STREAM INVENTORY REPORT

SOUTH FORK ELK RIVER

INTRODUCTION

A stream inventory was conducted during the summer of 1994 on South Fork Elk River 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 South Fork Elk River. 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.

Adult carcass surveys were conducted on South Fork Elk River by the California Department of Fish and Game (DFG) from 1986 through 1994. The table below describes the results of those surveys:

South Fork Elk River Carcass Surveys 1986 - 94

		Chinook Salmon				Other	
Year	# of Surveys	Live Fish	# of Carcass	Adipose ClipCWT	Redds seen	Coho seen	SH/RT seen
1986-87	3	3	0	0	57	40	0
1987-88	3	26	11	0	215	98	10
1989-90	2	2	0	0	37	57	1
1990-91	5	49	15	1	341	33	33
1991-92	1	2	5	0	42	24	4
1993-94	2	2	1	0	325	484	4

The objective of this report is to document the current habitat conditions in South Fork Elk River and recommend options for the enhancement of habitat for chinook salmon, coho salmon and steelhead trout.

WATERSHED OVERVIEW

South Fork Elk River is tributary to Elk River, tributary to

Humboldt Bay, located in Humboldt County, California (Figure 1). The legal description at the confluence with Elk River is T04N R01W S26. Its location is 40°42'09" North latitude and 124° 09'04" West longitude. South Fork Elk River is a third order stream and has approximately ten miles of blue line stream according to the USGS Fields Landing and McWhinney Creek 7.5 minute quadrangles. South Fork Elk River and its tributaries drain a basin of approximately 21 square miles, and the system has a total of 18 miles of blue line stream. Summer base flow is approximately 0.5 cubic feet per second (cfs) at the mouth. Elevations range from about 80 feet at the mouth of the creek to 1600 feet in the headwater areas. Redwood and fir forest dominates the watershed. The watershed is privately owned and is managed for timber production. Year-round vehicle access exists from U.S. Highway 101 via Elk River Road.

METHODS

The habitat inventory conducted in South Fork Elk River follows the methodology presented in the California Salmonid Stream Habitat Restoration Manual (Flosi and Reynolds, 1991 rev. 1994). The California Conservation Corps (CCC) Technical Advisors (T.A.'s) that conducted the inventory were trained in standardized habitat inventory methods by the California Department of Fish and Game. South Fork Elk River personnel were trained in June, 1994, by Gary Flosi and Scott Downie. This inventory was conducted by a two person team.

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 South Fork Elk River 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 and revised by David Rosgen (1985 rev. 1994). 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 five measured parameters used to determine channel type: 1) water slope gradient, 2) entrenchment, 3) width/depth ratio, 4) substrate composition, 5) sinuosity.

3. Temperatures:

Both water and air temperatures are taken and recorded at each tenth unit typed. The time of the measurement is also recorded. 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". South Fork Elk River 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 South Fork Elk River, 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 South Fork Elk River, 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 and recorded as a one and two respectively.

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 South Fork Elk River, 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 and Vegetation:

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 South Fork Elk River, the dominant bank composition type and the dominant vegetation type of both the right and left banks were selected from 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 South Fork Elk River to document the fish species composition and distribution. Seven sites were electrofished in South Fork Elk River 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.

DATA ANALYSIS

Data from the habitat inventory form are entered into Habitat, a dBASE 4.2 data entry program developed by Tim Curtis, Inland Fisheries Division, California Department of Fish and Game (DFG). This program also processes and summarizes the data.

The Habitat program produces the following 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 South Fork Elk River 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
- Bank vegetation by vegetation type

HABITAT INVENTORY RESULTS

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

The habitat inventory of July 13, 14, 18, 19, 20, 22, and August 1, 3, 4, 5, 8, 9, 11, 12, 15, 16, 18, and 19, 1994, was conducted by Chris Coyle, Craig Mesman, and Kevin Schukraft (CCC). The survey began at the confluence with Tom Gulch and extended up South Fork Elk River to the headwaters. The total length of the stream surveyed was 50,062 feet with an additional 626 feet of side channel.

A flow of 0.4 cfs was measured August 22, 1994 at habitat unit

33, 1571 feet above survey start, with a Marsh-McBirney Model 2000 flowmeter. On the same date, at 35,530 feet above survey start, flow was measured at 0.3 cfs. On August 23, 1994, flow was measured at 0.1 cfs at 45,240 feet above survey start.

This section of South Fork Elk River has three channel types: from the mouth to 9,007 feet an F4; next 20,610 feet an F3; next 1,364 feet an F2; next 5,561 feet an F3; next 6,078 feet an F2; and the upper 7,442 feet an F4. F-type channels are entrenched, meandering, riffle/pool channels on low gradients with high width-depth ratios. F2 channels have a boulder-dominant substrate, F3 is cobble-dominant, and F4 is gravel-dominant.

Water temperatures ranged from 53 to 66 degrees Fahrenheit. Air temperatures ranged from 53 to 74 degrees Fahrenheit.

Table 1 summarizes the Level II riffle, flatwater, and pool habitat types. By percent **occurrence**, riffles made up 33%, flatwater types 33%, and pools 33% (Graph 1). Flatwater habitat types made up 40% of the total survey **length**, pools 34%, and riffles 26% (Graph 2).

Twenty-one 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 29%; mid-channel pools 22%; runs 13%; and step runs 13% (Graph 3). By percent total **length**, mid-channel pools made up 24%, low gradient riffles 23%, step runs 23%, and runs 9%.

Three-hundred-eighty-one pools were identified (Table 3). Main channel pools were most often encountered at 70% and comprised 73% 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. One-hundred-thirteen of the 381 pools (30%) had a depth of three feet or greater (Graph 5).

The depth of cobble embeddedness was estimated at pool tail-outs. Of the 367 pool tail-outs measured, 151 had a value of 1 (41%); 117 had a value of 2 (32%); 87 had a value of 3 (24%); and 12 had a value of 4 (3%). On this scale, a value of one is 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. Pool types had the highest shelter rating at 31. Flatwater types had the lowest rating with 20 (Table 1). Of the pool types, the backwater pools had the highest mean shelter rating at 46, main channel pools rated

31, and scour pools 27 (Table 3).

Table 5 summarizes mean percent cover by habitat type. Boulders are the dominant cover type in South Fork Elk River and are extensive. Large and small woody debris are the next most common cover types. Graph 7 describes the pool cover in South Fork Elk River.

Table 6 summarizes the dominant substrate by habitat type. Small cobble was the dominant substrate observed in 144 of the 337 low gradient riffles (43%). Gravel was the next most frequently observed dominant substrate type and occurred in 29% of the low gradient riffles (Graph 8).

Twelve percent of South Fork Elk River lacked shade canopy. Of the 88% of the stream that was covered with canopy, 67% was composed of deciduous trees, and 33% was composed of coniferous trees. Graph 9 describes the canopy in South Fork Elk River.

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 92%. The mean percent left bank vegetated was 93%. The dominant elements composing the structure of the stream banks consisted of 7.7% bedrock, 21.1% boulder, 39.8% cobble/gravel, and 31.4% sand/silt/clay (Graph 10). Grass was the dominant vegetation type observed in 50% of the units surveyed. Additionally, 13.4% of the units surveyed had deciduous trees as the dominant vegetation type, and 6.4% had coniferous trees as the dominant vegetation, including down trees, logs, and root wads (Graph 11).

BIOLOGICAL INVENTORY RESULTS

Seven sites were electrofished on July 21 and August 10, 22, and 23, 1994 in South Fork Elk River. The units were sampled by Craig Mesman, Chris Coyle, Jason MacDonnell and Charles Bartolotta (CCC), and Julie Reynolds (Sierra Pacific Industries). All measurements are fork lengths unless noted otherwise.

The first site sampled was habitat units 34-36, a run / low gradient riffle / backwater pool series approximately 1,652 feet from the confluence with Tom Gulch. The site had an area of 3,372 sq ft and a volume of 4,180 cu ft. The sample included 93 steelhead, ranging from 32 to 172 mm; 47 coho, ranging from 43 to 72 mm; 35 three-spine stickleback, ranging from 20 to 63 mm; five Pacific lamprey amnocetes, ranging from 50 to 110 mm total length; and two Pacific giant salamanders.

The second sample site was habitat unit 466, a lateral scour pool - root wad enhanced, approximately 26,315 feet above the confluence with Tom Gulch. This site had an area of 294 sq ft and a volume of 265 cu ft. The sample included 16 steelhead ranging from 39 to 161 mm, and 24 coho, ranging from 48 to 70 mm.

The third site was habitat units 668-669, a lateral scour pool - root wad enhanced and step run approximately 34,814 feet from the confluence with Tom Gulch and just downstream from the confluence with Line Creek. This site had an area of 1,318 sq ft and a volume of 905 cu ft. The sample included 36 steelhead ranging from 38 to 131 mm; 29 coho, ranging from 50 to 70 mm; one red-legged frog and seven Pacific giant salamanders.

The fourth site was habitat unit 709, a mid-channel pool approximately 36,671 feet from the confluence with Tom Gulch and upstream from Line Creek. This site had an area of 618 sq ft, and a volume of 556 cu ft. The sample included 26 steelhead ranging from 35 to 155 mm; 13 coho, ranging from 55 to 75 mm; one Pacific lamprey ammocete and one Pacific giant salamander.

The fifth site was habitat unit 792, a mid-channel pool approximately 40,018 feet from the confluence with Tom Gulch. The site had an area of 395 sq ft and a volume of 277 cu ft. The sample included 25 steelhead between 43 and 155mm.

The sixth site was habitat unit 904, a mid-channel pool approximately 44,185 feet from the confluence with Tom Gulch. The site had an area of 966 sq ft and a volume of 1,256 cu ft. The sample was comprised of 21 steelhead ranging from 37 to 119 mm, and two Pacific giant salamanders.

The seventh site was a lateral scour pool - root wad enhanced / low gradient riffle / corner pool series approximately 50,212 feet from the confluence with Tom Gulch and approximately 150 feet above the 1994 end of survey. The site had an approximate area of 200 sq ft and an estimated volume of 100 cu ft. Efforts yielded one 128 mm steelhead.

DISCUSSION

South Fork Elk River has three channel types: F2, F3, and F4. The F2 channel type is considered fair for the placement of low stage weirs, single and opposing wing deflectors, bank cover, and log cover structures; it is considered poor for medium stage weirs. The F3 channel type is considered good for bank-placed boulders and single and opposing wing deflectors; fair for low stage weirs, random boulder placement, channel constrictors,

bank cover, and log cover structures; and poor for medium stage weirs. The F4 channel type is considered good for bank placed boulders; fair for low stage weirs, single and opposing wing deflectors, channel constrictors, bank cover, and log cover structures; and poor for medium stage weirs and random boulder placement.

The water temperatures recorded on the survey days July 13 through August 19, 1994, ranged from 53° to 66° Fahrenheit. Air temperatures ranged from 53° to 74° Fahrenheit. This is a good temperature range for salmonids; however, to make any further conclusions, temperatures need to be monitored for a longer period of time through the critical summer months, and more extensive biological sampling needs to be conducted.

Flatwater habitat types comprised 40% of the total **length** of this survey, riffles 26%, and pools 34%. The pools are relatively shallow with only 113 of the 381 pools having a maximum depth greater than 3 feet. In coastal coho and steelhead streams, it is generally desirable to have primary pools comprise approximately 50% of total habitat. In third and fourth order streams a primary pool is defined to have a maximum depth of at least three feet, occupy at least half the width of the low flow channel, and be as long as the low flow channel width. Installing structures that will increase pool habitat is recommended for locations where their installation will not jeopardize existing unstable stream banks or subject the structures to high stream energy.

Ninety-nine of the 367 pool tail-outs measured had embeddedness ratings of 3 or 4; 151 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 South Fork Elk River, sediment sources should be mapped and rated according to their potential sediment yields, and control measures taken.

The mean shelter rating for pools was low with a rating of 31. The shelter rating in the flatwater habitats was lower at 20. 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. Log and root wad cover structures in the pool and flatwater habitats are needed to improve both summer and winter salmonid habitat. Log cover structure provides rearing fry with protection from predation, rest from water velocity, and also divides territorial units to reduce density related competition. Two-hundred-forty-one of the 337 low gradient riffles had either gravel or small cobble as the dominant substrate. This is

generally considered good for spawning salmonids.

The mean percent canopy for the survey reach was 88%. This is a very high percentage of canopy, since 80 percent is generally considered desirable.

RECOMMENDATIONS

1) South Fork Elk River should be managed as an anadromous, natural production stream.

2) Where feasible, increase woody cover in the pool and flatwater habitat units. Most of the existing cover is from boulders. Adding high quality complexity with woody cover is desirable. Combination cover/scour structures constructed with boulders and woody debris would be effective in many flatwater and pool locations. In some areas the material is at hand.

3) Active and potential sediment sources related to the road system need to be identified, mapped, and treated according to their potential for sediment yield to the stream and its tributaries.

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

5) Inventory and map sources of stream bank erosion, and prioritize them according to present and potential sediment yield. Identified sites should then be treated to reduce the amount of fine sediments entering the stream.

6) The boulder roughs starting at 36,542' appear to be hindering fish passage, especially for coho. Improvement of fish passage here would increase access to almost two miles of additional habitat.

7) There are several log debris accumulations present on South Fork Elk River that are retaining large quantities of fine sediment. The modification of these debris accumulations is desirable, but must be done carefully over time to avoid excessive sediment loading in downstream reaches.

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 Tom Gulch. Channel type is F4.
1201'	Flatcar bridge 16' long x 32' wide x 11' clearance.
5724'	Left bank tributary with residual surface flow. No fish observed.
7377'	Down tree in channel retaining floating debris. No gravel retention and not a barrier (NGNB).
7593'	Floating, unconsolidated log debris accumulation (LDA) 3' high x 25' wide x 20' long. NGNB.
9007'	Channel type changes to F3.
9566'	Dry right bank tributary.
9861'	Right bank vehicle access (former site of bridge crossing for McCloud Creek haul road).
10694'	McCloud Creek enters left bank. Flow visually estimated at 1-2 gallons per minute (GPM) on 7/18/94; only ephemeral pools remained by 8/24/94. Young-of-year (YOY) salmonids observed in McCloud Creek.
14427'	Dry left bank tributary.
16701'	Right bank slump 50' high x 50' long. Grass well-established.
17856'	Left bank tributary with residual surface flow. No fish observed.
18417'	Right bank siltstone bluff 100' long x 40' high with rip-rapped toe calving rubble into the channel.
20450'	ATV crossing.
21055'	Left bank erosion 40' high x 40' long contributing fines.
21569'	Little South Fork Elk River enters from the left bank. Flow visually estimated at 0.5 cfs. YOY salmonids observed.

23254' Dry right bank bedrock ravine.

25826' Left bank equipment access.

26137' Flatcar bridge 20' wide x 20' long x 9' clearance.

27766' Left bank tributary with residual surface flow. No fish observed.

29535' Left bank erosion 15' high x 15' long contributing fines and gravel.

29617' Channel type changes to F2.

30453' Boulder/LDA blockage 12' high 55' wide x 25' long. Retains sand and gravel 4' high x 45' wide x 50' long. Not a barrier.

30981' Channel type changes to F3.

32046' Left bank erosion 12' high x 20' long contributing fines and gravel.

32880' Left bank tributary. Flow visually estimated at 1-2 GPM. No fish observed.

34749' Flatcar bridge 10' long x 42' wide x 6' clearance.

35345' Line Creek enters right bank. Flow visually estimated at 0.3 cfs. YOY salmonids observed.

35736' Dry left bank tributary.

36542' Channel type changes to F2.

36563' Left bank tributary. Flow visually estimated at 1-2 GPM. No fish observed.

39540' Left bank spring.

39956' Decaying log stringer bridge 37' long x 28' wide x 6' clearance. Partially collapsed.

40165' LDA 12' high x 70' wide x 20' long. Former CCC fish passage site. NGNB.

41204' Left bank tributary with residual surface flow. No fish observed.

41814' LDA 8' high x 70' wide x 18' long. Retains gravel 5' deep x 30' wide x approximately 100' long. Possible barrier.

42506' Left bank tributary. Flow visually estimated at 1 GPM. No fish observed.

42620' Channel type changes to F4.

45018' LDA 5' high x 30' wide x 15' long. NGNB.

45225' Log stringer bridge (Pacific Lumber Company Elk Spur Road) 23' long x 32' wide x 6' clearance.

45315' Right bank tributary. Flow visually estimated at <0.1 cfs. Open and accessible to fish.

45849' LDA 5' high x 25' wide x 10' long. NGNB.

45916' LDA 6' high x 35' wide x 10' long. NGNB.

46554' Left bank tributary. Flow visually estimated at 1-2 GPM. No fish observed.

46578' LDA 4' high x 30' wide x 15' long. Possible barrier.

46634' LDA 5' high x 40' wide x 12' long. NGNB.

46914' LDA 3' high x 30' wide x 8' long. Gravel retained 1' deep x 15' wide x 40' long. Passable.

47383' Left bank tributary. Flow visually estimated at <0.1 cfs. YOY salmonids observed in tributary.

47672' LDA 9' high x 60' wide x 20' long. Live trees in matrix. Retains gravel 2' deep x 25' wide x 40' long. Possible barrier.

48508' LDA 3' high x 30' wide x 6' long. Retains silt 1' deep x 20' wide x 15' long. Probably passable at high flows.

48874' LDA 4' high x 25' wide x 10' long. Retains gravel 2' deep x 10' wide 20' long. Possibly passable at high flows.

49400' Left bank erosion 12' high x 20' long contributing gravel and fines.

49420' Debris from old left bank slide. Retains sand 1' deep

x 10' wide x 50' long. Passable.

49748' LDA 3' high x 25' wide x 10' long. NGNB.

49915' LDA 4' high x 20' wide x 10' long. Retains gravel 1' deep x 10' wide x 10' long. Possible barrier.

49968' Right bank tributary. Flow visually estimated at approximately 1 GPM. Possibly fish-bearing, but none observed.

50062' End of survey at uppermost headwater forks. Of remaining flow, approximately 60% comes from right fork. Both forks open and accessible to fish. Left fork narrows and steepens rapidly with no fish observed. Right fork offers perhaps 1/4 mile of marginal habitat. Fish observed in right fork.

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