STREAM INVENTORY REPORT

RATTLESNAKE CREEK

INTRODUCTION

A stream inventory was conducted during the summer of 1993 on Rattlesnake 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 Rattlesnake 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 Rattlesnake Creek on December 31, 1987. This survey found 5 live chinook salmon, as well as 15 chinook carcasses, and 6 redds. 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

Rattlesnake Creek is tributary to the South Fork Eel River, tributary to the Eel River, located in Mendocino County, California (Figure 1). The legal description at the confluence with the South Fork Eel River is T23N R16W S20. Its location is 39°49'24" N. latitude and 123°39'23" W. longitude. Rattlesnake Creek is a third order stream and has approximately 11.0 miles of blue line stream, according to the USGS Leggett, Oak Park, Bell Springs, and Iron Peak 7.5 minute quadrangles. Rattlesnake Creek and its tributaries drain a basin of approximately 37.5 square miles, and the system has a total of 23.8 miles of blue line stream. Summer base flow is approximately 6-7 cfs at the mouth. Elevations range from about 870 feet at the mouth of the creek to 3,800 feet in the headwater areas. Redwood forest dominates the watershed, but there are zones of grassland and oak-woodland in the upper watershed. The lower 0.4 miles of the creek is federally owned and is managed by the Bureau of Land Management. The remainder of the watershed is privately owned and is managed for timber production and rangeland. Year round vehicle access exists from U.S. Highway 101, approximately 5 miles south of Leggett. The upper watershed is accessed via Spy Rock Road.

METHODS

The habitat inventory conducted in Rattlesnake Creek follows the

methodology presented in the California Salmonid Stream Habitat Restoration Manual (Flosi and Reynolds, 1991). The California Conservation Corps (CCC) and contract seasonal Technical Advisors that conducted the inventory were trained in standardized habitat inventory methods by the California Department of Fish and Game (DFG). Rattlesnake Creek personnel were trained in May, 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 Rattlesnake 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 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". Rattlesnake 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 Rattlesnake 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 Rattlesnake 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 Rattlesnake 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 Rattlesnake 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 Rattlesnake Creek to document the fish species composition and distribution. Two sites were electrofished in Rattlesnake 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).

During field analysis, fine sediment suspended in the liquid portion of the sample is settled in Imhoff cones for one hour, measured, and recorded on a standard field form. The remainder of the sample is sealed in plastic bags with an identification and information ribbon, then taken to the laboratory for final processing.

In the laboratory the samples are wet sieved using standard Tyler screens. All particles greater than 0.85 mm diameter are

measured by displacement in graduated cylinders. The volume of fine sediment less than 0.85 mm is measured following one hour of settling in graduated cylinders or Imhoff cones. The fines measured in the field are added to these results.

Gravel sampling is conducted to determine the percentage of fine sediment present in probable fish spawning areas. These areas are generally found in low gradient riffles at the tail-outs of pools. The higher the percent of fine sediment, the lower the probability for eggs to survive to hatch. This is due to the reduced quantity of oxygenated water able to percolate through the gravel, or because of fine sediment capping the redd and preventing fry emergence.

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 (DFG). This program also processes and summarizes the data.

The Habitat Runtime 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 Rattlesnake 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 *

Rattlesnake Creek

The habitat inventory of June 29-30, and July 1, 6-8, 13-15, and 19, 1993, was conducted by Charles Patton, Brian Humphrey, Ruth Goodfield, and Warren Mitchell (CCC and contract seasonals). The survey began at the confluence with the South Fork Eel River and extended up Rattlesnake Creek to a point approximately 2,000 feet upstream from the start of Spy Rock Road. The total length of the stream surveyed was 45,480 feet, with an additional 3,531 feet of side channel.

A flow of 6.0 cfs was measured 8-10-93, 200' above the confluence with the South Fork Eel River using a Marsh-McBirney Model 2000 flowmeter.

The surveyed section of Rattlesnake Creek has three channel types: from the mouth to 26,959 a C2; next 16,943 feet a C1; and the upper 1,578 feet a B2. C1 streams are low gradient (1.0-1.5%), cobble bed meandering channels, with developed flood plains. C2 channels are low gradient, moderately confined streams, with over-fit cobble beds. B2 channels are moderate gradient (1.0-2.5%), moderately confined streams, with cobble/gravel channels.

Water temperatures ranged from 55 to 73 degrees fahrenheit. Air temperatures ranged from 52 to 94 degrees fahrenheit.

Table 1 summarizes the Level II riffle, flatwater, and pool habitat types. By percent **occurrence**, riffles made up 34.8%, flatwater types 34.6%, and pools 30.6% (Graph 1). Flatwater habitat types made up 47.3% of the total survey **length**, riffles 31.8%, and pools 20.9% (Graph 2).

Twenty 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, 21.5%; runs, 18.4%; and step runs, 13.8% (Graph 3). By percent total **length**, step runs made up 26.6%, low gradient riffles 19.8%, and runs 17.5%.

One-hundred-eighty-eight pools were identified (Table 3). Main channel pools were most often encountered at 53.7%, and comprised 59.1% 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 twenty-five of the 188 pools (66%) had a depth of three feet or greater (Graph 5).

The depth of cobble embeddedness was estimated at pool tail-outs. Of the 167 pool tail-outs measured, 8 had a value of 1 (4.8%);

36 had a value of 2 (21.6%); 78 had a value of 3 (46.7%); and 45 had a value of 4 (26.9%). 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 29.5. Flatwater habitat types had the lowest rating with 15.0 (Table 1). Of the pool types, the backwater pools had the highest mean shelter rating at 34.3, scour pools rated 30.4, and main channel pools 28.5 (Table 3).

Table 5 summarizes mean percent cover by habitat type. Boulders are the dominant cover type in Rattlesnake Creek and are extensive. Bedrock ledges and white water are the next most common cover type. Graph 7 describes the pool cover in Rattlesnake Creek.

Table 6 summarizes the dominant substrate by habitat type. Gravel was the dominant substrate observed in 82 of the 132 low gradient riffles (62.1%). Small cobble was the next most frequently observed dominant substrate type, and occurred in 20.5% of the low gradient riffles (Graph 8).

Nearly 56% of Rattlesnake Creek lacked shade canopy. Of the 44% of the stream that was covered with canopy, 96% was composed of deciduous trees, and 4% was composed of coniferous trees. Graph 9 describes the canopy in Rattlesnake 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 42.7%. The mean percent left bank vegetated was 47.6%. The dominant elements composing the structure of the stream banks consisted of 22.8% bedrock, 10.1% boulder, 10.1% cobble/gravel, 1.1% bare soil, 3.0% grass, 2.9% brush. Additionally, 49.9% of the banks were covered with deciduous trees, and 0.1% with coniferous trees, including downed trees, logs, and root wads (Graph 10).

BIOLOGICAL INVENTORY RESULTS

Two sites were electrofished on August 18, 1993 in Rattlesnake Creek. The units were sampled by Ruth Goodfield and Warren Mitchell (CCC). All measurements are fork lengths unless noted otherwise.

The first sample site was habitat unit 143, a mid-channel pool,

approximately 11,737 above the confluence with the South Fork Eel River, and directly downstream from the double culvert crossing on Highway 101. This site had an area of 450 sq ft, and a volume of 315 cu ft. The sample included 25 steelhead, ranging from 51 to 143mm. Three passes were performed, for a total effort of 512 seconds.

The second site sampled was habitat unit 338, a boulder formed lateral scour pool, approximately 26,960 feet from the confluence with the South Fork Eel River. The site had an area of 450 sq ft, and a volume of 855 cu ft. The sample included 37 steelhead, ranging from 39 to 123mm; and three Pacific lamprey ammocetes 105, 110, and 122mm total length. Three passes were performed, for a total effort of 533 seconds.

GRAVEL SAMPLING RESULTS

No gravel samples were taken on Rattlesnake Creek.

DISCUSSION

Rattlesnake Creek has three channel types: B2, C1, and C2. The B2 channel type is excellent for many types of low and medium stage instream enhancement structures. There are 1,578 feet of this type of channel in Rattlesnake Creek. Many site specific projects can be designed within this channel type, especially to increase pool frequency, volume and pool cover.

The lower 26,959 feet of Rattlesnake Creek is a C2 channel type. There is also a 16,943' reach of C1 channel in the middle section of Rattlesnake Creek. Both C1 and C2 channels have suitable gradients and the stable stream banks that are necessary for the installation of instream structures designed to increase pool habitat, trap spawning gravels, and provide protective cover for fish. Well placed and engineered structures that constrict the channel to form pool habitat or cover structures are usually appropriate and have a good chance of success in these channel types.

The water temperatures recorded on the survey days June 29-July 19, 1993 ranged from 55° F to 73° F. Air temperatures ranged from 52° F to 94° F. The warmer water temperatures, if sustained, are above the threshold stress level for salmonids. 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 conducted.

Flatwater habitat types comprised 47.3% of the total **length** of this survey, riffles 31.8%, and pools 20.9%. The pools are relatively deep with 125 of the 188 pools having a maximum depth greater than 3 feet. However, 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. Therefore, installing structures that will increase pool habitat is recommended for locations where their installation will not subject the structures to high stream energy.

One-hundred-twenty-three of the 167 pool tail-outs measured had embeddedness ratings of 3 or 4. Only eight 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 Rattlesnake 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 low with a rating of 29.5. The shelter rating in the flatwater habitats was lower at 15.0. Riffles rated 15.1. However, 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, bedrock ledges and white water 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.

One-hundred-nine of the 132 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 only 44%. This is a low percentage of canopy, since 80 percent is generally considered desirable for salmon and steelhead streams in this region. Elevated water temperatures could be reduced by increasing stream canopy. Cooler water temperatures are desirable in Rattlesnake Creek. The large trees required to contribute shade to the wide channel typical of this reach would also eventually provide a long term source of large woody debris

needed for instream structure.

RECOMMENDATIONS

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

2) Temperatures in this section of Rattlesnake Creek, as well as upstream, should be monitored to determine if they are having a deleterious effect upon juvenile salmonids. To achieve this, biological sampling is also required.

3) 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.

4) 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.

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) 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.

7) Increase the canopy on Rattlesnake Creek by planting willow, alder, redwood, and Douglas fir along the stream where shade canopy is not at acceptable levels. Stream canopy above this survey section should be inventoried and treated if needed. In some cases, planting should be coordinated with bank stabilization or upslope erosion control projects.

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.

Rattlesnake Creek

0' Begin survey at the confluence with the South Fork Eel River. Side channel of Rattlesnake Creek enters the South Fork Eel River 150' below confluence with the main stem of the creek. Young-of-the-year (YOY) salmonids observed in this side channel. Reach #1 is a C2 channel type.

446' Summer bridge; three culverts 3' diameter.

1896' Left bank slide 65' high x 95' long, depositing fines into a side channel.

3479' Squaw Creek enters from the right bank; no access to anadromous salmonids. YOY observed in Rattlesnake Creek.

4874' Left bank slide 100' high x 50' long, depositing fines into the channel.

5229' Right bank slide 150' high x 45' long, depositing fines into the channel.

5428' Right bank slide 125' high x 70' long, contributing fines to the bank. Left bank slide 150' high x 80' long, contributing fines into the channel.

5937' Left bank slide 200' high x 100' long, contributing fines into the creek. Right bank slide 150' high x 50' long, depositing boulders onto the bank.

6269' Measly Creek enters from the right bank. Left bank slide 150' high x 100' long, depositing fines to the bank. Right bank slide 50' high x 50' long, depositing fines into the creek.

6453' YOY, 1+, and 2+ steelhead observed. Small tributary enters from the left bank.

7231' Right bank slide 150' high x 210' long. Highway 271 erosion contributing massive fines into the creek.

8034' Right bank slide 100' high x 100' long, contributing fines into the channel.

8364' Right bank spring; clay bank 45' high x 60' long, with clay washing into the creek.

Rattlesnake Creek

9267'Wilson Creek enters from the right bank.

10739'Plunge 4' high over bedrock.

10904'YOY observed in four step pools.

12613'Highway 101 overpass. Two concrete arch culverts 17.5' wide and 16.5' wide x 230' long. Stream passes through the lower culvert.

12751'Trash rack for culverts. In the past, this has been a barrier to salmonids from time to time, and Caltrans should monitor it during periods of high discharge.

14145' Foster Creek enters from the right bank, open to anadromous salmonids.

16448' Mad Creek enters from the left bank, no access for anadromous salmonids.

16537'Natural rock culvert 22' high x 20' wide x 50' long.

16619'Small tributary enters from the left bank, no access to anadromous salmonids.

16714'Small tributary enters from the left bank, no access to anadromous salmonids.

17034'Foot bridge 45' above creek.

17278'Small tributary enters from the right bank, no access to anadromous salmonids.

19548'Right bank slide 30' high x 200' long depositing fines to the bank.

20675'Elk Creek enters from the left bank. There is a fishway into the Highway 101 culvert and baffles to facilitate fish passage into Elk Creek.

20735'Flow measured at 3.3 cfs on 8-9-93.

21352'Slide 40' high x 100' long, depositing fines onto the bank.

23092'Small tributary enters from the right bank, not accessible to anadromous salmonids.

25921'Fishway 8' wide x 25' long along the right bank; 3 step pools. Bedrock sheet along left bank.

25989'Highway 101 overpass. Concrete arch culvert 20' wide x 16.5' high x 110' long.

26960' YOY observed.

26959'Channel type changes to a C1 (reach #2).

27529'Railroad car bridge 13' wide x 45' long x 11' high.

27529'Cummings Creek enters from the right bank through an arched pipe culvert 11' wide x 7' high x 120' long. Culvert has a concrete bottom with no baffles; open to anadromous salmonids.

28926'Corrugated culvert 1.5' diameter on the right bank.

29688'Twin Rocks Creek enters from the right bank; approximate flow 1.5 cfs.

29916'Left bank slope failure 100' high x 80' long, contributing fines into the creek.

29995'Dirt access road across creek from Highway 101. Flow measured at 2.13 cfs on 8-9-93.

31138'Culvert 1.5' diameter enters from the right bank; no flow.

31254'Left bank slope failure 45' high x 35' long constricts the channel.

31404'Two culverts 1.5' diameter enter from the right bank; no flow.

32121'Wooden car bridge 10' above the water.

32438'Small tributary enters from the left bank.

33066'Culvert 1.5' diameter enters from the right bank; no flow.

34545'Old car frame in channel. Access by private road.

34609'Pool dammed by landowners approximately 0.8' high.

35078'Wooden car bridge 6.5' high. Private road fords the

creek.

36608'Tributary enters from the left bank; approximate flow 0.2 cfs.

36722'Private road fords the creek.

37861'Rectangular concrete culvert 12' wide x 10' high x 145' long, with no baffles.

37910' Pool dammed with rocks by landowners.

37938'Grapewine Creek enters from the right bank.

38650'Highway 101 crossing. Rectangular concrete culvert 12' wide x 7' high x 180' long, with no baffles.

40804'Tributary enters from the left bank; approximate flow 0.2 cfs.

42245'Highway 101 crossing at Spy Rock Road. Concrete arch culvert 8' wide x 5' high x 175' long, with wing wall on left bank. Culvert appears to have been designed to allow for fish passage.

43520'Culvert 1.5' diameter enters right bank from Spy Rock Road.

43902'Channel type changes to a B2 (reach #3).

44126'Railroad car bridge 14' above the creek. Private road access.

44238'Plunge 4' high.

45480'Survey access denied by landowner; end of survey reach.

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