CDFG, 1995

STREAM INVENTORY REPORT

Unnamed Tributary to Redwood Creek

INTRODUCTION

A stream inventory was conducted during the summer of 1995 on an unnamed tributary to Redwood Creek. The objective of the habitat inventory was to document the habitat available to anadromous salmonids in unnamed tributary to Redwood Creek.

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

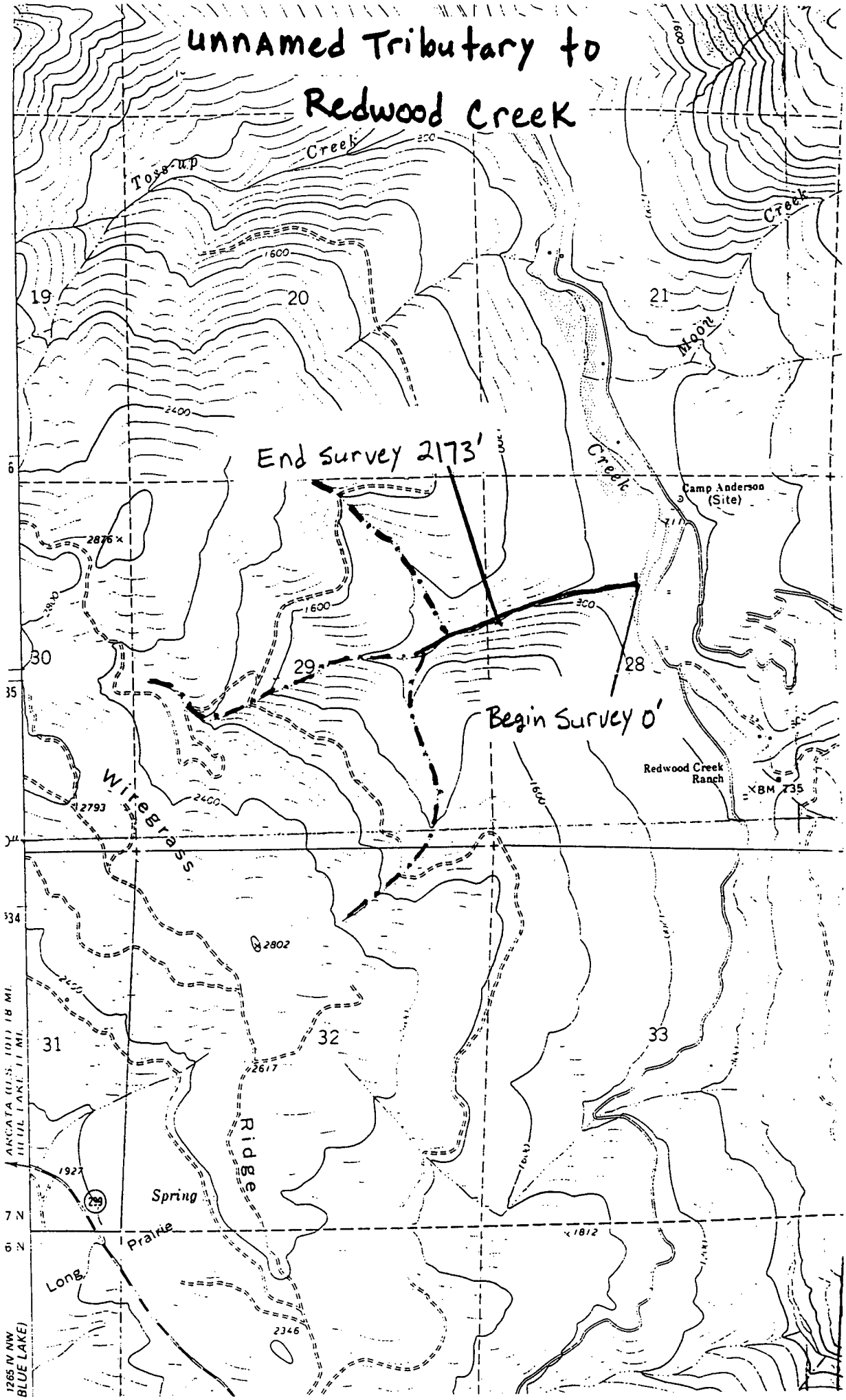
Unnamed Tributary to Redwood Creek is tributary to the Redwood Creek, tributary to the Pacific Ocean, located in Humboldt County, California (Map 1). Unnamed Tributary to Redwood Creek's legal description at the confluence with Redwood Creek is T7N R3E S28. Its location is 40°58'04" north latitude and 123°50'30" west longitude. Unnamed Tributary to Redwood Creek is a first order stream and has approximately 0.7 miles of blue line stream according to the USGS Lord-Ellis Summit 7.5 minute quadrangle. Unnamed Tributary to Redwood Creek drains a watershed of approximately 1.6 square miles. Elevations range from about 680 feet at the mouth of the creek to 2,400 feet in the headwater areas. Redwood/Douglas fir/grass/oak/mixed hardwood/mixed conifer forest dominates the watershed. The watershed is privately owned and is managed for timber production.

METHODS

The habitat inventory conducted in unnamed tributary to Redwood Creek follows the methodology presented in the *California Salmonid Stream Habitat Restoration Manual* (Flosi and Reynolds, 1991 rev. 1994). The Northwest Emergency Assistance Program (NEAP) 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.

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 to Redwood Creek to record measurements and observations. There are nine components to the inventory form.


unnAmed Tributary to
Redwood CreeK
End survey 2173'
Begin Survey 0'
Camp Anderson
(Site)
Redwood Creek
Ranch
XBM 735
Wiregrass
Ridge
Spring
Prairie
Long
Creek
19
20
21
30
29
28
31
32
33
2876
2793
2802
2617
1927
2346
1812
1600
2400

Redwood Creek Unnamed Tributary

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". Unnamed tributary to Redwood 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. Pool tail crest depth at each pool unit was measured in the thalweg. All measurements were 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 unnamed tributary to Redwood 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) 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, 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 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 to Redwood Creek, a standard qualitative shelter value of 0 (none), 1 (low), 2 (medium), or 3 (high) was assigned according to the complexity of the cover. Thus, shelter ratings can range from 0-300 and are expressed as mean values by habitat types within a stream.

7. Substrate Composition:

Substrate composition ranges from silt/clay sized particles to boulders and bedrock elements. In all habitat units, dominant and sub-dominant substrate elements were ocularly estimated using a list of seven size classes 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.* Canopy density relates to the amount of stream shaded from the sun. In unnamed tributary to Redwood Creek, an estimate of the percentage of the habitat unit covered by canopy was made from the center of every unit. 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 unnamed tributary to Redwood Creek, the dominant composition type and the dominant vegetation type of both the right and left banks for each unit were selected from the habitat inventory form. Additionally, the percent of each bank covered by vegetation was estimated and recorded.

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 unnamed tributary to Redwood 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 August 8, and 9, 1995, was conducted by Mike Develin (PCFWWRA), and Nancy Pearson and Phil Reig (NEAP). The total length of the stream surveyed was 2,173 feet with an additional 55 feet of side channel.

Flow was measured at the bottom of the survey reach with a Marsh-McBirney Model 2000 flowmeter at 0.026 cfs on September 21, 1995.

Unnamed tributary to Redwood Creek is an A2 channel type for the entire 2,173 feet of stream reach surveyed. A2 channels are steep, narrow, cascading, step-pool streams with high energy/debris transport associated with depositional soils and are boulder dominant.

Redwood Creek Unnamed Tributary

Water temperatures taken during the survey period ranged from 55 to 58 degrees Fahrenheit. Air temperatures ranged from 62 to 70 degrees Fahrenheit.

Table 1 summarizes the Level II riffle, flatwater, and pool habitat types. Based on frequency of **occurrence** there were 30% riffle units, 37% flatwater units, and 33% pool units (Graph 1). Based on total **length** of Level II habitat types there were 24% riffle units, 50% flatwater units, and 26% pool units (Graph 2).

Twelve Level IV habitat types were identified (Table 2). The most frequent habitat types by percent **occurrence** were step runs, 23%; high gradient riffles, 17%; and step pools, 14% (Graph 3). Based on percent total **length**, step runs made up 36%, step pools 16%, and high gradient riffles 13%.

A total of 23 pools were identified (Table 3). Main channel pools were most frequently encountered at 52% 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. Pool quality for salmonids increases with depth. Four of the 23 pools (17%) had a depth of two feet or greater (Graph 5).

The depth of cobble embeddedness was estimated at pool tail-outs. Of the 23 pool tail-outs measured, 6 had a value of 1 (26%); 7 had a value of 2 (30%); none had a value of 3; none had a value of 4, and 10 had a value of 5 (44%) (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. Riffle habitat types had a mean shelter rating of 13, flatwater habitat types had a mean shelter rating of 23, and pool habitats had a mean shelter rating of 22 (Table 1). Of the pool types, the main pools had the highest mean shelter rating at 27. Scour pools had a mean shelter rating of 18 (Table 3).

Table 5 summarizes mean percent cover by habitat type. Boulders are the dominant cover type in unnamed tributary to Redwood Creek. Large woody debris are lacking in nearly all habitat types. Graph 7 describes the pool cover in unnamed tributary to Redwood Creek.

Table 6 summarizes the dominant substrate by habitat type. Gravel was the dominant substrate observed in 4 of the 7 low gradient riffles measured (57%). Large cobble was the next most frequently observed dominant substrate type and occurred in 29% of the low gradient riffles (Graph 8).

Redwood Creek Unnamed Tributary

The mean percent canopy density for the stream reach surveyed was 94%. The mean percentages of deciduous and coniferous trees were 86% and 14%, respectively. Graph 9 describes the canopy in unnamed tributary to Redwood Creek.

For the stream reach surveyed, the mean percent right bank vegetated was 67.3%. The mean percent left bank vegetated was 63.9%. The dominant elements composing the structure of the stream banks consisted of 2.9% bedrock, 34.3% boulder, 4.3% cobble/gravel, and 58.6% sand/silt/clay (Graph 10). Deciduous trees were the dominant vegetation type observed in 37.1% of the units surveyed. (Graph 11).

DISCUSSION

Unnamed tributary to Redwood Creek is a A2 channel type for the entire 2,173 feet of stream surveyed. A2 channel types are generally not suitable for fish habitat improvement structures. A2 channel types are high energy streams with stable stream banks and poor gravel retention capabilities.

The water temperatures recorded on the survey days August 8 and 9, 1995, ranged from 55 to 58 degrees Fahrenheit. Air temperatures ranged from 62 to 70 degrees Fahrenheit. This is a good water temperature range for salmonids. Unnamed tributary to Redwood Creek seems to have temperatures favorable to 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 50% of the total **length** of this survey, riffles 24%, and pools 26%. The pools are relatively shallow, with only 4 of the 23 (17%) 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 increase or deepen pool habitat is not recommended due to the A2 channel type.

Ten of the 23 pool tail-outs measured had embeddedness ratings of 5. Only 6 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 unnamed tributary to Redwood 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 22. The shelter rating in the flatwater habitats was slightly better at 23. A pool shelter rating of approximately 100 is

desirable. The relatively small amount of cover that now exists is being provided primarily by boulders in all habitat types. Additionally, white water contributes a small amount. Log and root wad cover structures in the pool and flatwater habitats are needed to improve both summer and winter salmonid habitat. Log cover structure provides rearing fry with protection from predation, rest from water velocity, and also divides territorial units to reduce density related competition.

Four of the 7 low gradient riffles measured had gravel cobble as the dominant substrate. This is generally considered good for spawning salmonids.

The mean percent canopy density for the stream was 94%. 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 moderate at 67.3% and 63.9%, 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 to Redwood Creek 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 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.

4) 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.

5) Due to the high gradient of the stream, access for migrating salmonids is an ongoing potential problem. Good water temperature and flow regimes exist in the stream and it offers good conditions for rearing fish. Fish passage should be monitored and improved where 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 reach.

0'	Begin survey at confluence with Redwood Creek. Channel type is A2.
419'	Channel type taken.
727'	Left bank slide area, bedrock exposed.
1,064'	Log jam across creek.
1,499'	Big log jam across creek.
1,793'	Small slide on right bank.
2,025'	Blue shale slide on right bank, 30'W.
2,173'	End of survey. Bedrock plunge, 10' drop.

REFERENCES

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

UNNAMED TRIBUTARY TO REDWOOD CREEK Drainage: REDWOOD CREEK

Table 1 - SUMMARY OF RIFFLE, FLATWATER, AND POOL HABITAT TYPES Survey Dates: 08/08/95 to 08/09/95

Confluence Location: QUAD: LORD-ELLIS LEGAL DESCRIPTION: T06NR03ES10 LATITUDE: 40°55'22" LONGITUDE: 123°49'24"

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
21	21	RIFFLE	30	26	544	24	9.6	0.3	181	3805	49	1032	0	13
26	26	FLATWATER	37	43	1106	50	10.5	0.4	350	9104	154	4016	0	23
23	23	POOL	33	25	578	26	10.1	0.8	222	5102	177	4077	140	22

TOTAL UNITS	TOTAL UNITS	TOTAL LENGTH (ft.)	TOTAL AREA (sq. ft.)	TOTAL VOL. (cu. ft.)
70	70	2228	18011	9126

UNNAMED TRIBUTARY TO REDWOOD CREEK — Drainage: REDWOOD CREEK

Table 2 - SUMMARY OF HABITAT TYPES AND MEASURED PARAMETERS — Survey Dates: 08/08/95 to 08/09/95

Confluence Location: QUAD: LORD-ELLIS LEGAL DESCRIPTION: T06NR03ES10 LATITUDE: 40°55'22" LONGITUDE: 123°49'24"

HABITAT UNITS #	UNITS FULLY MEASURED	HABITAT TYPE	HABITAT OCCURRENCE %	MEAN LENGTH ft.	TOTAL LENGTH ft.	TOTAL LENGTH %	MEAN WIDTH ft.	MEAN DEPTH ft.	MAXIMUM 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	MEAN CANOPY %
7	7	LGR	10	33	233	10	8	0.3	0.9	222	1555	58	407	0	11	94
12	12	HGR	17	24	285	13	11	0.3	1.2	174	2090	48	578	0	15	93
2	2	CAS	3	13	26	1	9	0.3	1.0	80	160	24	48	0	5	95
9	9	POW	13	32	288	13	9	0.5	1.6	222	1994	117	1050	0	30	94
1	1	RUN	1	15	15	1	7	0.4	0.9	84	84	34	34	0	10	95
16	16	SRN	23	50	803	36	11	0.4	3.0	439	7026	183	2932	0	19	94
1	1	TRP	1	12	12	1	4	1.0	2.0	43	43	43	43	22	40	90
1	1	MCP	1	16	16	1	8	0.5	1.0	115	115	58	58	35	30	95
10	10	STP	14	35	354	16	11	0.7	2.4	326	3259	216	2161	183	25	94
4	4	LSBk	6	21	85	4	8	0.8	2.5	157	628	121	483	65	18	95
4	4	LSBo	6	14	56	3	10	0.8	1.8	119	475	92	367	54	10	95
3	3	PLP	4	18	55	2	11	1.2	4.5	194	581	322	966	286	28	95

TOTAL UNITS	TOTAL UNITS	LENGTH (ft.)	AREA (sq.ft)	TOTAL VOL. (cu.ft)
70	70	2228	18011	9126

UNNAMED TRIBUTARY TO REDWOOD CREEK

Drainage: REDWOOD CREEK

Table 3 - SUMMARY OF POOL TYPES

Survey Dates: 08/08/95 to 08/09/95

Confluence Location: QUAD: LORD-ELLIS LEGAL DESCRIPTION: T06NR03ES10 LATITUDE: 40°55'22" LONGITUDE: 123°49'24"

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
12	12	MAIN	52	32	382	66	10.5	0.7	285	3417	188	2261	158	27
11	11	SCOUR	48	18	196	34	9.6	0.9	153	1684	165	1816	122	18

TOTAL UNITS	TOTAL UNITS	TOTAL LENGTH (ft.)	TOTAL AREA (sq.ft.)	TOTAL VOL. (cu.ft.)
23	23	578	5102	4077

UNNAMED TRIBUTARY TO REDWOOD CREEK Drainage: REDWOOD CREEK

Table 4 - SUMMARY OF MAXIMUM POOL DEPTHS BY POOL HABITAT TYPES Survey Dates: 08/08/95 to 08/09/95

Confluence Location: QUAD: LORD-ELLIS LEGAL DESCRIPTION: T06NR03ES10 LATITUDE: 40°55'22" LONGITUDE: 123°49'24"

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
1	TRP	4	0	0	0	0	1	100	0	0	0	0
1	MCP	4	0	0	1	100	0	0	0	0	0	0
10	STP	43	0	0	9	90	1	10	0	0	0	0
4	LSBk	17	0	0	3	75	1	25	0	0	0	0
4	LSBo	17	0	0	4	100	0	0	0	0	0	0
3	PLP	13	0	0	2	67	0	0	0	0	1	33
TOTAL UNITS 23			0		19		3		0		1	

UNNAMED TRIBUTARY TO REDWOOD CREEK Drainage: REDWOOD CREEK

Table 5 - SUMMARY OF MEAN PERCENT COVER BY HABITAT TYPE Survey Dates: 08/08/95 to 08/09/95

Confluence Location: QUAD: LORD-ELLIS LEGAL DESCRIPTION: T06NR03ES10 LATITUDE: 40°55'22" LONGITUDE: 123°49'24"

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
7	7	LGR	0	22	4	3	16	0	12	32	11
12	12	HGR	2	13	0	2	5	0	23	42	13
2	2	CAS	0	5	0	0	13	0	8	45	30
9	9	POW	2	14	4	1	9	0	18	43	9
1	1	RUN	0	10	0	0	0	0	30	40	20
16	16	SRN	1	15	2	3	12	0	19	40	9
1	1	TRP	0	20	0	0	0	0	30	30	20
1	1	MCP	10	10	0	0	0	0	10	40	30
10	10	STP	4	16	1	2	14	1	19	30	14
4	4	LSBk	0	6	5	0	6	0	20	34	29
4	4	LSBo	3	14	4	0	10	0	9	49	10
3	3	PLP	3	15	5	2	15	0	15	25	23

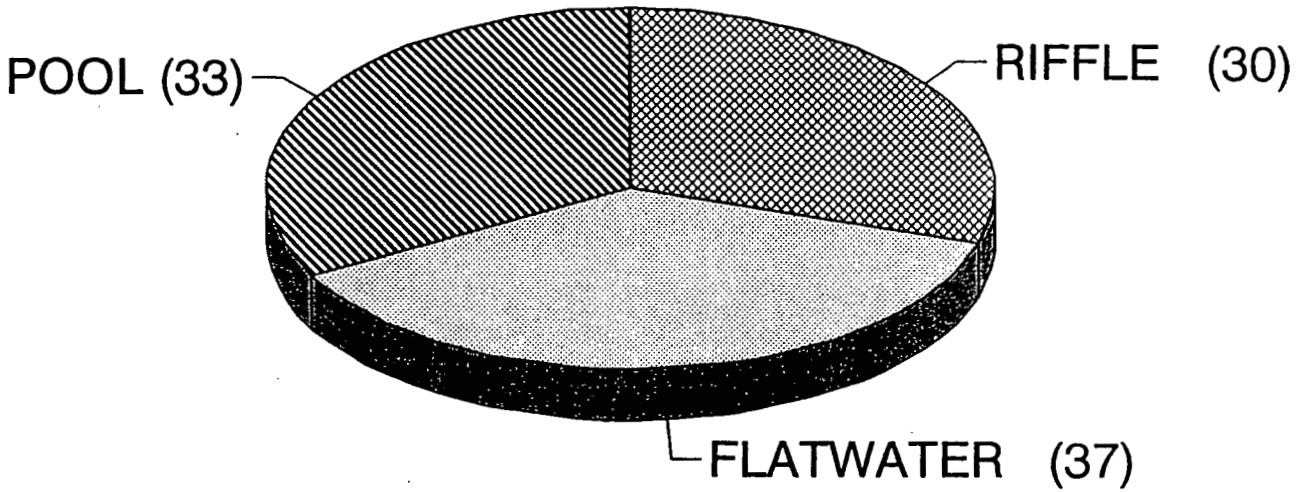
UNNAMED TRIBUTARY TO REDWOOD CREEK Drainage: REDWOOD CREEK

Table 6 - SUMMARY OF DOMINANT SUBSTRATES BY HABITAT TYPE Survey Dates: 08/08/95 to 08/09/95

Confluence Location: QUAD: LORD-ELLIS LEGAL DESCRIPTION: T06NR03ES10 LATITUDE: 40°55'22" LONGITUDE: 123°49'24"

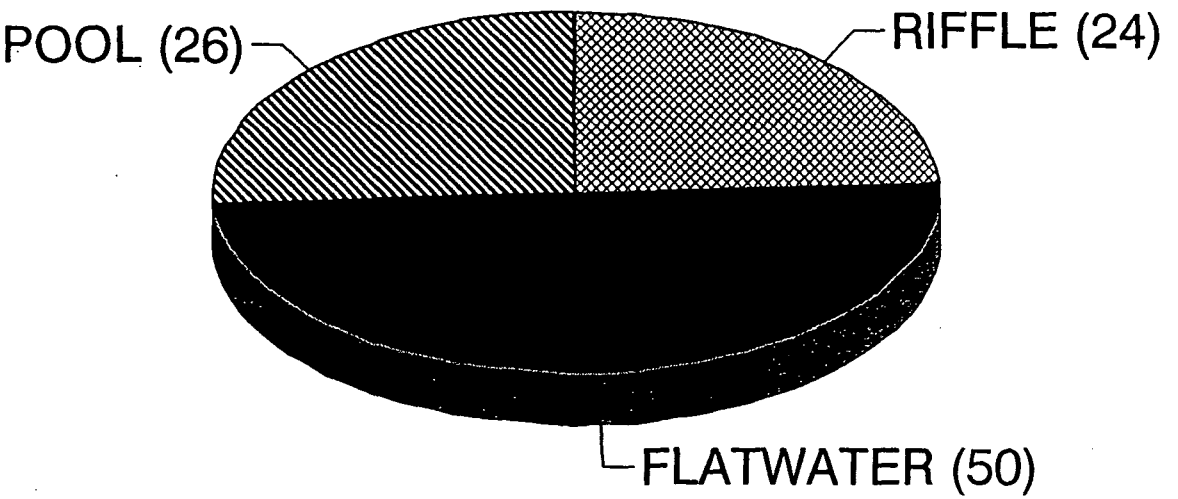
TOTAL HABITAT UNITS	UNITS FULLY MEASURED	HABITAT TYPE	% TOTAL SILT/CLAY DOMINANT	% TOTAL SAND DOMINANT	% TOTAL GRAVEL DOMINANT	% TOTAL SM COBBLE DOMINANT	% TOTAL LG COBBLE DOMINANT	% TOTAL BOULDER DOMINANT	% TOTAL BEDROCK DOMINANT
7	7	LGR	0	0	57	14	29	0	0
12	12	HGR	0	0	42	8	17	33	0
2	2	CAS	0	0	0	0	0	50	50
9	9	POW	0	0	78	22	0	0	0
1	1	RUN	0	0	0	0	100	0	0
16	16	SRN	0	6	75	19	0	0	0
1	1	TRP	0	0	0	0	0	0	100
1	1	MCP	0	0	100	0	0	0	0
10	10	STP	0	20	70	0	0	10	0
4	4	LSBk	0	0	100	0	0	0	0
4	4	LSBo	0	25	75	0	0	0	0
3	3	PLP	0	33	33	0	0	33	0

UNNAMED TRIBUTARY TO REDWOOD CREEK
HABITAT TYPES BY PERCENT OCCURRENCE



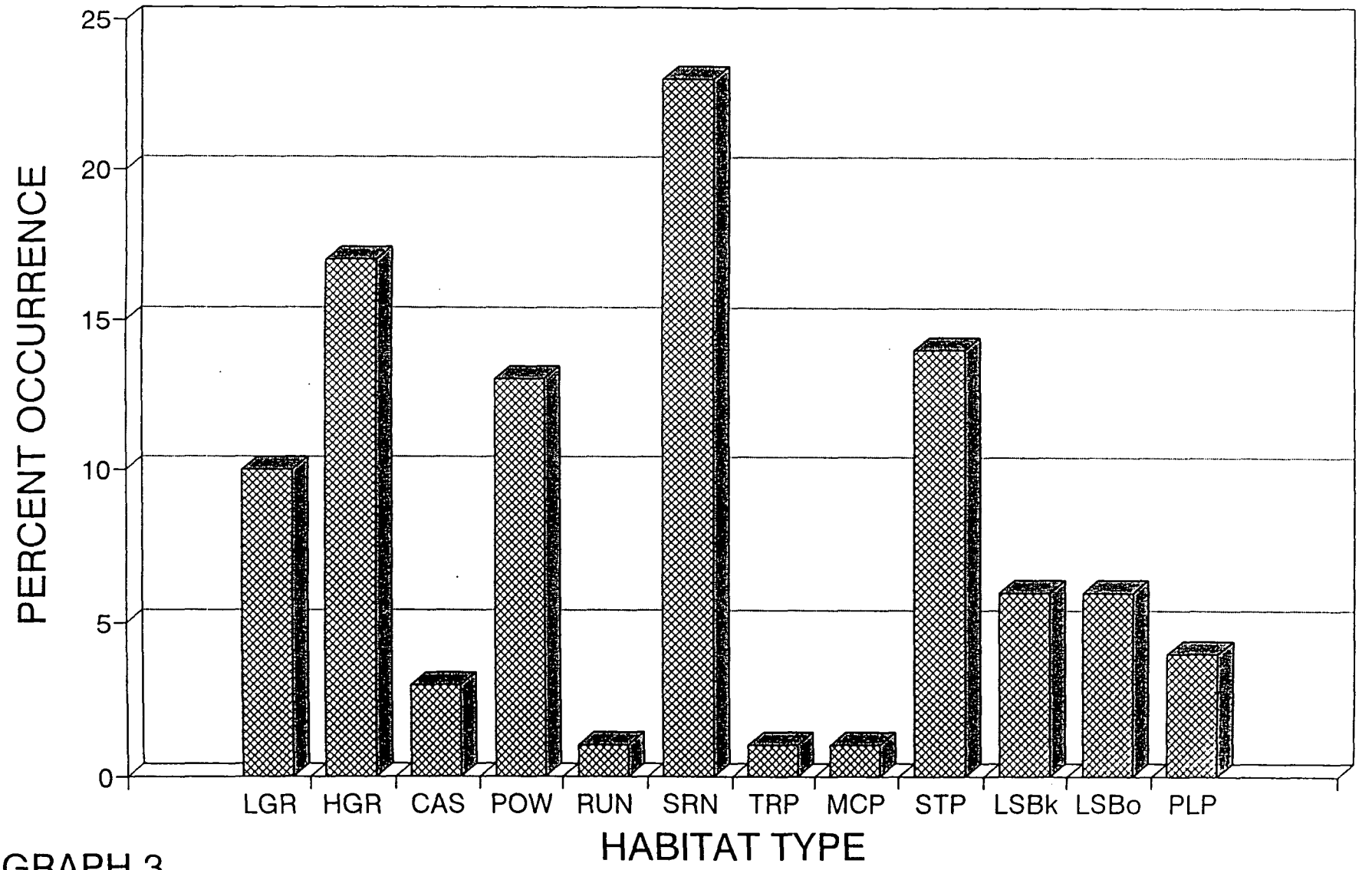
GRAPH 1

UNNAMED TRIBUTARY TO REDWOOD CREEK
HABITAT TYPES BY PERCENT TOTAL LENGTH



GRAPH 2

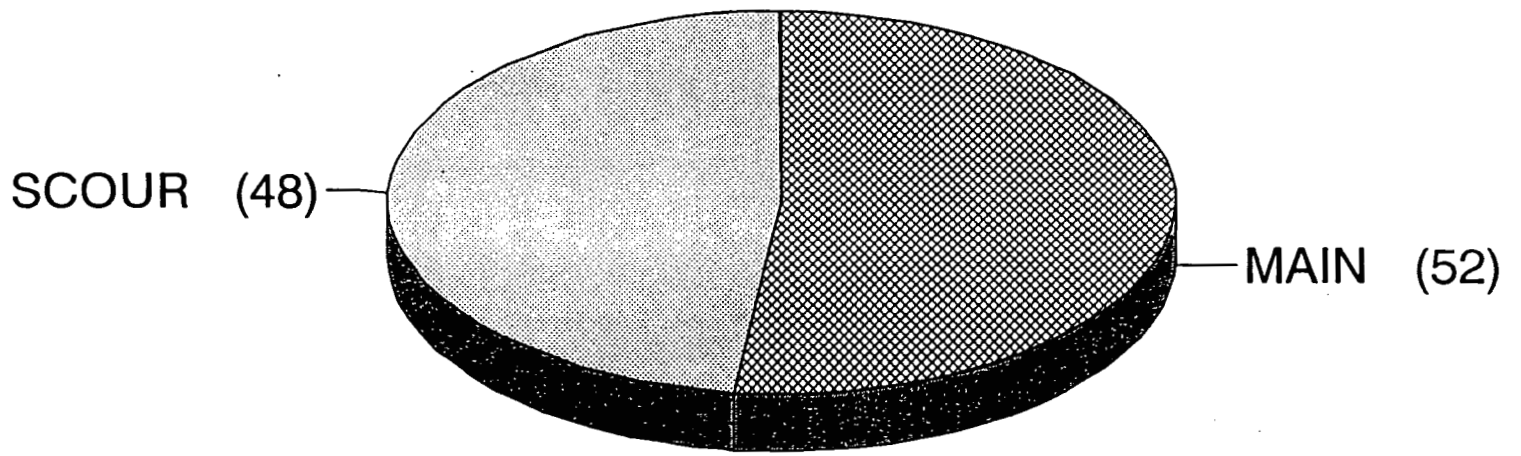
UNNAMED TRIBUTARY TO REDWOOD CREEK
HABITAT TYPES BY PERCENT OCCURRENCE



GRAPH 3

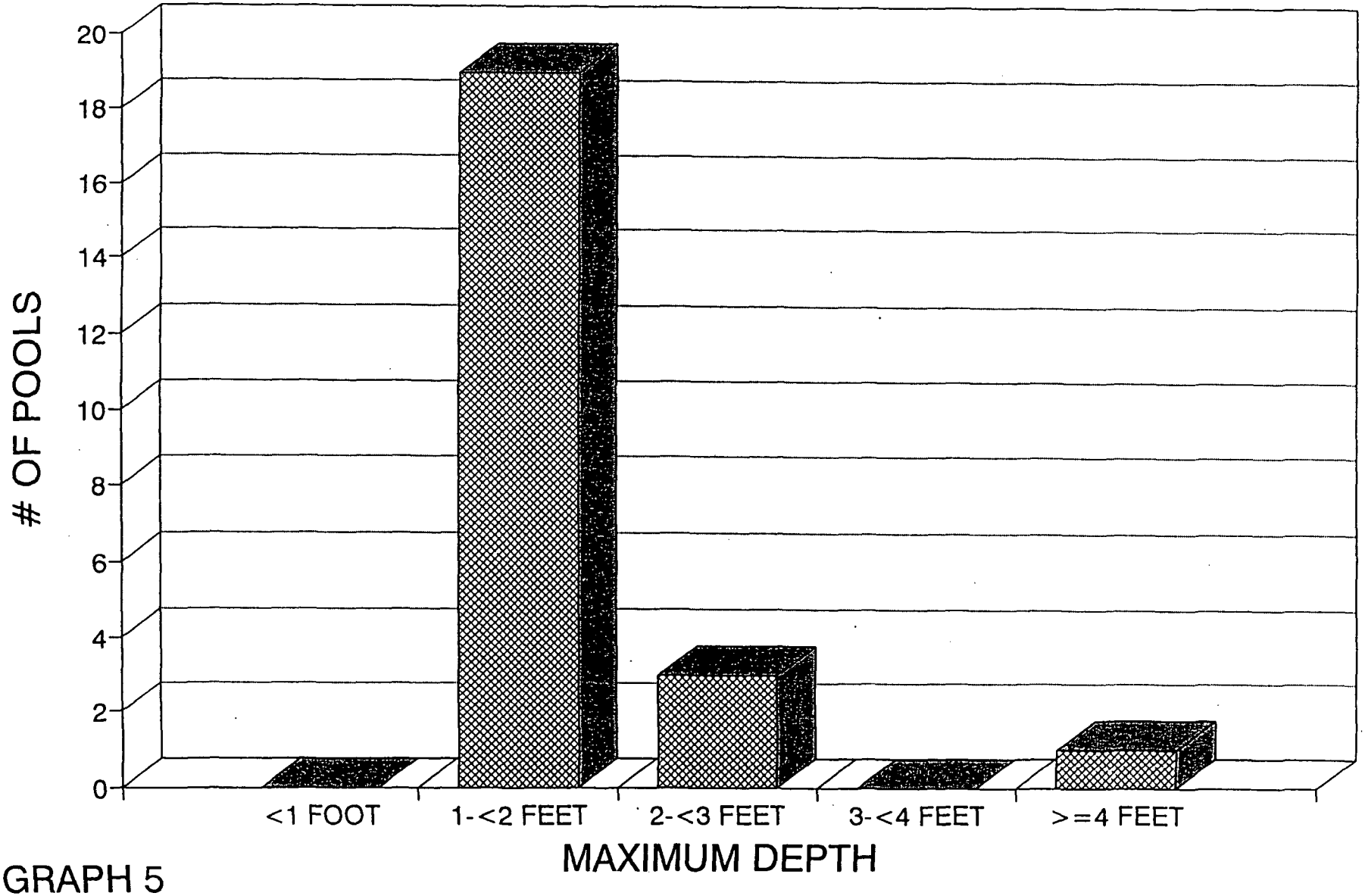
UNNAMED TRIBUTARY TO REDWOOD CREEK

POOL HABITAT TYPES BY PERCENT OCCURRENCE



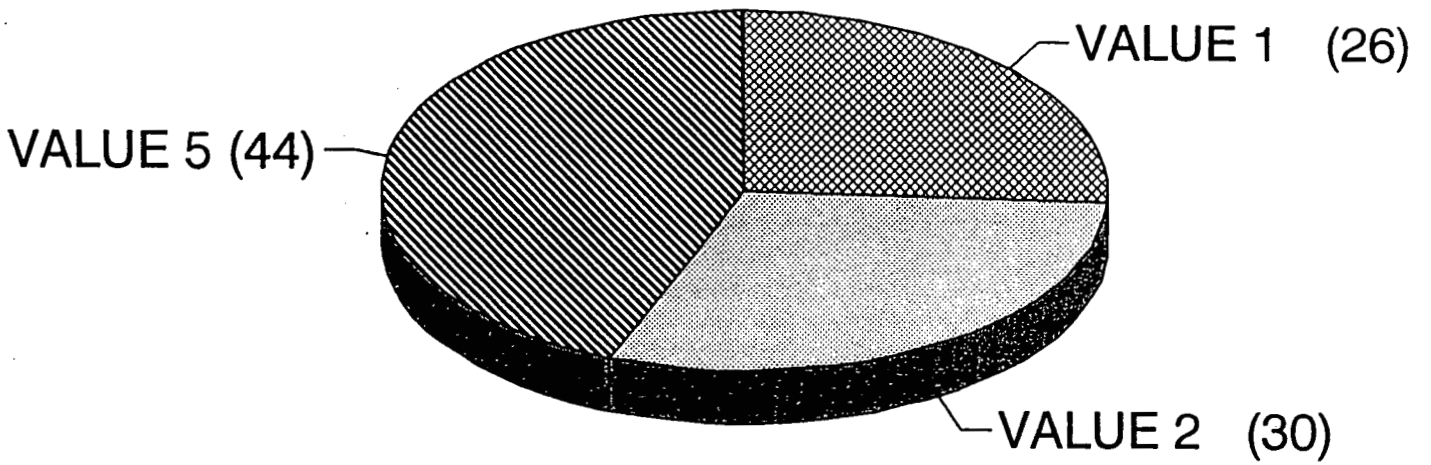
GRAPH 4

UNNAMED TRIBUTARY TO REDWOOD CREEK
MAXIMUM POOL DEPTHS



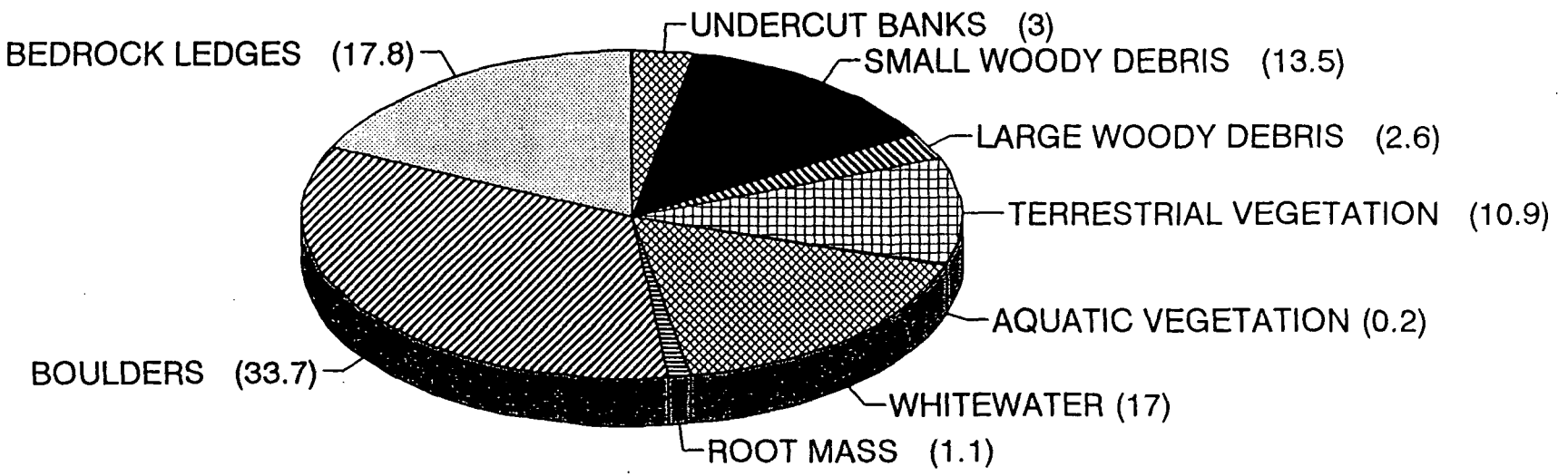
GRAPH 5

UNNAMED TRIBUTARY TO REDWOOD CREEK
PERCENT EMBEDDEDNESS



GRAPH 6

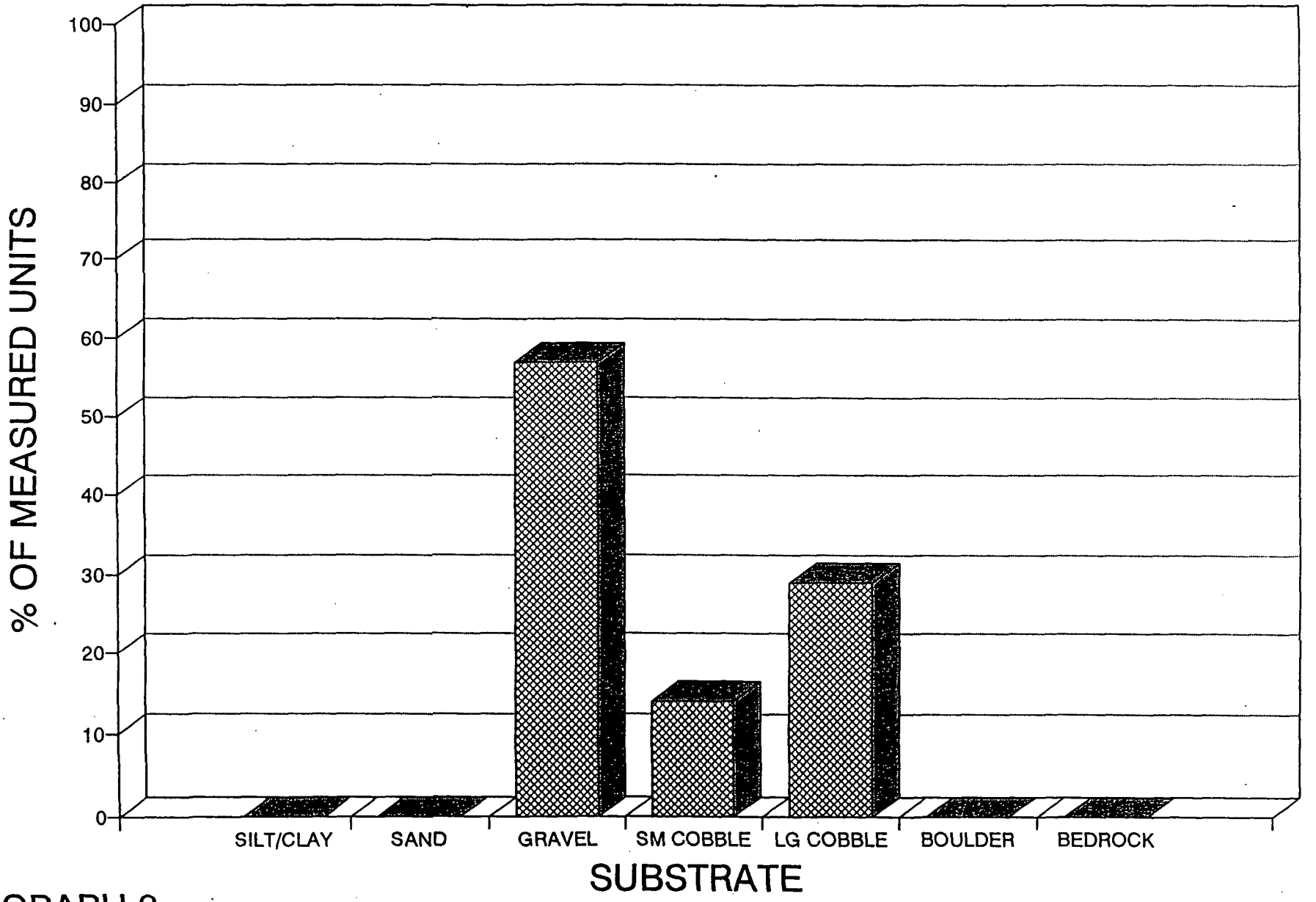
UNNAMED TRIBUTARY TO REDWOOD CREEK
MEAN PERCENT COVER TYPES IN POOLS



GRAPH 7

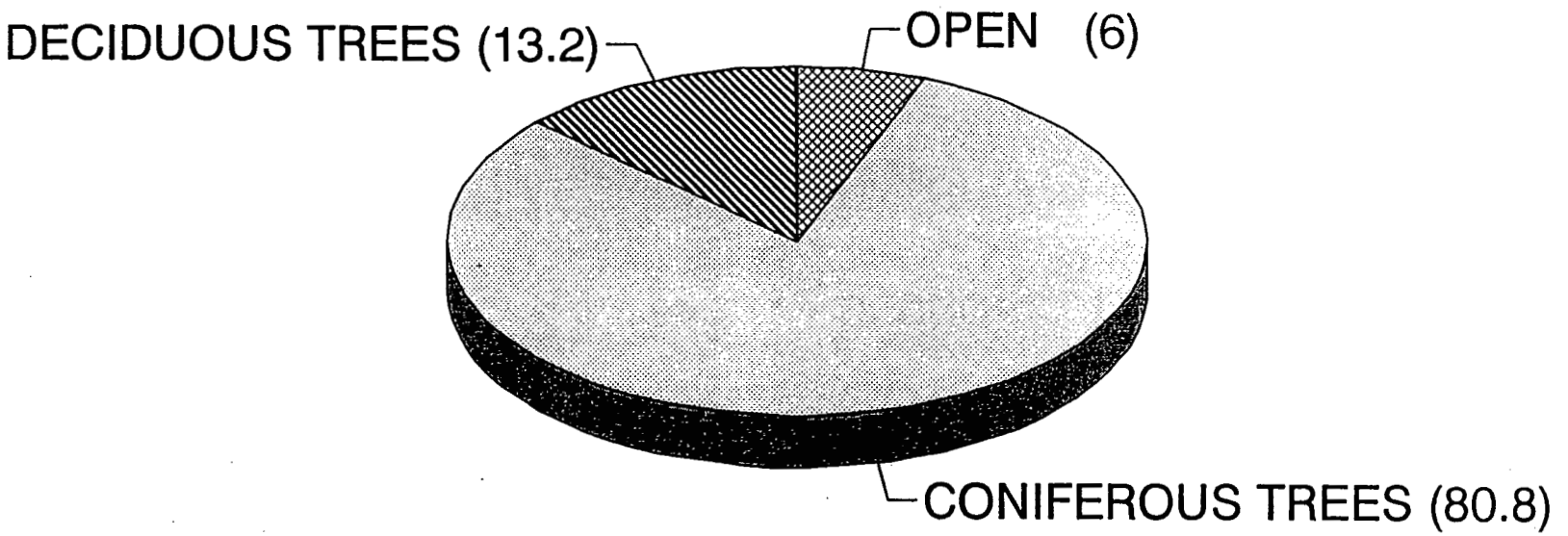
UNNAMED TRIBUTARY TO REDWOOD CREEK

SUBSTRATE COMPOSITION IN LOW GRADIENT RIFFLES



GRAPH 8

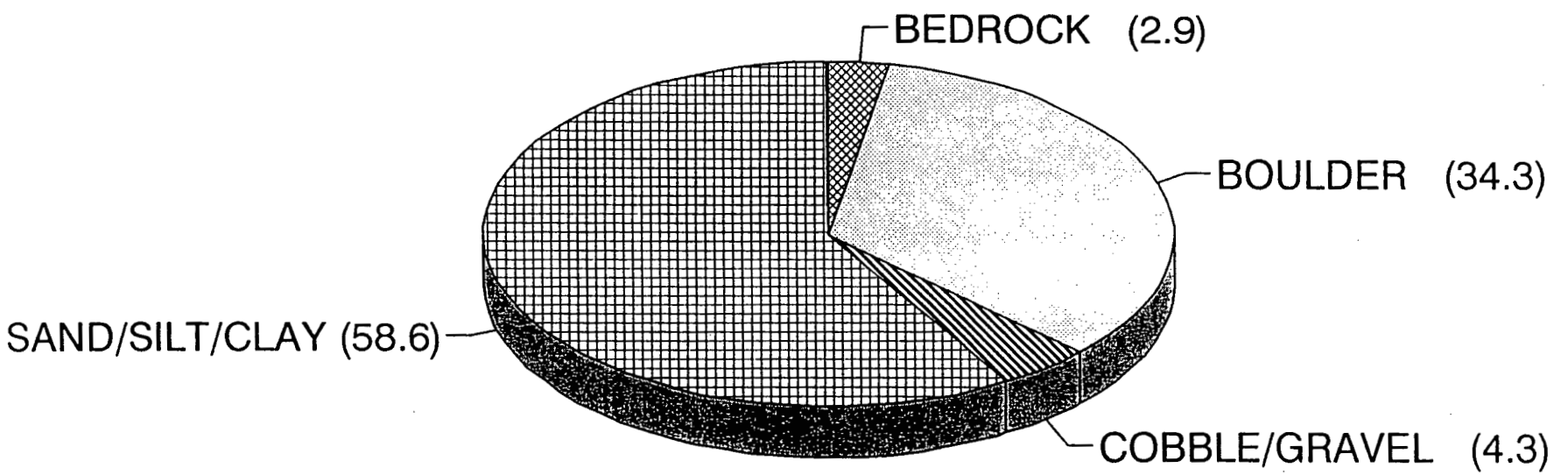
UNNAMED TRIBUTARY TO REDWOOD CREEK
PERCENT CANOPY



GRAPH 9

UNNAMED TRIBUTARY TO REDWOOD CREEK

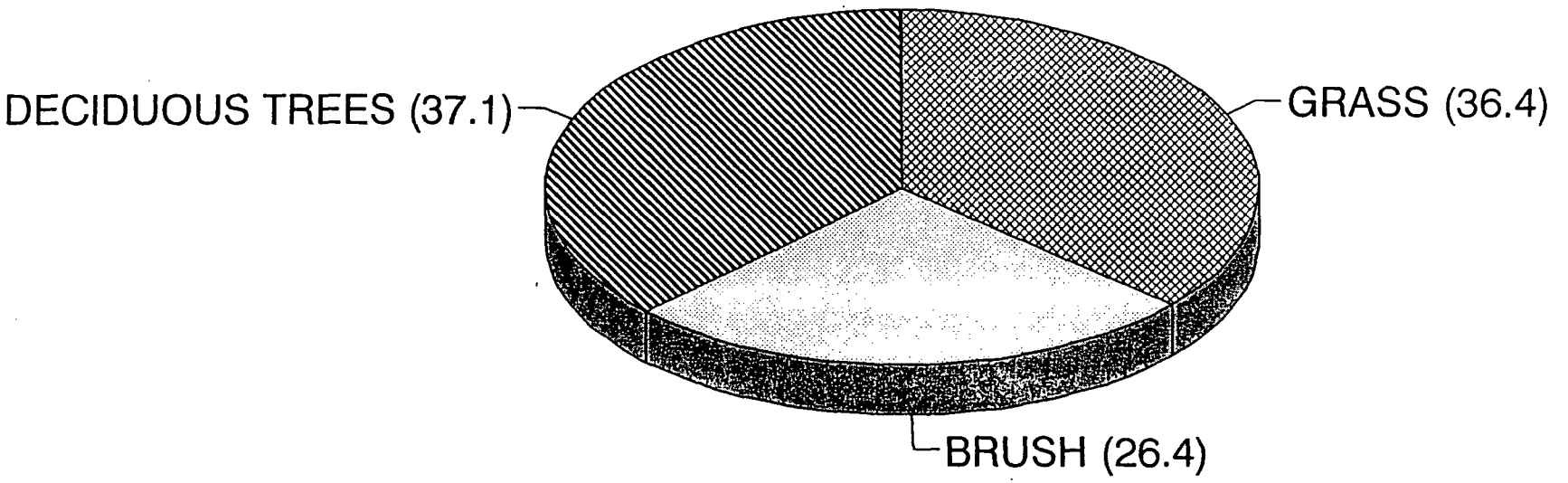
DOMINANT BANK COMPOSITION IN SURVEY REACH



GRAPH 10

UNNAMED TRIBUTARY TO REDWOOD CREEK

DOMINANT BANK VEGETATION IN SURVEY REACH



GRAPH 11

Summary of Mean Percent Vegetative Cover for Entire Stream

Mean Percent Canopy	Mean Percent Conifer	Mean Percent Deciduous	Mean Percent Open units	Mean Right bank % Cover	Mean Left Bank % Cover
94	14	86	0	67.3	63.9

Note: Mean percent conifer and deciduous for the entire reach are means of canopy components from units with canopy values greater than zero.

Open units represent habitat units with zero canopy cover.

TABLE 8. FISH HABITAT INVENTORY DATA SUMMARY

STREAM NAME: No Name Creek
SAMPLE DATES: 08/08/95 to 08/09/95
STREAM LENGTH: 2173 ft.
LOCATION OF STREAM MOUTH:
USGS Quad Map: lord-ellis — Latitude: 40°55'22"
Legal Description: T06NR03ES10 — Longitude: 123°49'24"

SUMMARY OF FISH HABITAT ELEMENTS BY STREAM REACH

STREAM REACH 01

Channel Type: A2	Canopy Density: 94%
Channel Length: 2173 ft.	Coniferous Component: 14%
Riffle/flatwater Mean Width: 10 ft.	Deciduous Component: 86%
Total Pool Mean Depth: 0.8 ft.	Pools by Stream Length: 27%
Base Flow: 0.0 cfs	Pools >=3 ft.deep: 4%
Water: 055- 058°F Air: 062- 070°F	Mean Pool Shelter Rtn: 22
Dom. Bank Veg.: Deciduous Trees	Dom. Shelter: Boulders
Vegetative Cover: 66%	Occurrence of LOD: 2%
Dom. Bank Substrate: Silt/Clay/Sand	Dry Channel: 0 ft.

Embeddness Value: 1. 26% 2. 30% 3. 0% 4. 0% 5. 43%

Mean Percentage of Dominant Substrate

Dominant Class of Substrate	Number Units Right Bank	Number Units Left Bank	Total Mean Percent
Bedrock	1	3	2.86
Boulder	21	27	34.29
Cobble/Gravel	3	3	4.29
Silt/clay	45	37	58.57

Mean Percentage of Dominant Vegetation

Dominant Class of Vegetation	Number Units Right Bank	Number Units Left Bank	Total Mean Percent
Grass	37	14	36.43
Brush	14	23	26.43
Decid. Trees	19	33	37.14
Conif. Trees	0	0	0
No Vegetation	0	0	0