STREAM INVENTORY REPORT

CEDAR CREEK

INTRODUCTION

A stream inventory was conducted during the fall of 1993 on Cedar Creek to assess habitat conditions for anadromous salmonids. The inventory was conducted in two parts: habitat inventory and biological inventory. The objective of the habitat inventory was to document the habitat available to anadromous salmonids in Cedar Creek. The objective of the biological inventory was to document the salmonid species present and their distribution. After analysis of the information and data gathered, stream restoration and enhancement recommendations are presented.

An adult carcass survey was conducted in Cedar Creek on January 20, 1988. The survey reach extended from the confluence with the South Fork Eel River to a cascade approximately 25,000' upstream. Two live Chinook salmon and nineteen carcasses, five males and 14 females, were observed. Forty unidentified skeletons were also observed. No adult carcass surveys have been conducted since. However, steelhead fry were sampled during the 1993 fall electrofishing survey (below). The California Department of Fish and Game opened an experimental hatchery at the mouth of Cedar Creek in 1949. It was closed in 1964 due to repeated flooding of the facility. During the period of operation the facility released over 400,000 steelhead and 700,000 coho. The objective of this report is to document the current habitat conditions and recommend options for the potential enhancement of habitat for Chinook salmon, coho salmon and steelhead trout.

WATERSHED OVERVIEW

Cedar Creek is tributary to the South Fork Eel River, tributary to the Eel River, located in Mendocino County, California. Cedar Creek's legal description at the confluence with the South Fork Eel River is T23N R17W S14. Its location is 39°50'19" N. latitude and 123°42'27" W. longitude. Cedar Creek is a second order stream and has approximately 10.2 miles of blue line stream, according to the USGS Leggett, Bell Springs, Noble Butte, and Tan Oak Park 7.5 minute quadrangles. Cedar Creek drains a watershed of approximately 15.4 square miles. Summer base flow is approximately 8 cfs at the mouth, but drops to 0.25 cfs at the confluence with Little Cedar Creek 45,326' upstream. Elevations range from about 760 feet at the mouth of the creek to 3,500 feet in the headwater areas. Douglas fir and ponderosa pine forests dominate the watershed. The watershed is primarily privately owned and is managed for timber and rangeland. Lower Cedar Creek flows through the rural community of South Leggett. Vehicle access exists via U.S. Highway 101 and frontage roads immediately south of Leggett.

METHODS

The habitat inventory conducted in Cedar Creek follows the methodology presented in the California Salmonid Stream Habitat Restoration Manual (Flosi and Reynolds, 1991). The California Conservation Corps (CCC) Technical Advisors and the contract seasonals that conducted the inventory were trained in standardized habitat inventory methods by the California Department of Fish and Game (DFG). Cedar Creek personnel were trained in June, 1993, by

Gary Flosi and Scott Downie. This inventory was conducted by two person teams.

HABITAT INVENTORY COMPONENTS

A standardized habitat inventory form has been developed for use in California stream surveys and can be found in the California Salmonid Stream Habitat Restoration Manual. This form was used in Cedar Creek to record measurements and observations. There are nine components to the inventory form.

1. Flow:

Flow is measured in cubic feet per second (cfs) at the bottom of the stream survey reach using standard flow measuring equipment, if available. In some cases flows are estimated. Flows should also be measured or estimated at major tributary confluences.

2. Channel Type:

Channel typing is conducted according to the classification system developed by David Rosgen (1985). This methodology is described in the California Salmonid Stream Habitat Restoration Manual. Channel typing is conducted simultaneously with habitat typing and follows a standard form to record measurements and observations. There are four measured parameters used to determine channel type: 1) water slope gradient, 2) channel confinement, 3) width/depth ratio, 4) substrate composition.

3. Temperatures:

Both water and air temperatures are measured and recorded at each tenth unit typed. The time of the measurement is also recorded. Both temperatures are taken in fahrenheit at the middle of the habitat unit and within one foot of the water surface.

4. Habitat Type:

Habitat typing uses the 24 habitat classification types defined by McCain and others (1988). Habitat units are numbered sequentially and assigned a type identification number selected from a standard list of 24 habitat types. Dewatered units are labeled "dry". Cedar Creek habitat typing used standard basin level measurement criteria. These parameters require that the minimum length of a described habitat unit must be equal to or greater than the stream's mean wetted width. Channel dimensions were measured using hip chains, range finders, tape measures, and stadia rods. Unit measurements included mean length, mean width, mean depth, and maximum depth. Pool tail crest depth at each pool unit was measured in the thalweg. All measurements were taken in feet to the nearest tenth.

5. Embeddedness:

The depth of embeddedness of the cobbles in pool tail-out reaches is measured by the percent of the cobble that is surrounded or buried by fine sediment. In Cedar Creek, embeddedness was ocularly estimated. The values were recorded using the following ranges: 0 - 25% (value 1), 26 - 50% (value 2), 51 - 75% (value 3), 76 - 100% (value 4).

6. Shelter Rating:

Instream shelter is composed of those elements within a stream channel that provide salmonids protection from predation, reduce water velocities so fish can rest and conserve energy, and allow separation of territorial units to reduce density related competition. The shelter rating is calculated for each habitat unit by multiplying shelter value and percent cover. Using an overhead view, a quantitative estimate of the percentage of the habitat unit covered is made. All cover is then classified according to a list of nine cover types. In Cedar Creek, a standard qualitative shelter value of 0 (none), 1 (low), 2 (medium), or 3 (high) was assigned according to the complexity of the cover. Thus, shelter ratings can range from 0-300, and are expressed as mean values by habitat types within a stream.

7. Substrate Composition:

Substrate composition ranges from silt/clay sized particles to boulders and bedrock elements. In all habitat units, dominant and sub-dominant substrate elements were ocularly estimated using a list of seven size classes.

8. Canopy:

Stream canopy is estimated using handheld spherical densiometers and is a measure of the water surface shaded during periods of high sun. In Cedar Creek, an estimate of the percentage of the habitat unit covered by canopy was made from the center of each unit. The area of canopy was further analyzed to estimate its percentages of coniferous or deciduous trees, and the results recorded.

9. Bank Composition:

Bank composition elements range from bedrock to bare soil. However, the stream banks are usually covered with grass, brush, or trees. These factors influence the ability of stream banks to withstand winter flows. In Cedar Creek, the dominant composition type in both the right and left banks was selected from a list of eight options on the habitat inventory form. Additionally, the percent of each bank covered by vegetation was estimated and recorded.

BIOLOGICAL INVENTORY

Biological sampling during stream inventory is used to determine fish species and their distribution in the stream. Biological inventory is conducted using one or more of three basic

methods: 1) stream bank observation, 2) underwater observation, 3) electrofishing. These sampling techniques are discussed in the California Salmonid Stream Habitat Restoration Manual.

Biological inventory was conducted in Cedar Creek to document the fish species composition and distribution. Two sites were electrofished in Cedar Creek using one Smith Root Model 12 electrofisher. Each site was end-blocked with nets to contain the fish within the sample reach. Fish from each site were counted by species, measured, and returned to the stream.

SUBSTRATE SAMPLING

Gravel sampling is conducted using a 9 inch diameter standard McNeil gravel sampler. Sample sites are identified numerically beginning at the most upstream site in the stream. Gravel samples are separated and measured to determine respective percent volume using five sieve sizes (25.4, 12.5, 4.7, 2.37, and 0.85mm).

DATA ANALYSIS

Data from the habitat inventory form are entered into Habitat Runtime, a dBASE 4.1 data entry program developed by the California Department of Fish and Game. This program processes and summarizes the data, and produces the following six tables:

- Riffle, flatwater, and pool habitat types
- Habitat types and measured parameters
- Pool types
- Maximum pool depths by habitat types
- Dominant substrates by habitat types
- Mean percent shelter by habitat types

Graphics are produced from the tables using Lotus 1,2,3. Graphics developed for Cedar Creek include:

- Riffle, flatwater, pool habitats by percent occurrence
- Riffle, flatwater, pool habitats by total length
- Total habitat types by percent occurrence
- Pool types by percent occurrence
- Total pools by maximum depths
- Embeddedness
- Pool cover by cover type
- Dominant substrate in low gradient riffles
- Percent canopy
- Bank composition by composition type

HABITAT INVENTORY RESULTS

* ALL TABLES AND GRAPHS ARE LOCATED AT THE END OF THE REPORT *

The habitat inventory of October 13-28 and November 1-3, 1993, was conducted by Chris Coyle, Brian Michaels, Michelle Rose, and Ruth Goodfield (CCC and contract seasonals). The total length of the stream surveyed was 55,249 feet, with an additional 2,311 feet of side channel.

Flow was measured at the bottom of the survey reach with a Marsh-McBirney Model 2000 flowmeter at 8.8 cfs on Oct. 27, 1993.
Cedar Creek is a B2 channel type for the first 24,848 feet; A2 for the next 1,644 feet; B2 for the next 14,567 feet; and an F3 for the last 13,390 feet of the survey. B2 streams are moderate gradient (1.5-4.0%), stable, large cobble and coarse gravel channels. A2 channels are high gradient (4-10%), very well confined streams, with stable stream banks. F3 channels are flat, totally confined, highly meandering streams, with a cobble/ gravel bed and a high sediment load.

Water temperatures ranged from 44 to 58 degrees Fahrenheit. Air temperatures ranged from 44 to 71 degrees Fahrenheit.

Table 1 summarizes the Level II riffle, flatwater, and pool habitat types. By percent **occurrence**, riffles made up 39.6%, pools 32.2%, and flatwater types 28.1% (Graph 1). riffle habitat types made up 42.8% of the total survey **length**, flatwater 32.3%, and pools 24.9% (Graph 2).

Eighteen Level IV habitat types were identified. The data are summarized in Table 2. The most frequent habitat types by percent **occurrence** were low gradient riffles, 31.7%; step runs, 15.5%; and mid-channel pools, 14.4% (Graph 3). By percent total **length**, low gradient riffles made up 36.4%, step runs 23.0%, and mid-channel pools 10.3%.

Two-hundred-forty-four pools were identified (Table 3). main-channel pools were most often encountered at 49.6%, and comprised 51.4% of the total length of pools (Graph 4).

Table 4 is a summary of maximum pool depths by pool habitat types. Depth is an indicator of pool quality. Two-hundred-seventeen of the 244 pools (89%) had a depth of two feet or greater (Graph 5).

The depth of cobble embeddedness was estimated at pool tail-outs. Of the 238 pool tail-outs measured, sixty-four had a value of 1 (26.9%); 64 had a value of 2 (26.9%); 83 had a value of 3 (34.9%); and 27 had a value of 4 (11.3%). On this scale, a value of one is the best for fisheries (Graph 6).

A shelter rating was calculated for each habitat unit and expressed as a mean value for each habitat type within the survey using a scale of 0-300. Riffle habitat types had the highest shelter rating at 60.7. Pool habitats followed with a rating of 36.2 (Table 1). Of the pool types, the backwater pools had the highest mean shelter rating at 40.0, and scour pools rated 37.0 (Table 3).

Table 5 summarizes mean percent cover by habitat type. Boulders are the dominant cover type in Cedar Creek and are extensive. Large and small woody debris are lacking in nearly all habitat types. Graph 7 describes the pool cover in Cedar Creek.

Table 6 summarizes the dominant substrate by habitat type. Small cobble was the dominant substrate observed in 83 of the 240 low gradient riffles (34.6%). Gravel was the next most frequently observed dominant substrate type, and occurred in 20.8% of the low gradient riffles (Graph 8).

Seventy-three percent of the survey reach lacked shade canopy. Of the 27% of the stream covered with canopy, 66% was composed of deciduous trees, and 26% was composed of coniferous trees. Graph 9 describes the canopy in Cedar Creek.

Table 2 summarizes the mean percentage of the right and left stream banks covered with vegetation by habitat type. For the stream reach surveyed, the mean percent right bank vegetated was 53.0%. The mean percent left bank vegetated was 53.1%. The dominant elements composing the structure of the stream banks consisted of 44.1% bedrock, 23.1% boulder, 14.5% cobble/gravel, 2.3% bare soil, 0.1% grass, 0.3% brush. Additionally, 13.4% of the banks were covered with deciduous trees, and 2.1% with coniferous trees, including downed trees, logs, and root wads (Graph 10).

BIOLOGICAL INVENTORY RESULTS

Two sites were electrofished on November 4, 1993 in Cedar Creek. The units were sampled by Chris Coyle and Ruth Goodfield (contract seasonals). All measurements are fork lengths unless noted otherwise.

The first site sampled was habitat unit 55, a lateral scour bedrock pool, approximately 4,707 feet above the creek mouth. This site had an area of 1,040 sq ft, and a volume of 1,976 cu ft. Thirteen steelhead were sampled. They ranged from 54 to 135mm FL. The total effort for the single pass was 346 seconds.

The second site sampled included habitat units 498 and 499, a step run and mid-channel pool, approximately 43,434 feet from the confluence with the South Fork Eel River. This site had an area of 1,116 sq ft, and a volume of 998 cu ft. The unit yielded 91 steelhead, ranging from 51 to 132mm FL. Total effort for the three passes was 1,680 seconds.

GRAVEL SAMPLING RESULTS

No gravel samples were taken on Cedar Creek.

DISCUSSION

Cedar Creek has three channel types: B2, A2, and F3. The B2 channel type is excellent for many types of low stage instream enhancement structures such as weirs, boulders placed in-channel and along banks, single and double wing deflectors, channel constrictors and submerged shelters in straight reaches. There are 39,415 feet of this type of channel in Cedar Creek.

The A2 channel type is generally not suitable for fish habitat improvement structures. A2 channels are found in high energy, steep gradient stream reaches. They have channels dominated by boulders, do not retain gravels very well, but do have stable stream banks. There are 1,644 feet of this channel type in Cedar Creek.

The F3 channel type is generally not suitable for stream habitat improvement structures. F3 channels are totally confined, highly meandering cobble/ gravel bed stream with high sediment supply and unstable stream banks that are prone to erosion. There are 13,390 feet of this channel type in Cedar Creek.

The water temperatures recorded on the survey days October 13-28 and November 1-3, 1993 ranged from 44° F to 58° F. Air temperatures ranged from 44° F to 71° F. This is a very good water temperature regime for salmonids. However, this survey was conducted after the warm summer period. Considering the low level of stream canopy, water temperatures should be monitored throughout the warm summer months, and more extensive biological sampling conducted before forming any conclusions.

Flatwater habitat types comprised 32.3% of the total **length** of this survey, riffles 42.8%, and pools 24.9%. The pools are deep with 217 of the 244 pools having a maximum depth greater than 2 feet. In coastal coho and steelhead streams, it is generally desirable to have primary pools comprise approximately 50% of total habitat. In first and second order streams a primary pool is defined to have a maximum depth of at least two feet, occupy at least half the width of the low flow channel, and be as long as the low flow channel width. Therefore, installing structures that will increase or deepen pool habitat is recommended for locations where their installation will not be threatened by high stream energy or unstable stream banks.

One-hundred-ten of the 238 pool tail-outs measured had embeddedness ratings of 3 or 4. Sixty-four had a 1 rating. Cobble embeddedness measured to be 25% or less, a rating of 1, is considered best for the needs of salmon and steelhead. In Cedar Creek, sediment sources should be mapped and rated according to their potential sediment yields, and control measures taken.

The mean shelter rating for pools was relatively low with a rating of 36.1. The shelter rating in the flatwater habitats was slightly less at 34.3. A pool shelter rating of approximately 100 is desirable. The relatively small amount of cover that now exists is being provided primarily by boulders in all habitat types. Additionally, large and small woody debris contribute a small amount of escape cover.

One-hundred-thirty-three of the 240 low gradient riffles had small cobble and gravel as the dominant substrate. This is generally considered good for spawning salmonids.

The mean percent canopy for the stream was 27%. This is a relatively low percentage of canopy, since 80 percent is generally considered optimum in these north coast streams. In areas of stream bank erosion, planting endemic species of coniferous and deciduous trees, in conjunction with bank stabilization, is recommended.

RECOMMENDATIONS

1) Cedar Creek should be managed as an anadromous, natural production stream.

2) Temperatures should be monitored through the summer months, and canopy increased on Cedar Creek by planting willow, alder, and Douglas fir along the stream where shade canopy is not at acceptable levels. In many cases, planting will need to be coordinated to follow bank stabilization or upslope erosion control projects.

3) Inventory and map sources of stream bank erosion, and prioritize them according to present and potential sediment yield. Identified sites, like the site at 1,093', should then be treated to reduce the amount of fine sediments entering the stream.

4) Increase woody cover in the pools and flatwater habitat units. Most of the existing cover is from boulders. Adding high quality complexity with woody cover is desirable and in some areas the material is at hand.

5) Spawning gravels on Cedar Creek are limited to relatively few reaches. Projects should be designed at suitable sites to trap and sort spawning gravels in order to expand redd site distribution in the stream.

6) Due to the high gradient in some reaches, access for migrating salmonids is an ongoing potential problem. Good water temperature and flow regimes exist in the stream and it offers good conditions for rearing fish. Fish passage should be monitored, and improved where possible.

7) Where feasible, design and engineer pool enhancement structures to increase the number of pools. This must be done where the banks are stable or in conjunction with stream bank armor to prevent erosion.

PROBLEM SITES AND LANDMARKS

The following landmarks and possible problem sites were noted. All the distances are approximate and taken from the beginning of the survey reach.

0'	Begin survey at confluence with South Fork Eel River. Channel type is a B2.
732'	Left bank erosion 100' high x 100' long.
1515'	Left bank erosion 60' high x 70' long, contributing cobble.
1593'	Left bank slide 100' long x 100' high, contributing fines.
1971'	Dry tributary from right bank.
2366'	Left bank erosion 100' high x 70' long, contributing fines and gravel.
4707'	Biological inventory site #1. Habitat unit #55.
5861'	Arch shaped concrete culvert under U.S. Highway 101. On downstream end of culvert a fish ladder 20' high x 22' wide x 790' long is located.
6179'	Arch concrete culvert under Highway 271 bridge. Approximately 150' above the wetted channel, right bank is rip-rapped.
6764'	Left bank erosion 20' high x 100' long, contributing fines.
7303'	Right bank slide 80' high x 50' long, contributing fines.
7692'	Right bank erosion 80' high x 70' long, contributing gravel and fines.
7924'	Right bank slide 80' high x 40' long, contributing fines and gravel.
9588'	Left bank slide 200' high x 140' long, contributing fines and boulders.
9923'	Left bank erosion 25' high x 40' long, contributing fines.
10009'	Left bank erosion 100' high x 80' long, contributing fines.
10403'	Left bank erosion 60' high x 60' long, contributing fines. Right bank erosion 100' high x 50' long.
10744'	Within habitat unit #114, there are a series of left bank slides: 80' high x 80' long, 80' high x 40' long, and 50' high x 60' long. All are contributing fines.

11227' Right bank erosion 150' high x 150' long, contributing fines.

11302' Left bank erosion 150' high x 150' long, contributing fines and gravel.

11857' Left bank erosion 100' high x 100' long, contributing fines.

12133' Left bank erosion 50' high x 50' long.

12790' Left bank erosion 80' high x 50' long, contributing fines.

12888' Right bank erosion 100' high x 60' long, contributing Toe of slide is beginning to revegetate.

12970' Left bank slide 100' high x 20' long, contributing gravel.

14250' Right bank slide 150' high x 150' long, contributing fines and gravel.

14855' Left bank erosion 70' high x 50' long, contributing fines.

14917' Left bank erosion 70' high x 50' long, contributing fines.

15553' Left bank erosion 100' high x 150' long, contributing fines. Slide is partially revegetated.

15830' Right bank erosion 200' high x 70' long, contributing fines. Toe is partially revegetated. Left bank has multiple terraces of cobble and gravel.

16793' Road access on left bank through Bradley property.

17623' Left bank erosion 100' high x 150' long, contributing fines and gravel.

17336' Right bank erosion 500' high x 200' long, contributing fines, gravel, and boulders.

17607' Right bank erosion 70' high x 50' long, contributing fines.

19205' Left bank erosion 200' high x 200' long, contributing fines and gravel.

19946' Log debris accumulation (LDA) 15' high x 50' wide x 100' long, partially constricting channel. Not a barrier.

20493' Right bank erosion 50' high x 150' long, contributing fines and boulders.

20925' Left bank slide 100' high x 150' long, contributing fines.

21248' Right bank erosion 80' high x 200' long, contributing fines. Toe of slide is revegetated.

21547' Right bank erosion 150' high x 100' long, contributing fines.

22515' High gradient boulder cataract over the next 2000 feet. Channel type changes to an A2.

23850' Right bank erosion 50' high x 150' long, contributing fines and gravel.

24044' Right bank erosion 50' high x 200' long, contributing fines and gravel.

24814' Small tributary entering from left bank.

24848' Reach 2, channel type changes to an A2.

25722' Dry tributary from right bank.

25541' Right bank erosion 100' high x 250' long, contributing fines and gravel.

26492' Reach 3, channel type changes to a B2.

27212' High gradient tributary entering from right bank.

27465' Reach 3, channel type changes to a B2

27323' Right bank erosion 100' high x 300' long.

27718' Left bank erosion 12' high x 400' long, contributing fines and gravel.

27845' Dry tributary from left bank.

28765' Tributary entering from right bank. Left bank erosion 200' high x 300' long contributing fines. Young of the year (YOY) and 2+ salmonid observed in main channel.

28876' Left bank erosion 30' high x 250' long, contributing fines.

29345' Springs entering from right bank. Left bank erosion 15' high x 350' long, contributing fines and cobble.

29911' Right bank erosion 800' high x 450' long, contributing fines.

30093' Left bank erosion 70' high x 250' long.

30556' Right bank erosion 100' high x 350' long.

30966' Left bank erosion 50' high x 250' long, contributing fines and gravel.

31147' Right bank erosion 200' high x 520' long, contributing fines and gravel.

31833' Left bank erosion 50' high x 150' long, contributing fines and boulders.

31883' Right bank erosion 70' high x 200' long.

32404' Right bank erosion 600' high x 500' long.

32751' Left bank erosion 50' high x 150' long.

33007' Left bank erosion 500; high x 300' long. Right bank erosion 15' high x 300' long.

33469' Tributary entering from right bank. Channel of trib. is highly eroded with substantial quantities of gravel and cobble on both of the and at the confluence.

33691' Left bank erosion 100' high x 200' long, contributing fines and boulders. Tributary entering from right bank.

33819' Left bank erosion 80' high x 125' long.
34279' Left bank erosion 400' high x 500' long.

34643' Right bank erosion 200' high x 300' long.

35694' Right bank erosion 80' high x 200' long.

36406' Right bank erosion 400' high x 500' long.

37055' Left bank erosion 200' high x 200' long.

37284' Right bank erosion 200' high x 250' long, contributing fines and cobble.

37542' Left bank erosion 300' high x 350' long, contributing fines and gravel.

37983' Left bank erosion 50' high x 80' long.

38208' Right bank erosion 150' high x 250' long.

38564' Left bank erosion 100' high x 200' long.

38890' Right bank erosion 50' high x 150' long.

39287' Left bank erosion 20' high x 150' long.

40661' Flow of .66 cfs was measured.

40788' Confluence of Cedar Creek and North Fork Cedar Creek. Flow of North Fork Cedar Creek measured at 0.3 cfs.

41059' Reach 4, channel type changes from a B2 to an F3. Flow is .25 cfs.

43358' Trail access to Cedar Creek via Gullick Ranch.

43434' Biological inventory site #2, habitat units 498-499.

45326' Little Cedar Creek enters main channel. Thirteen foot bedrock falls block mouth of tributary.

47065' Dry tributary from left bank.

47517' Cable yarder line crosses channel.

48439' Dry tributary entering from right bank.

50326' Tributary entering from left bank. Flow is approximately 0.1 cfs.

50474' Right bank erosion 70' high x 80' long, contributing fines.

50789' Right bank erosion 40' high x 50' long.

54236' Boulder cataract constricting channel. Right bank erosion 50' high x 100' long. LDA 10' high x 30' wide x 20' long. Not a barrier.

54266' YOY observed above boulder cataract.

54705' Tributary entering from right bank. Flow is 0.1 cfs.

55166' Dry tributary from right bank.

55249' END OF SURVEY. Flow becomes intermittent, gradient increases and number of fish observed dramatically decreases above boulder cataract.

LEVEL III and LEVEL IV HABITAT TYPE KEY:

HABITAT TYPE	LETTER	NUMBER
RIFFLE		
Low Gradient Riffle	[LGR]	1.1
High Gradient Riffle	[HGR]	1.2
CASCADE		
Cascade	[CAS]	2.1
Bedrock Sheet	[BRS]	2.2
FLATWATER		
Pocket Water	[POW]	3.1
Glide	[GLD]	3.2
Run	[RUN]	3.3
Step Run	[SRN]	3.4
Edgewater	[EDW]	3.5
MAIN CHANNEL POOLS		
Trench Pool	[TRP]	4.1
Mid-Channel Pool	[MCP]	4.2
Channel Confluence Pool	[CCP]	4.3
Step Pool	[STP]	4.4
SCOUR POOLS		
Corner Pool	[CRP]	5.1
Lateral Scour Pool - Log Enhanced	[LSL]	5.2
Lateral Scour Pool - Root Wad Enhanced	[LSR]	5.3
Lateral Scour Pool - Bedrock Formed	[LSBk]	5.4
Lateral Scour Pool - Boulder Formed	[LSBo]	5.5
Plunge Pool	[PLP]	5.6
BACKWATER POOLS		
Secondary Channel Pool	[SCP]	6.1
Backwater Pool - Boulder Formed	[BPB]	6.2
Backwater Pool - Root Wad Formed	[BPR]	6.3
Backwater Pool - Log Formed	[BPL]	6.4
Dammed Pool	[DPL]	6.5