature classification
Map Set 2	Inventoried Fish, Wildlife, and Habitat Attributes and Aquatic Habitat Index

APPENDICES

APPENDIX A.	Eagle River Reach Data (centerline survey) with AHI Scores	
APPENDIX B.	River Bank (Left and Right) Segment Data Base with AHI Scores	
APPENDIX C.	Centerline and Bank Aquatic Habitat Index Analysis Tables	
	Appendix C-1- Holding values based on spatial data (DFO 2014)	2
	Appendix C-2. Rearing - habitat unit : fish life history scoring matrix.....	2
	Appendix C-3. General Living - habitat unit/sub area : fish life history scoring matrix.....	3
	Appendix C-4. Cover habitat unit/sub area : fish life history scoring matrix	4
	Appendix C-5. Ecological category : riparian habitat unit rating matrix.	5
APPENDIX D.	Data Dictionary for Large River System Inventory and Mapping	



1.0 INTRODUCTION

Mapping of waterbodies in the Okanagan and Shuswap regions is being conducted following the current three step Lake Management process being standardized across British Columbia and described below:

1. Sensitive Habitat Inventory and Mapping (SHIM) and Foreshore Inventory and Mapping (FIM) are protocols used to collect baseline information regarding the current condition of watercourses (SHIM), shorelines (FIM), and associated riparian habitats. These inventories provide information on, channel character, shore/bank types and condition, substrates, land use, and habitat modifications. This information is combined where possible, with other mapping resources such as previous fisheries inventories, recent orthophotos, and other information. Recently, a protocol was developed specifically for the Shuswap River to map large river habitat and character. This protocol, referred to as River Inventory and Mapping (RIM) was used in the current project to map the Eagle River.
2. An Aquatic Habitat Index (AHI) is generated using the processed field data to determine the relative habitat value of the aquatic habitats and shoreline areas. This index follows similar methods that were developed for Okanagan Lake and Windermere Lake and is similar to other assessments used for Wasa, Moyie and Monroe Lakes. The Aquatic Habitat Index uses many different criteria, such as biophysical, fisheries values, and anthropogenic characteristics to estimate the habitat value of a shoreline segment. The Habitat Index classifies this information in a 5-Class system from Very High to Very Low. AHI is used for both FIM and RIM projects.
3. Shoreline Management Guidelines are prepared to identify the Shoreline Vulnerability or Sensitivity to changes in land use or habitat modification. Shoreline Vulnerability Zones are based upon the AHI described above. The Shoreline Vulnerability uses a risk-based approach to shoreline management, assessing the potential risks of different activities (e.g., construction of docks, groynes, marinas, etc.) in the different shore segments. The Shoreline Management Guidelines document is intended to provide background information to stakeholders, proponents, and governmental agencies when land use changes or activities are proposed that could alter the shoreline thereby affecting fish or wildlife habitat.

In 2014 Ecoscape Environmental Consultants Ltd. (Ecoscape) was contracted by the Spltasin First Nation (Spltasin), on behalf of Sexqeltkemc to Secwepemc, to complete a comprehensive inventory of the Eagle River between Summit Lake and Shuswap Lake and the associated AHI. The following technical report outlines the project approach and presents and analyzes the results of the both the Inventory and AHI phases of the project. This report is intended as a “Living Document”. In so being, it may be



continually edited and updated and may evolve and be expanded as needed, and serve a different purpose over time.

1.1 Project Background

As resource development and human populations increase in British Columbia, pressures for all resources and services have accelerated. Rapid growth has often overwhelmed the ability of local planners to manage land and preserve sensitive habitats (Mason and Knight, 2001). This has resulted in the loss or degradation of aquatic and riparian habitats that are critical for fish and a diverse wildlife assemblage. More specifically, rapid population growth and development around our large interior lakes and rivers is one of many factors that is impacting our fish and wildlife resources. This tremendous growth rate has resulted in commercial and residential developments around these large lakes and rivers. This rapid increase in population and development presents a significant challenge to plan and/or manage future growth around our large interior lakes. Accordingly, there is an urgent need to develop stronger tools and better methods to conserve, protect and reclaim these habitats.

SHIM and FIM are recognized standards for fish and aquatic habitat mapping in urban and rural watersheds in British Columbia. These protocols attempt to ensure the collection and mapping of reliable, high quality, current, and spatially accurate information about local freshwater habitats, watercourses, and associated riparian communities.

These protocols are designed as land-planning, computer-generated, interactive GIS tools that identify sensitive aquatic and terrestrial habitats. They are intended to provide community, stewardship groups, individuals, regional districts and municipalities with an effective, low-cost delivery system for information on these local habitats and associated current land uses.

SHIM and FIM have numerous applications and can:

- Provide current information not previously available to urban planners, to allow more informed planning decisions and provide inventory information for integration into Official Community Plans. In addition, this information can be used to educate the public as to the natural resource values of these systems and the impacts our activities have on them;
- Provide a catalogue of the current condition of the foreshore to aid with permit and compliance monitoring;
- Assist in the design of stormwater/runoff management plans;
- Monitor for changes in habitat resulting from known disturbance;



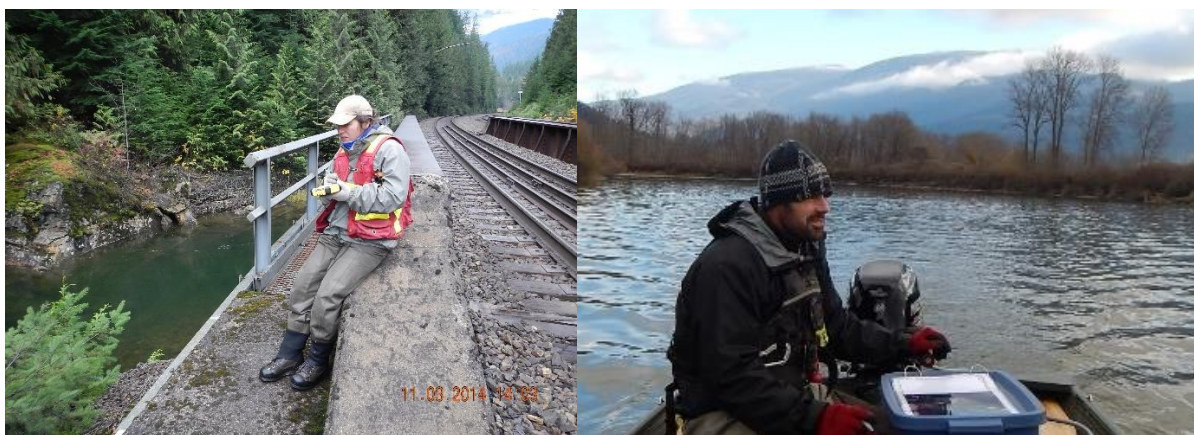
- Identify and map potential point sources of pollution;
- Help guide management decisions and priorities with respect to habitat restoration and enhancement projects;
- Assist in determining setbacks and fish/wildlife-sensitive zones;
- Identify sensitive habitats for fish and wildlife along watercourses;
- Provide a means of highlighting areas that may have problems with channel stability or water quality that require more detailed study;
- Provide a baseline inventory of existing shoreline developments/modifications such as docks, retaining walls, groynes, stream mouths, and land use activities;
- Provide baseline mapping data for future monitoring activities and development of a shoreline management plan; and
- Map and identify the extent of riparian vegetation available and used by wildlife and fish.



2.0 RIVER INVENTORY MAPPING

Biophysical surveys of the ERIV used the RIM methodology which adapted the data collection methods and standards of Sensitive Habitat Inventory and Mapping (SHIM) (Mason and Knight, 2001) and Foreshore Inventory and Mapping. Data was recorded using a Trimble Nomad and XH GPS Receiver and Trimble Geo7x/Data Logger and entered into a digital data dictionary. Data collection fields for respective biophysical and anthropogenic attributes are listed in the following sub sections. Data collection methods and processing standards can be reviewed in full at:

http://www.shim.bc.ca/methods/SHIM_Methods.html



Entering data into the Trimble Geo 7x (Left) using the data dictionary developed specifically for RIM (Appendix D). Marking up large format field maps for subsequent incorporation into GIS mapping and integration into the final data deliverables (Right).

2.1 Pre-Field / Start-up

Ecoscape reviewed all pertinent background information useful to the project and incorporated this data, where relevant, into respective watercourse features and their attributes.

Prior to deployment of field inventories, Ecoscape retained Aero Geomatics to conduct a fly over of the river channel and collect high resolution ortho photos (digital imagery) of the River from Victor Lake to Shuswap Lake. In addition, with the assistance of DFO, Ecoscape collected previous aerial imagery and spatial data for salmon spawning and holding.

From the digital imagery, preliminary reach breaks (segments) were identified and right and left bank shoreline segments were determined. In addition, we identified adjacent natural features of interest (i.e., tributaries, side channels, islands, wetlands etc.) that otherwise may not be picked up during standard centerline surveys. Large format field maps were then produced, on which field staff transcribed various field data.



2.3 RIM Adapted SHIM/FIM for Large River Systems

The SHIM data collection, data processing, and data deliverables were based on the mapping standards for SHIM (Mason and Knight, 2001), with consideration that the ERIV is a middle sized river. The Data Dictionary (Version 1.1) is provided in Appendix D. This digital data collection format adapts both SHIM and FIM dictionaries into a common field data collection file, tailored to a spatial biophysical inventory on mid to large size river system like the Eagle River. The intent of this approach is to utilize a specific mapping protocol that can be for mid to large sized river systems in British Columbia.

2.3.1 Centerline Survey

The centerline of the river channel was mapped along the center of the bankfull (not floodplain) width. While both banks and instream features were digitized using air photo interpretation. Comprehensive data for both the left and right river banks were collected independently of the stream centerline as unique “Right Bank” and “Left Bank” line features (reviewed below in Section 2.3.2).

The river was stratified into a series of successive reaches, each possessing and being characterized by different attributes or biophysical characteristics (i.e., hydraulic class, channel characteristics, substrates composition, and riparian class etc.) (Table 1).



Table 1. Overview of river centerline data fields collected using the Trimble data dictionary.

Reach Length	Linear measure along centerline of channel (m)
Primary Character:	Modified; Natural; Other
Channel width	Bankfull level (m)
Gradient	% grade
Salmonid Spawning	Yes/No; Species
Livestock Access	Yes/No; Comment
Hydraulic Character	Beaver Pond; Cascade; Cascade-Pool; Falls; Pool; Run; Riffle; Riffle-Pool; Slough; Standing; Wetland; Other
Channel Pattern	Straight; Sinuous; Irregular; Irregular meandering; Regular meanders; Tortuous meanders
Bars	Side; Diagonal; Mid-channel; Spanning; Braided
Islands	Occasional; Split; Frequent – Irregular; Frequent – Regular; Anastomosing
Substrate Composition	% Organic; % Fines; % Gravel; % Cobble; % Boulder; % Bedrock
Embeddedness/Compaction	Degree of embeddeness of coarse substrates in fines (sand/silt)
% Instream Cover	Boulder; Deep Pool; Instream Vegetation; Large Woody Debris; Overstream Vegetation
Reach Impact Rating	See Table 2.

A Level of Impact rating was included in the data dictionary and applied to the centerline reach information (Appendix D). This rating system was designed with the intent of providing a more measurable parameter in evaluating river condition and monitoring and evaluating habitat changes on local watercourses and associated riparian and floodplain communities. Individual reach scores were assigned based on the criteria outlined in Table 2. Weighted scores for respective impact ratings were obtained by dividing the cumulative length of reaches receiving the same impact rating by the total river length being evaluated to obtain a fractional abundance (% of river length). This value was then multiplied by the respective Score (0-6) equaling the weighted score. The sum of weighted scores was then divided by the maximum attainable score (6)¹ and transformed into a percentage value or river grade. This scoring system precedes the Aquatic Habitat Index and, on its own, is a field measure of river/bank condition.

¹ A combined weighted score of 6 would be attained if all reaches were natural with no discernable human disturbance on either the right or left bank. In other words, the river is pristine.



Table 2. Level of Impact rating criteria for Eagle River Inventory and Mapping.	
River Bank Impact Criteria ¹	Combined River Reach Score
Nil-Nil (<i>Nil impacts on both banks</i>)	6
Nil-Low	5
Nil-Mod	4
Nil-High	3
Low-Low	4
Low-Mod	3
Low-High	2
Mod-Mod	2
Mod-High	1
High-High (<i>Impact on both banks is high</i>)	0

¹. Numeric Bank Impact Scores: Nil=3; Low=2; Mod=1; High=0

2.3.2 Left and Right Bank Mapping (adapted SHIM-FIM)

Conventional SHIM methods describe the right and left bank character and condition within a single stream centerline feature for respective reaches. To better map and evaluate the larger scale represented in the ERIV, the SHIM approach was modified (Appendix D), which adapts the FIM field attributes into the data dictionary. Through this approach, left and right bank lines were logged in the field independently of one another (similar to FIM shoreline mapping) and data fields were populated separate from the Centerline. Individual segments were determined as relatively homogenous sections of shoreline based on vegetation structure, physical character, and general land use. Shoreline sections that displayed a consistent pattern or distribution of different biophysical units/features interspersed with anthropogenic units (e.g., clearings and fields) were also considered as a single segment. An example of this would be through rural areas; where remnant natural pockets along the river bank are interspersed with rural residences and small agricultural clearings. Shoreline segments were determined and assigned independently of river reaches. However, the adjacent river reach was identified in the data for each shoreline segment (e.g., Left Bank Segment 25, River Reach 11).

Large format laminated posters of the River were marked-up to illustrate river and riparian features, attribute lines (e.g., bank armouring) and points (e.g. docks). These features were then digitized in the office to supplement GPS field data. Table 3 summarizes the data fields that were collected for each bank segment.



Table 3. Overview of data collected for right and left bank segments during the field inventory.

Segment Number	Reach Number	Segment Length	Representative Photo
Category	Menu/Data Fields		
Primary Shore Type	Cliff/Bluff; Rocky Shore; Gravel; Sand; Confluence (alluvial fan); Wetland; Other; Flood Low Bench; Flood Mid Bench; Flood High Bench		
Shore Modifier	Log Yard; Marina small (6-20); Marina large (20+); Railway; Road; None; Other		
Slope (general slope of shore landward)	Bench; Low (0-5%); Moderate (5-20%); Steep (20-60%); Very Steep (60%+)		
Land Use (Observed)	Agriculture; Commercial; Conservation; Forestry; Industrial; Institution; Multi Family; Natural Area; Park; Recreation; Rural; Single Family; Urban Park		
Level of Impact	None; Low (<10%); Medium (10-40%); High (>40%)		
Livestock Access	Yes/No		
Relative Condition	%Disturbed; %Natural		
% Shore Type Distribution	%Cliff/Bluff; % Rocky; % Gravel; % Sand; % Confluence; % Wetland; % Other; % Flood Low Bench; % Flood Mid Bench; % Flood High Bench		
% Landuse Distribution	Agriculture; Commercial; Conservation; Forestry; Industrial; Institution; Multi Family; Natural Area; Park; Recreation; Rural; Single Family; Urban Park		
Modifications	% of segment retained/armoured by walls and rip rap	Number of Boat launches per segment	
	Docks per segment	% of segment with railway influence	
	Boat House per segment	% of segment with a road influence	
	Groins per segment	Marinas per segment	
Bank Stability	High; Medium; Low; Eroding	% Eroding	
Bank Material	Clay; Silt; Sand; Gravel; Cobble; Boulder; Bedrock		
Comments	Provided with various categories listed above		



2.3.3 Feature Mapping

Morphological, habitat, and anthropogenic features were marked with both the GPS and described on field maps and later digitized as point and polygons into the modified ERIV data dictionary. These features, summarized in Table 4, provide a more quantitative measure of relative disturbance/modification, and aquatic habitat quality/complexity (e.g., aerial abundance of spawning substrates/coarse woody debris measure etc.).

Table 4. Overview of watercourse and habitat attributes that were collected using the Data Dictionary developed for this project (Adapted from Module 3, Mason and Knight, 2001). The complete data dictionary can be found in Appendix D.

Main Attribute	Detailed Feature Collected
Modifications	Type (retaining wall/water withdrawal/bridge/dock etc.) material; length; photo
Culvert Attributes	Type-Material; Condition; Barrier; Size; Baffles
Obstruction Attributes	Type-Material; Barrier; Size; Photo
Stream Discharge Attributes	Point of Discharge; Type-material; Size
Erosion Feature	Type of Erosion; severity; exposure; material
Fish Habitat Attributes	Type of Habitat (Spawning/rearing/cover); Size; Slope; Photo
Enhancement Areas	Type of Enhancement; Potential or existing enhancement
Wildlife Observations	Type of Observation; Wildlife species; Photo
Wildlife Tree Attributes	Type of Tree; Size; Location
Near Waterbody Attributes	Type of Waterbody (spring/side channel/pond etc.); Size
Wetland Attributes (Polygon feature)	Wetland Type-Class; Photo
Representative Photograph Location	Location; Direction

2.3.4 Key Fisheries Zones

Ecoscope incorporated detailed fish habitat use information, contributed by DFO, regarding salmonid spawning locations, known rearing and nursery sites, and key holding areas. GIS shapefiles were digitized, outlining the spatial extents of respective fish habitat use information, and presented in Map Set 2 along with other observed or contributed wildlife information.

2.4 Instream Morphology and Habitat Feature Polygonization

We identified and mapped the spatial extents of side channels, backwaters, and associated riverine wetlands and floodplain communities. Relative habitat scores were applied to each type to be used in analysis and habitat index calculations (Section 4.1). The river channel, extending to the outer limits of the mean annual high water level (to include low bench floodplain areas) was estimated using field inventory data and



subsequent further air photo interpretation. The spatial extents of the channel formed the basis for subsequent stratification of habitat units within (Map Series 1). Habitat units were classified based on complex hydraulic and instream habitat feature classes as one of the following in Table 5.

Table 5. Hydraulic and instream habitat feature classes assigned to Eagle River and associated low flood and wetland polygons	
BW	Backwater
CA	Cascade
CO	Confluence
FL	Low Flood Bench
G	Glide
LK	Lake
LWD	Large Woody Debris
P	Pool
RF	Riffle
RM	Riverine Marsh
RN	Run
SC	Side Channel

2.5 Riparian Polygonization

Broad vegetation communities/habitat types were stratified within a 100-m band along the right and left river banks (Map Series 1). Polygons were classified according to Table 6. In addition site qualifiers (Table 7) were assigned to each polygon to reflect the estimated level of disturbance and habitat quality and condition.

The river channel boundary was established at the estimated mean annual floodplain level to include riparian marshes and low bench floodplain sites. Thus mid bench floodplain ecosystems (i.e., black cottonwood ecosystems) were included in the 100 riparian band and not factored into the stream channel analysis (Section 4.2).



Table 6. Broad vegetation communities (Habitat Types) used for classification of stratified polygons occurring along the Eagle River (100-m band) from Victor Lake to Shuswap Lake (Adapted from Mackenzie and Moran (2004) and Lloyd et al. (1990).

Map Code	Description	BGC Zone/ Variant/ Phase	Site Series	Association	Site Series Name	Assumed Situation/Comment	
B	Broadleaf Forest	ICHmw2	01-YS	HF	CwFd - Feathermoss (seral association)	gentle slopes; deep, medium - textured soils	Upland broadleaf forest ecosystem above the active floodplain predominated by paper birch
		ICHmw3	01-YC	HF	HwCw - Feathermoss (seral association)	gentle slope; deep, medium - textured soil	
CL	Cleared					Forest clearing associated with rural and woodlot activities. A disturbed shrub layer may still be present.	
C	Coniferous Forest	ICHwk1; ICHmw2; ICHmw3	01;04;06	HO	CwHw - Oak fern	gentle and lower slopes; moisture receiving sites; deep, medium - textured soils	Upland Coniferous Forest ecosystem above the active floodplain
			02	LV	PIHw - Velvet-leaved blueberry	gentle slope; deep, coarse - textured soils	
			03	HM	HwCw - Step moss	significant slope, medium textured shallow soils; cool aspect	
			04;01;01	HF	HwCw - Falsebox - Feathermoss	genetle to significant slopes, deep soils, medium - textured	
			05	RD	CwHw - Devil's club - Lady fern	gentle slope, receiving moisture, seepage, deep medium - textured soils	
			02	DF	FdCw - Falsebox - Prince's pine	significant slope, warm aspect; deep, medium - textured soil	
			06	RH	CwHw - Horsetail	level, receiving position; deep, fine - textured soil	
			02	DJ	Fd - Juniper - Cladina	significant slope; warm aspect, medium textured shallow soil over bedrock	
			03	DP	FdPI - Pinegrass - Feathermoss	significant slope; warm aspect, deep, coarse - textured soil	
CF	Cultivated Field					Cultivated fields (i.e., hayfields, row crops, orchards)	
FL/SH-r	Low Flood Bench			FI01	Mountain alder – Common horsetail	Low bench ecosystems occur on sites that are flooded for moderate periods (< 40 days) of the growing season, conditions that limit the canopy to tall shrubs, especially willows and alders. Annual erosion and deposition of sediment generally limit understorey and humus development	
				FI02	Mountain alder – Red-osier dogwood – Lady fern		
				FI04	Sitka Willow - Red-osier dogwood (levees)		
FM	Mid Flood Bench			Fm01	Cottonwood – snowberry – Rose	Middle bench ecosystems occur on sites briefly flooded (10–25 days) during freshet, allowing tree growth but limiting tree species to only flood-tolerant broadleaf species such as black cottonwood.	



Map Code	Description	BGC Zone/ Variant/ Phase	Site Series	Association	Site Series Name	Assumed Situation/Comment	
				Fm02	Cottonwood – Spruce – Red-osier dogwood		
M	Mixed Forest	ICHmw2; ICHmw3	03;05	RF	CwFd - Falsebox	gentle to significant slope, cool aspect; deep, medium - textured soil	Upland Mixed stand Forest ecosystem above the active floodplain
		ICHmw3	04	RS	CwFd - Soopolallie - Twinflower	gentle slope; deep, coarse - textured soil	
			07	RD	CwHw - Devil's club - Lady fern	gentle, lower slope receiving position, deep, medium - textured soil; seepage	
			08	RC	CwSxw - Skunk cabbage	level to depressional sites; deep, medium- textured soil, high water table	
		ICHmw2	01-YS	HF	CwFd - Feathermoss (seral association)	gentle slopes; deep, medium - textured soils	
		ICHmw3	01-YC	HF	HwCw - Feathermoss (seral association)	gentle slope; deep, medium - textured soil	
RL	Railway						
RI	River					Tributaries	
RM	Riverine Marsh						
RZ	Road Surface						
RU	Rural					Rural areas containing houses, outbuildings, driveways, and landscaping. A native tree canopy may be present but it is perforated by development and the understory plant associations have been partly removed. In higher disturbed sites the tree canopy is very limited to absence and natural plant associations sparse to absent.	
SH-f;md;hd	Shrub					Persistently disturbed shrub sites that are not included within low flood bench	
WN	Wetland/Marsh			Wm01	Water sedge	A marsh is a shallowly flooded mineral wetland dominated by emergent grass-like vegetation. A fluctuating watertable is typical, with early-season high watertables dropping through the growing season. Exposure of the substrate in late season or during dry years is common.	
				Wm02	Beaked Sedge		
				Wm04	Spike rush		
				RG	Reed canarygrass		



Table 7. Site qualifiers assigned to each polygon (Table 6) to reflect the estimated level of disturbance and habitat quality and condition.

a	Avalanche track/chute
e	early successional stage (Structural Stage 2-3)
hd	Highly disturbed, fragmented/broken canopy. Analogous to a partly treed rural site. Highly disturbed wetland and fragmented by land use and agricultural practices. The ecological function of this feature is severely impaired by human and associated activities.
md	Moderately disturbed treed riparian area. The habitat community structure may be fragmented or perforated by some land clearing and rural disturbances.
ld	Low disturbance, not recently disturbed. Containing natural tree canopy and understory vegetation associations.
f	Narrow riparian fringe generally less than 5-m wide but occasionally up to 10-m.
i	Island
n	natural, undisturbed site
r	Riparian
s	Terrain Failure/slide

2.6 Data Processing and Quality Assurance and Control

The Resource Inventory Committee and SHIM Methodology (Mason and Knight, 2001) provide specific requirements for quality assurance and quality control. These standards, such as GPS settings/precision, logging intervals, and data management and deliverables were followed throughout the field inventory stages of the project.

GPS settings and use were in accordance with Resource Inventory Committee Standards to ensure the collection of spatially accurate data. The coordinate system used was UTM Zone 11 North, North American Datum 83.

Field data was differentially corrected using base data provided by the SOPAC, Dominion Radio Astrophysical Observatory, daily Position: 49°19'21.43081"N, 119°37'29.93120"W, 541.88 m and CORS, Oroville Airport (RKD1), Washington (ITRF00(1997)-Derived from IGS08 (NEW)) Position: 48°57'51.66889"N, 119°24'46.89431"W, 313.27 m.

Data dictionary tools designed for ARC View 3.x were employed to process the data and to export the data into ESRI shapefiles. Subsequent processing and mapping was completed using ArcGIS 10.x. Processed GPS data (shapefiles) were then converted into geodatabases.

To ensure Quality Assurance and Control the following tasks were followed during completion of this project:



- Field data collected was backed up daily onto the local server and field computer at the end of each field day.
- All field data collected during the field inventories was post processed by the field inventory biologist, and data manager, Kyle Hawes, R.P.Bio.
- We reviewed each attribute collected during the field survey as part of a quality control / assurance process. The final database will be provided to Splotsin First Nation and project partners at the completion of the project. Corrections and adjustments to the database will be made as necessary.
- We integrated this assessment with additional GIS information provided by other parties.

2.7 Photo Log

SHIM/FIM standards require that a detailed photo log accompany and be incorporated into the database. All photos were entered into a log for location and subject reference. In addition, coordinate locations (UTM Zone 11 North, North American datum 83 Canada) were included in the photo data to enable spatial referencing on the ground.

3.0 EAGLE RIVER KEY FISH SPECIES

The Eagle River flows from its headwaters in the mountains north of Highway 1 between Victor Lake and Clanwilliam Lake, to the south end of the Sicamous Arm of Shuswap Lake, a distance of approximately 76 km. It supports populations of five of the seven species of Pacific salmon; pink (*Oncorhynchus gorbuscha*), Coho (*O. kisutch*), Sockeye (*O. nerka*), Steelhead (*O. mykiss*) and Chinook (*O. tshawytscha*), as well as the non-anadromous forms (freshwater only) Kokanee (*O. nerka*) and Rainbow Trout (*O. mykiss*). Other salmonid fish species include the Westslope Cutthroat Trout (*Oncorhynchus clarki lewisi*), Rocky Mountain whitefish (*Prosopium williamsoni*), Bull Trout (*Salvelinus confluentus*) and Dolly Varden (*Salvelinus malma*). Non-salmonid fish include suckers (*Catostomus* spp.), Peamouth Chub (*mylocheilus caurinus*), sculpins (*Cottus* spp.), carp (*Cyprinus carpio*), prickly sculpin (*Cottus asper*), redbside shiner (*Richardsonius balteatus*), slimy sculpin (*Cottus cognatus*) and longnose dace (*Rhinichthys cataractae*). Westslope Cutthroat Trout in BC are listed as a species of special concern under the federal *Species at Risk Act*. Because of their importance to commercial, recreational and aboriginal fishery's the following were selected as key species for matrix development in this study: Kokanee, Sockeye Salmon, Rainbow Trout, Steelhead, Coho Salmon, Chinook Salmon, Pink, Bull Trout, Dolly Varden, and Westslope Cutthroat Trout.



3.1 Kokanee

LIFE HISTORY

Kokanee (*Oncorhynchus nerka*) are considered a keystone species in many large British Columbia lakes. They are most often the major source of forage for other predators such as burbot, Rainbow Trout, lake trout and Bull Trout. Provincially they are third only to Rainbow and cutthroat trout in sport fish catch (Ministry of Water, Land and Air Protection 2003).

Kokanee are a non-migratory form of Sockeye Salmon. They have very similar traits to Sockeye with the one major exception that they spend their entire life in freshwater. Both species will normally spend their first year of juvenile rearing in a freshwater lake, in this case Shuswap Lake, but while Sockeye will out-migrate to the ocean after one year, Kokanee remain for 2 or 3 years in the lake before returning to spawn. In British Columbia Kokanee typically reach maturity at the end of their third (age 2+) or fourth (age 3+) summer (McPhail 2007).

In 2001, a four year investigation into the status of Kokanee populations in the Thompson-Shuswap watersheds was initiated by the Ministry of Water, Land and Air protection and completed by Redfish Consulting. The results of this study were particularly helpful in the preparation of this species account.

Traditionally most fishery managers believed that Kokanee were quite abundant, requiring little attention. Today, however, that perception has changed and the prevailing view is that this important species appears to be in trouble in many interior lakes. Reasons for this decline are believed to be habitat related and are focused on spawning habitat deficiencies (Redfish Consulting 2005).

Kokanee populations in most of the Shuswap Lake system, are not well understood. There appears to be a critical absence of information on habitat use, angler harvest and escapement numbers over time (Ministry of Forests, Lands and Natural Resource Operations files 2011).

REPRODUCTION

Fisheries personnel use various methods to enumerate these spawning runs including helicopter and drift boat surveys. Frequencies of counts and survey dates have varied considerably over the years which have likely contributed in some part to large variations in annual counts.

AGE GROWTH AND MATURITY

Upon emergence, Kokanee usually migrate to a nursery lake before starting to feed. This downstream migration occurs at night with peak migration between dusk and midnight (Lorz and Northcote 1965; Webster, J. 2007). The fry are negatively



phototactic (avoid light) and, if the migration takes more than one night, they shelter during the day under rocks and organic debris (McPhail 2007).

On lake entry the fry of some Kokanee populations immediately move offshore and begin vertical migrations in search of zooplankters, their preferred feed. Other populations, however, remain inshore and forage in the littoral zone for variable amounts of time. These differences in fry behavior probably are related to food availability, temperature and predation risk (McPhail 2007).

HABITAT INDEX MATRIX

The Habitat Index Matrices developed for this study accordingly rates Kokanee adult stages as high for spawning gravel requirements but low in requirements for cover and rearing. During the spawning process they show little concern about hiding and cover as they go about the task of building redds and laying and fertilizing eggs. Gravel conditions and flows are very important during the egg to fry incubation stage. The emergent fry may have some limited requirements for cover or habitat complexity as they attempt to swim downstream under cover of darkness as quickly as possible. As McPhail (2007) explains, if the journey takes more than one night they will seek cover of organic debris or boulders along the way then resume their swim after dark.

3.2 Sockeye Salmon

LIFE HISTORY

Sockeye Salmon (*Oncorhynchus nerka*) are the third most abundant of seven species of Pacific salmon (Groot and Margolis 1991). In British Columbia Sockeye tend to have similar life history traits as Kokanee with a few major exceptions. As with Kokanee, Sockeye fry normally will spend their first year in a freshwater lake – in this case Shuswap Lake – then will begin the long journey to the Pacific Ocean. This anadromous tendency allows them to become much larger than Kokanee as there is more abundance of feed in the north Pacific than in interior lakes. Sockeye spend from one to four years in the ocean before returning to fresh water to spawn.

REPRODUCTION

Sockeye spawn in the fall, usually when water temperatures drop below 12°C. Historically there have been both early (spawning in early to mid-September) and late Sockeye runs (late October) in the Eagle River (DFO 1997). As with Kokanee, Sockeye will form dense aggregations on spawning grounds. They will normally choose larger spawning substrates than Kokanee which tends to cause separation in spawning locations. Like other Pacific salmon Sockeye will defend their redds until too weak to maintain position and die after spawning.

Even in larger rivers, Sockeye tend to spawn in shallow riffle areas (Groot and Margolis 1991). There are exceptions, however, and it is clear that they have the ability to detect



and utilize groundwater upwelling areas. Fecundity varies from about 2,000 to 4,000 eggs related to female size (Harris 1986 as discussed in Groot and Margolis 1991). Incubation times vary related to water temperatures. Fry typically emerge from late March to late May with peak emergence occurring in early May (Stewart et al. 1989 and Whelan et al. 1982 in DFO 1997). It is known, however, that these fry need to move downstream quickly to lakes where they begin feeding or they will not survive. They move downstream under cover of darkness to avoid predators. Fry generally rear and overwinter in the lake environment and outmigrate in June and early July. Large numbers of yearlings have been observed in the lower Fraser in September which suggest that South Thompson Shuswap Sockeye smolts enter the Strait of Georgia later than other Fraser stocks (Healy 1980 in DFO 1997).

Sockeye cycle on a four year rotation and can vary considerably in numbers from year to year.

Sockeye tend to spawn in areas above nursery lakes or in some cases just below (McPhail 2007).

AGE, GROWTH AND MATURITY

As with Kokanee, Sockeye fry once emerged from the gravel normally will migrate downstream under cover of darkness to their nursery lake for a period of rearing, usually lasting one year. J. D. McPhail (2005) suggests that the migrating fry will look for cover areas in organic debris or boulder substrate if the migration cannot occur in one night. They will then resume their downstream travel once darkness returns.

HABITAT INDEX MATRIX

The Habitat Index Matrices developed for this study tend to be very similar for Sockeye as they are for Kokanee. Spawning gravel attributes score very high for adult spawning and juvenile incubation while rearing and cover attributes score low due to their tendency to spend most of their juvenile stage rearing in Shuswap Lake and then the remainder of their adult life rearing in the Pacific Ocean.

3.3 Rainbow Trout

LIFE HISTORY

Rainbow Trout (*Oncorhynchus mykiss*) are an important game fish that reside in the Eagle River. They are considered the number one target for anglers in the British Columbia interior. It is apparent that there are two forms of trout in the system; a resident population that lives its entire life cycle in the river and adjoining tributaries, and an adfluvial form that spends the majority of its life in large lakes but migrates to rivers and streams to spawn or feed (Ministry of Environment files, Okanagan Region). There are many similarities between these two groups as far as spawning



requirements, early rearing and adult life forms and accordingly these life forms will be grouped in this discussion.

Rainbow Trout in the system, both in lake forms and resident river populations are heavily sought after by anglers and tend to be easily overfished. For this reason, conservative, 'catch and release' angling regulations were introduced by MOE fisheries managers in the mid to late 1990's (Jantz, memo to file, MOE). According to local opinions these measures appear to have been successful in conserving adult trout in the system and increasing angler catch success (pers. comm. Neil Brooks, Kingfisher Community Hatchery).

REPRODUCTION

Rainbow Trout are spring spawners and migrations into spawning streams are triggered by rising water temps (above 5°C.) and rising water levels (Hartman 1966 in McPhail 2007). The Eagle River is normally in freshet at this time with high flows and turbid waters. These conditions present a challenge for fisheries managers to monitor their activities and population strengths.

A search of the Ministry of Environment Habitat Wizard reveals that Rainbow Trout have been found in many of the tributary streams of the Eagle River (along with Coho, Chinook and Sockeye). These streams are critically important for the nursery phase of Rainbow Trout juvenile rearing. Maturing adults will migrate into these streams during freshet flows (April and May) and will spawn on the receding flows following. Unlike Pacific salmon, Rainbow Trout adults can survive spawning and it has been determined that about 10% will live on to spawn a second time (McPhail 2007).

Rainbow Trout juveniles rearing in small streams tend to be highly connected with riffles, runs and large woody debris. These areas provide the best habitat for cover and feed consisting of small aquatic insects. They need to select streams that provide suitable habitat to survive summer and winter extremes for up to three years. Low summer flows, caused by agricultural irrigation diversions can have significant impact on smaller streams. Rainbow Trout juveniles can also be displaced by other fish, such as Coho, which tend to compete heavily for prime feeding areas as they have similar diets (Griffith 1986).

It is believed that many of these developing juveniles will eventually move from nursery tributary streams down to the Eagle River or Shuswap Lake. In rivers, Rainbow Trout will normally establish territories in shallow water along stream margins (Slaney and Northcote 1974). During their adult phase in streams and rivers they occupy riffles, runs, glides and pools and tend to occur in deeper and faster water than juveniles (McPhail 2007). As they grow, terrestrial insects are added to their diet and so riparian areas along river margins become increasingly important to them (McPhail 2007).



AGE, GROWTH AND MATURITY

Some Rainbow Trout will live their entire life cycle in small streams or rivers (resident) while others are of an adfluvial nature and will move down to large lakes. Information is limited on downstream migration traits but it is believed that they travel in the freshet and utilize cover habitats along the way to escape their predators (McPhail 2007). Adfluvial trout can live up to 8 years before maturing with the norm being 5 or 6 (MOE Okanagan Region files). Their biggest obstacle in lakes is anglers who target them extensively. Rainbows can tolerate temperatures up to 27°C but anything higher can be lethal (Lee and Rinne 1980 in McPhail 2007). In adfluvial populations, Rainbow Trout rely heavily on Kokanee and Sockeye forage once they move to large lake habits.

HABITAT INDEX MATRIX

The Habitat Index Matrices developed for this study indicate that Rainbow Trout depend heavily on pools, runs, riffles, boulder areas and cover afforded by riparian vegetation or in-stream woody debris. Log jams associated with pools are also used extensively for feeding and hiding. Tributary stream confluences are important as are small, stable streams which provide rearing habitat for juveniles and resident populations. Of the five species of fish, discussed in these accounts for the Lower Eagle River, Rainbow Trout are likely the most sensitive to habitat changes because they spend so much of their life cycle in these zones.

3.4 Steelhead

LIFE HISTORY

Steelhead (*Oncorhynchus mykiss*) are the anadromous form or Rainbow Trout. There are three distinct Steelhead groups in BC, including North Coast, Vancouver Island and Interior Fraser groups, to which the Shuswap population belongs (McPhail 2007). Steelhead enter freshwater in fall and winter and in spring and summer as separate runs. Winter-run Steelhead are almost fully mature when they enter freshwater and spawn shortly thereafter. Summer-run Steelhead are immature when they enter the rivers and spend up to 8 months holding in freshwater before spawning (McPhail 2007). Typically most interior Steelhead are summer run. Run timing is genetically determined and summer and winter runs are distinct races (Ministry of Fisheries, 1999).

REPRODUCTION

Timing of river entry is usually a factor of distance to spawning grounds and is affected by seasonal differences in water levels that allow fish to pass barriers that would be present at lower river levels (McPhail 2007). Spawning females typically dig nests in gravel sites with swift water, such as the tail of a pool where it breaks into a riffle (Ministry of Fisheries 1999). Unlike other pacific salmon, not all Steelhead die after spawning, some return to spawn again.



AGE, GROWTH AND MATURITY

Smolting usually occurs in spring and is determined by body size rather than age (McPhail 2007). Egg hatch depends on water temperature with eggs hatching typically four to seven weeks after spawning and fry emergence occurring during summer (Ministry of Fisheries 1999). Migration begins in May and dispersal offshore begins almost immediately after the smolts enter salt water.

HABITAT INDEX MATRIX

The Habitat Index Matrices developed for this study indicate that Rainbow Trout depend on gravel sites with adequate flows and associated pools and riffles. Overhead cover (large woody debris and overhanging vegetation) is important in small streams (Flebbe and Dolloff 1995 as cited in McPhail 2007). Deep pools with abundant cover (boulders, ledges and overhanging vegetation) are important holding areas. Currents along the margins of streams are often used by Steelhead fry.

3.5 Coho Salmon

LIFE HISTORY

Coho Salmon (*Oncorhynchus kisutch*) are an important species and range through hundreds of coastal and interior streams in British Columbia. Interior Fraser River Coho Salmon are genetically unique and can be distinguished from lower Fraser River Coho. Studies of the genetic structure of Interior Fraser Coho indicate that there are five distinct populations. Three are within the Thompson (North Thompson, South Thompson, and Lower Thompson regions) and two are within the Fraser (the area between the Fraser Canyon and the Thompson-Fraser confluence and the Fraser River and tributaries above the Thompson-Fraser confluence) (Interior Fraser Coho Recovery Team 2006). South Thompson populations are further divided into sub-populations which are comprised of: the Adams River; Shuswap Lake and tributaries; and the Middle and Lower Shuswap River.

Coho populations in the interior of British Columbia face many threats and challenges. So much so that in 2002 the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) listed them as endangered. COSEWIC was concerned that if Interior Fraser Coho distribution became too fragmented, genetic exchange within the populations may be insufficient to ensure long-term survival (COSEWIC 2002).

Over the period of record (1975-2003) the 3-year average escapement for Interior Fraser Coho peaked in the mid-1980's at over 70,000 fish, and declined to a running average of less than 18,000 individuals in the late 1990's. Similar trends are observed in total abundance (i.e. catch plus escapement), which declined from over 200,000 in the late 1970's and 1980's to less than 30,000 in recent years (Interior Fraser Coho Recovery Team. 2006).



On average, North and South Thompson Coho Salmon declined in numbers by approximately 60% during the 10-year period from 1990-2000. There were four years (1991, 1995, 1997, and 1998) when productivity was so low that some of the populations may not have been able to maintain replacement spawner numbers, even with a zero exploitation rate (Irvine et al 1999).

Natural spawning is responsible for producing most of the Coho Salmon escaping to the Interior Fraser River, except for the Lower Thompson population where hatchery fish outnumber those produced from fish spawning in natural stream areas. There is no evidence that the overall distribution of Coho Salmon within the Interior Fraser River watershed has changed, although spawners were observed in fewer streams as spawning abundance declined.

The Eagle River is considered a major Coho producer (DFO 1997). A decline in Coho escapement rates in the South Thompson Shuswap Habitat Management Area has been attributed to excessive exploitation rates, low marine survival and degradation of freshwater habitat. Historically Coho stocks in the Eagle River were supplemented by a hatchery which was closed in 1994.

Population trends from 1975 to 2003 for the South Thompson Unit peaked at 25,209 with the lowest escapement at 1799 for years 1988 and 1996 respectively (DFO 1997).

Interior Fraser Coho require adequate freshwater and marine habitats to survive and reproduce. These fish spawn in freshwater and the juveniles normally spend one full year in freshwater before migrating to the sea as smolts. The distribution of spawning habitat for Coho Salmon is usually clumped within watersheds, often at the heads of riffles in small streams and in side-channels of larger streams. However, Interior Fraser Coho are commonly observed spawning in mainstems of larger rivers during periods of low flow, presumably when tributary and side-channel habitats are less accessible.

The outlook for Interior Fraser Coho is highly uncertain and depends on the magnitude of negative impacts due to fishing, habitat perturbations, and climate related changes in survival. A return to higher survivals, combined with continued low exploitation rates, conservation of existing habitat, and habitat restoration, could produce increases in escapements and subsequently population recovery. However, if survival rates are at low levels, such as those recorded in 1998, spawner numbers will continue to decrease, possibly resulting in the eventual extinction of Interior Fraser Coho. Since there is no predictor of future survival rates, a cautious approach to harvest and habitat management will be required to ensure the long-term viability of Interior Fraser Coho (Interior Fraser Coho Recovery Team. 2006).

Between 1971 and 1995 the Eagle River had the highest Coho escapements of any of the rivers in the South Thompson Shuswap Habitat Management area where enumeration was completed. Coho escapements between 1989 and 1995 declined in the Eagle River. Declines are attributed to poor marine survival, exploitation rates and impacts to freshwater habitat (DFO 1997).



REPRODUCTION

The timing of river entry and spawning varies with latitude and distance from the ocean. Thompson Coho stocks return at age 3 to the lower Fraser between late August and October and spawning occurs from mid-October to December. Spawning Coho are the most secretive of Pacific salmon and most reproduction behavior occurs at night.

Coho have similar tendencies to Rainbow Trout in their selection of rearing habitat (Griffith 1986). They prefer sites with sub-gravel flow as is found in tail-outs of pools immediately above riffles or upwelling sites. They prefer smaller tributary and headwater streams often not much more than 1m in width. Eggs incubate over winter and hatch in the spring. Incubation timing is dependent on water temperatures as with all other salmonids in the Shuswap system.

Fry emerge from late March through late May and early June (DFO 1997). Several of the tributaries of the Eagle River, including the Perry River, Crazy Creek and South Pass Creek have obstructions to upstream migration and only low numbers of Coho spawn in their lower reaches (DFO 1990 in DFO 1997). Rearing in Shuswap Lake occurs adjacent to spawning streams like the Eagle River and along migration routes (Russell et al. 1980 in DFO 1997). Juveniles spend one year in freshwater, rearing initially in their natal streams and subsequently moving downstream to rear and overwinter in rivers and lakes (DFO 1997). Overwintering also occurs in the Eagle River mainstem. Juvenile Coho move offshore in mid-July and rear in the pelagic zone of Shuswap Lake until migration the following spring. Migration likely occurs between mid-April and early May.

According to the B.C. Ministry of Environment Habitat Wizard, Coho are present in five tributary streams of the Eagle River including South Pass Creek, the Perry River, Yard Creek, Owlhead Creek and Crazy Creek. The lower reaches of many smaller tributaries likely provide important Coho habitat.

AGE, GROWTH AND MATURITY

In British Columbia, Coho fry usually reach 80-90mm in their first year (Sandercock 1991 in McPhail 2007). Coho fry in interior streams normally spend 1 to 2 years in nursery streams before out-migrating to the Pacific Ocean. They are primarily drift-feeders and take the drifting stages of aquatic insects from the water column or terrestrial insects from the surface. Coho prefer pools and backwater areas. They will aggregate in backwaters, side-channels and quiet embayments along stream margins. They will eventually emigrate to larger rivers and will search out off-channel overwintering areas such as beaver ponds and flooded wetlands (Peterson 1982 in McPhail 1997). In winter they will seek cover under woody debris, undercut banks, cobbles and move deeply into root wads.



HABITAT INDEX MATRIX

The Habitat Index Matrices indicate that Coho adults require cascade areas, confluence areas, pools, riffles, runs, cover and access to small streams in upper watersheds. They will hide under cut banks and root wads and will search for suitable gravel in upwelling areas and tail-outs of pools.

Coho juveniles depend heavily on pools, backwaters, in-stream vegetation areas, low and middle flood benches, marsh areas, side channels, cobble areas and large woody debris. Tributary stream confluences are important as are small, stable streams which provide rearing habitat. These streams will support Coho through their incubation period and their first year of rearing. Adequate year-round flows and cool temperatures afforded by well-developed riparian zones are important. Some fry will move to the main rivers where they will seek back-waters, flood benches and beaver dams.

Coho in south central B.C. will usually rear for 1 year in freshwater and then begin their migration to the ocean. They will spend 18 months at sea before returning as adults to spawn. As with other Pacific salmon (except for Steelhead and coastal cutthroat) they die after spawning.

3.6 Chinook Salmon

In British Columbia Chinook salmon spawn in over 250 rivers and streams (McPhail 2007). Within the Fraser River system, there are seven genetically recognizable geographic groupings: an upper, middle, and lower Fraser group; a northern, southern and lower Thompson group; and the Birkenhead River population (Beacham et al. in McPhail 2007). Chinook are the largest of seven species of Pacific salmon and have the widest distribution. They have sustained First Nations for thousands of years, provide important recreational and commercial harvesting opportunities, and were an important part of the colonization of British Columbia.

Chinook stocks exhibit both ocean type and stream type life history patterns. Ocean type Chinook rear in freshwater for several months and migrate to the ocean in the first fall while stream type Chinook rear in freshwater for one year before migrating to the ocean (Fraser et al. 1982 in DFO 1997). Eagle River Chinook are predominantly stream type.

REPRODUCTION

Eagle River Chinook runs typically return to the lower Fraser by mid-July with peak spawning occurring from late August to November. Since Eagle River Chinook are spring run, peak spawning typically occurs earlier during this period, around mid-September (DFO 1997). Chinook in the Eagle River spawn below Griffin Lake.

Chinook females choose the spawning site and appear to prefer sites with subgravel flow (eg. In the tail-outs of pools immediately above riffles or in upwelling sites)



(McPhail 2007). Chinook eggs are the largest of the species of Pacific salmon and require higher rates of flow and oxygen than other species. As with most other species of Pacific salmon, adults will die after spawning.

AGE, GROWTH AND MATURITY

Chinook eggs incubate through the winter period and fry emerge in the early spring. As with the other species discussed earlier, their incubation period varies with water temperatures. Once emerged the diet of fry includes adult chironomids as well as chironomid larvae and pupae, terrestrial insects taken from the surface, and nymphs of larvae of aquatic insects (McPhail 2007). Upon emergence, Chinook fry are often moved downstream by flows from areas where they incubated (Groot and Margolis 1991). Their habitat range is often keyed to flow velocities rather than habitat types. They range widely in habitat use but generally will occupy bouldery areas in faster waters.

Downstream timing appears to be correlated strongly with size (Groot and Margolis 1991). They will eventually move out to the Pacific and return 4-5 years later to spawn as adults.

Juvenile rearing is not well understood but both natal streams and lakes are utilized. Lakes and larger natal streams provide overwintering habitat for stream type Chinook (DFO 1997). Ocean type Chinook likely realize a greater benefit from the productivity of larger lakes; as opposed to stream type Chinook which typically overwinter in freshwater to be able to reach a sufficient size to allow for salt water adaptation (DFO 1997).

HABITAT INDEX MATRIX

Chinook adults are heavily dependent on deep pools where they may hold for up to 8 weeks before moving out to spawning grounds. Their spawning areas must have larger diameter clean gravels which will afford adequate percolation of flows and oxygen to meet incubation requirements. They are particularly sensitive to movements of silt or reductions in flow during the incubation period.

3.7 Pink Salmon

LIFE HISTORY

Pink Salmon are not as adept as other Pacific salmon at negotiating barriers and typically spawn closer to the ocean than these other species (McPhail 2007). Pinks mature at two years and southern populations of Pink Salmon (*Oncorhynchus gorbuscha*) typically spawn September to October. A three year life cycle is rare. The population of Pink Salmon that would use the Eagle River is likely limited.



REPRODUCTION

Spawning typically occurs in September and October. In the Fraser system the spawning run has early and late segments (McPhail 2007). Female Pink Salmon prefer sites with clean coarse gravel and subgravel flow. Sites are typically shallow riffles or channels 20 – 100 cm deep with current. Some streams have both early and late spawning runs (McPhail 2007) and some stocks appear to be adapted to different temperature regimes.

AGE, GROWTH AND MATURITY

Eggs incubate in gravel over winter, hatch in about 1.5 to 3 months and emerge from gravel about 3 to 5 months after hatching. Once they begin swimming, fry quickly migrate downstream (McPhail 2007). Fry migrate to the ocean as soon as they fill their swimbladders (McPhail 2007).

HABITAT INDEX MATRIX

Medium sized gravel areas with sub-gravel flow are the areas that are important to Pink Salmon for spawning.

3.8 Bull Trout

LIFE HISTORY

Bull Trout (*Salvelinus confluentus*) have a highly variable life history. There are three life history forms in BC: fluvial, adfluvial and resident. The fluvial form spends its entire life in flowing water but often makes extensive migrations within large river systems (McPhail 2007).

REPRODUCTION

Timing of spawning migrations depends on a number of factors such as water temperature, habitat, genetic stock and possibly amount of daylight (MWLAP 2004). They spawn between mid August and late October (MWLAP 2004) with resident populations tending to migrate shorter distances to spawning grounds. Migratory or adfluvial populations can have a much larger home range and migratory Bull Trout may travel up to or over 250 km (MWLAP 2004). The temperature below which Bull Trout begin spawning activity appears to be 9°C (MWLAP 2004). Bull Trout spawn in flowing water in habitat similar to other salmonids, often in runs or glides in larger river or in pockets of suitable gravel in smaller streams (McPhail 2007). They show a preference for gravel and cobble sections in smaller, lower order rivers and streams (MWLAP 2004). Size of the redd and size of gravel at the spawning site depends on female size (i.e. larger females spawn in larger gravel).



AGE, GROWTH AND MATURITY

Bull Trout fry tend to stay near the substrate to avoid being swept downstream (Ford et al. 1995 in MWLAP 2004). Juvenile trout feed on aquatic insects. Adfluvial trout are typically piscivorous and typically tend to grow larger than fluvial populations (MWLAP 2004). Bull Trout reach maturity most often at 5 to 7 years but the range is 3 to 8 years. Juvenile fish (fly to 3+) move from streams to lakes or reservoirs throughout the summer months (McPhail and Murray 1979 in MWLAP 2004).

HABITAT INDEX MATRIX

Mature forest capable of producing large woody debris is typically more important to Bull Trout than younger structural stages. These forests typically trap and store more sediment and provide more nutrients and fish habitat structure than younger forests (MWLAP 2004). Bull Trout are dependent upon cover, usually in the form of deep pools, woody debris jams and undercut banks (MWLAP 2004). Factors that are often associated with Bull Trout distribution and abundance include channel and hydraulic stability, substrate, cover, temperature and the presence of migration corridors (MWLAP 2004). The influence and importance of these factors varies based on life history (resident, adfluvial or anadromous) and life history stage (MWLAP 2004).

3.9 Dolly Varden

Life History

Dolly Varden (*Salvelinus malma*) are primarily a coastal species, however, there have reportedly been transferred historically from coastal drainages into the upper Fraser (McPhail 2007). There are three forms of Dolly Varden in BC (stream resident, anadromous and adfluvial [lake dweller that spawns in streams]) and the population in the Eagle River is likely resident.

Reproduction

Dolly Varden spawn in the fall and stream residents usually spawn locally (McPhail 2007). The female typically digs a redd in gravel; the size of gravel and the associated redd depends upon the size of the female. Females in headwater populations typically spawn at a smaller size.

AGE, GROWTH AND MATURITY

Dolly Varden eggs overwinter in gravel and hatch in about 3 months (McPhail 2007). Fry in other headwater systems emerge in early June. Most Dolly Varden reach maturity at the end of their fifth growing season. Stream residents feed on the nymphs and larvae of aquatic insects; as a result feeding during the day occurs close to the bottom of the channel (McPhail 2007).



HABITAT INDEX MATRIX

Dolly Varden utilize gravel for spawning similar to other salmonids. There is some evidence that in areas of contact between Bull Trout and Dolly Varden, the latter are more likely to use small stream habitat (McPhail 2007). Adult Dolly Varden often use similar habitat as juvenile Bull Trout including main and side channel pools and riffles (McPhail 2007). Juveniles are associated with shallow (<0.5 m deep), slow (<0.10 m/s) runs and pools as well as side channels. For cover they utilize large rocks, woody debris, root wads and undercut banks (McPhail 2007). They overwinter in streams associated with cover (MWLAP 2004). Young-of-the-year are denser than water and are primarily associated with shallow areas and are found around coarse gravel and cobble interspersed with boulders. They seek shelter under rocks, logs and undercut banks. Fry will shift to deeper water as they grow (Dolloff and Reeves 1990 in McPhail 2007) and in winter in river systems subject to freezing. Adults will often carry out extensive downstream migration to overwintering habitat (MWLAP 2004).

3.10 Westslope Cutthroat Trout

LIFE HISTORY

Westslope Cutthroat Trout (*Oncorhynchus clarki*) is one of 14 subspecies of interior cutthroat trout and it is suggested that populations in the Shuswap system may have been introduced (MWLAP 2004). Westslope cutthroat live in a variety of stream conditions and as a result there are different forms (lake resident, migratory and non-migratory stream resident) in BC with a high degree of within species diversity (MWLAP 2004). They are found in tributaries of the Eagle River (Yard, Crazy and Fog Creeks) (McPhail 2007).

REPRODUCTION

Most adults return to their natal streams to spawn and then return to a relatively small home range area in either a large stream or lake for the remainder of the year (Behnke 1992 in MWLAP 2004). Rising water temperatures (i.e. 5°C or slightly greater) and rising stream levels tend to trigger spawning. Adults begin to display spawning streams in May and June. Spawning can occur from April through August but tends to peak in Late May through June (MWLAP 2004). Populations in headwater streams spawn later, usually peaking in mid-July and may repeat spawning in successive years depending on local conditions. Repeat spawners can be upwards of 70% of the spawning population.

AGE, GROWTH AND MATURITY

Eggs incubate in gravel for 6 to 7 weeks and spend an additional 1 to 2 weeks in the interstitial space in the gravel before the fry emerge from gravel usual mid-July through early August. Fry then either migrate to other habitat or rear in their natal streams (MWLAP 2004).



HABITAT INDEX MATRIX

Westslope Cutthroat Trout live in a variety of different stream conditions. Westslope Cutthroat Trout are opportunistic foragers and depend on drifting aquatic insect larvae when feeding in streams (MWLAP 2004). Westslope Cutthroat Trout tend to occupy the best habitat such as deep pools and runs where there is abundant cover and low to moderate gradient (MWLAP 2004). Juvenile fish often feed in less optimal habitat such as shallow riffles and glides.

4.0 AQUATIC HABITAT INDEX

AHI scores derived for each reach of the river channel and left and right bank segments are analogous to the current productivity, which is defined as the sum of relative habitat values for all subareas occurring within a defined area (i.e., river channel extents of a respective reach) (Minns 1997). The AHI is a categorical scale of relative habitat value that ranks the river channel and bank segments in a range between *Very High* and *Very Low*. Our approach to development of the index incorporated the following components:

1. Utilization of all existing data that occurs in a spatial GIS format to develop the index.
2. Species Accounts (Section 3), developed to inform life history scores for discrete instream habitat units/features for key species of the Eagle River.
3. The AHI was developed and calibrated using professional opinion similar to other habitat indices that have been developed for lake systems. Criteria were reviewed for relevancy and weighted appropriately (i.e., representative of the contribution to overall habitat sensitivity), and the index was developed in such a way that new data layers may be added in the future.

The data previously collected for this project involved numerous spatial data layers and is substantially more complicated to develop than an AHI developed for a lake ecosystem. The dynamic nature of riverine ecosystems required that four separate layers of data be collected as part of the inventory phase. One layer of data was attributed to the primary character of the river, one layer was used to describe the right bank, one layer was used to describe the left bank, and one layer was used to describe the mapped extent of salmonid spawning utilization.

4.1 Instream Polygon Scoring Matrix

Habitat unit classes (Section 3.1) were assigned a relative habitat value for each key fish life history stage/habitat quality categories. The relative productivity value was defined for each habitat unit as the sum of all production scores accrued by each of the fish species during the time they spend any part of their life history in that area (e.g.,



for spawning, rearing, and feeding) or accrued elsewhere as a result of a strict habitat requirement to use that area of habitat (e.g., for staging, migration, or cover).

Habitat unit: Fish life history and habitat requirement matrices were developed to determine the relative habitat value for each habitat unit. Life history stages considered were:

- Spawning
- Rearing
- General Living/Feeding

Habitat Requirement categories included:

- Substrate composition
- Cover (habitat complexity)

Life history accounts informed the relative values assigned each habitat unit for each species and life history stage. The relative habitat unit values are presented in the following matrices (Tables 6-9). A 3-class score was assigned to each matrix cell; where 1 = *low value*, 2 = *moderate value*, and 3 = *High value*. The sum of species scores for each habitat unit were then transformed to a relative habitat value, which was calculated as the habitat unit score / maximum habitat unit score.

Table 8. Fisheries relative habitat values (RHV) and weighted scores for aquatic and riparian habitat features.							
Habitat Variable	Code	Rearing		General Living		Cover	
		RHV	Wt. Score	RHV	Wt. Score	RHV	Wt. Score
Backwater	BW	1.00	28.75	0.23	1.31	0.20	3.45
Cascade	CA	0.50	14.38	0.61	3.53	0.65	11.21
Confluence	CO	0.72	20.76	0.91	5.23	0.83	14.38
Low Flood Bench	FL	0.22	6.39	0.11	0.65	0.08	1.44
Mid Flood Bench	FM	0.11	3.19	0.07	0.39	0.05	0.86
Glide	G	0.44	12.78	0.36	2.09	0.27	4.60
Lake	LK	0.44	12.78	0.68	3.92	0.72	12.36
Large Woody Debris	LWD	1.00	28.75	0.91	5.23	0.98	16.96
Mixed Forest	M	0.11	3.19	0.07	0.39	0.07	1.15
Pool	P	1.00	28.75	1.00	5.75	1.00	17.25
Riffle	RF	0.72	20.76	0.82	4.70	0.67	11.50
Riverine Marsh	RM	1.00	28.75	0.16	0.91	0.15	2.59
Run	RN	0.72	20.76	0.80	4.57	0.57	9.78
Side Channel	SC	0.89	25.56	0.84	4.84	0.70	12.08
Shrub - Low Flood/Swamp	SH-r	0.33	9.58	0.27	1.57	0.30	5.18



Table 9. Weighted scores for mapped salmonid holding areas (DFO 2014).

Species	Weighted Score
Chinook	11.5
Coho	11.5

Table 10. Relative value and weighted scores for mapped salmonid (Chinook, Sockeye, Coho) spawning areas and use intensity (DFO 2014). Assigned values are applied to the matrix based on the relative abundance spawning area polygons attribute to the total instream reach area.

Spawning and intensity	Weighted Score	Relative Value
High	11.5	1
Moderate - High	9.2	0.8
Moderate	5.75	0.5
Low - Moderate	3.45	0.3
Low	2.3	0.2
Unknown	1.15	0.1

Table 11. Relative value and weighted scores for mapped instream substrate composition.

Substrate Class	Relative Value	Weighted Score
Organic	0.3	5.175
Fines (silt/sand)	0.2	3.45
Gravel	1	17.25
Cobble	0.75	12.9375
Boulder	0.5	8.625
Bedrock	0.1	1.725



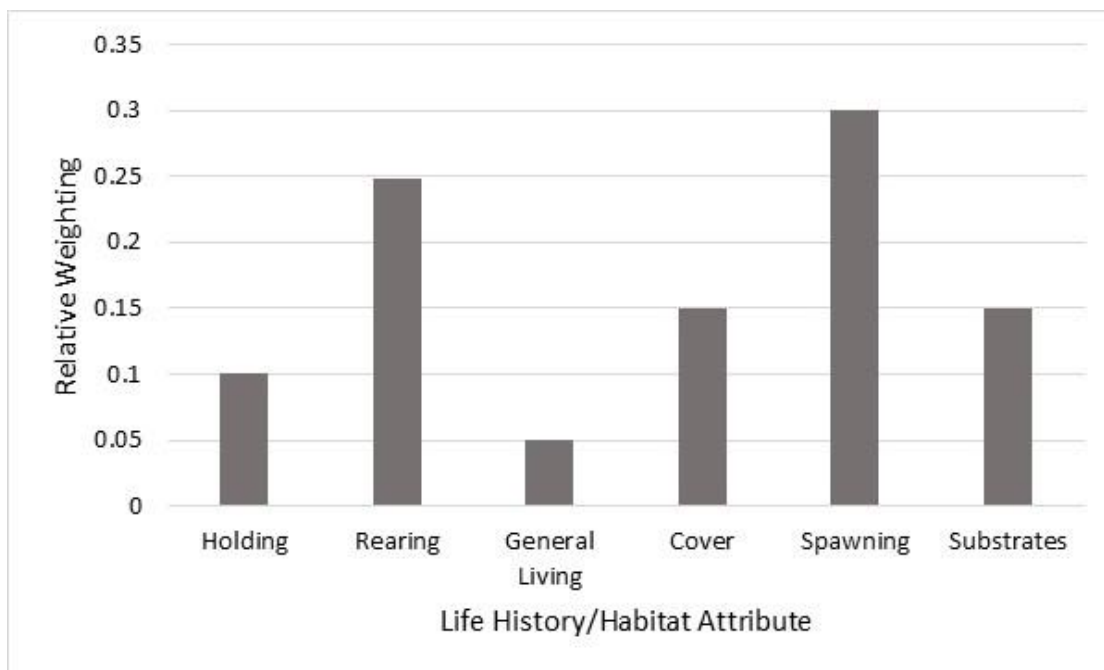


Figure 1. Relative weighting of life history and habitat attributes for instream AHI scores.

4.2 Riparian Polygon Scoring Matrix

Relative habitat values were assigned to riparian polygons (delineated within the 100-m riparian band) based the sum of values of four categories: Wildlife habitat rating; biodiversity rating; nutrient value/leaf and litter fall; and large woody debris recruitment (Table 12). The sum of relative habitat unit scores were then added to the other parameters of the bank AHI system relating to the current level of impact, degree of bank modifications, and current severity of erosion (caused by human activities).



Table 12. Ecological category: riparian habitat unit rating matrix (relative habitat value).						
Habitat Type	Code	Qualifier	Wildlife Rating	LWD	Biodiversity Rating	Nutrients
Broadleaf Forest	B	e	0.2	0	0.2	0.2
		ld	0.7	0.4	0.7	0.8
		md	0.6	0.4	0.5	0.6
		n	0.8	1	0.8	0.9
Backwater	BW		0.7	0	0.5	0
Coniferous Forest	C	e	0.2	0	0.2	0.2
		i	0.6	0.8	0.6	0.6
		ld	0.5	0.8	0.5	0.6
		md	0.5	0.6	0.4	0.5
		n	0.7	0.8	0.6	0.6
Cultivated Field	CF		0.1	0	0.1	0.1
Cleared	CL	a	0.2	0	0.1	0.2
		hd	0.1	0	0.2	0.1
		l	0.2	0	0.2	0.3
		ld	0.4	0	0.3	0.3
		n	0.5	0	0.4	0.4
		s	0.1	0	0	0
Low Flood Bench	FL	ld	0.7	0	0.7	0.3
		n	0.9	0	0.9	0.4
Mid Flood Bench	FM	hd	0.4	0.4	0.5	0.4
		ld	0.8	1	0.8	0.9
		md	0.6	0.8	0.6	0.7
		n	1	1	1	1
Mixed Forest	M	a	0.2	0	0.2	0.2
		e	0.3	0	0.2	0.2
		f	0.3	0.6	0.4	0.4
		hd	0.3	0.4	0.3	0.4
		ld	0.7	0.8	0.8	0.4
		md	0.6	0.7	0.6	0.6
		n	0.9	1	1	0.4
		r	0.9	1	1	0.2
River	RI		0.8	0	0.8	0
Railway	RL		0	0	0	0
Riverine Marsh	RM	ld	0.9	0	0.9	0.3
Rural	RU	hd	0	0	0	0.1
		ld	0.4	0.4	0.4	0.4
		md	0.3	0.2	0.2	0.3
Road	RZ		0	0	0	0
Side Channel	SC		0.8	0	0.7	0
Shrub	SH	f	0.4	0	0.2	0.3
		hd	0.2	0	0.1	0.2
		ld	0.5	0	0.4	0.5
		md	0.4	0	0.3	0.3
		n	0.6	0	0.5	0.6
		r	0.6	0	0.5	0.6
Wetland	WN	hd	0.6	0	0.5	0.1
		ld	0.8	0	0.8	0.4
		md	0.6	0	0.6	0.2
		n	1	0	1	0.4



4.3 AHI Logic, Calibration, and Ranking

As part of the index development for the Eagle River RIM, index development and calibration involved multiple iterations - assigning different weights to each of the parameters within the various habitat units, life history and ecological matrices. Following each iteration, the resultant sensitivity outputs were reviewed and scrutinized by fisheries biologists both on the project team and from DFO. Calibration of the index was ultimately finalized using professional judgment.

The AHI provides a categorical scale of relative habitat value that ranks the centerline and shoreline segments in a range between *Very High* and *Very Low* sensitivity. The index is relative, because it only assesses the sensitivity of one shoreline area relative to another within the extents of the river being examined. Thus index scores and rankings developed for the Lower Shuswap River may not be directly transferable to the Eagle River or other river systems without re-calibration. The following provides a definition for each AHI ranking:

- *Very High* – Reaches/Segments ranked as *Very High* are considered integral to the maintenance of fish and wildlife species and generally contain important natural riparian and floodplain areas, complex mosaics of habitat units supporting high biodiversity and productivity values, and high value/use salmonid spawning, rearing, and general living habitats.
- *High* - Reaches/Segments ranked as *High* are considered to be very important to the maintenance of fish and wildlife species along and within the river and areas can be ranked as *High* for a variety of reasons.
- *Moderate* - Reaches/Segments ranked as *Moderate* are areas that are common along the river, and have likely experienced some habitat alteration. These areas may contain important habitat areas, such as shore holding areas (deep pools).
- *Low* – Reaches/Segments that are generally highly modified. These areas have been impaired through land development activities. A common symptom along the river is high bank instability and bank erosion exacerbated by the removal/absence of riparian vegetation.
- *Very Low* – Segments that are extremely modified and not adjacent to any known important habitat characteristics.

After reviewing the distribution of the data from the iterations, logical breaks in the scores were used to determine the AHI rankings (discussed above). The breaks created reflect the clustering of scores based upon the output of the results, which somewhat mimic a normal distribution (although an analysis of data distribution was not conducted).



4.3.1 Centerline – Instream Zone AHI Logic

The AHI for each channel reach was calculated as the sum of life history scores for each reach. Table 13 presents the categories, relative category weightings, and logic for the Centerline AHI scoring.

The centerline AHI scores for respective reaches (AHI_{reach}) was calculated using the following,

$$AHI_{reach} = \sum \left[\frac{A_h}{A_t} \times W_h \right] + \sum \left[\frac{A_{sp}}{A_t} \times W_{sp} \right] + \sum [P_{sub} \times W_{sub}] + \sum \left[\frac{A_{hold}}{A_t} \times W_{hold} \right] \quad (1)$$

where A represents the area of a described river feature (such as h is habitat, sp is spawning, and $hold$ is holding), P represents a percentage of the area, A_t represents the total area of the river channel contained with the subject reach, and W represents the relative weighting given to the described river feature (Tables 8-11).

Table 13. The parameters and logic for the Centerline of the Eagle River			
Category	Criteria		Logic
General Living	Instream Habitat unit and Hydraulic Class polygons		% Area * Category Score
Rearing	Instream Habitat unit and Hydraulic Class polygons		% Area * Category Score
Chinook/Coho Holding	Mapped polygons		% Area * Category Score
Spawning ¹	High	11.5	34.5 (30%) % total spawning area * Category Score scores combined for Chinook, Coho, and Sockeye
	Moderate - High	9.2	
	Moderate	5.75	
	Low - Moderate	3.45	
	Low	2.3	
	Unknown	1.15	
Substrates	% composition estimated during 2009 field inventory		17.25 (15%) % Area * Category Score
Cover	Instream Habitat unit and Hydraulic Class polygons		17.25 (15%) % Area * Category Score

¹. For the AHI spawning polygons were split according to identified reach breaks to allow a reach by reach analysis. To accomplish this, the data was transformed and described as a percentage of the total river area available for individual reaches for mapped anadromous spawning use.



4.3.2 River Bank – Riparian Band AHI Logic

The left and right bank AHI segment scores (AHI_{bank}) were calculated using Equation 2.

$$AHI_{Segment} = \sum [P_{nat} \times W_{nat}] + \sum [P_{retain} \times W_{retain}] + \sum \left[\frac{L_{dock}}{L_t} \times W_{dock} \right] + \sum \left[\frac{L_{erosion}}{L_t} \times W_{erosion} \right] - Modifier$$

(2)

where L is the length of the bank of a described river feature. Modifiers are either railways, roads or other large modifications to the bank or near the bank. Table 14 presents the categories, relative category weightings, and logic for the river bank AHI scoring.

Table 14. The parameters and logic for the banks of the Eagle River

Category		Criteria	Maximum Relative Value (Score)	Percent of the Category	Logic
Percent Natural		Percent Natural	5	100	% Natural Value (P_{nat}) * Category Score (P_n)
Wildlife ^a		Wildlife	5	100	% Area * Category Score
Large Woody Debris Recruitment ^a		Large Woody Debris Recruitment	5	100	% Area * Category Score
Biodiversity ^a		Biodiversity	5	100	% Area * Category Score
Leaf and Litterfall ^a		Leaf and Litterfall	5	100	% Area * Category Score
Impairments	Erosion	Low	-0.75	5	% of Segment Length * Score
		Moderate	-1.5	10	% of Segment Length * Score
		High	-4.5	32	% of Segment Length * Score
		Extreme	-7.5	53	% of Segment Length * Score
	Bank Armouring	Retaining wall, rip rap	-2		% of Segment Length * Score
	Modifications	Dock	-0.25		#/km * Score
		Boat Launch	-1		# * Score
	Shore Modifier	Rail	-5		If yes = Score
		Road	-5		If yes = Score
		Other	-2		If yes = Score

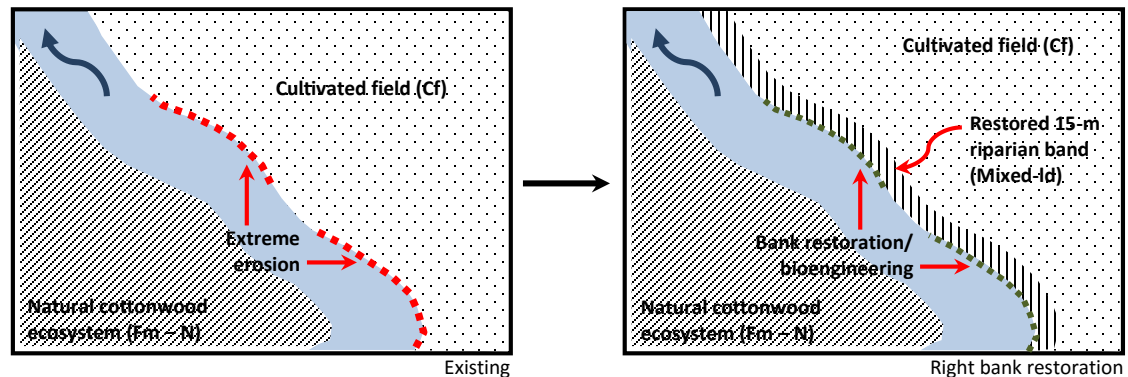
a. See Table 11 for rating matrix and relative habitat values



4.4 Restoration and Segment Prioritization Analysis

To assess the viable restoration potential of a segment, the following changes were made to existing polygons occurring within the 100-m riparian band as well as to the bank inventory data. This involved the following:

1. When the adjacent river polygons were of lesser quality than a treed riparian fringe (i.e., where a cultivated field or cleared area extended to the river's edge) a 15-m treed riparian band with low disturbance qualifier supplanted the existing lesser value condition for that area (implying restoration to the site potential vegetation type).
2. Lengths of “*high*” and “*severe*” bank erosion, inventoried and mapped during the 2009 field inventory, were removed from the bank segment data - representing bank restoration, stabilization, and bioengineering.



3. Once steps 1 and 2 were completed, the AHI was re-run – outputting improved scores for reaches that had higher levels of impact and consequently lower Bank AHI scores and ratings. Bank segments demonstrating the greatest AHI score differential between AHI_{now} and $AHI_{\text{potential}}$ were identified as higher priority areas for mitigative action.

On the Eagle River, the primary concern is riparian loss, river encroachment, and bank erosion, whereas modified features were generally limited and had little influence on respective bank AHI scores.



5.0 INVENTORY SUMMARY OF RESULTS

The Eagle River flows from its headwaters in the mountains north of Highway 1 between Victor Lake and Summit (Clanwilliam) Lake, to the south end of the Sicamous Arm of Shuswap Lake, a distance of approximately 83 km.

The River was broken into a total of 51 reaches. The left bank (looking downstream) was divided into 137 Segments and the right bank was broken into 114 Segments. The total length of the left and right river banks was 87 km and 85 km respectively.

5.1 Stream Primary Character

5.1.1 Shore Type Relative Distribution

Bench flood associations account for about 73% of the left bank and 77% of right bank (Figure 2). Low and Middle Bench site associations combined account for about 21% of the left bank and about 33% of the right bank. Low and Middle Bench Site Associations occur in the geomorphologically dynamic portion of the floodplain and are maintained by a combination of prolonged flooding and site erosion/sedimentation (Mackenzie and Moran 2004). Low bench ecosystems occur on sites that are flooded for moderate periods (< 40 days) of the growing season, conditions that limit the canopy to tall shrubs, especially willows and alders. Annual erosion and deposition of sediment generally limit understory and humus development (Mackenzie and Moran 2004). Middle bench ecosystems occur on sites briefly flooded (10–25 days) during freshet, allowing tree growth but limiting tree species to only flood-tolerant broadleaf species such as black cottonwood (Mackenzie and Moran 2004).

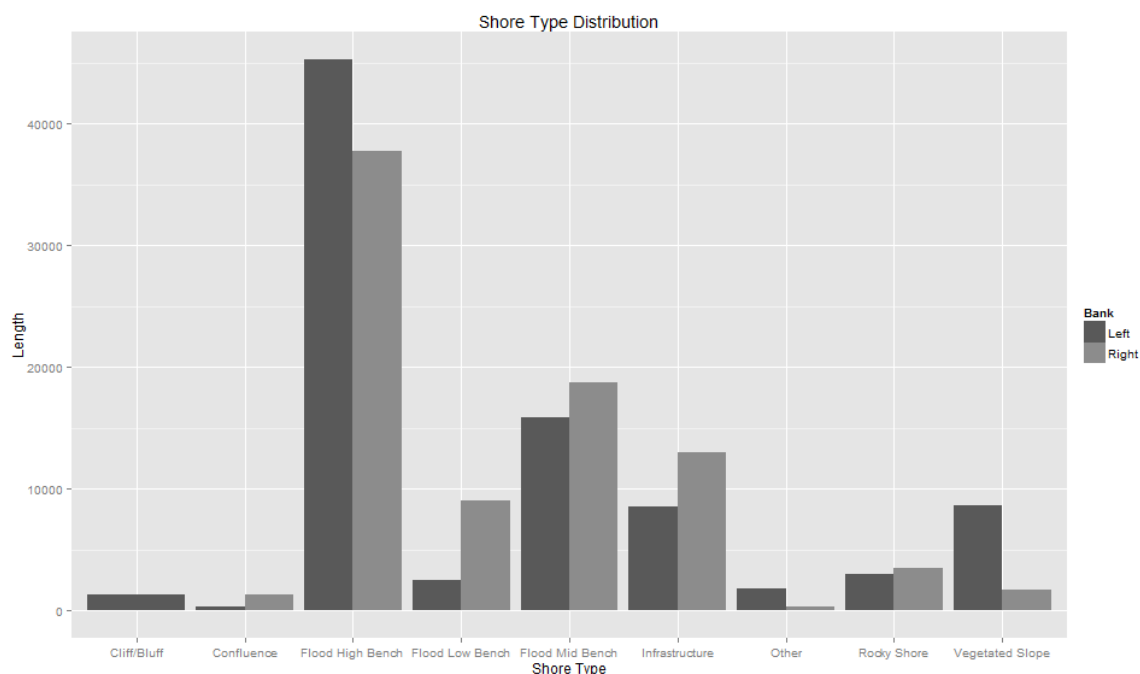


Figure 2. Relative distribution of shore types along the left and right bank of the Eagle River.



*Low Flood Bench**Mid Flood Bench**Mixed Forest/Flood High Bench**Cultivated Field**Confluence**Riverine Marsh and Backwater*

5.1.2 Landuse Relative Distribution

Both the left and right banks of the river are predominantly natural or have not been recently disturbed (Figure 3). Highway and railway (infrastructure) encroachment/confinement and disturbance occur along about 12% of the left bank and 18% of the right bank. Agricultural landuse occurs along 10% of the left bank and about 12% of the right bank.

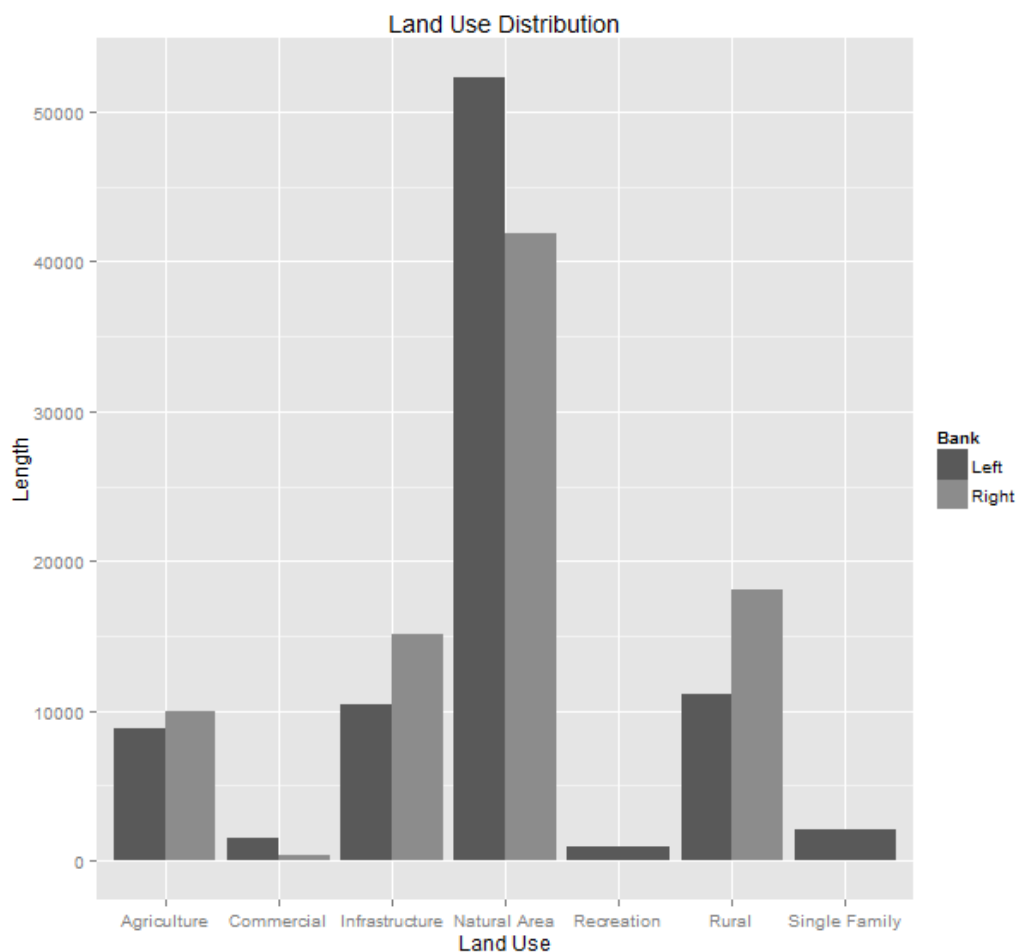


Figure 3. Relative landuse distribution of along the left and right bank of the Eagle River. The total length of the left (LB) and right river banks (RB) was 87 km and 85 km respectively.



*Agriculture**Infrastructure**Natural Area*

*Rural**Single Family**Commercial*

5.1.3 River Bank Level of Impact

Anthropogenic impacts to the river occurred in highest density from Cambie-Solsqua Road Bridge downstream to Sicamous. About 33 km (38%) of the left bank and about 34 km (39%) of the right bank has had moderate to high level of impact. Figure 4 summarizes the distribution of impact rating categories assigned to the left and right banks of the Eagle River.

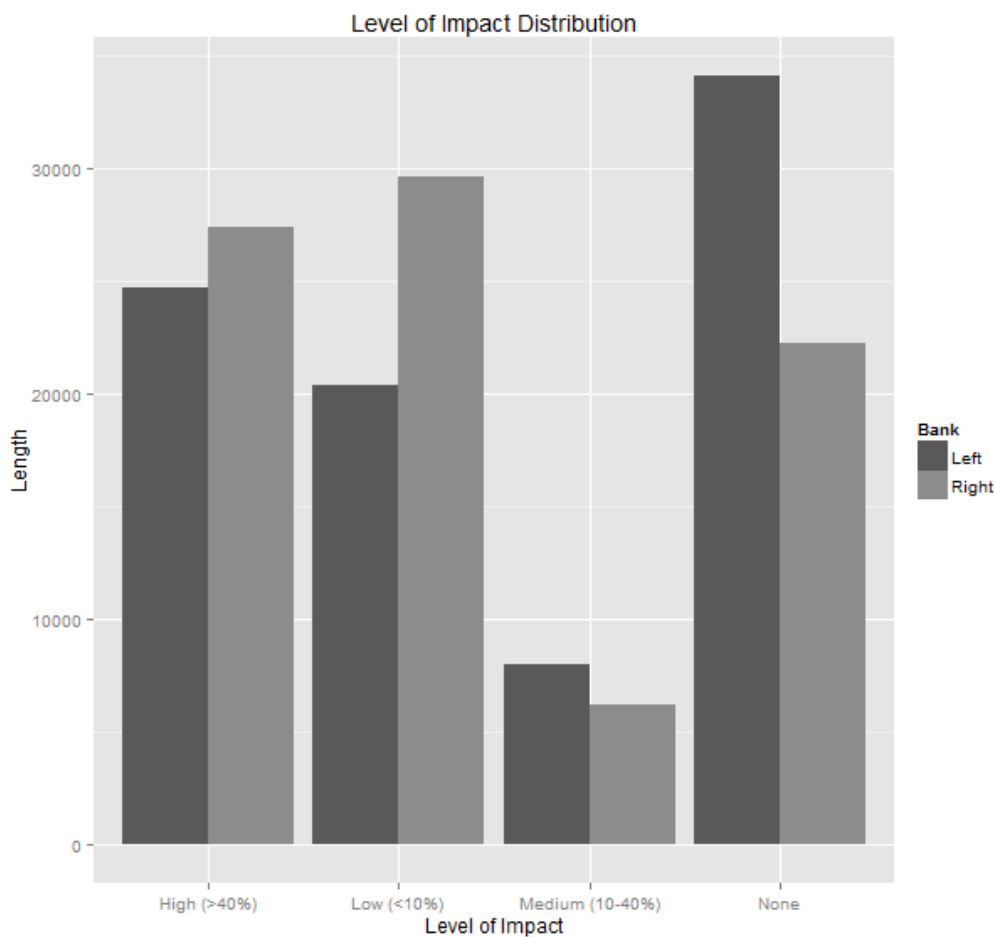


Figure 4. Level of impact category distribution on the left and right bank of the Eagle River.



5.2 Stream Channel and Hydraulic Character

The Eagle River has long expanses of runs and glides totaling about 43 km. The runs often had associated pools but gradients were too low for more prominent riffle development. Riffle-pool reaches occurred on over 21 km (26%) of the River (Figure 5). Higher gradient runs with some riffle-pool sequences begin upstream of the Malakwa-Hwy 1 Bridge (Reach 12). More defined riffle-pool reaches become common and persistent upstream of the Perry River confluence (Reach 16).

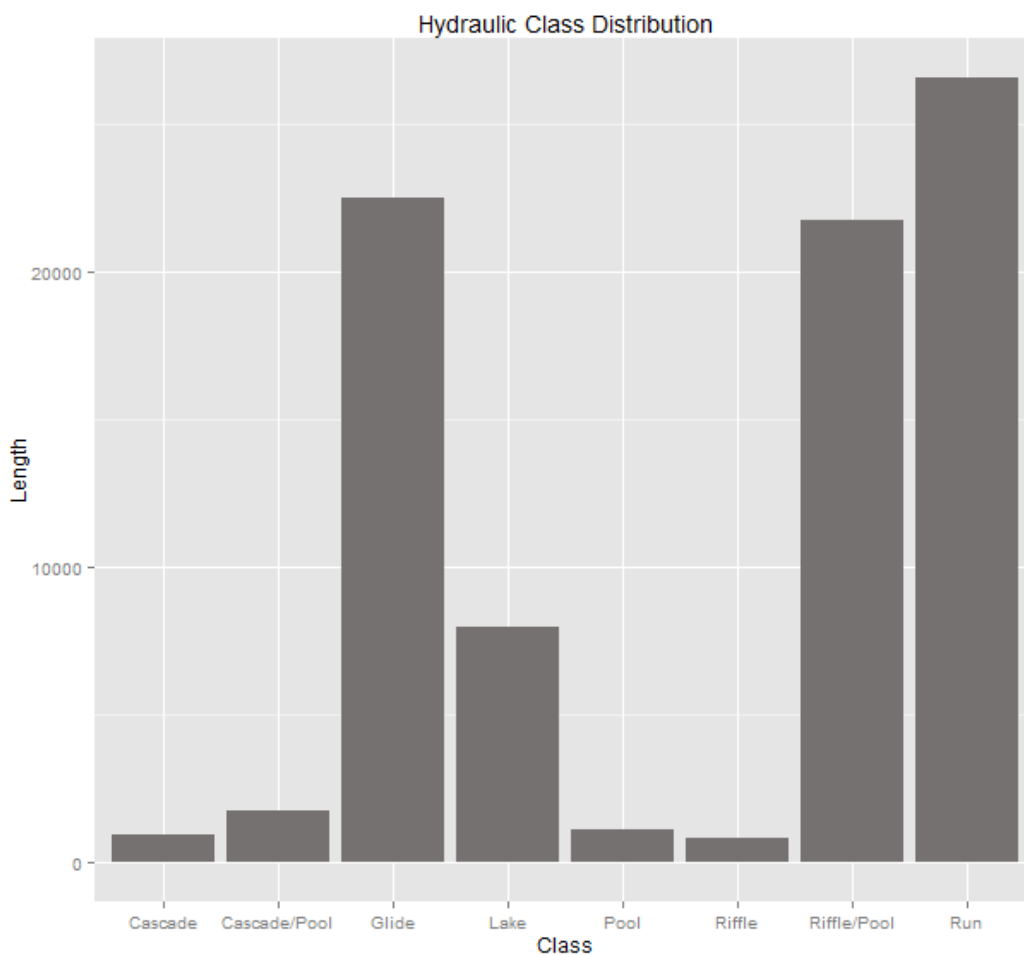


Figure 5. Eagle River hydraulic class distribution over the 83 km river length (centerline length).



5.3 Fish Habitat



Fish fence situated upstream of confluence with the Perry River.

Individual instream habitat features (e.g. deep pool, large woody debris, rearing/nursery, and spawning habitat) were recorded in the GPS and marked on field maps during the field inventory (Figure 6).

About 57 hectares of the Eagle was mapped as suitable fish spawning habitat, which accounts for about 11% of the total river channel area (508 ha – excluding lakes). Key rearing areas for Chinook were described by Federenko and Pierce (1982) as flooded pastures, backwaters and sloughs adjacent to spawning areas being the preferred areas for rearing. In terms of potential rearing and nursery habitat, low flood bench sites and riverine wetlands occurring adjacent to the river channel and in backwater areas, cover about 100 hectares. These sites are flooded for moderate periods (< 40 days) of the growing season, during which time they provide season nursery and rearing habitat for juvenile salmonids. Rearing/nursery habitat, which included backwaters and riverine marsh, were recorded as occupying about 25 ha (5%). These areas occurred primarily in Reach 20 (upstream of Crazy Creek confluence) and Reach 23 just downstream of the *Enchanted Forest*. Deep pools, important for cover and general living as well as holding areas for anadromous migrations, also amount to about 27 ha (5%) of the river. Large woody debris (LWD) provided structural cover/complexity to about 5.6 ha of the river (1%). LWD was more sparse in lower reaches – likely a function of riparian clearing, which reduces the degree of LWD recruitment.

Overall there were marked changes in the relative abundance and complexity of habitats at key tributary confluences. Downstream of Yard Creek channel complexity is reduced. A marked increase was noted upstream of the Yard Creek confluence through Malakwa to the Perry River. Upstream of the Perry confluence habitat quality and complexity increases further.



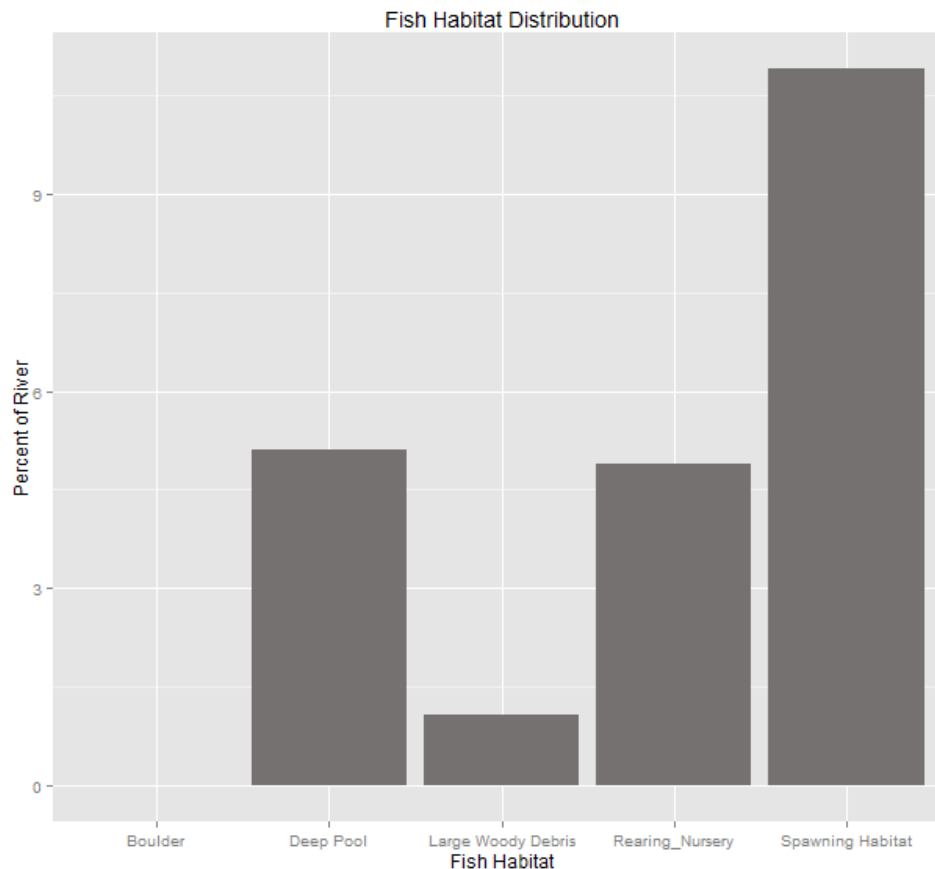


Figure 6. Relative distribution of key habitat elements mapped during the Eagle River inventory. Percentage values shown in the illustration represent the estimated spatial coverage of respective features over the total instream area (~hectares).

Anadromous spawning data provided by Fisheries and Oceans Canada (2014) stratified polygons in the river based on spawning utilization by Coho, Chinook, and Sockeye and relative use intensity. As shown in Table 15, moderate to high Coho spawning use occurs on less than 2% of the River. Moderate to high use areas occupy less than 1% for Chinook. However, Chinook low-use areas are shown to cover over 10% of the river. High use areas for Sockeye account for nearly 6% of the river channel. The data summarized in Table 15 and illustrated on Map Set 2 was also incorporated into the AHI (Section 6.1).



Table 15. Salmon aerial cover of spawning habitat in the Eagle River.

		Area (m ²)	Percent of Eagle channel ¹
Coho	High	96867.71	1.26%
	Moderate to High	52355.59	0.68%
	Moderate	11261.42	0.15%
	Low to Moderate	88243.78	1.15%
	Low	166130	2.16%
Chinook	High	1909.576	0.02%
	Moderate to High	62590.27	0.81%
	Moderate	43271.42	0.56%
	Low to Moderate	172368	2.24%
	Low	785319.1	10.22%
Sockeye	High	450189.1	5.86%
	Moderate to High	0	0.00%
	Moderate	144199.9	1.88%
	Low to Moderate	0	0.00%
	Low	2769.464	0.04%

Total River Channel=7686309m²*Side channel**Large woody debris and associated spawning habitat*



Spawning habitat (Sockeye)



Spawning habitat (Chinook)



Juvenile rearing habitat (backwaters and riverine marsh)



Holding area/deep pool

5.4 Modifications

Instream and bank modifications and features were recorded in the field as points and summarized in Table 16. It should be noted that general clearing/removal of riparian vegetation and encroachment by field and urban and rural development was not recorded as individual points and instead were captured within the percent disturbed field for individual shore segments.

Combined road modifications total about 5.2 km on both banks while railway alterations (e.g. encroachment, rip rap armouring, confinement, channelization, and bridges) total over 11 km of the Eagle River. Formal stormwater discharges to the River were limited to only 4. However, non-point source discharges from highway run off are likely more abundant recognizing the degree of encroachment along the river bank. The other discharge of note was that from the Sicamous wastewater treatment facility.

Table 16. Summary of anthropogenic features and modifications catalogued during the Eagle River Inventory Mapping.

Feature	Bank	Sum of Length (m)	Count of Modification Type
Boat Launch	Left	4	1
	Right	8	1
Bridge	Both	480	31
Channelization	Both	563	2
Dock	Left	101	14
	Right	92	10
Garbage/Pollution	Left	82	7
	Right	51	8
Livestock Access	Left	820	5
	Right	140	2
Other	Both	21	2
	Instream	28	3
	Left	2881	31
	Right	4293	35
Retain Wall/Bank Stability	Left	183	9
	Right	148	3
Rip Rap/Stonework	Both	80	2
	Left	7677	34
	Right	2505	27
Road	Left	3460	4
	Right	2837	7
Water Withdrawal	Left		9
	Right		3

1. The total length of the left (LB) and right river banks (RB) was 87.1 km and 85.5 km respectively.



*Dock**Water Withdrawal*

Improperly screened intakes, result in impingement or entrainment of fish.

*Livestock Access**Rip rap and Bank Stabilization**Discharge*

5.5 Bank Stability and Erosion

High to extreme severity bank erosion was documented on approximately 6.2 km (7%) of the left bank and 3.4 km (4%) of the right bank (Table 17). Bank instability appeared to be largely attributed to the lack of riparian vegetation and encroachment associated with agricultural land use, rural, and residential sites. All erosion features are shown in Map Set 2 and are included in the data deliverables. Bank segments with prominent erosion are listed in Table 18.

Table 17. Summary of river bank integrity and erosion along the Eagle River.

Row Labels	Sum of erosion length (m)	Percent of respective river bank ¹
Left	16430	18.9%
Extreme	1451	1.7%
High	4705	5.4%
Moderate	6354	7.3%
Low	3920	4.5%
Right	14936	17.5%
Extreme	352	0.4%
High	3223	3.8%
Moderate	7109	8.3%
Low	4252	5.0%
Grand Total	31366	

¹ The total length of the left and right river banks was 87.1 km and 85.5 km respectively.



High Severity Erosion



Extreme Severity Erosion

Table 18. Summary of prominent erosion by bank segment.

Bank	Segment	Sum of Extreme Erosion (length:m)	Sum of High Erosion (length:m)	Bank	Segment	Sum of Extreme Erosion (length:m)	Sum of High Erosion (length:m)
Left	1	780	134	Left	52		173
Left	11	248		Right	22		167
Left	20	193	339	Right	38		158
Right	3	187		Left	26		155
Right	21	130	174	Right	8		153
Left	37	95		Left	4		149
Left	28	92		Left	51		148
Left	36	43		Left	46		147
Right	75	34		Left	27		145
Left	32		403	Right	31		135
Left	62		336	Left	66		123
Right	30		327	Left	63		123
Right	37		306	Left	41		115
Right	10		295	Left	2		111
Left	57		288	Left	18		105
Right	19		246	Right	27		104
Left	30		228	Right	6		99
Right	44		215	Left	44		96
Left	40		207	Left	3		84
Left	61		203	Right	20		70
Left	49		203	Left	22		64
Right	12		197	Right	78		63
Left	64		193	Left	23		55
Right	39		183				



5.6 Eagle River Condition Score

A condition score was assigned to each river reach. This rating system was designed with the intent of providing a more measurable parameter in evaluating the watercourse condition and monitoring and evaluating habitat changes on local watercourses and associated riparian and floodplain communities.

The sum of weighted scores equaled 3.14 (out of 6), with the Eagle River receiving a stream grade of 52% (19).

Table 19. Level of impact rating / condition score for the Eagle River.				
Impact Rating	Sum of Length (m)	Condition Value Score¹	% of River	Weighted Score
high-high	4333	0	5%	0.00
mod-high	662	1	1%	0.01
mod-mod	16942	2	20%	0.41
low-mod	28533	3	34%	1.03
nil-high	4814	3	6%	0.17
low-low	5173	4	6%	0.25
nil-mod	12540	4	15%	0.60
nil-low	6229	5	7%	0.37
nil-nil	4150	6	5%	0.30
Sum	83376			3.14
Condition Score				52%

¹Reach condition references the condition of both banks. E.g., high-high translates to high level of impact on both banks over the reach. Numeric Bank Impact Scores: Nil=3; Low=2; Mod=1; High=0



6.0 AQUATIC HABITAT INDEX RESULTS

The AHI results summarized below are illustrated in Map Series 2 and the raw AHI analysis scores are included in Appendix A and B with centerline and bank segment information. Section 6.1 summarizes the AHI scores and resultant rankings (i.e., *Very Low – Very High*) for the 51 reaches of the Eagle River, represented in the maps and data analysis as the *centerline*. Section 6.2 summarizes the AHI scores and resultant rankings for the respective left and right bank segments.

6.1 The River

The centerline AHI analysis resulted in about 14% of the river being ranked as Very High and 27% of the river ranked as High (Table 20). The centerline/reach AHI rankings are illustrated in Figure 7. Figure 8 represents a scaled profile of reach/AHI scores moving upstream (left to right) from Shuswap Lake to Summit Lake.

Table 20. Relative AHI rank distribution (by length) of the Eagle River.

AHI Category	Total Length (m)	Percent of River
Very High	11436	14
High	22666	27
Moderate	26867	32
Low	22407	27

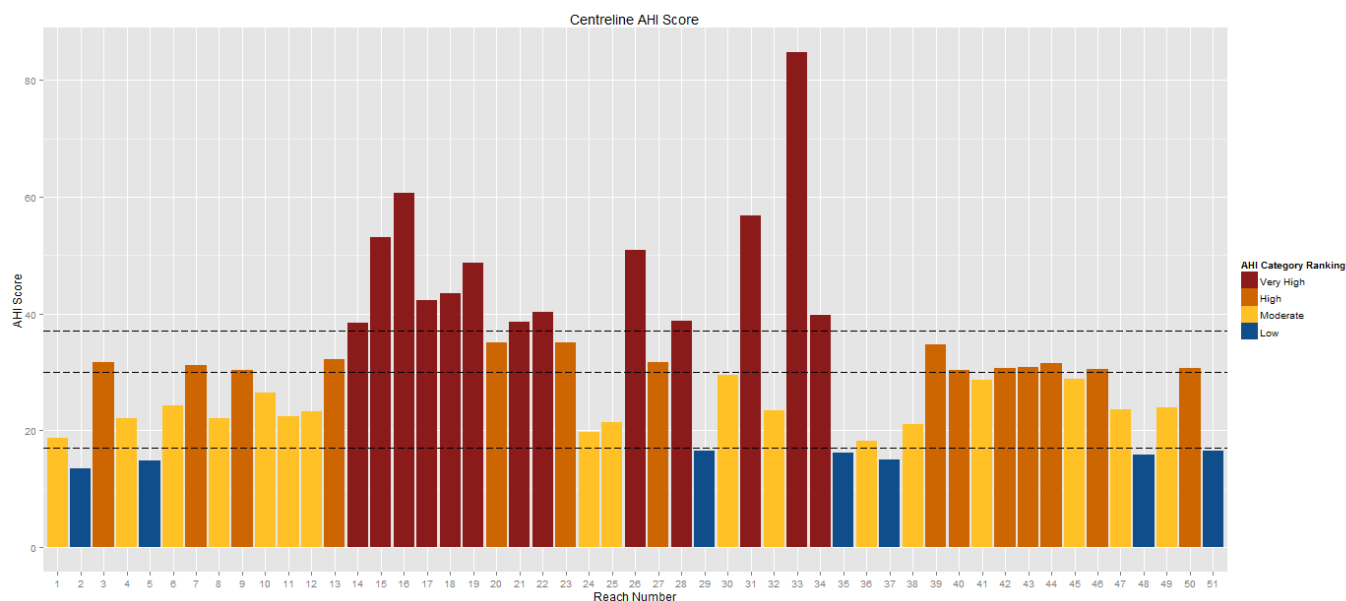


Figure 7. Centerline/reach AHI scores and AHI Rank values (Low/Moderate/High/Very High).



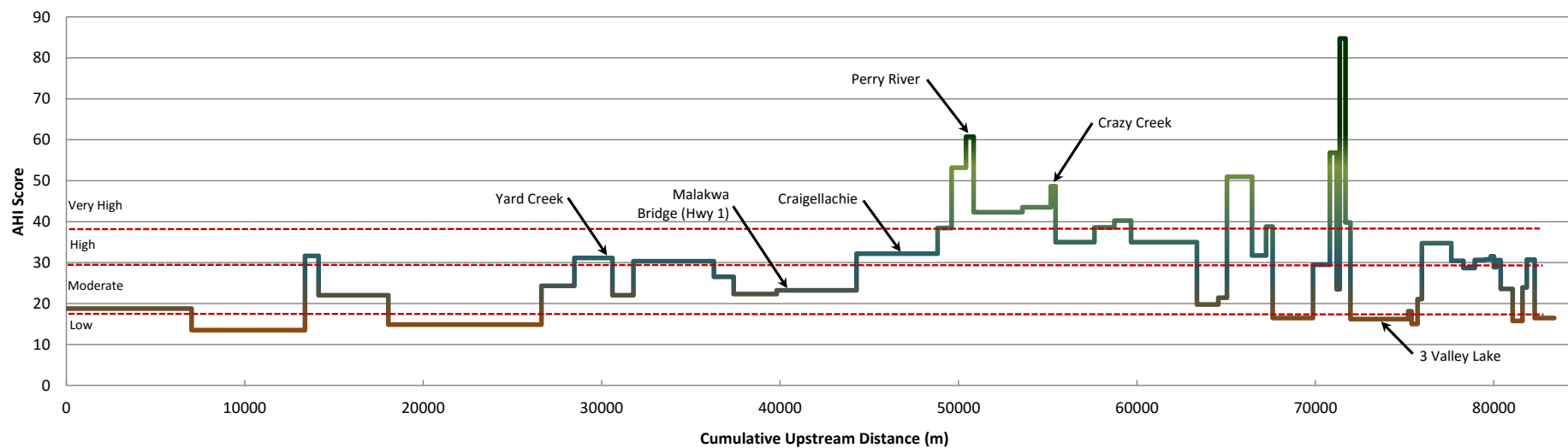


Figure 8. Scaled profile of the Eagle River illustrating the of centerline/reach AHI scores.



6.2 The Banks

Close to 50% of the left bank of the Eagle River is ranked Very High according to Bank AHI scores (Table 21). Conversely, about 24% of the Right Bank of the river is ranked Very High. The higher relative abundance of Very High segment scores along the left bank is largely due to more nature character to this bank upstream of Malakwa Bridge. Figures 9 and 10 illustrates respective segment scores on the left and right banks.

Table 21. Relative AHI rank distribution (by length) of the right bank (looking downstream) of the Eagle River.			
Segment/AHI Ratings		Sum of Segment Length (m)	Percent of Bank
Left	Very High	43154	49.5%
	High	8985	10.3%
	Moderate	18235	20.9%
	Low	3292	3.8%
	Very Low	13483	15.5%
Right	Very High	20615	24.1%
	High	19331	22.6%
	Moderate	18674	21.9%
	Low	26653	31.2%
	Very Low	185	0.2%



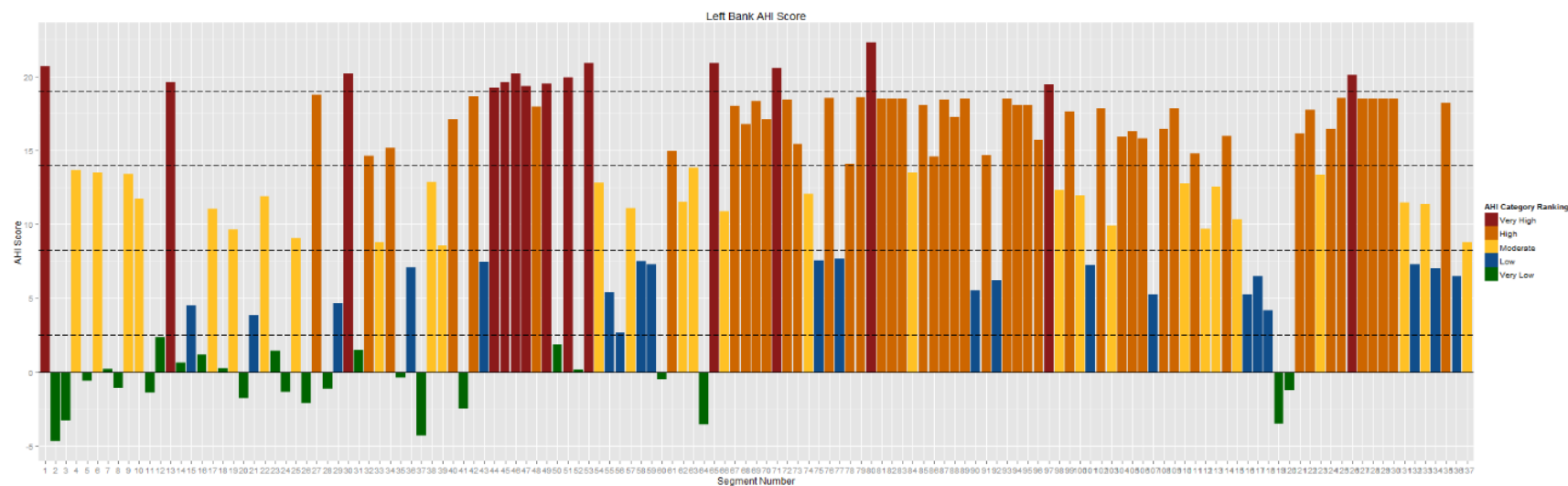


Figure 9. Left bank segment AHI scores.

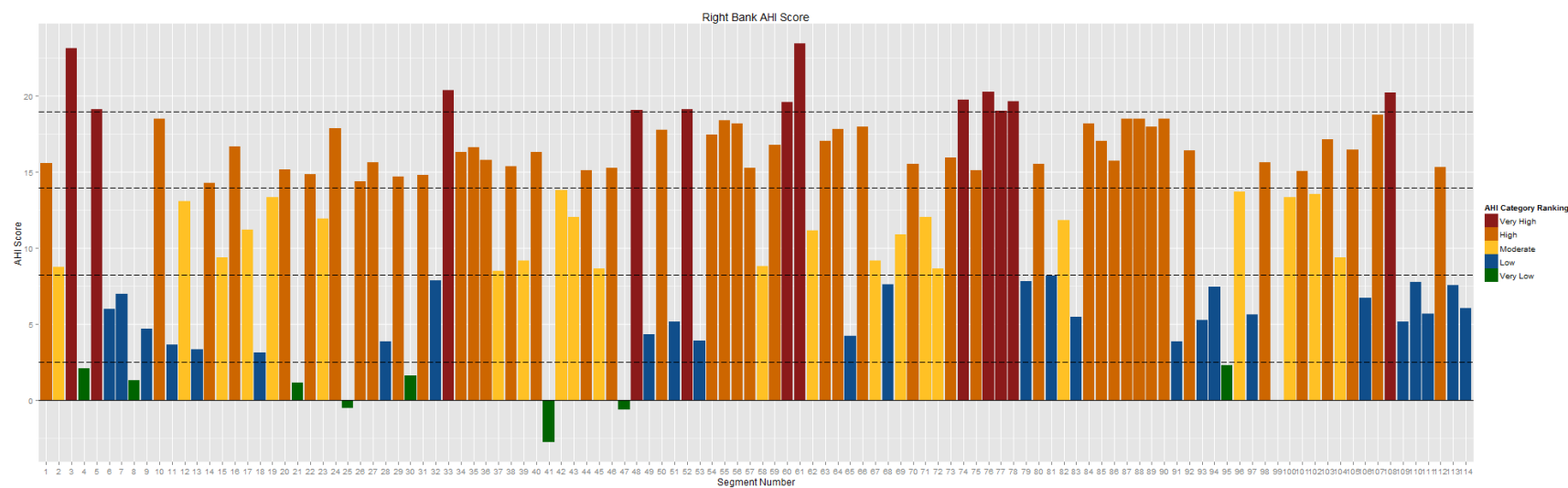


Figure 10. Right bank segment AHI scores.



6.3 Restoration Analysis and Priorities

Eighteen bank segments were extracted from the restoration analysis as those with the greatest potential AHI score differential between AHI_{now} and AHI_{potential} (Table 22). These segments represent high priority sites warranting more immediate attention in regards to bank and riparian restoration. Of these 18 priority segments, 14 occur on the left bank and 4 on the right bank. Figures 11 and 12 illustrate the differences between the AHI_{now} and AHI_{potential} scores.

Table 22. Summary of priority bank segments extracted from the AHI Restoration analysis. High priority sites are in bold.

Segment	Bank ¹	Existing Bank AHI ²	Existing Bank Category	Potential Bank AHI	Potential Bank Category	Score Difference
2	Right	8.741489	Moderate	14.94513	High	6.203644
64	Left	-3.58964	Very Low	2.332056	Very Low	5.921694
37	Left	-4.30661	Very Low	0.958597	Very Low	5.265204
28	Left	-1.14873	Very Low	3.833108	Low	4.981834
62	Left	11.50896	Moderate	16.23389	High	4.724928
52	Left	0.126995	Very Low	4.626993	Low	4.499998
30	Right	1.618404	Very Low	5.970123	Low	4.351719
41	Left	-2.49127	Very Low	1.626664	Very Low	4.117936
26	Left	-2.11318	Very Low	1.703603	Very Low	3.816784
20	Left	-1.79058	Very Low	1.576864	Very Low	3.367441
11	Left	-1.42045	Very Low	1.70688	Very Low	3.127331
37	Right	8.505317	Moderate	11.55423	Moderate	3.048912
57	Left	11.06591	Moderate	14.00048	Moderate	2.934566
119	Left	-3.50473	Very Low	-0.70437	Very Low	2.800364
1	Left	20.67569	Very High	23.43974	Very High	2.764047
61	Left	14.92625	High	17.4202	High	2.493955
95	Right	2.283005	Very Low	4.694019	Low	2.411015
2	Left	-4.68426	Very Low	-2.36127	Very Low	2.322991

¹ The left and right banks are determined when looking downstream

² AHI scores used in the restoration analysis were not adjusted according to the adjacent centerline AHI scores



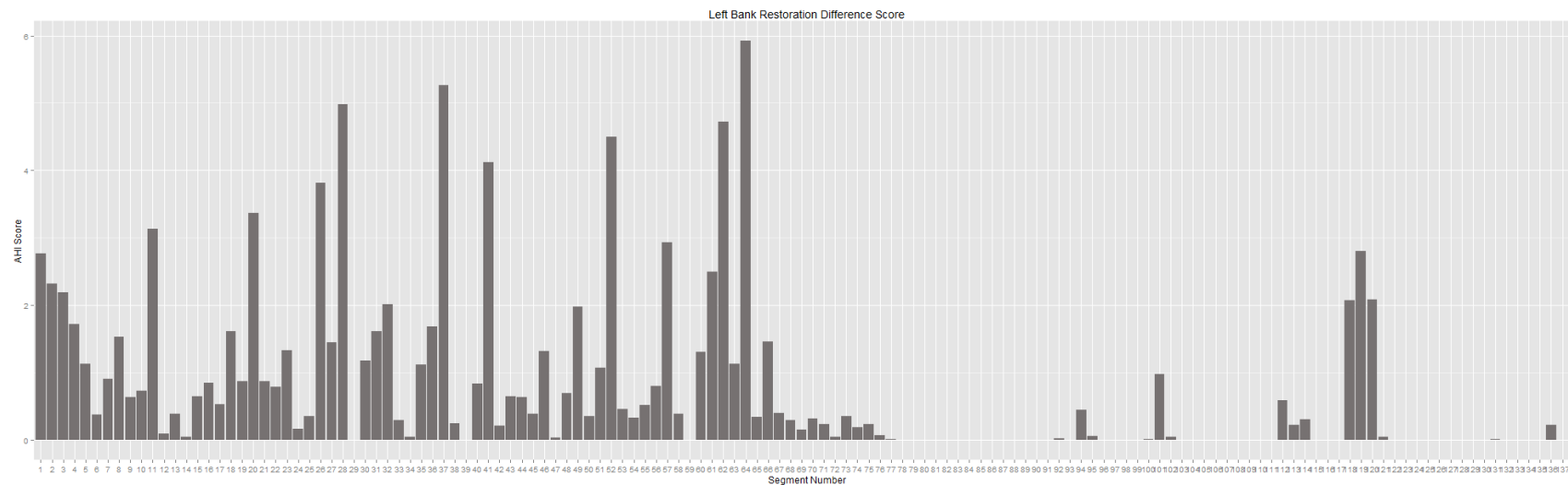


Figure 11. Left bank potential AHI score differential (Potential bank AHI scores - Current AHI score) based on the results of the restoration analysis.

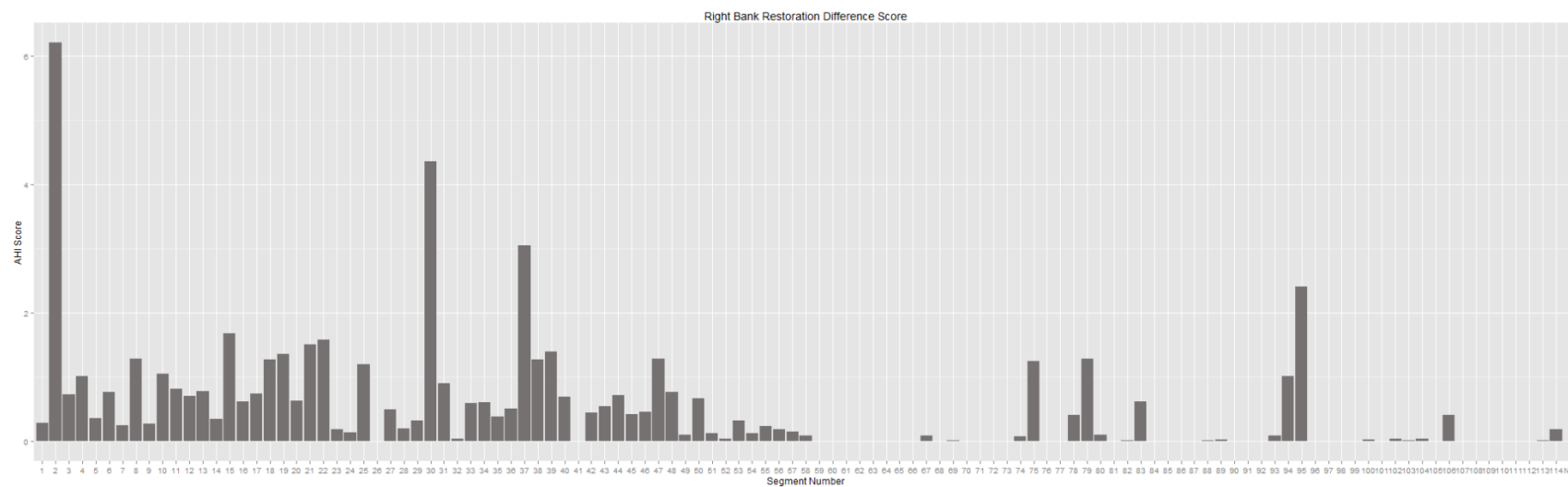


Figure 12. Right bank potential AHI score differential (Potential bank AHI scores - Current AHI score) based on the results of the restoration analysis.

7.0 DISCUSSION

Flood ecosystems are intensively used by many wildlife species. These are lush habitats with structural elements often not found in adjacent uplands. In addition, the low flood sites may provide critical rearing habitat for juvenile salmoinds during seasonal inundation periods. The *High* and *Very High* AHI scores/ranks supports this ecological statement; where the mosaic of riparian habitats and complex instream habitat subunits and diverse fish life history utilization combine to represent the highest centerline and bank AHI scores throughout the Eagle River.

The areal extent of flood associated ecosystems remains constant in a stream reach over time, given no fundamental change in water regime or sediment load, but their location in the floodplain changes in response to stream channel changes (Mackenzie and Moran 2004). Flood ecosystems are maintained by a combination of annual flooding, erosion, channel movement, and deposition, which modify the site conditions on the floodplain regularly. Middle bench ecosystems will succeed low benches as sites accumulate sediments and become raised above the stream. With human influence, continued isolation of middle or low bench ecosystems from the regular flooding, through sediment accumulation or stream channel changes, hastens the natural succession and can lead to the formation of seral ecosystems that progress towards modified high bench ecosystems (Mackenzie and Moran 2004).

Recognizing the above, it is paramount that landuse planning and management of the Eagle River focus on conservation and restoration of floodplain ecosystems. In addition opportunities should be explored to increase the relative abundance of off channel and back water habitats for improved salmon rearing/nursing potential. Currently rearing habitats were recorded to account for about 5% of the river habitat. Relic ox bow channels that have been isolated from the river provide an opportunity to realize an increase in backwater habitat.

Hard armouring of gravel banks can reduce the supply of gravel through natural stream channel migration processes and the removal of riparian vegetation hastens bank erosion and fine sediment deposits. Moreover, upland activities can impact floodplains. Instead of conventional hard armouring techniques, riparian and channel-bank restoration using bioengineering techniques should be investigated. Benefits of these activities will include bank stabilization and habitat restoration. For instance, spawning was found to be associated with channel complexity, large woody debris, gravel sources, and more intact stream banks.





Large woody debris revetment and bank stabilization

The restoration analysis extracted 18 priority segments requiring more immediate attention. To fully realize the benefit of such biophysical inventories, actions need to be taken to begin to address concerns or issues identified above. In doing so, this information must be presented to pertinent groups and stakeholders to direct appropriate action and management decisions.

The Eagle River is a high value anadromous and resident system regardless of individual reach AHI scores. A low AHI reach score does not imply that particular reach is of low value. Rather the combination of habitat attribute values in that reach contribute less to fisheries and aquatic production than other reaches. Reaches 1, 2, 4, and 5 had Low centerline AHI scores. The Low ranking is a result of more limited habitat complexity (i.e., being a slow glide, limited LWD), absence of salmonid spawning habitat, and being generally limited in instream cover. However, these lower reaches are still important and more sensitive for both spawning migration and fry outmigration.

The *Very High* and *High* river bank areas and those adjacent to *High* and *Very High* ranked reaches are considered the most important areas and mechanisms to protect these key habitat features need to be developed. This analysis highlights the importance of conserving important natural areas that remain and prioritizing habitat improvements where feasible.

While the restoration analysis extracted 18 priority segments requiring more immediate attention, conservation of existing riparian conditions is paramount to prevent a reduction in Bank AHI scores for respective segments. The scores and corresponding rankings established in this analysis should form the baseline when reviewing current and proposed activities along the River. The review of existing or proposed activities should be measured against these baseline AHI scores using the metrics and relative habitat value scores for riparian band habitat units of the Bank AHI




(net change analysis). In doing so, such activities and the potential impacts and modifications they may cause can be evaluated in accordance with the Canadian Policy for the management of fish habitat; where No Net Loss is the guiding principle.

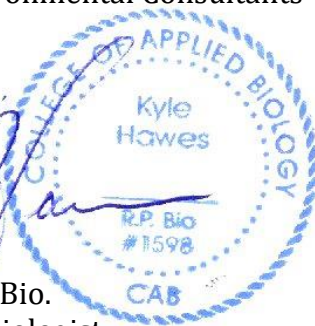
8.0 CLOSURE


This Document has been prepared for the exclusive use of Sexqtkemc to Secwepemc. It has been prepared based upon information collected during the comprehensive field inventory and other related documentation.


Questions or comments in reference to this report, and the data presented should be forwarded to the undersigned.


Respectfully Submitted,
ECOSCAPE Environmental Consultants

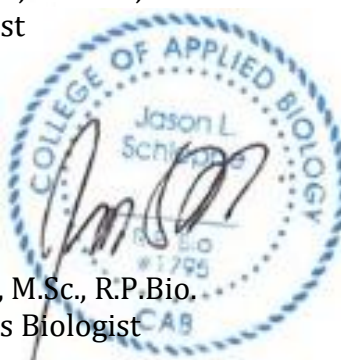

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MAPSHEETS



APPENDIX A

Eagle River Reach Data (centerline survey) with AHI Scores



RIVERNAME	LOCALNAME	ORGANIZATI	WTRESHEDCD	WTRBDYID	DATE	TIME	CREW	WEATHER	STAGE	LINE_TYPE	LINE_SRC	COMMENTS	PHOTONUM	REACH_NUM8	Shape_Leng
Eagle River	Eagle River	Ecoscape/Splatsin	128-831400	EAGL	11/13/2014	08:53:41am	KH;AC	Clear	moderate	Trimble	RIM2014		DSCN4227.jpg	1	7017.61
Eagle River	Eagle River	Ecoscape/Splatsin	128-831400	EAGL	11/12/2014	01:07:41pm	KH;AC	Clear	moderate	Trimble	RIM2014		DSCN3952.jpg	2	6354.71
Eagle River	Eagle River	Ecoscape/Splatsin	128-831400	EAGL	11/12/2014	01:00:57pm	KH;AC	Clear	moderate	Trimble	RIM2014		DSCN3905.jpg	3	767.02
Eagle River	Eagle River	Ecoscape/Splatsin	128-831400	EAGL	11/12/2014	10:59:04am	KH;AC	Clear	moderate	Trimble	RIM2014		DSCN3883.jpg	4	3905.07
Eagle River	Eagle River	Ecoscape/Splatsin	128-831400	EAGL	11/11/2014	03:19:12pm	KH;AC	Clear	moderate	Trimble	RIM2014		DSCN3765.jpg	5	8576.49
Eagle River	Eagle River	Ecoscape/Splatsin	128-831400	EAGL	11/11/2014	02:32:01pm	KH;AC	Clear	moderate	Trimble	RIM2014		DSCN3643.jpg	6	1845.94
Eagle River	Eagle River	Ecoscape/Splatsin	128-831400	EAGL	11/11/2014	01:17:01pm	KH;AC	Clear	moderate	Trimble	RIM2014		DSCN3570.jpg	7	2142.10
Eagle River	Eagle River	Ecoscape/Splatsin	128-831400	EAGL	11/11/2014	12:45:04pm	KH;AC	Clear	moderate	Trimble	RIM2014		DSCN3562.jpg	8	1172.47
Eagle River	Eagle River	Ecoscape/Splatsin	128-831400	EAGL	11/11/2014	08:36:32am	KH;AC	Clear	moderate	Trimble	RIM2014		DSCN3444.jpg	9	4506.21
Eagle River	Eagle River	Ecoscape/Splatsin	128-831400	EAGL	11/10/2014	04:00:30pm	KH;AC	Over cast	moderate	Trimble	RIM2014		DSCN3375.jpg	10	1114.19
Eagle River	Eagle River	Ecoscape/Splatsin	128-831400	EAGL	11/10/2014	03:17:10pm	KH;AC	Snow/Sleet	moderate	Trimble	RIM2014		DSCN3324.jpg	11	2401.30
Eagle River	Eagle River	Ecoscape/Splatsin	128-831400	EAGL	11/10/2014	12:57:32pm	KH;AC	Partly Cloudy	moderate	Trimble	RIM2014		DSCN3193.jpg	12	4479.98
Eagle River	Eagle River	Ecoscape/Splatsin	128-831400	EAGL	11/10/2014	10:10:34am	KH;AC	Partly Cloudy	moderate	Trimble	RIM2014		DSCN3089.jpg	13	4540.57
Eagle River	Eagle River	Ecoscape/Splatsin	128-831400	EAGL	11/6/2014	01:46:48pm	KH;AC	Over cast	moderate	Trimble	RIM2014		DSCN3048.jpg	14	789.60
Eagle River	Eagle River	Ecoscape/Splatsin	128-831400	EAGL	11/6/2014	01:37:16pm	KH;AC	Over cast	moderate	Trimble	RIM2014		DSCN3043.jpg	15	802.11
Eagle River	Eagle River	Ecoscape/Splatsin	128-831400	EAGL	11/6/2014	01:22:38pm	KH;AC	Over cast	moderate	Trimble	RIM2014		DSCN3028.jpg	16	427.15
Eagle River	Eagle River	Ecoscape/Splatsin	128-831400	EAGL	11/6/2014	10:12:30am	KH;AC	Over cast	moderate	Trimble	RIM2014		DSCN2870.jpg	17	2741.40
Eagle River	Eagle River	Ecoscape/Splatsin	128-831400	EAGL	11/6/2014	08:51:39am	KH;AC	Over cast	moderate	Trimble	RIM2014		DSCN2806.jpg	18	1588.17
Eagle River	Eagle River	Ecoscape/Splatsin	128-831400	EAGL	11/6/2014	08:51:39am	KH;AC	Over cast	moderate	Trimble	RIM2014	Crazy Creek confluence	DSCN2781.jpg	19	266.69
Eagle River	Eagle River	Ecoscape/Splatsin	128-831400	EAGL	11/6/2014	08:51:39am	KH;AC	Over cast	moderate	Trimble	RIM2014	Glide through willow swamp/low flood bench with back water and riverine marsh	DSCN2731.jpg	20	2172.84
Eagle River	Eagle River	Ecoscape/Splatsin	128-831400	EAGL	11/4/2014	02:55:26pm	KH;AC	Heavy Rain	moderate	Trimble	RIM2014		DSCN2723.jpg	21	1123.19
Eagle River	Eagle River	Ecoscape/Splatsin	128-831400	EAGL	11/4/2014	02:55:26pm	KH;AC	Heavy Rain	moderate	Trimble	RIM2014		DSCN2700.jpg	22	934.35
Eagle River	Eagle River	Ecoscape/Splatsin	128-831400	EAGL	11/4/2014	02:55:26pm	KH;AC	Heavy Rain	moderate	Trimble	RIM2014		DSCN2682.jpg	23	3690.50
Eagle River	Eagle River	Ecoscape/Splatsin	128-831400	EAGL	11/4/2014	02:21:52pm	KH;AC	Light Rain	moderate	Trimble	RIM2014		DSCN2526.jpg	24	1197.52
Eagle River	Eagle River	Ecoscape/Splatsin	128-831400	EAGL	11/4/2014	01:46:18pm	KH;AC	Light Rain	moderate	Trimble	RIM2014		P1160766.jpg	25	481.14
Eagle River	Eagle River	Ecoscape/Splatsin	128-831400	EAGL	11/4/2014	12:20:17pm	KH;AC	Light Rain	moderate	Trimble	RIM2014		DSCN2465.jpg	26	1412.65
Eagle River	Eagle River	Ecoscape/Splatsin	128-831400	EAGL	11/4/2014	09:47:35am	KH;AC	Light Rain	moderate	Trimble	RIM2014		DSCN2386.jpg	27	778.59
Eagle River	Eagle River	Ecoscape/Splatsin	128-831400	EAGL	11/4/2014	08:44:05am	KH;AC	Light Rain	moderate	Trimble	RIM2014		DSCN2342.jpg	28	369.55
Griffin Lake	Griffin Lake	Ecoscape/Splatsin	128-831400	EAGL	11/3/2014	03:10:25pm	KH;AC	Light Rain	moderate	Trimble	RIM2014		DSCN2327.jpg	29	2258.89
Eagle River	Eagle River	Ecoscape/Splatsin	128-831400	EAGL	11/3/2014	01:36:01pm	KH;AC	Light Rain	moderate	Trimble	RIM2014		DSCN2278.jpg	30	952.66
Eagle River	Eagle River	Ecoscape/Splatsin	128-831400	EAGL	11/3/2014	01:21:12pm	KH;AC	Light Rain	low	Trimble	RIM2014		DSCN2259.jpg	31	377.48
Eagle River	Eagle River	Ecoscape/Splatsin	128-831400	EAGL	11/3/2014	01:00:42pm	KH;AC	Light Rain	low	Trimble	RIM2014		DSCN2244.jpg	32	173.26
Eagle River	Eagle River	Ecoscape/Splatsin	128-831400	EAGL	11/3/2014	12:39:33pm	KH;AC	Light Rain	low	Trimble	RIM2014		DSCN2230.jpg	33	322.89
Eagle River	Eagle River	Ecoscape/Splatsin	128-831400	EAGL	11/3/2014	12:02:28pm	KH;AC	Light Rain	low	Trimble	RIM2014		DSCN2216.jpg	34	280.55
Three Valley Lake	Three Valley Lake	Ecoscape/Splatsin	128-831400	EAGL	11/3/2014	11:00:00am	KH;AC	Light Rain	moderate	Trimble	RIM2014		DSCN2197.jpg	35	3236.96
Eagle River	Eagle River	Ecoscape/Splatsin	128-831400	EAGL	11/3/2014	10:41:52am	KH;AC	Light Rain	low	Trimble	RIM2014		DSCN2186.jpg	36	191.33
Eagle River	Eagle River	Ecoscape/Splatsin	128-831400	EAGL	10/31/2014	12:39:11pm	KH;AC	Light Rain	moderate	Trimble	RIM2014		DSCN2161.jpg	37	325.52
Eagle River	Eagle River	Ecoscape/Splatsin	128-831400	EAGL	10/31/2014	12:14:14pm	KH;AC	Light Rain	moderate	Trimble	RIM2014		DSCN2157.jpg	38	247.42
Eagle River	Eagle River	Ecoscape/Splatsin	128-831400	EAGL	10/31/2014	10:30:20am	KH;AC	Light Rain	moderate	Trimble	RIM2014		DSCN2120.jpg	39	1645.32
Eagle River	Eagle River	Ecoscape/Splatsin	128-831400	EAGL	10/31/2014	09:33:09am	KH;AC	Light Rain	moderate	Trimble	RIM2014		DSCN2058.jpg	40	682.42
Eagle River	Eagle River	Ecoscape/Splatsin	128-831400	EAGL	10/31/2014	08:20:35am	KH;AC	Light Rain	moderate	Trimble	RIM2014		DSCN1991.jpg	41	633.66
Eagle River	Eagle River	Ecoscape/Splatsin	128-831400	EAGL	10/30/2014	05:04:25pm	KH;AC	Light Rain	low	Trimble	RIM2014		DSCN1927.jpg	42	587.98
Eagle River	Eagle River	Ecoscape/Splatsin	128-831400	EAGL	10/30/2014	04:22:17pm	KH;AC	Light Rain	low	Trimble	RIM2014		DSCN1875.jpg	43	310.26
Eagle River	Eagle River	Ecoscape/Splatsin	128-831400	EAGL	10/30/2014	04:01:14pm	KH;AC	Light Rain	low	Trimble	RIM2014		DSCN1861.jpg	44	171.65
Eagle River	Eagle River	Ecoscape/Splatsin	128-831400	EAGL	10/30/2014	03:42:54pm	KH;AC	Over cast	low	Trimble	RIM2014		DSCN1836.jpg	45	145.44
Eagle River	Eagle River	Ecoscape/Splatsin	128-831400	EAGL	10/30/2014	03:17:28pm	KH;AC	Over cast	low	Trimble	RIM2014		DSCN1814.jpg	46	235.51
Victor Lake	Victor Lake	Ecoscape/Splatsin	128-831400	EAGL	10/30/2014	02:55:41pm	KH;AC	Over cast	low	Trimble	RIM2014		DSCN1786.jpg	47	666.52
Eagle River	Eagle River	Ecoscape/Splatsin	128-831400	EAGL	10/30/2014	01:47:59pm	KH;AC	Over cast	low	Trimble	RIM2014		DSCN1730.jpg	48	558.12
Eagle River	Eagle River	Ecoscape/Splatsin	128-831400	EAGL	10/30/2014	01:05:45pm	KH;AC	Over cast	low	Trimble	RIM2014		DSCN1696.jpg	49	241.38
Eagle River	Eagle River	Ecoscape/Splatsin	128-831400	EAGL	10/30/2014	11:31:19am	KH;AC	Over cast	low	Trimble	RIM2014		DSCN1665.jpg	50	435.18
Summit Lake	Summit Lake	Ecoscape/Splatsin	128-831400	EAGL	10/30/2014	11:31:19am	KH;AC	Over cast	low	Trimble	RIM2014		DSCN1656.jpg	51	1096.13

AHI	PRIMARY	SECONDARY	IMPACT_RAT	HYDRAULIC	PATTERN	COMT_CLASS	PERCENT_GR	SPAWNING_H	LIVESTOCK	BARS	ISLANDS
Moderate	Modified		low_mod	Other	Irregular Meandering	Glide with run sections	2.0	Unknown		None	None
Low	Modified		mod_mod	Other	Sinuuous	Glide	0.5	Unknown	Yes	None	None
High	Modified		low_low	Run	Sinuuous		3.0	Potential		None	None
Moderate	Other		mod_mod	Other	Irregular Meandering	Glide	2.0	Unknown		None	None
Low	Modified		low_mod	Run	Sinuuous		2.0	Unknown		None	None
Moderate	Modified		low_mod	Other	Sinuuous	Glide	2.0	Potential		Side	None
High	Modified		low_mod	Riffle/Pool	Sinuuous	Riffle pool glide	2.0	Potential		None	Occasional
Moderate	Modified		low_low	Other	Sinuuous	Deep glide	2.0	Potential		None	Occasional
High	Modified		low_mod	Riffle/Pool	Regular Meanders	Sections of run	3.0	Potential	Yes	Side	Frequent - Irregular
Moderate	Modified		mod_mod	Pool	Sinuuous		2.0	Unknown	Yes	None	None
Moderate	Modified		mod_mod	Run	Sinuuous		2.0	Unknown	Yes	Side	None
Moderate	Modified		nil_mod	Run	Sinuuous		2.0	Anadromous		Side	None
High	Modified		nil_mod	Run	Regular Meanders	Some riffle pool sections	3.0	Anadromous		Side	None
Very High	Natural		nil_mod	Run	Straight		3.0	Anadromous		Side	None
Very High	Natural		nil_nil	Run	Straight	Downstream of confluence with Perry River	2.0	Anadromous		Side	None
Very High	Natural		nil_nil	Riffle/Pool	Sinuuous	Confluence with Perry River	2.0	Anadromous		Side	None
Very High	Natural		nil_low	Riffle/Pool	Sinuuous	Riffle pool run type, short segment with railway	2.0	Anadromous		Side	Occasional
Very High	Natural		low_low	Riffle/Pool	Sinuuous		3.0	Potential		Side	Occasional
Very High	Natural		nil_nil	Riffle/Pool	Sinuuous		3.0	Anadromous		None	None
High	Natural		nil_nil	Glide	Regular Meanders		3.0	Unknown		Side	None
Very High	Natural		nil_high	Riffle/Pool	Sinuuous		3.0	Anadromous		None	None
Very High	Modified		nil_low	Cascade	Straight	Highway along right bank	6.0	Unknown		None	None
High	Modified		nil_high	Run	Sinuuous	Railway close to channel	1.0	Unknown		None	Frequent - Irregular
Moderate	Modified		nil_mod	Riffle/Pool	Sinuuous	Nil to high near highway	2.0	Anadromous		Side	None
Moderate	Natural	Braided	nil_nil	Riffle/Pool	Sinuuous		2.0	Anadromous		Side	Frequent - Irregular
Very High	Modified		low_mod	Other	Sinuuous	Pools uncommon-riffle run pool	3.0	Anadromous		Side	None
High	Natural		nil_low	Riffle/Pool	Sinuuous		3.0	Anadromous		Side	Occasional
Very High	Modified		nil_low	Cascade/Pool	Sinuuous		5.0	Anadromous		Mid-channel	None
Low	Natural		mod_mod	Lake			0.0	Unknown		None	None
Moderate	Modified		low_mod	Cascade/Pool	Sinuuous	Some short riffle and flat sections, straight along rail	5.0	Anadromous		None	Occasional
Very High	Modified		nil_low	Standing		Lake	0.0	Unknown		None	None
Moderate	Modified		nil_low	Cascade/Pool	Sinuuous		3.0	Unknown		None	None
Very High	Modified		low_mod	Lake		Lake	0.0	Unknown		None	None
Very High	Modified		low_mod	Cascade/Pool	Sinuuous	Some sections almost like cascade	2.0	Unknown		None	None
Low	Modified		high_mod	Lake			0.0	Unknown		None	None
Moderate	Channellized		mod_high	Run	Sinuuous	Riffle pool in some sections but mostly flat water	2.0	Unknown		Side	None
Low	Modified		mod_high	Run	Sinuuous		2.0	Unknown		Side	None
Moderate	Modified		low_mod	Riffle/Pool	Sinuuous		3.0	Unknown		Side	None
High	Natural		low_low	Riffle/Pool	Sinuuous	Downstream section more characteristic of irregular meander. Higher modification near bridge.	2.0	Potential		Side	None
High	Natural		nil_low	Riffle/Pool	Irregular Meandering		2.0	Potential		Side	None
Moderate	Natural		nil_mod	Riffle/Pool	Sinuuous		3.0	Unknown		Side	Occasional
High	Natural		nil_mod	Riffle/Pool	Sinuuous	Reach break starts at last point generic	3.0	Potential		Side	Occasional
High	Natural	Side channel	nil_mod	Riffle/Pool	Sinuuous	Railway right bank	3.0	Potential		Side	None
High	Natural		nil_low	Riffle/Pool	Sinuuous		4.0	Potential		Mid-channel	None
Moderate	Modified		mod_high	Riffle/Pool	Straight	Typical of a cascade in some sections	2.0	Potential		None	Split
High	Modified		low_mod	Riffle/Pool	Sinuuous	Lake outlet	2.0	Potential		Side	Split
Moderate	Modified	Other	mod_mod	Lake		Lake	0.0	Unknown		None	None
Low	Modified		low_mod	Riffle	Sinuuous	Right channel is the main stem	3.0	Potential		Side	Split
Moderate	Modified		mod_mod	Riffle	Straight		3.0	Unknown		None	None
High	Modified		low_mod	Riffle/Pool	Sinuuous		2.0	Potential		None	None
Low	Modified		high_high	Lake			0.0	Unknown		None	None

COMT_SCHAR	SUB_ORGANI	SUB_FINES	SUB_GRAVEL	SUB_COBBLE	SUB_BLDER	SUB_BEDRK	EMBEDDEDNE	COMPACTION	COMT_SUB
	0	70	20	10	0	0	High (75%+)	Low	
	0	98	2	0	0	0	High (75%+)	Low	
	0	10	80	10	0	0	Low (0-25%)	Low	
	0	70	30	0	0	0	High (75%+)	Low	
Possible livestock access unknown, rural properties	0	80	15	5	0	0	Medium (25-75%)	Low	
	0	50	30	19	1	0	Medium (25-75%)	Low	
	0	20	80	0	0	0	Medium (25-75%)	Low	
One island	0	70	25	3	2	0	High (75%+)	Medium	
	0	5	80	15	0	0	Medium (25-75%)	Medium	
	0	90	10	0	0	0	High (75%+)	Low	
	0	50	50	0	0	0	Medium (25-75%)	Low	
	0	25	70	5	0	0	Low (0-25%)	Low	Moderate embeddedness in some areas - deeper glides and pools
One island near downstream end of reach	0	20	75	5	0	0	Low (0-25%)	Low	
	0	35	55	10	0	0	Medium (25-75%)	Medium	Embeddedness lower in some areas higher in fines
	0	20	50	30	0	0	Low (0-25%)	Low	More embedded with higher percent fines
	0	30	65	5	0	0	Low (0-25%)	Low	More embedded with higher percent fines
Mid channel bars	0	30	65	5	0	0	Low (0-25%)	Low	More embedded with higher percent fines
	0	0	60	25	10	5	Low (0-25%)	Medium	
	0	0	80	20	0	0	Low (0-25%)	Low	
	20	80	0	0	0	0	High (75%+)	Low	
	0	10	55	35	0	0	Low (0-25%)	Low	
	0	0	10	65	25	0	None	High	
Some submerged gravel bars	0	95	5	0	0	0	None	Low	
	0	35	60	5	0	0	Low (0-25%)	Low	
	0	55	40	5	0	0	High (75%+)	Medium	
Mid channel bars also but less frequent	0	15	59	25	1	0	Low (0-25%)	Low	More embedded and compact on gravel bars with high fines, more boulder added by bridge abutment
Some braided areas and mid channel bars	0	10	50	30	10	0	Low (0-25%)	Low	More embedded and compact on gravel bars with high percent fines
	0	5	15	55	25	0	Medium (25-75%)	Medium	
	0	0	0	0	0	0			
	0	0	5	50	45	0	Low (0-25%)	High	
	99	99	99	99	99	99			
Mid channel island likely historically man made	0	1	9	55	35	0	Low (0-25%)	High	Cobble/boulder likely added to channel during island creation
	99	99	99	99	99	99			
	0	10	20	45	25	0	Low (0-25%)	Medium	
	99	99	99	99	99	99			
	0	70	5	5	20	0	Medium (25-75%)	Low	Gravel embedded in fines, boulder cobble revetment along banks
	0	65	35	0	0	0	Medium (25-75%)	Medium	Gravel embedded in fines, some boulder in channel from sidecast
	0	30	68	2	0	0	Medium (25-75%)	Medium	Gravel embedded in fines, some boulder in channel from rail sidecast
Bars infrequent along straight stretches	0	15	65	10	5	5	Low (0-25%)	Low	Embeddedness higher slack water\ eddies
Mid channel bars present	0	25	70	5	0	99	Medium (25-75%)	Medium	Higher percentage of fines in eddies and pools
Both mid and side channel bars	0	25	60	15	0	0	Low (0-25%)	Medium	Higher embeddedness / compaction and predominance of fines in pools and eddies
Both mid and side bars and islands present	0	15	60	25	0	0	Low (0-25%)	Low	
Mostly side channel bars present. Mid channel present but uncommon.	0	10	58	30	2	0	Low (0-25%)	Medium	Compaction variable low to moderate
Both mid and side channel bars	0	10	60	25	5	0	Low (0-25%)	Low	
	5	10	30	50	5	0	Low (0-25%)	Medium	
	5	10	65	20	0	0	Low (0-25%)	Medium	
	60	30	10	0	0	99			
Some small mid bar present	0	5	40	45	10	0	Low (0-25%)	Medium	
	0	5	25	40	30	0	Low (0-25%)	Medium	
	0	10	60	25	5	0	Medium (25-75%)	Low	
	0	0	0	0	0	0	Low (0-25%)	Low	

WIDTH W	WIDTH BF	WIDTH LFP	WIDTH RFP	DEPTH W	DEPTH BF	DEPTH FP	COMT_CHAN	TOTAL_COVE	B	DP	IV	LWD	OV	SWD	UC	COMT_COV
0.0	100.0	0.0	0.0	0.0	0.0	0.0		5	0	70	0	30	0	0	0	Lot of submerged large woody debris accumulated on bottom
0.0	70.0	0.0	0.0	0.0	0.0	0.0		15	0	90	0	10	0	0	0	
0.0	70.0	0.0	0.0	0.0	0.0	0.0		5	0	50	0	50	0	0	0	
0.0	60.0	0.0	0.0	0.0	0.0	0.0		15	0	80	0	20	0	0	0	
0.0	50.0	0.0	0.0	0.0	0.0	0.0		20	0	85	0	10	5	0	0	
0.0	60.0	0.0	0.0	0.0	0.0	0.0		40	0	90	0	10	0	0	0	
0.0	60.0	0.0	0.0	0.0	0.0	0.0		15	0	80	0	20	0	0	0	
0.0	70.0	0.0	0.0	0.0	0.0	0.0		40	0	85	0	15	0	0	0	
0.0	100.0	0.0	0.0	0.0	0.0	0.0		10	0	80	0	20	0	0	0	
0.0	70.0	0.0	0.0	0.0	0.0	0.0		80	0	100	0	0	0	0	0	
0.0	80.0	0.0	0.0	0.0	0.0	0.0		20	0	80	0	15	0	5	0	
0.0	50.0	0.0	0.0	0.0	0.0	0.0		10	0	30	0	60	5	2	3	
0.0	60.0	0.0	0.0	0.0	0.0	0.0		15	0	40	0	50	5	2	3	
0.0	60.0	0.0	0.0	0.0	0.0	0.0		15	0	65	0	20	10	0	5	
0.0	50.0	0.0	0.0	0.0	0.0	0.0		15	0	65	0	20	10	0	5	
0.0	50.0	0.0	0.0	0.0	0.0	0.0		40	0	65	0	24	5	1	5	
0.0	40.0	0.0	0.0	0.0	0.0	0.0		30	0	65	0	20	5	5	5	Cover varies - higher where pools are present along riffle sections
0.0	35.0	0.0	0.0	0.0	0.0	0.0		30	5	55	0	20	10	5	5	Cover varies from 20-50 percent
0.0	0.0	0.0	0.0	0.0	0.0	0.0		30	5	55	0	20	10	5	5	Cover varies from 20-50 percent
0.0	0.0	0.0	0.0	0.0	0.0	0.0		0	0	0	0	0	0	0	0	Cover varies from 20-50 percent
0.0	0.0	0.0	0.0	0.0	0.0	0.0		0	0	0	0	0	0	0	2	
0.0	0.0	0.0	0.0	0.0	0.0	0.0		0	0	0	0	0	0	0	2	
0.0	60.0	0.0	0.0	0.0	0.0	0.0		80	0	88	1	0	8	1	2	
0.0	60.0	0.0	0.0	0.0	0.0	0.0		55	0	70	0	25	5	0	0	
0.0	60.0	0.0	0.0	0.0	0.0	0.0		70	0	50	5	25	10	10	0	
0.0	30.0	0.0	0.0	0.0	0.0	0.0		20	1	10	0	45	34	10	0	
0.0	30.0	0.0	0.0	0.0	0.0	0.0		30	20	45	0	20	10	5	0	
0.0	30.0	0.0	0.0	0.0	0.0	0.0		25	50	30	0	5	10	5	0	
0.0	0.0	0.0	0.0	0.0	0.0	0.0		0	0	0	0	0	0	0	3	
0.0	15.0	0.0	0.0	0.0	0.0	0.0	Wider in some areas, more confined through steeper sections	50	53	40	0	1	5	1	0	
0.0	0.0	0.0	0.0	0.0	0.0	0.0		0	0	0	0	0	0	0	0	
0.0	15.0	0.0	0.0	0.0	0.0	0.0		40	25	64	0	5	5	1	0	
0.0	0.0	0.0	0.0	0.0	0.0	0.0		0	0	0	0	0	0	0	0	
0.0	25.0	0.0	0.0	0.0	0.0	0.0		40	15	50	5	15	10	5	0	Accumulation of submerged woody debris closer to outlet of lake
0.0	0.0	0.0	0.0	0.0	0.0	0.0		0	0	0	0	0	0	0	0	
0.0	15.0	0.0	0.0	0.0	0.0	0.0		30	20	60	0	0	15	0	5	
0.0	12.0	0.0	0.0	0.0	0.0	0.0		15	0	65	0	0	15	10	10	
0.0	15.0	0.0	0.0	0.0	0.0	0.0		20	0	60	0	10	10	10	10	
0.0	18.0	0.0	0.0	0.0	0.0	0.0	Width varies, lwd jams etc.	20	0	40	0	30	10	10	10	Along straight riffle sections total cover can be even lower
0.0	20.0	0.0	0.0	0.0	0.0	0.0	Width varies, lwd jams etc.	35	0	40	0	30	10	15	5	Percent cover varies throughout
0.0	18.0	0.0	0.0	0.0	0.0	0.0		40	0	40	0	33	10	15	2	Percent cover varies and is lower in some areas, but higher near large pools and large woody debris
0.0	25.0	0.0	0.0	0.0	0.0	0.0		35	0	10	0	60	10	10	0	
0.0	18.0	0.0	0.0	0.0	0.0	0.0		15	0	5	0	35	35	20	5	
0.0	15.0	0.0	0.0	0.0	0.0	0.0		40	5	25	0	35	20	15	0	
0.0	10.0	0.0	0.0	0.0	0.0	0.0		10	25	5	0	0	60	10	0	
0.0	12.0	0.0	0.0	0.0	0.0	0.0		20	0	70	5	10	10	5	0	
0.0	0.0	0.0	0.0	0.0	0.0	0.0		0	0	0	0	0	0	0	0	
0.0	6.0	0.0	0.0	0.0	0.0	0.0		30	20	10	0	0	70	0	0	
0.0	0.0	0.0	0.0	0.0	0.0	0.0		50	35	0	0	0	65	0	0	
0.0	0.0	0.0	0.0	0.0	0.0	0.0		8	5	45	5	25	10	5	5	
0.0	0.0	0.0	0.0	0.0	0.0	0.0		0	0	0	0	0	0	0	5	

CMMNTFLORA	CMMNTFAUNA	MAX PDOF	GPS_DATE	GPS_TIME	FEAT_NAME	UNFLT_POS	FILT_POS	DATA_DICTI	AVG_HORZ_P	WORST_HORZ
		32.10	11/13/2014	09:53:41am	RIVER CE	1909.00	1909.00	LRIM	1.20	7.60
		4.30	11/12/2014	02:07:40pm	RIVER CE	684.00	684.00	LRIM	1.60	3.30
		2.90	11/12/2014	02:00:56pm	RIVER CE	134.00	134.00	LRIM	1.00	1.10
		3.20	11/12/2014	11:59:02am	RIVER CE	752.00	752.00	LRIM	1.10	1.90
		3.60	11/11/2014	04:19:12pm	RIVER CE	604.00	604.00	LRIM	1.40	2.50
		4.20	11/11/2014	03:32:00pm	RIVER CE	405.00	405.00	LRIM	1.90	2.80
		6.20	11/11/2014	02:17:00pm	RIVER CE	463.00	463.00	LRIM	1.80	3.30
		3.10	11/11/2014	01:45:03pm	RIVER CE	174.00	174.00	LRIM	1.00	1.10
		5.10	11/11/2014	09:36:34am	RIVER CE	1235.00	1235.00	LRIM	1.10	6.60
		20.10	11/10/2014	05:00:28pm	RIVER CE	356.00	356.00	LRIM	1.50	6.30
	goldeneyes, beaver, eagle	5.60	11/10/2014	04:17:09pm	RIVER CE	663.00	663.00	LRIM	1.00	1.10
		7.40	11/10/2014	01:57:29pm	RIVER CE	1114.00	1114.00	LRIM	2.10	4.20
		267.00	11/10/2014	11:10:35am	RIVER CE	1988.00	1988.00	LRIM	1.40	8.40
		3.70	11/6/2014	02:46:46pm	RIVER CE	178.00	178.00	LRIM	1.40	1.60
		3.70	11/6/2014	02:37:15pm	RIVER CE	251.00	251.00	LRIM	1.10	1.30
	Spawning frequent in riffles	3.00	11/6/2014	02:22:36pm	RIVER CE	98.00	98.00	LRIM	1.10	1.50
	Spawning frequent in riffles	59.60	11/6/2014	11:12:29am	RIVER CE	839.00	839.00	LRIM	2.30	112.80
		11.80	11/6/2014	09:51:39am	RIVER CE	684.00	684.00	LRIM	1.10	3.00
		11.80	11/6/2014	09:51:39am	RIVER CE	684.00	684.00	LRIM	1.10	3.00
		11.80	11/6/2014	09:51:39am	RIVER CE	684.00	684.00	LRIM	1.10	3.00
		6.20	11/4/2014	04:02:44pm	RIVER CE	1652.00	1652.00	LRIM	0.20	1.70
		6.20	11/4/2014	04:02:44pm	RIVER CE	1652.00	1652.00	LRIM	0.20	1.70
		6.20	11/4/2014	04:02:44pm	RIVER CE	1652.00	1652.00	LRIM	0.20	1.70
	Abundant spawning activity	12.10	11/4/2014	03:29:10pm	RIVER CE	802.00	802.00	LRIM	0.30	12.60
	Abundant spawning activity	17.30	11/4/2014	02:53:35pm	RIVER CE	400.00	400.00	LRIM	0.80	7.20
	Abundant spawning activity	73.10	11/4/2014	01:27:35pm	RIVER CE	495.00	495.00	LRIM	1.20	7.60
	Eagles - bald and golden	117.20	11/4/2014	10:54:52am	RIVER CE	680.00	680.00	LRIM	1.00	8.30
		70.80	11/4/2014	09:51:24am	RIVER CE	763.00	763.00	LRIM	0.80	7.40
	Spawned sockeye at inlet to lake	6.30	11/3/2014	04:17:41pm	RIVER CE	29.00	29.00	LRIM	0.60	1.10
	Sockeye and coho at fish fence, spawned sockeye at inlet to lake	199.90	11/3/2014	02:43:17pm	RIVER CE	1179.00	1179.00	LRIM	1.40	38.90
		13.30	11/3/2014	02:28:28pm	RIVER CE	167.00	167.00	LRIM	0.90	2.10
		10.30	11/3/2014	02:07:58pm	RIVER CE	104.00	104.00	LRIM	1.50	9.80
		8.30	11/3/2014	01:46:50pm	RIVER CE	199.00	199.00	LRIM	0.80	7.40
		18.60	11/3/2014	01:09:46pm	RIVER CE	252.00	252.00	LRIM	1.30	7.80
		0.00	11/3/2014	11:00:00am	RIVER CE	0.00	0.00	LRIM	0.00	0.00
		13.20	11/3/2014	11:49:31am	RIVER CE	216.00	216.00	LRIM	3.10	10.10
		3.40	10/31/2014	12:46:22pm	RIVER CE	7.00	7.00	LRIM	1.50	6.30
		16.30	10/31/2014	12:21:26pm	RIVER CE	69.00	69.00	LRIM	2.20	8.40
		31.90	10/31/2014	10:37:32am	RIVER CE	581.00	581.00	LRIM	0.80	8.20
		12.90	10/31/2014	09:40:21am	RIVER CE	557.00	557.00	LRIM	0.90	7.90
		12.90	10/31/2014	08:27:46am	RIVER CE	259.00	259.00	LRIM	0.90	7.10
		15.10	10/30/2014	05:11:36pm	RIVER CE	191.00	191.00	LRIM	1.60	9.30
		776.60	10/30/2014	04:29:28pm	RIVER CE	403.00	403.00	LRIM	1.20	8.60
		21.00	10/30/2014	04:08:24pm	RIVER CE	184.00	184.00	LRIM	1.20	9.50
		19.80	10/30/2014	03:50:06pm	RIVER CE	186.00	186.00	LRIM	1.40	7.70
		9.50	10/30/2014	03:24:41pm	RIVER CE	186.00	186.00	LRIM	0.90	6.90
		19.80	10/30/2014	03:02:54pm	RIVER CE	95.00	95.00	LRIM	2.00	9.30
		4.50	10/30/2014	01:58:08pm	RIVER CE	168.00	168.00	LRIM	0.90	6.90
		12.10	10/30/2014	01:14:53pm	RIVER CE	108.00	108.00	LRIM	1.40	6.30
		7.30	10/30/2014	11:38:31am	RIVER CE	173.00	173.00	LRIM	1.70	45.90
		7.30	10/30/2014	11:38:31am	RIVER CE	173.00	173.00	LRIM	1.70	45.90

APPENDIX B

River Bank (Left and Right) Segment Data Base with AHI Scores



RIVER_NAME	ORGANIZATI	DATE	TIME	CREW	WEATHER	JURISDICTI	COMMENTS	Bank	SEGMNT_NUM	REACH_NUMB	AHI	Shape Leng	SHORE_TYPE	SHORE_MODI	SLOPE	LAND_USE	
Eagle River	Ecoscape/Splatsin	11/13/2014	08:53:41am	KH;AC	Clear	District of Sicamous		Left		1	1	Very High	2654	Flood Mid Bench	None	Bench	Natural Area
Eagle River	Ecoscape/Splatsin	11/13/2014	08:53:41am	KH;AC	Clear	District of Sicamous		Left		2	1	Very Low	744	Other	Other	Bench	Single Family
Eagle River	Ecoscape/Splatsin	11/13/2014	08:53:41am	KH;AC	Clear	District of Sicamous		Left		3	1	Very Low	663	Other	Other	Bench	Commercial
Eagle River	Ecoscape/Splatsin	11/13/2014	08:53:41am	KH;AC	Clear	District of Sicamous		Left		4	1	Moderate	535	Flood High Bench	None	Bench	Natural Area
Eagle River	Ecoscape/Splatsin	11/13/2014	08:53:41am	KH;AC	Clear	District of Sicamous		Left		5	1	Very Low	1382	Flood High Bench	Other	Bench	Single Family
Eagle River	Ecoscape/Splatsin	11/13/2014	08:53:41am	KH;AC	Clear	District of Sicamous		Left		6	1	Moderate	319	Flood High Bench	Other	Bench	Rural
Eagle River	Ecoscape/Splatsin	11/13/2014	08:53:41am	KH;AC	Clear	District of Sicamous		Left		7	1	Very Low	572	Flood High Bench	Other	Bench	Agriculture
Eagle River	Ecoscape/Splatsin	11/13/2014	08:53:41am	KH;AC	Clear	District of Sicamous		Left		8	1	Very Low	906	Flood High Bench	Other	Bench	Recreation
Eagle River	Ecoscape/Splatsin	11/12/2014	01:07:41pm	KH;AC	Clear	District of Sicamous		Left		9	2	Moderate	1565	Flood High Bench	None	Bench	Rural
Eagle River	Ecoscape/Splatsin	11/12/2014	01:07:41pm	KH;AC	Clear	District of Sicamous/Columbia-Shuswap E		Left		10	2	Moderate	353	Flood High Bench	None	Bench	Natural Area
Eagle River	Ecoscape/Splatsin	11/12/2014	01:07:41pm	KH;AC	Clear	Columbia-Shuswap E		Left		11	2	Very Low	1406	Flood High Bench	Other	Bench	Agriculture
Eagle River	Ecoscape/Splatsin	11/12/2014	01:07:41pm	KH;AC	Clear	Columbia-Shuswap E		Left		12	2	Very Low	279	Rocky Shore	Road	Moderate (5-20)	Infrastructure
Eagle River	Ecoscape/Splatsin	11/12/2014	01:07:41pm	KH;AC	Clear	Columbia-Shuswap E		Left		13	2	Very High	808	Flood High Bench	None	Bench	Natural Area
Eagle River	Ecoscape/Splatsin	11/12/2014	01:07:41pm	KH;AC	Clear	Columbia-Shuswap E		Left		14	2	Very Low	454	Rocky Shore	Road	Moderate (5-20)	Infrastructure
Eagle River	Ecoscape/Splatsin	11/12/2014	01:07:41pm	KH;AC	Clear	Columbia-Shuswap E		Left		15	2	Low	332	Flood High Bench	Other	Bench	Rural
Eagle River	Ecoscape/Splatsin	11/12/2014	01:00:57pm	KH;AC	Clear	Columbia-Shuswap E		Left		16	3	Very Low	2523	Flood High Bench	Other	Bench	Agriculture
Eagle River	Ecoscape/Splatsin	11/12/2014	10:59:04am	KH;AC	Clear	Columbia-Shuswap E		Left		17	4	Moderate	314	Flood High Bench	None	Bench	Natural Area
Eagle River	Ecoscape/Splatsin	11/12/2014	10:59:04am	KH;AC	Clear	Columbia-Shuswap E		Left		18	4	Very Low	434	Flood High Bench	Road	Bench	Rural
Eagle River	Ecoscape/Splatsin	11/12/2014	10:59:04am	KH;AC	Clear	Columbia-Shuswap E		Left		19	4	Moderate	325	Flood Mid Bench	Other	Bench	Agriculture
Eagle River	Ecoscape/Splatsin	11/12/2014	10:59:04am	KH;AC	Clear	Columbia-Shuswap E		Left		20	4	Very Low	1758	Flood High Bench	Other	Bench	Agriculture
Eagle River	Ecoscape/Splatsin	11/11/2014	03:19:12pm	KH;AC	Clear	Columbia-Shuswap E		Left		21	5	Low	550	Flood High Bench	Other	Bench	Agriculture
Eagle River	Ecoscape/Splatsin	11/11/2014	03:19:12pm	KH;AC	Clear	Columbia-Shuswap E		Left		22	5	Moderate	710	Flood High Bench	Other	Bench	Rural
Eagle River	Ecoscape/Splatsin	11/11/2014	03:19:12pm	KH;AC	Clear	Columbia-Shuswap E		Left		23	5	Very Low	270	Flood High Bench	Other	Bench	Agriculture
Eagle River	Ecoscape/Splatsin	11/11/2014	03:19:12pm	KH;AC	Clear	Columbia-Shuswap E		Left		24	5	Very Low	200	Flood Mid Bench	Road	Bench	Infrastructure
Eagle River	Ecoscape/Splatsin	11/11/2014	03:19:12pm	KH;AC	Clear	Columbia-Shuswap E		Left		25	5	Moderate	276	Flood Mid Bench	Other	Bench	Rural
Eagle River	Ecoscape/Splatsin	11/11/2014	03:19:12pm	KH;AC	Clear	Columbia-Shuswap E		Left		26	5	Very Low	286	Flood High Bench	Other	Bench	Agriculture
Eagle River	Ecoscape/Splatsin	11/11/2014	03:19:12pm	KH;AC	Clear	Columbia-Shuswap E		Left		27	5	High	453	Flood High Bench	None	Bench	Natural Area
Eagle River	Ecoscape/Splatsin	11/11/2014	03:19:12pm	KH;AC	Clear	Columbia-Shuswap E		Left		28	5	Very Low	262	Flood High Bench	Other	Bench	Rural
Eagle River	Ecoscape/Splatsin	11/11/2014	03:19:12pm	KH;AC	Clear	Columbia-Shuswap E		Left		29	5	Low	208	Flood High Bench	Road	Bench	Infrastructure
Eagle River	Ecoscape/Splatsin	11/11/2014	03:19:12pm	KH;AC	Clear	Columbia-Shuswap E		Left		30	5	Very High	1199	Flood High Bench	None	Bench	Natural Area
Eagle River	Ecoscape/Splatsin	11/11/2014	03:19:12pm	KH;AC	Clear	Columbia-Shuswap E		Left		31	5	Very Low	218	Flood High Bench	Other	Bench	Agriculture
Eagle River	Ecoscape/Splatsin	11/11/2014	03:19:12pm	KH;AC	Clear	Columbia-Shuswap E		Left		32	5	High	945	Flood High Bench	None	Bench	Natural Area
Eagle River	Ecoscape/Splatsin	11/11/2014	03:19:12pm	KH;AC	Clear	Columbia-Shuswap E		Left		33	5	Moderate	373	Flood Mid Bench	Other	Bench	Rural
Eagle River	Ecoscape/Splatsin	11/11/2014	03:19:12pm	KH;AC	Clear	Columbia-Shuswap E		Left		34	5	High	121	Flood High Bench	None	Bench	Natural Area
Eagle River	Ecoscape/Splatsin	11/11/2014	03:19:12pm	KH;AC	Clear	Columbia-Shuswap E		Left		35	5	Very Low	133	Flood Mid Bench	Other	Bench	Agriculture
Eagle River	Ecoscape/Splatsin	11/11/2014	03:19:12pm	KH;AC	Clear	Columbia-Shuswap E		Left		36	5	Low	205	Flood High Bench	Other	Bench	Agriculture
Eagle River	Ecoscape/Splatsin	11/11/2014	03:19:12pm	KH;AC	Clear	Columbia-Shuswap E		Left		37	5	Very Low	180	Flood High Bench	Other	Bench	Agriculture
Eagle River	Ecoscape/Splatsin	11/11/2014	03:19:12pm	KH;AC	Clear	Columbia-Shuswap E		Left		38	5	Moderate	325	Flood Mid Bench	Other	Bench	Rural
Eagle River	Ecoscape/Splatsin	11/11/2014	03:19:12pm	KH;AC	Clear	Columbia-Shuswap E		Left		39	5	Moderate	350	Infrastructure	Road	Steep (20-60)	Infrastructure
Eagle River	Ecoscape/Splatsin	11/11/2014	03:19:12pm	KH;AC	Clear	Columbia-Shuswap E		Left		40	5	High	1171	Flood High Bench	Other	Bench	Rural
Eagle River	Ecoscape/Splatsin	11/11/2014	02:32:01pm	KH;AC	Clear	Columbia-Shuswap E		Left		41	6	Very Low	238	Flood High Bench	Other	Bench	Rural
Eagle River	Ecoscape/Splatsin	11/11/2014	02:32:01pm	KH;AC	Clear	Columbia-Shuswap E		Left		42	6	High	442	Flood High Bench	None	Bench	Natural Area
Eagle River	Ecoscape/Splatsin	11/11/2014	02:32:01pm	KH;AC	Clear	Columbia-Shuswap E		Left		43	6	Low	516	Flood Mid Bench	Other	Bench	Rural
Eagle River	Ecoscape/Splatsin	11/11/2014	02:32:01pm	KH;AC	Clear	Columbia-Shuswap E		Left		44	6	Very High	1201	Flood High Bench	None	Bench	Natural Area
Eagle River	Ecoscape/Splatsin	11/11/2014	01:17:01pm	KH;AC	Clear	Columbia-Shuswap E		Left		45	7	Very High	357	Flood Mid Bench	None	Bench	Natural Area
Eagle River	Ecoscape/Splatsin	11/11/2014	01:17:01pm	KH;AC	Clear	Columbia-Shuswap E		Left		46	7	Very High	716	Flood High Bench	None	Bench	Natural Area
Eagle River	Ecoscape/Splatsin	11/11/2014	01:17:01pm	KH;AC	Clear	Columbia-Shuswap E		Left		47	7	Very High	302	Confluence	None	Bench	Natural Area
Eagle River	Ecoscape/Splatsin	11/11/2014	12:45:04pm	KH;AC	Clear	Columbia-Shuswap E		Left		48	8	High	992	Flood Mid Bench	None	Bench	Natural Area
Eagle River	Ecoscape/Splatsin	11/11/2014	12:45:04pm	KH;AC	Clear	Columbia-Shuswap E		Left		49	8	Very High	526	Flood High Bench	None	Bench	Natural Area
Eagle River	Ecoscape/Splatsin	11/11/2014	08:36:32am	KH;AC	Clear	Columbia-Shuswap E		Left		50	9	Very Low	137	Flood High Bench	Road	Bench	Rural
Eagle River	Ecoscape/Splatsin	11/11/2014	08:36:32am	KH;AC	Clear	Columbia-Shuswap E		Left		51	9	Very High	628	Flood High Bench	None	Bench	Natural Area
Eagle River	Ecoscape/Splatsin	11/11/2014	08:36:32am	KH;AC	Clear	Columbia-Shuswap E		Left		52	9	Very Low	173	Flood High Bench	Road	Bench	Rural
Eagle River	Ecoscape/Splatsin	11/11/2014	08:36:32am	KH;AC	Clear	Columbia-Shuswap E		Left		53	9	Very High	777	Flood High Bench	None	Bench	Natural Area
Eagle River	Ecoscape/Splatsin	11/11/2014	08:36:32am	KH;AC	Clear	Columbia-Shuswap E		Left		54	9	Moderate	1795	Flood High Bench	None	Bench	Rural
Eagle River	Ecoscape/Splatsin	11/11/2014	08:36:32am	KH;AC	Clear	Columbia-Shuswap E		Left		55	9	Low	228	Flood High Bench	Other	Bench	Agriculture
Eagle River	Ecoscape/Splatsin	11/11/2014	08:36:32am	KH;AC	Clear	Columbia-Shuswap E		Left		56	9	Low	654	Flood Mid Bench	Other	Bench	Rural
Eagle River	Ecoscape/Splatsin	11/11/2014	08:36:32am	KH;AC	Clear	Columbia-Shuswap E		Left		57	9	Moderate	493	Flood High Bench	None	Bench	Rural
Eagle River	Ecoscape/Splatsin	11/11/2014	08:36:32am	KH;AC	Clear	Columbia-Shuswap E		Left		58	9	Low	631	Flood High Bench	Other	Bench	Rural
Eagle River	Ecoscape/Splatsin	11/10/2014	04:00:30pm	KH;AC	Over cast	Columbia-Shuswap E		Left		59	10	Low	272	Flood High Bench	Road	Bench	Rural
Eagle River	Ecoscape/Splatsin	11/10/2014	04:00:30pm	KH;AC	Over cast	Columbia-Shuswap E		Left		60	10	Very Low	143	Flood High Bench	Other	Bench	Rural
Eagle River	Ecoscape/Splatsin	11/10/2014	04:00:30pm	KH;AC	Over cast	Columbia-Shuswap E		Left		61	10	High	636	Flood High Bench	None	Low (0-5)	Natural Area
Eagle River	Ecoscape/Splatsin	11/10/2014	03:17:10pm	KH;AC	Snow/Sleet	Columbia-Shuswap E		Left		62	11	Moderate	360	Flood High Bench	None	Low (0-5)	Natural Area
Eagle River	Ecoscape/Splatsin	11/10/2014	03:17:10pm	KH;AC	Snow/Sleet	Columbia-Shuswap E		Left		63	11	Moderate	553	Flood Mid Bench	None	Low (0-5)	Natural Area
Eagle River	Ecoscape/Splatsin	11/10/2014	03:17:10pm	KH;AC	Snow/Sleet	Columbia-Shuswap E		Left		64	11	Very Low	199	Flood High Bench	None	Low (0-5)	Agriculture
Eagle River	Ecoscape/Splatsin	11/10/2014	03:17:10pm	KH;AC	Snow/Sleet	Columbia-Shuswap E		Left		65	11	Very High	514	Flood High Bench	None	Low (0-5)	Natural Area
Eagle River	Ecoscape/Splatsin	11/10/2014	03:17:10pm	KH;AC	Snow/Sleet	Columbia-Shuswap E		Left		66	11	Moderate	426	Flood High Bench	Rail	Low (0-5)	Natural Area

RIVER_NAME	ORGANIZATI	DATE	TIME	CREW	WEATHER	JURISDICTI	COMMENTS	Bank	SEGMNT_NUM	REACH_NUMB	AHI	Shape_Leng	SHORE_TYPE	SHORE_MODI	SLOPE	LAND_USE
Eagle River	Ecoscope/Splatsin	11/10/2014	12:57:32pm	KH;AC	Partly Cloudy	Columbia-Shuswap E		Left	67	12	High	3731	Flood High Bench	None	Low (0-5)	Natural Area
Eagle River	Ecoscope/Splatsin	11/10/2014	12:57:32pm	KH;AC	Partly Cloudy	Columbia-Shuswap E		Left	68	12	High	1628	Flood Mid Bench	None	Low (0-5)	Natural Area
Eagle River	Ecoscope/Splatsin	11/10/2014	10:10:34am	KH;AC	Partly Cloudy	Columbia-Shuswap E		Left	69	13	High	918	Flood High Bench	None	Low (0-5)	Natural Area
Eagle River	Ecoscope/Splatsin	11/10/2014	10:10:34am	KH;AC	Partly Cloudy	Columbia-Shuswap E		Left	70	13	High	470	Flood High Bench	None	Steep (20-60)	Natural Area
Eagle River	Ecoscope/Splatsin	11/6/2014	01:37:16pm	KH;AC	Over cast	Columbia-Shuswap E		Left	71	15	Very High	3874	Flood High Bench	None	Low (0-5)	Natural Area
Eagle River	Ecoscope/Splatsin	11/6/2014	01:22:38pm	KH;AC	Over cast	Columbia-Shuswap E		Left	72	16	High	1056	Vegetated Slope	None	Steep (20-60)	Natural Area
Eagle River	Ecoscope/Splatsin	11/6/2014	10:12:30am	KH;AC	Over cast	Columbia-Shuswap E		Left	73	17	High	1662	Flood High Bench	Railway	Low (0-5)	Natural Area
Eagle River	Ecoscope/Splatsin	11/6/2014	10:12:30am	KH;AC	Over cast	Columbia-Shuswap E		Left	74	17	Moderate	790	Flood High Bench	Railway	Low (0-5)	Natural Area
Eagle River	Ecoscope/Splatsin	11/6/2014	10:12:30am	KH;AC	Over cast	Columbia-Shuswap E		Left	75	17	Low	182	Infrastructure	Railway	Steep (20-60)	Infrastructure
Eagle River	Ecoscope/Splatsin	11/6/2014	10:12:30am	KH;AC	Over cast	Columbia-Shuswap E		Left	76	17	High	251	Flood Mid Bench	None	Low (0-5)	Natural Area
Eagle River	Ecoscope/Splatsin	11/6/2014	08:51:39am	KH;AC	Over cast	Columbia-Shuswap E		Left	77	18	Low	143	Infrastructure	Railway	Steep (20-60)	Infrastructure
Eagle River	Ecoscope/Splatsin	11/6/2014	08:51:39am	KH;AC	Over cast	Columbia-Shuswap E		Left	78	18	High	306	Flood Mid Bench	Railway	Low (0-5)	Natural Area
Eagle River	Ecoscope/Splatsin	11/6/2014	08:51:39am	KH;AC	Over cast	Columbia-Shuswap E		Left	79	18	High	158	Cliff/Bluff	None	Steep (20-60)	Natural Area
Eagle River	Ecoscope/Splatsin	11/6/2014	08:51:39am	KH;AC	Over cast	Columbia-Shuswap E		Left	80	18	Very High	459	Flood Mid Bench	None	Low (0-5)	Natural Area
Eagle River	Ecoscope/Splatsin	11/6/2014	08:51:39am	KH;AC	Over cast	Columbia-Shuswap E		Left	81	19	High	623	Cliff/Bluff	None	Steep (20-60)	Natural Area
Eagle River	Ecoscope/Splatsin	11/6/2014	08:51:39am	KH;AC	Over cast	Columbia-Shuswap E		Left	82	20	High	302	Vegetated Slope	None	Steep (20-60)	Natural Area
Eagle River	Ecoscope/Splatsin	11/6/2014	08:51:39am	KH;AC	Over cast	Columbia-Shuswap E		Left	83	20	High	546	Cliff/Bluff	None	Steep (20-60)	Natural Area
Eagle River	Ecoscope/Splatsin	11/6/2014	08:51:39am	KH;AC	Over cast	Columbia-Shuswap E		Left	84	20	Moderate	433	Flood Low Bench	None	Low (0-5)	Natural Area
Eagle River	Ecoscope/Splatsin	11/6/2014	08:51:39am	KH;AC	Over cast	Columbia-Shuswap E		Left	85	20	High	240	Vegetated Slope	None	Steep (20-60)	Natural Area
Eagle River	Ecoscope/Splatsin	11/6/2014	08:51:39am	KH;AC	Over cast	Columbia-Shuswap E		Left	86	20	High	871	Flood Low Bench	None	Low (0-5)	Natural Area
Eagle River	Ecoscope/Splatsin	11/6/2014	08:51:39am	KH;AC	Over cast	Columbia-Shuswap E		Left	87	20	High	417	Vegetated Slope	None	Steep (20-60)	Natural Area
Eagle River	Ecoscope/Splatsin	11/6/2014	08:51:39am	KH;AC	Over cast	Columbia-Shuswap E		Left	88	20	High	558	Flood Mid Bench	None	Low (0-5)	Natural Area
Eagle River	Ecoscope/Splatsin	11/4/2014	02:55:26pm	KH;AC	Heavy Rain	Columbia-Shuswap E		Left	89	21	High	1555	Vegetated Slope	None	Steep (20-60)	Natural Area
Eagle River	Ecoscope/Splatsin	11/4/2014	02:55:26pm	KH;AC	Heavy Rain	Columbia-Shuswap E		Left	90	22	Low	449	Infrastructure	Road	Steep (20-60)	Infrastructure
Eagle River	Ecoscope/Splatsin	11/4/2014	02:55:26pm	KH;AC	Heavy Rain	Columbia-Shuswap E		Left	91	23	High	420	Flood Low Bench	None	Low (0-5)	Natural Area
Eagle River	Ecoscope/Splatsin	11/4/2014	02:55:26pm	KH;AC	Heavy Rain	Columbia-Shuswap E		Left	92	23	Low	2497	Infrastructure	Road	Steep (20-60)	Infrastructure
Eagle River	Ecoscope/Splatsin	11/4/2014	01:46:18pm	KH;AC	Light Rain	Columbia-Shuswap E		Left	93	25	High	1878	Vegetated Slope	None	Steep (20-60)	Natural Area
Eagle River	Ecoscope/Splatsin	11/4/2014	12:20:17pm	KH;AC	Light Rain	Columbia-Shuswap E		Left	94	26	High	490	Vegetated Slope	None	Steep (20-60)	Natural Area
Eagle River	Ecoscope/Splatsin	11/4/2014	12:20:17pm	KH;AC	Light Rain	Columbia-Shuswap E		Left	95	26	High	864	Flood Mid Bench	None	Low (0-5)	Natural Area
Eagle River	Ecoscope/Splatsin	11/4/2014	08:44:05am	KH;AC	Light Rain	Columbia-Shuswap E		Left	96	28	High	1102	Flood Mid Bench	None	Low (0-5)	Natural Area
Eagle River	Ecoscope/Splatsin	11/3/2014	03:10:25pm	KH;AC	Light Rain	Columbia-Shuswap E		Left	97	29	Very High	541	Flood Mid Bench	None	Low (0-5)	Natural Area
Eagle River	Ecoscope/Splatsin	11/3/2014	03:10:25pm	KH;AC	Light Rain	Columbia-Shuswap E		Left	98	29	Moderate	435	Vegetated Slope	Railway	Moderate (5-20)	Natural Area
Eagle River	Ecoscope/Splatsin	11/3/2014	03:10:25pm	KH;AC	Light Rain	Columbia-Shuswap E		Left	99	29	High	158	Flood High Bench	None	Moderate (5-20)	Natural Area
Eagle River	Ecoscope/Splatsin	11/3/2014	03:10:25pm	KH;AC	Light Rain	Columbia-Shuswap E		Left	100	29	Moderate	205	Vegetated Slope	Railway	Moderate (5-20)	Natural Area
Eagle River	Ecoscope/Splatsin	11/3/2014	03:10:25pm	KH;AC	Light Rain	Columbia-Shuswap E		Left	101	29	Low	246	Flood High Bench	Other	Low (0-5)	Rural
Eagle River	Ecoscope/Splatsin	11/3/2014	03:10:25pm	KH;AC	Light Rain	Columbia-Shuswap E		Left	102	29	High	594	Flood High Bench	None	Low (0-5)	Natural Area
Eagle River	Ecoscope/Splatsin	11/3/2014	03:10:25pm	KH;AC	Light Rain	Columbia-Shuswap E		Left	103	29	Moderate	134	Flood High Bench	Road	Low (0-5)	Natural Area
Eagle River	Ecoscope/Splatsin	11/3/2014	03:10:25pm	KH;AC	Light Rain	Columbia-Shuswap E		Left	104	29	High	92	Flood High Bench	None	Bench	Natural Area
Eagle River	Ecoscope/Splatsin	11/3/2014	01:36:01pm	KH;AC	Light Rain	Columbia-Shuswap E		Left	105	30	High	168	Rocky Shore	None	Moderate (5-20)	Natural Area
Eagle River	Ecoscope/Splatsin	11/3/2014	01:36:01pm	KH;AC	Light Rain	Columbia-Shuswap E		Left	106	30	High	395	Rocky Shore	None	Moderate (5-20)	Natural Area
Eagle River	Ecoscope/Splatsin	11/3/2014	01:21:12pm	KH;AC	Light Rain	Columbia-Shuswap E		Left	107	31	Low	748	Rocky Shore	Railway	Low (0-5)	Infrastructure
Eagle River	Ecoscope/Splatsin	11/3/2014	01:00:42pm	KH;AC	Light Rain	Columbia-Shuswap E		Left	108	32	High	216	Rocky Shore	None	Low (0-5)	Natural Area
Eagle River	Ecoscope/Splatsin	11/3/2014	12:39:33pm	KH;AC	Light Rain	Columbia-Shuswap E		Left	109	33	High	327	Rocky Shore	None	Low (0-5)	Natural Area
Eagle River	Ecoscope/Splatsin	11/3/2014	12:02:28pm	KH;AC	Light Rain	Columbia-Shuswap E		Left	110	34	Moderate	453	Flood High Bench	Road	Moderate (5-20)	Natural Area
Eagle River	Ecoscope/Splatsin	11/3/2014	11:00:00am	KH;AC	Light Rain	Columbia-Shuswap E		Left	111	35	High	144	Infrastructure	None	Moderate (5-20)	Infrastructure
Eagle River	Ecoscope/Splatsin	11/3/2014	11:00:00am	KH;AC	Light Rain	Columbia-Shuswap E		Left	112	35	Moderate	507	Infrastructure	Road	Moderate (5-20)	Infrastructure
Eagle River	Ecoscope/Splatsin	11/3/2014	11:00:00am	KH;AC	Light Rain	Columbia-Shuswap E		Left	113	35	Moderate	688	Flood High Bench	None	Steep (20-60)	Natural Area
Eagle River	Ecoscope/Splatsin	11/3/2014	11:00:00am	KH;AC	Light Rain	Columbia-Shuswap E		Left	114	35	High	233	Flood High Bench	None	Moderate (5-20)	Natural Area
Eagle River	Ecoscope/Splatsin	11/3/2014	11:00:00am	KH;AC	Light Rain	Columbia-Shuswap E		Left	115	35	Moderate	449	Flood High Bench	Road	Steep (20-60)	Natural Area
Eagle River	Ecoscope/Splatsin	11/3/2014	11:00:00am	KH;AC	Light Rain	Columbia-Shuswap E		Left	116	35	Low	178	Flood Mid Bench	Road	Low (0-5)	Natural Area
Eagle River	Ecoscope/Splatsin	11/3/2014	11:00:00am	KH;AC	Light Rain	Columbia-Shuswap E		Left	117	35	Low	1939	Infrastructure	Road	Low (0-5)	Infrastructure
Eagle River	Ecoscope/Splatsin	11/3/2014	11:00:00am	KH;AC	Light Rain	Columbia-Shuswap E		Left	118	35	Low	189	Other	Other	Low (0-5)	Commercial
Eagle River	Ecoscope/Splatsin	11/3/2014	10:41:52am	KH;AC	Light Rain	Columbia-Shuswap E		Left	119	36	Very Low	215	Other	Other	Low (0-5)	Commercial
Eagle River	Ecoscope/Splatsin	10/31/2014	12:39:11pm	KH;AC	Light Rain	Columbia-Shuswap E		Left	120	37	Very Low	398	Rocky Shore	Other	Low (0-5)	Commercial
Eagle River	Ecoscope/Splatsin	10/31/2014	12:14:14pm	KH;AC	Light Rain	Columbia-Shuswap E		Left	121	38	High	586	Flood Mid Bench	None	Low (0-5)	Natural Area
Eagle River	Ecoscope/Splatsin	10/31/2014	10:30:20am	KH;AC	Light Rain	Columbia-Shuswap E		Left	122	39	High	133	Flood Mid Bench	None	Low (0-5)	Natural Area
Eagle River	Ecoscope/Splatsin	10/31/2014	10:30:20am	KH;AC	Light Rain	Columbia-Shuswap E		Left	123	39	Moderate	382	Flood Low Bench	None	Low (0-5)	Natural Area
Eagle River	Ecoscope/Splatsin	10/31/2014	10:30:20am	KH;AC	Light Rain	Columbia-Shuswap E		Left	124	39	High	481	Flood Mid Bench	None	Low (0-5)	Natural Area
Eagle River	Ecoscope/Splatsin	10/31/2014	10:30:20am	KH;AC	Light Rain	Columbia-Shuswap E		Left	125	39	High	249	Vegetated Slope	None	Moderate (5-20)	Natural Area
Eagle River	Ecoscope/Splatsin	10/31/2014	10:30:20am	KH;AC	Light Rain	Columbia-Shuswap E		Left	126	39	Very High	670	Flood Mid Bench	None	Low (0-5)	Natural Area
Eagle River	Ecoscope/Splatsin	10/31/2014	09:33:09am	KH;AC	Light Rain	Columbia-Shuswap E		Left	127	40	High	630	Vegetated Slope	None	Steep (20-60)	Natural Area
Eagle River	Ecoscope/Splatsin	10/31/2014	08:20:35am	KH;AC	Light Rain	Columbia-Shuswap E		Left	128	41	High	243	Flood High Bench	None	Low (0-5)	Natural Area
Eagle River	Ecoscope/Splatsin	10/30/2014	05:04:25pm	KH;AC	Light Rain	Columbia-Shuswap E		Left	129	42	High	568	Vegetated Slope	None	Steep (20-60)	Natural Area
Eagle River	Ecoscope/Splatsin	10/30/2014	04:22:17pm	KH;AC	Light Rain	Columbia-Shuswap E		Left	130	43	High	426	Vegetated Slope	None	Steep (20-60)	Natural Area
Eagle River	Ecoscope/Splatsin	10/30/2014	03:17:28pm	KH;AC	Over cast	Columbia-Shuswap E		Left	131	46	Moderate	496	Flood Mid Bench	Road	Low (0-5)	Natural Area
Eagle River	Ecoscope/Splatsin	10/30/2014	02:55:41pm	KH;AC	Over cast	Columbia-Shuswap E		Left	132	47	Low	159	Infrastructure	Railway	Low (0-5)	Infrastructure

RIVER_NAME	ORGANIZATI	DATE	TIME	CREW	WEATHER	JURISDICTI	COMMENTS	Bank	SEGMNT_NUM	REACH_NUMB	AHI	Shape_Leng	SHORE_TYPE	SHORE_MODI	SLOPE	LAND_USE
Eagle River	Ecoscope/Splatsin	10/30/2014	02:55:41pm	KH;AC	Over cast	Columbia-Shuswap E		Left	133	47	Moderate	205	Flood Mid Bench	Railway	Low (0-5)	Natural Area
Eagle River	Ecoscope/Splatsin	10/30/2014	01:47:59pm	KH;AC	Over cast	Columbia-Shuswap E		Left	134	48	Low	1042	Infrastructure	Railway	Moderate (5-20)	Infrastructure
Eagle River	Ecoscope/Splatsin	10/30/2014	11:31:19am	KH;AC	Over cast	Columbia-Shuswap E		Left	135	50	High	198	Vegetated Slope	None	Steep (20-60)	Natural Area
Eagle River	Ecoscope/Splatsin	10/30/2014	11:31:19am	KH;AC	Over cast	Columbia-Shuswap E		Left	136	50	Low	358	Flood Low Bench	Road	Low (0-5)	Natural Area
Eagle River	Ecoscope/Splatsin	10/30/2014	11:31:19am	KH;AC	Over cast	Columbia-Shuswap E		Left	137	51	Moderate	1132	Infrastructure	Road	Low (0-5)	Infrastructure
Eagle River	Ecoscope/Splatsin	11/13/2014	08:53:41am	KH;AC	Clear	District of Sicamous		Right	1	1	High	1285	Flood Mid Bench	None	Bench	Natural Area
Eagle River	Ecoscope/Splatsin	11/13/2014	08:53:41am	KH;AC	Clear	District of Sicamous		Right	2	1	Moderate	982	Flood High Bench	Other	Bench	Rural
Eagle River	Ecoscope/Splatsin	11/13/2014	08:53:41am	KH;AC	Clear	District of Sicamous		Right	3	1	Very High	1977	Flood Mid Bench	None	Bench	Natural Area
Eagle River	Ecoscope/Splatsin	11/13/2014	08:53:41am	KH;AC	Clear	District of Sicamous		Right	4	1	Very Low	1554	Flood High Bench	Other	Bench	Agriculture
Eagle River	Ecoscope/Splatsin	11/13/2014	08:53:41am	KH;AC	Clear	District of Sicamous		Right	5	1	Very High	324	Flood High Bench	None	Bench	Natural Area
Eagle River	Ecoscope/Splatsin	11/13/2014	08:53:41am	KH;AC	Clear	District of Sicamous		Right	6	1	Low	894	Flood High Bench	Other	Bench	Agriculture
Eagle River	Ecoscope/Splatsin	11/13/2014	08:53:41am	KH;AC	Clear	District of Sicamous		Right	7	1	Low	406	Flood High Bench	Railway	Low (0-5)	Rural
Eagle River	Ecoscope/Splatsin	11/12/2014	01:07:41pm	KH;AC	Clear	District of Sicamous/Columbia-Shuswap E		Right	8	2	Very Low	2775	Flood High Bench	Other	Bench	Agriculture
Eagle River	Ecoscope/Splatsin	11/12/2014	01:07:41pm	KH;AC	Clear	Columbia-Shuswap E		Right	9	2	Low	371	Infrastructure	Railway	Low (0-5)	Rural
Eagle River	Ecoscope/Splatsin	11/12/2014	01:07:41pm	KH;AC	Clear	Columbia-Shuswap E		Right	10	2	High	1367	Flood High Bench	None	Bench	Natural Area
Eagle River	Ecoscope/Splatsin	11/12/2014	01:07:41pm	KH;AC	Clear	Columbia-Shuswap E		Right	11	2	Low	1297	Flood High Bench	Other	Bench	Agriculture
Eagle River	Ecoscope/Splatsin	11/12/2014	10:59:04am	KH;AC	Clear	Columbia-Shuswap E		Right	12	4	Moderate	1535	Flood High Bench	Railway	Bench	Natural Area
Eagle River	Ecoscope/Splatsin	11/12/2014	10:59:04am	KH;AC	Clear	Columbia-Shuswap E		Right	13	4	Low	367	Flood High Bench	Other	Bench	Rural
Eagle River	Ecoscope/Splatsin	11/12/2014	10:59:04am	KH;AC	Clear	Columbia-Shuswap E		Right	14	4	High	603	Flood High Bench	None	Low (0-5)	Rural
Eagle River	Ecoscope/Splatsin	11/12/2014	10:59:04am	KH;AC	Clear	Columbia-Shuswap E		Right	15	4	Moderate	916	Flood High Bench	None	Bench	Rural
Eagle River	Ecoscope/Splatsin	11/12/2014	10:59:04am	KH;AC	Clear	Columbia-Shuswap E		Right	16	4	High	205	Confluence	None	Low (0-5)	Natural Area
Eagle River	Ecoscope/Splatsin	11/12/2014	10:59:04am	KH;AC	Clear	Columbia-Shuswap E		Right	17	4	Moderate	489	Flood High Bench	None	Low (0-5)	Rural
Eagle River	Ecoscope/Splatsin	11/12/2014	10:59:04am	KH;AC	Clear	Columbia-Shuswap E		Right	18	4	Low	1252	Flood High Bench	None	Bench	Agriculture
Eagle River	Ecoscope/Splatsin	11/11/2014	03:19:12pm	KH;AC	Clear	Columbia-Shuswap E		Right	19	5	Moderate	1408	Flood High Bench	None	Bench	Natural Area
Eagle River	Ecoscope/Splatsin	11/11/2014	03:19:12pm	KH;AC	Clear	Columbia-Shuswap E		Right	20	5	High	974	Flood High Bench	None	Bench	Natural Area
Eagle River	Ecoscope/Splatsin	11/11/2014	03:19:12pm	KH;AC	Clear	Columbia-Shuswap E		Right	21	5	Very Low	1783	Flood High Bench	Other	Bench	Agriculture
Eagle River	Ecoscope/Splatsin	11/11/2014	03:19:12pm	KH;AC	Clear	Columbia-Shuswap E		Right	22	5	High	582	Flood High Bench	None	Bench	Natural Area
Eagle River	Ecoscope/Splatsin	11/11/2014	03:19:12pm	KH;AC	Clear	Columbia-Shuswap E		Right	23	5	Moderate	845	Flood Low Bench	None	Bench	Natural Area
Eagle River	Ecoscope/Splatsin	11/11/2014	03:19:12pm	KH;AC	Clear	Columbia-Shuswap E		Right	24	5	High	236	Flood High Bench	None	Bench	Natural Area
Eagle River	Ecoscope/Splatsin	11/11/2014	03:19:12pm	KH;AC	Clear	Columbia-Shuswap E		Right	25	5	Very Low	422	Flood High Bench	Road	Bench	Agriculture
Eagle River	Ecoscope/Splatsin	11/11/2014	03:19:12pm	KH;AC	Clear	Columbia-Shuswap E		Right	26	5	High	507	Flood High Bench	None	Low (0-5)	Natural Area
Eagle River	Ecoscope/Splatsin	11/11/2014	03:19:12pm	KH;AC	Clear	Columbia-Shuswap E		Right	27	5	High	1366	Flood Mid Bench	Railway	Low (0-5)	Natural Area
Eagle River	Ecoscope/Splatsin	11/11/2014	03:19:12pm	KH;AC	Clear	Columbia-Shuswap E		Right	28	5	Low	443	Rocky Shore	Railway	Moderate (5-20)	Infrastructure
Eagle River	Ecoscope/Splatsin	11/11/2014	02:32:01pm	KH;AC	Clear	Columbia-Shuswap E		Right	29	6	High	1630	Flood Mid Bench	None	Bench	Natural Area
Eagle River	Ecoscope/Splatsin	11/11/2014	01:17:01pm	KH;AC	Clear	Columbia-Shuswap E		Right	30	7	Very Low	375	Flood High Bench	Railway	Low (0-5)	Infrastructure
Eagle River	Ecoscope/Splatsin	11/11/2014	01:17:01pm	KH;AC	Clear	Columbia-Shuswap E		Right	31	7	High	1182	Flood Mid Bench	Railway	Low (0-5)	Natural Area
Eagle River	Ecoscope/Splatsin	11/11/2014	01:17:01pm	KH;AC	Clear	Columbia-Shuswap E		Right	32	7	Low	656	Rocky Shore	Railway	Moderate (5-20)	Infrastructure
Eagle River	Ecoscope/Splatsin	11/11/2014	08:36:32am	KH;AC	Clear	Columbia-Shuswap E		Right	33	9	Very High	2656	Flood Mid Bench	None	Low (0-5)	Natural Area
Eagle River	Ecoscope/Splatsin	11/11/2014	08:36:32am	KH;AC	Clear	Columbia-Shuswap E		Right	34	9	High	891	Flood Mid Bench	None	Bench	Natural Area
Eagle River	Ecoscope/Splatsin	11/11/2014	08:36:32am	KH;AC	Clear	Columbia-Shuswap E		Right	35	9	High	1913	Flood High Bench	None	Bench	Natural Area
Eagle River	Ecoscope/Splatsin	11/10/2014	04:00:30pm	KH;AC	Over cast	Columbia-Shuswap E		Right	36	10	High	1119	Flood High Bench	None	Low (0-5)	Rural
Eagle River	Ecoscope/Splatsin	11/10/2014	03:17:10pm	KH;AC	Snow/Sleet	Columbia-Shuswap E		Right	37	11	Moderate	516	Flood High Bench	None	Bench	Rural
Eagle River	Ecoscope/Splatsin	11/10/2014	03:17:10pm	KH;AC	Snow/Sleet	Columbia-Shuswap E		Right	38	11	High	560	Flood Low Bench	None	Bench	Natural Area
Eagle River	Ecoscope/Splatsin	11/10/2014	03:17:10pm	KH;AC	Snow/Sleet	Columbia-Shuswap E		Right	39	11	Moderate	841	Flood Low Bench	None	Bench	Rural
Eagle River	Ecoscope/Splatsin	11/10/2014	03:17:10pm	KH;AC	Snow/Sleet	Columbia-Shuswap E		Right	40	11	High	346	Flood Low Bench	None	Bench	Natural Area
Eagle River	Ecoscope/Splatsin	11/10/2014	03:17:10pm	KH;AC	Snow/Sleet	Columbia-Shuswap E		Right	41	11	Very Low	185	Rocky Shore	Road	Bench	Infrastructure
Eagle River	Ecoscope/Splatsin	11/10/2014	12:57:32pm	KH;AC	Partly Cloudy	Columbia-Shuswap E		Right	42	12	Moderate	652	Flood Low Bench	None	Bench	Natural Area
Eagle River	Ecoscope/Splatsin	11/10/2014	12:57:32pm	KH;AC	Partly Cloudy	Columbia-Shuswap E		Right	43	12	Moderate	1060	Flood High Bench	None	Bench	Rural
Eagle River	Ecoscope/Splatsin	11/10/2014	12:57:32pm	KH;AC	Partly Cloudy	Columbia-Shuswap E		Right	44	12	High	1553	Flood High Bench	None	Bench	Rural
Eagle River	Ecoscope/Splatsin	11/10/2014	12:57:32pm	KH;AC	Partly Cloudy	Columbia-Shuswap E		Right	45	12	Moderate	671	Flood Mid Bench	None	Bench	Rural
Eagle River	Ecoscope/Splatsin	11/10/2014	12:57:32pm	KH;AC	Partly Cloudy	Columbia-Shuswap E		Right	46	12	High	599	Flood High Bench	None	Bench	Rural
Eagle River	Ecoscope/Splatsin	11/10/2014	10:10:34am	KH;AC	Partly Cloudy	Columbia-Shuswap E		Right	47	13	Very Low	203	Flood Low Bench	Railway	Bench	Infrastructure
Eagle River	Ecoscope/Splatsin	11/10/2014	10:10:34am	KH;AC	Partly Cloudy	Columbia-Shuswap E		Right	48	13	Very High	933	Flood High Bench	None	Bench	Natural Area
Eagle River	Ecoscope/Splatsin	11/10/2014	10:10:34am	KH;AC	Partly Cloudy	Columbia-Shuswap E		Right	49	13	Low	462	Flood High Bench	Railway	Bench	Infrastructure
Eagle River	Ecoscope/Splatsin	11/10/2014	10:10:34am	KH;AC	Partly Cloudy	Columbia-Shuswap E		Right	50	13	High	1091	Flood High Bench	None	Bench	Natural Area
Eagle River	Ecoscope/Splatsin	11/10/2014	10:10:34am	KH;AC	Partly Cloudy	Columbia-Shuswap E		Right	51	13	Low	192	Flood High Bench	Railway	Bench	Infrastructure
Eagle River	Ecoscope/Splatsin	11/10/2014	10:10:34am	KH;AC	Partly Cloudy	Columbia-Shuswap E		Right	52	13	Very High	788	Flood High Bench	None	Bench	Rural
Eagle River	Ecoscope/Splatsin	11/6/2014	01:46:48pm	KH;AC	Over cast	Columbia-Shuswap E		Right	53	14	Low	1611	Flood High Bench	Railway	Bench	Rural
Eagle River	Ecoscope/Splatsin	11/6/2014	01:37:16pm	KH;AC	Over cast	Columbia-Shuswap E		Right	54	15	High	994	Flood High Bench	None	Bench	Rural
Eagle River	Ecoscope/Splatsin	11/6/2014	01:22:38pm	KH;AC	Over cast	Columbia-Shuswap E		Right	55	16	High	411	Confluence	None	Bench	Natural Area
Eagle River	Ecoscope/Splatsin	11/6/2014	10:12:30am	KH;AC	Over cast	Columbia-Shuswap E		Right	56	17	High	341	Flood High Bench	None	Bench	Natural Area
Eagle River	Ecoscope/Splatsin	11/6/2014	08:51:39am	KH;AC	Over cast	Columbia-Shuswap E		Right	57	18	High	3090	Flood Mid Bench	None	Bench	Rural
Eagle River	Ecoscope/Splatsin	11/6/2014	08:51:39am	KH;AC	Over cast	Columbia-Shuswap E		Right	58	18	Moderate	562	Flood Mid Bench	Road	Bench	Infrastructure
Eagle River	Ecoscope/Splatsin	11/6/2014	08:51:39am	KH;AC	Over cast	Columbia-Shuswap E		Right	59	18	High	548	Flood Mid Bench	None	Bench	Natural Area
Eagle River	Ecoscope/Splatsin	11/6/2014	08:51:39am	KH;AC	Over cast	Columbia-Shuswap E		Right	60	19	Very High	444	Confluence	None	Bench	Natural Area
Eagle River	Ecoscope/Splatsin	11/6/2014	08:51:39am	KH;AC	Over cast	Columbia-Shuswap E		Right	61	20	Very High	385	Flood Low Bench	None	Bench	Natural Area

RIVER_NAME	ORGANIZATI	DATE	TIME	CREW	WEATHER	JURISDICTI	COMMENTS	Bank	SEGMNT_NUM	REACH_NUMB	AHI	Shape Leng	SHORE_TYPE	SHORE_MODI	SLOPE	LAND_USE
Eagle River	Ecoscope/Splatsin	11/6/2014	08:51:39am	KH;AC	Over cast	Columbia-Shuswap E		Right	62	20	Moderate	883	Infrastructure	Road	Low (0-5)	Rural
Eagle River	Ecoscope/Splatsin	11/6/2014	08:51:39am	KH;AC	Over cast	Columbia-Shuswap E		Right	63	20	High	539	Flood Low Bench	None	Low (0-5)	Natural Area
Eagle River	Ecoscope/Splatsin	11/4/2014	02:55:26pm	KH;AC	Heavy Rain	Columbia-Shuswap E		Right	64	21	High	740	Vegetated Slope	None	Low (0-5)	Natural Area
Eagle River	Ecoscope/Splatsin	11/4/2014	02:55:26pm	KH;AC	Heavy Rain	Columbia-Shuswap E		Right	65	21	Low	183	Infrastructure	Road	Low (0-5)	Infrastructure
Eagle River	Ecoscope/Splatsin	11/4/2014	02:55:26pm	KH;AC	Heavy Rain	Columbia-Shuswap E		Right	66	21	High	389	Vegetated Slope	None	Low (0-5)	Natural Area
Eagle River	Ecoscope/Splatsin	11/4/2014	02:55:26pm	KH;AC	Heavy Rain	Columbia-Shuswap E		Right	67	22	Moderate	379	Infrastructure	Road	Low (0-5)	Infrastructure
Eagle River	Ecoscope/Splatsin	11/4/2014	02:55:26pm	KH;AC	Heavy Rain	Columbia-Shuswap E		Right	68	22	Low	576	Infrastructure	Railway	Low (0-5)	Infrastructure
Eagle River	Ecoscope/Splatsin	11/4/2014	02:55:26pm	KH;AC	Heavy Rain	Columbia-Shuswap E		Right	69	23	Moderate	2381	Infrastructure	Railway	Bench	Infrastructure
Eagle River	Ecoscope/Splatsin	11/4/2014	02:55:26pm	KH;AC	Heavy Rain	Columbia-Shuswap E		Right	70	23	High	228	Flood Low Bench	None	Bench	Natural Area
Eagle River	Ecoscope/Splatsin	11/4/2014	02:55:26pm	KH;AC	Heavy Rain	Columbia-Shuswap E		Right	71	23	Moderate	261	Flood Low Bench	Railway	Bench	Infrastructure
Eagle River	Ecoscope/Splatsin	11/4/2014	02:21:52pm	KH;AC	Light Rain	Columbia-Shuswap E		Right	72	24	Moderate	1040	Infrastructure	Road	Low (0-5)	Infrastructure
Eagle River	Ecoscope/Splatsin	11/4/2014	01:46:18pm	KH;AC	Light Rain	Columbia-Shuswap E		Right	73	25	High	548	Flood High Bench	None	Low (0-5)	Natural Area
Eagle River	Ecoscope/Splatsin	11/4/2014	12:20:17pm	KH;AC	Light Rain	Columbia-Shuswap E		Right	74	26	Very High	665	Flood High Bench	None	Low (0-5)	Natural Area
Eagle River	Ecoscope/Splatsin	11/4/2014	12:20:17pm	KH;AC	Light Rain	Columbia-Shuswap E		Right	75	26	High	258	Flood High Bench	None	Bench	Natural Area
Eagle River	Ecoscope/Splatsin	11/4/2014	12:20:17pm	KH;AC	Light Rain	Columbia-Shuswap E		Right	76	26	Very High	218	Flood High Bench	None	Bench	Natural Area
Eagle River	Ecoscope/Splatsin	11/4/2014	09:47:35am	KH;AC	Light Rain	Columbia-Shuswap E		Right	77	27	Very High	555	Flood Low Bench	None	Bench	Natural Area
Eagle River	Ecoscope/Splatsin	11/4/2014	08:44:05am	KH;AC	Light Rain	Columbia-Shuswap E		Right	78	28	Very High	831	Flood High Bench	None	Low (0-5)	Natural Area
Eagle River	Ecoscope/Splatsin	11/4/2014	08:44:05am	KH;AC	Light Rain	Columbia-Shuswap E		Right	79	28	Low	290	Confluence	None	Low (0-5)	Rural
Eagle River	Ecoscope/Splatsin	11/3/2014	03:10:25pm	KH;AC	Light Rain	Columbia-Shuswap E		Right	80	29	High	157	Flood Mid Bench	None	Bench	Natural Area
Eagle River	Ecoscope/Splatsin	11/3/2014	03:10:25pm	KH;AC	Light Rain	Columbia-Shuswap E		Right	81	29	Low	412	Infrastructure	Road	Low (0-5)	Infrastructure
Eagle River	Ecoscope/Splatsin	11/3/2014	03:10:25pm	KH;AC	Light Rain	Columbia-Shuswap E		Right	82	29	Moderate	308	Vegetated Slope	Road	Low (0-5)	Natural Area
Eagle River	Ecoscope/Splatsin	11/3/2014	03:10:25pm	KH;AC	Light Rain	Columbia-Shuswap E		Right	83	29	Low	310	Infrastructure	Road	Low (0-5)	Infrastructure
Eagle River	Ecoscope/Splatsin	11/3/2014	03:10:25pm	KH;AC	Light Rain	Columbia-Shuswap E		Right	84	29	High	620	Flood Mid Bench	None	Bench	Natural Area
Eagle River	Ecoscope/Splatsin	11/3/2014	03:10:25pm	KH;AC	Light Rain	Columbia-Shuswap E		Right	85	29	High	297	Vegetated Slope	None	Low (0-5)	Natural Area
Eagle River	Ecoscope/Splatsin	11/3/2014	03:10:25pm	KH;AC	Light Rain	Columbia-Shuswap E		Right	86	29	High	773	Flood High Bench	None	Low (0-5)	Natural Area
Eagle River	Ecoscope/Splatsin	11/3/2014	01:36:01pm	KH;AC	Light Rain	Columbia-Shuswap E		Right	87	30	High	284	Rocky Shore	None	Moderate (5-20)	Natural Area
Eagle River	Ecoscope/Splatsin	11/3/2014	01:36:01pm	KH;AC	Light Rain	Columbia-Shuswap E		Right	88	30	High	652	Rocky Shore	None	Moderate (5-20)	Natural Area
Eagle River	Ecoscope/Splatsin	11/3/2014	01:21:12pm	KH;AC	Light Rain	Columbia-Shuswap E		Right	89	31	High	1254	Flood Low Bench	None	Low (0-5)	Natural Area
Eagle River	Ecoscope/Splatsin	11/3/2014	01:00:42pm	KH;AC	Light Rain	Columbia-Shuswap E		Right	90	32	High	519	Rocky Shore	None	Moderate (5-20)	Natural Area
Eagle River	Ecoscope/Splatsin	11/3/2014	12:39:33pm	KH;AC	Light Rain	Columbia-Shuswap E		Right	91	33	Low	275	Infrastructure	Railway	Low (0-5)	Infrastructure
Eagle River	Ecoscope/Splatsin	11/3/2014	12:02:28pm	KH;AC	Light Rain	Columbia-Shuswap E		Right	92	34	High	233	Rocky Shore	None	Moderate (5-20)	Natural Area
Eagle River	Ecoscope/Splatsin	11/3/2014	11:00:00am	KH;AC	Light Rain	Columbia-Shuswap E		Right	93	35	Low	3086	Infrastructure	Railway	Moderate (5-20)	Infrastructure
Eagle River	Ecoscope/Splatsin	11/3/2014	11:00:00am	KH;AC	Light Rain	Columbia-Shuswap E		Right	94	35	Low	197	Flood Low Bench	None	Bench	Natural Area
Eagle River	Ecoscope/Splatsin	11/3/2014	10:41:52am	KH;AC	Light Rain	Columbia-Shuswap E		Right	95	36	Very Low	359	Other	Other	Low (0-5)	Commercial
Eagle River	Ecoscope/Splatsin	10/31/2014	12:39:11pm	KH;AC	Light Rain	Columbia-Shuswap E		Right	96	37	Moderate	281	Flood Low Bench	None	Bench	Natural Area
Eagle River	Ecoscope/Splatsin	10/31/2014	12:14:14pm	KH;AC	Light Rain	Columbia-Shuswap E		Right	97	38	Low	90	Infrastructure	Railway	Moderate (5-20)	Infrastructure
Eagle River	Ecoscope/Splatsin	10/31/2014	10:30:20am	KH;AC	Light Rain	Columbia-Shuswap E		Right	98	39	High	1305	Flood Low Bench	None	Bench	Natural Area
Eagle River	Ecoscope/Splatsin	10/31/2014	10:30:20am	KH;AC	Light Rain	Columbia-Shuswap E		Right	99	39	Very Low	189	Infrastructure	Railway	Moderate (5-20)	Infrastructure
Eagle River	Ecoscope/Splatsin	10/31/2014	10:30:20am	KH;AC	Light Rain	Columbia-Shuswap E		Right	100	39	Moderate	273	Flood Mid Bench	None	Low (0-5)	Natural Area
Eagle River	Ecoscope/Splatsin	10/31/2014	09:33:09am	KH;AC	Light Rain	Columbia-Shuswap E		Right	101	40	High	472	Flood Low Bench	None	Bench	Natural Area
Eagle River	Ecoscope/Splatsin	10/31/2014	08:20:35am	KH;AC	Light Rain	Columbia-Shuswap E		Right	102	41	Moderate	796	Flood Mid Bench	Railway	Low (0-5)	Natural Area
Eagle River	Ecoscope/Splatsin	10/30/2014	05:04:25pm	KH;AC	Light Rain	Columbia-Shuswap E		Right	103	42	High	704	Flood Mid Bench	None	Low (0-5)	Natural Area
Eagle River	Ecoscope/Splatsin	10/30/2014	04:22:17pm	KH;AC	Light Rain	Columbia-Shuswap E		Right	104	43	Moderate	140	Flood Mid Bench	Railway	Moderate (5-20)	Natural Area
Eagle River	Ecoscope/Splatsin	10/30/2014	04:22:17pm	KH;AC	Light Rain	Columbia-Shuswap E		Right	105	43	High	235	Flood High Bench	None	Low (0-5)	Natural Area
Eagle River	Ecoscope/Splatsin	10/30/2014	04:01:14pm	KH;AC	Light Rain	Columbia-Shuswap E		Right	106	44	Low	187	Infrastructure	Road	Moderate (5-20)	Infrastructure
Eagle River	Ecoscope/Splatsin	10/30/2014	03:17:28pm	KH;AC	Over cast	Columbia-Shuswap E		Right	107	46	High	210	Flood Mid Bench	None	Bench	Natural Area
Eagle River	Ecoscope/Splatsin	10/30/2014	02:55:41pm	KH;AC	Over cast	Columbia-Shuswap E		Right	108	47	Very High	136	Flood Low Bench	None	Bench	Natural Area
Eagle River	Ecoscope/Splatsin	10/30/2014	02:55:41pm	KH;AC	Over cast	Columbia-Shuswap E		Right	109	47	Low	334	Infrastructure	Road	Steep (20-60)	Infrastructure
Eagle River	Ecoscope/Splatsin	10/30/2014	02:55:41pm	KH;AC	Over cast	Columbia-Shuswap E		Right	110	47	Low	178	Rocky Shore	Road	Steep (20-60)	Natural Area
Eagle River	Ecoscope/Splatsin	10/30/2014	01:47:59pm	KH;AC	Over cast	Columbia-Shuswap E		Right	111	48	Low	666	Infrastructure	Road	Steep (20-60)	Infrastructure
Eagle River	Ecoscope/Splatsin	10/30/2014	01:05:45pm	KH;AC	Over cast	Columbia-Shuswap E		Right	112	49	High	313	Rocky Shore	None	Low (0-5)	Natural Area
Eagle River	Ecoscope/Splatsin	10/30/2014	11:31:19am	KH;AC	Over cast	Columbia-Shuswap E		Right	113	50	Low	430	Infrastructure	Railway	Steep (20-60)	Infrastructure
Eagle River	Ecoscope/Splatsin	10/30/2014	11:31:19am	KH;AC	Over cast	Columbia-Shuswap E		Right	114	51	Low	1193	Infrastructure	Railway	Steep (20-60)	Infrastructure

LEV_OF_IMP	LIVEST_ACC	PCTDISTURB	PCTNATURAL	PHOTONUM	TAPE_NUMB	VIDEO_TIME	CMMNT_CLAS	CLIFF_BLUF	ROCKY	GRAVEL	SAND	CONFLUENCE	WETLAND	OTHER
None	No	0	100	DSCN4227.jpg				0	0	0	0	0	0	0
High (>40%)	No	100	0	DSCN4189.jpg				0	0	0	0	0	0	0
High (>40%)	No	100	0	DSCN4164.jpg				0	90	0	0	0	0	0
Low (<10%)	No	10	90	DSCN4143.jpg				0	0	0	0	0	0	0
High (>40%)	No	95	5	DSCN4105.jpg				0	0	0	0	0	0	0
Low (<10%)	No	5	95	DSCN4093.jpg				0	0	0	0	0	0	0
High (>40%)	No	98	2	DSCN4083.jpg				0	0	0	0	0	0	0
High (>40%)	No	100	0	DSCN4033.jpg				0	0	0	0	0	0	0
Low (<10%)	No	15	85	DSCN4002.jpg				0	0	0	0	0	0	0
Low (<10%)	No	10	90	DSCN3980.jpg				0	0	0	0	0	0	0
High (>40%)	Yes	100	0	DSCN3950.jpg				0	0	0	0	0	0	0
High (>40%)	No	100	0	DSCN3946.jpg				0	70	0	0	0	0	0
None	No	2	98	DSCN3933.jpg				0	0	0	0	0	0	0
High (>40%)	No	100	0	DSCN3924.jpg				0	90	0	0	0	0	0
Medium (10-40%)	No	70	30	DSCN3921.jpg				0	0	0	0	0	0	0
High (>40%)	No	100	0	DSCN3884.jpg				0	0	0	0	0	0	0
Low (<10%)	No	2	98	DSCN3876.jpg				0	0	0	0	0	0	0
High (>40%)	Yes	65	35	DSCN3863.jpg				0	0	0	0	0	0	0
Low (<10%)	Yes	20	80	DSCN3851.jpg				0	0	0	0	0	0	0
High (>40%)	Yes	100	0	DSCN3817.jpg				0	0	0	0	0	0	0
High (>40%)	No	70	30	DSCN3800.jpg				0	0	0	0	0	0	0
Low (<10%)	No	15	85	DSCN3796.jpg				0	0	0	0	0	0	0
High (>40%)	No	70	30	DSCN3773.jpg				0	0	0	0	0	0	0
High (>40%)	No	100	0	DSCN3772.jpg				0	0	0	0	0	0	0
Medium (10-40%)	No	15	85	DSCN3767.jpg				0	0	0	0	0	0	0
High (>40%)	No	100	0	DSCN3764.jpg				0	0	0	0	0	0	0
Low (<10%)	No	2	98	DSCN3761.jpg			Rural disturbance in from riparian zone	0	0	0	0	0	0	0
High (>40%)	No	100	0	DSCN3751.jpg				0	0	0	0	0	0	0
High (>40%)	No	100	0	DSCN3747.jpg				0	0	0	0	0	0	0
None	No	0	100	DSCN3734.jpg				0	0	0	0	0	0	0
High (>40%)	No	60	40	DSCN3709.jpg			8-10 metre riparian fringe with adjacent field	0	0	0	0	0	0	0
Low (<10%)	No	5	95	DSCN3698.jpg				0	0	0	0	0	0	0
Medium (10-40%)	No	20	80	DSCN3687.jpg				0	0	0	0	0	0	0
None	No	0	10	DSCN3680.jpg				0	0	0	0	0	0	0
High (>40%)	Yes	98	2	DSCN3681.jpg				0	0	0	0	0	0	0
Low (<10%)	Yes	20	80	DSCN3679.jpg				0	0	0	0	0	0	0
High (>40%)	Yes	100	0	DSCN3675.jpg				0	0	0	0	0	0	0
Low (<10%)	No	5	85	DSCN3667.jpg				0	0	0	0	0	0	0
High (>40%)	No	100	0	DSCN3662.jpg				0	70	0	0	0	0	0
Low (<10%)	No	5	95	DSCN3653.jpg			Previous selective logging	0	0	0	0	0	0	0
High (>40%)	No	100	0	DSCN3640.jpg				0	0	0	0	0	0	0
Low (<10%)	No	2	98	DSCN3636.jpg				0	0	0	0	0	0	0
Medium (10-40%)	No	40	60	DSCN3623.jpg				0	0	0	0	0	0	0
Low (<10%)	No	2	98	DSCN3605.jpg				0	0	0	0	0	0	0
None	No	0	100	DSCN3593.jpg				0	0	0	0	0	10	0
None	No	0	100	DSCN3588.jpg				0	0	0	0	0	0	0
None	No	0	100	DSCN3576.jpg				0	0	0	0	20	0	0
None	No	0	100	DSCN3553.jpg				0	0	0	0	0	25	0
None	No	0	100	DSCN3539.jpg				0	0	0	0	0	0	0
Medium (10-40%)	No	75	25	DSCN3534.jpg				0	50	0	0	0	0	0
None	No	0	100	DSCN3525.jpg				0	0	0	0	0	15	0
Low (<10%)	No	10	90	DSCN3518.jpg				0	0	0	0	0	0	0
None	No	0	100	DSCN3500.jpg				0	0	0	0	0	0	0
Medium (10-40%)	No	15	85	DSCN3438.jpg				0	0	0	0	0	5	0
High (>40%)	No	60	40	DSCN3424.jpg				0	0	0	0	0	0	0
High (>40%)	No	90	10	DSCN3410.jpg				0	0	0	0	0	0	0
Low (<10%)	No	10	90	DSCN3392.jpg				0	0	0	0	0	0	0
Medium (10-40%)	No	40	60	DSCN3370.jpg				0	0	0	0	0	0	0
High (>40%)	No	65	35	DSCN3357.jpg				0	0	0	0	0	0	0
High (>40%)	No	80	20	DSCN3355.jpg				0	0	0	0	0	0	0
Low (<10%)	Yes	2	98	DSCN3332.jpg				0	0	0	0	0	0	0
Low (<10%)	No	1	99	DSCN3346.jpg				0	0	0	0	0	0	0
Low (<10%)	Yes	7	93	DSCN3325.jpg				0	0	0	0	0	0	0
High (>40%)	Yes	100	0	DSCN3315.jpg				0	0	0	0	0	0	0
Low (<10%)	Yes	2	98	DSCN3306.jpg				0	0	0	0	0	0	0
Medium (10-40%)	No	20	80	DSCN3290.jpg				0	0	0	0	0	0	0

LEV_OF_IMP	LIVEST_ACC	PCTDISTURB	PCTNATURAL	PHOTONUM	TAPE_NUMB	VIDEO_TIME	CMMNT_CLAS	CLIFF_BLUF	ROCKY	GRAVEL	SAND	CONFLUENCE	WETLAND	OTHER
Low (<10%)	No	2	98	DSCN3186.jpg				0	0	0	0	0	0	0
None	No	0	100	DSCN3153.jpg				0	0	0	0	0	0	0
None	No	0	100	DSCN3126.jpg				0	0	0	0	0	0	0
None	No	0	100	DSCN3097.jpg				0	0	0	0	0	0	0
None	No	0	100	DSCN3077.jpg				0	0	0	0	0	0	0
None	No	0	100	DSCN3030.jpg				100	0	0	0	0	0	0
Low (<10%)	No	2	98	DSCN2954.jpg				0	0	0	0	0	0	0
Medium (10-40%)	No	20	80	DSCN2909.jpg				0	0	0	0	0	0	0
High (>40%)	No	100	0	DSCN2889.jpg				0	0	50	50	0	0	0
None	No	0	100	DSCN2861.jpg				0	0	0	0	0	0	0
High (>40%)	No	100	0	DSCN2842.jpg				0	100	0	0	0	0	0
Low (<10%)	No	5	95	DSCN2825.jpg				0	0	0	0	0	0	0
None	No	0	100	DSCN2814.jpg				100	0	0	0	0	0	0
None	No	0	100	DSCN2796.jpg				0	0	0	0	0	0	0
None	No	0	100	DSCN2782.jpg				80	0	0	0	0	0	0
None	No	0	100	DSCN2773.jpg				100	0	0	0	0	0	0
None	No	0	100	DSCN2753.jpg				100	0	0	0	0	0	0
None	No	0	100	DSCN2736.jpg				0	0	0	0	0	0	0
None	No	0	100	DSCN2734.jpg				85	0	0	0	0	0	0
None	No	0	100	DSCN2729.jpg				0	0	0	0	0	10	0
None	No	0	100	DSCN2727.jpg				100	0	0	0	0	0	0
None	No	0	0	DSCN2723.jpg				0	0	0	0	0	0	0
None	No	0	100	DSCN2707.jpg				100	0	0	0	0	0	0
High (>40%)	No	90	10	DSCN2682.jpg				0	0	100	0	0	0	0
None	No	0	100	DSCN2571.jpg				0	0	0	0	0	0	0
High (>40%)	No	80	20	DSCN2544.jpg				0	0	100	0	0	0	0
None	No	0	100	DSCN2507.jpg				0	0	0	0	0	0	0
None	No	0	100	DSCN2470.jpg				0	0	0	0	0	0	0
None	No	0	100	DSCN2427.jpg				0	0	0	0	0	0	0
None	No	0	0	DSCN2361.jpg				0	0	0	0	0	0	0
None	No	0	100	DSCN2329.jpg				0	0	0	0	0	5	0
Low (<10%)	No	5	95	DSCN2321.jpg				0	0	0	0	0	0	0
None	No	0	100	DSCN2321.jpg				0	0	0	0	0	0	0
Low (<10%)	No	10	90	DSCN2320.jpg				0	0	0	0	0	0	0
High (>40%)	No	95	5	DSCN2319.jpg				0	0	0	0	0	0	0
None	No	0	100	DSCN2313.jpg				0	0	0	0	0	0	0
Medium (10-40%)	No	5	95	DSCN2305.jpg				0	0	10	0	0	0	0
None	No	0	100	DSCN2305.jpg				0	0	0	0	0	80	0
Low (<10%)	No	2	98	DSCN2304.jpg			Small gravel road	0	80	0	0	0	0	0
Low (<10%)	No	2	98	DSCN2285.jpg			Small gravel road	0	80	0	0	0	0	0
High (>40%)	No	100	0	DSCN2254.jpg				0	0	100	0	0	0	0
None	No	0	100	DSCN2236.jpg				0	100	0	0	0	0	0
None	No	0	100	DSCN2230.jpg				0	100	0	0	0	0	0
Low (<10%)	No	5	95	DSCN2216.jpg				0	0	0	0	0	0	0
Medium (10-40%)	No	0	100	DSCN2205.jpg				0	0	0	0	0	0	0
Medium (10-40%)	No	15	85	No Photo Available				0	0	0	0	0	0	0
Medium(10-40%)	No	20	80	No Photo Available				0	10	15	0	0	0	0
Medium (10-40%)	No	20	80	No Photo Available				0	20	10	0	0	0	0
Low (<10%)	No	5	95	No Photo Available				0	0	30	0	0	0	0
Low (<10%)	No	10	90	No Photo Available				0	0	0	0	0	0	0
High (>40%)	No	100	0	DSCN2197.jpg				0	0	0	0	0	0	0
High (>40%)	No	100	0	DSCN2199.jpg				0	10	0	80	0	0	10
High (>40%)	No	100	0	DSCN2190.jpg				0	0	0	0	0	0	100
High (>40%)	No	100	0	DSCN2161.jpg				0	90	0	10	0	0	0
Low (<10%)	No	2	98	DSCN2149.jpg				0	0	0	0	0	0	0
None	No	0	100	DSCN2142.jpg				0	0	0	0	0	0	0
None	No	0	100	DSCN2134.jpg				0	0	0	0	0	0	0
None	No	0	100	DSCN2122.jpg				0	0	0	0	0	0	0
None	No	0	100	DSCN2093.jpg				0	0	0	0	0	0	0
None	No	0	100	DSCN2078.jpg				0	0	0	0	0	0	0
None	No	0	100	DSCN2003.jpg				0	0	0	0	0	0	0
None	No	0	100	DSCN1940.jpg				0	0	0	0	0	0	0
None	No	0	100	DSCN1915.jpg				0	0	0	0	0	0	0
None	No	0	100	DSCN1862.jpg			Natural cedar riparian area with steep slope	0	0	0	0	0	0	0
Medium (10-40%)	No	10	90	DSCN1805.jpg				0	0	0	0	0	0	0
Medium (10-40%)	No	100	0	DSCN1803.jpg				0	0	0	0	0	0	100

LEV_OF_IMP	LIVEST_ACC	PCTDISTURB	PCTNATURAL	PHOTONUM	TAPE_NUMB	VIDEO_TIME	CMMNT_CLAS	CLIFF_BLUF	ROCKY	GRAVEL	SAND	CONFLUENCE	WETLAND	OTHER
Low (<10%)	No	5	95	DSCN1792.jpg			Channel moves away from railway	0	0	0	0	0	0	0
High (>40%)	No	100	0	DSCN1782.jpg				0	0	0	0	0	0	100
None	No	1	99	DSCN1674.jpg				75	0	0	0	0	0	0
Medium (10-40%)	No	10	90	DSCN1668.jpg				0	0	0	0	0	5	15
High (>40%)	No	10	90	DSCN1656.jpg				0	0	0	0	0	5	15
Low (<10%)	No	10	90	DSCN4290.jpg				0	0	0	0	0	0	0
High (>40%)	No	70	30	DSCN4261.jpg				0	0	0	0	0	0	0
None	No	0	100	DSCN4172.jpg				0	0	0	0	0	0	0
High (>40%)	No	90	10	DSCN4143.jpg				0	0	0	0	0	0	0
None	No	5	95	DSCN4101.jpg				0	0	0	0	0	0	0
Medium (10-40%)	No	55	45	DSCN4094.jpg				0	0	0	0	0	0	0
Medium (10-40%)	No	40	60	DSCN4042.jpg				0	5	0	0	0	0	0
High (>40%)	Yes	95	5	DSCN3999.jpg				0	0	0	0	0	0	0
High (>40%)	No	100	0	DSCN3961.jpg				0	0	0	0	0	0	100
None	No	0	100	DSCN3959.jpg				0	0	0	0	0	10	0
High (>40%)	No	90	10	DSCN3927.jpg				0	0	0	0	0	0	0
Low (<10%)	No	10	90	DSCN3902.jpg				0	0	0	0	0	0	0
Medium (10-40%)	No	75	25	DSCN3888.jpg				0	0	0	0	0	0	0
Low (<10%)	No	10	90	DSCN3880.jpg				0	0	0	0	0	0	0
High (>40%)	No	50	50	DSCN3867.jpg				0	0	0	0	0	0	0
Low (<10%)	No	0	100	DSCN3850.jpg				0	0	0	0	80	0	0
Low (<10%)	No	20	80	DSCN3840.jpg				0	0	0	0	0	0	0
High (>40%)	No	90	10	DSCN3823.jpg				0	0	0	0	0	0	0
Low (<10%)	No	7	93	DSCN3790.jpg				0	0	0	0	0	0	0
Low (<10%)	No	2	98	DSCN3767.jpg				0	0	0	0	0	0	0
High (>40%)	No	100	0	DSCN3732.jpg				0	0	0	0	0	0	0
None	No	0	100	DSCN3709.jpg				0	0	0	0	0	0	0
Low (<10%)	No	5	95	DSCN3706.jpg				0	0	0	0	0	0	0
None	No	0	100	DSCN3700.jpg				0	0	0	0	0	0	0
High (>40%)	No	80	20	DSCN3693.jpg				0	0	0	0	0	0	0
Low (<10%)	No	10	90	DSCN3682.jpg				0	0	0	0	0	0	0
Low (<10%)	No	5	95	DSCN3669.jpg				0	0	0	0	0	0	0
High (>40%)	No	100	0	DSCN3654.jpg				0	100	0	0	0	0	0
Low (<10%)	No	5	95	DSCN3644.jpg				0	0	0	0	0	0	0
High (>40%)	No	60	40	DSCN3617.jpg				0	0	0	0	0	0	30
Low (<10%)	No	10	90	DSCN3592.jpg				0	0	0	0	0	0	0
High (>40%)	No	100	0	DSCN3582.jpg				0	100	0	0	0	0	0
None	No	2	98	DSCN3495.jpg				0	0	30	0	0	5	0
None	No	0	100	DSCN3481.jpg				0	0	0	0	0	20	0
Low (<10%)	No	5	95	DSCN3440.jpg				0	0	0	0	0	0	0
Low (<10%)	No	25	75	DSCN3376.jpg				0	0	0	0	5	0	0
High (>40%)	No	55	45	DSCN3350.jpg				0	0	0	0	0	0	0
None	No	0	100	DSCN3341.jpg				0	0	0	0	0	10	0
Medium (10-40%)	No	40	60	DSCN3322.jpg				0	0	0	0	0	30	0
Low (<10%)	No	5	95	DSCN3312.jpg				0	0	0	0	0	40	0
High (>40%)	No	100	0	DSCN3294.jpg				0	90	0	0	0	0	0
Low (<10%)	No	5	95	DSCN3272.jpg				0	0	0	0	0	30	0
Medium (10-40%)	No	30	70	DSCN3249.jpg				0	0	0	0	0	0	0
Low (<10%)	No	5	95	DSCN3205.jpg				0	0	0	0	0	0	0
Medium (10-40%)	No	40	60	DSCN3165.jpg				0	0	0	0	0	10	0
Low (<10%)	No	0	98	DSCN3160.jpg				0	0	0	0	0	0	0
High (>40%)	No	100	0	DSCN3145.jpg				0	0	0	0	0	20	0
None	No	2	98	DSCN3140.jpg				0	0	0	0	0	15	0
High (>40%)	No	100	0	DSCN3115.jpg				0	40	0	0	0	0	0
Low (<10%)	No	2	98	DSCN3091.jpg				0	0	0	0	0	10	0
High (>40%)	No	100	0	DSCN3070.jpg				0	40	0	0	0	0	0
Low (<10%)	No	10	90	DSCN3054.jpg				0	0	0	0	0	10	0
High (>40%)	No	80	20	DSCN3046.jpg				0	0	0	0	0	0	0
Low (<10%)	No	15	85	DSCN3042.jpg				0	0	20	0	10	0	0
Low (<10%)	No	15	85	DSCN3036.jpg			Previous clearing on right bank of Perry R. and further upstream of Perry on left bank	0	0	10	0	80	0	0
None	No	0	100	DSCN3017.jpg				0	0	0	0	0	0	0
Low (<10%)	No	10	90	DSCN2930.jpg				0	0	0	0	0	5	0
Medium (10-40%)	No	25	75	DSCN2806.jpg				0	0	0	0	0	0	0
None	No	0	100	DSCN2800.jpg				0	0	0	0	0	0	0
None	No	0	100	DSCN2784.jpg			Crazy Creek confluence	0	0	0	0	40	0	0
None	No	0	100	DSCN2772.jpg				0	0	0	0	0	35	0

LEV_OF_IMP	LIVEST_ACC	PCTDISTURB	PCTNATURAL	PHOTONUM	TAPE_NUMB	VIDEO_TIME	CMMNT_CLAS	CLIFF_BLUF	ROCKY	GRAVEL	SAND	CONFLUENCE	WETLAND	OTHER
Low (<10%)	No	30	70	DSCN2730.jpg				0	0	0	0	0	30	40
None	No	2	98	DSCN2727.jpg			Hwy 1 disturbance at downstream segment break	0	0	0	0	0	0	0
Low (<10%)	No	5	95	DSCN2726.jpg			Hwy 1 encroachment into riparian	0	0	0	0	0	0	40
High (>40%)	No	100	0	DSCN2726.jpg				0	0	0	0	0	0	75
Low (<10%)	No	10	90	DSCN2723.jpg				0	0	0	0	0	0	80
Medium (10-40%)	No	15	85	DSCN2710.jpg			Natural with occasional road encroachment	0	0	0	0	0	0	80
High (>40%)	No	100	0	DSCN2692.jpg				0	0	0	0	0	0	100
High (>40%)	No	60	40	DSCN2684.jpg				0	0	0	0	0	30	35
None	No	0	100	DSCN2593.jpg				0	0	0	0	0	30	0
Medium (10-40%)	No	30	70	DSCN2570.jpg				0	0	0	0	0	20	30
High (>40%)	No	40	60	DSCN2530.jpg				0	0	0	0	0	30	40
None	No	0	100	DSCN2504.jpg				0	0	0	0	0	0	0
None	No	0	100	DSCN2480.jpg				0	0	0	0	0	0	0
Low (<10%)	No	5	95	DSCN2440.jpg				0	0	0	0	0	0	10
None	No	0	100	DSCN2425.jpg				0	0	0	0	0	0	0
None	No	0	100	DSCN2413.jpg				0	0	0	0	0	20	0
None	No	2	98	DSCN2374.jpg			Old bridge abutments at upstream end of cascade	0	0	0	0	0	0	0
High (>40%)	No	50	50	DSCN2333.jpg				0	0	40	0	20	0	0
Low (<10%)	No	5	95	DSCN2326.jpg				0	0	0	0	0	0	0
High (>40%)	No	100	0	DSCN2318.jpg				0	0	0	0	0	0	95
Low (<10%)	No	10	90	DSCN2317.jpg				0	0	0	0	0	0	30
High (>40%)	No	100	0	DSCN2318.jpg				0	0	0	0	0	0	95
None	No	2	98	DSCN2314.jpg				0	0	0	0	0	10	0
Low (<10%)	No	0	100	DSCN2315.jpg			Hwy setback from shoreline and riparian area	0	0	0	0	0	0	25
None	No	0	100	DSCN2313.jpg				0	0	0	0	0	25	25
None	No	0	100	DSCN2300.jpg				0	100	0	0	0	0	0
None	No	0	100	DSCN2271.jpg			Historic channelization with railway	0	100	0	0	0	0	0
None	No	2	98	DSCN2261.jpg				0	0	0	0	0	10	0
None	No	0	100	DSCN2259.jpg			Cedar forest	0	100	0	0	0	0	0
High (>40%)	No	80	20	DSCN2231.jpg				0	0	100	0	0	0	0
None	No	0	100	DSCN2223.jpg				0	100	0	0	0	0	0
High (>40%)	No	70	30	DSCN2209.jpg				0	80	0	0	0	0	0
Low (<10%)	No	20	80	DSCN2198.jpg				0	0	0	0	0	0	0
High (>40%)	No	100	0	DSCN2188.jpg				0	0	0	0	0	100	0
Low (<10%)	No	5	95	DSCN2173.jpg				0	0	0	0	0	0	0
High (>40%)	No	100	0	DSCN2139.jpg				0	0	100	0	0	0	0
None	No	0	100	DSCN2120.jpg				0	0	0	0	0	0	0
Medium (10-40%)	No	50	50	DSCN2106.jpg			Highway and rail	0	0	0	0	0	0	90
Low (<10%)	No	0	100	DSCN2093.jpg				0	0	0	0	0	0	0
None	No	0	100	DSCN2044.jpg				0	0	0	0	0	0	0
Low (<10%)	No	2	98	DSCN2003.jpg				0	0	0	0	0	0	0
None	No	0	100	DSCN1894.jpg				0	0	0	0	0	0	0
Low (<10%)	No	5	95	DSCN1879.jpg			Intermittent railway encroachment	0	0	0	0	0	0	0
None	No	0	100	DSCN1853.jpg				0	0	0	0	0	0	0
High (>40%)	No	90	10	DSCN1833.jpg				0	95	0	0	0	0	5
None	No	0	100	DSCN1814.jpg				0	0	0	0	0	15	0
None	No	0	100	DSCN1805.jpg				0	0	0	0	0	15	0
High (>40%)	No	100	0	DSCN1800.jpg			Hwy 1 along right extents of chanel and low flood bench	0	100	0	0	0	0	0
Medium (10-40%)	No	60	40	DSCN1792.jpg			Hwy 1 along right extents of chanel and low flood bench	0	100	0	0	0	0	0
High (>40%)	No	100	0	DSCN1790.jpg			Hwy 1 along right extents of chanel and low flood bench	0	100	0	0	0	0	0
Low (<10%)	No	5	95	DSCN1714.jpg				0	0	0	0	0	0	10
Medium (10-40%)	No	70	30	DSCN1680.jpg			Railway encroachment with naturalization	0	0	0	0	0	0	0
High (>40%)	No	85	15	DSCN1656.jpg			Railway encroachment with naturalization	0	0	0	0	0	0	85

FLOOD_LOW	FLOOD_MID	FLOOD_HIGH	STYPE_COMM	AGRICULTUR	COMMERCIAL	CONSERVATI	FORESTRY	INDUSTRIAL	INSTITUTIO	MULTI_FAMI	NATURAL_AR	PARK	RECREATION	RURAL
20	80	0		0	0	0	0	0	0	0	100	0	0	0
0	100	0		0	0	0	0	0	0	0	0	0	0	0
0	10	0		0	100	0	0	0	0	0	0	0	0	0
0	30	70		0	0	0	0	0	0	0	80	0	0	20
0	30	70		0	25	0	0	0	0	0	0	0	0	25
0	25	75		0	0	0	0	0	0	0	95	0	0	5
0	20	80		95	0	0	0	0	0	0	5	0	0	0
0	10	90		0	0	0	0	0	0	0	0	0	100	0
15	35	50		10	0	0	0	0	0	0	30	0	0	20
0	15	95		10	0	0	0	0	0	0	80	0	0	10
0	0	100		90	0	0	0	0	0	0	0	0	0	10
0	0	30		0	0	0	0	0	100	0	0	0	0	0
10	50	40		0	0	0	0	0	0	0	100	0	0	0
0	0	10		0	0	0	0	0	100	0	0	0	0	0
0	35	65		0	0	0	0	0	0	0	40	0	0	60
0	30	70		95	0	0	0	0	0	0	0	0	0	5
5	15	80		0	0	0	0	0	0	0	95	0	0	5
10	65	25		60	0	0	0	0	0	0	0	0	0	40
10	90	0		40	0	0	0	0	0	0	60	0	0	0
0	40	60		80	0	0	0	0	0	0	0	0	0	20
0	20	80		70	0	0	0	0	0	0	30	0	0	0
5	35	60		10	0	0	0	0	0	0	60	0	0	30
0	40	60		30	0	0	0	0	0	0	25	0	0	45
0	70	30		0	0	0	0	100	0	0	0	0	0	0
0	70	30		10	0	0	0	0	0	0	70	0	0	20
0	30	70		100	0	0	0	0	0	0	0	0	0	0
0	50	50		0	0	0	0	0	0	0	95	0	0	5
0	30	70		40	0	0	0	0	0	0	0	0	0	60
0	25	75		0	0	0	0	0	100	0	0	0	0	0
0	0	100		0	0	0	0	0	0	0	100	0	0	0
0	50	50		85	0	0	0	0	0	0	15	0	0	0
10	30	60		0	0	0	0	0	0	0	95	0	0	5
35	50	15		0	0	0	0	0	0	0	60	0	0	40
0	90	10		0	0	0	0	0	0	0	100	0	0	0
15	85	0		100	0	0	0	0	0	0	0	0	0	0
0	100	0		30	0	0	0	0	0	0	70	0	0	0
0	100	0		100	0	0	0	0	0	0	0	0	0	0
0	75	25		0	0	0	0	0	20	0	80	0	0	0
0	0	30		0	0	0	0	0	100	0	0	0	0	0
0	30	70		0	0	0	0	0	0	0	90	0	0	10
0	0	100		40	0	0	0	0	0	0	0	0	0	60
0	40	60		0	0	0	0	0	0	0	95	0	0	5
0	60	40		0	0	0	0	0	0	0	50	0	0	50
0	0	100		0	0	0	0	0	0	0	100	0	0	0
20	70	0		0	0	0	0	0	0	0	90	10	0	0
0	60	40		0	0	0	0	0	0	0	100	0	0	0
0	60	20		0	0	0	0	0	0	0	100	0	0	0
25	40	10		0	0	0	0	0	0	0	100	0	0	0
0	75	25		0	0	0	0	0	0	0	100	0	0	0
0	25	25		0	0	0	0	0	40	0	60	0	0	0
25	60	0		0	0	0	0	0	0	0	100	0	0	0
40	60	0		0	0	0	0	0	20	0	80	0	0	0
20	35	45		0	0	0	0	0	0	0	100	0	0	0
10	35	50		10	0	0	0	0	10	0	70	0	0	10
0	40	60		40	0	0	0	0	0	0	20	0	0	40
30	60	10		0	0	0	0	0	0	0	0	0	0	100
0	20	80		0	0	0	0	0	0	0	85	0	0	15
0	0	100		0	0	0	0	0	0	0	20	0	0	80
0	0	100		0	0	0	0	3	7	0	35	0	0	55
0	0	100		0	0	0	0	0	0	0	0	0	0	100
0	0	100		2	0	0	0	0	0	0	98	0	0	0
0	25	75		0	0	0	0	0	0	0	100	0	0	0
0	15	85		10	0	0	0	0	0	0	90	0	0	0
0	0	100		100	0	0	0	0	0	0	0	0	0	0
0	0	100		0	0	0	0	0	0	0	100	0	0	0
0	0	100		0	0	0	0	0	0	0	100	0	0	0
0	0	100		0	0	0	0	12	8	0	20	0	0	0

FLOOD_LOW	FLOOD_MID	FLOOD_HIGH	STYPE_COMM	AGRICULTUR	COMMERCIAL	CONSERVATI	FORESTRY	INDUSTRIAL	INSTITUTIO	MULTI_FAMI	NATURAL_AR	PARK	RECREATION	RURAL
0	0	100		0	0	0	0	0	0	0	100	0	0	0
5	10	85		0	0	0	0	0	0	0	100	0	0	0
0	5	95		0	0	0	0	0	0	0	100	0	0	0
0	0	100		0	0	0	0	0	0	0	100	0	0	0
0	10	90		0	0	0	0	0	0	0	100	0	0	0
0	0	0		0	0	0	0	0	0	0	100	0	0	0
0	15	85		0	0	0	0	1	0	0	99	0	0	0
0	40	60		0	0	0	0	20	0	0	80	0	0	0
0	0	0		0	0	0	0	100	0	0	0	0	0	0
20	70	10		0	0	0	0	0	0	0	100	0	0	0
0	0	0		0	0	0	0	100	0	0	0	0	0	0
0	85	15		0	0	0	0	5	0	0	95	0	0	0
0	0	0		0	0	0	0	0	0	0	100	0	0	0
0	70	30		0	0	0	0	0	0	0	100	0	0	0
0	0	20		0	0	0	0	0	0	0	100	0	0	0
0	0	0		0	0	0	0	0	0	0	100	0	0	0
0	0	0		0	0	0	0	0	0	0	100	0	0	0
80	20	0		0	0	0	0	0	0	0	100	0	0	0
5	10	0		0	0	0	0	0	0	0	100	0	0	0
60	30	0		0	0	0	0	0	0	0	100	0	0	0
0	0	0		0	0	0	0	0	0	0	100	0	0	0
15	85	0		0	0	0	0	0	0	0	100	0	0	0
0	0	0		0	0	0	0	0	0	0	100	0	0	0
0	0	0		0	0	0	0	0	90	0	10	0	0	0
100	0	0		0	0	0	0	0	0	0	100	0	0	0
0	0	0		0	0	0	0	0	80	0	20	0	0	0
0	0	0		0	0	0	0	0	0	0	100	0	0	0
0	0	0		0	0	0	0	0	0	0	100	0	0	0
20	60	20		0	0	0	0	0	0	0	100	0	0	0
0	0	100		0	0	0	0	0	0	0	100	0	0	0
30	60	5		0	0	0	0	0	0	0	100	0	0	0
0	10	90		0	0	0	0	5	0	0	95	0	0	0
0	0	100		0	0	0	0	0	0	0	100	0	0	0
0	0	100		0	0	0	0	5	0	0	95	0	0	0
0	0	100		0	0	0	0	0	0	0	0	0	0	100
0	40	60		0	0	0	0	0	0	0	100	0	0	0
0	0	90		0	0	0	0	0	5	0	95	0	0	0
20	0	0	At the inlet to Griffin Lake	0	0	0	0	0	0	0	100	0	0	0
0	0	20		0	0	0	0	0	0	0	100	0	0	0
0	0	20		0	0	0	0	0	0	0	100	0	0	0
0	0	0		0	0	0	0	0	0	0	100	0	0	0
0	0	0		0	0	0	0	0	0	0	100	0	0	0
0	0	0		0	0	0	0	0	0	0	100	0	0	0
0	0	0		0	0	0	0	0	0	0	100	0	0	0
5	15	80		0	0	0	0	0	5	0	95	0	0	0
0	10	90		0	0	0	0	0	0	0	100	0	0	0
0	10	90		0	0	0	0	0	5	0	80	0	0	15
0	0	75		0	0	0	0	0	0	0	80	0	0	20
0	0	70		0	0	0	0	0	0	0	80	0	0	20
0	10	60		0	0	0	0	0	0	0	100	0	0	0
20	60	20		0	0	0	0	0	10	0	30	0	0	60
0	0	0		0	0	0	0	0	0	0	0	0	0	0
0	0	0		0	0	0	0	0	0	0	0	0	0	0
0	0	0	Retaining wall	0	100	0	0	0	0	0	0	0	0	0
0	0	0	Rip rap revetment along bank	0	100	0	0	0	0	0	0	0	0	0
20	80	0		0	0	0	0	0	0	0	100	0	0	0
5	95	0		0	0	0	0	0	0	0	100	0	0	0
0	100	0		0	0	0	0	0	0	0	100	0	0	0
10	90	0		0	0	0	0	0	0	0	100	0	0	0
0	5	95		0	0	0	0	0	0	0	100	0	0	0
15	80	5		0	0	0	0	0	0	0	100	0	0	0
0	0	100		0	0	0	0	0	0	0	100	0	0	0
0	15	85		0	0	0	0	0	0	0	100	0	0	0
0	5	95		0	0	0	0	0	0	0	100	0	0	0
0	0	100		0	0	0	0	0	0	0	100	0	0	0
30	70	0		0	0	0	0	0	0	0	100	0	0	0
0	0	0	Railway bank	0	0	0	0	100	0	0	0	0	0	0

FLOOD_LOW	FLOOD_MID	FLOOD_HIGH	STYPE_COMM	AGRICULTUR	COMMERCIAL	CONSERVATI	FORESTRY	INDUSTRIAL	INSTITUTIO	MULTI_FAMI	NATURAL_AR	PARK	RECREATION	RURAL
0	100	0		0	0	0	0	0	0	0	100	0	0	0
0	0	0	Railway bank	0	0	0	0	100	0	0	0	0	0	0
0	0	25	Climbs quickly to cedar forest	0	0	0	0	0	0	0	100	0	0	0
40	20	20		0	0	0	0	0	0	0	100	0	0	0
40	20	20		0	0	0	0	0	0	0	100	0	0	0
20	80	0		0	0	0	0	0	0	0	100	0	0	0
0	30	70		20	0	0	0	0	0	0	10	0	0	70
0	40	60		0	0	0	0	0	0	0	100	0	0	0
0	10	90		80	0	0	0	0	0	0	0	0	0	20
0	15	85		0	0	0	0	0	0	0	100	0	0	0
0	10	90		30	0	0	0	10	0	0	30	0	0	30
0	0	95		0	0	0	0	0	30	0	30	0	0	40
0	75	25		95	0	0	0	0	5	0	0	0	0	0
0	0	0		0	0	0	0	0	100	0	0	0	0	0
0	70	20		0	0	0	0	0	0	0	100	0	0	0
0	70	30		70	0	0	0	0	0	0	5	0	0	25
0	20	80		0	0	0	0	0	20	0	80	0	0	0
0	0	100		35	0	0	0	0	0	0	15	0	0	50
0	0	100		0	0	0	0	0	0	0	60	0	0	40
0	80	20		25	0	0	0	0	0	0	50	0	0	30
0	20	0		0	0	0	0	0	0	0	100	0	0	0
0	0	100		0	0	0	0	0	0	0	80	0	0	20
0	40	60		60	0	0	0	0	0	0	5	0	0	25
0	10	90		10	0	0	0	0	0	0	80	0	0	10
0	15	85		0	0	0	0	0	0	0	100	0	0	0
0	60	40		100	0	0	0	0	0	0	0	0	0	0
10	30	60		0	0	0	0	0	0	0	100	0	0	0
60	40	0		5	0	0	0	0	0	0	95	0	0	0
0	0	100		0	0	0	0	0	0	0	100	0	0	0
0	0	100		50	0	0	0	0	0	0	20	0	0	30
0	0	100		0	0	0	0	0	0	0	95	0	0	5
5	60	35		0	0	0	0	0	5	0	95	0	0	0
0	0	0		0	0	0	0	0	100	0	0	0	0	0
5	35	60		0	0	0	10	0	0	0	80	0	10	0
0	10	60		0	0	0	0	0	40	0	25	0	0	35
0	0	100		0	0	0	0	10	0	0	55	0	0	35
0	0	0		0	0	0	0	100	0	0	0	0	0	0
5	20	40		0	0	0	10	0	0	0	90	0	0	0
10	30	40		0	0	0	0	0	0	0	100	0	0	0
15	35	50		5	0	0	0	0	0	0	90	0	0	5
0	20	75		5	0	0	0	5	0	0	80	0	0	10
0	25	75		25	0	0	0	0	0	0	40	0	0	35
40	30	20		0	0	0	0	0	0	0	100	0	0	0
60	10	0		20	0	0	0	0	0	0	60	0	0	20
60	0	0		0	0	0	0	0	0	0	100	0	0	0
10	0	0		0	0	0	0	0	90	0	10	0	0	0
60	10	0		0	0	0	0	0	5	0	95	0	0	0
0	20	80		0	0	0	0	0	0	0	20	0	0	80
25	10	65		0	0	0	0	0	0	0	95	0	0	5
50	10	30		0	0	0	0	0	0	0	30	0	0	70
30	0	70		0	0	0	0	0	0	0	90	0	0	10
80	0	0		0	0	0	0	0	100	0	0	0	0	0
35	10	40		0	0	0	0	0	2	0	98	0	0	0
0	600	0		0	0	0	0	0	100	0	0	0	0	0
30	20	40		0	0	0	0	0	2	0	98	0	0	0
0	0	0		0	0	0	0	0	100	0	0	0	0	0
10	10	70		0	0	0	0	0	5	0	85	0	0	10
0	0	100		0	0	0	0	0	50	0	25	0	0	25
0	0	70		0	0	0	0	0	0	0	80	0	0	20
0	10	0		0	0	0	0	0	0	0	80	0	0	20
30	30	40		0	0	0	0	0	0	0	100	0	0	0
20	50	25		0	0	0	0	0	0	0	85	0	0	15
40	50	10		0	0	0	0	0	25	0	75	0	0	0
20	80	0		0	0	0	0	0	0	0	100	0	0	0
30	30	0		0	0	0	0	0	0	0	100	0	0	0
45	20	0		0	0	0	0	0	0	0	100	0	0	0

FLOOD_LOW	FLOOD_MID	FLOOD_HIGH	STYPE_COMM	AGRICULTUR	COMMERCIAL	CONSERVATI	FORESTRY	INDUSTRIAL	INSTITUTIO	MULTI_FAMI	NATURAL_AR	PARK	RECREATION	RURAL
30	0	0	Mixed wood road fill slope to low flood and wetland communities along river	0	0	0	0	0	0	0	100	0	0	0
60	0	40	Low flood shrub association follows channel and slopes up to mix forest beyond	0	0	0	0	0	0	0	100	0	0	0
25	0	35	Coniferous forest above narrow shrub riparian fringe	0	0	0	0	0	0	0	100	0	0	0
25	0	0		0	0	0	0	0	100	0	0	0	0	0
0	0	20		0	0	0	0	0	0	0	100	0	0	0
0	0	20		0	0	0	0	0	40	0	60	0	0	0
0	0	0	Road and rail fill slope	0	0	0	0	0	100	0	0	0	0	0
35	0	0	Rail bed encroachment and confinement	0	0	0	0	0	100	0	0	0	0	0
70	0	0		0	0	0	0	0	0	0	100	0	0	0
40	10	0		0	0	0	0	0	70	0	30	0	0	0
30	0	0	Hwy 1 encroaches on riverine wetland and low flood ecosystems and mainstem channel	0	0	0	0	0	100	0	0	0	0	0
25	30	45		0	0	0	0	0	0	0	100	0	0	0
0	25	75		0	0	0	0	0	0	0	100	0	0	0
50	40	0		0	0	0	0	0	5	0	95	0	0	0
5	95	0		0	0	0	0	0	0	0	100	0	0	0
50	30	0		0	0	0	0	0	0	0	100	0	0	0
0	35	65		0	0	0	0	0	0	0	100	0	0	0
0	20	20		0	0	0	0	0	0	0	40	0	60	0
40	60	0		0	0	0	0	0	0	0	100	0	0	0
0	0	5	Hwy fill slope	0	0	0	0	0	100	0	0	0	0	0
20	20	30		0	0	0	0	0	50	0	50	0	0	0
0	0	5	Hwy fill slope	0	0	0	0	0	100	0	0	0	0	0
40	50	0		0	0	0	0	0	0	0	90	0	0	10
25	25	25		0	0	0	0	0	50	0	50	0	0	0
25	0	25		0	0	0	0	0	0	0	100	0	0	0
0	0	0		0	0	0	0	0	0	0	100	0	0	0
0	0	0		0	0	0	0	0	0	0	100	0	0	0
50	40	0		0	0	0	0	0	0	0	100	0	0	0
0	0	0		0	0	0	0	0	0	0	100	0	0	0
0	0	0		0	0	0	0	0	80	0	20	0	0	0
0	0	0		0	0	0	0	0	0	0	100	0	0	0
0	5	15		0	0	0	0	0	95	0	5	0	0	0
100	0	0		0	20	0	0	0	0	0	80	0	0	0
0	0	0	Lawn	0	100	0	0	0	0	0	0	0	0	0
70	30	0		0	0	0	0	0	0	0	100	0	0	0
0	0	0		0	0	0	0	0	100	0	0	0	0	0
80	20	0		0	0	0	0	0	0	0	100	0	0	0
0	10	0	Fill slope	0	0	0	0	0	60	0	40	0	0	0
10	90	0		0	0	0	0	0	0	0	100	0	0	0
90	10	0		0	0	0	0	0	0	0	100	0	0	0
25	50	25		0	0	0	0	0	0	0	100	0	0	0
25	50	25		0	0	0	0	0	0	0	100	0	0	0
20	30	50		0	0	0	0	0	0	0	100	0	0	0
20	30	50		0	0	0	0	0	0	0	100	0	0	0
0	0	0		0	0	0	0	0	85	0	15	0	0	0
30	55	0		0	0	0	0	0	0	0	100	0	0	0
55	30	0	Trib fan	0	0	0	0	0	0	0	100	0	0	0
0	0	0	Highway fill slope forms bank material which is rock following channel	0	0	0	0	0	100	0	0	0	0	0
0	0	0	Highway fill slope forms bank material which is rock following channel	0	0	0	0	0	60	0	40	0	0	0
0	0	0	Highway fill slope forms bank material which is rock following channel	0	0	0	0	0	100	0	0	0	0	0
0	0	90		0	0	0	0	0	0	0	100	0	0	0
30	70	0		0	0	0	0	0	70	0	30	0	0	0
15	0	0		0	0	0	0	0	85	0	15	0	0	0

[illegible]

[illegible]

[illegible]

SINGLE_FAM	URBAN_PARK	LANDU_COMM	RETAIN_WAL	PERRETAIN	RETAIN_MAT	DOCKS	DOCKS_KM	BOAT_HOUSE	GROYNES	GROYNES_KM	BOAT_LAUNC	PERRAIL_MO	PERROAD_MO	MARIN_RAIL	MARINAS	SUB_MODIFI
0	0		0	0		0	0	0	0	0	0	0	25	0	0	
0	0		0	0		0	0	0	0	0	0	0	0	0	0	
0	0		0	0		0	0	0	0	0	0	0	5	0	0	
0	0		0	0		0	0	0	0	0	0	0	0	0	0	
0	0		0	0		0	0	0	0	0	0	0	10	0	0	
0	0		0	0		0	0	0	0	0	0	0	10	0	0	
0	0	Railway along majority of bank until river crosses Hwy 1	0	0		0	0	0	0	0	0	70	30	0	0	
0	0		0	0		0	0	0	0	0	0	60	0	0	0	
0	0		0	0		0	0	0	0	0	0	0	0	0	0	
0	0		0	0		0	0	0	0	0	0	30	0	0	0	
0	0		0	0		0	0	0	0	0	0	0	40	0	0	
0	0		0	0		0	0	0	0	0	0	0	0	0	0	
0	0		0	0		0	0	0	0	0	0	0	0	0	0	
0	0		0	0		0	0	0	0	0	0	5	0	0	0	
0	0		0	0		0	0	0	0	0	0	0	0	0	0	
0	0		0	0		0	0	0	0	0	0	0	0	0	0	
0	0		0	0		0	0	0	0	0	0	0	0	0	0	
0	0		0	0		0	0	0	0	0	0	0	0	0	0	
0	0		0	0		0	0	0	0	0	0	0	100	0	0	
0	0		0	0		0	0	0	0	0	0	0	10	0	0	
0	0		0	0		0	0	0	0	0	0	0	100	0	0	
0	0		0	0		0	0	0	0	0	0	0	0	0	0	
0	0		0	0		0	0	0	0	0	0	0	0	0	0	
0	0		0	0		0	0	0	0	0	0	0	0	0	0	
0	0		0	0		0	0	0	0	0	0	0	0	0	0	
0	0		0	0		0	0	0	0	0	0	0	0	0	0	
0	0		0	0		0	0	0	0	0	0	0	0	0	0	
0	0		0	0		0	0	0	0	0	0	80	0	0	0	
0	0		0	0		0	0	0	0	0	0	0	0	0	0	
0	0		0	0		0	0	0	0	0	0	90	0	0	0	
0	0		0	0		0	0	0	0	0	0	0	0	0	0	
0	0	Three valley hotel	0	5	Stonework	0	0	0	0	0	0	0	0	0	0	
0	0		0	0		0	0	0	0	0	0	0	0	0	0	
0	0		0	0		0	0	0	0	0	0	100	0	0	0	
0	0		0	0		0	0	0	0	0	0	0	0	0	0	
0	0	Transportation	1	30	Stonework	0	0	0	0	0	0	40	20	0	0	
0	0		0	0		0	0	0	0	0	0	0	0	0	0	
0	0		0	0		0	0	0	0	0	0	0	0	0	0	
0	0		0	0		0	0	0	0	0	0	2	0	0	0	
0	0		0	0		0	0	0	0	0	0	0	0	0	0	
0	0		0	0		0	0	0	0	0	0	5	0	0	0	
0	0		0	0		0	0	0	0	0	0	0	0	0	0	
0	0		0	0		0	0	0	0	0	0	0	80	5	0	
0	0		0	0		0	0	0	0	0	0	0	0	0	0	
0	0	Highway	0	0		0	0	0	0	0	0	0	100	0	0	Yes
0	0	Highway	0	0		0	0	0	0	0	0	0	60	0	0	Yes
0	0	Highway	0	0		0	0	0	0	0	0	0	100	0	0	Yes
0	0		0	0		0	0	0	0	0	0	0	0	0	0	
0	0	Railway	0	0		0	0	0	0	0	0	70	5	0	0	
0	0	Railway	0	0		0	0	0	0	0	0	85	0	0	0	

PERSUB_MOD	COMMNT_MOD	L_BKSTBILI	PCTERODING	L_BANK_MAT	L_COMMENT	VETERANS	SNAGS
0		Eroding	60	Fines			
0		Medium	0	Stonework			
0		High	0	Stonework			
0		Low	0	Fines			
0		Medium	0	Fines			
0		Medium	0	Fines			
0		Medium	0	Fines			
0		High	0	Fines			
0		Medium	0	Fines			
0		Low	0	Fines			
0		Eroding	0	Fines			
0		High	0	Stonework			
0		Medium	0	Fines			
0		High	0	Stonework			
0		High	0	Fines			
0		Medium	0	Fines			
0		Medium	0	Fines			
0		Low	0	Fines			
0		Medium	0	Fines			
0		Eroding	0	Fines	Regular sections of high to extreme erosion along segment		
0		Medium	0	Fines			
0		Medium	0	Fines			
0		Medium	0	Fines			
0		High	0	Stonework			
0		High	0	Fines			
0		Eroding	0	Fines			
0		Medium	0	Fines			
0		Eroding	0	Fines			
0		High	0	Stonework			
0		Medium	0	Fines			
0		Low	0	Fines			
0		Eroding	0	Fines			
0		High	0	Fines			
0		High	0	Fines			
0		High	0	Fines			
0		Eroding	0	Fines	Extreme erosion at upstream end of segment		
0		Eroding	80	Fines			
0		High	0	Fines			
0		High	0	Stonework			
0		Low	0	Fines			
0		Eroding	0	Fines			
0		Medium	0	Fines			
0		High	0	Fines			
0		Medium	0	Gravel			
0		High	0	Fines			
0		Medium	0	Fines			
0		High	0	Gravel			
0		Medium	0	Fines			
0		Low	0	Fines			
0		High	0	RipRap			
0		Medium	0	Fines	High erosion at upstream end continued from Segment 52		
0		Eroding	0	Fines			
0		High	0	Fines			
0		High	0	Fines			
0		High	0	Fines			
0		Medium	0	Fines			
0		Eroding	0	Till			
0		High	0	Till			
0	Road and rail bridges across river	High	0	Till			
0	Foot bridge across river	Low	0	Fines	Some stonework at base of foot bridge		
0		Medium	0	Fines			
0		Very Low	0	Fines			
0		Medium	0	Fines			
0		Very Low	100	Fines			
0		Low	0	Fines			
0		Low	0	Fines	Historic enhancement (root wads, woody debris revetment)		

PERSUB_MOD	COMMTT_MOD	L BKSTBILI	PCTERODING	L BANK_MAT	L COMMENT	VETERANS	SNAGS
0		Medium	0	Fines	Some areas with Till		
0		Medium	0	Fines			
0		Medium	0	Fines			
0		High	0	Till			
0		Medium	0	Fines	Some areas fines, some till		
0		Medium	0	Till			
0	Fish fence on main & side channel, gabions, armouring at bridge abutment, log struct. along bank	Medium	0	Fines			
0		Medium	0	Fines			
0		Medium	25	Stonework			
0		Medium	10	Gravel			
0		High	0	Stonework			
0		High	0	Gravel			
0		High	0	Gravel			
0		High	0	Till			
0		High	0	Till		No	No
0		High	0	Till		No	No
0		High	0	Cobble		No	No
0		High	0	Fines			
0		High	0	Cobble		No	No
0		High	0	Fines			
0		High	0	Cobble		No	No
0		High	0	Cobble		No	No
0		High	0	Cobble		No	No
0		High	0	Gravel		No	No
0		High	0	Fines		No	No
0		High	0	Gravel		No	No
0	Rail crossing at upstream end of segment	Medium	5	Fines		No	No
0	Rail crossing at upstream end of segment	Medium	5	Fines		No	No
0		Medium	2	Till		No	No
0		Medium	0	Till			
0		High	0	Fines			
0		High	0	Fines			
0		High	0	Fines			
0		High	0	Fines			
0		High	0	Stonework			
0		High	0	Fines			
0		High	0	Fines			
0		High	0	Gravel			
0		High	0	Fines		No	No
0		High	0	Cobble		No	No
0		High	0	Cobble		No	No
0		High	0	Gravel		No	No
0		High	0	Boulder	Both left and right banks naturally rocky	No	No
0		High	0	Boulder	Both left and right banks naturally rocky	No	No
5	Rip rap armouring of bridge abutment	High	0	Fines			
0		High	0	Fines			
0		High	0	Fines			
0		High	0	Gravel			
30	Rip rap revetment	High	0	Gravl			
0		High	0	Gravel			
0		High	0	Gravel			
0		High	0	Stonework			
0		High	0	Fines			
0		High	0	Concrete			
0		High	0	Stonework			
0		High	0	Fines			
0		High	0	Fines			
0		High	0	Fines			
10		High	0	Fines			
0		High	0	Fines			
0		Medium	5	Fines		No	No
0		High	0	Fines			
0		High	0	Fines			
0		High	0	Fines			
0		Medium	10	Till	40 m long cut bank failure causing large debris jam	No	No
0		High	0	Till		No	No
0		Medium	5	Gravel	Some bank instability	No	No

PERSUB_MOD	COMMNT_MOD	L_BKSTBILI	PCTERODING	L_BANK_MAT	L_COMMENT	VETERANS	SNAGS
0		High	0	Gravel		No	No
0		Medium	5	Gravel	Some bank instability	No	No
0		High	0	Bed_Rock		No	No
10		High	0	Gravel		No	No
10		High	0	Gravel		No	No
0		Medium	0	Fines			
0		Medium	0	Fines			
0		High	0	Fines			
0		Medium	0	Fines			
0		High	0	Fines			
0		Medium	0	Fines			
0		High	0	Fines			
0		Medium	0	Fines			
0		High	0	Gravel			
0		Erosion	0	Fines			
0		High	0	Stonework			
0		Low	0	Fines			
0		Medium	0	Fines			
0		Medium	0	Fines			
0		Medium	0	Fines			
0		Medium	0	Fines			
0		High	0	Gravel			
0		Medium	0	Fines			
0		Medium	0	Fines			
0		Low	0	Fines			
0		Medium	0	Fines			
0		Erosion	0	Fines			
0		Low	0	Fines			
0		High	0	Fines			
0		High	0	Fines			
0		Medium	0	Fines			
0		Medium	0	Fines			
0		Medium	0	Fines			
0		High	0	Stonework			
0		Low	0	Fines			
0		Erosion	75	Fines			
0		Medium	0	Fines			
0		High	0	Stonework			
0		Medium	0	Fines			
0		Medium	0	Fines			
0		Medium	0	Fines			
0		Medium	0	Fines			
0		Erosion	0	Fines			
0		Medium	0	Fines			
0		Medium	0	Fines			
0		Medium	0	Fines			
0		High	0	Stonework			
0		High	0	Fines			
0		Medium	0	Gravel			
0		Medium	0	Fines			
0		High	0	Gravel			
0		Medium	0	Fines			
0		Medium	0	Fines			
0		Low	0	Fines			
0		High	0	Stonework			
0		Low	0	Fines			
0		High	0	Stonework			
0		Medium	0	Fines			
0		Medium	0	Gravel			
0		High	0	Gravel			
0		High	0	Gravel			
0		High	0	Gravel			
0		High	0	Gravel			
0		High	0	Gravel			
0		Medium	5	Fines		No	No
0		High	0	Fines			

PERSUB_MOD	COMMNT_MOD	L_BKSTBILI	PCTERODING	L_BANK_MAT	L_COMMENT	VETERANS	SNAGS
0		High	0	Fines			
0		High	0	Gravel			
0		High	0	Gravel			
0		High	0	Gravel			
0		High	5	Cobble	Mixed cobble and boulder along cascade	No	No
0		High	5	Cobble	Mixed cobble and boulder along cascade	No	No
0		High	0	Stonework			
0		High	0	Fines			
0		High	0	Fines			
0		High	0	Fines			
0		High	0	Gravel	Rip rap occurs along road slope with fines also being prevalent along pool sections		
0		High	0	Gravel			
0		High	0	Gravel			
0		Medium	0	Gravel	34 m section of erosion just upstream of rail crossing		
0		High	0	Gravel			
0		High	0	Gravel			
0		Medium	0	Gravel	65 m section of erosion near downstream end		
0		High	0	Gravel			
0		High	0	Fines			
0		High	0	Stonework			
0		High	0	Fines			
0		High	0	Stonework			
0		High	0	Fines			
0		High	0	Fines			
0		High	0	Fines			
0		High	0	Fines			
0		High	0	Boulder		No	No
0	Left bank 100% railway modified	High	0	Boulder		No	No
0		High	0	Fines		No	No
0		High	0	Boulder		No	No
0	Railway follows shoreline	High	0	Gravel		No	No
0		High	0	Boulder		No	No
0		High	0	Till		No	No
0		Medium	0	Fines		No	No
0	Primarily rock on right bank and concrete on left bank.	High	2	Stonework	Some retaining wall also	No	No
0		High	0	Till		No	No
0		High	0	Gravel		No	No
0		Medium	0	Gravel		No	No
0		High	0	Till		No	No
0		Medium	20	Fines		No	No
0		Medium	20	Fines		No	No
0	Predominantly natural with short section of railway encroachment	Medium	1	Till		No	No
0		Medium	0	Fines		No	No
0		High	2	Till		No	No
0		High	0	Till		No	No
0		High	0	Boulder		No	No
0		High	0	Gravel		No	No
0		High	0	Gravel		No	No
0		High	0	Stonework		No	No
0		High	0	Stonework		No	No
0		High	0	Stonework		No	No
0		High	0	Cobble		No	No
0		Medium	5	Fines		No	No
0		Medium	5	Fines		No	No

[illegible]

CMMNT_FLRA	CMMNT_FAUN	MAX_PDOP	GPS_DATE	GPS_TIME	FEAT_NAME	UNFLT_POS	FILT_POS	DATA_DICT1	AVG_HORZ_P	WORST_HORZ
		7.40	11/10/2014	12:57:32pm	Left_Bank.shp	1114	1114	LRIM	2.10	4.20
		7.40	11/10/2014	12:57:32pm	Left_Bank.shp	1114	1114	LRIM	2.10	4.20
		267.00	11/10/2014	10:10:34am	Left_Bank.shp	1988	1988	LRIM	1.40	8.40
		267.00	11/10/2014	10:10:34am	Left_Bank.shp	1988	1988	LRIM	1.40	8.40
		3.70	11/6/2014	01:37:16pm	Left_Bank.shp	251	251	LRIM	1.10	1.30
		3.00	11/6/2014	01:22:38pm	Left_Bank.shp	98	98	LRIM	1.10	1.50
		59.60	11/6/2014	10:12:30am	Left_Bank.shp	839	839	LRIM	2.30	112.80
		59.60	11/6/2014	10:12:30am	Left_Bank.shp	839	839	LRIM	2.30	112.80
		59.60	11/6/2014	10:12:30am	Left_Bank.shp	839	839	LRIM	2.30	112.80
		11.80	11/6/2014	08:51:39am	Left_Bank.shp	684	684	LRIM	1.10	3.00
		11.80	11/6/2014	08:51:39am	Left_Bank.shp	684	684	LRIM	1.10	3.00
		11.80	11/6/2014	08:51:39am	Left_Bank.shp	684	684	LRIM	1.10	3.00
		11.80	11/6/2014	08:51:39am	Left_Bank.shp	684	684	LRIM	1.10	3.00
Steep mountain slope - cedar hemlock forest		11.80	11/6/2014	08:51:39am	Left_Bank.shp	684	684	LRIM	1.10	3.00
Steep mountainside - cedar-hemlock mature forest		11.80	11/6/2014	08:51:39am	Left_Bank.shp	684	684	LRIM	1.10	3.00
Steep mountainside - cedar-hemlock mature forest		11.80	11/6/2014	08:51:39am	Left_Bank.shp	684	684	LRIM	1.10	3.00
		11.80	11/6/2014	08:51:39am	Left_Bank.shp	684	684	LRIM	1.10	3.00
Steep mountainside - cedar-hemlock mature forest		11.80	11/6/2014	08:51:39am	Left_Bank.shp	684	684	LRIM	1.10	3.00
		11.80	11/6/2014	08:51:39am	Left_Bank.shp	684	684	LRIM	1.10	3.00
Steep mountainside - cedar-hemlock mature forest		11.80	11/6/2014	08:51:39am	Left_Bank.shp	684	684	LRIM	1.10	3.00
		6.20	11/4/2014	02:55:26pm	Left_Bank.shp	1652	1652	LRIM	0.20	1.70
		6.20	11/4/2014	02:55:26pm	Left_Bank.shp	1652	1652	LRIM	0.20	1.70
		6.20	11/4/2014	02:55:26pm	Left_Bank.shp	1652	1652	LRIM	0.20	1.70
		6.20	11/4/2014	02:55:26pm	Left_Bank.shp	1652	1652	LRIM	0.20	1.70
		17.30	11/4/2014	01:46:18pm	Left_Bank.shp	400	400	LRIM	0.80	7.20
		73.10	11/4/2014	12:20:17pm	Left_Bank.shp	495	495	LRIM	1.20	7.60
		73.10	11/4/2014	12:20:17pm	Left_Bank.shp	495	495	LRIM	1.20	7.60
		70.80	11/4/2014	08:44:05am	Left_Bank.shp	763	763	LRIM	0.80	7.40
		6.30	11/3/2014	03:10:25pm	Left_Bank.shp	29	29	LRIM	0.60	1.10
		6.30	11/3/2014	03:10:25pm	Left_Bank.shp	29	29	LRIM	0.60	1.10
		6.30	11/3/2014	03:10:25pm	Left_Bank.shp	29	29	LRIM	0.60	1.10
		6.30	11/3/2014	03:10:25pm	Left_Bank.shp	29	29	LRIM	0.60	1.10
		6.30	11/3/2014	03:10:25pm	Left_Bank.shp	29	29	LRIM	0.60	1.10
		6.30	11/3/2014	03:10:25pm	Left_Bank.shp	29	29	LRIM	0.60	1.10
		6.30	11/3/2014	03:10:25pm	Left_Bank.shp	29	29	LRIM	0.60	1.10
		199.90	11/3/2014	01:36:01pm	Left_Bank.shp	1179	1179	LRIM	1.40	38.90
		199.90	11/3/2014	01:36:01pm	Left_Bank.shp	1179	1179	LRIM	1.40	38.90
		13.30	11/3/2014	01:21:12pm	Left_Bank.shp	167	167	LRIM	0.90	2.10
		10.30	11/3/2014	01:00:42pm	Left_Bank.shp	104	104	LRIM	1.50	9.80
		8.30	11/3/2014	12:39:33pm	Left_Bank.shp	199	199	LRIM	0.80	7.40
		18.60	11/3/2014	12:02:28pm	Left_Bank.shp	252	252	LRIM	1.30	7.80
		0.00	11/3/2014	11:00:00am	Left_Bank.shp	0	0	LRIM	0.00	0.00
		0.00	11/3/2014	11:00:00am	Left_Bank.shp	0	0	LRIM	0.00	0.00
		0.00	11/3/2014	11:00:00am	Left_Bank.shp	0	0	LRIM	0.00	0.00
		0.00	11/3/2014	11:00:00am	Left_Bank.shp	0	0	LRIM	0.00	0.00
		0.00	11/3/2014	11:00:00am	Left_Bank.shp	0	0	LRIM	0.00	0.00
		0.00	11/3/2014	11:00:00am	Left_Bank.shp	0	0	LRIM	0.00	0.00
		0.00	11/3/2014	11:00:00am	Left_Bank.shp	0	0	LRIM	0.00	0.00
		13.20	11/3/2014	10:41:52am	Left_Bank.shp	216	216	LRIM	3.10	10.10
		3.40	10/31/2014	12:39:11pm	Left_Bank.shp	7	7	LRIM	1.50	6.30
		16.30	10/31/2014	12:14:14pm	Left_Bank.shp	69	69	LRIM	2.20	8.40
		31.90	10/31/2014	10:30:20am	Left_Bank.shp	581	581	LRIM	0.80	8.20
		31.90	10/31/2014	10:30:20am	Left_Bank.shp	581	581	LRIM	0.80	8.20
		31.90	10/31/2014	10:30:20am	Left_Bank.shp	581	581	LRIM	0.80	8.20
		31.90	10/31/2014	10:30:20am	Left_Bank.shp	581	581	LRIM	0.80	8.20
		31.90	10/31/2014	10:30:20am	Left_Bank.shp	581	581	LRIM	0.80	8.20
		12.90	10/31/2014	09:33:09am	Left_Bank.shp	557	557	LRIM	0.90	7.90
		12.90	10/31/2014	08:20:35am	Left_Bank.shp	259	259	LRIM	0.90	7.10
		15.10	10/30/2014	05:04:25pm	Left_Bank.shp	191	191	LRIM	1.60	9.30
		776.60	10/30/2014	04:22:17pm	Left_Bank.shp	403	403	LRIM	1.20	8.60
		9.50	10/30/2014	03:17:28pm	Left_Bank.shp	186	186	LRIM	0.90	6.90
		19.80	10/30/2014	02:55:41pm	Left_Bank.shp	95	95	LRIM	2.00	9.30

CMMNT_FLRA	CMMNT_FAUN	MAX_PDOP	GPS_DATE	GPS_TIME	FEAT_NAME	UNFLT_POS	FILT_POS	DATA_DICT1	AVG_HORZ_P	WORST_HORZ
		19.80	10/30/2014	02:55:41pm	Left_Bank.shp	95	95	LRIM	2.00	9.30
		4.50	10/30/2014	01:47:59pm	Left_Bank.shp	168	168	LRIM	0.90	6.90
		7.30	10/30/2014	11:31:19am	Left_Bank.shp	173	173	LRIM	1.70	45.90
		7.30	10/30/2014	11:31:19am	Left_Bank.shp	173	173	LRIM	1.70	45.90
		7.30	10/30/2014	11:31:19am	Left_Bank.shp	173	173	LRIM	1.70	45.90
		32.10	11/13/2014	09:53:41am	Right_Bank.shp	1909	1909	LRIM	1.20	7.60
		32.10	11/13/2014	09:53:41am	Right_Bank.shp	1909	1909	LRIM	1.20	7.60
		32.10	11/13/2014	09:53:41am	Right_Bank.shp	1909	1909	LRIM	1.20	7.60
		32.10	11/13/2014	09:53:41am	Right_Bank.shp	1909	1909	LRIM	1.20	7.60
		32.10	11/13/2014	09:53:41am	Right_Bank.shp	1909	1909	LRIM	1.20	7.60
		32.10	11/13/2014	09:53:41am	Right_Bank.shp	1909	1909	LRIM	1.20	7.60
		32.10	11/13/2014	09:53:41am	Right_Bank.shp	1909	1909	LRIM	1.20	7.60
		4.30	11/12/2014	02:07:40pm	Right_Bank.shp	684	684	LRIM	1.60	3.30
		4.30	11/12/2014	02:07:40pm	Right_Bank.shp	684	684	LRIM	1.60	3.30
		4.30	11/12/2014	02:07:40pm	Right_Bank.shp	684	684	LRIM	1.60	3.30
		4.30	11/12/2014	02:07:40pm	Right_Bank.shp	684	684	LRIM	1.60	3.30
		3.20	11/12/2014	11:59:02am	Right_Bank.shp	752	752	LRIM	1.10	1.90
		3.20	11/12/2014	11:59:02am	Right_Bank.shp	752	752	LRIM	1.10	1.90
		3.20	11/12/2014	11:59:02am	Right_Bank.shp	752	752	LRIM	1.10	1.90
		3.20	11/12/2014	11:59:02am	Right_Bank.shp	752	752	LRIM	1.10	1.90
		3.20	11/12/2014	11:59:02am	Right_Bank.shp	752	752	LRIM	1.10	1.90
		3.20	11/12/2014	11:59:02am	Right_Bank.shp	752	752	LRIM	1.10	1.90
		3.60	11/11/2014	04:19:12pm	Right_Bank.shp	604	604	LRIM	1.40	2.50
		3.60	11/11/2014	04:19:12pm	Right_Bank.shp	604	604	LRIM	1.40	2.50
		3.60	11/11/2014	04:19:12pm	Right_Bank.shp	604	604	LRIM	1.40	2.50
		3.60	11/11/2014	04:19:12pm	Right_Bank.shp	604	604	LRIM	1.40	2.50
		3.60	11/11/2014	04:19:12pm	Right_Bank.shp	604	604	LRIM	1.40	2.50
		3.60	11/11/2014	04:19:12pm	Right_Bank.shp	604	604	LRIM	1.40	2.50
		3.60	11/11/2014	04:19:12pm	Right_Bank.shp	604	604	LRIM	1.40	2.50
		3.60	11/11/2014	04:19:12pm	Right_Bank.shp	604	604	LRIM	1.40	2.50
		4.20	11/11/2014	03:32:00pm	Right_Bank.shp	405	405	LRIM	1.90	2.80
		6.20	11/11/2014	02:17:00pm	Right_Bank.shp	463	463	LRIM	1.80	3.30
		6.20	11/11/2014	02:17:00pm	Right_Bank.shp	463	463	LRIM	1.80	3.30
		6.20	11/11/2014	02:17:00pm	Right_Bank.shp	463	463	LRIM	1.80	3.30
		5.10	11/11/2014	09:36:34am	Right_Bank.shp	1235	1235	LRIM	1.10	6.60
		5.10	11/11/2014	09:36:34am	Right_Bank.shp	1235	1235	LRIM	1.10	6.60
		5.10	11/11/2014	09:36:34am	Right_Bank.shp	1235	1235	LRIM	1.10	6.60
		20.10	11/10/2014	05:00:28pm	Right_Bank.shp	356	356	LRIM	1.50	6.30
		5.60	11/10/2014	04:17:09pm	Right_Bank.shp	663	663	LRIM	1.00	1.10
		5.60	11/10/2014	04:17:09pm	Right_Bank.shp	663	663	LRIM	1.00	1.10
		5.60	11/10/2014	04:17:09pm	Right_Bank.shp	663	663	LRIM	1.00	1.10
		5.60	11/10/2014	04:17:09pm	Right_Bank.shp	663	663	LRIM	1.00	1.10
		5.60	11/10/2014	04:17:09pm	Right_Bank.shp	663	663	LRIM	1.00	1.10
		7.40	11/10/2014	01:57:29pm	Right_Bank.shp	1114	1114	LRIM	2.10	4.20
		7.40	11/10/2014	01:57:29pm	Right_Bank.shp	1114	1114	LRIM	2.10	4.20
		7.40	11/10/2014	01:57:29pm	Right_Bank.shp	1114	1114	LRIM	2.10	4.20
		7.40	11/10/2014	01:57:29pm	Right_Bank.shp	1114	1114	LRIM	2.10	4.20
		7.40	11/10/2014	01:57:29pm	Right_Bank.shp	1114	1114	LRIM	2.10	4.20
		267.00	11/10/2014	11:10:35am	Right_Bank.shp	1988	1988	LRIM	1.40	8.40
		267.00	11/10/2014	11:10:35am	Right_Bank.shp	1988	1988	LRIM	1.40	8.40
		267.00	11/10/2014	11:10:35am	Right_Bank.shp	1988	1988	LRIM	1.40	8.40
		267.00	11/10/2014	11:10:35am	Right_Bank.shp	1988	1988	LRIM	1.40	8.40
		267.00	11/10/2014	11:10:35am	Right_Bank.shp	1988	1988	LRIM	1.40	8.40
		3.70	11/6/2014	02:46:46pm	Right_Bank.shp	178	178	LRIM	1.40	1.60
		3.70	11/6/2014	02:37:15pm	Right_Bank.shp	251	251	LRIM	1.10	1.30
		3.00	11/6/2014	02:22:36pm	Right_Bank.shp	98	98	LRIM	1.10	1.50
		59.60	11/6/2014	11:12:29am	Right_Bank.shp	839	839	LRIM	2.30	112.80
		11.80	11/6/2014	09:51:39am	Right_Bank.shp	684	684	LRIM	1.10	3.00
		11.80	11/6/2014	09:51:39am	Right_Bank.shp	684	684	LRIM	1.10	3.00
		11.80	11/6/2014	09:51:39am	Right_Bank.shp	684	684	LRIM	1.10	3.00
		11.80	11/6/2014	09:51:39am	Right_Bank.shp	684	684	LRIM	1.10	3.00
		11.80	11/6/2014	09:51:39am	Right_Bank.shp	684	684	LRIM	1.10	3.00

CMMNT_FLRA	CMMNT_FAUN	MAX_PDOP	GPS_DATE	GPS_TIME	FEAT_NAME	UNFLT_POS	FILT_POS	DATA_DICTI	AVG_HORZ_P	WORST_HORZ
		11.80	11/6/2014	09:51:39am	Right Bank.shp	684	684	LRIM	1.10	3.00
		11.80	11/6/2014	09:51:39am	Right Bank.shp	684	684	LRIM	1.10	3.00
		6.20	11/4/2014	04:02:44pm	Right Bank.shp	1652	1652	LRIM	0.20	1.70
		6.20	11/4/2014	04:02:44pm	Right Bank.shp	1652	1652	LRIM	0.20	1.70
		6.20	11/4/2014	04:02:44pm	Right Bank.shp	1652	1652	LRIM	0.20	1.70
		6.20	11/4/2014	04:02:44pm	Right Bank.shp	1652	1652	LRIM	0.20	1.70
		6.20	11/4/2014	04:02:44pm	Right Bank.shp	1652	1652	LRIM	0.20	1.70
		6.20	11/4/2014	04:02:44pm	Right Bank.shp	1652	1652	LRIM	0.20	1.70
		6.20	11/4/2014	04:02:44pm	Right Bank.shp	1652	1652	LRIM	0.20	1.70
		6.20	11/4/2014	04:02:44pm	Right Bank.shp	1652	1652	LRIM	0.20	1.70
		12.10	11/4/2014	03:29:10pm	Right Bank.shp	802	802	LRIM	0.30	12.60
		17.30	11/4/2014	02:53:35pm	Right Bank.shp	400	400	LRIM	0.80	7.20
		73.10	11/4/2014	01:27:35pm	Right Bank.shp	495	495	LRIM	1.20	7.60
		73.10	11/4/2014	01:27:35pm	Right Bank.shp	495	495	LRIM	1.20	7.60
		73.10	11/4/2014	01:27:35pm	Right Bank.shp	495	495	LRIM	1.20	7.60
		117.20	11/4/2014	10:54:52am	Right Bank.shp	680	680	LRIM	1.00	8.30
		70.80	11/4/2014	09:51:24am	Right Bank.shp	763	763	LRIM	0.80	7.40
		70.80	11/4/2014	09:51:24am	Right Bank.shp	763	763	LRIM	0.80	7.40
		6.30	11/3/2014	04:17:41pm	Right Bank.shp	29	29	LRIM	0.60	1.10
		6.30	11/3/2014	04:17:41pm	Right Bank.shp	29	29	LRIM	0.60	1.10
		6.30	11/3/2014	04:17:41pm	Right Bank.shp	29	29	LRIM	0.60	1.10
		6.30	11/3/2014	04:17:41pm	Right Bank.shp	29	29	LRIM	0.60	1.10
		6.30	11/3/2014	04:17:41pm	Right Bank.shp	29	29	LRIM	0.60	1.10
		6.30	11/3/2014	04:17:41pm	Right Bank.shp	29	29	LRIM	0.60	1.10
		199.90	11/3/2014	02:43:17pm	Right Bank.shp	1179	1179	LRIM	1.40	38.90
		199.90	11/3/2014	02:43:17pm	Right Bank.shp	1179	1179	LRIM	1.40	38.90
		13.30	11/3/2014	02:28:28pm	Right Bank.shp	167	167	LRIM	0.90	2.10
		10.30	11/3/2014	02:07:58pm	Right Bank.shp	104	104	LRIM	1.50	9.80
		8.30	11/3/2014	01:46:50pm	Right Bank.shp	199	199	LRIM	0.80	7.40
		18.60	11/3/2014	01:09:46pm	Right Bank.shp	252	252	LRIM	1.30	7.80
		0.00	11/3/2014	11:00:00am	Right Bank.shp	0	0	LRIM	0.00	0.00
		0.00	11/3/2014	11:00:00am	Right Bank.shp	0	0	LRIM	0.00	0.00
		13.20	11/3/2014	11:49:31am	Right Bank.shp	216	216	LRIM	3.10	10.10
		3.40	10/31/2014	12:46:22pm	Right Bank.shp	7	7	LRIM	1.50	6.30
		16.30	10/31/2014	12:21:26pm	Right Bank.shp	69	69	LRIM	2.20	8.40
		31.90	10/31/2014	10:37:32am	Right Bank.shp	581	581	LRIM	0.80	8.20
		31.90	10/31/2014	10:37:32am	Right Bank.shp	581	581	LRIM	0.80	8.20
Willow low floodplain area with an open canopy.		31.90	10/31/2014	10:37:32am	Right Bank.shp	581	581	LRIM	0.80	8.20
Willow low floodplain area with an open canopy.		12.90	10/31/2014	09:40:21am	Right Bank.shp	557	557	LRIM	0.90	7.90
Cedar hemlock forest with narrow low flood willow band		12.90	10/31/2014	08:27:46am	Right Bank.shp	259	259	LRIM	0.90	7.10
		15.10	10/30/2014	05:11:36pm	Right Bank.shp	191	191	LRIM	1.60	9.30
		776.60	10/30/2014	04:29:28pm	Right Bank.shp	403	403	LRIM	1.20	8.60
		776.60	10/30/2014	04:29:28pm	Right Bank.shp	403	403	LRIM	1.20	8.60
		21.00	10/30/2014	04:08:24pm	Right Bank.shp	184	184	LRIM	1.20	9.50
Cottonwood/sedge/willow dogwood		9.50	10/30/2014	03:24:41pm	Right Bank.shp	186	186	LRIM	0.90	6.90
Cottonwood/sedge/willow dogwood		19.80	10/30/2014	03:02:54pm	Right Bank.shp	95	95	LRIM	2.00	9.30
	Beaver activity high within adjacent reach 5	19.80	10/30/2014	03:02:54pm	Right Bank.shp	95	95	LRIM	2.00	9.30
	Beaver activity high within adjacent reach 5	19.80	10/30/2014	03:02:54pm	Right Bank.shp	95	95	LRIM	2.00	9.30
	Beaver activity high within adjacent reach 5	4.50	10/30/2014	01:58:08pm	Right Bank.shp	168	168	LRIM	0.90	6.90
Cedar broadleaf		12.10	10/30/2014	01:14:53pm	Right Bank.shp	108	108	LRIM	1.40	6.30
		7.30	10/30/2014	11:38:31am	Right Bank.shp	173	173	LRIM	1.70	45.90
		7.30	10/30/2014	11:38:31am	Right Bank.shp	173	173	LRIM	1.70	45.90

APPENDIX C

Centerline and Bank Aquatic Habitat Index Analysis Matrices



Appendix C-1- Holding values based on spatial data (DFO 2014)

Variable	Relative score
Chinook Holding Total	11.5
Coho Holding Total	11.5

Appendix C-2. Rearing - habitat unit : fish life history scoring matrix

Species	Habitat Type																						
	CA	CO	P	LK	RF	RN	G	BW	FL_i	FL_ld	FL_n	FM_i	FM_n	M_i	M_r	RM_n	SC	LWD_1	B_i	RU_i	SH_i	SH_n	SH_r
Rainbow (Resident)	2	2	3	0	3	3	1	1	1	1	1	0	0	0	0	1	3	3	0	0	0	0	2
Rainbow (Adfluvial)	2	2	3	0	3	3	1	1	1	1	1	0	0	0	0	1	3	3	0	0	0	0	2
Steelhead	2	2	3	0	3	2	1	1	1	1	1	0	0	0	0	1	3	3	0	0	0	0	2
Bull Trout	3	3	3	2	3	2	1	0	0	0	0	0	1	1	1	0	3	3	0	0	0	0	0
Dolly Varden	1	2	3	2	2	3	2	2	0	0	0	0	1	1	1	0	3	3	0	0	0	0	0
Cutthroat	1	2	3	1	2	3	2	0	0	0	0	0	0	0	0	0	3	3	0	0	0	0	0
Kokanee	1	2	1	3	1	0	0	1	0	0	0	0	0	0	0	1	1	3	0	0	0	0	0
Pink Salmon	1	3	3	2	3	3	1	0	0	0	0	0	0	0	0	0	2	1	0	0	0	0	0
Chinook	3	2	3	3	3	2	1	1	1	1	1	0	0	0	0	1	1	3	0	0	0	0	2
Coho	1	2	3	0	3	3	1	3	2	2	2	0	0	0	0	2	3	3	0	0	0	0	2
Sockeye	1	2	1	2	1	0	0	1	0	0	0	0	0	0	0	1	1	3	0	0	0	0	0
Sum	18	24	29	15	27	24	11	11	6	6	6	0	2	2	2	8	26	31	0	0	0	0	10
Relative Unit Value	0.55	0.73	0.88	0.45	0.82	0.73	0.33	0.33	0.18	0.18	0.18	0.00	0.06	0.06	0.06	0.24	0.79	0.94	0.00	0.00	0.00	0.00	0.30
Adjusted (/1)	0.58	0.77	0.94	0.48	0.87	0.77	0.35	0.35	0.19	0.19	0.19	0.00	0.06	0.06	0.06	0.26	0.84	1.00	0.00	0.00	0.00	0.00	0.32
Score (/28.75)	17	22	27	14	25	22	10	10	6	6	6	0	2	2	2	7	24	29	0	0	0	0	9



Appendix C-3. General Living - habitat unit/sub area : fish life history scoring matrix

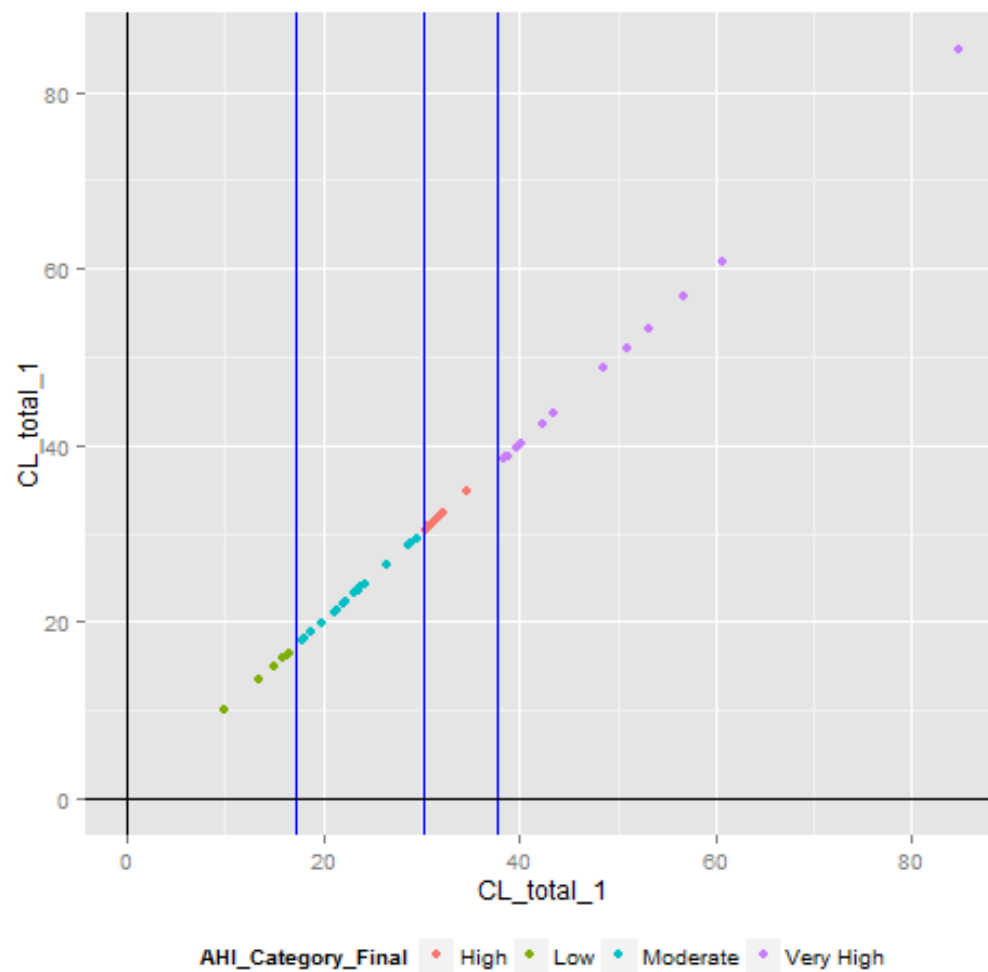
Species	Life Stage	Habitat Type																						
		CA	CO	P	LK	RF	RN	G	BW	FL_i	FL_Id	FL_n	FM_i	FM_n	M_i	M_r	RM_n	SC	LWD_1	B_i	RU_i	SH_i	SH_n	SH_r
Rainbow (Resident)	Juvenile	2	2	3	0	3	3	1	1	1	1	1	0	0	0	0	1	3	3	0	0	0	0	2
	Adult	2	3	3	0	3	3	1	1	0	0	0	0	0	0	0	1	3	3	0	0	0	0	2
Rainbow (Adfluvial)	Juvenile	2	2	3	0	3	3	1	1	1	1	1	0	0	0	0	1	3	3	0	0	0	0	2
	Adult	0	2	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Steelhead	Juvenile	2	2	3	0	3	3	1	1	1	1	1	0	0	0	0	1	3	3	0	0	0	0	2
	Adult	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bull Trout	Juvenile	3	3	3	2	3	2	1	0	0	0	0	0	1	1	1	0	3	3	0	0	0	0	0
	Adult	3	3	3	3	2	2	1	1	0	0	0	0	0	0	0	0	2	3	0	0	0	0	0
Dolly Varden	Juvenile	1	2	3	2	2	3	2	2	0	0	0	0	1	1	1	0	3	3	0	0	0	0	0
	Adult	3	3	3	2	3	2	1	0	0	0	0	0	1	1	1	0	3	3	0	0	0	0	0
Cutthroat	Juvenile	1	2	3	1	2	3	2	0	0	0	0	0	0	0	0	0	3	3	0	0	0	0	0
	Adult	1	2	3	1	2	3	2	0	0	0	0	0	0	0	0	0	3	3	0	0	0	0	0
Kokanee	Juvenile	1	2	1	3	1	0	0	1	0	0	0	0	0	0	0	1	1	3	0	0	0	0	0
	Adult	0	2	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pink Salmon	Juvenile	1	3	3	2	3	3	1	0	0	0	0	0	0	0	0	0	2	1	0	0	0	0	0
	Adult	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Chinook	Juvenile	3	2	3	3	3	2	1	1	1	1	1	0	0	0	0	1	1	3	0	0	0	0	2
	Adult	0	2	3	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Coho	Juvenile	2	2	3	0	3	3	1	1	1	1	1	0	0	0	0	1	3	3	0	0	0	0	2
	Adult	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sockeye	Juvenile	0	1	1	2	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
	Adult	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sum		27	40	44	30	36	35	16	10	5	5	5	0	3	3	3	7	37	40	0	0	0	0	12
Relative Score		0.41	0.61	0.67	0.45	0.55	0.53	0.24	0.15	0.08	0.08	0.08	0.00	0.05	0.05	0.05	0.11	0.56	0.61	0.00	0.00	0.00	0.00	0.18
Adjusted (/1)		0.61	0.91	1.00	0.68	0.82	0.80	0.36	0.23	0.11	0.11	0.11	0.00	0.07	0.07	0.07	0.16	0.84	0.91	0.00	0.00	0.00	0.00	0.27
Score (/5.75)		4	5	6	4	5	5	2	1	1	1	1	0	0	0	0	1	5	5	0	0	0	0	2



Appendix C-4. Cover habitat unit/sub area : fish life history scoring matrix

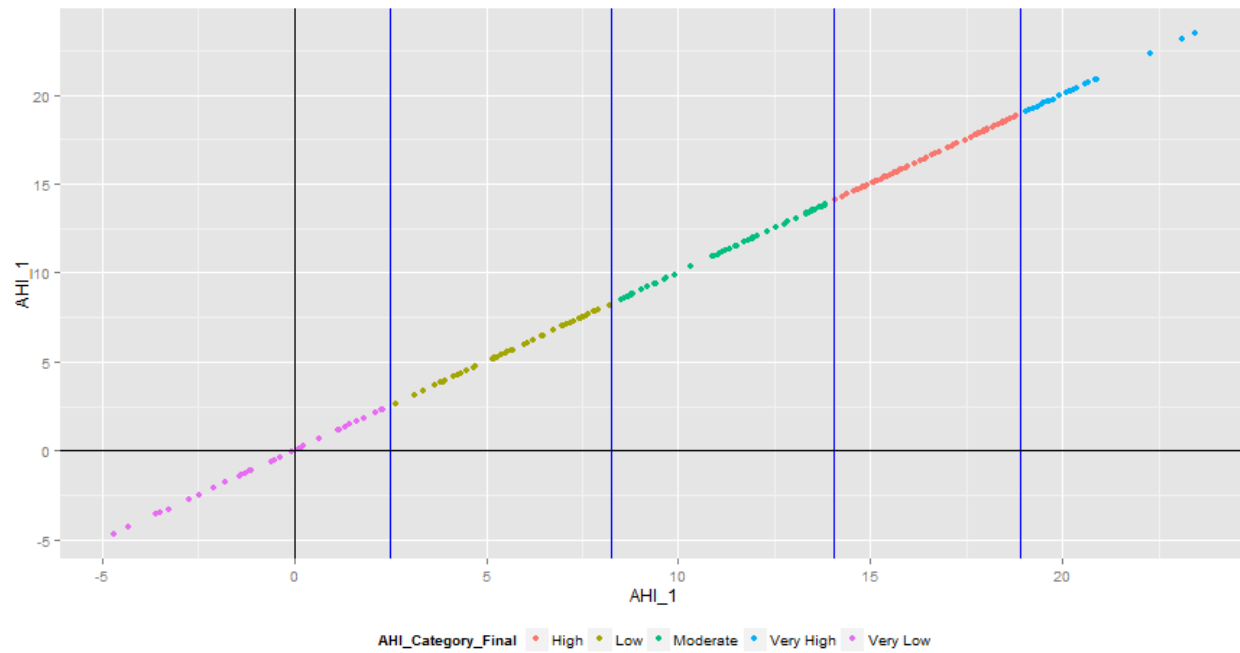
Species	Life Stage	Habitat Type																						
		CA	CO	P	LK	RF	RN	G	BW	FL_i	FL_ld	FL_n	FM_i	FM_n	M_i	M_r	RM_n	SC	LWD_1	B_i	RU_i	SH_i	SH_n	SH_r
Rainbow (Resident)	Juvenile	2	2	3	0	3	2	1	1	1	1	1	0	0	0	0	1	3	3	0	0	0	0	2
	Adult	2	3	3	0	3	2	1	1	0	0	0	0	0	0	0	1	3	3	0	0	0	0	2
Rainbow (Adfluvial)	Juvenile	2	2	3	0	3	2	1	1	1	1	1	0	0	0	0	1	3	3	0	0	0	0	2
	Adult	0	2	3	3	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	2
Steelhead	Juvenile	2	2	3	0	3	2	1	1	1	1	1	0	0	0	0	1	3	3	0	0	0	0	2
	Adult	2	2	3	3	3	2	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	2
Bull Trout	Juvenile	3	3	3	2	3	2	1	0	0	0	0	0	1	1	1	0	3	3	0	0	0	0	0
	Adult	3	3	3	3	2	2	1	0	0	0	0	0	0	0	0	0	2	3	0	0	0	0	0
Dolly Varden	Juvenile	1	2	3	2	2	3	2	2	0	0	0	0	1	1	1	0	3	3	0	0	0	0	0
	Adult	3	3	3	2	3	2	1	0	0	0	0	0	1	1	1	0	3	3	0	0	0	0	0
Cutthroat	Juvenile	1	2	3	1	2	3	2	0	0	0	0	0	0	0	0	0	3	3	0	0	0	0	0
	Adult	1	2	3	1	2	3	2	0	0	0	0	0	0	0	0	0	3	3	0	0	0	0	0
Kokanee	Juvenile	1	2	1	3	1	0	0	1	0	0	0	0	0	0	0	1	1	3	0	0	0	0	0
	Adult	0	2	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pink Salmon	Juvenile	1	3	3	2	0	0	0	0	0	0	0	0	0	0	0	0	1	2	0	0	0	0	0
	Adult	2	2	3	3	1	1	0	0	0	0	0	0	0	0	0	0	2	3	0	0	0	0	0
Chinook	Juvenile	3	2	3	3	3	2	1	1	1	1	1	0	0	0	0	1	1	3	0	0	0	0	2
	Adult	2	2	3	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Coho	Juvenile	2	2	3	0	3	3	1	1	1	1	1	0	0	1	1	1	3	3	0	0	0	0	2
	Adult	2	3	3	3	2	3	1	2	0	0	0	0	0	0	0	1	3	3	0	0	0	0	2
Sockeye	Juvenile	2	2	3	3	1	0	0	1	0	0	0	0	0	0	0	1	2	3	0	0	0	0	0
	Adult	2	2	2	3	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0
Sum		39	50	60	43	40	34	16	12	5	5	5	0	3	4	4	9	42	59	0	0	0	0	18
Relative Unit Value		0.59	0.76	0.91	0.65	0.61	0.52	0.24	0.18	0.08	0.08	0.08	0.00	0.05	0.06	0.06	0.14	0.64	0.89	0.00	0.00	0.00	0.00	0.27
Adjusted (/1)		0.65	0.83	1.00	0.72	0.67	0.57	0.27	0.20	0.08	0.08	0.08	0.00	0.05	0.07	0.07	0.15	0.70	0.98	0.00	0.00	0.00	0.00	0.30
Weight Score (/17.25)		11	14	17	12	12	10	5	3	1	1	1	0	1	1	1	3	12	17	0	0	0	0	5





Appendix C-5. Ecological category : riparian habitat unit rating matrix.						
Habitat Type	Code	Qualifier	Wildlife Rating	LWD	Biodiversity Rating	Nutrients
Broadleaf Forest	B	e	0.2	0	0.2	0.2
		ld	0.7	0.4	0.7	0.8
		md	0.6	0.4	0.5	0.6
		n	0.8	1	0.8	0.9
Backwater	BW		0.7	0	0.5	0
Coniferous Forest	C	e	0.2	0	0.2	0.2
		i	0.6	0.8	0.6	0.6
		ld	0.5	0.8	0.5	0.6
		md	0.5	0.6	0.4	0.5
		n	0.7	0.8	0.6	0.6
Cultivated Field	CF		0.1	0	0.1	0.1
Cleared	CL	a	0.2	0	0.1	0.2
		hd	0.1	0	0.2	0.1
		l	0.2	0	0.2	0.3
		ld	0.4	0	0.3	0.3
		n	0.5	0	0.4	0.4
		s	0.1	0	0	0
Low Flood Bench	FL	ld	0.7	0	0.7	0.3
		n	0.9	0	0.9	0.4
Mid Flood Bench	FM	hd	0.4	0.4	0.5	0.4
		ld	0.8	1	0.8	0.9
		md	0.6	0.8	0.6	0.7
		n	1	1	1	1
Mixed Forest	M	a	0.2	0	0.2	0.2
		e	0.3	0	0.2	0.2
		f	0.3	0.6	0.4	0.4
		hd	0.3	0.4	0.3	0.4
		ld	0.7	0.8	0.8	0.4
		md	0.6	0.7	0.6	0.6
		n	0.9	1	1	0.4
		r	0.9	1	1	0.2
River	RI		0.8	0	0.8	0
Railway	RL		0	0	0	0
Riverine Marsh	RM	ld	0.9	0	0.9	0.3
Rural	RU	hd	0	0	0	0.1
		ld	0.4	0.4	0.4	0.4
		md	0.3	0.2	0.2	0.3
Road	RZ		0	0	0	0
Side Channel	SC		0.8	0	0.7	0
Shrub	SH	f	0.4	0	0.2	0.3
		hd	0.2	0	0.1	0.2
		ld	0.5	0	0.4	0.5
		md	0.4	0	0.3	0.3
		n	0.6	0	0.5	0.6
		r	0.6	0	0.5	0.6
Wetland	WN	hd	0.6	0	0.5	0.1
		ld	0.8	0	0.8	0.4
		md	0.6	0	0.6	0.2
		n	1	0	1	0.4





APPENDIX D

Data Dictionary for Large River Inventory and Mapping – Version 1.2



Lrge River Inventory.txt

"Lrge River Inventory", Dictionary, version, 5, "SHIM/FIM adapted - Ecoscape Oct.19, 2009"

"RIVER_CENTERLINE", line, "RIVER_CENTERLINE", 1, seconds, 1, Code
 "RIVER_REFERENCE ", caption, normal, "RIVER_REFERENCE ", normal
 "RiverName", text, 100, normal, "RiverName", normal, Eagle River, Label1
 "LocalName", text, 100, normal, "LocalName", normal, Eagle River
 "Organization", text, 100, normal, "Organization", normal, Ecoscape/Splatsin
 "WtreshedCde", text, 100, normal, "WtreshedCde", normal, 128-831400
 "WtrBdyID", text, 100, normal, "WtrBdyID", normal, EAGL
 "Date", date, auto, ymd, manual, required, "Date", required
 "Time ", time, auto, 24, manual, normal, "Time ", normal
 "Crew", text, 50, required, "Crew", required, KH;AC
 "Weather", menu, normal, "Weather", normal
 "Light Rain",[L]
 "Heavy Rain",[H]
 "Snow/Sleet",[N]
 "Over cast",[OV]
 "Clear",[S]
 "Partly Cloudy",[PC]
 "Other",[O]
 "AirTemp", numeric, 1, -25.0, 99.0, 99.0, normal, "AirTemp", normal
 "Water_Temp", numeric, 1, -2.0, 99.0, 99.0, normal, "Water_Temp", normal
 "Stage", menu, normal, "Stage", normal
 "dry"
 "low"
 "moderate"
 "high"
 "flood"
 "other"
 "Line_Type", menu, normal, "Line_Type", normal
 "Trimble", default
 "Garmin"
 "Photointerp"
 "Chain_Compass"
 "Other"
 "Line_Src", menu, normal, "Line_Src", normal, Label2
 "RIM2014", default
 "shim2008"
 "shim2006"
 "trim"
 "DFO"
 "other"
 "Comments", text, 100, normal, "Comments", normal
 "PhotoNum", text, 100, normal, "PhotoNum", normal
 "Photo", filename, normal, "Photo", normal
 "_____", caption, normal, "_____", normal
 "SEGMENT_CLASS", caption, normal, "SEGMENT_CLASS", normal
 "Reach_Number", numeric, 1, 0.0, 99999.0, 0.0, required, "Reach_Number", required


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"Primary", menu, required, "Primary", required
  "Channelized",[CH]
  "Culvert",[CV]
  "Ditch",[FRT]
  "Modified",[Md]
  "Natural",[N]
  "Other",[O]
"Secondary", menu, normal, "Secondary", normal
  "Beaver Pond",[BP]
  "Ephemeral",[EP]
  "Flumed",[F]
  "Intermittent",[IN]
  "Side channel",[SC]
  "Wetland",[Hmw]
  "Braided",[BC]
  "Non-channelized",[NC]
  "Other",[O]
"Impact_rating", menu, normal, "Impact_rating", normal
  "nil_nil",[8]
  "nil_low",[7]
  "nil_mod",[6]
  "nil_high",[5]
  "low_low",[6]
  "low_mod",[5]
  "low_high",[4]
  "mod_mod",[4]
  "mod_high",[3]
  "high_high",[2]
"Hydraulic", menu, normal, "Hydraulic", normal
  "Beaver Pond",[BP]
  "Cascade",[C]
  "Cascade/Pool",[CP]
  "Falls",[F]
  "Pool",[P]
  "Run",[RN]
  "Riffle",[RF]
  "Riffle/Pool",[RP]
  "Slough",[S]
  "Standing",[S]
  "Wetland",[Hmw]
  "Other",[O]
"Pattern", menu, normal, "Pattern", normal
  "Straight"
  "Sinuous"
  "Irregular Wandering"
  "Irregular Meandering"
  "Regular Meanders"
  "Tortuous Meanders"

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Lrge River Inventory.txt

"Comt_Class", text, 100, normal, "Comt_Class", normal
 "_____", caption, normal, "_____", normal
 "SEGMENT_CHARACTER", caption, normal, "SEGMENT_CHARACTER", normal
 "Percent_Gradient", numeric, 1, 0.0, 100.0, 99.0, normal, "Percent_Gradient", normal
 "Spawning_Habitat", menu, normal, "Spawning_Habitat", normal
 "Anadromous"
 "Resident"
 "Unknown", default
 "Potential"
 "Livestock_access", menu, normal, "Livestock_access", normal
 "Yes"
 "Bars", menu, normal, "Bars", normal
 "None", default
 "Side"
 "Diagonal"
 "Mid-channel"
 "Spanning"
 "Braided"
 "Islands", menu, normal, "Islands", normal
 "None", default
 "Occasional"
 "Frequent - Irregular"
 "Frequent - Regular"
 "Split"
 "Anastomosing"
 "Comt_SChar", text, 100, normal, "Comt_SChar", normal
 "_____", caption, normal, "_____", normal
 "SUBSTRATE", caption, normal, "SUBSTRATE", normal
 "Sub_Organic", numeric, 0, 0, 100, 99, normal, "Sub_Organic", normal
 "Sub_Fines", numeric, 0, 0, 100, 99, normal, "Sub_Fines", normal
 "Sub_Gravel", numeric, 0, 0, 100, 99, normal, "Sub_Gravel", normal
 "Sub_Cobble", numeric, 0, 0, 100, 99, normal, "Sub_Cobble", normal
 "Sub_Blder", numeric, 0, 0, 100, 99, normal, "Sub_Blder", normal
 "Sub_BedRk", numeric, 0, 0, 100, 99, normal, "Sub_BedRk", normal
 "Embeddedness", menu, normal, "Embeddedness", normal
 "None"
 "Low (0-25%)", [L]
 "Medium (25-75%)", [M]
 "High (75%+)", [H]
 "Unknown", default
 "Compaction", menu, normal, "Compaction", normal
 "Low", [L]
 "Medium", [M]
 "High", [H]
 "Comt_Sub", text, 100, normal, "Comt_Sub", normal
 "_____", caption, normal, "_____", normal
 "CHANNEL ", caption, normal, "CHANNEL ", normal
 "Width_W", numeric, 2, 0.00, 250.00, 0.00, normal, "Width_W", normal

Lrge River Inventory.txt

"Width_BF", numeric, 2, 0.00, 500.00, 0.00, normal, "Width_BF", normal
 "Width_LFP", numeric, 2, 0.00, 1000.00, 0.00, normal, "Width_LFP", normal
 "Width_RFP", numeric, 2, 0.00, 1000.00, 0.00, normal, "Width_RFP", normal
 "Depth_W", numeric, 2, 0.00, 20.00, 0.00, normal, "Depth_W", normal
 "Depth_BF", numeric, 2, 0.00, 20.00, 0.00, normal, "Depth_BF", normal
 "Depth_FP", numeric, 2, 0.00, 10.00, 0.00, normal, "Depth_FP", normal
 "Comt_Chant", text, 100, normal, "Comt_Chant", normal
 "_____", caption, normal, "_____", normal
 "INSTREAM_COVER", caption, normal, "INSTREAM_COVER", normal
 "Total_Cover", numeric, 0, 0, 100, 99, normal, "Total_Cover", normal
 "B", numeric, 0, 0, 100, 0, normal, "B", normal
 "DP", numeric, 0, 0, 100, 0, normal, "DP", normal
 "IV", numeric, 0, 0, 100, 0, normal, "IV", normal
 "LWD", numeric, 0, 0, 100, 0, normal, "LWD", normal
 "OV", numeric, 0, 0, 100, 0, normal, "OV", normal
 "SWD", numeric, 0, 0, 100, 0, normal, "SWD", normal
 "UC", numeric, 0, 0, 100, 0, normal, "UC", normal
 "LWD_Count", numeric, 0, 0, 999, 999, normal, "LWD_Count", normal
 "Log_Jam_Count", numeric, 0, 0, 999, 999, normal, "Log_Jam_Count", normal
 "DP_Count", numeric, 0, 0, 999, 999, normal, "DP_Count", normal
 "Comt_Cov", text, 100, normal, "Comt_Cov", normal
 "_____", caption, normal, "_____", normal
 "FLORA_FAUNA ", caption, normal, "FLORA_FAUNA ", normal
 "CmmntFlora", text, 100, normal, "CmmntFlora", normal
 "CmmntFauna", text, 100, normal, "CmmntFauna", normal

"LEFT_BANK", line, "LEFT_BANK", 1, seconds, Code

"LEFT BANK REFERENCE", caption, normal, "LEFT BANK REFERENCE", normal
 "River_Name", text, 100, normal, "River_Name", normal, Eagle River
 "Organization", text, 100, normal, "Organization", normal, Ecoscape/Splatsin
 "Date", date, auto, ymd, manual, normal, "Date", normal
 "Time ", time, auto, 24, manual, normal, "Time ", normal
 "Crew", text, 50, normal, "Crew", normal, KH/AC
 "Weather", menu, normal, "Weather", normal

"Light Rain",[L]
 "Heavy Rain",[H]
 "Snow/Sleet",[N]
 "Over cast",[OV]
 "Clear",[S]
 "Partly Cloudy",[PC]
 "Other",[O]

"Jurisdiction", text, 100, normal, "Jurisdiction", normal
 "Comments", text, 100, normal, "Comments", normal
 "_____", caption, normal, "_____", normal
 "SEGMENT CLASS", caption, normal, "SEGMENT CLASS", normal
 "Segmnt_Num", numeric, 1, 0.0, 99999.0, 0.0, required, "Segmnt_Num", required,

Label1

"Reach_Number", numeric, 1, 0.0, 99999.0, 0.0, required, "Reach_Number", required

Lrge River Inventory.txt

"Shore_Type", menu, required, "Shore_Type", normal
 "Cliff/Bluff"
 "Rocky Shore"
 "Gravel"
 "Sand "
 "Confluence"
 "Wetland"
 "Other"
 "Flood Low Bench"
 "Flood Mid Bench"
 "Flood High Bench"
"Shore_Modifier", menu, normal, "Shore_Modifier", normal
 "Log Yard"
 "Marina_small (6-20)"
 "Marina_large (20+)"
 "Railway"
 "Road"
 "None", default
 "Other"
"Slope", menu, normal, "Slope", normal
 "Bench"
 "Low (0-5)"
 "Moderate (5-20)"
 "Steep (20-60)"
 "Very Steep (60+)"
"Land_Use", menu, normal, "Land_Use", normal
 "Agriculture"
 "Commercial"
 "Conservation"
 "Forestry"
 "Industrial"
 "Institution"
 "Multi Family"
 "Natural Area"
 "Park"
 "Recreation"
 "Rural"
 "Single Family"
 "Urban Park"
"Lev_of_Imp", menu, normal, "Lev_of_Imp", normal
 "None", default
 "Low (<10%)"
 "Medium (10-40%)"
 "High (>40%)"
"Livest_Acc", menu, normal, "Livest_Acc", normal
 "Yes"
 "No", default
"PCTDisturbed", numeric, 0, 0, 100, 0, normal, "PCTDisturbed", normal

Lrge River Inventory.txt

"PCTNatural", numeric, 0, 0, 100, 0, normal, "PCTNatural", normal
 "PhotoNum", text, 100, normal, "PhotoNum", normal
 "Tape_Numb", text, 100, normal, "Tape_Numb", normal
 "Video_Time", text, 100, normal, "Video_Time", normal
 "Cmmnt_Clas", text, 100, normal, "Cmmnt_Clas", normal
 "Photo", filename, normal, "Photo", normal
 "_____", caption, normal, "_____", normal
 "SHORE TYPE", caption, normal, "SHORE TYPE", normal
 "Cliff/Bluff", numeric, 0, 0, 100, 0, normal, "Cliff/Bluff", normal
 "Rocky", numeric, 0, 0, 100, 0, normal, "Rocky", normal
 "Gravel", numeric, 0, 0, 100, 0, normal, "Gravel", normal
 "Sand", numeric, 0, 0, 100, 0, normal, "Sand", normal
 "Confluence", numeric, 0, 0, 100, 0, normal, "Confluence", normal
 "Wetland", numeric, 0, 0, 100, 0, normal, "Wetland", normal
 "Other", numeric, 0, 0, 100, 0, normal, "Other", normal
 "Flood Low Bench", numeric, 0, 0, 100, 0, normal, "Flood Low Bench", normal
 "Flood Mid Bench", numeric, 0, 0, 100, 0, normal, "Flood Mid Bench", normal
 "Flood High Bench", numeric, 0, 0, 100, 0, normal, "Flood High Bench", normal
 "Stype_comm", text, 100, normal, "Stype_comm", normal
 "_____", caption, normal, "_____", normal
 "LAND USE", caption, normal, "LAND USE", normal
 "Agriculture", numeric, 0, 0, 100, 0, normal, "Agriculture", normal
 "Commercial", numeric, 0, 0, 100, 0, normal, "Commercial", normal
 "Conservation", numeric, 0, 0, 100, 0, normal, "Conservation", normal
 "Forestry", numeric, 0, 0, 100, 0, normal, "Forestry", normal
 "Industrial", numeric, 0, 0, 100, 0, normal, "Industrial", normal
 "Institution", numeric, 0, 0, 100, 0, normal, "Institution", normal
 "Multi Family", numeric, 0, 0, 100, 0, normal, "Multi Family", normal
 "Natural Area", numeric, 0, 0, 100, 0, normal, "Natural Area", normal
 "Park", numeric, 0, 0, 100, 0, normal, "Park", normal
 "Recreation", numeric, 0, 0, 100, 0, normal, "Recreation", normal
 "Rural", numeric, 0, 0, 100, 0, normal, "Rural", normal
 "Single Family", numeric, 0, 0, 100, 0, normal, "Single Family", normal
 "Urban Park", numeric, 0, 0, 100, 0, normal, "Urban Park", normal
 "Landu_Commnt", text, 100, normal, "Landu_Commnt", normal
 "_____", caption, normal, "_____", normal
 "MODIFICATIONS", caption, normal, "MODIFICATIONS", normal
 "Retain_Wal", numeric, 0, 0, 99999999, 0, normal, "Retain_Wal", normal
 "PerRetain_Wall", numeric, 0, 0, 100, 0, normal, "PerRetain_Wall", normal
 "Retain_Mat", menu, normal, "Retain_Mat", normal
 "Bio_Eng"
 "Concrete"
 "Mixed"
 "Stonework"
 "Wood"
 "Metal"
 "Tires"
 "Rock"

Lrge River Inventory.txt

"Other"

"Docks", numeric, 0, 0, 99999999, 0, normal, "Docks", normal

"Docks_km", numeric, 0, 0, 1000, 0, normal, "Docks_km", normal

"Boat_House", numeric, 0, 0, 99999999, 0, normal, "Boat_House", normal

"Groynes", numeric, 0, 0, 99999999, 0, normal, "Groynes", normal

"Groynes_km", numeric, 0, 0, 1000, 0, normal, "Groynes_km", normal

"Boat_Launch", numeric, 0, 0, 1000, 0, normal, "Boat_Launch", normal

"PerRail_mod", numeric, 0, 0, 100, 0, normal, "PerRail_mod", normal

"PerRoad_mod", numeric, 0, 0, 100, 0, normal, "PerRoad_mod", normal

"Marin_Rail", numeric, 0, 0, 99999999, 0, normal, "Marin_Rail", normal

"Marinas", numeric, 0, 0, 99999999, 0, normal, "Marinas", normal

"Sub_modification", menu, normal, "Sub_modification", normal

"Yes"

"No"

"PerSub_mod", numeric, 0, 0, 100, 0, normal, "PerSub_mod", normal

"Commnt_Mod", text, 100, normal, "Commnt_Mod", normal

"_____", caption, normal, "_____", normal

"BANK STABILITY", caption, normal, "BANK STABILITY", normal

"L_BkStbility", menu, normal, "L_BkStbility", normal

"High",[H]

"Medium",[M]

"Low",[L]

"Erosion",[VL]

"PctEroding", numeric, 0, 0, 100, 0, normal, "PctEroding", normal

"L_Bank_Material", menu, normal, "L_Bank_Material", normal

"Concrete",[C]

"Gabions",[GB]

"Pilings",[P]

"Stonework",[S]

"RipRap",[RR]

"Retain Wall/Bank Stb",[EHB]

"Sandbags",[SB]

"Wood",[W]

"Bark_Mulch",[BM]

"Asphalt",[AS]

"Dyke",[DY]

"Till",[T]

"Fines",[F]

"Gravel",[G]

"Cobble",[CB]

"Boulder",[B]

"Bed_Rock",[BR]

"Other",[O]

"L_Comment", text, 100, normal, "L_Comment", normal

"_____", caption, normal, "_____", normal

"FLORA & FAUNA ", caption, normal, "FLORA & FAUNA ", normal

"Veterans", menu, normal, "Veterans", normal

"No", default

Lrge River Inventory.txt

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"<5"
"5-25"
">25"
"Snags", menu, normal, "Snags", normal
  "No", default
  "<5"
  "5-25"
  ">25"
"Cmmnt_Flra", text, 100, normal, "Cmmnt_Flra", normal
"Cmmnt_Faun", text, 100, normal, "Cmmnt_Faun", normal

"RIGHT_BANK", line, "RIGHT_BANK", 1, seconds, Code
  "RIGHT BANK REFERENCE", caption, normal, "RIGHT BANK REFERENCE", normal
  "River_Name", text, 100, normal, "River_Name", normal, Eagle River
  "Organization", text, 100, normal, "Organization", normal, Ecoscape/Splatsin
  "Date", date, auto, ymd, manual, normal, "Date", normal
  "Time ", time, auto, 24, manual, normal, "Time ", normal
  "Crew", text, 50, normal, "Crew", normal, KH/AC
  "Weather", menu, normal, "Weather", normal
    "Light Rain",[L]
    "Heavy Rain",[H]
    "Snow/Sleet",[N]
    "Over cast",[OV]
    "Clear",[S]
    "Partly Cloudy",[PC]
    "Other",[O]
  "Jurisdiction", text, 100, normal, "Jurisdiction", normal
  "Comments", text, 100, normal, "Comments", normal
  "_____", caption, normal, "_____", normal
  "SEGMENT CLASS", caption, normal, "SEGMENT CLASS", normal
  "Segmnt_Num", numeric, 1, 0.0, 99999.0, 0.0, required, "Segmnt_Num", required,
Label1
  "Reach_Number", numeric, 1, 0.0, 99999.0, 0.0, required, "Reach_Number", required
  "Shore_Type", menu, required, "Shore_Type", normal
    "Cliff/Bluff"
    "Rocky Shore"
    "Gravel"
    "Sand "
    "Confluence"
    "Wetland"
    "Other"
    "Flood Low Bench"
    "Flood Mid Bench"
    "Flood High Bench"
  "Shore_Modifier", menu, normal, "Shore_Modifier", normal
    "Log Yard"
    "Marina_small (6-20)"
    "Marina_large (20+)"

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Lrge River Inventory.txt

"Railway"
 "Road"
 "None", default
 "Other"
 "Slope", menu, normal, "Slope", normal
 "Bench"
 "Low (0-5)"
 "Moderate (5-20)"
 "Steep (20-60)"
 "Very Steep (60+)"
 "Land_Use", menu, normal, "Land_Use", normal
 "Agriculture"
 "Commercial"
 "Conservation"
 "Forestry"
 "Industrial"
 "Institution"
 "Multi Family"
 "Natural Area"
 "Park"
 "Recreation"
 "Rural"
 "Single Family"
 "Urban Park"
 "Lev_of_Imp", menu, normal, "Lev_of_Imp", normal
 "None", default
 "Low (<10%)"
 "Medium (10-40%)"
 "High (>40%)"
 "Livest_Acc", menu, normal, "Livest_Acc", normal
 "Yes"
 "No", default
 "PCTDisturbed", numeric, 0, 0, 100, 0, normal, "PCTDisturbed", normal
 "PCTNatural", numeric, 0, 0, 100, 0, normal, "PCTNatural", normal
 "PhotoNum", text, 100, normal, "PhotoNum", normal
 "Tape_Numb", text, 100, normal, "Tape_Numb", normal
 "Video_Time", text, 100, normal, "Video_Time", normal
 "Cmmnt_Clas", text, 100, normal, "Cmmnt_Clas", normal
 "Photo", filename, normal, "Photo", normal
 "_____", caption, normal, "_____", normal
 "SHORE TYPE", caption, normal, "SHORE TYPE", normal
 "Cliff/Bluff", numeric, 0, 0, 100, 0, normal, "Cliff/Bluff", normal
 "Rocky", numeric, 0, 0, 100, 0, normal, "Rocky", normal
 "Gravel", numeric, 0, 0, 100, 0, normal, "Gravel", normal
 "Sand", numeric, 0, 0, 100, 0, normal, "Sand", normal
 "Confluence", numeric, 0, 0, 100, 0, normal, "Confluence", normal
 "Wetland", numeric, 0, 0, 100, 0, normal, "Wetland", normal
 "Other", numeric, 0, 0, 100, 0, normal, "Other", normal

Large River Inventory.txt

"Flood Low Bench", numeric, 0, 0, 100, 0, normal, "Flood Low Bench", normal
 "Flood Mid Bench", numeric, 0, 0, 100, 0, normal, "Flood Mid Bench", normal
 "Flood High Bench", numeric, 0, 0, 100, 0, normal, "Flood High Bench", normal
 "Stype_comm", text, 100, normal, "Stype_comm", normal
 "_____", caption, normal, "_____", normal
 "LAND USE", caption, normal, "LAND USE", normal
 "Agriculture", numeric, 0, 0, 100, 0, normal, "Agriculture", normal
 "Commercial", numeric, 0, 0, 100, 0, normal, "Commercial", normal
 "Conservation", numeric, 0, 0, 100, 0, normal, "Conservation", normal
 "Forestry", numeric, 0, 0, 100, 0, normal, "Forestry", normal
 "Industrial", numeric, 0, 0, 100, 0, normal, "Industrial", normal
 "Institution", numeric, 0, 0, 100, 0, normal, "Institution", normal
 "Multi Family", numeric, 0, 0, 100, 0, normal, "Multi Family", normal
 "Natural Area", numeric, 0, 0, 100, 0, normal, "Natural Area", normal
 "Park", numeric, 0, 0, 100, 0, normal, "Park", normal
 "Recreation", numeric, 0, 0, 100, 0, normal, "Recreation", normal
 "Rural", numeric, 0, 0, 100, 0, normal, "Rural", normal
 "Single Family", numeric, 0, 0, 100, 0, normal, "Single Family", normal
 "Urban Park", numeric, 0, 0, 100, 0, normal, "Urban Park", normal
 "Landu_Commnt", text, 100, normal, "Landu_Commnt", normal
 "_____", caption, normal, "_____", normal
 "MODIFICATIONS", caption, normal, "MODIFICATIONS", normal
 "Retain_Wal", numeric, 0, 0, 99999999, 0, normal, "Retain_Wal", normal
 "PerRetain_Wall", numeric, 0, 0, 100, 0, normal, "PerRetain_Wall", normal
 "Retain_Mat", menu, normal, "Retain_Mat", normal
 "Bio_Eng"
 "Concrete"
 "Mixed"
 "Stonework"
 "Wood"
 "Metal"
 "Tires"
 "Rock"
 "Other"
 "Docks", numeric, 0, 0, 99999999, 0, normal, "Docks", normal
 "Docks_km", numeric, 0, 0, 1000, 0, normal, "Docks_km", normal
 "Boat_House", numeric, 0, 0, 99999999, 0, normal, "Boat_House", normal
 "Groynes", numeric, 0, 0, 99999999, 0, normal, "Groynes", normal
 "Groynes_km", numeric, 0, 0, 1000, 0, normal, "Groynes_km", normal
 "Boat_Launch", numeric, 0, 0, 1000, 0, normal, "Boat_Launch", normal
 "PerRail_mod", numeric, 0, 0, 100, 0, normal, "PerRail_mod", normal
 "PerRoad_mod", numeric, 0, 0, 100, 0, normal, "PerRoad_mod", normal
 "Marin_Rail", numeric, 0, 0, 99999999, 0, normal, "Marin_Rail", normal
 "Marinas", numeric, 0, 0, 99999999, 0, normal, "Marinas", normal
 "Sub_modification", menu, normal, "Sub_modification", normal
 "Yes"
 "No"
 "PerSub_mod", numeric, 0, 0, 100, 0, normal, "PerSub_mod", normal

Large River Inventory.txt

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"Commnt_Mod", text, 100, normal, "Commnt_Mod", normal
"_____", caption, normal, "_____", normal
"BANK STABILITY", caption, normal, "BANK STABILITY", normal
"R_BkStbility", menu, normal, "R_BkStbility", normal
    "High", [H]
    "Medium", [M]
    "Low", [L]
    "Erosion", [VL]
"PctEroding", numeric, 0, 0, 100, 0, normal, "PctEroding", normal
"R_Bank_Material", menu, normal, "R_Bank_Material", normal
    "Concrete", [C]
    "Gabions", [GB]
    "Pilings", [P]
    "Stonework", [S]
    "RipRap", [RR]
    "Retain Wall/Bank Stb", [EHB]
    "Sandbags", [SB]
    "Wood", [W]
    "Bark_Mulch", [BM]
    "Asphalt", [AS]
    "Dyke", [DY]
    "Till", [T]
    "Fines", [F]
    "Gravel", [G]
    "Cobble", [CB]
    "Boulder", [B]
    "Bed_Rock", [BR]
    "Other", [O]
"R_Comment", text, 100, normal, "R_Comment", normal
"_____", caption, normal, "_____", normal
"FLORA & FAUNA ", caption, normal, "FLORA & FAUNA ", normal
"Veterans", menu, normal, "Veterans", normal
    "No", default
    "<5"
    "5-25"
    ">25"
"Snags", menu, normal, "Snags", normal
    "No", default
    "<5"
    "5-25"
    ">25"
"Cmmnt_Flra", text, 100, normal, "Cmmnt_Flra", normal
"Cmmnt_Faun", text, 100, normal, "Cmmnt_Faun", normal

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"Chan_Morph", area, "Chan_Morph", 1, seconds, 1, Code

"Point_number", numeric, 1, 0.0, 99999.0, 0.0, required, "Point_number", required,
Label1

"Character", menu, normal, "Character", normal

Lrge River Inventory.txt

"Bar",[BA]
 "Beaver Pond",[BP]
 "Cascade",[C]
 "Cascade/Pool",[CP]
 "Falls",[F]
 "Glide",[GL]
 "Pool",[P]
 "Run",[RN]
 "Riffle",[RF]
 "Riffle/Pool",[RP]
 "Slough",[S]
 "Standing",[S]
 "Wetland",[HMM]
 "Other",[O]
 "Area", numeric, 2, 0.00, 1000.00, 0.00, normal, "Area", normal
 "Comments", text, 100, normal, "Comments", normal
 "_____", caption, normal, "_____", normal
 "SUBSTRATE", caption, normal, "SUBSTRATE", normal
 "Sub_Organic", numeric, 0, 0, 100, 0, normal, "Sub_Organic", normal
 "Sub_Fines", numeric, 0, 0, 100, 0, normal, "Sub_Fines", normal
 "Sub_Gravel", numeric, 0, 0, 100, 0, normal, "Sub_Gravel", normal
 "Sub_Cobble", numeric, 0, 0, 100, 0, normal, "Sub_Cobble", normal
 "Sub_Blder", numeric, 0, 0, 100, 0, normal, "Sub_Blder", normal
 "Sub_BedRk", numeric, 0, 0, 100, 0, normal, "Sub_BedRk", normal
 "Embeddedness", menu, normal, "Embeddedness", normal
 "None"
 "Low (0-25%)", [L]
 "Medium (25-75%)", [M]
 "High (75%+)", [H]
 "Unknown", default
 "Compaction", menu, normal, "Compaction", normal
 "Low", [L]
 "Medium", [M]
 "High", [H]
 "Comt_Sub", text, 100, normal, "Comt_Sub", normal
 "PhotoNum", text, 100, normal, "PhotoNum", normal

 "Erosion", line, "Erosion", 1, seconds, 1, Code
 "Point_number", numeric, 1, 0.0, 99999.0, 0.0, required, "Point_number", required,
 Label1
 "Source_Erosion", menu, normal, "Source_Erosion", normal, Label2
 "Bank Erosion", [HCEB]
 "Culvert", [CV]
 "Headwall", [H]
 "Lack of Riparian Veg", [WDL]
 "Livestock Access", [WDC]
 "Streamside Grazing", [WDG]
 "Landslide "

Lrge River Inventory.txt

```

    "Debris flow/torrent"
    "Sloughing "
    "Other",[O]
"Bank", menu, normal, "Bank", normal
    "Both",[B]
    "Instream",[I]
    "Left",[L]
    "Right",[R]
"Severity", menu, required, "Severity", required
    "Low"
    "Moderate"
    "High"
    "Extreme"
"Exposure", menu, normal, "Exposure", normal
    "Clay",[C]
    "Silt",[Si]
    "Till",[T]
    "Bedrock",[B]
    "Roots",[R]
    "Soil",[S]
    "Other",[O]
"Length", numeric, 0, 0, 10000, 0, normal, "Length", normal
"Width", numeric, 0, 0, 1000, 0, normal, "Width", normal
"Height", numeric, 2, 0.00, 1000.00, 0.00, normal, "Height", normal
"Slope Degrees", numeric, 0, 0, 90, 0, normal, "Slope Degrees", normal
"PhotoNum", text, 100, normal, "PhotoNum", normal
"Comments", text, 100, normal, "Comments", normal
"Photo", filename, normal, "Photo", normal

"Erosion", point, "Erosion", 1, seconds, 1, Code
    "Point_number", numeric, 1, 0.0, 99999.0, 0.0, required, "Point_number", required,
Label1
    "Source_Erosion", menu, normal, "Source_Erosion", normal, Label2
        "Bank Erosion",[HCEB]
        "Culvert",[CV]
        "Headwall",[H]
        "Lack of Riparian Veg",[WDL]
        "Livestock Access",[WDC]
        "Streamside Grazing",[WDG]
        "Landslide "
        "Debris flow/torrent"
        "Sloughing "
        "Other",[O]
"Bank", menu, normal, "Bank", normal
    "Both",[B]
    "Instream",[I]
    "Left",[L]
    "Right",[R]

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Lrge River Inventory.txt

"Severity", menu, required, "Severity", required

"Low"

"Moderate"

"High"

"Extreme"

"Exposure", menu, normal, "Exposure", normal

"Clay",[C]

"Silt",[Si]

"Till",[T]

"Bedrock",[B]

"Roots",[R]

"Soil",[S]

"Other",[O]

"Length", numeric, 0, 0, 10000, 0, normal, "Length", normal

"Width", numeric, 0, 0, 1000, 0, normal, "Width", normal

"Height", numeric, 2, 0.00, 1000.00, 0.00, normal, "Height", normal

"Slope Degrees", numeric, 0, 0, 90, 0, normal, "Slope Degrees", normal

"PhotoNum", text, 100, normal, "PhotoNum", normal

"Comments", text, 100, normal, "Comments", normal

"Photo", filename, normal, "Photo", normal

"Modification", line, "Modification", 1, seconds, 1, Code

"Point_number", numeric, 1, 0.0, 99999.0, 0.0, required, "Point_number", required,
Label1

"Type_Modification", menu, normal, "Type_Modification", normal, Label2

"Boat Launch",[BL]

"Bridge",[BR]

"Catchbasin",[CB]

"Channelization",[HOC]

"Dam",[HOD]

"Detention Pond",[DP]

"Dock",[DK]

"Dredging",[HBDD]

"Fences",[HOF]

"FloodGate",[FG]

"Garbage/Pollution",[WP]

"Gravel Pit",[GP]

"Livestock Crossing",[LC]

"Livestock Access",[LA]

"Logging",[LG]

"PipeCrossing",[PL]

"Pump Station",[PS]

"Rec Access",[RA]

"Retain Wall/Bank Stb",[EHB]

"Rip_Rap",[RR]

"Road",[R]

"Trail",[TR]

"Water Withdrawal",[FUP]

Lrge River Inventory.txt

```

    "Other",[O]
"Bank", menu, normal, "Bank", normal
    "Both",[B]
    "Instream",[I]
    "Left",[L]
    "Right",[R]
"Type_Material", menu, normal, "Type_Material", normal
    "Concrete",[C]
    "Gabions",[GB]
    "Pilings",[P]
    "Stonework",[S]
    "Sandbags",[SB]
    "Wood",[W]
    "Gravel",[G]
    "Bark_Mulch",[BM]
    "Asphalt",[AS]
    "Dyke",[DY]
    "Other",[O]
"Length", numeric, 2, 0.00, 1000.00, 0.00, normal, "Length", normal
"Width", numeric, 2, 0.00, 1000.00, 0.00, normal, "Width", normal
"Height", numeric, 2, 0.00, 1000.00, 0.00, normal, "Height", normal
"PhotoNum", text, 100, normal, "PhotoNum", normal
"Comments", text, 100, normal, "Comments", normal
"Photo", filename, normal, "Photo", normal

"Modification", point, "Modification", 1, seconds, 1, Code
    "Point_number", numeric, 1, 0.0, 99999.0, 0.0, required, "Point_number", required,
Label1
    "Type_Modification", menu, normal, "Type_Modification", normal, Label2
        "Boat Launch",[BL]
        "Bridge",[BR]
        "Catchbasin",[CB]
        "Channelization",[HOC]
        "Dam",[HOD]
        "Detention Pond",[DP]
        "Dock",[DK]
        "Dredging",[HBDD]
        "Fences",[HOF]
        "FloodGate",[FG]
        "Garbage/Pollution",[WP]
        "Gravel Pit",[GP]
        "Livestock Crossing",[LC]
        "Livestock Access",[LA]
        "Logging",[LG]
        "PipeCrossing",[PL]
        "Pump Station",[PS]
        "Rec Access",[RA]
        "Retain Wall/Bank Stb",[EHB]

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Lrge River Inventory.txt

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    "Rip_Rap",[RR]
    "Road",[R]
    "Trail",[TR]
    "Water Withdrawal",[FUP]
    "Other",[O]
"Bank", menu, normal, "Bank", normal
    "Both",[B]
    "Instream",[I]
    "Left",[L]
    "Right",[R]
"Type_Material", menu, normal, "Type_Material", normal
    "Concrete",[C]
    "Gabions",[GB]
    "Pilings",[P]
    "Stonework",[S]
    "Sandbags",[SB]
    "Wood",[W]
    "Gravel",[G]
    "Bark_Mulch",[BM]
    "Asphalt",[AS]
    "Dyke",[DY]
    "Other",[O]
"Length", numeric, 2, 0.00, 1000.00, 0.00, normal, "Length", normal
"Width", numeric, 2, 0.00, 1000.00, 0.00, normal, "Width", normal
"Height", numeric, 2, 0.00, 1000.00, 0.00, normal, "Height", normal
"PhotoNum", text, 100, normal, "PhotoNum", normal
"Comments", text, 100, normal, "Comments", normal
"Photo", filename, normal, "Photo", normal

"Fish_Habitat", line, "Fish_Habitat", 1, seconds, 1, Code
    "Point_number", numeric, 1, 0.0, 99999.0, 0.0, required, "Point_number", required,
Label1
    "Type_Habitat", menu, normal, "Type_Habitat", normal, Label2
        "Boulder",[B]
        "Deep Pool",[DP]
        "Instream Vegetation",[IV]
        "Large Woody Debris",[LWD]
        "Over Stream Vegetn.",[OV]
        "Rearing_Nursery",[RE]
        "Small Woody Debris",[SWD]
        "Spawning Habitat",[HS]
        "Undercut Bank",[UC]
        "Other",[O]
"Bank", menu, normal, "Bank", normal
    "Both",[B]
    "Instream",[I]
    "Left",[L]
    "Right",[R]

```

Lrge River Inventory.txt

"Length", numeric, 2, 0.00, 1000.00, 0.00, normal, "Length", normal
 "Width", numeric, 2, 0.00, 1000.00, 0.00, normal, "Width", normal
 "Depth", numeric, 2, 0.00, 1000.00, 0.00, normal, "Depth", normal
 "Area", numeric, 2, 0.00, 1000.00, 0.00, normal, "Area", normal
 "PhotoNum", text, 100, normal, "PhotoNum", normal
 "Comments", text, 100, normal, "Comments", normal
 "Photo", filename, normal, "Photo", normal

"Fish_Habitat", point, "Fish_Habitat", 1, seconds, 1, Code

"Point_number", numeric, 1, 0.0, 99999.0, 0.0, required, "Point_number", required,
 Label1

"Type_Habitat", menu, normal, "Type_Habitat", normal, Label2

"Boulder",[B]

"Deep Pool",[DP]

"Instream Vegetation",[IV]

"Large Woody Debris",[LWD]

"Over Stream Vegetn.",[OV]

"Rearing Nursery",[RE]

"Small Woody Debris",[SWD]

"Spawning Habitat",[HS]

"Undercut Bank",[UC]

"Other",[O]

"Bank", menu, normal, "Bank", normal

"Both",[B]

"Instream",[I]

"Left",[L]

"Right",[R]

"Length", numeric, 2, 0.00, 1000.00, 0.00, normal, "Length", normal

"Width", numeric, 2, 0.00, 1000.00, 0.00, normal, "Width", normal

"Depth", numeric, 2, 0.00, 1000.00, 0.00, normal, "Depth", normal

"Area", numeric, 2, 0.00, 1000.00, 0.00, normal, "Area", normal

"PhotoNum", text, 100, normal, "PhotoNum", normal

"Comments", text, 100, normal, "Comments", normal

"Photo", filename, normal, "Photo", normal

"Culvert", point, "Culvert", 1, seconds, 1, Code

"Point_number", numeric, 1, 0.0, 99999.0, 0.0, required, "Point_number", required,
 Label1

"Type_Culvert", menu, normal, "Type_Culvert", normal, Label2

"Box Culvert",[BC]

"Gated Inlet",[GI]

"Gated Outlet",[GO]

"Gated Multiple Inlet",[GMI]

"Gated Multiple Out",[GMO]

"Inlet",[I]

"Inlet Stacked",[IS]

"Multiple Inlet",[MI]

"Multiple Outlet",[MO]

Lrge River Inventory.txt

"Outlet",[O]
 "Outlet Stacked",[OS]
 "Owner", menu, normal, "Owner", normal
 "Municipal",[MU]
 "Private",[PR]
 "Condition", menu, normal, "Condition", normal
 "Good",[G]
 "Partially Collapsed",[P]
 "Collapsed/Plugged",[C]
 "Barrier", menu, required, "Barrier", required
 "Yes",[Y]
 "No",[N]
 "Potential",[P]
 "unknown", default
 "Material", menu, required, "Material", required
 "Concrete",[C]
 "Steel",[S]
 "Wood",[W]
 "Iron",[I]
 "Metal_Concrete",[MC]
 "PVC",[P]
 "Asphalt coded",[AD]
 "Corrugated Steel",[CS]
 "Other",[O]
 "Substrate", menu, normal, "Substrate", normal
 "Boulders",[B]
 "Cobbles",[C]
 "Fines",[F]
 "Gravels",[G]
 "Mixed",[M]
 "Same as Culvert",[S]
 "Form", menu, normal, "Form", normal
 "Circular",[C]
 "Rectangular",[R]
 "Arch",[A]
 "Vertical Ellipse",[V]
 "Horizontal Ellipse",[H]
 "Other",[O]
 "Length", numeric, 2, 0.00, 1000.00, 0.00, normal, "Length", normal
 "Width", numeric, 2, 0.00, 1000.00, 0.00, normal, "Width", normal
 "Height", numeric, 2, 0.00, 1000.00, 0.00, normal, "Height", normal
 "Depth", numeric, 2, 0.00, 1000.00, 0.00, normal, "Depth", normal
 "Diameter", numeric, 2, 0.00, 1000.00, 0.00, normal, "Diameter", normal
 "ScreenSize", numeric, 2, 0.00, 100.00, 0.00, normal, "ScreenSize", normal
 "StormOutlets", numeric, 0, 0, 999, 0, normal, "StormOutlets", normal
 "Headwall", menu, normal, "Headwall", normal
 "Concrete",[C]
 "Concrete Block",[CB]

Lrge River Inventory.txt

"Gabion",[G]
"Sand bag",[SB]
"Wood",[W]
"Till",[T]
"Rip_rap",[RR]
"Stonework",[ST]
"Apron", menu, normal, "Apron", normal
"Yes",[Y]
"No",[N], default
"Baffles", menu, normal, "Baffles", normal
"Yes",[Y]
"No",[N], default
"Comments", text, 100, normal, "Comments", normal
"PhotoNum", text, 100, normal, "PhotoNum", normal
"Photo", filename, normal, "Photo", normal

"Discharge", point, "Discharge", 1, seconds, 1, Code
"Point_number", numeric, 1, 0.0, 99999.0, 0.0, required, "Point_number", required,
Label1
"Type_Discharge", menu, normal, "Type_Discharge", normal, Label2
"Agricultural Runoff",[WPA]
"HouseEffluent",[WE]
"Landfill Leachates",[WPML]
"Pollutant",[WP]
"Pulp Mill/Effluent",[WPP]
"Storm Drain",[WPD]
"Septic Effluent",[WPMP]
"Tile Drain",[WPI]
"Trench",[WPE]
"Other",[O]
"Bank", menu, normal, "Bank", normal
"Both",[B]
"Instream",[I]
"Left",[L]
"Right",[R]
"Material", menu, required, "Material", required
"Concrete",[C]
"Steel",[S]
"Wood",[W]
"Iron",[I]
"PVC",[P]
"Asphalt coded",[AD]
"Corrugated Steel",[CS]
"Other",[O]
"Headwall", menu, normal, "Headwall", normal
"Concrete",[C]
"Concrete Block",[CB]
"Gabion",[G]

Lrge River Inventory.txt

"Sand bag",[SB]
 "Wood",[W]
 "Till",[T]
 "Rip_rap",[RR]
 "Stonework",[ST]
 "Length", numeric, 2, 0.00, 1000.00, 0.00, normal, "Length", normal
 "Width", numeric, 2, 0.00, 1000.00, 0.00, normal, "Width", normal
 "Diameter", numeric, 2, 0.00, 1000.00, 0.00, normal, "Diameter", normal
 "Height", numeric, 2, 0.00, 1000.00, 0.00, normal, "Height", normal
 "Temperature", numeric, 2, 0.00, 100.00, 0.00, normal, "Temperature", normal
 "PhotoNum", text, 100, normal, "PhotoNum", normal
 "Comments", text, 100, normal, "Comments", normal
 "Photo", filename, normal, "Photo", normal

 "Fish_Sample", point, "Fish_Sample", 1, seconds, 1, Code
 "Point_number", numeric, 1, 0.0, 99999.0, 0.0, required, "Point_number", required,
 Label1
 "TrapNo", numeric, 0, 0, 100, 1, normal, "TrapNo", normal, Label2
 "DateIn", date, manual, ymd, manual, normal, "DateIn", normal
 "DateOut", date, manual, ymd, manual, normal, "DateOut", normal
 "Method", menu, normal, "Method", normal
 "Visual",[V]
 "Trap",[T]
 "Other",[O]
 "Species", menu, normal, "Species", normal
 "General Fish Observn",[FSH]
 "Bull trout",[BT]
 "Coho",[CO]
 "Chinook",[CH]
 "Chum",[CM]
 "Cutthroat Trout",[CT]
 "Westslope Cutthroat",[WCT]
 "Dolly Varden",[DV]
 "Anadromous Dolly Var",[ADV]
 "Pink",[PK]
 "Rainbow",[RB]
 "Stickleback",[SB]
 "Salmonid",[SA]
 "Sculpin",[CC]
 "Sockeye",[SK]
 "Steelhead",[ST]
 "Sucker",[SU]
 "Trout",[TR]
 "Whitefish",[WF]
 "Other",[O]
 "Count_total", numeric, 0, 0, 100, 0, normal, "Count_total", normal
 "Redd", menu, normal, "Redd", normal
 "Yes",[Y]

Lrge River Inventory.txt

"No",[N]
 "PhotoNum", text, 10, normal, "PhotoNum", normal
 "Photo_File", filename, normal, "Photo_File", normal
 "Comments", text, 100, normal, "Comments", normal
 "_____", caption, normal, "_____", normal
 "SPECIES 1", caption, normal, "SPECIES 1", normal
 "Sp_1", menu, normal, "Sp_1", normal
 "General Fish Observn",[FSH]
 "Bull trout",[BT]
 "Coho",[CO]
 "Chinook",[CH]
 "Chum",[CM]
 "Cutthroat Trout",[CT]
 "Westslope Cutthroat ",[WCT]
 "Dolly Varden",[DV]
 "Anadromous Dolly Var",[ADV]
 "Pink",[PK]
 "Rainbow",[RB]
 "Stickleback",[SB]
 "Salmonid",[SA]
 "Sculpin",[CC]
 "Kokanee",[KO]
 "Sockeye",[SK]
 "Steelhead",[ST]
 "Sucker",[SU]
 "Trout",[TR]
 "Whitefish",[WF]
 "Other",[O]
 "Count_1", numeric, 0, 0, 1000, 0, normal, "Count_1", normal
 "Age_1", menu, normal, "Age_1", normal
 "Juvenile",[J]
 "Immature",[I]
 "Mature",[M]
 "Spawning",[SPW]
 "Spent",[S]
 "Varied",[V]
 "Mort",[Mt]
 "ForkLth_1", numeric, 1, 0.0, 100.0, 0.0, normal, "ForkLth_1", normal
 "_____", caption, normal, "_____", normal
 "SPECIES 2", caption, normal, "SPECIES 2", normal
 "Sp_2", menu, normal, "Sp_2", normal
 "General Fish Observn",[FSH]
 "Bull trout",[BT]
 "Coho",[CO]
 "Chinook",[CH]
 "Chum",[CM]
 "Cutthroat Trout",[CT]
 "Westslope Cutthroat ",[WCT]

Lrge River Inventory.txt

"Dolly Varden",[DV]
 "Anadromous Dolly Var",[ADV]
 "Pink",[PK]
 "Rainbow",[RB]
 "Stickleback",[SB]
 "Salmonid",[SA]
 "Sculpin",[CC]
 "Kokanee",[KO]
 "Sockeye",[SK]
 "Steelhead",[ST]
 "Sucker",[SU]
 "Trout",[TR]
 "Whitefish",[WF]
 "Count_2", numeric, 0, 0, 1000, 0, normal, "Count_2", normal
 "Age_2", menu, normal, "Age_2", normal
 "Juvenile",[J]
 "Immature",[I]
 "Mature",[M]
 "Spawning",[SPW]
 "Spent",[S]
 "Varied",[V]
 "Mort",[Mt]
 "ForkLth_2", numeric, 1, 0.0, 100.0, 0.0, normal, "ForkLth_2", normal
 "_____", caption, normal, "_____", normal
 "SPECIES 3", caption, normal, "SPECIES 3", normal
 "Sp_3", menu, normal, "Sp_3", normal
 "General Fish Observn",[FSH]
 "Bull trout",[BT]
 "Coho",[CO]
 "Chinook",[CH]
 "Chum",[CM]
 "Cutthroat Trout",[CT]
 "Westslope Cutthroat",[WCT]
 "Dolly Varden",[DV]
 "Anadromous Dolly Var",[ADV]
 "Pink",[PK]
 "Rainbow",[RB]
 "Stickleback",[SB]
 "Salmonid",[SA]
 "Sculpin",[CC]
 "Kokanee",[KO]
 "Sockeye",[SK]
 "Steelhead",[ST]
 "Sucker",[SU]
 "Trout",[TR]
 "Whitefish",[WF]
 "Other",[O]
 "Count_3", numeric, 0, 0, 1000, 0, normal, "Count_3", normal

Lrge River Inventory.txt

"Age_3", menu, normal, "Age_3", normal
 "Juvenile",[J]
 "Immature",[I]
 "Mature",[M]
 "Spawning",[SPW]
 "Spent",[S]
 "Varied",[V]
 "Mort",[Mt]
 "ForkLth_3", numeric, 1, 0.0, 100.0, 0.0, normal, "ForkLth_3", normal
 "_____", caption, normal, "_____", normal
 "SPECIES 4", caption, normal, "SPECIES 4", normal
 "Sp_4", menu, normal, "Sp_4", normal
 "General Fish Observn",[FSH]
 "Bull trout",[BT]
 "Coho",[CO]
 "Chinook",[CH]
 "Chum",[CM]
 "Cutthroat Trout",[CT]
 "Westslope Cutthroat ",[WCT]
 "Dolly Varden",[DV]
 "Anadromous Dolly Var",[ADV]
 "Pink",[PK]
 "Rainbow",[RB]
 "Stickleback",[SB]
 "Salmonid",[SA]
 "Sculpin",[CC]
 "Kokanee",[KO]
 "Sockeye",[SK]
 "Steelhead",[ST]
 "Sucker",[SU]
 "Trout",[TR]
 "Whitefish",[WF]
 "Other",[O]
 "Count_4", numeric, 0, 0, 1000, 0, normal, "Count_4", normal
 "Age_4", menu, normal, "Age_4", normal
 "Juvenile",[J]
 "Immature",[I]
 "Mature",[M]
 "Spawning",[SPW]
 "Spent",[S]
 "Varied",[V]
 "Mort",[Mt]
 "ForkLth_4", numeric, 1, 0.0, 100.0, 0.0, normal, "ForkLth_4", normal
 "_____", caption, normal, "_____", normal
 "SPECIES 5", caption, normal, "SPECIES 5", normal
 "Sp_5", menu, normal, "Sp_5", normal
 "General Fish Observn",[FSH]
 "Bull trout",[BT]

Lrge River Inventory.txt

"Coho",[CO]
 "Chinook",[CH]
 "Chum",[CM]
 "Cutthroat Trout",[CT]
 "Westslope Cutthroat",[WCT]
 "Dolly Varden",[DV]
 "Anadromous Dolly Var",[ADV]
 "Pink",[PK]
 "Rainbow",[RB]
 "Stickleback",[SB]
 "Salmonid",[SA]
 "Sculpin",[CC]
 "Kokanee",[KO]
 "Sockeye",[SK]
 "Steelhead",[ST]
 "Sucker",[SU]
 "Trout",[TR]
 "Whitefish",[WF]
 "Other",[O]
 "Count_5", numeric, 0, 0, 1000, 0, normal, "Count_5", normal
 "Age_5", menu, normal, "Age_5", normal
 "Juvenile",[J]
 "Immature",[I]
 "Mature",[M]
 "Spawning",[SPW]
 "Spent",[S]
 "Varied",[V]
 "Mort",[Mt]
 "ForkLth_5", numeric, 1, 0.0, 100.0, 0.0, normal, "ForkLth_5", normal
 "_____", caption, normal, "_____", normal
 "SPECIES 6", caption, normal, "SPECIES 6", normal
 "Sp_6", menu, normal, "Sp_6", normal
 "General Fish Observn",[FSH]
 "Bull trout",[BT]
 "Coho",[CO]
 "Chinook",[CH]
 "Chum",[CM]
 "Cutthroat Trout",[CT]
 "Westslope Cutthroat",[WCT]
 "Dolly Varden",[DV]
 "Anadromous Dolly Var",[ADV]
 "Pink",[PK]
 "Rainbow",[RB]
 "Stickleback",[SB]
 "Salmonid",[SA]
 "Sculpin",[CC]
 "Kokanee",[KO]
 "Sockeye",[SK]

Lrge River Inventory.txt

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"Steelhead",[ST]
"Sucker",[SU]
"Trout",[TR]
"Whitefish",[WF]
"Other",[O]
"Count_6", numeric, 0, 0, 1000, 0, normal, "Count_6", normal
"Age_6", menu, normal, "Age_6", normal
    "Juvenile",[J]
    "Immature",[I]
    "Mature",[M]
    "Spawning",[SPW]
    "Spent",[S]
    "Varied",[V]
    "Mort",[Mt]
"ForkLth_6", numeric, 1, 0.0, 100.0, 0.0, normal, "ForkLth_6", normal

"Enhancement", point, "Enhancement", 1, seconds, 1, Code
    "Point_number", numeric, 1, 0.0, 99999.0, 0.0, required, "Point_number", required,
Label1
    "Type_Enhance", menu, normal, "Type_Enhance", normal, Label2
        "Fishways",[EOF]
        "Hatchery",[ECAH]
        "Incubation Box",[ECNX]
        "Livestock Fencing",[LF]
        "LWD Placement",[EHRL]
        "Log/Rock Wiers",[EHRI]
        "Riparian Plantings",[EHBP]
        "Riparian Zone Fence",[EHBF]
        "Rock/Boulder Placeme",[EHRR]
        "Side Channel/Pool",[EHRS]
        "Spawning Gravel",[EHSP]
        "Veg Bank Stabilize",[EHBV]
        "Other",[O]
    "Bank", menu, normal, "Bank", normal
        "Both",[B]
        "Instream",[I]
        "Left",[L]
        "Right",[R]
    "Status", menu, normal, "Status", normal
        "Existing",[E]
        "Potential",[P]
    "Length", numeric, 2, 0.00, 1000.00, 0.00, normal, "Length", normal
    "Width", numeric, 2, 0.00, 1000.00, 0.00, normal, "Width", normal
    "Height", numeric, 2, 0.00, 1000.00, 0.00, normal, "Height", normal
    "Diameter", numeric, 2, 0.00, 1000.00, 0.00, normal, "Diameter", normal
    "Comments", text, 100, normal, "Comments", normal
    "PhotoNum", text, 100, normal, "PhotoNum", normal
    "Photo", filename, normal, "Photo", normal

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Lrge River Inventory.txt

"Enhancement", line, "Enhancement", 1, seconds, 1, Code
"Point_number", numeric, 1, 0.0, 99999.0, 0.0, required, "Point_number", required,
Label1

"Type_Enhance", menu, normal, "Type_Enhance", normal, Label2

"Fishways",[EOF]

"Hatchery",[ECAH]

"Incubation Box",[ECNX]

"Livestock Fencing",[LF]

"LWD Placement",[EHRL]

"Log/Rock Wiers",[EHRI]

"Riparian Plantings",[EHBP]

"Riparian Zone Fence",[EHBF]

"Rock/Boulder Placeme",[EHRR]

"Side Channel/ Pools",[EHRS]

"Spawning Gravel",[EHSP]

"Veg Bank Stabilize",[EHBV]

"Other",[O]

"Bank", menu, normal, "Bank", normal

"Both",[B]

"Instream",[I]

"Left",[L]

"Right",[R]

"Status", menu, normal, "Status", normal

"Existing",[E]

"Potential",[P]

"Length", numeric, 2, 0.00, 1000.00, 0.00, normal, "Length", normal

"Width", numeric, 2, 0.00, 1000.00, 0.00, normal, "Width", normal

"Height", numeric, 2, 0.00, 1000.00, 0.00, normal, "Height", normal

"Diameter", numeric, 2, 0.00, 1000.00, 0.00, normal, "Diameter", normal

"Comments", text, 100, normal, "Comments", normal

"PhotoNum", text, 100, normal, "PhotoNum", normal

"Photo", filename, normal, "Photo", normal

"Line_generic", line, "Line_generic", 1, seconds, 1, Code

"Comment", text, 100, normal, "Comment", normal, Label1

"Obstruction", point, "Obstruction", 1, seconds, 1, Code

"Point_number", numeric, 1, 0.0, 99999.0, 0.0, normal, "Point_number", normal,
Label1

"Type_Obstruction", menu, normal, "Type_Obstruction", normal, Label2

"Beaver Dam",[BD]

"Canyon",[CN]

"Cascade",[C]

"Dam",[D]

"Falls",[F]

"Fences",[FE]

"Hydro Dam",[HD]

Lrge River Inventory.txt

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"Log Jam",[X]
"Persistent Debris",[PD]
"Pump",[PU]
"Rock",[R]
"Velocity Barrier",[VB]
"Other",[OT]
"Bank", menu, normal, "Bank", normal
  "Both",[B]
  "Instream",[I]
  "Left",[L]
  "Right",[R]
"Barrier", menu, required, "Barrier", required
  "Yes",[Y]
  "Potential",[P]
  "unknown", default
"Length", numeric, 2, 0.00, 1000.00, 0.00, normal, "Length", normal
"Width", numeric, 2, 0.00, 1000.00, 0.00, normal, "Width", normal
"Depth", numeric, 2, 0.00, 1000.00, 0.00, normal, "Depth", normal
"Diameter", numeric, 2, 0.00, 1000.00, 0.00, normal, "Diameter", normal
"Height", numeric, 2, 0.00, 1000.00, 0.00, normal, "Height", normal
"Slope", numeric, 0, 0, 90, 0, normal, "Slope", normal
"ScreenSize", numeric, 2, 0.00, 100.00, 0.00, normal, "ScreenSize", normal
"PhotoNum", text, 100, normal, "PhotoNum", normal
"Comments", text, 100, normal, "Comments", normal
"Photo", filename, normal, "Photo", normal

"Photo_Location", point, "Photo_Location", 1, seconds, 1, Code
  "Point_number", numeric, 1, 0.0, 99999.0, 0.0, required, "Point_number", required,
Label1
  "Photo_Roll_&Frame", text, 100, normal, "Photo_Roll_&Frame", normal, Label2
  "Photo_Direction", menu, normal, "Photo_Direction", normal
    "Upstream",[U]
    "Downstream",[D]
    "Accross_stream",[X]
    "Up",[UP]
    "Down",[BD]
  "Photo_Bearing", numeric, 0, 0, 360, 0, normal, "Photo_Bearing", normal
  "Photo_Comments", text, 100, normal, "Photo_Comments", normal
  "Photo", filename, normal, "Photo", normal

"POINT", point, "POINT", 1, seconds, 1, Code
  "Type_Point", menu, required, "Type_Point", required, Label1
    "Location Point",[L]
    "Start Point",[S]
    "End Point",[E]
    "Reference Point",[RP]
    "Bench Mark",[BM]
    "Monument",[MT]

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Lrge River Inventory.txt

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    "Map Tie Point",[MTP]
    "Reach Break",[R]
    "Riparian Band",[RB]
    "Segment Break",[SB]
    "Elevation",[Alt]
    "Left Top of Bank",[LTOB]
    "Right Top of Bank",[RTOB]
    "Point_number", numeric, 1, 0.0, 99999.0, 0.0, normal, "Point_number", normal,
Label2
    "Distance", numeric, 2, 0.00, 1000.00, 0.00, normal, "Distance", normal
    "Bearing", numeric, 0, 0, 360, 0, normal, "Bearing", normal
    "Gradient", numeric, 0, 0, 90, 0, normal, "Gradient", normal
    "Elevation", numeric, 0, 0, 2000, 0, normal, "Elevation", normal
    "Comments", text, 100, normal, "Comments", normal
    "PhotoNum", text, 100, normal, "PhotoNum", normal
    "Photo", filename, normal, "Photo", normal

    "Point_generic", point, "Point_generic", 1, seconds, 1, Code
    "Comment", text, 100, normal, "Comment", normal, Label1
    "Photo", filename, normal, "Photo", normal, Label2

    "Tree_Wildlife", point, "Tree_Wildlife", 1, seconds, 1, Code
    "Point_number", numeric, 1, 0.0, 99999.0, 0.0, required, "Point_number", required,
Label1
    "Type_Tree", menu, normal, "Type_Tree", normal, Label2
        "Coniferous"
        "Deciduous"
        "Unknown"
    "Veteran_tree", menu, normal, "Veteran_tree", normal
        "Yes"
    "DBH", numeric, 2, 0.00, 20.00, 0.00, normal, "DBH", normal
    "Mast_tree", menu, normal, "Mast_tree", normal
        "Yes"
    "Bank", menu, normal, "Bank", normal
        "Both",[B]
        "Instream",[I]
        "Left",[L]
        "Right",[R]
    "Nesting", menu, normal, "Nesting", normal
        "Potential"
        "Large"
        "Small"
    "State", menu, normal, "State", normal
        "Living"
        "Dead"
        "unknown"
    "Woodpkr_use", menu, normal, "Woodpkr_use", normal
        "Yes"

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Large River Inventory.txt

"Denning", menu, normal, "Denning", normal
 "Yes"
 "Perches", menu, normal, "Perches", normal
 "Yes"
 "Cavities", menu, normal, "Cavities", normal
 "1"
 "2"
 "3"
 "4+"
 "CmmntFlora", text, 100, normal, "CmmntFlora", normal
 "PhotoNum", text, 100, normal, "PhotoNum", normal
 "Photo", filename, normal, "Photo", normal

"Waterbody", line, "Waterbody", 1, seconds, 1, Code
 "Point_number", numeric, 1, 0.0, 99999.0, 0.0, required, "Point_number", required,
 Label1

"Type_Waterbody", menu, normal, "Type_Waterbody", normal, Label2
 "Beaver Pond",[BP]
 "Discontinued",[HMD]
 "Ditch",[FRT]
 "Natural Springs",[HMS]
 "Off Channel",[OffC]
 "OxBow",[OxB]
 "Side Channel",[SC]
 "Tributary",[HMT]
 "Wetland",[HMT]
 "Other ",[HM]
 "Bank", menu, normal, "Bank", normal
 "Both",[B]
 "Instream",[I]
 "Left",[L]
 "Right",[R]
 "Length", numeric, 2, 0.00, 1000.00, 0.00, normal, "Length", normal
 "Width", numeric, 2, 0.00, 1000.00, 0.00, normal, "Width", normal
 "Depth", numeric, 2, 0.00, 1000.00, 0.00, normal, "Depth", normal
 "Temperature", numeric, 2, 0.00, 100.00, 0.00, normal, "Temperature", normal
 "PhotoNum", text, 100, normal, "PhotoNum", normal
 "Comments", text, 100, normal, "Comments", normal
 "Photo", filename, normal, "Photo", normal

"Waterbody", point, "Waterbody", 1, seconds, 1, Code
 "Point_number", numeric, 1, 0.0, 99999.0, 0.0, required, "Point_number", required,
 Label1

"Type_Waterbody", menu, normal, "Type_Waterbody", normal, Label2
 "Beaver Pond",[BP]
 "Discontinued",[HMD]
 "Ditch",[FRT]
 "Natural Springs",[HMS]

Lrge River Inventory.txt

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"Off Channel",[OffC]
"OxBow",[OxB]
"Side Channel",[SC]
"Tributary",[HMT]
"Wetland",[HWW]
"Other ",[HM]
"Bank", menu, normal, "Bank", normal
    "Both",[B]
    "Instream",[I]
    "Left",[L]
    "Right",[R]
"Length", numeric, 2, 0.00, 1000.00, 0.00, normal, "Length", normal
"Width", numeric, 2, 0.00, 1000.00, 0.00, normal, "Width", normal
"Depth", numeric, 2, 0.00, 1000.00, 0.00, normal, "Depth", normal
"Temperature", numeric, 2, 0.00, 100.00, 0.00, normal, "Temperature", normal
"PhotoNum", text, 100, normal, "PhotoNum", normal
"Comments", text, 100, normal, "Comments", normal
"Photo", filename, normal, "Photo", normal

"Water_Sample", point, "Water_Sample", 1, seconds, 1, Code
    "Point_number", numeric, 1, 0.0, 99999.0, 0.0, required, "Point_number", required,
Label1
    "TDS", numeric, 1, 0.0, 250.0, 0.0, normal, "TDS", normal, Label2
    "pH", numeric, 1, 0.0, 15.0, 0.0, normal, "pH", normal
    "Temp", numeric, 1, 0.0, 100.0, 0.0, normal, "Temp", normal
    "DO", numeric, 1, 0.0, 25.0, 9.0, normal, "DO", normal
    "Turbidity", menu, normal, "Turbidity", normal
        "Clear",[C], default
        "Lightly Turbid",[L]
        "Moderately Turbid",[M]
        "Turbid",[T]
        "Other"
    "Comments", text, 100, normal, "Comments", normal

"Wildlife", point, "Wildlife", 1, seconds, 1, Code
    "Point_number", numeric, 1, 0.0, 99999.0, 0.0, required, "Point_number", required,
Label1
    "Type_Evidence", menu, normal, "Type_Evidence", normal, Label2
        "Calls",[Cl]
        "Egg masses",[EM]
        "Nest",[Nt]
        "Sighted",[St]
        "Scat/Droppings",[Sd]
        "Tracks",[Tk]
        "Other",[O]
    "Class_Wildlife", menu, normal, "Class_Wildlife", normal
        "Amphibian"
        "Large Mammal"

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Lrge River Inventory.txt

"Songbird"
"Raptor"
"Reptile"
"Small Mammal"
"Waterbirds"
"Waterfowl"
"Bank", menu, normal, "Bank", normal
"Both",[B]
"Instream",[I]
"Left",[L]
"Right",[R]
"Species_Wildlife", text, 45, normal, "Species_Wildlife", normal
"CmmntFauna", text, 100, normal, "CmmntFauna", normal
"PhotoNum", text, 100, normal, "PhotoNum", normal

"WETLAND_POINT", line, "WETLAND_POINT", 1, seconds, 1, Code
"Class", menu, normal, "Class", normal
"Shallow water"
"Marsh"
"Swamp"
"Fen"
"Bog"
"Flood_High_Bench"
"Flood_Mid_Bench"
"Flood_Low_Bench"
"Shrub Carr"
"Saline Meadow"
"Form", menu, normal, "Form", normal
"Discharge Swamp"
"Flat Swamp"
"Mineral-Rise Swamp"
"Riparian Swamp"
"Slope Swamp"
"Basin Marsh"
"Hummock Marsh"
"Lacustrine Marsh"
"Riparian Marsh"
"Slope Marsh"
"Spring Marsh"
"Basin Water"
"Lacustrine Water"
"Riparian Water"
"Subform", menu, normal, "Subform", normal
"Floodplain"
"Delta"
"Isolated"
"Linked"
"Bay"

Lrge River Inventory.txt

"Lagoon"
"Shore"
"Stream"
"Discharge"
"Spring"
"Seepage"
"Slope "
"Basin Swamp"
"Unconfined Swamp"
"Swale Swamp"
"Floodplain Swamp"
"Channel Swamp"
"Lacustrine Swamp"
"Riverine Swamp"
"Beach Ridge Swamp"
"Island Swamp"
"Levee Swamp"
"Mound Swamp"
"Floodplain Water"
"Shore Water"
"Stream Water"
"Type", menu, normal, "Type", normal
"Floating_aquatic"
"Submerged_aquatic"
"Forb"
"Grass"
"Low_rush"
"Reed"
"Sedge"
"Tall_rush"
"Lichen"
"Moss"
"Non_vegetated"
"Low_Shrub_<2-m"
"Mixed_shrub"
"Tall_shrub_>2-m"
"Tree_Conifer"
"Tree_Mixed"
"Tree_Broadleaf"
"Site_Assocn", menu, normal, "Site_Assocn", normal
"Wm01"
"Wm02"
"Wm03"
"Wm04"
"Wm05"
"Wm06"
"Wm07"
"Wm51"

Lrge River Inventory.txt

"Ws01"

"Ws02"

"Ws03"

"Ws04"

"Ws05"

"Ws06"

"Ws07"

"Ws09"

"Ws10"

"Ws50"

"Ws51"

"Wa"

"Fl01"

"Fl02"

"Fl03"

"Fl04"

"Fl05"

"Fl06"

"Fl07"

"Fm01"

"Fm02"

"Gs01"

"Gs02"

"Gs03"

"Gs04"

"RCG"

"Gs00"

"Wm00"

"Ws00"

"No_Veg_Forms", numeric, 0, 0, 16, 1, normal, "No_Veg_Forms", normal

"Veg_Forms", text, 100, normal, "Veg_Forms", normal

"Dom_Veg", text, 100, normal, "Dom_Veg", normal

"REF_PHOTO", text, 100, normal, "REF_PHOTO", normal

"Comment_Unit", text, 100, normal, "Comment_Unit", normal

"Photo", filename, normal, "Photo", normal, Label1

"WETLAND_POINT", area, "WETLAND_POINT", 1, seconds, 1, Code

"Class", menu, normal, "Class", normal

"Shallow water"

"Marsh"

"Swamp"

"Fen"

"Bog"

"Flood_High_Bench"

"Flood_Mid_Bench"

"Flood_Low_Bench"

"Shrub Carr"

"Saline Meadow"

Lrge River Inventory.txt

"Form", menu, normal, "Form", normal

- "Discharge Swamp"
- "Flat Swamp"
- "Mineral-Rise Swamp"
- "Riparian Swamp"
- "Slope Swamp"
- "Basin Marsh"
- "Hummock Marsh"
- "Lacustrine Marsh"
- "Riparian Marsh"
- "Slope Marsh"
- "Spring Marsh"
- "Basin Water"
- "Lacustrine Water"
- "Riparian Water"

"Subform", menu, normal, "Subform", normal

- "Floodplain"
- "Delta"
- "Isolated"
- "Linked"
- "Bay"
- "Lagoon"
- "Shore"
- "Stream"
- "Discharge"
- "Spring"
- "Seepage"
- "Slope "
- "Basin Swamp"
- "Unconfined Swamp"
- "Swale Swamp"
- "Floodplain Swamp"
- "Channel Swamp"
- "Lacustrine Swamp"
- "Riverine Swamp"
- "Beach Ridge Swamp"
- "Island Swamp"
- "Levee Swamp"
- "Mound Swamp"
- "Floodplain Water"
- "Shore Water"
- "Stream Water"

"Type", menu, normal, "Type", normal

- "Floating_aquatic"
- "Submerged_aquatic"
- "Forb"
- "Grass"
- "Low_rush"

Lrge River Inventory.txt

"Reed"
"Sedge"
"Tall_rush"
"Lichen"
"Moss"
"Non_vegetated"
"Low_Shrub_<2-m"
"Mixed_shrub"
"Tall_shrub_>2-m"
"Tree_Conifer"
"Tree_Mixed"
"Tree_Broadleaf"
"Site_Assocn", menu, normal, "Site_Assocn", normal
"Wm01"
"Wm02"
"Wm03"
"Wm04"
"Wm05"
"Wm06"
"Wm07"
"Wm51"
"Ws01"
"Ws02"
"Ws03"
"Ws04"
"Ws05"
"Ws06"
"Ws07"
"Ws09"
"Ws10"
"Ws50"
"Ws51"
"Wa"
"Fl01"
"Fl02"
"Fl03"
"Fl04"
"Fl05"
"Fl06"
"Fl07"
"Fm01"
"Fm02"
"Gs01"
"Gs02"
"Gs03"
"Gs04"
"RCG"
"Gs00"

Lrge River Inventory.txt

"Wm00"

"Ws00"

"No_Veg_Forms", numeric, 0, 0, 16, 1, normal, "No_Veg_Forms", normal

"Veg_Forms", text, 100, normal, "Veg_Forms", normal

"Dom_Veg", text, 100, normal, "Dom_Veg", normal

"REF_PHOTO", text, 100, normal, "REF_PHOTO", normal

"Comment_Unit", text, 100, normal, "Comment_Unit", normal

"Photo", filename, normal, "Photo", normal, Label1