CALIFORNIA DEPARTMENT OF FISH AND GAME
STREAM INVENTORY REPORT
Windsor and Pool Creeks
Report Revised April 14, 2006
Report Completed 2000
Assessment Completed 1996

INTRODUCTION

A stream inventory was conducted during the summer of 1996 on Windsor Creek. The inventory was conducted in two parts: habitat inventory and biological inventory. The objective of the habitat inventory was to document the amount and condition of available habitat to fish, and other aquatic species with an emphasis on anadromous salmonids in Windsor Creek. The objective of the biological inventory was to document the salmonid and other aquatic species present and their distribution.

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

Windsor Creek is a tributary to Mark West Creek, a tributary of the Russian River, located in Sonoma County, California (see Windsor Creek map, page 2). The legal description at the confluence with Mark West Creek is T8N, R9W, S0. Its location is 38 29'25" N. latitude and 122 50'54" W. longitude.

Windsor Creek and its tributaries drain a basin of approximately 26 square miles. Windsor Creek is a third order stream and has approximately 8.2 miles of blue line stream, according to the USGS Sebastopol and Healdsburg 7.5 minute quadrangles. Major tributaries include Pool Creek which was inventoried in 1997 and is included in this report. Summer flow was measured as approximately 3.3 cfs. Elevations range from about 50 feet at the mouth of the creek to 1000 feet in the headwaters. Urban and agricultural areas dominate the watershed, but there are zones of oak-woodland in the upper watershed.

METHODS

The habitat inventory conducted in Windsor Creek follows the methodology presented in the California Salmonid Stream Habitat Restoration Manual (Flosi, et al. 1998). The Sonoma county

Water Agency personnel 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 with technical oversight by Bob Coey, Russian River Basin Planner (DFG).

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 Windsor Creek to record measurements and observations. There are nine components to the inventory form: flow, channel type, temperatures, habitat type, embeddedness, shelter rating, substrate composition, canopy, and bank composition.

1. Flow:

Flow is measured in cubic feet per second (cfs) at the bottom of the stream survey reach using standard flow measuring equipment, if available. In some cases flows are estimated. Flows were also measured or estimated at major tributary confluences.

2. Channel Type:

Channel typing is conducted according to the classification system developed and revised by David Rosgen (1985 rev. 1996). 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:

Water and air temperatures, and time, are measured by crew members with hand held thermometers and recorded at each tenth unit typed. Temperatures are measured in Fahrenheit at the middle of the habitat unit and within one foot of the water surface. Temperatures are also recorded using remote Temperature recorders which log temperature every two hours, 24 hours/day.

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". Windsor 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. All unit lengths were measured, additionally, the first occurrence of each unit type and a randomly selected 10% subset of all units were completely sampled (length, mean width, mean depth, maximum depth and pool tail crest depth). 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 Windsor Creek, embeddedness was visually estimated. The values were recorded using the following ranges: 0 - 25% (value 1), 26 - 50% (value 2), 51 - 75% (value 3), 76 - 100% (value 4). Additionally, a rating of "not suitable" (NS)was assigned to tail-outs deemed unsuited for spawning due to inappropriate substrate particle size, having a bedrock tail-out, or other considerations.

6. Shelter Rating:

Instream shelter is composed of those elements within a stream channel that provide salmonids protection from predation, reduce water velocities so fish can rest and conserve energy, and allow separation of territorial units to reduce density related competition. Using an overhead view, a quantitative estimate of the percentage of the habitat unit covered is made. All shelter is then classified according to a list of nine shelter types. In Windsor Creek, a standard qualitative shelter value of 0 (none), 1 (low), 2 (medium), or 3 (high) was assigned according to the complexity of the shelter. The shelter rating is calculated for each habitat unit by multiplying shelter value and percent covered. 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 measured habitat units, dominant and sub-dominant substrate elements were visually estimated using a list of seven size classes.

8. Canopy:

Stream canopy density was estimated using modified handheld spherical densiometers as described in the California Salmonid Stream Habitat Restoration Manual, 1994. Canopy density relates to the amount of stream shaded from the sun. In Windsor Creek,

an estimate of the percentage of the habitat unit covered by canopy was made from the center of approximately every third unit in addition to every fully-described unit, giving an approximate 30% sub-sample. In addition, the area of canopy was estimated visually into percentages of evergreen or deciduous trees.

9. Bank Composition:

Bank composition elements range from bedrock to bare soil. However, the stream banks are usually covered with grass, brush, or trees. These factors influence the ability of stream banks to withstand winter flows. In Windsor Creek, the dominant composition type and the dominant vegetation type of both the right and left banks for each fully measured unit were selected from the habitat inventory form. Additionally, the percent of each bank covered by vegetation was estimated and recorded.

BIOLOGICAL INVENTORY

Biological sampling during stream inventory is used to determine fish species and their distribution in the stream. Biological inventory is conducted using one or more of three basic methods: 1) stream bank observation, 2) underwater observation, 3) electrofishing. These sampling techniques are discussed in the California Salmonid Stream Habitat Restoration Manual.

DATA ANALYSIS

Data from the habitat inventory form are entered into Habitat, a dBASE IV 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 tables and appendices:

- Riffle, flatwater, and pool habitat types
- Habitat types and measured parameters
- Pool types
- Maximum pool depths by habitat types
- Shelter by habitat types
- Dominant substrates by habitat types
- Vegetative cover and dominant bank composition
- Fish habitat elements by stream reach

Graphics are produced from the tables using Lotus 1,2,3. Graphics developed for Windsor Creek include:

- Level II Habitat Types by % Occurrence and % Total Length

- Level IV Habitat Types by % Occurrence
- Pool Habitat Types by % Occurrence
- Maximum Depth in Pools
- Pool Shelter Types by % Area
- Substrate Composition in Low Gradient Riffles
- Percent Cobble Embeddedness by Reach
- Mean Percent Canopy
- Mean Percent Canopy by Reach
- Percent Bank Composition and Bank Vegetation

HABITAT INVENTORY RESULTS

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

The habitat inventory of June 12-25, 1996 was conducted by Sean White and Pam Higgins, Sonoma County Water Agency personnel with data analysis by DFG. The survey began at the confluence with Mark West Creek and extended up Windsor Creek to the Arata Road bridge. The total length of the stream surveyed was 21,672 feet, with an additional 72 feet of side channel. Flow was estimated to be 3.3 cfs during the survey period.

This section of Windsor Creek has two channel types: from the mouth to 20,172 feet a B4 and the upper 1,500 feet an F3.

B4 channel types are moderately entrenched, moderate gradient (2-4%), riffle dominated channels, with infrequently spaced pools, a very stable plan and profile, stable banks and have a predominantly gravel substrate.

F3 channel types are entrenched meandering riffle/pool channels on low gradients (<2%) with a high width/depth ratio and a predominantly cobble substrate.

Water temperatures ranged from 62°F to 66°F and air temperatures ranged from 72°F to 86°F.

Table 1 summarizes the Level II riffle, flatwater, and pool habitat types. Based on frequency of occurrence there were 44% flatwater units, 39% pool units, 9% dry streambed units, and 8% riffle units. Based on total length there were 78% flatwater units, 11% pool units, 9% dry streambed units, and 2% riffle units (Graph 1).

One hundred, ten habitat units were measured and 19% were completely sampled. Thirteen Level IV habitat types were

identified. The data is summarized in Table 2. The most frequent habitat types by percent occurrence were glides at 30%, runs 14%, root wad scour pools 14% and mid-channel pools 11% (Graph 2). By percent total length, glides made up 75%, dry streambed 9%, mid-channel pools 4%, and root wad scour pools 4%.

Forty-three pools were identified (Table 3). Scour pools were most often encountered at 63%, and comprised 56% of the total length of pools (Graph 3).

Table 4 is a summary of maximum pool depths by pool habitat types. Pool quality for salmonids increases with depth. 84% of the 43 pools had a depth of two feet or greater (Graph 4). These deeper pools comprised 12% of the total length of stream habitat.

A shelter rating was calculated for each habitat unit and expressed as a mean value for each habitat type within the survey using a scale of 0-300. Pool types in general had a mean shelter rating of 49 (Table 1). The main channel pools rated 50, scour pools rated 49, and backwater pools rated 42 (Table 3).

Table 5 summarizes fish shelter by habitat type. By percent area, the dominant pool shelter types were root masses at 41%, terr. vegetation 22%, small woody debris 19%, and large woody debris 11%. Graph 5 describes the pool shelter in Windsor Creek.

Table 6 summarizes the dominant substrate by habitat type. Gravel was the dominant substrate observed in the 1 low gradient riffles measured.

The depth of cobble embeddedness was estimated at pool tail-outs. Of the 40 pool tail-outs measured, none had a value of 1 or 2; five had a value of 3 (13%); and 35 had a value of 4 (88%). On this scale, a value of one is best for fisheries.

The mean percent canopy density for the stream reach surveyed was 64%. The mean percentages of deciduous and evergreen trees were 83% and 17%, respectively. Graph 8 describes the canopy for the entire survey.

For the entire stream reach surveyed, the mean percent right bank vegetated was 91% and the mean percent left bank vegetated was 94%. For the habitat units measured, the dominant vegetation types for the stream banks were: 82% deciduous trees, 14% brush, and 5% evergreen trees. The dominant substrate for the stream banks were: 93% silt/clay/sand, 5% boulder, and 2% bedrock (Graph 10).

During the summer of 1997, summer water temperatures were measured using remote temperature recorders placed in pools (see Temperature Summary graphs at end of report). Two recorders were placed in Windsor Creek and logged temperatures every two hours from May 20 to September 10, 1997. The first recorder was placed in Reach 1 near the confluence of Windsor Creek and Mark West Creek and the highest temperature recorded was 82°F in July and the lowest temperature recorded was 61°F in August. The second recorder was placed in Reach 1 near Bridge #2 and the highest temperature recorded was 74°F and the lowest temperature recorded was 59°F.

HABITAT INVENTORY RESULTS FOR POOL CREEK

The habitat inventory of August 12 and 14, 1997 was conducted by Joyce Ambrosius and Miles Leigh(Sonoma County Water Agency) with supervision and analysis by CDFG. The survey began at the confluence with Windsor Creek and extended up Pool Creek to the end of landowner access permission. The total length of the stream surveyed was 10872 feet.

Flows were not measured on Pool Creek.

This section of Pool Creek has two channel types: from the mouth to 5672 feet a B6 and the upper 5200 feet an F5.

B6 channel types are moderately entrenched, moderate gradient (2-4%), riffle dominated channels, with infrequently spaced pools, a very stable plan and profile, stable banks and have a predominantly silt/clay substrate.

F5 channel types are entrenched meandering riffle/pool channels on low gradients (<2%) with a high width/depth ratio and a predominantly sand substrate.

Water temperatures ranged from 66°F to 68°F. Air temperatures ranged from 78°F to 80°F.

*Based on frequency of **occurrence** there were 44% flatwater units, 33% dry streambed units, and 22% pool units. Based on total **length** there were 81% flatwater units, 18% dry streambed units, and 1% pool units.*

*Nine habitat units were measured and 56% were completely sampled. Four Level IV habitat types were identified. The most frequent habitat types by percent **occurrence** were glides at 33%, dry*

*streambed 33%, root wad scour pools 22% and runs 11%. By percent total **length**, glides made up 80%, dry streambed 18% and root wad scour pools 1%.*

Two pools were identified, both of which were scour pools.

Pool quality for salmonids increases with depth. 50% of the pools had a depth of two feet or greater. These deeper pools comprised 2% of the total length of stream habitat.

A shelter rating was calculated for each habitat unit and expressed as a mean value for each habitat type within the survey using a scale of 0-300. Pool types had the highest shelter rating at 70 and flatwater rated 15.

By percent area, the dominant pool shelter types were root masses at 50%, large woody debris 30%, and small woody debris 20%.

No mechanical gravel sampling was conducted in 1997 surveys.

The depth of cobble embeddedness was estimated at pool tail-outs. Of the 2 pool tail-outs measured, 2 had a value of 4 (100%). On this scale, a value of one is best for fisheries.

The mean percent canopy density for the stream reach surveyed was 82%. The mean percentages of deciduous and evergreen trees were 76% and 24%, respectively.

For the entire stream reach surveyed, the mean percent right bank vegetated was 83% and the mean percent left bank vegetated was 84%. For the habitat units measured, the dominant vegetation types for the stream banks were: 79% brush, 7% grass, 7% deciduous trees, and 7% evergreen trees. The dominant substrate for the stream banks were: 100% silt/clay/sand.

BIOLOGICAL INVENTORY

Biological surveys were not conducted in Windsor or Pool Creek in 1996 or 1997.

No fish were seen during the stream inventory of Pool Creek.

Historical records reflect no hatchery plants, transfers or known fish rescue operations have occurred in the watershed.

DISCUSSION

Windsor Creek has two channel types: B4 and F3. There are 20,172 feet of B4 channel type in Reach 1.

According to the DFG Salmonid Stream Habitat Restoration Manual, B4 channel types are excellent for low-stage plunge weirs, boulder clusters, bank placed boulders, single and opposing wing-deflectors and log cover. They are also good for medium-stage plunge weirs. There are 1,500 feet of F3 channel type in Reach 2. F3 channel types are good for bank-placed boulders as well as single and opposing wing-deflectors. They are fair for low-stage weirs, boulder clusters, channel constrictors and log cover.

The water temperatures recorded on the survey days June 12-25, 1996 ranged from 62°F to 66°F and air temperatures ranged from 72°F to 86°F. These higher temperatures are near the threshold stress level (65°F) for salmonids. To make any further conclusions, temperatures need to be monitored for a longer period of time through the critical summer months, and more extensive biological sampling conducted.

Pools comprised 11% of the total length of this survey. In third and fourth order streams a primary pool is defined to have a maximum depth of at least three feet, occupy at least half the width of the low flow channel, and be as long as the low flow channel width. In Windsor Creek, the pools are relatively shallow with 33% having a maximum depth of at least 3 feet. These pools comprised 4% of the total length of stream habitat. However, in coastal coho and steelhead streams, it is generally desirable to have primary pools comprise approximately 50% of total habitat length.

The mean shelter rating for pools was 49. However, a pool shelter rating of approximately 80 is desirable. The relatively moderate amount of pool shelter that now exists is being provided primarily by root masses (41%), terr. vegetation (22%), small woody debris (19%), and large woody debris (11%). Additional log and root wad cover in the pool and flatwater habitats would improve both summer and winter salmonid habitat. Log cover provides rearing fry with protection from predation, rest from water velocity, and also divides territorial units to reduce density related competition.

The one low gradient riffle measured had gravel as the dominant substrate. This is generally considered good for spawning salmonids.

All of the pool tail-outs measured had embeddedness ratings of either 3 or 4. Cobble embeddedness measured to be 25% or less, a rating of 1, is considered best for the needs of salmon and steelhead.

The higher the percent of fine sediment, the lower the probability that eggs will survive to hatch. This is due to the reduced quantity of oxygenated water able to percolate through the gravel, or because of fine sediment capping the redd and preventing fry emergence. In Windsor Creek, spawning habitat is degraded due to high levels of sediment.

The mean percent canopy for the survey was only 64%. This is a slightly low percentage of canopy, since 80 percent is generally considered desirable. Elevated water temperatures could be reduced by increasing stream canopy. The large trees required for adequate stream canopy would also eventually provide a long term source of large woody debris needed for instream structure and bank stability.

DISCUSSION OF POOL CREEK

Pool Creek has two channel types: B6 (5672 ft.) and F5 (5200 ft.).

There are 5672 feet of B6 channel type in Reach 1. According to the DFG Salmonid Stream Habitat Restoration Manual, B6 channel types are excellent for bank-placed boulders and log cover. They are also good for low-stage weirs, single and opposing wing-deflectors and channel constrictors.

There are 5200 feet of F5 channel type in Reach 2. According to the DFG Salmonid Stream Habitat Restoration Manual, F5 channel types are good for bank-placed boulders and fair for low-stage weirs, single and opposing wing-deflectors, channel constrictors and log cover.

Many site specific projects can be designed within B and F channel types, especially to increase pool frequency, volume and shelter.

The water temperatures recorded on the survey days August 12 and 14, 1997 ranged from 66°F to 68°F. Air temperatures ranged from 78°F to 80°F. The warmer water temperatures were recorded in Reach 2. These temperatures, if sustained, are near the threshold stress level (65°F) for salmonids.

It is unknown if this thermal regime is typical. To make any further conclusions, temperatures need to be monitored for a longer period of time through the critical summer months, and\or more extensive biological sampling conducted.

*Pools comprised 2% of the total **length** of this survey. In 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. In Pool Creek, the pools are relatively deep with 50% having a maximum depth of at least two feet. These pools comprised 2% of the total length of stream habitat. In coastal coho and steelhead streams, it is generally desirable to have primary pools comprise approximately 50% of total habitat length.*

The mean shelter rating for pools was 70, a pool shelter rating of approximately 80 is desirable. Pool shelter that now exists is being provided primarily by root masses (50%), large woody debris (30%), and small woody debris (20%). Log and root wad cover in the pool and flatwater habitats would improve both summer and winter salmonid habitat. Log cover provides rearing fry with protection from predation, rest from water velocity, and also divides territorial units to reduce density related competition.

No low gradient riffles were observed, which typically provide the gravel and/or small cobble dominant substrates which are ideal for salmonid spawning habitat.

Both pool tail-outs measured had embeddedness ratings of either 3 or 4. Cobble embeddedness measured to be 25% or less, a rating of 1, is considered best for the needs of salmon and steelhead.

The higher the percent of fine sediment, the lower the probability that eggs will survive to hatch. This is due to the reduced quantity of oxygenated water able to percolate through the gravel, or because of fine sediment capping the redd and preventing fry emergence. In Pool Creek Reaches 1 and 2, sediment sources should be mapped and rated according to their potential sediment yields, and control measures taken.

The mean percent canopy for the survey was 82%. This is excellent, since 80 percent is generally considered desirable. However, the riparian buffer is thin or nearly absent in areas with urban development. Riparian removal within the riparian corridor could lead to less stream canopy and channel incision causing bank erosion and higher water temperatures.

GENERAL RECOMMENDATIONS

Windsor Creek and Pool Creek should be managed as anadromous, natural production streams.

Recent storms brought down many large trees and other woody debris into the stream, which increased the number and quality of pools since the drought years. This woody debris, if left undisturbed, will provide fish shelter and rearing habitat, and offset channel incision. Many signs of recent and historic tree and log removal were evident in the active channel during our survey. Efforts to increase flood protection or improve fish access in the short run, have led to long term problems in the system. Landowners should be encouraged not to remove woody debris from the stream, except under extreme buildup and only under guidance by a fishery professional.

SPECIFIC FISHERY ENHANCEMENT RECOMMENDATIONS

1. Access for migrating salmonids should be assessed at all road crossings. Where needed crossings should be replaced or modified to improve fish passage.

2. Increase the canopy on Windsor Creek by planting willow, alder, redwood, and Douglas fir along the stream where shade canopy is not at acceptable levels. The reach above the survey section should be assessed for planting and treated as well, since water temperatures throughout are effected from upstream. In Pool Creek (Reach 2), elevated water temperatures need to be addressed as well, and canopy can be increased where shade levels are inadequate. In many cases, planting will need to be coordinated to follow bank stabilization or upslope erosion control projects.

3. Map sources of upslope and in-channel 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. Near-stream riparian planting along Windsor Creek should be encouraged to provide bank stability and a buffering against agricultural, grazing and urban run-off. Biotechnical approaches should be utilized in both creeks.

4. Where feasible, design and engineer pool enhancement structures to increase the number, depth and quality of pools. This must be done where the banks are stable or in conjunction with stream bank armor to prevent erosion. Many glide habitats could be converted to pools with the addition of large woody

debris.

5. Install structures to recruit spawning gravels. Boulder and vortex weirs would reduce stream velocities, recruit gravel and encourage scour.

6. Conduct biological sampling in Pool and Windsor Creeks.

PROBLEM SITES AND LANDMARKS - WINDSOR CREEK SURVEY COMMENTS

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

HABITAT UNIT #	STREAM LEN (FT.)	COMMENTS
9.00	626	WOODEN BRIDGE (#1); 42.8w/9.2h/15.8
10.00	669	NEXT UNIT AFTER BRIDGE #1
22.00	1204	LARGE LOG JAM ACROSS CREEK (X 3' HIGH FROM WATER
39.00	2338	ENDED SURVEY SECTION HERE (100 YDS FROM BOUNDARY OF ACCESS O.K. APN 066-280-03
40.00	2838	MCLAUGHLIN PROPERTY ONLY --BOUNDARY TO BOUNDARY
41.00	2938	START @ ANDERSON PROPERTY BOUNDARY
45.00	3043	POOL CREEK (TRIB-L/B)
47.00	9515	FROM X 75' UPSTREAM OF POOL CREEK CONFLUENCE TO BRIDGE #2 (WINDSOR RD.) HEAVY CHANNEL VEGETATION. bRIDGE #2 (48'L/10.3H/53.0W) APPROX. 4,000'OF UNIT FROM WINDSOR RD. BRIDGE DOWNSTREAM = FLOOD CONTROL CHANNEL. *POND TURTLE
48.00	9546	BEGIN @ UPSTREAM OF WINDSOR BRIDGE #2
49.00	15646	UPSTREAM OF RAILROAD TRACKS BOULDER WEIR ACROSS STREAMBED.
50.00	15740	BEHIND BROOKS CREEK DEVELOPMENT (WINDSOR)
54.00	15929	LOTS OF FISH HERE:
71.00	16992	CANOPY - 90% BAY
74.00	17115	CANOPY - 100% BAY
77.00	17330	GRADE CONTROL STRUCTURE; CEMENT DROP TO POOL SURFACE - 5.6 FT.
78.00	17580	CHANNELIZED AREA (250 FT. FROM

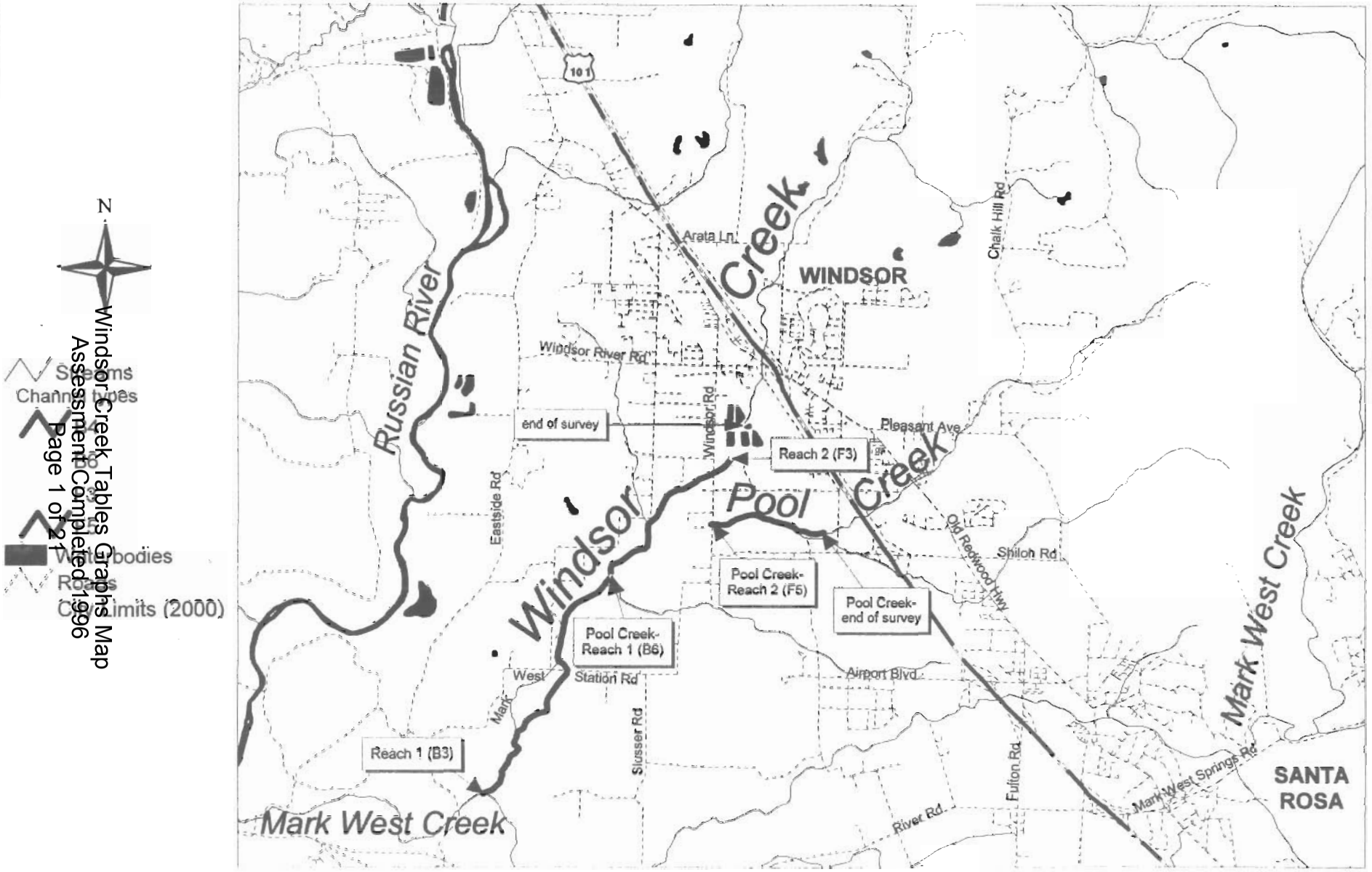
		BEGIN TO NATALIE RD., DOWNSTREAM OF BROOKS RD.)
79.00	17633	NATALIE RD. BRIDGE #3- CEMENT (24'W/7.5'H); TWIN CULVERT- 53.0 L; RT. BANK- METAL CULVERT- 3.5' DIA.
82.00	18257	WET BUT NO FLOWING WATER
97.00	19406	CEMENT BRIDGE- 67.0'L/10.0'H/12.0'W- BROOKS RD. #4
107.00	20176	END AT BRIDGE #5 (ARATA RD.)
108.00	21676	UNIT FROM DOWNSTREAM BOUNDARY OF BOLMAN PROPERTY TO UPSTREAM OF BRIDGE #- SUBSTRATE IS SM. & LG. COBBLE & GRAVEL. LGR & HGR AREA.

PROBLEM SITES AND LANDMARKS - POOL CREEK SURVEY COMMENTS

HABITAT UNIT #	*STREAM LEN (FT.)*	*COMMENTS*
1.00	*1980*	*Start at confluence. Dry to end of Anderson's*
7.00	*5673*	*3400' Windsor Rd crossing, 1490'Rd. crossing. Large Trib, lumber in creek.*
8.00	*10873*	*Complete unit thru Windsor golf course. Approximate measurements.*
9.00	*10873*	*Unit walked on edge, no exact measurements.*
		Creek dry- end of access

****END OF SURVEY*****

Windsor Creek



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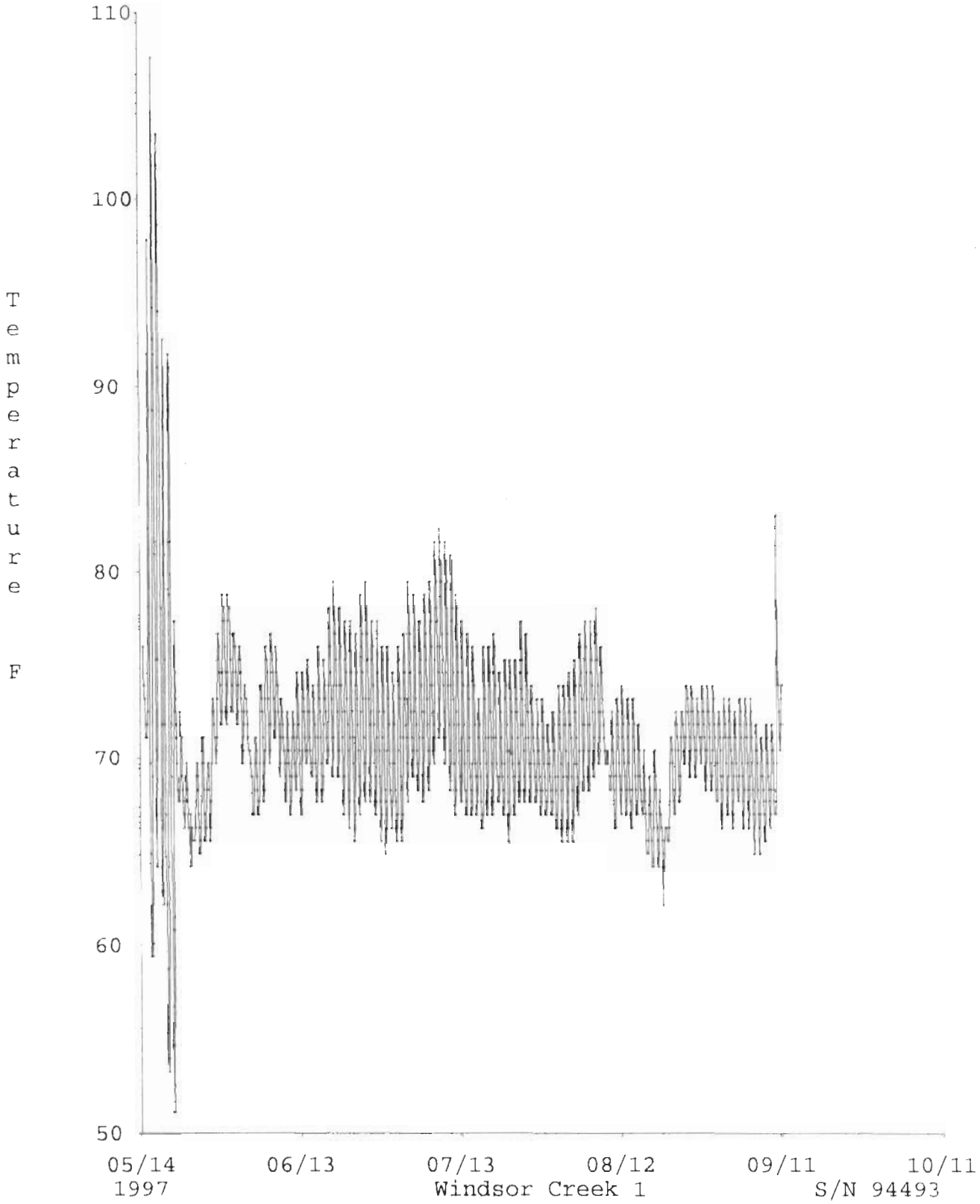
Department of Fish and Game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90
80
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Temperature F
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07/13
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10/11
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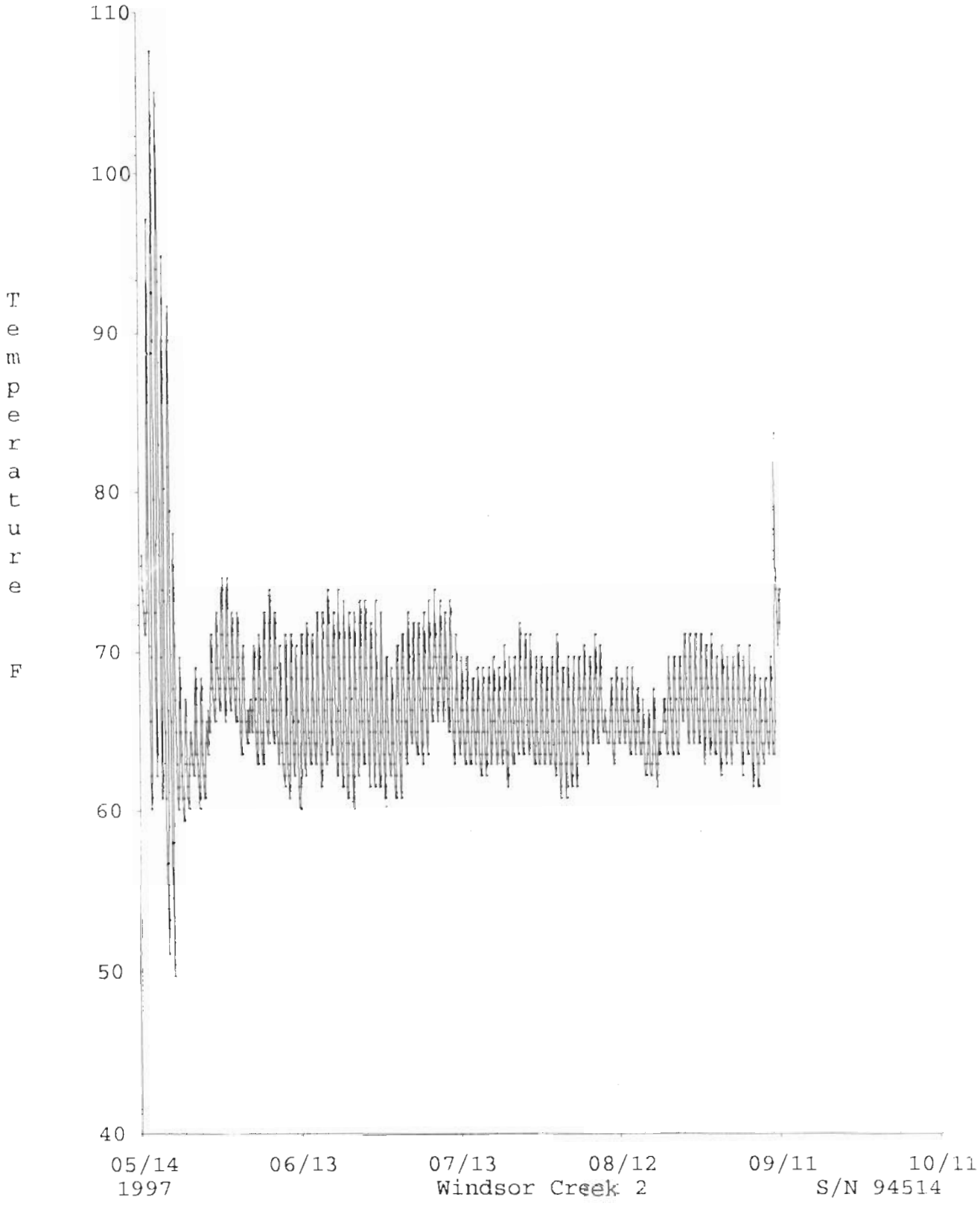
S/N 94493


110
100
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Temperature F
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07/13
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09/11
10/11
Windsor Creek 2
S/N 94514

WINDSOR CREEK

Drainage: Mark West Creek

Table 1 - SUMMARY OF RIFFLE, FLATWATER, AND POOL HABITAT TYPES

Survey Dates: 06/12/96 to 06/25/96

Confluence Location: QUAD: SEBAS/HEAL LEGAL DESCRIPTION: T8NR9W

LATITUDE: 38°29'25" LONGITUDE: 122°50'54"

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
9	2	RIFFLE	8	52	470	2	7.2	0.3	717	6451	214	1926	0	0
48	3	FLATWATER	44	355	17025	78	10.0	0.9	3262	156570	5902	283294	0	5
43	14	POOL	39	55	2382	11	16.9	1.8	1036	44550	1934	83182	1443	49
10	2	DRY	9	187	1867	9	12.2	0.0	2447	24473	0	0	0	0

TOTAL UNITS	TOTAL UNITS	TOTAL LENGTH (ft.)	TOTAL AREA (sq. ft.)	TOTAL VOL. (cu. ft.)
110	21	21744	232044	368402

WINDSOR CREEK

Drainage: Mark West Creek

Table 2 - SUMMARY OF HABITAT TYPES AND MEASURED PARAMETERS

Survey Dates: 06/12/96 to 06/25/96

Confluence Location: QUAD: SEBAS/HEAL LEGAL DESCRIPTION: T8NR9W LATITUDE: 38°29'25" LONGITUDE: 122°50'54"

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	1	LGR	6	61	429	2	8	0.3	0.7	905	6337	269	1883	0	0	57
2	1	HGR	2	21	41	0	3	0.4	0.7	57	114	22	43	0	0	20
33	2	GLD	30	493	16271	75	12	1.1	5.0	4678	154374	8686	286622	0	7	71
15	1	RUN	14	50	754	3	6	0.4	1.4	335	5028	149	2238	0	0	58
12	3	MCP	11	77	924	4	18	2.0	4.4	1651	19808	3229	38743	2092	53	76
1	1	CCP	1	49	49	0	20	1.8	3.3	961	961	1731	1731	1154	20	70
4	2	CRP	4	27	109	1	13	1.5	2.8	358	1433	601	2405	501	19	73
5	2	LSL	5	42	210	1	15	1.7	4.1	658	3292	1182	5912	1106	87	66
15	3	LSR	14	59	882	4	16	1.7	3.7	968	14514	1667	25003	1325	43	69
3	2	PLP	3	45	136	1	21	2.3	3.5	926	2778	2039	6118	1659	60	57
1	1	BPL	1	8	8	0	7	0.8	1.5	51	51	41	41	10	20	75
2	0	DPL	2	33	65	0	24	2.3	4.0	857	1713	1615	3229	1911	53	0
10	2	DRY	9	187	1867	9	12	0.0	0.0	2447	24473	0	0	0	0	40

TOTAL UNITS	TOTAL UNITS	LENGTH (ft.)	AREA (sq.ft)	TOTAL VOL. (cu.ft)
110	21	21744	234877	373969

WINDSOR CREEK

Drainage: Mark West Creek

Table 3 - SUMMARY OF POOL TYPES

Survey Dates: 06/12/96 to 06/25/96

Confluence Location: QUAD: SEBAS/HEAL LEGAL DESCRIPTION: T8NR9W LATITUDE: 38°29'25" LONGITUDE: 122°50'54"

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
13	4	MAIN	30	75	973	41	18.2	2.0	1598	20769	3113	40474	2014	50
27	9	SCOUR	63	49	1336	56	16.1	1.7	815	22017	1461	39438	1187	49
3	1	BACKWATER	7	24	73	3	18.4	1.8	588	1764	1090	3270	961	42

TOTAL UNITS	TOTAL UNITS	TOTAL LENGTH (ft.)	TOTAL AREA (sq.ft.)	TOTAL VOL. (cu.ft.)
43	14	2382	44550	83182

WINDSOR CREEK

Drainage: Mark West Creek

Table 4 - SUMMARY OF MAXIMUM POOL DEPTHS BY POOL HABITAT TYPES

Survey Dates: 06/12/96 to 06/25/96

Confluence Location: QUAD: SEBAS/HEAL LEGAL DESCRIPTION: T8NR9W LATITUDE: 38°29'25" LONGITUDE: 122°50'54"

UNITS MAX DPTH 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
12	MCP	28	0	0	0	0	7	58	3	25	2	17
1	CCP	2	0	0	0	0	0	0	1	100	0	0
4	CRP	9	0	0	2	50	2	50	0	0	0	0
5	LSL	12	0	0	2	40	2	40	0	0	1	20
15	LSR	35	0	0	2	13	9	60	4	27	0	0
3	PLP	7	0	0	0	0	1	33	2	67	0	0
1	BPL	2	0	0	1	100	0	0	0	0	0	0
2	DPL	5	0	0	0	0	1	50	0	0	1	50

TOTAL UNITS
43

WINDSOR CREEK

Drainage: Mark West Creek

Table 5 - Summary of Shelter by Habitat Type

Survey Dates: 06/12/96 to 06/25/96

Confluence Location: QUAD: SEBAS/HEAL LEGAL DESCRIPTION: T8NR9W

LATITUDE: 38°29'25" LONGITUDE: 122°50'54"

	UNITS MEASURED	UNITS SHELTER MEASURED	HABITAT TYPE	% TOTAL UNDERCUT BANKS	% TOTAL SWD	% TOTAL LWD	% TOTAL ROOT MASS	% TOTAL TERR. VEGETATION	% TOTAL AQUATIC VEGETATION	% TOTAL WHITE WATER	% TOTAL BOULDERS	% TOTAL BEDROCK LEDGES
	7	7	LGR	0	0	0	0	0	0	0	0	0
	2	2	HGR	0	0	0	0	0	0	0	0	0
	33	32	GLD	10	10	10	39	31	0	0	0	0
	15	15	RUN	0	0	0	0	0	0	0	0	0
	12	12	MCP	2	24	13	43	15	1	0	0	0
	1	1	CCP	0	0	0	90	10	0	0	0	0
	4	4	CRP	11	0	0	11	23	0	0	54	0
	5	5	LSL	0	19	17	23	38	2	0	0	0
	15	15	LSR	9	4	2	52	28	3	0	0	0
	3	3	PLP	4	21	8	28	29	0	0	9	0
	1	1	BPL	10	90	0	0	0	0	0	0	0
	2	2	DPL	0	33	17	23	27	0	0	0	0
	10	10	DRY	0	0	0	0	0	0	0	0	0
TOTAL HABITAT TYPES	110	109		6	16	11	40	25	1	0	1	0
POOLS ONLY	43	43		4	19	11	41	22	1	0	2	0

WINDSOR CREEK

Drainage: Mark West Creek

Table 6 - SUMMARY OF DOMINANT SUBSTRATES BY HABITAT TYPE

Survey Dates: 06/12/96 to 06/25/96

Confluence Location: QUAD: SEBAS/HEAL LEGAL DESCRIPTION: T8NR9W LATITUDE: 38°29'25" LONGITUDE: 122°50'54"

TOTAL HABITAT UNITS	UNITS SUBSTRATE 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	1	LGR	0	0	100	0	0	0	0
1	1	HGR	0	0	0	0	100	0	0
3	3	GLD	0	33	67	0	0	0	0
5	1	RUN	0	100	0	0	0	0	0
4	4	MCP	0	75	25	0	0	0	0
1	1	CCP	0	100	0	0	0	0	0
4	2	CRP	0	100	0	0	0	0	0
5	2	LSL	0	50	50	0	0	0	0
6	3	LSR	0	67	33	0	0	0	0
6	3	PLP	0	67	33	0	0	0	0
1	1	BPL	0	0	100	0	0	0	0
2	0	DPL	0	0	0	0	0	0	0
0	2	DRY	0	0	100	0	0	0	0

WINDSOR CREEK

APPENDIX A. Summary of Mean Percent Vegetative Cover for Entire Stream

Mean Percent Canopy	Mean Percent Evergreen	Mean Percent Deciduous	Mean Right bank % Cover	Mean Left Bank % Cover
64.40	16.98	83.02	91.14	94.09

APPENDIX B.

Mean Percentage of Dominant Substrate

Dominant Class of Substrate	Number Units Right Bank	Number Units Left Bank	Percent Total Units
Bedrock	1	0	2.27
Boulder	1	1	4.55
Cobble/Gravel	0	0	0
Silt/clay	20	21	93.18

Mean Percentage of Dominant Vegetation

Dominant Class of Vegetation	Number Units Right Bank	Number Units Left Bank	Percent Total Units
Grass	0	0	0
Brush	3	3	13.64
Deciduous Trees	18	18	81.82
Evergreen Trees	1	1	4.55
No Vegetation	0	0	0

APPENDIX C. FISH HABITAT INVENTORY DATA SUMMARY

STREAM NAME: WINDSOR CREEK
SAMPLE DATES: 06/12/96 to 06/25/96
SURVEY LENGTH:
MAIN CHANNEL: 21672 ft. SIDE CHANNEL: 72 ft.
LOCATION OF STREAM MOUTH:
USGS Quad Map: SEBAS/HEAL Latitude: 38°29'25"
Legal Description: T8NR9W Longitude: 122°50'54"

SUMMARY OF FISH HABITAT ELEMENTS BY STREAM REACH

STREAM REACH 1 (Units 1-107)

Channel Type: B4	Mean Canopy Density: 64%
Main Channel Length: 20172 ft.	Evergreen Component: 17%
Side Channel Length: 72 ft.	Deciduous Component: 83%
Riffle/Flatwater Mean Width: 9.6 ft.	Pools by Stream Length: 12%
Pool Mean Depth: 1.8 ft.	Pools >=2 ft. Deep: 84%
Base Flow: 3.3 cfs	Pools >=3 ft. Deep: 33%
Water: 62-66°F Air: 72-86°F	Mean Pool Shelter Rtn: 49
Dom. Bank Veg.: Deciduous Trees	Dom. Shelter: Root masses
Bank Vegetative Cover: 93%	Occurrence of LOD: 23%
Dom. Bank Substrate: Silt/Clay/Sand	Dry Channel: 367 ft.

Embeddness Value: 1. 0% 2. 0% 3. 13% 4. 88% 5. 0%

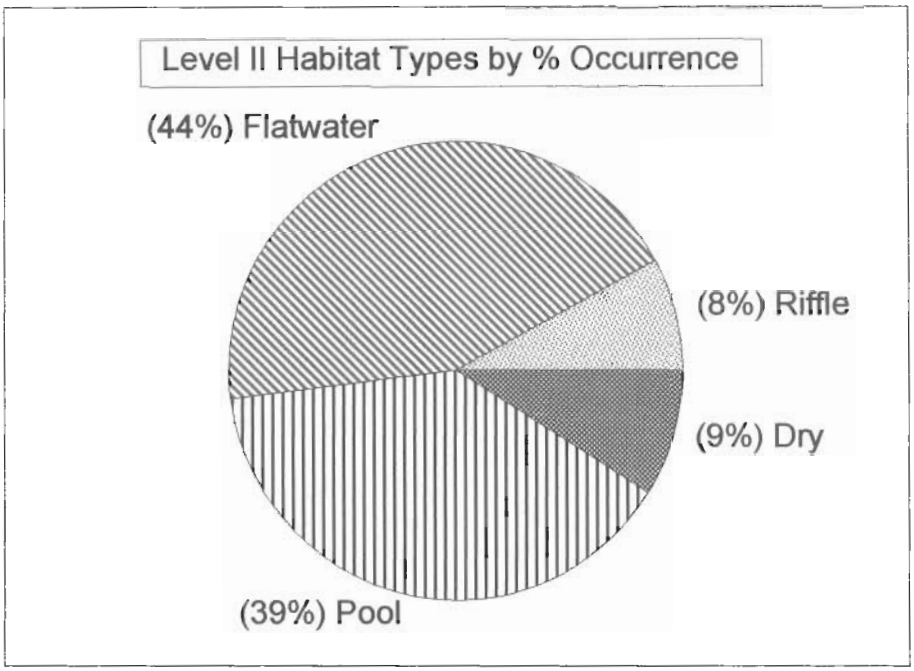
STREAM REACH 2 (Units 108-108)

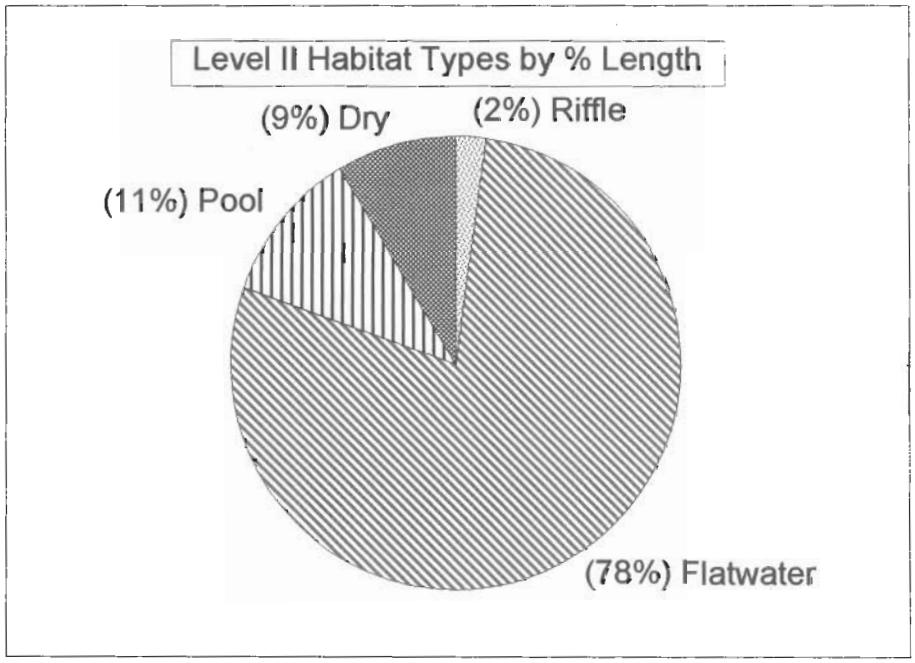
Channel Type: F3	Mean Canopy Density: 0%
Main Channel Length: 1500 ft.	Evergreen Component: 0%
Side Channel Length: 0 ft.	Deciduous Component: 0%
Riffle/Flatwater Mean Width: 0.0 ft.	Pools by Stream Length: 0%
Pool Mean Depth: 0.0 ft.	Pools >=2 ft. Deep: **********%
Base Flow: 3.3 cfs	Pools >=3 ft. Deep: **********%
Water: 64-64°F Air: 80-80°F	Mean Pool Shelter Rtn: 0
Dom. Bank Veg.: Deciduous Trees	Dom. Shelter: Undercut Banks
Bank Vegetative Cover: 0%	Occurrence of LOD: 0%
Dom. Bank Substrate: Silt/Clay/Sand	Dry Channel: 1500 ft.

Embeddness Value: 1. 2. 3. 4. 5.

Windsor Creek

Level II Habitat Types

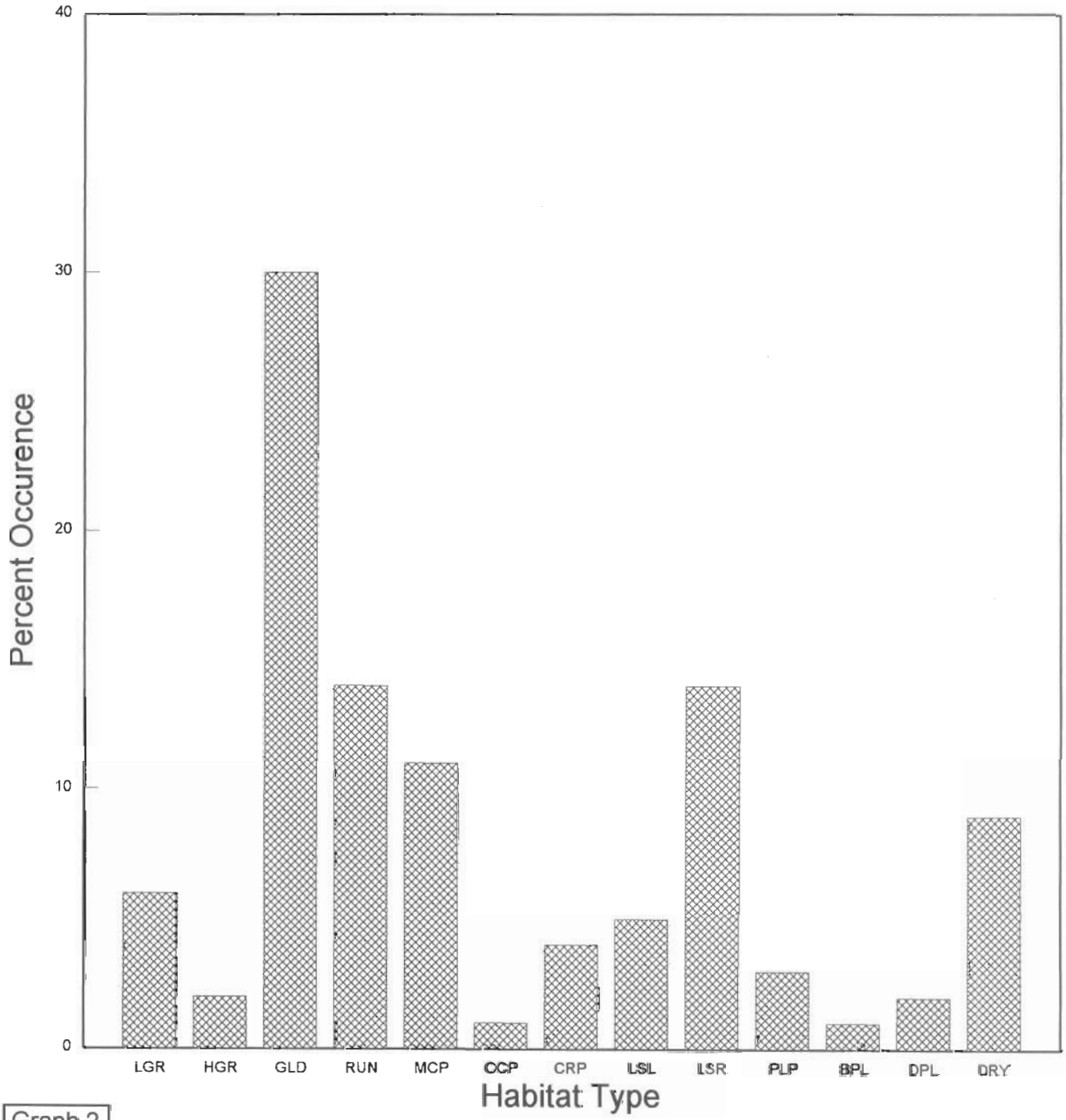




Graph 1

Windsor Creek

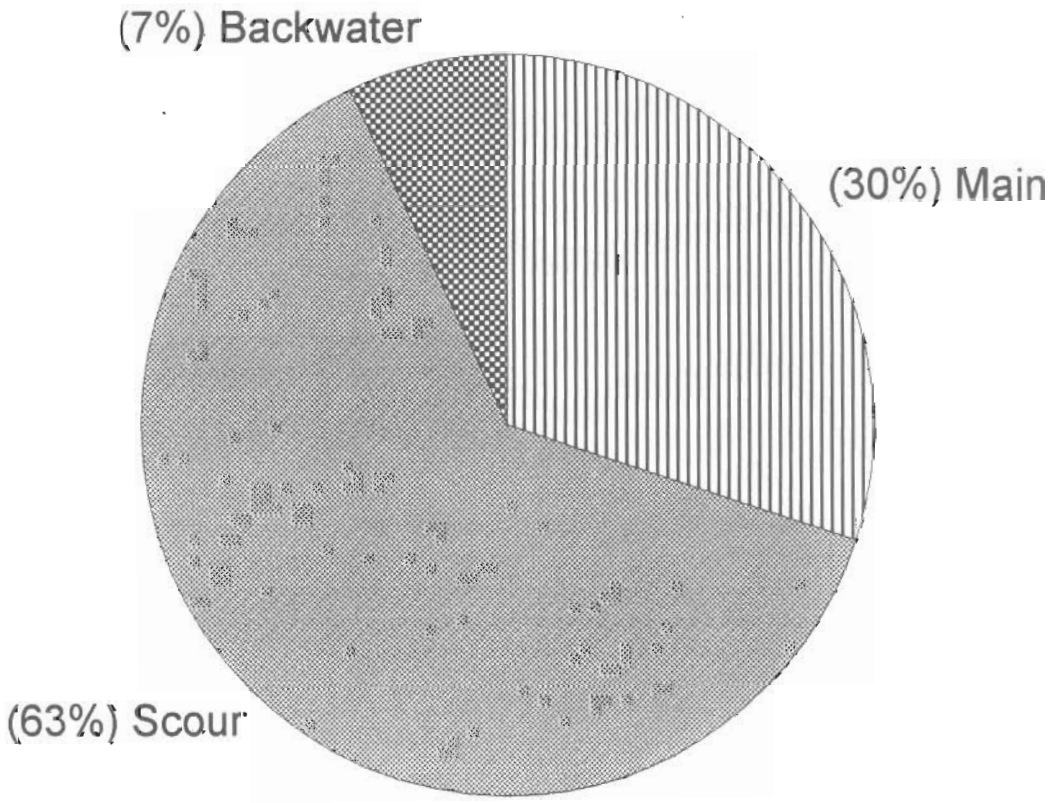
Level IV Habitat Types by % Occurrence



Graph 2

Windsor Creek

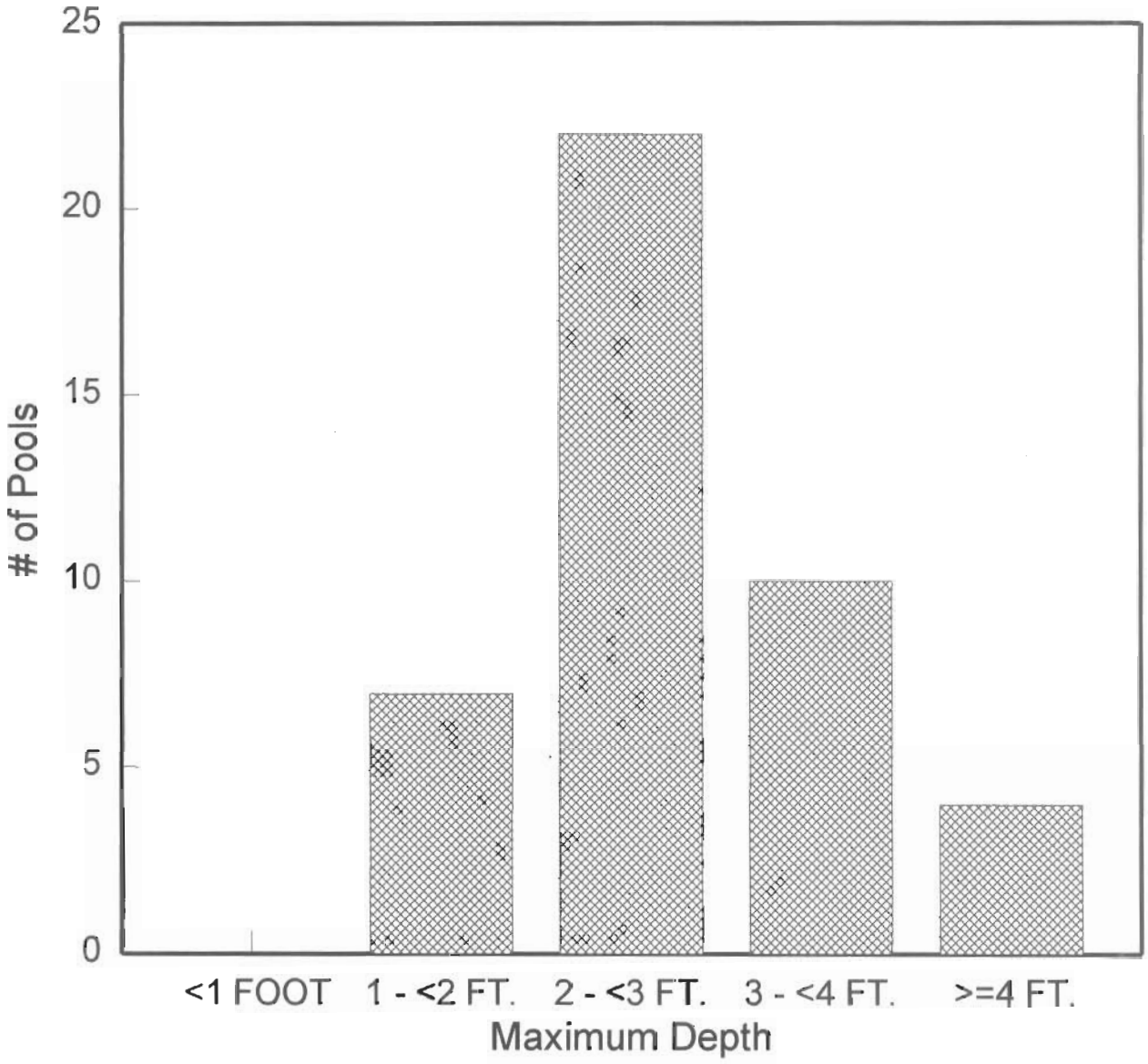
Pool Habitat Types by % Occurrence



Graph 3

Windsor Creek

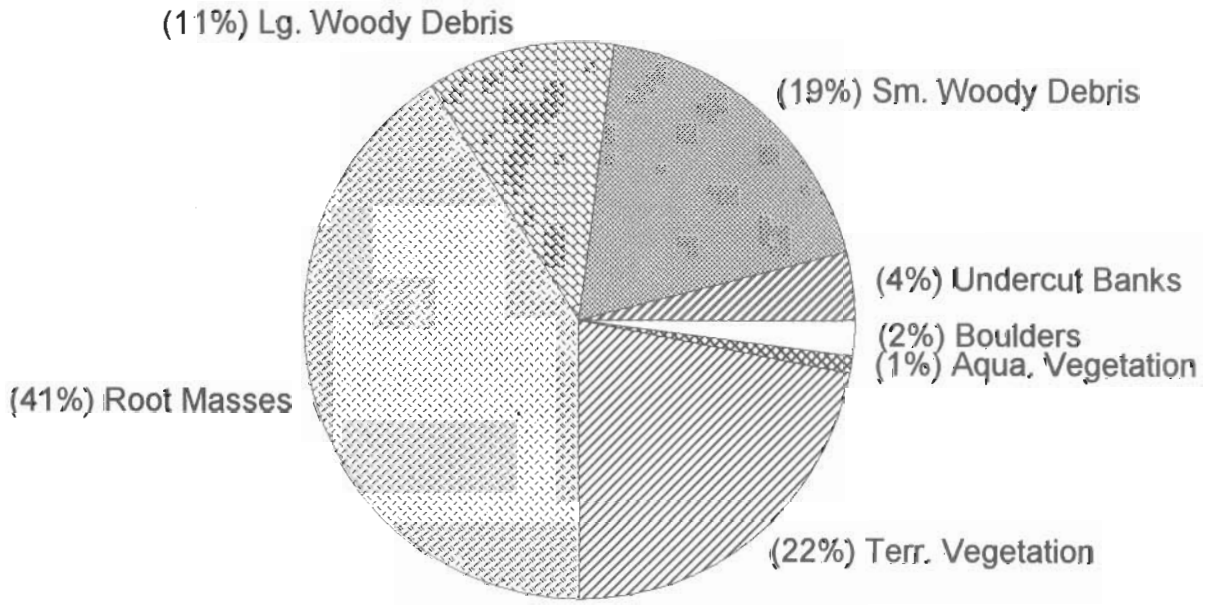
Maximum Depth in Pools



Graph 4

Windsor Creek

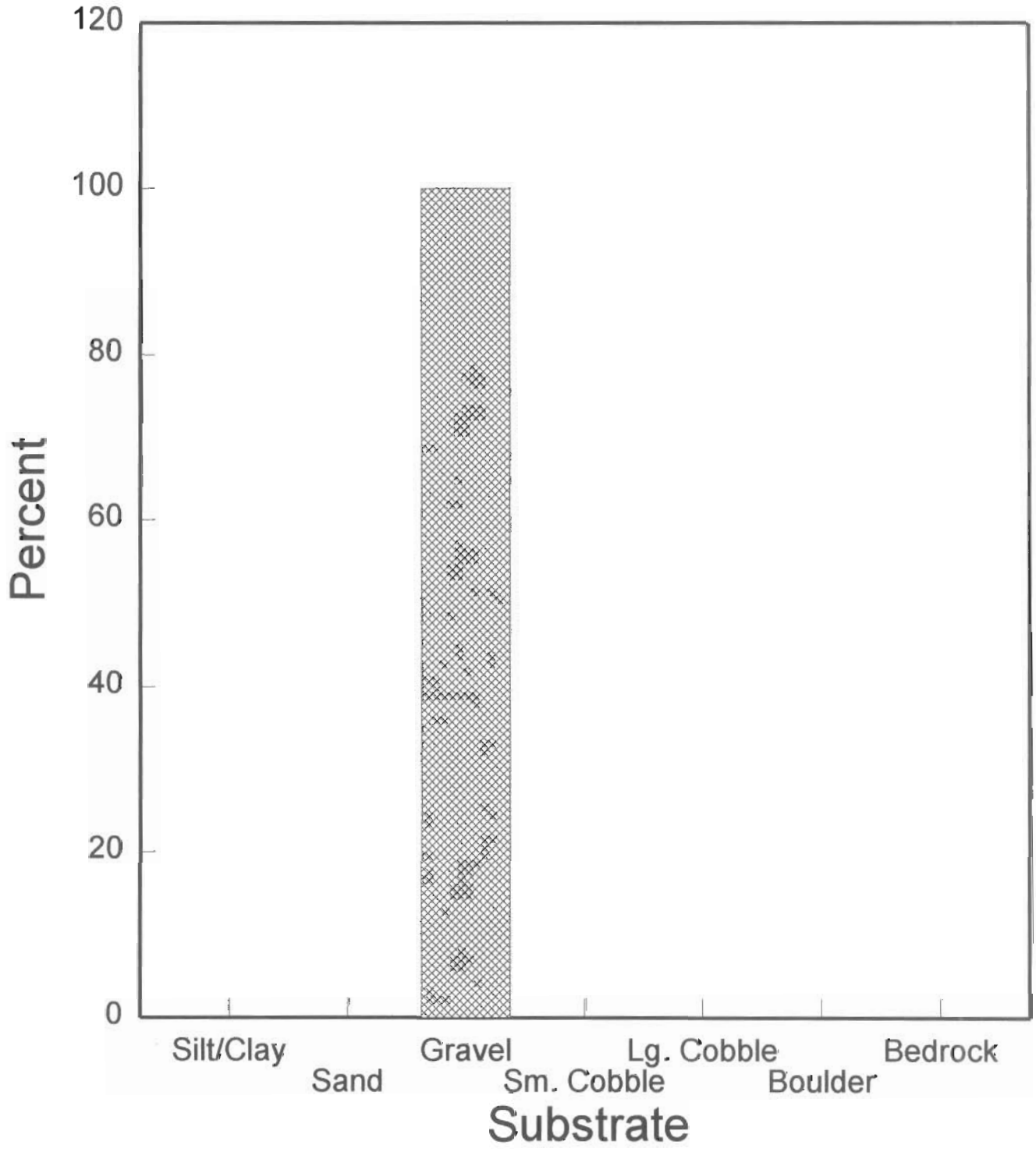
Pool Shelter Types by % Area



Graph 5

Windsor Creek

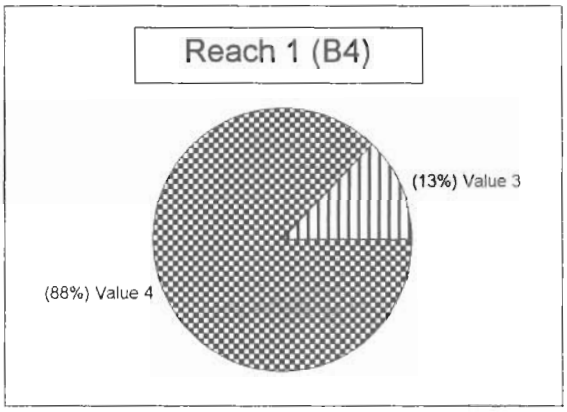
Substrate Composition in Low Gradient Riffles



Graph 6

WINDSOR CREEK

Percent Cobble Embeddedness by Reach

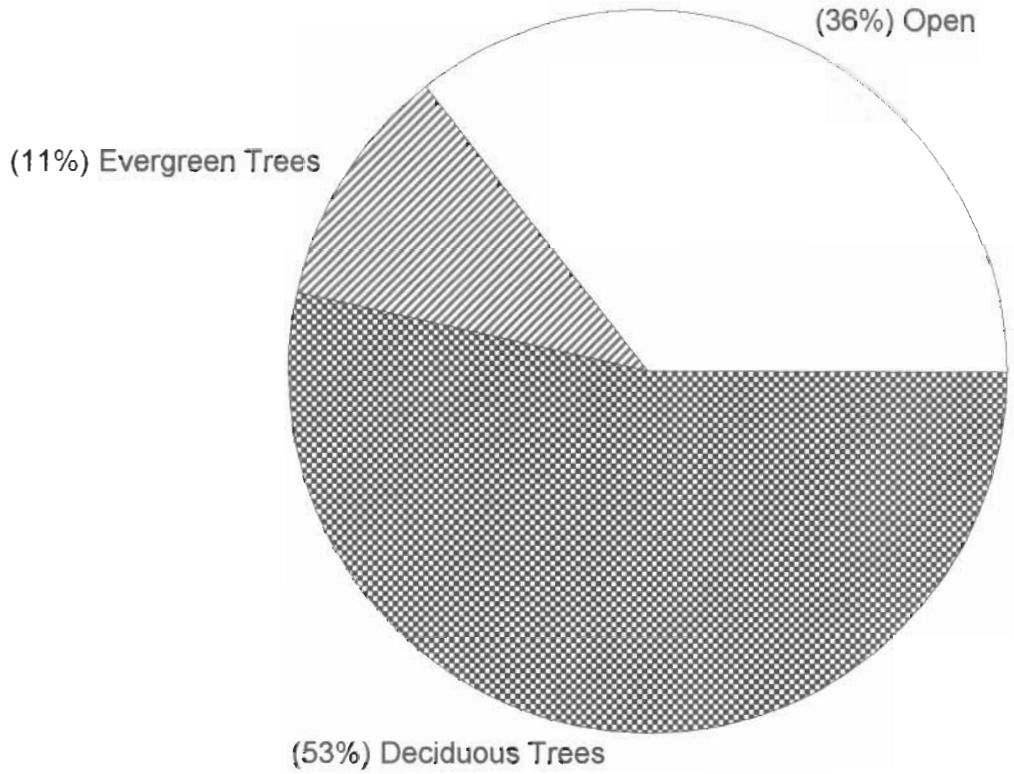


Value 1 = <25% Value 2 = 25-50% Value 3 = 51-75% Value 4 = >76%

Graph 7

Windsor Creek

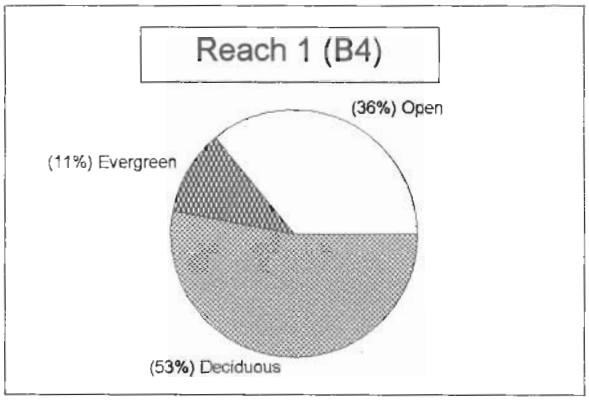
Mean Percent Canopy



Graph 8

WINDSOR CREEK

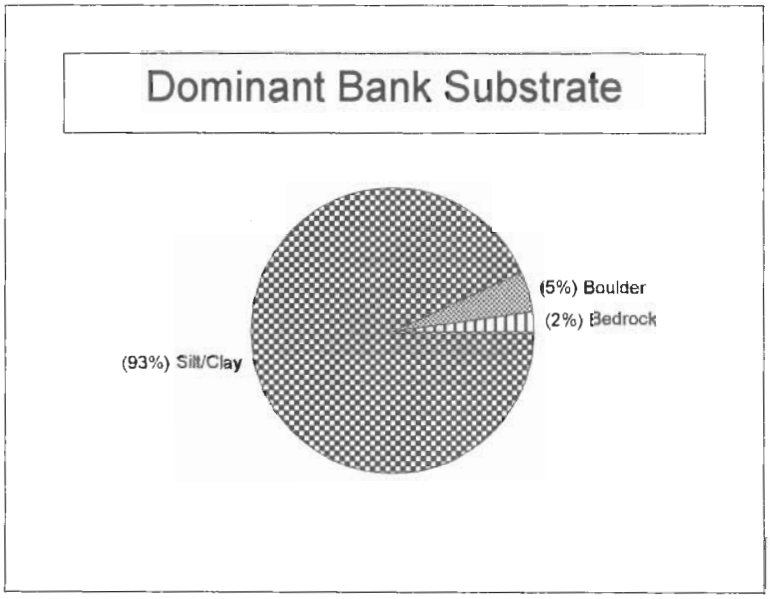
Percent Canopy By Reach

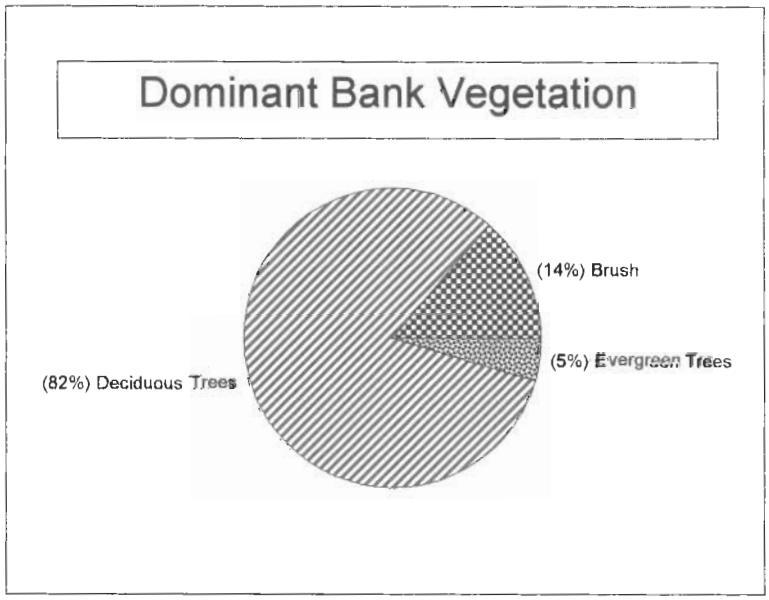


Graph 9

Windsor Creek

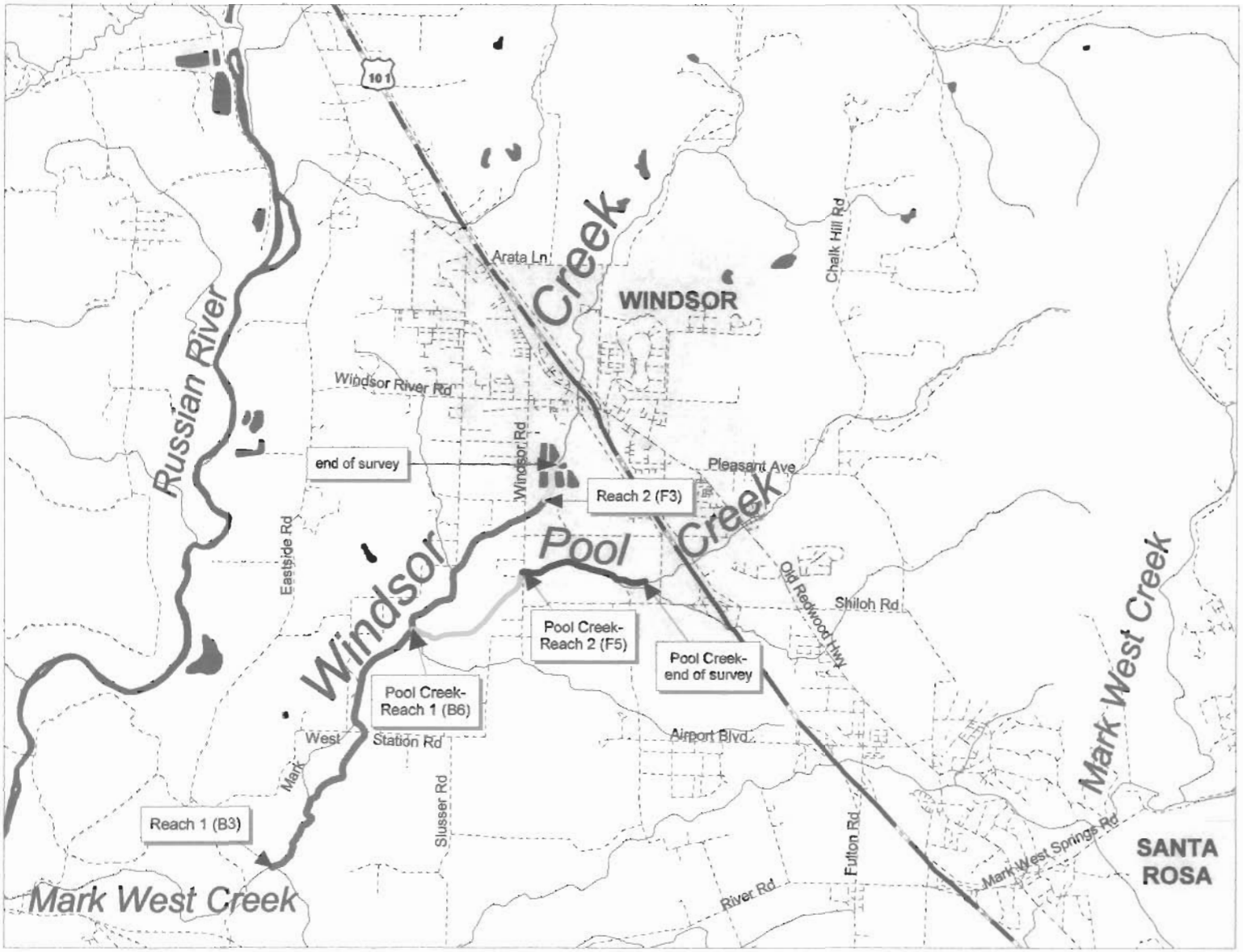
Percent Bank Composition





Graph 10

Windsor Creek



N

Streams
Channel Types
Waterbodies
Roads
City Limits (2000)

1 0 1 2 Miles

1 0 1 2 3 4 5 Kilometers

Scale = 1:72,000

Central Coast Region
Department of Fish and Game

February 9, 2001
I:/mondo3/data/stream-projects/windsor.apr

Pool Creek Tables,Graphs,Map
Assessment Completed 1996
Page 1 of 9

Pool Creek — Drainage: Windsor Creek, Mark West Creek, Russian River

Table 1 - SUMMARY OF RIFFLE, FLATWATER, AND POOL HABITAT TYPES — Survey Dates: 08/12/97 to 08/14/97

Confluence Location: QUAD: Healdsburg LEGAL DESCRIPTION: T08NR09WS23 LATITUDE: 38°31'20" LONGITUDE: 122°49'50"

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
4	4	FLATWATER	44	2192	8769	81	18.5	1.5	62434	249737	*****	645597	0	15
2	1	POOL	22	55	110	1	18.7	1.1	1050	2101	1191	2382	419	70
3	0	DRY	33	665	1994	18	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.)
9	5	10872	251838	647979

Pool Creek

Drainage: Windsor Creek, Mark West Creek, Russian River

Table 2 - SUMMARY OF HABITAT TYPES AND MEASURED PARAMETERS

Survey Dates: 08/12/97 to 08/14/97

Confluence Location: QUAD: Healdsburg LEGAL DESCRIPTION: T08NR09WS23 LATITUDE: 38°31'20" LONGITUDE: 122°49'50"

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 %
3	3	GLD	33	2907	8720	80	23	1.9	4.0	83167	249500	*****	645550	0	20	72
1	1	RUN	11	49	49	0	5	0.2	0.4	237	237	47	47	0	0	90
2	1	LSR	22	55	110	1	19	1.1	2.7	1050	2101	1191	2382	419	70	85
3	0	DRY	33	665	1994	18	0	0.0	0.0	0	0	0	0	0	0	93

TOTAL UNITS	TOTAL UNITS	LENGTH (ft.)	AREA (sq.ft)	TOTAL VOL. (cu.ft)
9	5	10872	251837	647979

Pool Creek

Drainage: Windsor Creek, Mark West Creek, Russian River

Table 3 - SUMMARY OF POOL TYPES

Survey Dates: 08/12/97 to 08/14/97

Confluence Location: QUAD: Healdsburg LEGAL DESCRIPTION: T08NR09WS23 LATITUDE: 38°31'20" LONGITUDE: 122°49'50"

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
2	1	SCOUR	100	55	110	100	18.7	1.1	1050	2101	1191	2382	419	70

TOTAL UNITS	TOTAL UNITS	TOTAL LENGTH (ft.)	TOTAL AREA (sq.ft.)	TOTAL VOL. (cu.ft.)
2	1	110	2101	2382

Pool Creek | Drainage: Windsor Creek, Mark West Creek, Russian River

Table 4 - SUMMARY OF MAXIMUM POOL DEPTHS BY POOL HABITAT TYPES | Survey Dates: 08/12/97 to 08/14/97

Confluence Location: QUAD: Healdsburg LEGAL DESCRIPTION: T08NR09WS23 LATITUDE: 38°31'20" LONGITUDE: 122°49'50"

UNITS MAX DPTH 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
2	LSR	100	0	0	1	50	1	50	0	0	0	0

TOTAL UNITS 2

Pool Creek

Drainage: windsor Creek, Mark West Creek, Russian River

Table 5 - Summary of Shelter by Habitat Type

Survey Dates: 08/12/97 to 08/14/97

Confluence Location: QUAD: Healdsburg LEGAL DESCRIPTION: T08NR09WS23 LATITUDE: 38°31'20" LONGITUDE: 122°49'50"

UNITS MEASURED	UNITS SHELTER MEASURED	HABITAT TYPE	% TOTAL UNDERCUT BANKS	% TOTAL SWD	% TOTAL LWD	% TOTAL ROOT MASS	% TOTAL TERR. VEGETATION	% TOTAL AQUATIC VEGETATION	% TOTAL WHITE WATER	% TOTAL BOULDERS	% TOTAL BEDROCK LEDGES
3	3	GLD	0	50	9	0	41	0	0	0	0
1	1	RUN	0	0	0	0	0	0	0	0	0
2	1	LSR	0	20	30	50	0	0	0	0	0
3	2	DRY	0	0	0	0	0	0	0	0	0
ALL HABITAT TYPES 9	7		0	50	9	0	41	0	0	0	0
POOLS ONLY 2	1		0	20	30	50	0	0	0	0	0

Pool Creek

Drainage: Windsor Creek, Mark West Creek, Russian River

Table 6 - SUMMARY OF DOMINANT SUBSTRATES BY HABITAT TYPE

Survey Dates: 08/12/97 to 08/14/97

Confluence Location: QUAD: Healdsburg LEGAL DESCRIPTION: T08NR09WS23 LATITUDE: 38°31'20" LONGITUDE: 122°49'50"

TOTAL HABITAT UNITS	UNITS SUBSTRATE 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
3	3	GLD	67	0	33	0	0	0	0
1	1	RUN	0	0	100	0	0	0	0
2	1	LSR	100	0	0	0	0	0	0
3	2	DRY	50	0	50	0	0	0	0

Pool Creek

APPENDIX A. Summary of Mean Percent Vegetative Cover for Entire Stream

Mean Percent Canopy	Mean Percent Evergreen	Mean Percent Deciduous	Mean Right bank % Cover	Mean Left Bank % Cover
82.14	24.29	75.71	82.86	84.29

APPENDIX B.

Mean Percentage of Dominant Substrate

Dominant Class of Substrate	Number Units Right Bank	Number Units Left Bank	Percent Total Units
Bedrock	0	0	0
Boulder	0	0	0
Cobble/Gravel	0	0	0
Silt/clay	7	7	100

Mean Percentage of Dominant Vegetation

Dominant Class of Vegetation	Number Units Right Bank	Number Units Left Bank	Percent Total Units
Grass	1	0	7.14
Brush	6	5	78.57
Deciduous Trees	0	1	7.14
Evergreen Trees	0	1	7.14
No Vegetation	0	0	0

APPENDIX C. FISH HABITAT INVENTORY DATA SUMMARY

STREAM NAME: Pool Creek
SAMPLE DATES: 08/12/97 to 08/14/97
SURVEY LENGTH:
MAIN CHANNEL: 10872 ft. SIDE CHANNEL: 0 ft.
LOCATION OF STREAM MOUTH:
USGS Quad Map: Healdsburg Latitude: 38°31'20"
Legal Description: T08NR09WS23 Longitude: 122°49'50"

SUMMARY OF FISH HABITAT ELEMENTS BY STREAM REACH

STREAM REACH 1 (Units 1-7)

Channel Type: B6	Mean Canopy Density: 89%
Main Channel Length: 5672 ft.	Evergreen Component: 23%
Side Channel Length: 0 ft.	Deciduous Component: 77%
Riffle/Flatwater Mean Width: 14.0 ft.	Pools by Stream Length: 2%
Pool Mean Depth: 1.1 ft.	Pools >=2 ft. Deep: 50%
Base Flow: 0.0 cfs	Pools >=3 ft. Deep: 0%
Water: 66-66°F Air: 78-78°F	Mean Pool Shelter Rtn: 70
Dom. Bank Veg.: Brush	Dom. Shelter: Large Woody Debris
Bank Vegetative Cover: 91%	Occurrence of LOD: 40%
Dom. Bank Substrate: Silt/Clay/Sand	Dry Channel: 1994 ft.

Embeddness Value: 1. 0% 2. 0% 3. 0% 4. 100% 5. 0%

STREAM REACH 2 (Units 8-9)

Channel Type: F5	Mean Canopy Density: 40%
Main Channel Length: 5200 ft.	Evergreen Component: 30%
Side Channel Length: 0 ft.	Deciduous Component: 70%
Riffle/Flatwater Mean Width: 32.0 ft.	Pools by Stream Length: 0%
Pool Mean Depth: 0.0 ft.	Pools >=2 ft. Deep: **********%
Base Flow: 0.0 cfs	Pools >=3 ft. Deep: **********%
Water: 68-68°F Air: 80-80°F	Mean Pool Shelter Rtn: 0
Dom. Bank Veg.: Brush	Dom. Shelter: Small Woody Debris
Bank Vegetative Cover: 40%	Occurrence of LOD: 0%
Dom. Bank Substrate: Silt/Clay/Sand	Dry Channel: 0 ft.

Embeddness Value: 1. 2. 3. 4. 5.