STREAM INVENTORY REPORT

CASPAR CREEK (NORTH FORK)

INTRODUCTION

A stream inventory was conducted during the summer of 1995 on the upper reach of Caspar Creek beginning at the confluence with the unnamed tributary locally known as South Fork Caspar Creek. This section of Caspar Creek is locally known and hereafter referred to as North Fork Caspar Creek. 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 North Fork Caspar Creek. The objective of the biological inventory was to document presence and distribution of juvenile salmonid species. Adult spawning surveys have been conducted on North Fork Caspar Creek. Spawning survey results are available from the California Department of Fish and Game, Region 3 Office in Yountville, California. The United States Forest Service, Redwood Sciences Laboratory, in Arcata also has fisheries and large woody debris data available.

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. Recommendations for habitat improvement activities are based upon target habitat values suitable for salmonids in California's north coast streams.

WATERSHED OVERVIEW

North Fork Caspar Creek is tributary to Caspar Creek, tributary to the Pacific Ocean, located in Mendocino County, California (Figure 1). North Fork Caspar Creek's legal description at the confluence with South Fork Caspar Creek is T17N R17W S09. Its location is 39E20N480 north latitude and 123E45N150 west longitude. North Fork Caspar Creek is a first order stream and has approximately 3.8 miles of blue line stream according to the USGS Mendocino, Mathison Peak, and Noyo Hill 7.5 minute quadrangles. North Fork Caspar Creek drains a watershed of approximately 3.8 square miles. Summer base runoff is approximately 0.1 cubic feet per second (cfs) at the mouth. Elevations range from about 70 feet at the mouth of the creek to 1000 feet in the headwater areas. Redwood and Douglas fir forest dominates the watershed. The watershed is located within Jackson Demonstration State Forest and is managed for timber production. This watershed is under study as part of a cooperative agreement between the California Department of Forestry and Fire Protection (CDF) and the United States Forest Service. Vehicle access exists via California Department of Forestry and Fire Protection (CDF) Road 620.

North Fork Caspar Creek

METHODS

The habitat inventory conducted in North Fork Caspar Creek 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 and Watershed Stewards Project/AmeriCorps (WSP/AmeriCorps) members that conducted the inventory were trained in standardized habitat inventory methods by the California Department of Fish and Game (DFG). North Fork Caspar Creek personnel were trained in May, 1995, by Gary Flosi. This inventory was conducted by a two-person team.

SAMPLING STRATEGY

The inventory uses a method that samples approximately 10% of the habitat units within the survey reach (Hopelain, 1994). All habitat units included in the survey are classified according to habitat type and their lengths are measured. All pool units are measured for maximum depth. Habitat unit types encountered for the first time are further measured for all the parameters and characteristics on the field form. Additionally, from the ten habitat units on each field form page, one is randomly selected for complete measurement.

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 North Fork Caspar 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.

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, and 5) sinuosity.

3. Temperatures:

Both water and air temperatures are measured and recorded at every tenth habitat unit. The time of the measurement is also recorded. Both temperatures are taken in degrees 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". North Fork Caspar 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. All units were measured for mean length; additionally, the first occurrence of each unit type and a randomly selected 10% subset of all units were sampled for all features on the sampling form (*Sampling Levels for Fish Habitat Inventory*, Hopelain, 1995). 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 North Fork Caspar 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). Additionally, a rating of "not suitable" (NS) was assigned to tail-outs deemed unsuited for spawning due to inappropriate substrate particle size, having a bedrock tail-out, or other considerations.

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 fully-described 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 North Fork Caspar 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

fully-described 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 density was estimated using modified handheld spherical densiometers as described in the *California Salmonid Stream Habitat Restoration Manual*, 1994. Canopy density relates to the amount of stream shaded from the sun. In North Fork Caspar Creek, an estimate of the percentage of the habitat unit covered by canopy was made from the center of approximately every third unit in addition to every fully-described unit, giving an approximate 30% sub-sample. In addition, the area of canopy was estimated ocularly into percentages of coniferous or deciduous trees.

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 North Fork Caspar Creek, the dominant composition type (options 1-4) and the dominant vegetation type (options 5-9) of both the right and left banks for each fully-described unit 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. In North Fork Caspar Creek fish presence was observed from the stream banks, and five sites were electrofished using one Smith-Root Model 12 electrofisher. These sampling techniques are discussed in the *California Salmonid Stream Habitat Restoration Manual*.

LARGE WOODY DEBRIS (LWD) STREAM AND RIPARIAN INVENTORY

In North Fork Caspar Creek a large woody debris (LWD) stream and riparian inventory was conducted using the methodology as described in the *California Salmonid Stream Habitat Restoration Manual*. Data from the LWD Inventory Form are entered into a dBASE 4.2 data entry program developed by Inland Fisheries Division, California Department of Fish and Game. The North Fork Caspar Creek LWD Inventory Report is included as Appendix A in the Caspar Creek Stream Inventory Report.

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. 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 North Fork Caspar 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
- Bank vegetation by vegetation type

HABITAT INVENTORY RESULTS

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

The habitat inventory of October 16-25, 1995, was conducted by Kyle Young and Toni Ouradnik (WSP/AmeriCorps). The total length of the stream surveyed was 20,151 feet with an additional 821 feet of side channel.

Flow was measured at the bottom of the survey reach with a Marsh-McBirney Model 2000 flowmeter at 0.096 cfs on October 18, 1995.

North Fork Caspar Creek is an F4 channel type for the first 8,817 feet of stream reach surveyed, an F3 for the next 3,547 feet, and an F4 for the remaining 7,787 feet. F-type channels are entrenched, meandering, riffle/pool channels on low gradients with high width/depth ratios.

Water temperatures ranged from 54 to 59 degrees Fahrenheit. Air temperatures ranged from 50 to 70 degrees Fahrenheit.

Table 1 summarizes the Level II riffle, flatwater, and pool habitat types. Based on frequency of **occurrence** there was 39% pool units, 30% flatwater units, and 28% riffle units (Graph 1). Based on total **length** of Level II habitat types there were 39% pool units, 38% flatwater units, and 21% riffle units (Graph 2).

Eighteen Level IV habitat types were identified (Table 2). The most frequent habitat types by percent **occurrence** were low-gradient riffles, 28%; mid-channel pools, 26%; and glides, 15% (Graph 3). Based on percent total **length**, mid-channel pools made up 25%, low-gradient riffles 20%, and step runs 20%.

A total of 346 pools were identified (Table 3). Main channel pools were most frequently encountered at 67% and comprised 66% of the total length of all pools (Graph 4).

Table 4 is a summary of maximum pool depths by pool habitat types. Depth is an indicator of pool quality. Sixty-four of the 346 pools (18%) had a depth of two feet or greater (Graph 5).

The depth of cobble embeddedness was estimated at pool tail-outs. Of the 290 pool tail-outs measured, 87 had a value of 1 (30.0%); 124 had a value of 2 (42.8%); 57 had a value of 3 (19.6%); and 22 had a value of 4 (7.6%) (Graph 6). On this scale, a value of 1 indicates the highest quality of spawning substrate.

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 habitat types had a mean shelter rating of 37, and riffle habitats had a mean shelter rating of 14 (Table 1). Main channel pools had a mean shelter rating of 49, and backwater pools rated 26 (Table 3).

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

Table 6 summarizes the dominant substrate by habitat type. Gravel was the dominant substrate observed in 17 of the 19 low gradient riffles measured (89%). Small cobble was the next most frequently observed dominant substrate type and occurred in 11% of the low gradient riffles (Graph 8).

The mean percent canopy density for the stream reach surveyed was 97%. The mean percentages of deciduous and coniferous trees were 18% and 82%, respectively. Graph 9 describes the canopy in North Fork Caspar Creek.

For the stream reach surveyed, the mean percent right bank vegetated was 85%. The mean percent left bank vegetated was 82%. The dominant elements composing the structure of the stream banks consisted of 6.0% bedrock, 1.5% boulder, 66.5% cobble/gravel, and 26.0% sand/silt/clay (Graph 10). Grass was the dominant vegetation type observed in 58% of the units surveyed. Additionally, 4% of

the units surveyed had deciduous trees as the dominant vegetation type, and 23% had coniferous trees as the dominant vegetation, including down trees, logs, and root wads (Graph 11).

BIOLOGICAL INVENTORY RESULTS

Five sites were electrofished on October 19-24, 1995, in North Fork Caspar Creek. The units were sampled by Craig Mesman and Heidi Hickethier (CCC) and Bettina Chimarios, Shelly Dunn, Kyle Young, and Toni Ouradnik (WSP/AmeriCorps).

The first site sampled included habitat units 35-37, two mid-channel pools and a glide approximately 432 feet from the confluence with South Fork Caspar Creek and within the first F4 channel type reach. This site had an area of 800 sq ft and a volume of 800 cu ft. The site yielded two 0+ coho, three 0+ steelhead, one 1+ steelhead, and one three-spine stickleback.

The second site included habitat units 308-314, a series of pools, runs, a glide, and a riffle located approximately 9,146 feet above the confluence with South Fork Caspar Creek and within the F3 channel type reach. This site had an area of 1,200 sq ft and a volume of 600 cu ft. The site yielded seven 0+ coho, nine 0+ steelhead, three 1+ steelhead, two three-spine stickleback, and seven Pacific giant salamanders.

The third site sampled included habitat units 469-473, a series of pools, runs, and a riffle located approximately 13,183 feet above the confluence with South Fork Caspar Creek. This and the remaining sites were within the second F4 channel type reach. The site had an area of 300 sq ft and a volume of 100 cu ft. The site yielded five 0+ coho, fifteen 0+ steelhead, one 1+ steelhead, and three Pacific giant salamanders.

The fourth site sampled included habitat units 537-548, a series of pools, glides, and riffles alternating with dry units located approximately 14,610 feet above the confluence with South Fork Caspar Creek. The site had a length of 318 feet. The site yielded twenty-one 0+ steelhead, one 1+ steelhead, and two Pacific giant salamanders.

The fifth site sampled was above the log jam at the end of the surveyed reach, approximately 20,151 feet above the confluence with South Fork Caspar Creek. The site had a length of 108 feet. No fish were sampled.

LARGE WOODY DEBRIS (LWD) STREAM AND RIPARIAN INVENTORY RESULTS

The results of the LWD stream and riparian inventory are discussed in Appendix A of the Caspar Creek Stream Inventory Report.

DISCUSSION

North Fork Caspar Creek is an F4 channel type for the first 8,817 feet of stream surveyed, an F3 for the next 3,547 feet, and an F4 for the remaining 7,787 feet. The suitability of F4 channel types for fish habitat improvement structures is as follows: good for bank-placed boulders; fair for low-stage weirs, single and opposing wing deflectors, channel constrictors, and log cover; and poor for medium-stage weirs and boulder clusters. F3 channel types are considered: good for bank-placed boulders and single and opposing wing deflectors; fair for low-stage weirs, boulder clusters, channel constrictors, and log cover; and poor for medium-stage weirs.

The water temperatures recorded on the survey days October 16-25, 1995, ranged from 54 to 59 degrees Fahrenheit. Air temperatures ranged from 50 to 70 degrees Fahrenheit. This is a good water temperature range for salmonids. To make any further conclusions, temperatures would need to be monitored for several years throughout the warm summer months, and more extensive biological sampling would need to be conducted.

Flatwater habitat types comprised 38% of the total **length** of this survey, riffles 21%, and pools 39%. The pools are relatively shallow, with only 64 of the 346 (18.5%) pools having a maximum depth greater than 2 feet. In general, pool enhancement projects are considered when primary pools comprise less than 40% of the length of total stream 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. Installing structures that will deepen pool habitat is recommended for locations where their installation will not be threatened by high stream energy.

Seventy-nine of the 290 pool tail-outs measured had embeddedness ratings of 3 or 4. Only 87 had a 1 rating. Cobble embeddedness measured to be 25% or less, a rating of 1, is considered to indicate good quality spawning substrate for salmon and steelhead. In North Fork Caspar Creek, sediment sources should be mapped and rated according to their potential sediment yields, and control measures should be taken.

The mean shelter rating for pools was low with a rating of 37. The shelter rating in the flatwater habitats was much lower at 9. 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. 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.

All of the nineteen low gradient riffles measured had gravel or small cobble as the dominant substrate. This is generally considered good for spawning salmonids.

The mean percent canopy density for the stream was 97%. This is a relatively high percentage of canopy. In general, revegetation projects are considered when canopy density is less than 80%.

The percentage of right and left bank covered with vegetation was high at 85% and 82%, respectively. In areas of stream bank erosion or where bank vegetation is not at acceptable levels, planting endemic species of coniferous and deciduous trees, in conjunction with bank stabilization, is recommended.

Coho salmon were sampled or observed through the first 14,610 feet of stream surveyed. An LDA at that point impedes their further passage. Steelhead were observed throughout the entire surveyed reach.

RECOMMENDATIONS

1) North Fork Caspar Creek should be managed as an anadromous, natural production stream.

2) 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 locally available. In particular, large wood should be placed in a manner to increase backwater areas to produce winter holdover habitat.

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 depth of the 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 limited water temperature data available suggest that maximum temperatures are within the acceptable range for juvenile salmonids. To establish more complete and meaningful temperature regime information, 24-hour monitoring during the July and August temperature extreme period should be performed for 3 to 5 years.

PROBLEM SITES AND LANDMARKS

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

0' Begin survey at confluence with South Fork Caspar Creek. Channel type is F4.

43' Road 600 plate arch culvert 7' wide x 57' long x 11' clearance.

1288' Dry left bank tributary.

1954' Left bank seep.

3390' Left bank tributary. Estimated flow <0.1 cfs. Only first 70' are accessible to fish.

3791' Log and debris accumulation (LDA) 5' high x 15' long. Not a barrier and no gravel retained (NBNG).

4012' Right bank tributary. Estimated flow <0.01 cfs.

4347' Left bank draw.

4738' Right bank tributary. No surface flow.

5995' LDA 4' high x 30' wide x 10' long retaining gravel 3' deep at base. Not a barrier.

6041' LDA 3' high x 20' wide x 15' long. NBNG.

6225' Left bank erosion 10' high x 40' long contributing fines and gravel. LDA 5' high x 40' wide x 20' long. NBNG.

6751' LDA 5' high x 40' wide x 10' long retaining gravel 5' deep at base. Not a barrier.

6882' LDA 4' high x 40' wide x 10' long retaining gravel 5' deep at base. Not a barrier.

7651' Left bank tributary. Estimated flow <0.01 cfs. Not accessible to fish (NAF).

8192' LDA 5' high x 30' wide x 15' long. NBNG.

8447' LDA 5' high x 20' wide x 25' long. NBNG.

8475' Right bank tributary. Estimated flow <0.01 cfs. Sub-surface flow after 15'.

8817' Channel type changes to F3.

9238' Middle Fork Caspar Creek enters left bank (see separate report).

10583' Right bank slide 25' high x 17' long contributing fines and gravel.

North Fork Caspar Creek

12007' North Fork Caspar Creek sediment trapping complex. Fish passage structure incorporated into trap. This fishway must be maintained to provide fish passage.

12364' Right bank tributary. Estimated flow <0.1 cfs. NAF. Channel type changes to F4.

12446' Gauging station.

12682' Right bank slide 40' high x 54' long contributing fines and gravel.

12942' Left bank erosion 15' high x 15' long contributing fines and gravel. LDA with minor gravel retention. Not a barrier.

12995' LDA 4' high x 25' wide x 17' long retaining gravel 3-4' deep at base. Not a barrier.

13567' LDA 5' high x 20' wide x 10' long retaining gravel 4' deep at base. Not a barrier.

14161' Down log retaining gravel 2' deep.

14246' Right bank tributary. Estimated flow <0.01 cfs. Only first 50' accessible to fish.

14496' Left bank seep.

14610' LDA 6' high x 30' wide x 15' long retaining gravel 3' deep at base. Current end of access for coho.

15006' LDA 5' high x 20' wide x 5' long retaining gravel 4' deep at base.

15511' LDA 1-4' high x 15' wide x 10' long. Not a barrier.

15850' Left bank tributary. Estimated flow <0.01 cfs. Accessible to fish; none observed in first 50'.

16081' Gauging station.

16319' LDA 5' high x 15' wide retaining gravel 2-3' deep at base.

16799' Left bank tributary. Estimated flow <0.01 cfs. NAF.

17020' Right bank tributary. Estimated flow <0.01 cfs. Accessible to fish; none observed.

17189' LDA 6' high x 10' wide x 20' long retaining sediment 3' deep at base.

17427' LDA 5' high x 15' wide x 15' long. No gravel retention.

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17612' Left bank draw.

17944' LDA 5' high x 15' wide x 5' long retaining sediment 2' deep at base.

18067' LDA 5' high x 30' wide x 20' long retaining sediment 3' deep at base.

18239' Gauging station.

18262' Left bank tributary. Estimated flow <0.01 cfs. Accessible to fish; none observed.

18536' LDA 5' high x 15' wide x 8' long retaining sediment 3' deep at base.

18760' Right bank tributary. Estimated flow <0.01 cfs. Only first 50' accessible to fish.

18903' LDA 4' high x 15' wide x 5' long retaining sediment 3' deep at base.

19066' LDA

19462' LDA with some gravel retention.

19535' Left bank draw.

19739' Right bank draw.

19885' LDA 3' high x 10' wide x 10' long retaining sediment 2' deep at base.

20151' Channel totally blocked by large woody debris. No fish observed or sampled above this point. End of survey.

REFERENCES

Flosi, G., and F. Reynolds. 1994. California salmonid stream habitat restoration manual, 2nd edition. California Department of Fish and Game, Sacramento, California.

Hopelain, J. 1995. Sampling levels for fish habitat inventory, unpublished manuscript. California Department of Fish and Game, Inland Fisheries Division, Sacramento, California.

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