# STREAM INVENTORY REPORT

## Nye Creek

### INTRODUCTION

A stream inventory was conducted beginning July 21 and ending July 22, 2003 on Nye Creek. The survey began at the confluence with Alder Creek and extended upstream 1,969 feet.

The Nye Creek 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 Nye Creek. 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

Nye Creek is a tributary to Alder Creek, a tributary to the Pacific Ocean, located in Mendocino County, California (Map 1). Nye Creek's legal description at the confluence with Alder Creek is T13N R16W S10. Its location is 39°00′2.0″ north latitude and 123°36′59″ west longitude. Nye Creek is a first order stream and has approximately 11,040 feet of solid blue line stream and 507 feet of dashed blue line stream according to the USGS Cold Spring 7.5 minute quadrangle. Nye Creek drains a watershed of approximately 1.3 square miles. Elevations range from about 426 feet at the mouth of the creek to 2082 feet in the headwater areas. Mixed conifer forest dominates the watershed. The watershed is entirely privately owned and is managed for timber production and rangeland. Vehicle access exists via Piper Ranch forest roads. Foot access is available from logging roads and a walking trail along Alder Creek beginning approximately 2.5 miles upstream of Nye Creek.

### METHODS

The habitat inventory conducted in Nye Creek follows the methodology presented in the *California Salmonid Stream Habitat Restoration Manual* (Flosi et al., 1998). The California Department of Fish and Game field crew and 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 Nye Creek to record measurements and observations. There are nine components to the inventory form.

1. Flow:

Flow is measured in cubic feet per second (cfs) at the bottom of the stream survey reach using 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". Nye 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 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 Nye 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, 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 Nye Creek, a standard qualitative shelter value of 0 (none), 1 (low), 2 (medium), or 3 (high) was assigned according to the complexity of the cover. Thus, shelter ratings can range from 0-300 and are expressed as mean values by habitat types within a stream.

7. Substrate Composition:

Substrate composition ranges from silt/clay sized particles to boulders and bedrock elements. In all fully-described habitat units, dominant and sub-dominant substrate elements were ocularly estimated using a list of seven size classes and recorded as a one and two, respectively. In addition, the dominant substrate composing the pool tail-outs is recorded for each pool.

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 Nye Creek, an estimate of the percentage of the habitat unit covered by canopy was made from the center of approximately every third unit in addition to every fully-described unit, giving an approximate 30% sub-sample. In addition, the area of canopy was estimated ocularly into percentages of 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 Nye Creek, 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 Nye Creek. In addition, two sites were electrofished in 2002 by Mendocino Redwood Company Aquatic Biologists, 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 Nye Creek 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

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HABITAT INVENTORY RESULTS

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

The habitat inventory of July 21 to 22, 2003, was conducted by G. Trousdale (WSP/AmeriCorps) and J. Crews (DFG). The total length of the stream surveyed was 1,969 feet.

Stream flow was not measured on Nye Creek.

Nye Creek is an A2 channel type for the entire 1,969 feet of the stream surveyed. A2 channels are steep, narrow, cascading, step-pool streams; high energy transport associated with depositional soils and boulder dominant substrates.

Water temperatures taken during the survey period ranged from 59° to 61 ° Fahrenheit. Air temperatures ranged from 62° to 71° Fahrenheit.

Table 1 summarizes the Level II riffle, flatwater, and pool habitat types. Based on frequency of occurrence there were 53% riffle units, 44% pool units, and 2% unsurveyed (Graph 1). Based on total length of Level II habitat types there were 67% riffle units, 33% pool units, and 1% unsurveyed units (Graph 2).

Six Level IV habitat types were identified (Table 2). The most frequent habitat types by percent occurrence were high-gradient riffles, 36%; mid-channel pools, 20%; and step pools, 18% (Graph 3). Based on percent total length, high-gradient riffles made up 53%, step pools 23%, and low-gradient riffles 12%.

A total of 20 pools were identified (Table 3). Main-channel pools were the most frequently encountered, at 85%, and comprised 96% 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. Three of the 20 measured pools (1.5%) had a depth of two feet or greater (Graph 5).

The depth of cobble embeddedness was estimated at pool tail-outs. Of the 20 pool tail-outs measured, 4 had a value of 1 (20%); 12 had a value of 2 (60%); 1 had a value of 3 (5%); 0 had a value of 4 (0%); and 3 had a value of 5 (15%) (Graph 6). On this scale, a value of 1 indicates the highest quality of spawning substrate.

Riffle habitat types had a mean shelter rating of 56 and pool habitats had a mean shelter rating of 52 (Table 1). Of the pool types, the main-channel pools had the highest mean shelter rating at 53. Scour pools had a mean shelter rating of 47 (Table 3).

Table 5 summarizes mean percent cover by habitat type. Boulders are the dominant cover types in Nye Creek. Graph 7 describes the pool cover in Nye Creek. Boulders are the dominant pool cover types followed by whitewater.

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Table 6 summarizes the dominant substrate by habitat type. Graph 8 depicts the dominant substrate observed in pool tail-outs. Gravel was the dominant substrate observed in 50% of pool tail-outs while small cobble was the next most frequently observed substrate type, at 25%.

The mean percent canopy density for the surveyed length of Nye Creek was 91%. The mean percentages of evergreen and deciduous trees were 82% and 9%, respectively with 10% of the canopy open. Graph 9 describes the mean percent canopy in Nye Creek.

For the stream reach surveyed, the mean percent right bank vegetated was 44%. The mean percent left bank vegetated was 47%. The dominant elements composing the structure of the stream banks consisted of 38% bedrock, 27% boulder, 0% cobble/gravel, and 35% sand/silt/clay (Graph 10). Coniferous trees were the dominant vegetation type observed in 60% of the units surveyed. Additionally, 40% of the units surveyed had brush as the dominant vegetation type (Graph 11).

## BIOLOGICAL INVENTORY RESULTS

A backpack electrofisher survey was conducted at two locations on Nye Creek, by Mendocino Redwood Company, aquatic biologists in the summer of 2002. All aquatic species were identified, lengths were taken of salmonids. Steelhead rainbow trout (SH) were the only salmonid species observed. Other species identified were Pacific giant salamanders (PGS) (Table A).

Site 89-08 produced two steelhead trout between 70-130 mm in length.

Site 89-23 produced no salmonid species.

Table A. Nye Creek biological sampling data.

| Date | Site ID | Species | <70 mm | 70-130 mm | >130 mm | Other species |
|---|---|---|---|---|---|---|
| 9/26/2002 | 89-08 | SH | 0 | 2 | 0 | PGS |
| 9/26/2002 | 89-23 | | 0 | 0 | 0 | PGS |

## DISCUSSION

Nye Creek is an A2 channel type for the entire 1,969 feet of stream surveyed. A2 channel types are generally not suitable for fish habitat improvement structures.

The water temperatures recorded on the survey days were within the suitable range 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.

Riffle habitat types comprised 67% of the total length of this survey and pool 33%. The pools are relatively shallow, with only 3 of the 20 (15%) measured 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 recommended for locations where their installation will not be threatened by high stream energy, or where their installation will not conflict with the modification of the numerous log debris accumulations (LDA's) in the stream.

Sixteen of the 20 pool tail-outs measured had embeddedness ratings of 1 or 2. One of the pool tail-outs had embeddedness ratings of 3 or 4. Three of the pool tail-outs 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.

Fifteen of the 20 pool tail-outs measured had gravel or small cobble as the dominant substrate. This is generally considered good for spawning salmonids.

The mean shelter for flatwater was 0. The mean shelter rating for pools was 52. 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, whitewater contributes 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 91%.

The percentage of right and left bank covered with vegetation was low at 44% and 47%, respectively. In areas of stream bank erosion or where bank vegetation is not at acceptable levels, planting endemic trees species, in conjunction with bank stabilization, is recommended.

## RECOMMENDATIONS

1) Nye Creek should be managed as an anadromous, natural production stream.

2) 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) There are several log debris accumulations present on Nye Creek 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.

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.) | Habitat Unit # | Comments: |
|---|---|---|
| 0 | 0001 | Start of survey at confluence with Alder Creek. 39°00'00.6" N/123°36'53.5 W. There are no percent exposed substrate data available for units 001-026. Log debris accumulation (LDA). |
| 353 | 0011 | Fish observed. |
| 579 | 0020 | 4’ high plunge. |
| 591 | 0021 | LDA. |
| 790 | 0027 | 39°59'55.9" N 123°36'55.4" W. |
| 922 | 0028 | Left bank tributary. |
| 1010 | 0030 | LDA. |
| 1231 | 0035 | Left bank tributary. Fish observed. LDA. |
| 1513 | 0038 | Dry tributary on left bank. |
| 1543 | 0039 | Erosion site on left bank. |
| 1895 | 0044 | Left bank tributary with log jam at mouth. LDA. |
| 1937 | 0045 | End of survey. LDA measures 10' high x 10' wide, retaining sediment. Flag: "begin class II MRC 7/13 Fish 2001". |

**Nye Creek**

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] | |

## Nye Creek

TABLES AND GRAPHS

**Table 1 - Summary of Riffle, Flatwater, and Pool Habitat Types**

Stream Name: Nye Creek  Drainage: Point Arena

Survey Dates: 7/21/2003 to 7/22/2003

Confluence Location: Quad: COLD SPRING  Legal Description: T13NR16WS10  Latitude: 39:00:02.0N  Longitude: 123:36:59.0W

| Habitat Units | Units Fully Measured | Habitat Type | Habitat Occurrence (%) | Mean Length (ft.) | Total Length (ft.) | Percent Total Length | Mean Width (ft.) | Mean Depth (ft.) | Mean Max 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0 | NOSURVEY | 2.2 | 32 | 32 | 1.6 | | | | | | | | | |
| 20 | 20 | POOL | 44.4 | 31 | 621 | 31.5 | 11.0 | 0.7 | 1.6 | 294 | 5875 | 322 | 6449 | 243 | 52 |
| 24 | 6 | RIFFLE | 53.3 | 55 | 1316 | 66.8 | 10.0 | 0.5 | 1.2 | 519 | 12444 | 303 | 7260 | | 47 |

| Total Units | Total Units Fully Measured | Total Length (ft.) | Total Area (sq.ft.) | Total Volume (cu.ft.) |
|---|---|---|---|---|
| 45 | 26 | 1969 | 18319.35 | 13709.73 |

**Table 2 - Summary of Habitat Types and Measured Parameters**

Stream Name: Nye Creek  Drainage: Point Arena

Survey Dates: 7/21/2003 to 7/22/2003

Confluence Location: Quad: COLD SPRING  Legal Description: T13NR16WS10  Latitude: 39:00:02.0N  Longitude: 123:36:59.0W

| Habitat Units | Units Fully Measured | Habitat Type | Habitat Occurrence (%) | Mean Length (ft.) | Total Length (ft.) | Total Length (%) | Mean Width (ft.) | Mean Depth (ft.) | Max 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 | Mean Canopy (%) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 5 | 3 | LGR | 11.1 | 46 | 232 | 11.8 | 10 | 0.4 | 1.3 | 426 | 2132 | 166 | 930 | | 53 | 88 |
| 16 | 2 | HGR | 35.6 | 65 | 1045 | 53.1 | 10 | 0.7 | 1.6 | 811 | 12976 | 597 | 9554 | | 60 | 93 |
| 3 | 1 | BRS | 6.7 | 13 | 39 | 2.0 | 10 | 0.3 | 1.1 | 210 | 630 | 63 | 189 | | 0 | 89 |
| 9 | 9 | MCP | 20.0 | 15 | 133 | 6.8 | 11 | 0.5 | 1.9 | 161 | 1449 | 141 | 1272 | 101 | 41 | 91 |
| 8 | 8 | STP | 17.8 | 58 | 462 | 23.5 | 11 | 0.9 | 4.2 | 520 | 4156 | 608 | 4866 | 466 | 66 | 94 |
| 3 | 3 | PLP | 6.7 | 9 | 26 | 1.3 | 10 | 0.8 | 2.1 | 90 | 270 | 104 | 311 | 72 | 47 | 90 |
| 1 | 0 | NS | 2.2 | 32 | 32 | 1.6 | | | | | | | | | | |

| Total Units | Total Units Fully Measured | Total Length (ft.) | Total Area (sq.ft.) | Total Volume (cu.ft.) |
|---|---|---|---|---|
| 45 | 26 | 1969 | 21613.02 | 17121.76 |

# Nye Creek

**Table 3 - Summary of Pool Types**

Stream Name: Nye Creek  Drainage: Point Arena

Survey Dates: 7/21/2003 to 7/22/2003

Confluence Location: Quad: COLD SPRING  Legal Description: T13NR16WS10  Latitude: 39:00:02.0N  Longitude: 123:36:59.0W

| Habitat Units | Units Fully Measured | Habitat Type | Habitat Occurrence (%) | Mean Length (ft.) | Total Length (ft.) | Total Length (%) | Mean Width (ft.) | Mean Residual Depth (ft.) | Mean Area (sq.ft.) | Estimated Total Area (sq.ft.) | Mean Residual Pool Vol (cu.ft.) | Estimated Total Resid.Vol. (cu.ft.) | Mean Shelter Rating |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 17 | 17 | MAIN | 85 | 35 | 595 | 96 | 11.1 | 0.7 | 330 | 5605 | 273 | 4643 | 53 |
| 3 | 3 | SCOUR | 15 | 9 | 26 | 4 | 10.3 | 0.8 | 90 | 270 | 72 | 216 | 47 |

| Total Units | Total Units Fully Measured | Total Length (ft.) | Total Area (sq.ft.) | Total Volume (cu.ft.) |
|---|---|---|---|---|
| 20 | 20 | 621 | 5875.35 | 4858.766 |

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**Table 4 - Summary of Maximum Residual Pool Depths By Pool Habitat Types**

Stream Name: Nye Creek  Drainage: Point Arena
Survey Dates: 7/21/2003 to 7/22/2003
Confluence Location: Quad: COLD SPRING  Legal Description: T13NR16WS10  Latitude: 39:00:02.0N  Longitude: 123:36:59.0W

| Habitat Units | Habitat Type | Habitat Occurrence (%) | < 1 Foot Maximum Residual Depth | < 1 Foot Percent Occurrence | 1 < 2 Feet Maximum Residual Depth | 1 < 2 Feet Percent Occurrence | 2 < 3 Feet Maximum Residual Depth | 2 < 3 Feet Percent Occurrence | 3 < 4 Feet Maximum Residual Depth | 3 < 4 Feet Percent Occurrence | >= 4 Feet Maximum Residual Depth | >= 4 Feet Percent Occurrence |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 9 | MCP | 45 | 2 | 22 | 7 | 78 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8 | STP | 40 | 0 | 0 | 6 | 75 | 1 | 13 | 0 | 0 | 1 | 13 |
| 3 | PLP | 15 | 1 | 33 | 1 | 33 | 1 | 33 | 0 | 0 | 0 | 0 |

| Total Units | Total 1 Foot Max Resid. Depth | < Total 1 Foot % Occurrence | < Total 1 Foot Max Resid. Depth | 1< 2 Foot % Occurrence | Total 1< 2 Foot Max Resid. Depth | 2< 3 Foot % Occurrence | Total 2< 3 Foot Max Resid. Depth | 3< 4 Foot % Occurrence | Total 3< 4 Foot Max Resid. Depth | >= 4 Foot % Occurrence |
|---|---|---|---|---|---|---|---|---|---|---|
| 20 | 3 | 15 | 14 | 70 | 2 | 10 | 0 | 0 | 1 | 5 |

Mean Maximum Residual Pool Depth (ft.): 1.6

**Table 5 - Summary of Mean Percent Cover By Habitat Type**

Stream Name: Nye Creek  Drainage: Point Arena
Survey Dates: 7/21/2003 to 7/22/2003  Dry Units: 0
Confluence Location: Quad: COLD SPRING  Legal Description: T13NR16WS10  Latitude: 39:00:02.0N  Longitude: 123:36:59.0W

| Habitat Units | 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 5 | 3 | LGR | 0 | 0 | 3 | 0 | 0 | 0 | 17 | 80 | 0 |
| 16 | 2 | HGR | 0 | 0 | 15 | 0 | 0 | 3 | 10 | 73 | 0 |
| 3 | 1 | BRS | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 24 | 6 | TOTAL RIFFLE | 0 | 0 | 7 | 0 | 0 | 1 | 12 | 64 | 0 |
| 0 | 0 | TOTAL FLAT | | | | | | | | | |
| 9 | 9 | MCP | 0 | 0 | 3 | 0 | 1 | 0 | 12 | 79 | 4 |
| 8 | 8 | STP | 4 | 4 | 6 | 0 | 2 | 0 | 19 | 53 | 13 |
| 3 | 3 | PLP | 0 | 0 | 0 | 0 | 0 | 0 | 67 | 33 | 0 |
| 20 | 20 | TOTAL POOL | 2 | 2 | 4 | 0 | 1 | 0 | 23 | 62 | 7 |
| 1 | 0 | NS | | | | | | | | | |
| 45 | 26 | TOTAL | 1 | 1 | 5 | 0 | 1 | 0 | 20 | 62 | 5 |

## Nye Creek

**Table 6 - Summary of Dominant Substrates By Habitat Type**

Stream Name: Nye Creek  Drainage: Point Arena
Survey Dates: 7/21/2003 to 7/22/2003  Dry Units: 0
Confluence Location: Quad: COLD SPRING  Legal Description: T13NR16WS10 Latitude: 39:00:02.0N Longitude: 123:36:59.0W

| Habitat Units | Units Fully Measured | Habitat Type | % Total Silt/Clay Dominant | % Total Sand Dominant | % Total Gravel Dominant | % Total Small Cobble Dominant | % Total Large Cobble Dominant | % Total Boulder Dominant | % Total Bedrock Dominant |
|---|---|---|---|---|---|---|---|---|---|
| 5 | 3 | LGR | 0 | 0 | 0 | 0 | 0 | 67 | 33 |
| 16 | 2 | HGR | 0 | 0 | 50 | 0 | 0 | 50 | 0 |
| 3 | 1 | BRS | 0 | 0 | 0 | 0 | 0 | 0 | 100 |
| 9 | 9 | MCP | 0 | 0 | 78 | 0 | 0 | 11 | 11 |
| 8 | 8 | STP | 0 | 0 | 25 | 0 | 0 | 75 | 0 |
| 3 | 3 | PLP | 0 | 0 | 0 | 0 | 0 | 33 | 67 |

**Table 8 - Fish Habitat Inventory Data Summary**

Stream Name: Nye Creek  Drainage: Point Arena
Survey Dates: 7/21/2003 to 7/22/2003  Survey Length (ft.): 1969  Main Channel (ft.): 1969  Side Channel (ft.): 0
Confluence Location: Quad: COLD SPRING  Legal Description: T13NR16WS10 Latitude: 39:00:02.0N Longitude: 123:36:59.0W

**Summary of Fish Habitat Elements By Stream Reach**

**STREAM REACH: 1**

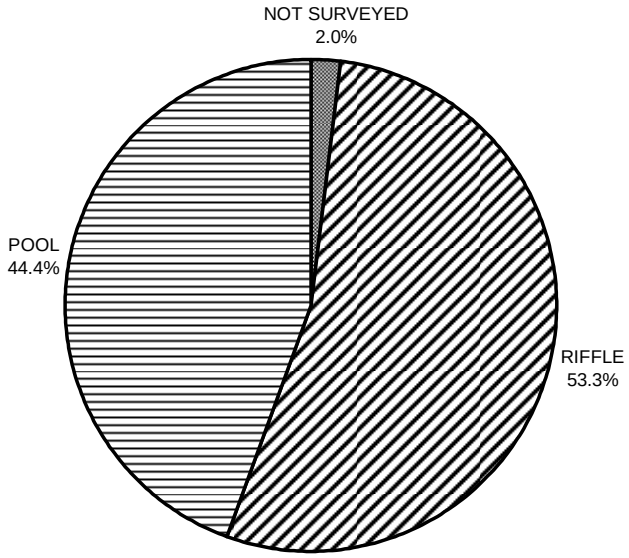
Channel Type: A2
Reach Length (ft.): 1969
Riffle/Flatwater Mean Width (ft.): 10.0
BFW:
Range (ft.): 13 to 19
Mean (ft.): 16
Std. Dev.: 2
Base Flow (cfs.): 0.0
Water (F): 59 - 61 Air (F): 62 - 71
Dry Channel (ft): 0

Canopy Density (%): 91
Coniferous Component (%): 90
Deciduous Component (%): 10
Dominant Bank Vegetation: Evergreen Trees
Vegetative Cover (%): 56
Dominant Shelter: Boulders
Dominant Bank Substrate Type: Bedrock
Occurrence of LWD (%): 5
LWD per 100 ft.:
Riffles: 2
Pools: 2
Flat:

Pools by Stream Length (%): 32
Pool Frequency (%): 44
Residual Pool Depth (%):
< 2 Feet Deep: 85
2 to 2.9 Feet Deep: 10
3 to 3.9 Feet Deep: 0
>= 4 Feet Deep: 5
Mean Max Residual Pool Depth (ft.): 1.6
Mean Pool Shelter Rating: 52

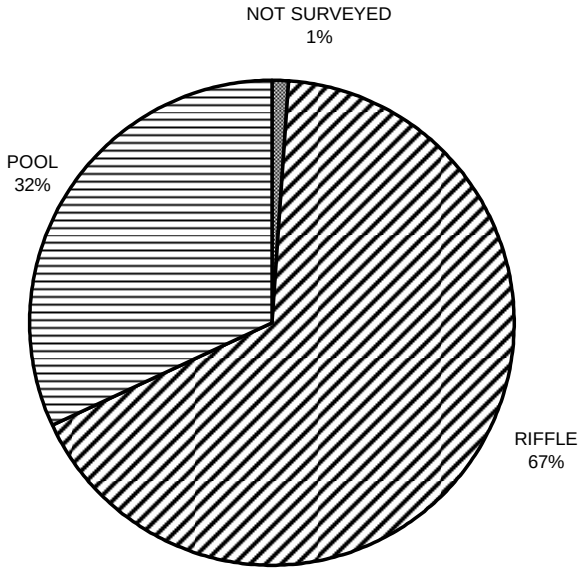
Pool Tail Substrate (%): Silt/Clay: 0 Sand: 0 Gravel: 50 Sm Cobble: 25 Lg Cobble: 10 Boulder: 5 Bedrock: 10
Embeddedness Values (%): 1. 20 2. 60 3. 5 4. 0 5. 15

# NYE CREEK
## HABITAT TYPES BY PERCENT OCCURRENCE



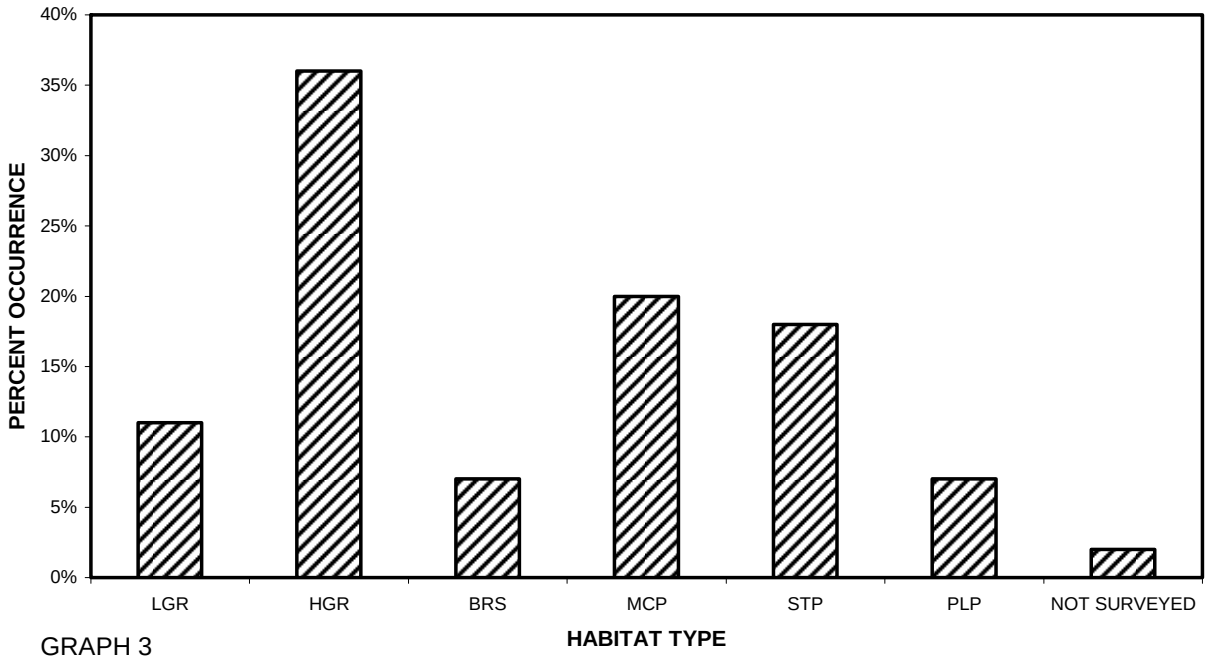

GRAPH 1

# NYE CREEK
## HABITAT TYPES BY PERCENT TOTAL LENGTH



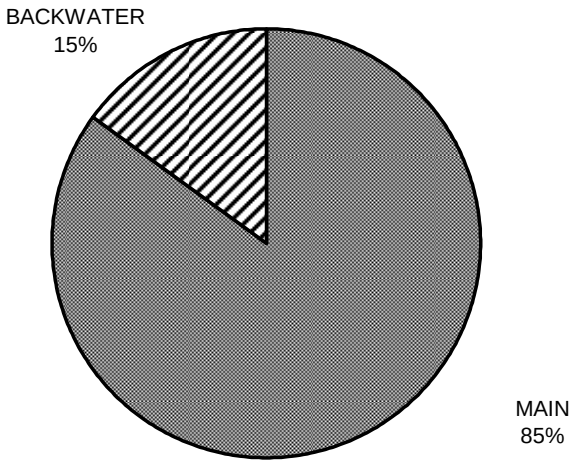

GRAPH 2

# NYE CREEK
## HABITAT UNIT TYPES BY PERCENT OCCURRENCE

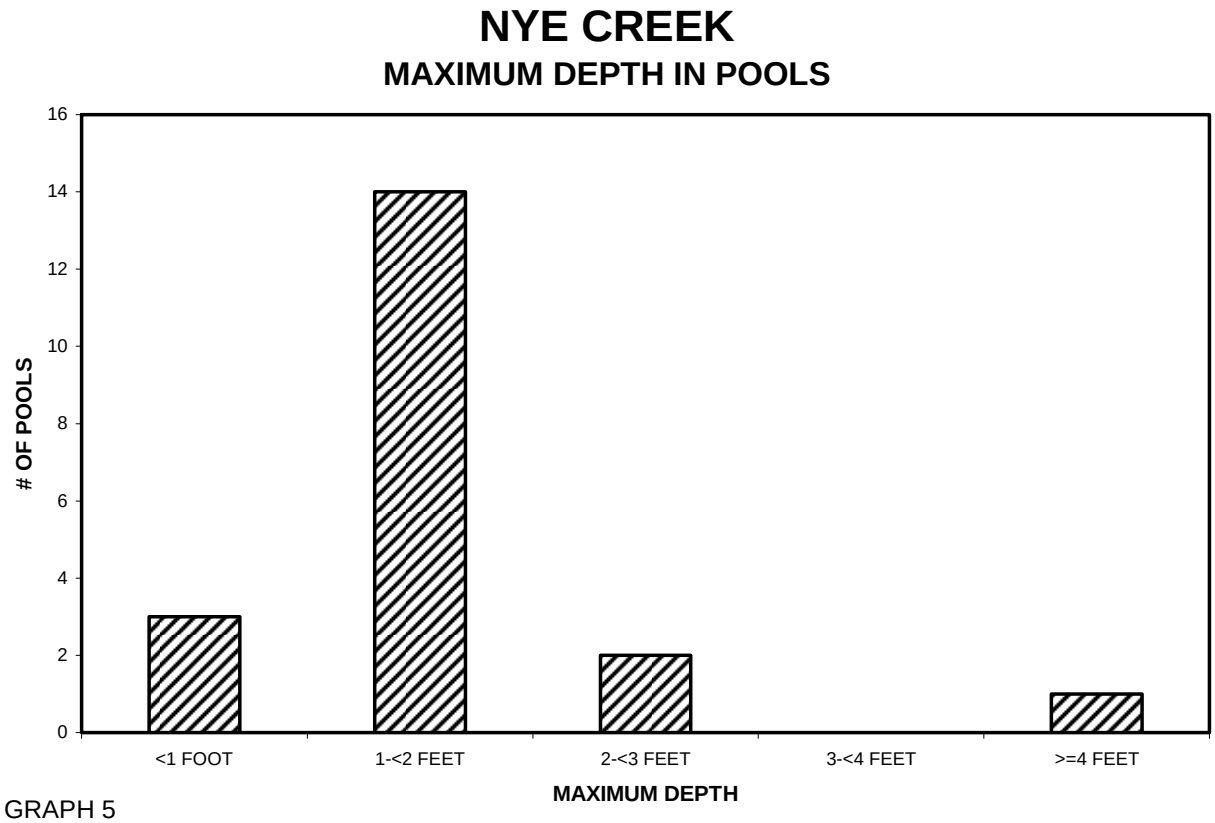



GRAPH 3

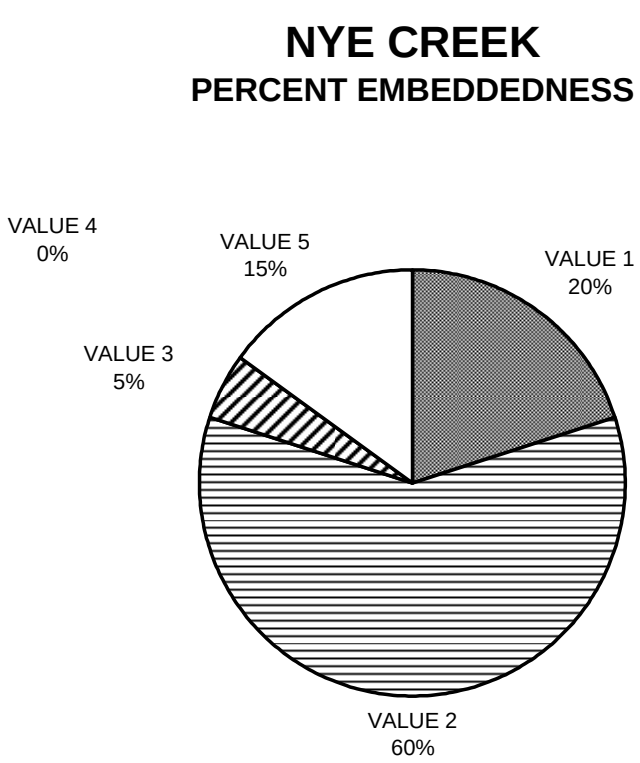
# NYE CREEK
## POOL HABITAT TYPES BY PERCENT OCCURRENCE



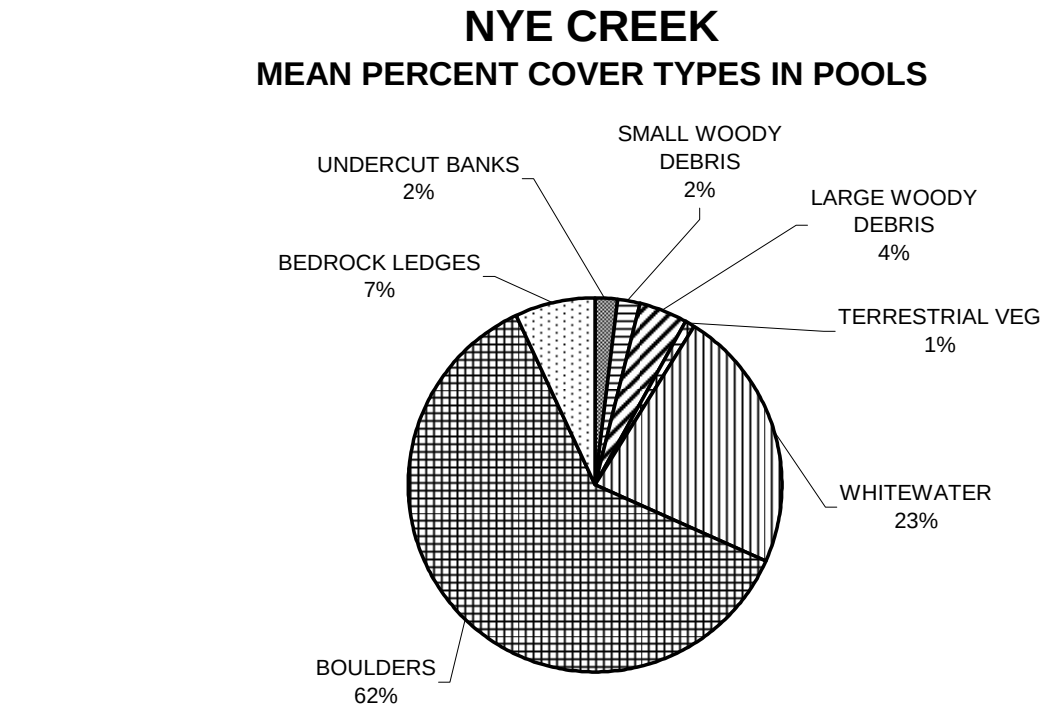

GRAPH 4



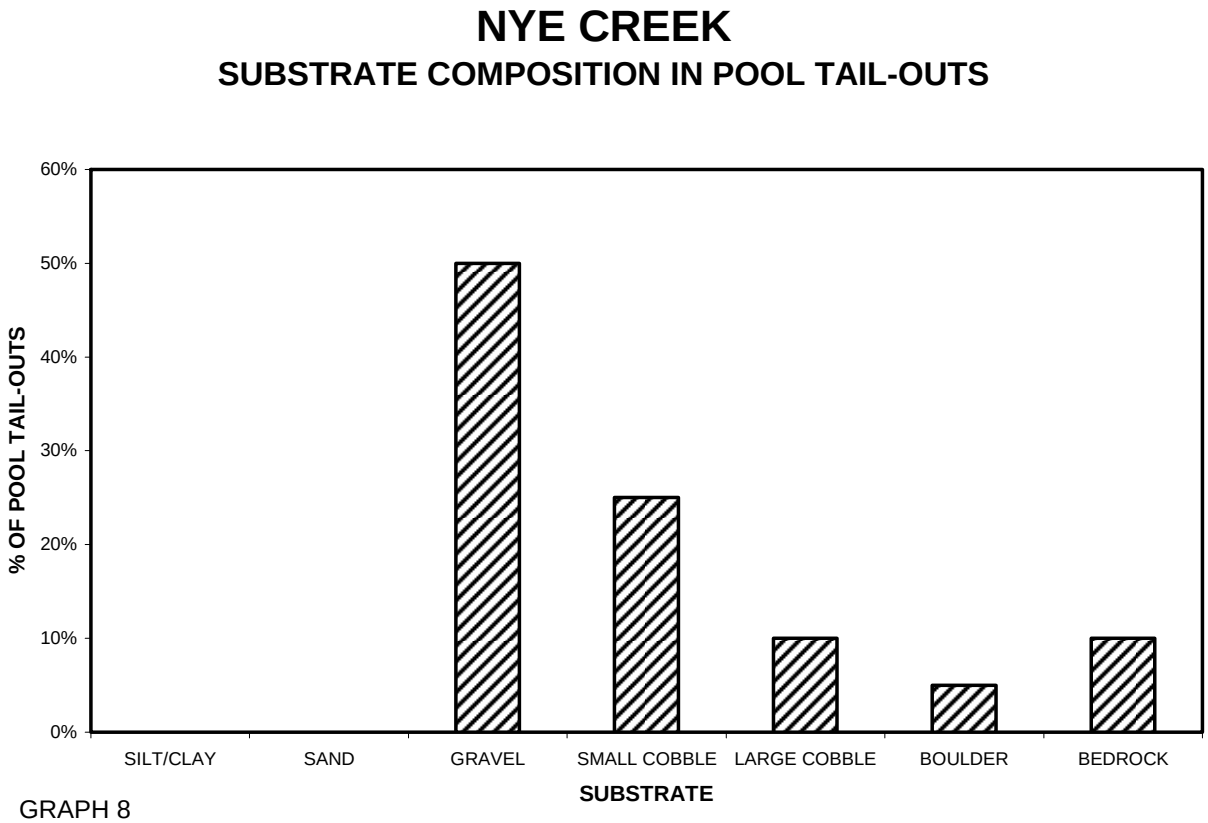

GRAPH 5




GRAPH 6

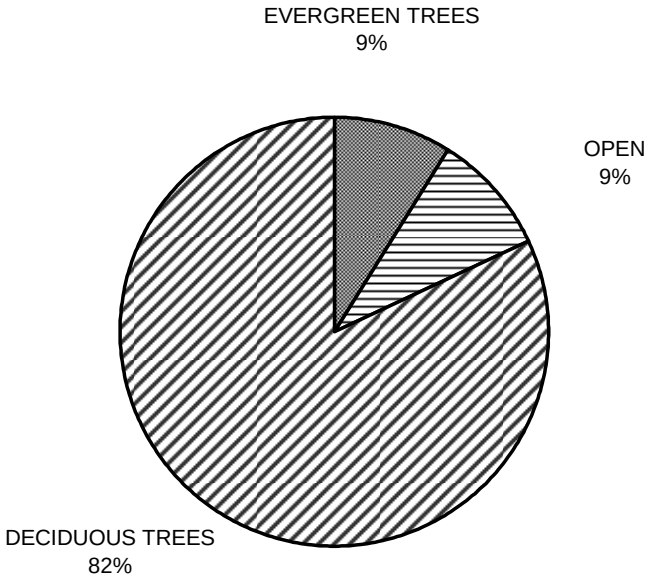



GRAPH 7



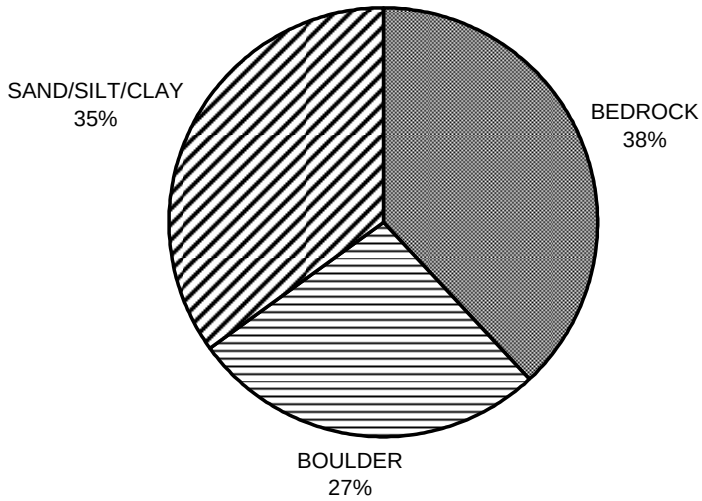

GRAPH 8

# NYE CREEK
## MEAN PERCENT CANOPY



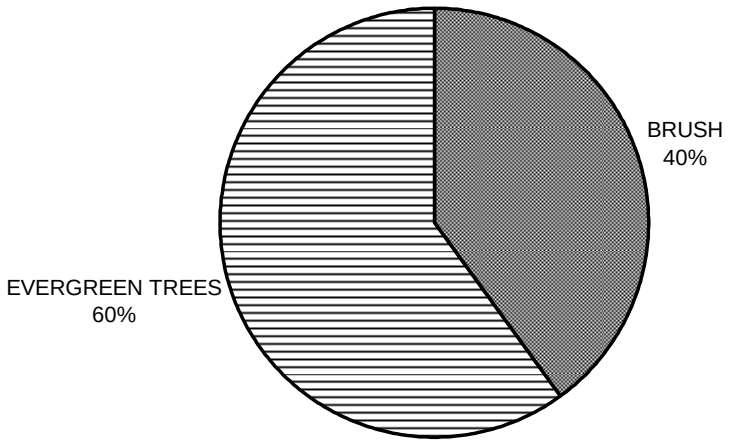

GRAPH 9

# NYE CREEK
## DOMINANT BANK COMPOSITION IN SURVEY REACH

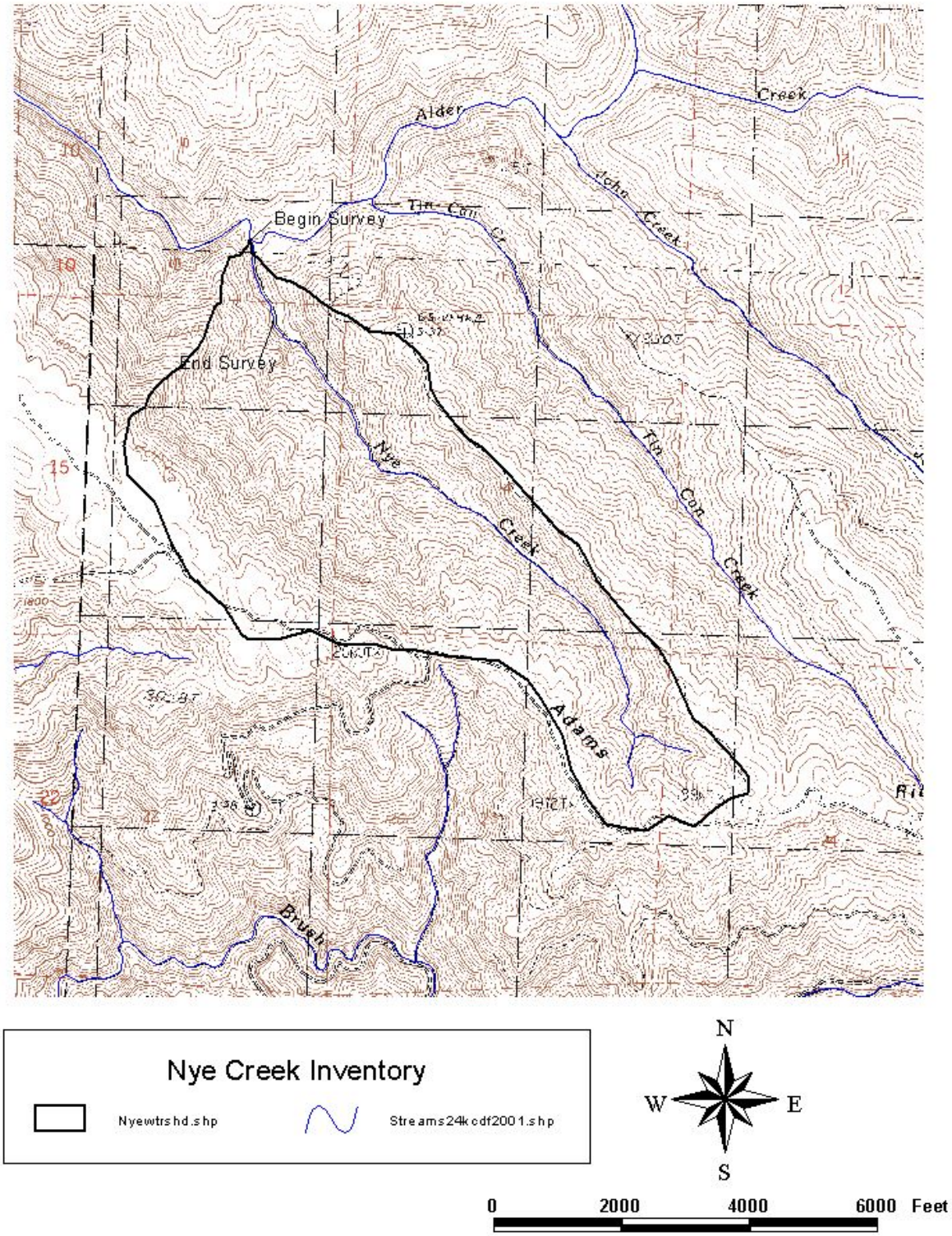



GRAPH 10

# NYE CREEK
## DOMINANT BANK VEGETATION IN SURVEY REACH




GRAPH 11




MAP 1. Map of Nye Creek showing the stream habitat inventory reach and watershed boundary.

REFERENCES

Flosi, G., Downie, S., Hopelain, J., Bird, M., Coey, R., and Collins, B. 1998. *California Salmonid Stream Habitat Restoration Manual*, 3rd edition. California Department of Fish and Game, Sacramento, California.