STREAM INVENTORY REPORT

Unnamed Tributary One to South Fork Big River aka "Pruitt Creek"

INTRODUCTION

A stream inventory was conducted beginning July 10, and ending July 23, 2002 on Unnamed Tributary One to South Fork Big River. The survey began at the confluence with South Fork Big River and extended upstream 1.2 miles.

The Unnamed Tributary One to South Fork Big River 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 Unnamed Tributary One to South Fork Big River. 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 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

Unnamed Tributary One is a tributary to South Fork Big River, a tributary to Big River, located in Mendocino County, California (Map 1). Unnamed Tributary One's legal description at the confluence with South Fork Big River is T16N R14W S14. Its location is 39°14′09″ north latitude and 123°22′48″ west longitude. Unnamed Tributary One to South Fork Big River is an intermittent stream and has approximately 15,200 feet of dashed blue line stream according to the USGS Bailey Ridge 7.5 minute quadrangle. Unnamed Tributary One to South Fork Big River drains a watershed of approximately 2.20 square miles. Elevations range from about 780 feet at the mouth of the creek to 2,204 feet in the headwater areas. Mixed conifer forest dominates the watershed. The watershed is owned partially by the State of California, while the majority is privately owned and used for residential area. Vehicle access exists via Comptche Ukiah Road to the mouth of the unnamed stream in Montgomery Redwoods State Park.

Electrofishing sampling was conducted on Unnamed Tributary One to South Fork Big River by California Department of Fish and Game (CDFG) on September 26, 2002. Young-of-the-year and yearling steelhead trout were observed, as well as 2 young-of-the-year coho salmon (CDFG file data).

METHODS

The habitat inventory conducted in Unnamed Tributary One to South Fork Big River follows the methodology presented in the *California Salmonid Stream Habitat Restoration Manual* (Flosi et al, 1998). The 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 Unnamed Tributary One to South Fork Big 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 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. 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. Channel characteristics are measured using a clinometer, hand level, hip chain, tape measure, and a stadia rod.

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". Unnamed Tributary One to South Fork Big 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. 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 Unnamed Tributary One to South Fork Big 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) 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 Unnamed Tributary One to South Fork Big 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 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 Unnamed Tributary One to South Fork Big River, 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 evergreen 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 Unnamed Tributary One to South Fork Big River, 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 Unnamed Tributary One to South Fork Big River. In addition, two sites were electrofished using a Smith-Root Model 12 electrofisher. 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 8.4, 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 seven tables:

- Summary of riffle, flatwater, and pool habitat types
- Summary of habitat types and measured parameters
- Summary of pool types
- Summary of maximum pool depths by pool habitat types
- Summary of shelter by habitat types
- Summary of dominant substrates by habitat types
- Summary of fish habitat elements by stream reach

Graphics are produced from the tables using Microsoft Excel. Graphics developed for Unnamed Tributary One to South Fork Big River include:

- Level II habitat types by % occurrence
- Level II habitat types by % total length
- Level IV habitat types by % occurrence
- Level I pool habitat types by % occurrence
- Maximum depth in pools
- Percent embeddedness estimated in pool tail-outs

- Mean percent cover types in pools
- Substrate composition in pool tail-outs
- Mean percent canopy
- Dominant bank composition in survey reach
- Dominant bank vegetation in survey reach

HABITAT INVENTORY RESULTS

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

The habitat inventory of July 10 through July 23, 2002, was conducted by K. Grossman and B. Wood (WSP/AmeriCorps). The total length of the stream surveyed was 6,177 feet.

Stream flow was not measured on Unnamed Tributary One to South Fork Big River.

Unnamed Tributary One to South Fork Big River is an F3 channel type for 3,855 feet of stream, a B2 for 664 feet, and a B4 for 1,342 feet of stream surveyed. F3 channel types are classified as entrenched, meandering/riffle channels with high width/depth ratios and cobble-dominant substrates. B2 channels are classified as moderately entrenched, moderate gradient, riffle dominated channels with infrequently spaced pools; very stable plan and profile with stable banks and bedrock-dominant substrates. B4 channels are classified as moderately entrenched, moderate gradient, riffle dominated channels with infrequently spaced pools; very stable plan and profile with stable banks and gravel-dominant substrates.

Water temperatures taken during the survey period ranged from 59 to 69 degrees Fahrenheit. Air temperatures ranged from 62 to 90 degrees Fahrenheit.

Table 1 summarizes the Level II riffle, flatwater, and pool habitat types. Based on frequency of occurrence there were 48% pool units, 31% flatwater units, 3% riffle units, 18% dry was (Graph 1). Based on total length of Level II habitat types there were 54% flatwater units, 26% pool units, 3% riffle units, and 17% was dry (Graph 2).

Eleven Level IV habitat types were identified (Table 2). The most frequent habitat types by percent occurrence were mid-channel pools, 33%; step runs, 27%; and dry channels, 18% (Graph 3). Based on percent total length, step runs made up, 52%, dry channels, 17%, and mid-channel pools 16%.

A total of 44 pools were identified (Table 3). Main channel pools were the most frequently encountered, at 82%, and comprised 85% 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-six of the 44 pools (59%) had a depth of two feet or greater (Graph 5).

The depth of cobble embeddedness was estimated at pool tail-outs. Of the 44 pool tail-outs measured, 13 had a value of 1 (30%); 13 had a value of 2 (30%); 10 had a value of 3 (23%); 3

had a value of 4 (7%); and 5 had a value of 5 (11%) (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 habitats had a mean shelter rating of 35, flatwater habitat types had a mean shelter rating of 13, and riffle habitat types had a mean shelter rating of 3 (Table 1). Of the pool types, scour pools had the highest mean shelter rating at 83. Main channel pools had a mean shelter rating of 25 (Table 3).

Table 5 summarizes mean percent cover by habitat type. Boulders are the dominant cover type in Unnamed Tributary One to South Fork Big River. Graph 7 describes the pool cover in Unnamed Tributary One to South Fork Big River. Boulders are the dominant pool cover type followed by undercut banks.

Table 6 summarizes the dominant substrate by habitat type. Graph 8 depicts the dominant substrate observed in pool tail-outs. Small cobble was the dominant substrate observed in 36% of pool tail-outs while gravel was the next most frequently observed substrate type, at 23%.

The mean percent canopy density for the surveyed length of Unnamed Tributary One to South Fork Big River was 69%. In the closed canopy, the mean percentages of deciduous and coniferous trees were 16% and 84%, respectively. Graph 9 describes the mean percent canopy in Unnamed Tributary One to South Fork Big River.

For the stream reach surveyed, the mean percent right bank vegetated was 44%. The mean percent left bank vegetated was 40%. The dominant elements composing the structure of the stream banks consisted of 32% cobble/gravel, 27% sand/silt/clay, 23% boulder, and 18% bedrock (Graph 10). Deciduous trees were the dominant vegetation type observed in 50% of the units surveyed. Additionally, 41% of the units surveyed had coniferous trees as the dominant vegetation type, and 5% had brush as the dominant vegetation (Graph 11).

BIOLOGICAL INVENTORY RESULTS

Two sites were electrofished for species composition and distribution in Unnamed Tributary One to South Fork Big River on September 26, 2002. Water temperature taken during the electrofishing period was 55 degrees Fahrenheit. Air temperatures ranged from 59 to 60 degrees Fahrenheit. The sites were sampled by S. Monday and K. Knechtle (DFG). All aquatic species were identified while lengths were taken of salmonids. Steelhead rainbow trout (SH) and coho (COHO) were the salmonid species observed. Other species identified were coast range sculpin (CRS) and Pacific giant salamander larva (PGS) (Table A).

The first site sampled included habitat unit 002, a mid-channel pool approximately 150 feet from the confluence with South Fork Big River. The site yielded 1 young-of-the-year steelhead trout and 1 yearling steelhead trout.

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The second site included habitat units 004, a mid-channel pool located approximately 200 feet above the creek mouth. The site yielded 2 young-of-the-year steelhead trout, 2 yearling steelhead trout, and 2 yearling coho salmon.

Table A. South Fork Big River, Unnamed Tributary One biological sampling data.

Date	Site ID	Species	YOY	Yearling	Other Species
9/26/2002	1	SH	1	1	None
9/26/2002	2	COHO	2		
9/26/2002	2	SH	2	2	CRS, PGS

DISCUSSION

Unnamed Tributary One to South Fork Big River is an F3 channel type for 3,855 feet, a B2 for 664 feet, and a B4 for 1,342 feet of stream surveyed. The suitability of F3 channel types for fish habitat improvement structures is as follows: F3 channel types are good for bank-placed boulders, single and opposing wing-deflectors and fair for plunge weirs, boulder clusters, channel constrictors and log cover. B2 channel types are excellent for plunge weirs, single and opposing wing-deflectors, and log cover.

The water temperatures recorded on the survey days July 10 through July 23, 2002 ranged from 59 to 69 degrees Fahrenheit. Air temperatures ranged from 62 to 90 degrees Fahrenheit. The recorded water temperatures of 60 degrees Fahrenheit and below are suitable for salmonids. 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 54% of the total length of this survey, pools 26%, and riffles 3%. The pools are relatively deep, with 26 of the 44 (59%) 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.

Twenty-six of the 44 pool tail-outs measured had embeddedness ratings of 1 or 2. Thirteen of the pool tail-outs had embeddedness ratings of 3 or 4. Five had a rating of 5, which is considered unsuitable for spawning. Cobble embeddedness measured to be 25% or less, a rating of 1, is considered to indicate good quality spawning substrate for salmon and steelhead.

Twenty-six of the 44 pool tail-outs measured had gravel or small cobble as the dominant substrate. This is generally considered good spawning salmonids.

The mean shelter rating for pools was 35. The shelter rating in the flatwater habitats was 13. A pool shelter rating of approximately 100 is desirable. The amount of cover that now exists is being provided primarily by boulders in all habitat types. Additionally, undercut banks contribute a small amount. Log and root wad cover structures 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 69%. In general, revegetation projects are considered when canopy density is less than 80%.

The percentage of right and left bank covered with vegetation was low at 44% and 40%, 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.

RECOMMENDATIONS

1) Unnamed Tributary One to South Fork Big River should be managed as an anadromous, natural production stream.

2) The limited water temperature data available suggest that maximum temperatures are above 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) 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) Increase woody cover in the pools and flatwater habitat units. Most of the existing cover is from boulders. Adding high quality complexity with log and root wad cover is desirable.

5) Active and potential sediment sources 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 Unnamed Tributary One to South Fork Big River by planting willow, alder, redwood, and Douglas fir along the stream where shade canopy is not at acceptable levels. The reaches above this survey section should be inventoried and treated as well, since the water flowing here is affected from upstream. In many cases, planting will need to be coordinated to follow bank stabilization or upslope erosion control projects.

7) 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.

8) There are several log debris accumulations present on Unnamed Tributary One to South Fork Big 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.

9) There are sections where the stream is being impacted from cattle trampling the riparian zone. Alternatives should be explored with the grazier and developed if possible.

COMMENTS AND LANDMARKS

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

Position (ft):	Comment:
0'	Begin survey 80 feet from the confluence with South Fork Big River. Stream flows under Orrs Springs Road bridge. The bridge has a 36 foot concrete bottom and is 12 feet wide. Salmonids present at South Fork Big River and below bridge on unnamed tributary.
38'	Salmonid YOY present.
79'	Unidentified frog. Although some of the unit is deep, unit is bedrock substrate and depth comes from carved out trenches.
181'	Five bedrock pools each separated by bedrock sheet or cascades. 3rd and 4th pools separated by 10 feet of bedrock sheet with high gradient around 10%. 4th pool is deepest at over 11 feet. Large bedrock outcrop on right bank above 10 feet long.
261'	Entire left bank is undercut bedrock ledge with an average of two feet, but deepest undercut is 4.5 feet.
360'	One yearling steelhead. Three foot diameter log across banks. Roots intact on left bank.
506'	Somewhat entrenched.
800'	Small riffles between three pools over bedrock.
961'	Log down across channel causing some scour along left bank.
976'	Coho YOY. LDA, consisting of two pieces of LWD in channel greater than 4' in diameter.
1052'	Dry right bank tributary.
1374'	Dry left bank tributary, 213 feet in to unit.

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1665' 2 pieces of LWD across channel, resting on banks. Left bank boulder causing some scour.

1686' Right bank slope failure. Three pieces of LWD in channel, two are 10' tall stumps.

1778' LWD (cut trees) >3' in diameter on left bank, some scour.

2034' Two small redwoods 113' into unit, down across channel from left bank causing some scour.

2254' Left bank dry tributary at top of unit.

2333' Two pools with 5' riffle in between; first is deeper, but equally wide.

2656' More boulders in channel, steelhead YOY.

2874' Scour around five or six boulders, but they are throughout channel.

2899' Yearling steelhead. Dry right bank tributary 66' into unit: high gradient, non-anadromous. Another dry tributary at 163' into unit, gradient not as steep as first one, not anadromous.

3141' Right bank dry tributary at top of unit, appears to be a fork to the previous tributary.

3251' Very large boulder with a sandy bottom causing scour around base of boulders.

3679' Possible channel type change. Many YOY, channel is wider.

3855' Channel type taken

3916' Yearling and YOY salmonids.

3943' Salmonid YOY at beginning of unit. Right bank tributary. Gradient increase.

4033' 12' tall boulders block channel at top of unit. Small 3' wide opening that steelhead may be able to jump up through during high flows, but no flow through it now. Water is pooling around smaller boulders at bottom, possible barrier. No fish in this pool.

4051' Stream flowing subsurface.

4076' Water not flowing, so was called step-pool. No fish, two pools separated by 2' boulder causing drop.

4093' 5' dry at top of unit, gradient continuing to increase.

4113' Left bank tributary very steep, non-anadromous.

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4154' Four-wheel drive road crosses channel 50' into unit.

4292' Water only pooling in scours around boulders and trickles between pools. No fish.

4429' Eight small pools mostly scouring around boulders.

4519' Possible channel type change, lots of tadpoles, no fish. Fewer boulders, less of a gradient, more water, more cobble. Right bank tributary at end of unit. Trees are all tan oak, bay laurel, or live oak. Outside of channel is meadow-like and not forested.

4871' No fish observed.

4893' Most of riffle part is extremely low flow or subsurface.

5013' Two smaller pools on opposite banks with about 6' of dry in between them. Right bank pool is lateral scour from bay laurel. Left bank pool is larger and deeper and is lateral scour from old madrone.

5051' Channel type taken. 5' of dry channel at beginning of unit. Dry right bank tributary in mid-unit.

5116' Left bank slope failure.

5199' Right bank slope failure mid unit contributing a lot of fine sediment. Right bank has no trees until top of ridge, just grass. All of canopy is from left bank, no canopy on right bank. Many tadpoles.

5313' Channel type taken, B4. Change from last channel type is slope and substrate.

5391' More boulders for substrate.

5438' Road along left bank.

5843' Resident trout, 7-8" long. Tributary enters at top of unit on right bank; has standing water in pools, not flowing. Walked up tributary to its first right bank tributary; no fish observed, did not appear to be fish bearing habitat.

5982' Right bank slope failure 20 feet into unit. Riffle parts of unit are almost dry, but water is still visible.

6107' Right bank landslide contributing fine sediment and boulders to channel causing pool.

6151' End of survey, end of anadromy. LDA at top of pool there between two boulders, logs piling up about 12 feet high. Potential migration barrier. Walked above unit to road crossing channel. No water in channel. Sand substrate is unsuitable for spawning.

REFERENCES

California Department of Fish and Game, 2002. South Fork Big River, Unnamed Tributary One Electrofishing Data Collection Form.

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.

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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]	

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TABLES AND GRAPHS

TABLE 8. FISH HABITAT INVENTORY DATA SUMMARY

STREAM NAME: UNNAMED TRIB #1 S.F. BIG
SAMPLE DATES: 07/10/02 to 07/23/02
STREAM LENGTH: 6177 ft.
LOCATION OF STREAM MOUTH:
USGS Quad Map: BAILEY RID — Latitude: 39°23'59"
Legal Description: T16NR14WS14 — Longitude: 123°38'0"

SUMMARY OF FISH HABITAT ELEMENTS BY STREAM REACH

STREAM REACH 01

Channel Type: F3	Canopy Density: 74%
Channel Length: 3855 ft.	Coniferous Component: 97%
Riffle/flatwater Mean Width: 6 ft.	Deciduous Component: 3%
Total Pool Mean Depth: 0.9 ft.	Pools by Stream Length: 24%
Base Flow: 0.0 cfs	Pools >=3 ft.deep: 18%
Water: 059- 069°F Air: 062-084°F	Mean Pool Shelter Rtn: 40
Dom. Bank Veg.: Deciduous Trees	Dom. Shelter: Undercut Banks
Vegetative Cover: 42%	Occurrence of LOD: 11%
Dom. Bank Substrate: Cobble/Gravel	Dry Channel: 0 ft.

Embeddness Value: 1. 18% 2.27% 3. 23% 4. 9% 5. 23%

STREAM REACH 2

Channel Type: B2	Canopy Density: 69%
Channel Length: 664 ft.	Coniferous Component: 75%
Riffle/flatwater Mean Width: 5 ft.	Deciduous Component: 25%
Total Pool Mean Depth: 0.6 ft.	Pools by Stream Length: 37%
Base Flow: 0.0 cfs	Pools >=3 ft.deep: 0%
Water: 059- 064°F Air: 078-090°F	Mean Pool Shelter Rtn: 34
Dom. Bank Veg.: Deciduous Trees	Dom. Shelter: Boulders
Vegetative Cover: 34%	Occurrence of LOD: 0%
Dom. Bank Substrate: Cobble/Gravel	Dry Channel: 216 ft.

Embeddness Value: 1. 33% 2.17% 3. 33% 4. 17% 5. 0%

STREAM REACH 3

Channel Type: B4	Canopy Density: 59%
Channel Length: 1342 ft.	Coniferous Component: 64%
Riffle/flatwater Mean Width: 2 ft.	Deciduous Component: 36%
Total Pool Mean Depth: 0.6 ft.	Pools by Stream Length: 30%
Base Flow: 0.0 cfs	Pools >=3 ft.deep: 0%
Water: 061- 061°F Air: 070-088°F	Mean Pool Shelter Rtn: 32
Dom. Bank Veg.: Deciduous Trees	Dom. Shelter: Root masses
Vegetative Cover: 49%	Occurrence of LOD: 10%
Dom. Bank Substrate: Cobble/Gravel	Dry Channel: 821 ft.

Embeddness Value: 1. 44% 2.38% 3. 19% 4. 0% 5. 0%

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UNNAMED TRIB #1 S.F. BIG — Drainage: SF BIG RIVER

Table 1 - SUMMARY OF RIFFLE, FLATWATER, AND POOL HABITAT TYPES — Survey Dates: 07/10/02 to 07/23/02

Confluence Location: QUAD: BAILEY RID LEGAL DESCRIPTION: T16NR14WS14 LATITUDE:39°23'59" LONGITUDE:123°38'0"

HABITAT UNITS	UNITS FULLY MEASURED	HABITAT TYPE	HABITAT PERCENT OCCURRENCE	MEAN LENGTH (ft.)	TOTAL LENGTH (ft.)	PERCENT TOTAL LENGTH	MEAN WIDTH (ft.)	MEAN DEPTH (ft.)	MEAN AREA (sq.ft.)	ESTIMATED TOTAL AREA (sq.ft.)	MEAN VOLUME (cu.ft.)	ESTIMATED TOTAL VOLUME (cu.ft.)	MEAN RESIDUAL POOL VOL (cu.ft.)	MEAN SHELTER RATING
3	2	RIFFLE	3	68	204	3	5.3	0.3	246	739	93	278	0	3
28	6	FLATWATER	31	120	3352	54	5.0	0.3	169	4743	74	2058	0	13
44	44	POOL	48	36	1584	26	7.9	0.8	292	12847	261	11498	208	35
16	0	DRY	18	65	1037	17	0.0	0.0	0	0	0	0	0	0

TOTAL UNITS	TOTAL UNITS	TOTAL LENGTH (ft.)	TOTAL AREA (sq. ft.)	TOTAL VOL. (cu. ft.)
91	52	6177	18329	13834

UNNAMED TRIB #1 S.F. BIG — Drainage: SF BIG RIVER

Table 2 - SUMMARY OF HABITAT TYPES AND MEASURED PARAMETERS — Survey Dates: 07/10/02 to 07/23/02

Confluence Location: QUAD: BAILEY RID LEGAL DESCRIPTION: T16NR14WS14 LATITUDE:39°23'59" LONGITUDE:123°38'0"

HABITAT UNITS	UNITS FULLY MEASURED	HABITAT TYPE	HABITAT OCCURRENCE	MEAN LENGTH	TOTAL LENGTH	TOTAL LENGTH	MEAN WIDTH	MEAN DEPTH	MAXIMUM DEPTH	MEAN AREA	TOTAL AREA EST.	MEAN VOLUME	TOTAL VOLUME EST.	MEAN RESIDUAL POOL VOL	MEAN SHELTER RATING	MEAN CANOPY
#			%	ft.	ft.	%	ft.	ft.	ft.	sq.ft.	sq.ft.	cu.ft.	cu.ft.	cu.ft.		%
2	1	LGR	2	51	102	2	6	0.2	0.2	59	119	12	24	0	0	74
1	1	BRS	1	102	102	2	5	0.4	1.2	434	434	173	173	0	5	76
3	1	RUN	3	55	165	3	8	0.5	1.0	271	812	135	406	0	0	85
25	5	SRN	27	127	3187	52	5	0.3	1.2	149	3728	61	1528	0	15	74
30	30	MCP	33	33	994	16	9	0.8	4.6	304	9121	295	8856	241	29	62
6	6	STP	7	58	348	6	6	0.6	11.6	351	2106	238	1430	156	6	76
2	2	LSL	2	29	57	1	10	1.0	3.4	289	578	275	550	246	128	65
4	4	LSR	4	22	87	1	5	0.4	2.3	89	357	35	139	19	86	69
1	1	LSBk	1	66	66	1	7	0.8	2.1	429	429	343	343	257	45	82
1	1	LSBo	1	32	32	1	8	0.7	3.3	256	256	179	179	154	15	87
16	0	DRY	18	65	1037	17	0	0.0	0.0	0	0	0	0	0	0	66

TOTAL UNITS	TOTAL UNITS	LENGTH (ft.)	AREA (sq.ft)	TOTAL VOL. (cu.ft)
91	52	6177	17940	13629

Unnamed Tributary One to South Fork Big River aka “Pruitt Creek”

UNNAMED TRIB #1 S.F. BIG — Drainage: SF BIG RIVER

Table 3 - SUMMARY OF POOL TYPES — Survey Dates: 07/10/02 to 07/23/02

Confluence Location: QUAD: BAILEY RID LEGAL DESCRIPTION: T16NR14WS14 LATITUDE:39°23'59" LONGITUDE:123°38'0"

HABITAT UNITS	UNITS FULLY MEASURED	HABITAT TYPE	HABITAT PERCENT OCCURRENCE	MEAN LENGTH (ft.)	TOTAL LENGTH (ft.)	PERCENT TOTAL LENGTH	MEAN WIDTH (ft.)	MEAN DEPTH (ft.)	MEAN AREA (sq.ft.)	TOTAL AREA EST. (sq.ft.)	MEAN VOLUME (cu.ft.)	TOTAL VOLUME EST. (cu.ft.)	MEAN RESIDUAL POOL VOL. (cu.ft.)	MEAN SHELTER RATING
36	36	MAIN	82	37	1342	85	8.1	0.8	312	11227	286	10286	227	25
8	8	SCOUR	18	30	242	15	6.8	0.6	202	1620	151	1212	123	83

TOTAL UNITS	TOTAL UNITS	TOTAL LENGTH (ft.)	TOTAL AREA (sq.ft.)	TOTAL VOL. (cu.ft.)
44	44	1584	12847	11498

UNNAMED TRIB #1 S.F. BIG — Drainage: SF BIG RIVER

Table 4 - SUMMARY OF MAXIMUM POOL DEPTHS BY POOL HABITAT TYPES — Survey Dates: 07/10/02 to 07/23/02

Confluence Location: QUAD: BAILEY RID LEGAL DESCRIPTION: T16NR14WS14 LATITUDE:39°23'59" LONGITUDE:123°38'0"

UNITS MEASURED	HABITAT TYPE	HABITAT PERCENT OCCURRENCE	<1 FOOT MAXIMUM DEPTH	<1 FOOT PERCENT OCCURRENCE	1-<2 FT. MAXIMUM DEPTH	1-<2 FOOT PERCENT OCCURRENCE	2-<3 FT. MAXIMUM DEPTH	2-<3 FOOT PERCENT OCCURRENCE	3-<4 FT. MAXIMUM DEPTH	3-<4 FOOT PERCENT OCCURRENCE	>=4 FEET MAXIMUM DEPTH	>=4 FEET PERCENT OCCURRENCE
30	MCP	68	1	3	11	37	17	57	0	0	1	3
6	STP	14	1	17	2	33	2	33	0	0	1	17
2	LSL	5	0	0	0	0	1	50	1	50	0	0
4	LSR	9	1	25	2	50	1	25	0	0	0	0
1	LSBk	2	0	0	0	0	1	100	0	0	0	0
1	LSBo	2	0	0	0	0	0	0	1	100	0	0

TOTAL UNITS
44

UNNAMED TRIB #1 S.F. BIG — Drainage: SF BIG RIVER

Table 5 - SUMMARY OF MEAN PERCENT COVER BY HABITAT TYPE — Survey Dates: 07/10/02 to 07/23/02

Confluence Location: QUAD: BAILEY RID LEGAL DESCRIPTION: T16NR14WS14 LATITUDE:39°23'59" LONGITUDE:123°38'0"

UNITS MEASURED	UNITS FULLY MEASURED	HABITAT TYPE	MEAN % UNDERCUT BANKS	MEAN % SWD	MEAN % LWD	MEAN % ROOT MASS	MEAN % TERR. VEGETATION	MEAN % AQUATIC VEGETATION	MEAN % WHITE WATER	MEAN % BOULDERS	MEAN % BEDROCK LEDGES
2	0	LGR	0	0	0	0	0	0	0	0	0
1	1	BRS	0	0	0	0	0	0	0	0	100
3	0	RUN	0	0	0	0	0	0	0	0	0
25	3	SRN	0	17	33	0	2	0	0	48	0
30	28	MCP	24	6	7	14	0	0	0	38	11
6	4	STP	16	3	0	0	0	0	0	51	30
2	2	LSL	40	18	20	15	0	0	0	8	0
4	4	LSR	3	13	19	64	0	0	0	3	0
1	1	LSBk	0	0	0	0	0	0	0	0	100
1	1	LSBo	15	25	0	0	0	0	0	60	0
16	0	DRY	0	0	0	0	0	0	0	0	0

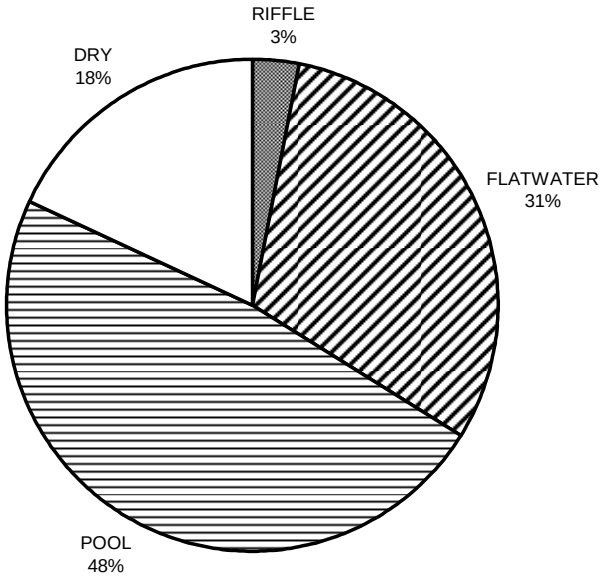
UNNAMED TRIB #1 S.F. BIG — Drainage: SF BIG RIVER

Table 6 - SUMMARY OF DOMINANT SUBSTRATES BY HABITAT TYPE — Survey Dates: 07/10/02 to 07/23/02

Confluence Location: QUAD: BAILEY RID LEGAL DESCRIPTION: T16NR14WS14 LATITUDE:39°23'59" LONGITUDE:123°38'0"

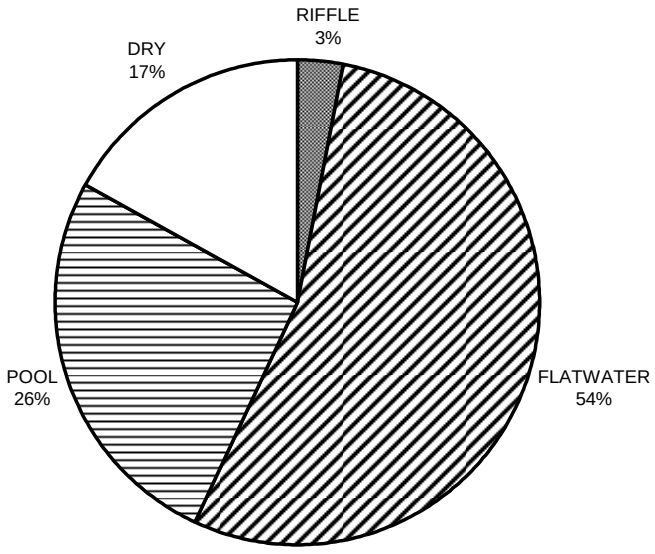
TOTAL HABITAT UNITS	UNITS FULLY MEASURED	HABITAT TYPE	% TOTAL SILT/CLAY DOMINANT	% TOTAL SAND DOMINANT	% TOTAL GRAVEL DOMINANT	% TOTAL SM COBBLE DOMINANT	% TOTAL LG COBBLE DOMINANT	% TOTAL BOULDER DOMINANT	% TOTAL BEDROCK DOMINANT
2	1	LGR	0	0	0	0	100	0	0
1	1	BRS	0	0	0	0	0	0	100
3	1	RUN	0	0	0	0	0	0	100
25	5	SRN	0	0	40	20	0	40	0
30	7	MCP	0	29	29	14	0	29	0
6	2	STP	0	0	0	0	0	50	50
2	1	LSL	0	100	0	0	0	0	0
4	2	LSR	0	0	100	0	0	0	0
1	1	LSBk	0	0	100	0	0	0	0
1	1	LSBo	0	100	0	0	0	0	0
16	0	DRY	0	0	0	0	0	0	0

SOUTH FORK BIG RIVER UNNAMED TRIBUTARY ONE
HABITAT TYPES BY PERCENT OCCURRENCE



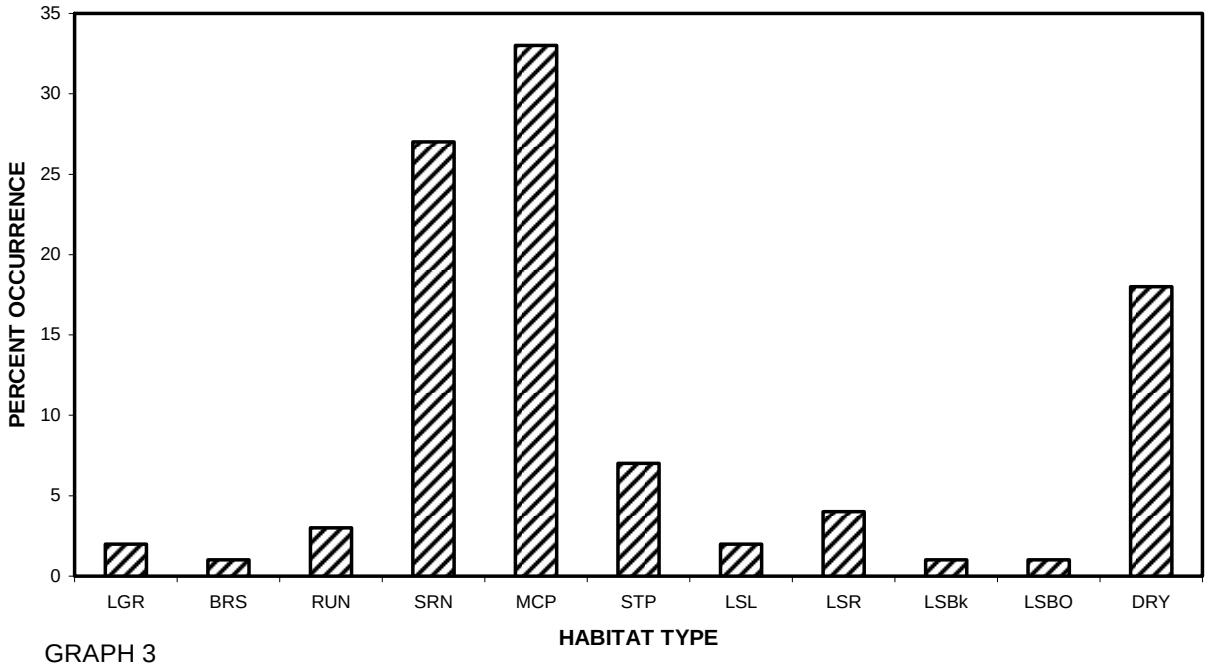
GRAPH 1

SOUTH FORK BIG RIVER UNNAMED TRIBUTARY ONE
HABITAT TYPES BY PERCENT TOTAL LENGTH



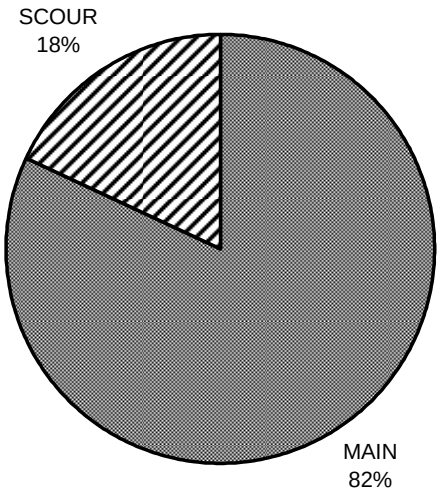
GRAPH 2

SOUTH FORK BIG RIVER UNNAMED TRIBUTARY ONE
HABITAT TYPES BY PERCENT OCCURRENCE



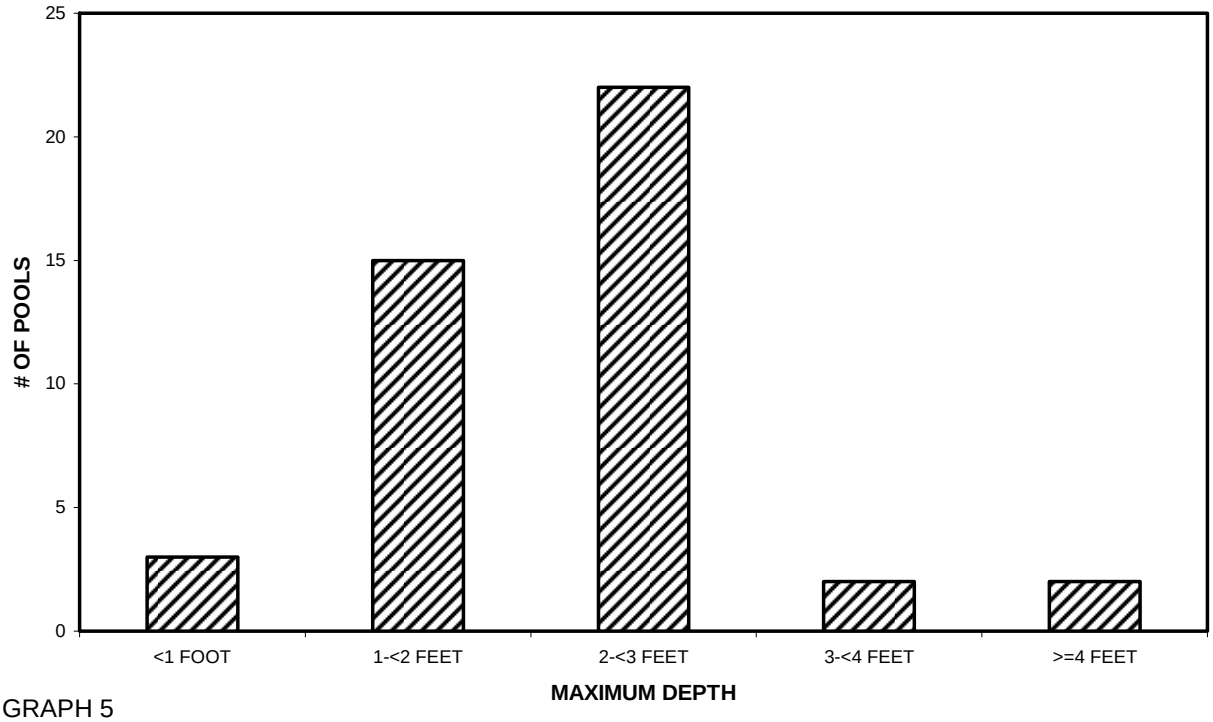
GRAPH 3

SOUTH FORK BIG RIVER UNNAMED TRIBUTARY ONE
POOL HABITAT TYPES BY PERCENT OCCURRENCE



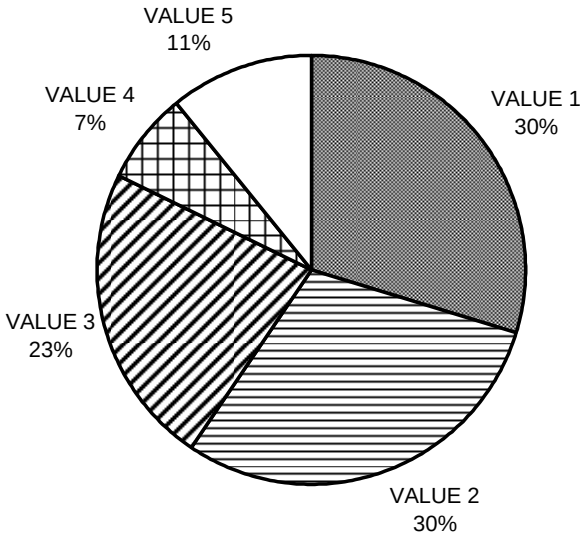
GRAPH 4

SOUTH FORK BIG RIVER UNNAMED TRIBUTARY ONE
MAXIMUM DEPTH IN POOLS



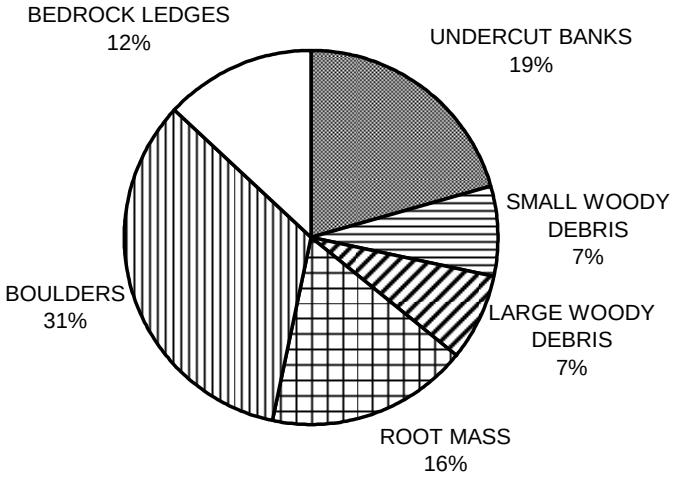
GRAPH 5

SOUTH FORK BIG RIVER UNNAMED TRIBUTARY ONE
PERCENT EMBEDDEDNESS



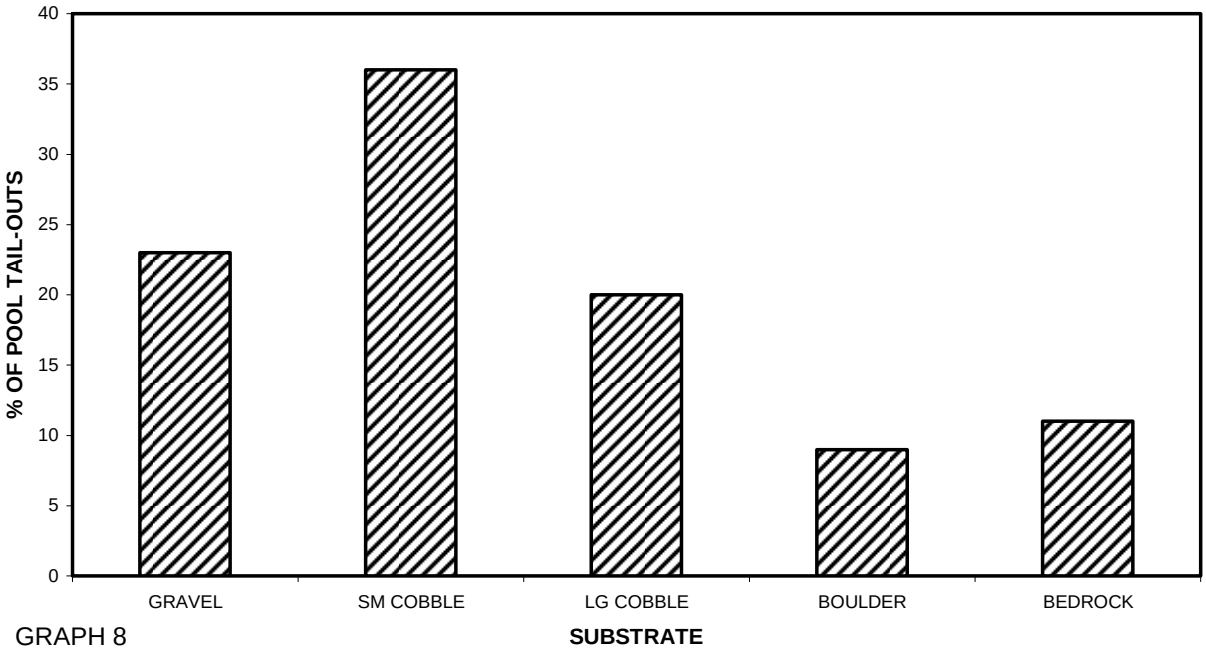
GRAPH 6

SOUTH FORK BIG RIVER UNNAMED TRIBUTARY ONE
MEAN PERCENT COVER TYPES IN POOLS



GRAPH 7

SOUTH FORK BIG RIVER UNNAMED TRIBUTARY ONE
SUBSTRATE COMPOSITION IN POOL TAIL-OUTS

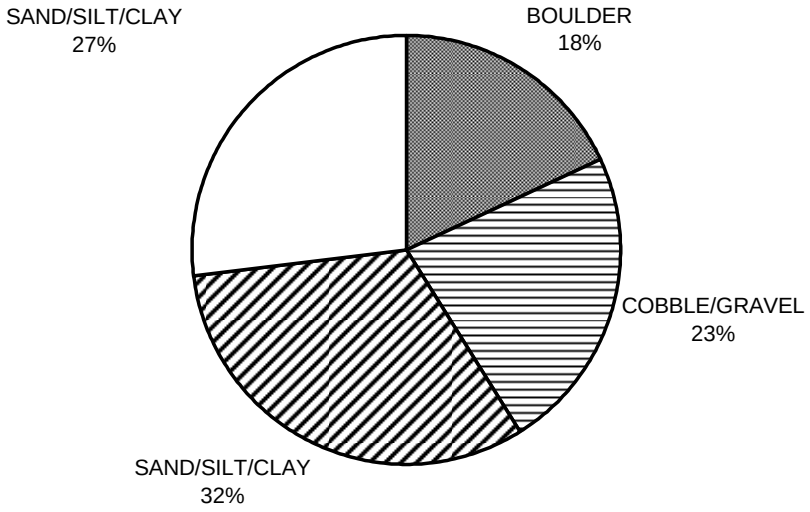


GRAPH 8

SOUTH FORK BIG RIVER UNNAMED TRIBUTARY ONE
MEAN PERCENT CANOPY

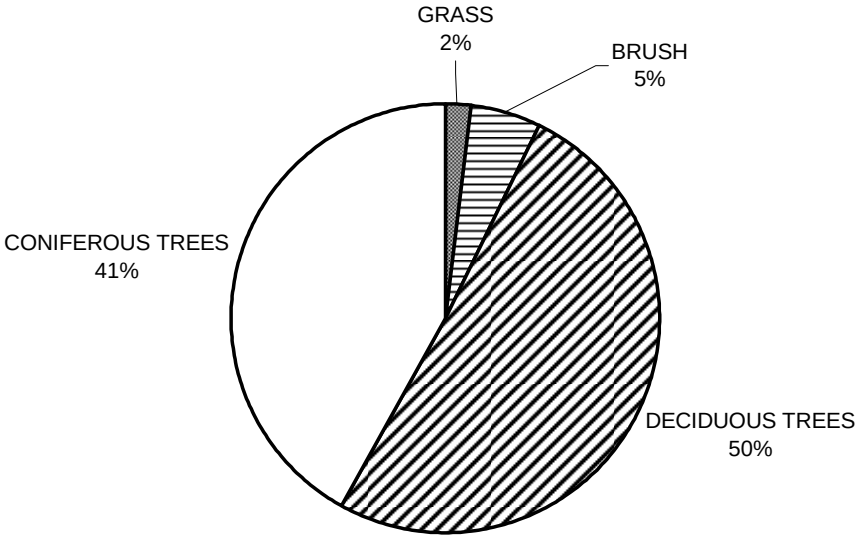
GRAPH 9

SOUTH FORK BIG RIVER UNNAMED TRIBUTARY ONE
DOMINANT BANK COMPOSITION IN SURVEY REACH

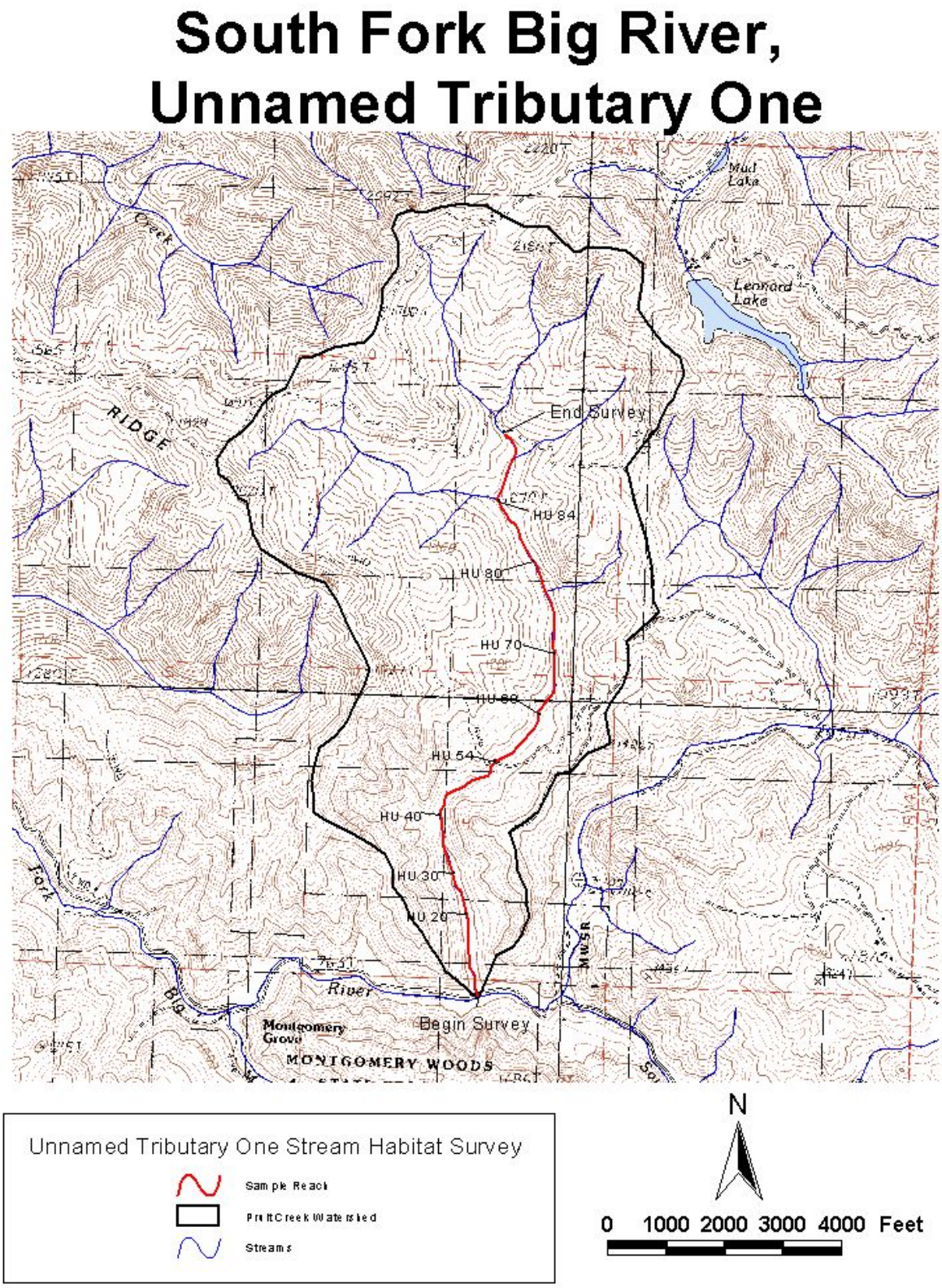


GRAPH 10

SOUTH FORK BIG RIVER UNNAMED TRIBUTARY ONE
DOMINANT BANK VEGETATION IN SURVEY REACH



GRAPH 11



Map 1. South Fork Big River, Unnamed Tributary One, stream inventory reach and watershed area.