STREAM INVENTORY REPORT

MCNUTT GULCH

INTRODUCTION

A stream inventory was conducted during the summer of 1999 on McNutt Gulch. The survey began at the confluence with the Pacific Ocean and extended upstream for 1.2 miles to a probable anadromous fish barrier. A stream survey was conducted for another mile upstream of the probable barrier to document general habitat and channel features.

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 McNutt Gulch. The objective of the biological inventory was to document the presence and distribution of juvenile salmonid species.

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

McNutt Gulch is a tributary to the Pacific Ocean, located in Humboldt County, California (Map 1). McNutt Gulch's legal description at the confluence with the Pacific Ocean is T01 R03W S25. Its location is 40□21□20□ north latitude and 124□21□42□ west longitude. McNutt Gulch is a second order stream and has approximately 3.6 miles of blue line stream according to the USGS Petrolia and Capetown 7.5 minute quadrangles. McNutt Gulch drains a watershed of approximately 6.5 square miles. Elevations range from about 0 feet at the ocean to 1,925 feet in the headwater areas. Douglas fir forest dominates the watershed. The watershed is entirely privately owned and is managed for timber production and rangeland. Vehicle access exists via the Mattole Road.

METHODS

The habitat inventory conducted in McNutt Gulch follows the methodology presented in the *California Salmonid Stream Habitat Restoration Manual* (Flosi et al, 1998). 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). 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. 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, depth of pool tail crest (measured in the thalweg), dominant substrate composing the pool tail crest, and embeddedness. Habitat unit types encountered for the first time are 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 McNutt Gulch 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 a Marsh-McBirney Model 2000 flow meter.

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. Channel dimensions are measrued using hip chains, hand levels, tape measures, and stadia rods. 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". McNutt Gulch 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. All measurements are in feet to the nearest tenth. Habitat characteristics are measured using a clinometer, hip chain, and stadia rod.

5. Embeddedness:

The depth of embeddedness of the cobbles in pool tail-out areas is measured by the percent of the cobble that is surrounded or buried by fine sediment. In McNutt Gulch, embeddedness was ocularly estimated. The values were recorded using the following ranges: 0 - 25% (value 1), 26 - 50% (value 2), 51 - 75% (value 3) and 76 - 100% (value 4). Additionally, a value of 5 was assigned to tail-outs deemed unsuited for spawning due to inappropriate substrate particle size, bedrock, 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 McNutt Gulch, 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. In addition, the dominant substrate composing the pool tail-outs is recorded for each pool.

8. Canopy:

Stream canopy density was estimated using modified handheld spherical densiometers as described in the *California Salmonid Stream Habitat Restoration Manual*. Canopy density relates to the amount of stream shaded from the sun. In McNutt Gulch, 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 McNutt Gulch, the dominant composition type and the dominant vegetation type 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 (including downed trees, logs, and rootwads) was estimated and recorded.

BIOLOGICAL INVENTORY

Biological sampling during the stream inventory is used to determine fish species and their distribution in the stream. Fish presence was observed from the stream banks in McNutt Gulch. In addition, eleven sites were electrofished using a Smith-Root Model 12 electrofisher. Snorkeling was also performed upstream of the electrofishing sites. These sampling techniques are discussed in the *California Salmonid Stream Habitat Restoration Manual*.

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 Quattro Pro. Graphics developed for McNutt Gulch 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 the pool tail-outs
- Mean 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 June 1, 2, and 9, 1999, was conducted by Michelle Hofmann (WSP/AmeriCorps) and Gina Capser (CCC). The total length of the stream surveyed was 6,485 feet with an additional 101 feet of side channel.

Stream flow was measured at the bottom of the survey reach with a Marsh-McBirney Model 2000 flowmeter at 0.76 cfs on June 2, 1999.

McNutt Gulch is a F3 channel type for 3,224 feet of stream reach surveyed, a F1 channel type for 1,594 feet and a F4 channel type for the remaining 1,667 feet. F channels are low gradient, entrenched, meandering, riffle/pool channels with high width/depth ratios. F3 channels have cobble dominated substrates, F1 channels have bedrock dominated substrates, and F4 channels have gravel dominated substrates.

Water temperatures taken during the survey period ranged from 53 to 63 degrees Fahrenheit. Air temperatures ranged from 52 to 72 degrees Fahrenheit.

Table 1 summarizes the Level II riffle, flatwater, and pool habitat types. Based on frequency of occurrence there were 38% riffle units, 25% flatwater units, and 37% pool units (Graph 1). Based on total length of Level II habitat types there were 32% riffle units, 37% flatwater units, and 31% pool units (Graph 2).

Twelve Level IV habitat types were identified (Table 2). The most frequent habitat types by percent occurrence were low gradient riffle, 34%; mid-channel pool, 33%; and run, 18% (Graph 3). Based on percent total length, low gradient riffle made up 30%, mid-channel pool, 29%, and run, 27%.

A total of forty-eight pools were identified (Table 3). Main channel pools were most frequently encountered at 92% and comprised 95% of the total length of all pools (Graph 4).

Table 4 is a summary of maximum pool depths by pool habitat types. Pool quality for salmonids increases with depth. Twenty-eight of the 48 pools (58%) had a depth of two feet or greater (Graph 5).

The depth of cobble embeddedness was estimated at pool tail-outs. Of the 48 pool tail-outs measured, 1 had a value of 1 (2.1%); 16 had a value of 2 (33.3%); 17 had a value of 3 (35.4%); 4 had a value of 4 (8.3%); and 10 had a value of 5 (21.3%) (Graph 6). On this scale, a value of 1 indicates the highest quality of spawning substrate and a value of 5 indicates the tail-out is not suitable for spawning. In McNutt Gulch, 6 of the 10 pool tail-outs which were valued at 5 were unsuitable for spawning due to the tail-outs being comprised of bedrock. The 4 other tail-outs

were unsuitable for spawning due to the substrate being dominated by silt/clay/sand, wood, or small gravel.

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 a mean shelter rating of 4, flatwater habitat types had a mean shelter rating of 4, and pool habitats had a mean shelter rating of 25 (Table 1). Of the pool types, the backwater pool had the highest mean shelter rating at 80. Main channel pools had a mean shelter rating of 23 (Table 3).

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

Table 6 summarizes the dominant substrate by habitat type. Graph 8 depicts the dominant substrate in pool tail-outs. Gravel was the dominant substrate observed in 22 of the 48 pool tail-outs measured (46%). Sand and bedrock were the next most frequently observed dominant substrate types and each occurred in 15% of the pool tail-outs .

The mean percent canopy density for the surveyed length of McNutt Gulch was 68%. The mean percentages of deciduous and coniferous trees were 86% and 14%, respectively. Graph 9 describes the canopy in McNutt Gulch.

For the stream reach surveyed, the mean percent right bank vegetated was 57%. The mean percent left bank vegetated was 76%. The dominant elements composing the structure of the stream banks consisted of 37.9% bedrock, 17.2% boulder, 29.3% cobble/gravel, and 15.5% sand/silt/clay (Graph 10). Deciduous trees were the dominant vegetation type observed in 55.2% of the units surveyed. Additionally, 25.9% of the units surveyed had brush as the dominant vegetation type, and 13.8% had grass as the dominant vegetation type (Graph 11).

BIOLOGICAL INVENTORY RESULTS

Eleven sites were electrofished and thirteen sites were snorkeled to determine species composition and distribution in McNutt Gulch. Michelle Gilroy (DFG) and Gina Capser (CCC) electrofished on July 23, 1999. The water temperature ranged from 57 to 60 degrees Fahrenheit during the survey period of 10:00am to 12:30pm. The air temperature ranged from 58 to 70 degrees Fahrenheit. Michelle Gilroy and Glenn Yoshioka (DFG) snorkeled upstream of the electrofishing survey on August 5, 1999.

Electrofishing Results

The first site sampled was habitat unit 6, a mid-channel pool, approximately 1,080 feet from the confluence with the Pacific Ocean. The site yielded 3 one-plus and 1 two-plus age class steelhead and 3 sculpin.

The second site sampled was habitat unit 11, a mid-channel pool with log cover, located approximately 1,925 feet above the creek mouth. The site yielded 3 young-of-the year, 5 one-plus and 1 two-plus age class steelhead. One three-spined stickleback was also observed.

The third site sampled was habitat unit 13, a mid-channel pool, located approximately 2,036 feet above the creek mouth. The site yielded 11 one-plus age class steelhead, 2 sculpin, and 1 three-spined stickleback.

The fourth site sampled was habitat unit 23, a lateral scour pool - log enhanced, located approximately 2,407 feet above the creek mouth. The site yielded 5 young-of-the-year, 4 one-plus, and 1 two-plus age class steelhead.

The fifth site sampled was habitat unit 29, a mid-channel pool with root wad cover, located approximately 2,781 feet above the creek mouth. The site yielded 3 one-plus age class steelhead and 1 sculpin.

The sixth site sampled was habitat unit 32, a mid-channel pool with large and small woody debris cover, located approximately 2,889 feet above the creek mouth. The site yielded 2 young-of-the-year, 7 one-plus age class steelhead and 1 sculpin.

The seventh site sampled was habitat unit 35, a mid-channel pool, located approximately 3,048 feet above the creek mouth. The site yielded 1 young-of-the-year, 5 one-plus, 1 two-plus age class steelhead and 1 sculpin.

The eighth site sampled was habitat unit 39, a mid-channel pool with boulder cover, located approximately 3,174 feet above the creek mouth. The site yielded 1 young-of-the-year, 3 one-plus, and 2 two-plus age class steelhead.

The ninth site sampled was habitat unit 43, a mid-channel pool, located approximately 3,327 feet above the creek mouth. The site yielded 4 young-of-the-year, 9 one-plus and 3 two-plus age class steelhead.

The tenth site sampled was habitat unit 45, a mid-channel pool with log cover, located approximately 3,384 feet above the creek mouth. The site yielded 1 young-of-the-year and 3 one-plus age class steelhead.

The eleventh site sampled was habitat unit 70, a mid-channel pool with log cover, located approximately 4,324 feet above the creek mouth. The site yielded 2 young-of-the-year, 5 one-plus and 1 two-plus age class steelhead.

The following chart summarizes the electrofishing data:

Date	Site #	Dist. from mouth (ft.)	Hab. Unit #	Hab. Type	Reach #	Channel type	Steelhead YOY	1+	2+
07/23/99	1	1,080	6	MCP	1	F3	0	3	1
07/23/99	2	1,925	11	MCP	1	F3	3	5	1
07/23/99	3	2,036	13	MCP	1	F3	0	11	0
07/23/99	4	2,407	23	LSL	1	F3	5	4	1
07/23/99	5	2,781	29	MCP	1	F3	0	3	0
07/23/99	6	2,889	32	MCP	1	F3	2	7	0
07/23/99	7	3,048	35	MCP	1	F3	1	5	1
07/23/99	8	3,174	39	MCP	2	F1	1	3	2
07/23/99	9	3,327	43	MCP	2	F1	4	9	3
07/23/99	10	3,384	45	MCP	2	F1	1	3	0
07/23/99	11	4,324	70	MCP	2	F1	2	5	1

Snorkeling Results

A snorkel survey was conducted upstream of the last electrofishing unit. The first portion of the snorkel survey extended from 4,400 feet upstream of the confluence with the Pacific Ocean to the end point of the stream habitat inventory (6,485 feet). The second portion of the snorkel survey included another 500 feet of stream located one mile above the suspected anadromous fish barrier. The approximate distance snorkel surveyed was 2,585 feet. The following is a list of the thirteen types of pool habitats that were sampled:

Lateral Scour Pool - Rootwad Enhanced	1
Lateral Scour Pool - Bedrock Formed	3
Lateral Scour Pool - Boulder Formed	4
Mid-Channel Pool	5

There was one mid-channel pool with a maximum pool depth of over fifteen feet at the beginning of the snorkel survey (4,400 feet upstream of the confluence with the Pacific Ocean). Fish were not enumerated during the first portion of this survey due to the large number of juvenile steelhead encountered. Numerous young of the year, 1 , 2, and possibly 3 year old steelhead were observed throughout the first snorkel survey reach.

Three mid-channel pools were sampled in the area located approximately one mile upstream of the suspected anadromous fish barrier. A total of five one year old steelhead/rainbow trout were observed. Young of the year steelhead/rainbow trout were not encountered.

During the one mile stream reconnaissance survey upstream of the probable anadromous fish barrier on June 3, 1999, one year old steelhead/rainbow trout were observed from the streambanks.

DISCUSSION

McNutt Gulch is a F3 channel type for the first 3,224 feet of stream surveyed, a F1 channel type for 1,594 feet, and a F4 for the remaining 1,667 feet. The suitability of F3 channel types for fish habitat improvement structures is: good for bank placed boulders; fair for single wing-deflectors and log cover; poor for plunge weirs, boulder clusters and opposing wing deflectors. The suitability of F1 channel types for fish habitat improvement structures is: good for bank placed boulders, and single and opposing wing-deflectors; fair for plunge weirs, boulder clusters, channel constrictors and log cover. The suitability of F4 channel types for fish habitat improvement structures is: good for bank-placed boulders; fair for plunge weirs, single and opposing wing-deflectors, channel constrictors and log cover; and poor for boulder clusters.

The water temperatures recorded on the survey days June 1, 2, and 9, 1999, ranged from 53 to 63 degrees Fahrenheit. This is a suitable water temperature range for salmonids. Air temperatures ranged from 52 to 72 degrees Fahrenheit. To make any further conclusions, temperatures would need to be monitored throughout the warm summer months and more extensive biological sampling would need to be conducted.

Flatwater habitat types comprised 37% of the total length of this survey, riffles 32%, and pools 31%. Fifty-eight percent of the pools had 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.

One of the 48 pool tail-outs measured had an embeddedness rating of 1. Sixteen of the pool tail-outs had embeddedness ratings of 2 and 17 had embeddedness ratings 3. Ten of the pool tail-outs had a rating of 5 which is considered unsuitable for spawning. Six of the 10 pool tail-outs which were valued at 5 were unsuitable for spawning due to the tail-outs being comprised of bedrock. The 4 other tail-outs were unsuitable for spawning due to the substrate being dominated by silt/clay/sand, wood, or small gravel. Cobble embeddedness measured to be 25% or less, a rating of 1, indicates good quality spawning substrate for salmon and steelhead. In McNutt Gulch, sediment sources should be mapped and rated according to their potential sediment yields, and control measures should be taken.

Twenty-two of the 48 pool tail-outs measured had gravel as the dominant substrate. Six of the pool tail-outs had small cobble as the dominant substrate. This is generally considered good for spawning salmonids.

The mean shelter rating in the flatwater habitats was 4. The shelter rating for pools was 25. 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 structure in the pool and flatwater habitats would enhance 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.

The mean percent canopy density for the stream was 68%. Reach 1 had a canopy density of 41% while Reaches 2 and 3 had canopy densities of 82% and 80%, respectively. In general, revegetation projects are considered when canopy density is less than 80%.

The percentage of right and left bank covered with vegetation was moderate, at 57% and 76%, 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.

The one mile stream section upstream of the probable anadromous fish barrier to the bridge is composed of 44% riffle, 31% run, and 25% pool habitat. The channel type is B3 for the first 2,895 feet and F4 for the remaining 2,429 feet. Several stream bank erosion sites were observed and are contributing fine sediment to the stream channel.

RECOMMENDATIONS

1. McNutt Gulch should be managed as an anadromous, natural production stream.

2. 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.

3. Increase the large wood component in the pools and flatwater habitat units. Most of the existing cover is from boulders. Adding additional high quality complexity with woody cover is desirable.

4. 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.

5. 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.

6. Increase the canopy on McNutt Gulch by planting willow, alder, redwood, and Douglas fir along the stream where shade canopy is not at acceptable levels. Planting will need to be completed following bank stabilization or upslope erosion control projects.

7. Conduct steelhead spawner surveys above the probable anadromous barrier within Mc Nutt Gulch and the left bank tributary to determine if steelhead are surmounting the identified probable barrier.

8. Conduct habitat inventories upstream of the probable barrier and within the left bank tributary above the probable barrier to determine the extent of suitable anadromous fish habitat. Consideration of barrier modification to allow/improve fish passage is recommended if suitable habitat exists upstream.

COMMENTS 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 the Pacific Ocean. Channel type is F3. Creek runs intermittent over sandy beach.

796' Boulder rip-rap 156' long x 15' high.

826' Bridge 75' wide x 39' long x 20' high.

1,080' First electrofishing site.

1,014' Tributary from right bank. One two year old steelhead was observed within the first 500 feet of stream.

1,925' Second electrofishing site.

2,036' Third electrofishing site.

2,407' Fourth electrofishing site.

2,781' Fifth electrofishing site.

2,889' Sixth electrofishing site.

2,913' Log debris accumulation, 20' long x 30' wide x 8' high.

3,038' Seventh electrofishing site.

3,174' Eighth electrofishing site.

3,224' Channel type changes to F1.

3,327' Ninth electrofishing site.

3,384' Tenth electrofishing site.

3,572' Left bank erosion contributing fine sediment.

4,121' Right bank erosion contributing fine sediment.

4,324' Eleventh electrofishing site.

4,372' Backwater pool with 2.5' high plunge.

4,471' 15' deep mid-channel pool with 5' waterfall and sheer bedrock walls. Beginning of snorkel survey.

4,578' 1.5' high plunge.

4,818' Channel type changes to F4.

5,048' Log debris accumulation, 15' long x 40' wide x 12' high.

6,485' End of Survey. Bedrock and log debris accumulation with waterfall 15' high. No plunge pool. Bedrock substrate. Fish observed up to end of survey. Waterfall approximately 5'W x 15'H with 30'H bedrock canyon walls.

REFERENCES

Flosi, G., Downie, S., Hopelain, J., Bird, M., Coey, R., and Collins, B., 1998, California salmonid stream habitat restoration manual, 3rd edition. California Department of Fish and Game, Sacramento, California.

LEVEL III and LEVEL IV HABITAT TYPES

RIFFLE			
Low Gradient Riffle	(LGR)	[1.1]	{ 1}
High Gradient Riffle	(HGR)	[1.2]	{ 2}
CASCADE			
Cascade	(CAS)	[2.1]	{ 3}
Bedrock Sheet	(BRS)	[2.2]	{24}
FLATWATER			
Pocket Water	(POW)	[3.1]	{21}
Glide	(GLD)	[3.2]	{14}
Run	(RUN)	[3.3]	{15}
Step Run	(SRN)	[3.4]	{16}
Edgewater	(EDW)	[3.5]	{18}
MAIN CHANNEL POOLS			
Trench Pool	(TRP)	[4.1]	{ 8}
Mid-Channel Pool	(MCP)	[4.2]	{17}
Channel Confluence Pool	(CCP)	[4.3]	{19}
Step Pool	(STP)	[4.4]	{23}
SCOUR POOLS			
Corner Pool	(CRP)	[5.1]	{22}
Lateral Scour Pool - Log Enhanced	(LSL)	[5.2]	{10}
Lateral Scour Pool - Root Wad Enhanced	(LSR)	[5.3]	{11}
Lateral Scour Pool - Bedrock Formed	(LSBk)	[5.4]	{12}
Lateral Scour Pool - Boulder Formed	(LSBo)	[5.5]	{20}
Plunge Pool	(PLP)	[5.6]	{ 9}
BACKWATER POOLS			
Secondary Channel Pool	(SCP)	[6.1]	{ 4}
Backwater Pool - Boulder Formed	(BPB)	[6.2]	{ 5}
Backwater Pool - Root Wad Formed	(BPR)	[6.3]	{ 6}
Backwater Pool - Log Formed	(BPL)	[6.4]	{ 7}
Dammed Pool	(DPL)	[6.5]	{13}
ADDITIONAL UNIT DESIGNATIONS			
Dry	(DRY)	[7.0]	
Culvert	(CUL)	[8.0]	
Not Surveyed	(NS)	[9.0]	
Not Surveyed due to a marsh	(MAR)	[9.1]	