

STREAM INVENTORY REPORT
Jacoby Creek Unnamed Tributary
LLID #1240295408198

INTRODUCTION

A stream inventory was conducted July 30 to August 4, 2008 on an unnamed tributary to Jacoby Creek. The survey began at the confluence with Jacoby Creek and extended upstream 0.5 miles.

The inventory was conducted in two parts: habitat inventory and biological inventory. The objective of the habitat inventory was to document the habitat available to anadromous salmonids in the unnamed tributary. The objective of the biological inventory was to document the presence and distribution of juvenile salmonid species.

The objective of this report is to document the current habitat conditions and recommend options for the potential enhancement of habitat for Chinook salmon, coho salmon, and steelhead trout. Recommendations for habitat improvement activities are based upon target habitat values suitable for salmonids in California's north coast streams.

WATERSHED OVERVIEW

The unnamed tributary is a tributary to Jacoby Creek, a tributary to Arcata Bay, located in Humboldt County, California (Map 1). Unnamed tributaries legal description at the confluence with Jacoby Creek is T05N R01E S14. Its location is 40.819722° north latitude and 124.029444° west longitude, LLID number 1240295408198. Unnamed tributary is a first order stream and has approximately 0.53 miles of blue line stream according to the USGS Arcata South 7.5 minute quadrangle. Unnamed tributary drains a watershed of approximately 0.7 square miles. Elevations range from about 112 feet at the mouth of the creek to 1,200 feet in the headwater areas. Mixed conifer forest dominates the watershed. The watershed is entirely privately owned and is managed for timber production. Vehicle access exists via Jacoby Creek Road.

METHODS

The habitat inventory conducted in unnamed tributary follows the methodology presented in the *California Salmonid Stream Habitat Restoration Manual* (Flosi et al, 1998). The California Conservation Corps (CCC) Technical Advisors and Watershed Stewards Project/AmeriCorps (WSP) 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

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their lengths are measured. All pool units are measured for maximum depth, depth of pool tail crest (measured in the thalweg), dominant substrate composing the pool tail crest, and embeddedness. Habitat unit types encountered for the first time are measured for all the parameters and characteristics on the field form. Additionally, from the ten habitat units on each field form page, one is randomly selected for complete measurement.

HABITAT INVENTORY COMPONENTS

A standardized habitat inventory form has been developed for use in California stream surveys and can be found in the *California Salmonid Stream Habitat Restoration Manual*. This form was used in unnamed tributary to record measurements and observations. There are eleven components to the inventory form.

1. Flow:

Flow is measured in cubic feet per second (cfs) near 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 (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 (1990). 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 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.

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5. Embeddedness:

The depth of embeddedness of the cobbles in pool tail-out areas is measured by the percent of the cobble that is surrounded or buried by fine sediment. In unnamed tributary, 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 like bedrock, log sills, boulders or other considerations.

6. Shelter Rating:

Instream shelter is composed of those elements within a stream channel that provide juvenile 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 for prey. The shelter rating is calculated for each fully-described habitat unit by multiplying shelter value and percent cover. Using an overhead view, a quantitative estimate of the percentage of the habitat unit covered is made. All cover is then classified according to a list of nine cover types. In unnamed tributary, a standard qualitative shelter value of 0 (none), 1 (low), 2 (medium), or 3 (high) was assigned according to the complexity of the cover. Thus, shelter ratings can range from 0-300 and are expressed as mean values by habitat types within a stream.

7. Substrate Composition:

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

8. Canopy:

Stream canopy density was estimated using modified handheld spherical densimeters 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, an estimate of the percentage of the habitat unit covered by canopy was made from the center of approximately every third unit in addition to every fully-described unit, giving an approximate 30% sub-sample. In addition, the area of canopy was estimated ocularly into percentages of coniferous or hardwood 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, 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.

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10. Large Woody Debris Count:

Large woody debris (LWD) is an important component of fish habitat and an element in channel forming processes. In each habitat unit all pieces of LWD partially or entirely below the elevation of bankfull discharge are counted and recorded. The minimum size to be considered is twelve inches in diameter and six feet in length. The LWD count is presented by reach and is expressed as an average per 100 feet.

11. Average Bankfull Width:

Bankfull width can vary greatly in the course of a channel type stream reach. This is especially true in very long reaches. Bankfull width can be a factor in habitat components like canopy density, water temperature, and pool depths. Frequent measurements taken at riffle crests (velocity crossovers) are needed to accurately describe reach widths. At the first appropriate velocity crossover that occurs after the beginning of a new stream survey page (ten habitat units), bankfull width is measured and recorded in the appropriate header block of the page. These widths are presented as an average for the channel type reach.

BIOLOGICAL INVENTORY

Biological sampling during the stream inventory is used to determine fish species and their distribution in the stream. Fish presence was observed from the stream banks in unnamed tributary. In addition, 5 sites were electrofished using a Smith-Root Model 12 electrofisher. These sampling techniques are discussed in the *California Salmonid Stream Habitat Restoration Manual*.

DATA ANALYSIS

Data from the habitat inventory form are entered into Stream Habitat 2.0.19, a Visual Basic data entry program developed by Karen Wilson, Pacific States Marine Fisheries Commission in conjunction with the California Department of Fish and Game. This program processes and summarizes the data, and produces the following ten tables:

- Riffle, Flatwater, and Pool Habitat Types
- Habitat Types and Measured Parameters
- Pool Types
- Maximum Residual Pool Depths by Habitat Types
- Mean Percent Cover by Habitat Type
- Dominant Substrates by Habitat Type
- Mean Percent Vegetative Cover for Entire Stream
- Fish Habitat Inventory Data Summary by Stream Reach (Table 8)
- Mean Percent Dominant Substrate / Dominant Vegetation Type for Entire Stream

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- Mean Percent Shelter Cover Types for Entire Stream

Graphics are produced from the tables using Microsoft Excel. Graphics developed for unnamed tributary include:

- Riffle, Flatwater, Pool Habitat Types by Percent Occurrence
- Riffle, Flatwater, Pool Habitat Types by Total Length
- Total Habitat Types by Percent Occurrence
- Pool Types by Percent Occurrence
- Maximum Residual Depth in Pools
- Percent Embeddedness
- Mean Percent Cover Types in Pools
- Substrate Composition in Pool Tail-outs
- Mean Percent Canopy
- Dominant Bank Composition by Composition Type
- Dominant Bank Vegetation by Vegetation Type

HABITAT INVENTORY RESULTS

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

The habitat inventory of July 30 to August 4, 2008, was conducted by J. Braren, B. Quaglieri, and C. Chavez (WSP). The total length of the stream surveyed was 2,499 feet.

Stream flow was not measured on unnamed tributary.

Unnamed tributary is a G4 channel type for the entire 2,499 feet of the stream surveyed (Reach 1). G4 channels are entrenched “gully” step-pool channels on moderate gradients with low width/depth ratios, very stable with gravel-dominant substrates.

Water temperatures taken during the survey period ranged from 50 to 56 degrees Fahrenheit. Air temperatures ranged from 54 to 58 degrees Fahrenheit.

Table 1 summarizes the Level II riffle, flatwater, and pool habitat types. Based on frequency of occurrence there were 38% flatwater units, 32% riffle units, 25% pool units, 4% dry units, and 1% culvert units (Graph 1). Based on total length of Level II habitat types there were 45% flatwater units, 34% riffle units, 14% pool units, 5% culvert units, and 2% dry units (Graph 2).

Ten Level IV habitat types were identified (Table 2). The most frequent habitat types by percent occurrence were 27% low gradient riffle units, 22% run units, and 16% step run units (Graph 3). Based on percent total length, low gradient riffle units made up 27%, step run units 26%, and run units 19%.

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A total of 19 pools were identified (Table 3). Main channel pools were the most frequently encountered at 53% (Graph 4), and comprised 59% of the total length of all pools (Table 3).

Table 4 is a summary of maximum residual pool depths by pool habitat types. Pool quality for salmonids increases with depth. Two of the 19 pools (11%) had a residual depth of two feet or greater (Graph 5).

The depth of cobble embeddedness was estimated at pool tail-outs. Of the 19 pool tail-outs measured, 16 had a value of 1 (84%); and 3 had a value of 2 (16%) (Graph 6). On this scale, a value of 1 indicates the best spawning conditions and a value of 4 the worst. Additionally, a value of 5 was assigned to tail-outs deemed unsuited for spawning due to inappropriate substrate such as bedrock, log sills, boulders, or other considerations.

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 43, flatwater habitat types had a mean shelter rating of 8, and pool habitats had a mean shelter rating of 22 (Table 1). Of the pool types, the main channel pools had the highest mean shelter rating at 24 and scour pools had a mean shelter rating of 21 (Table 3).

Table 5 summarizes mean percent cover by habitat type. Large woody debris is the dominant cover type in unnamed tributary. Graph 7 describes the pool cover in unnamed tributary. Large woody debris is the dominant pool cover type followed by boulders.

Table 6 summarizes the dominant substrate by habitat type. Graph 8 depicts the dominant substrate observed in pool tail-outs. Small cobble was the dominant substrate observed in 53% of pool tail-outs. Gravel was the next most frequently observed dominant substrate and occurred in 42% of pool tail-outs.

The mean percent canopy density for the surveyed length of unnamed tributary was 93%. Seven percent of the canopy was open. Of the canopy present, the mean percentages of hardwood and coniferous trees were 32% and 68%, respectively. Graph 9 describes the mean percent canopy in unnamed tributary.

For the stream reach surveyed, the mean percent right bank vegetated was 98%. The mean percent left bank vegetated was 97%. The dominant elements composing the structure of the stream banks consisted of 67% cobble/gravel, 15% sand/silt/clay, 10% bedrock, and 8% boulder (Graph 10). Coniferous trees were the dominant vegetation type observed in 67% of the units surveyed. Additionally, 25% of the units surveyed had deciduous trees as the dominant vegetation type, 4% had grass as the dominant vegetation type, and 4% had brush as the dominant vegetation type (Graph 11).

BIOLOGICAL INVENTORY RESULTS

Five sites were electrofished for species composition and distribution in unnamed tributary on August 6, 2008. Water temperatures taken during the electrofishing period of 1325 to 1507 were

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54 degrees Fahrenheit. Air temperatures ranged from 58 to 63 degrees Fahrenheit. The sites were sampled by J. Braren, B. Quaglieri (WSP), I. Mikus and A. Renger (DFG).

The survey comprised the entire 2,499 feet of stream. Five sites were sampled. The survey yielded 3 young-of-the-year steelhead/rainbow trout (SH/RT), 7 age 1+ SH/RT and 6 coho.

The following chart displays the information yielded from these sites:

2008 1240295408198 electrofishing observations.

Date	Site #	Habitat Unit #	Habitat Type	Approx. Dist. from mouth (ft.)	Coho		SH/RT		
					YOY	1+	YOY	1+	2+
Reach 1 G4 Channel Type									
08/06/08	1	003	4.1	95	4	0	0	1	0
08/06/08	2	006	5.1	382	2	0	1	1	0
08/06/08	3	036	5.2	1289	0	0	1	3	0
08/06/08	4	040	5.6	1424	0	0	1	1	0
08/06/08	5	017	5.2	743	0	0	0	1	0

DISCUSSION

Unnamed tributary is a G4 channel type for the entire 2,499 feet of the stream surveyed (Reach 1). The suitability of G4 channel types for fish habitat improvement structures is as follows: G4 channel types are good for bank-placed boulders and fair for plunge weirs, opposing wing-deflectors, and log cover.

The water temperatures recorded on the survey days July 30, 2008 to August 4, 2008, ranged from 50 to 56 degrees Fahrenheit. Air temperatures ranged from 54 to 58 degrees Fahrenheit. To make any 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 45% of the total length of this survey, riffles 34%, and pools 14%. Two of the 19 (11%) pools measured had a maximum residual 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 residual 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.

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Nineteen of the 19 pool tail-outs measured had embeddedness ratings of 1 or 2. None of the pool tail-outs had embeddedness ratings of 3 or 4. None 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.

Eighteen of the 19 pool tail-outs measured had gravel or small cobble as the dominant substrate. This is generally considered good for spawning salmonids.

The mean shelter rating for pools was 22. The shelter rating in the flatwater habitats was 8. A pool shelter rating of approximately 100 is desirable. The amount of cover that now exists is being provided primarily by large woody debris in unnamed tributary. Large woody debris is the dominant cover type in pools followed by boulders. 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 93%. In general, revegetation projects are considered when canopy density is less than 80%. The percentage of right and left bank covered with vegetation was 98% and 97%, respectively.

RECOMMENDATIONS

- 1) Unnamed tributary 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 in the pools is from large woody debris. Adding high quality complexity with woody cover in the pools is desirable.

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.

Position Habitat Comments:
(ft): Unit #

95	0004.00	Culvert #1 is made of metal and measures 131' long x 8.3' high x 7.5' wide. At the outlet there is a 1.3' plunge, max depth within 5' of the outlet is 1.5'. The slope of the culvert is approximately 1%. The culvert is in good condition although it has a small amount of rust. A fish passage assessment should be conducted on this culvert.
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- 761 0019.00 Young of the year salmonids were observed from the bank.
- 1408 0040.00 There is a 2.3' plunge in this unit.
- 1448 0042.00 Tributary 001 enters from the right bank. It's not flowing. For the 260' explored it appears that with water present it would be accessible to fish.
- 1448 0042.00 There was a juvenile salmonid observed in this unit.
- 2159 0067.00 There is a 2' plunge in this unit.
- 2491 0077.00 This unit has a 7.5' plunge and is a possible end of anadromy. The pool beneath the plunge is shallow.

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.

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LEVEL III and LEVEL IV HABITAT TYPES

RIFFLE

Low Gradient Riffle	(LGR)	[1.1]	{ 1 }
High Gradient Riffle	(HGR)	[1.2]	{ 2 }

CASCADE

Cascade	(CAS)	[2.1]	{ 3 }
Bedrock Sheet	(BRS)	[2.2]	{24}

FLATWATER

Pocket Water	(POW)	[3.1]	{21}
Glide	(GLD)	[3.2]	{14}
Run	(RUN)	[3.3]	{15}
Step Run	(SRN)	[3.4]	{16}
Edgewater	(EDW)	[3.5]	{18}

MAIN CHANNEL POOLS

Trench Pool	(TRP)	[4.1]	{ 8 }
Mid-Channel Pool	(MCP)	[4.2]	{17}
Channel Confluence Pool	(CCP)	[4.3]	{19}
Step Pool	(STP)	[4.4]	{23}

SCOUR POOLS

Corner Pool	(CRP)	[5.1]	{22}
Lateral Scour Pool - Log Enhanced	(LSL)	[5.2]	{10}
Lateral Scour Pool - Root Wad Enhanced	(LSR)	[5.3]	{11}
Lateral Scour Pool - Bedrock Formed	(LSBk)	[5.4]	{12}
Lateral Scour Pool - Boulder Formed	(LSBo)	[5.5]	{20}
Plunge Pool	(PLP)	[5.6]	{ 9 }

BACKWATER POOLS

Secondary Channel Pool	(SCP)	[6.1]	{ 4 }
Backwater Pool - Boulder Formed	(BPB)	[6.2]	{ 5 }
Backwater Pool - Root Wad Formed	(BPR)	[6.3]	{ 6 }
Backwater Pool - Log Formed	(BPL)	[6.4]	{ 7 }
Dammed Pool	(DPL)	[6.5]	{13}

ADDITIONAL UNIT DESIGNATIONS

Dry	(DRY)	[7.0]	
Culvert	(CUL)	[8.0]	
Not Surveyed	(NS)	[9.0]	
Not Surveyed due to a marsh	(MAR)	[9.1]	

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

Stream Name: 1240295408198

LLID: 1240295408198

Drainage: Eureka Plain

Survey Dates: 7/30/2008 to 8/4/2008

Confluence Location: Quad: ARCATA SOUTH

Legal Description: T05NR01ES14

Latitude: 40:49:11.0N

Longitude: 124:01:46.0

Habitat Units	Units Fully Measured	Habitat Type	Habitat Occurrence (%)	Mean Length (ft.)	Total Length (ft.)	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	CULVERT	1.3	131	131	5.2									
3	0	DRY	3.9	14	43	1.7									
29	2	FLATWATER	37.7	39	1132	45.3	4.0	0.4	1.1	233	6769	74	2135		8
19	19	POOL	24.7	18	340	13.6	7.2	0.5	1.4	121	2301	93	1768	71	22
25	3	RIFFLE	32.5	34	853	34.1	2.7	0.2	1.3	64	1606	13	323		43
Total Units	Total Units Fully Measured				Total Length (ft.)					Total Area (sq.ft.)			Total Volume (cu.ft.)		
77	24				2499					10676			4227		

Table 2 - Summary of Habitat Types and Measured Parameters

Stream Name: 1240295408198

LLID: 1240295408198

Drainage: Eureka Plain

Survey Dates: 7/30/2008 to 8/4/2008

Confluence Location: Quad: ARCATA SOUTH

Legal Description: T05NR01ES14

Latitude: 40:49:11.0N

Longitude: 124:01:46.0W

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 (%)
21	2	LGR	27.3	33	687	27.5	4	0.2	0.5	95	1997	19	399		5	94
4	1	HGR	5.2	42	166	6.6	0	0.3	3	3	10	1	3		120	95
17	1	RUN	22.1	28	471	18.8	4	0.4	1.1	72	1224	29	490		5	93
12	1	SRN	15.6	55	661	26.5	4	0.3	1	395	4738	118	1421		10	90
1	1	TRP	1.3	24	24	1.0	8	0.6	1.4	182	182	128	128	109	5	82
7	7	MCP	9.1	16	111	4.4	7	0.6	3.3	105	736	85	593	67	23	94
2	2	STP	2.6	33	66	2.6	8	0.5	1.9	221	443	156	311	111	35	92
7	7	LSL	9.1	17	122	4.9	6	0.5	1.1	104	727	77	541	58	22	94
2	2	PLP	2.6	8	17	0.7	12	0.6	1.7	107	213	98	195	76	15	90
3	0	DRY	3.9	14	43	1.7										
1	0	CUL	1.3	131	131	5.2										

Total Units
77

Total Units Fully Measured
24

Total Length (ft.)
2499

Total Area (sq.ft.)
10269

Total Volume (cu.ft.)
4082

Table 3 - Summary of Pool Types

Stream Name: 1240295408198

LLID: 1240295408198

Drainage: Eureka Plain

Survey Dates: 7/30/2008 to 8/4/2008

Confluence Location: Quad: ARCATA SOUTH

Legal Description: T05NR01ES14

Latitude: 40:49:11.0N

Longitude: 124:01:46.0W

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
10	10	MAIN	53	20	201	59	7.2	0.6	136	1361	80	800	24
9	9	SCOUR	47	15	139	41	7.2	0.5	104	940	62	557	21

Total Units	Total Units Fully Measured	Total Length (ft.)	Total Area (sq.ft.)	Total Volume (cu.ft.)
19	19	340	2301	1356

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

Stream Name: 1240295408198

LLID: 1240295408198

Drainage: Eureka Plain

Survey Dates: 7/30/2008 to 8/4/2008

Confluence Location: Quad: ARCATA SOUTH

Legal Description: T05NR01ES14

Latitude: 40:49:11.0N

Longitude: 124:01:46.0W

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
1	TRP	5	0	0	1	100	0	0	0	0	0	0
7	MCP	37	0	0	5	71	1	14	1	14	0	0
2	STP	11	0	0	2	100	0	0	0	0	0	0
7	LSL	37	2	29	5	71	0	0	0	0	0	0
2	PLP	11	1	50	1	50	0	0	0	0	0	0

Total Units	Total < 1 Foot Max Resid. Depth	Total < 1 Foot % Occurrence	Total 1< 2 Foot Max Resid. Depth	Total 1< 2 Foot % Occurrence	Total 2< 3 Foot Max Resid. Depth	Total 2< 3 Foot % Occurrence	Total 3< 4 Foot Max Resid. Depth	Total 3< 4 Foot % Occurrence	Total >= 4 Foot Max Resid. Depth	Total >= 4 Foot % Occurrence
19	3	16	14	74	1	5	1	5	0	0

Mean Maximum Residual Pool Depth (ft.): 1.4

Table 5 - Summary of Mean Percent Cover By Habitat Type

Stream Name: 1240295408198

LLID: 1240295408198

Drainage: Eureka Plain

Survey Dates: 7/30/2008 to 8/4/2008

Dry Units: 3

Confluence Location: Quad: ARCATA SOUTH

Legal Description: T05NR01ES14

Latitude: 40:49:11.0N

Longitude: 124:01:46.0W

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
21	2	LGR	0	38	0	0	20	0	0	43	0
4	1	HGR	0	40	50	0	0	0	0	10	0
25	3	TOTAL RIFFLE	0	38	17	0	13	0	0	32	0
17	1	RUN	0	25	0	0	25	0	0	50	0
12	1	SRN	0	20	30	0	40	0	0	10	0
29	2	TOTAL FLAT	0	23	15	0	33	0	0	30	0
1	1	TRP	0	10	0	0	10	0	0	80	0
7	7	MCP	0	26	32	0	1	0	0	29	11
2	2	STP	0	20	20	25	0	0	0	25	10
7	7	LSL	4	6	80	4	3	0	0	4	0
2	2	PLP	0	28	50	0	0	0	10	13	0
19	19	TOTAL POOL	1	18	49	4	2	0	1	20	5
1	0	CUL									
77	24	TOTAL	1	21	42	3	6	0	1	22	4

Table 6 - Summary of Dominant Substrates By Habitat Type

Stream Name: 1240295408198

LLID: 1240295408198

Drainage: Eureka Plain

Survey Dates: 7/30/2008 to 8/4/2008

Dry Units: 3

Confluence Location: Quad: ARCATA SOUTH

Legal Description: T05NR01ES14

Latitude: 40:49:11.0N

Longitude: 124:01:46.0W

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
21	2	LGR	0	0	50	0	50	0	0
4	1	HGR	0	0	0	100	0	0	0
17	1	RUN	0	0	100	0	0	0	0
12	1	SRN	0	0	100	0	0	0	0
1	1	TRP	0	0	0	0	0	100	0
7	7	MCP	0	43	29	0	29	0	0
2	2	STP	0	50	0	50	0	0	0
7	6	LSL	0	0	100	0	0	0	0
2	2	PLP	0	0	50	0	50	0	0

Table 7 - Summary of Mean Percent Canopy for Entire Stream

Stream Name: 1240295408198

LLID: 1240295408198

Drainage: Eureka Plain

Survey Dates: 7/30/2008 to 8/4/2008

Confluence Location: Quad: ARCATA SOUTH

Legal Description: T05NR01ES14

Latitude: 40:49:11.0N

Longitude: 124:01:46.0W

Mean Percent Canopy	Mean Percent Conifer	Mean Percent Hardwood	Mean Percent Open Units	Mean Right Bank % Cover	Mean Left Bank % Cover
93	68	32	0	98	97

Note: Mean percent conifer and hardwood 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 9 - Mean Percentage of Dominant Substrate and Vegetation

Stream Name: 1240295408198

LLID: 1240295408198

Drainage: Eureka Plain

Survey Dates: 7/30/2008 to 8/4/2008

Confluence Location: Quad: ARCATA SOUTH

Legal Description: T05NR01ES14

Latitude: 40:49:11.0N

Longitude: 124:01:46.0W

Mean Percentage of Dominant Stream Bank Substrate

Dominant Class of Substrate	Number of Units Right Bank	Number of Units Left Bank	Total Mean Percent (%)
Bedrock	1	4	10.4
Boulder	3	1	8.3
Cobble / Gravel	15	17	66.7
Sand / Silt / Clay	5	2	14.6

Mean Percentage of Dominant Stream Bank Vegetation

Dominant Class of Vegetation	Number of Units Right Bank	Number of Units Left Bank	Total Mean Percent (%)
Grass	1	1	4.2
Brush	1	1	4.2
Hardwood Trees	10	2	25.0
Coniferous Trees	12	20	66.7
No Vegetation	0	0	0.0

Total Stream Cobble Embeddedness Values: 1

Table 10 - Mean Percent of Shelter Cover Types For Entire Stream

StreamName: 1240295408198

LLID: 1240295408198

Drainage: Eureka Plain

Survey Dates: 7/30/2008 to 8/4/2008

Confluence Location: Quad: ARCATA SOUTH

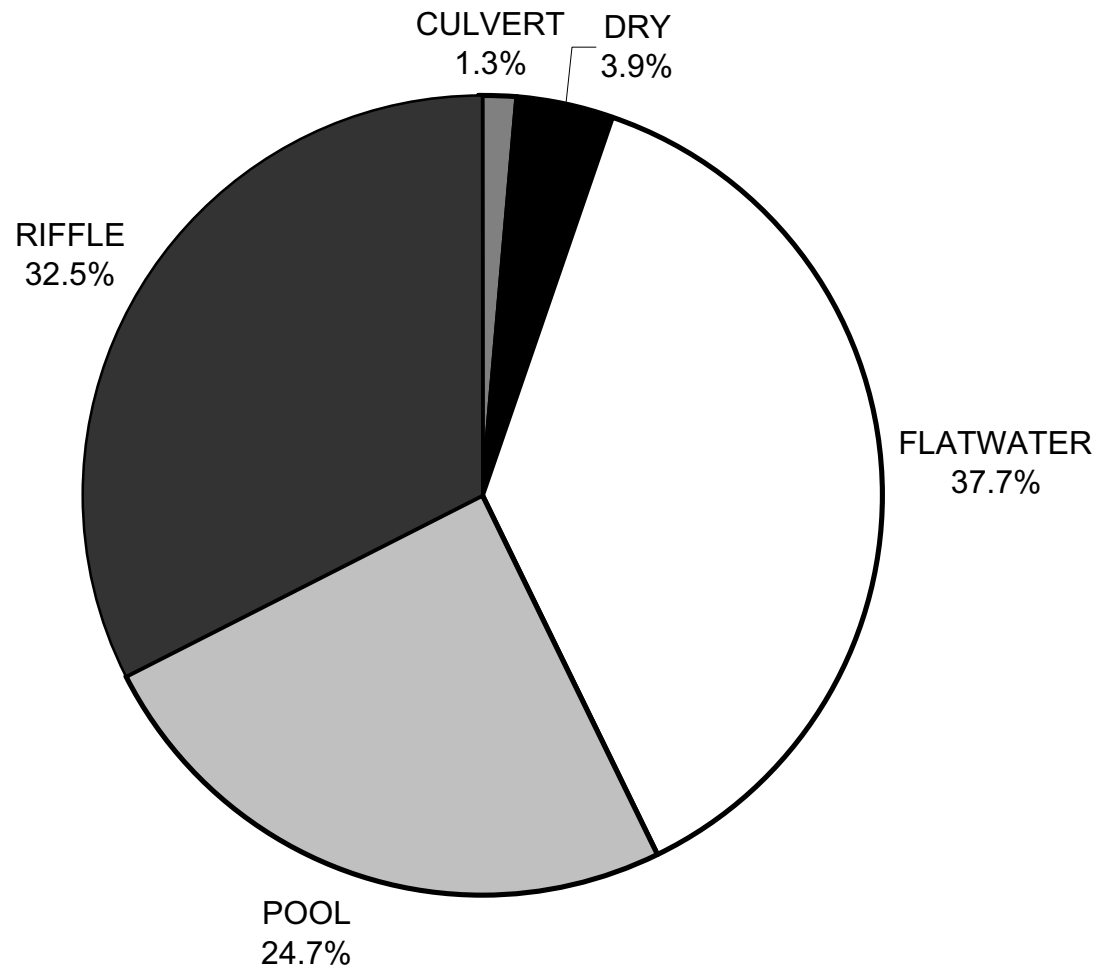
Legal Description: T05NR01ES14

Latitude: 40:49:11.0N

Longitude: 124:01:46.0W

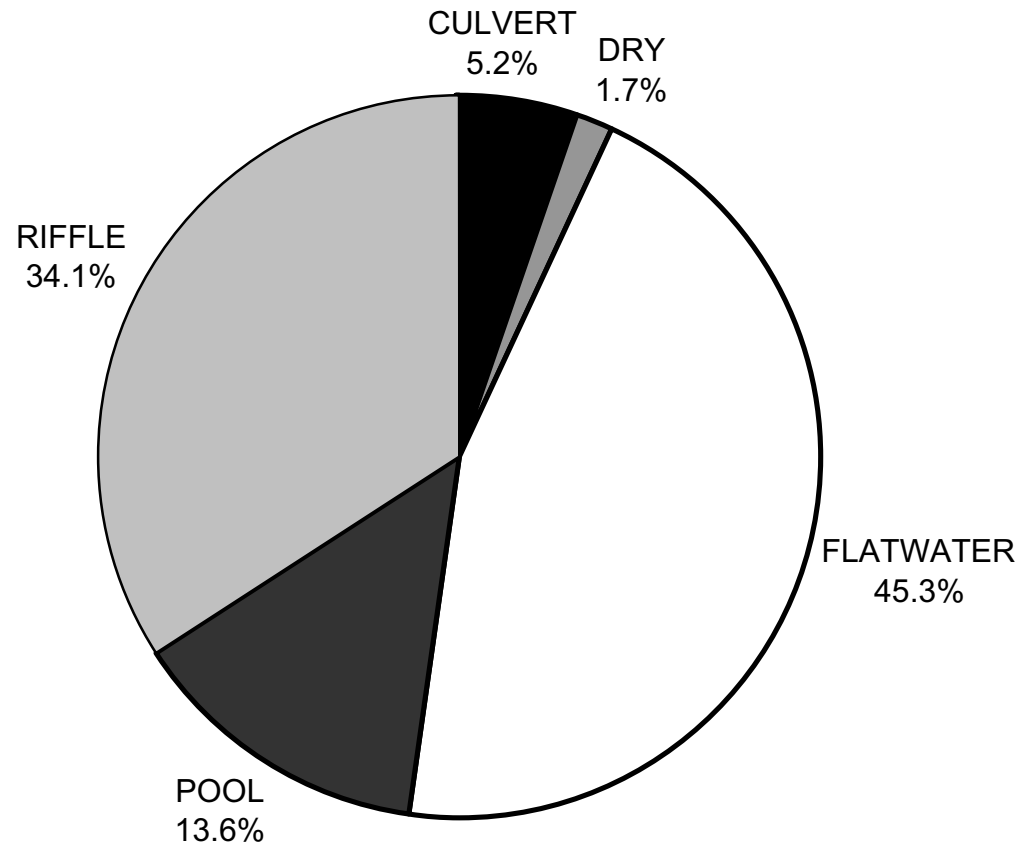
	Riffles	Flatwater	Pools
UNDERCUT BANKS (%)	0	0	1
SMALL WOODY DEBRIS (%)	38	23	18
LARGE WOODY DEBRIS (%)	17	15	49
ROOT MASS (%)	0	0	4
TERRESTRIAL VEGETATION (%)	13	33	2
AQUATIC VEGETATION (%)	0	0	0
WHITEWATER (%)	0	0	1
BOULDERS (%)	32	30	20
BEDROCK LEDGES (%)	0	0	5

1240295408198 2008
HABITAT TYPES BY PERCENT OCCURRENCE



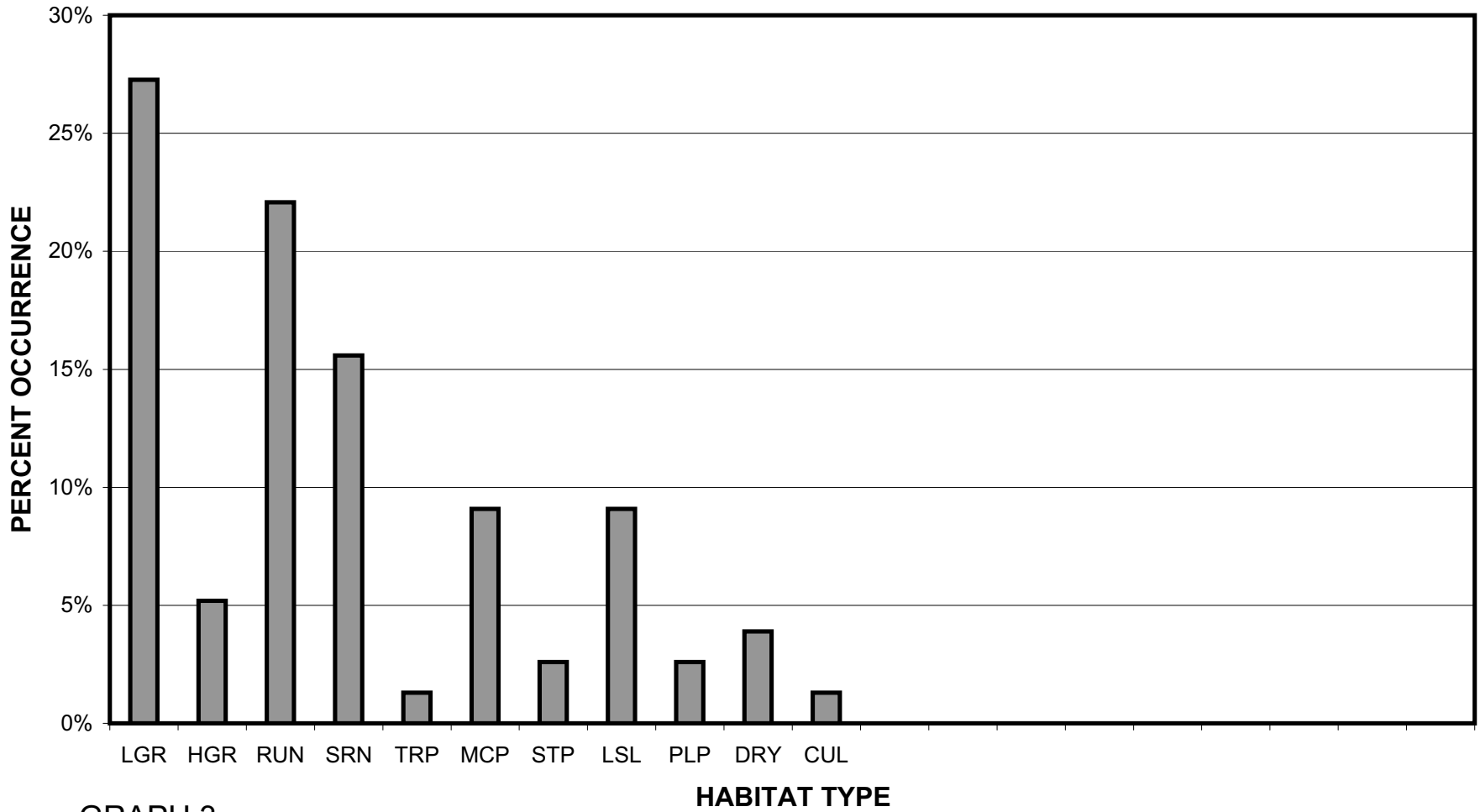
GRAPH 1

1240295408198 2008
HABITAT TYPES BY PERCENT TOTAL LENGTH



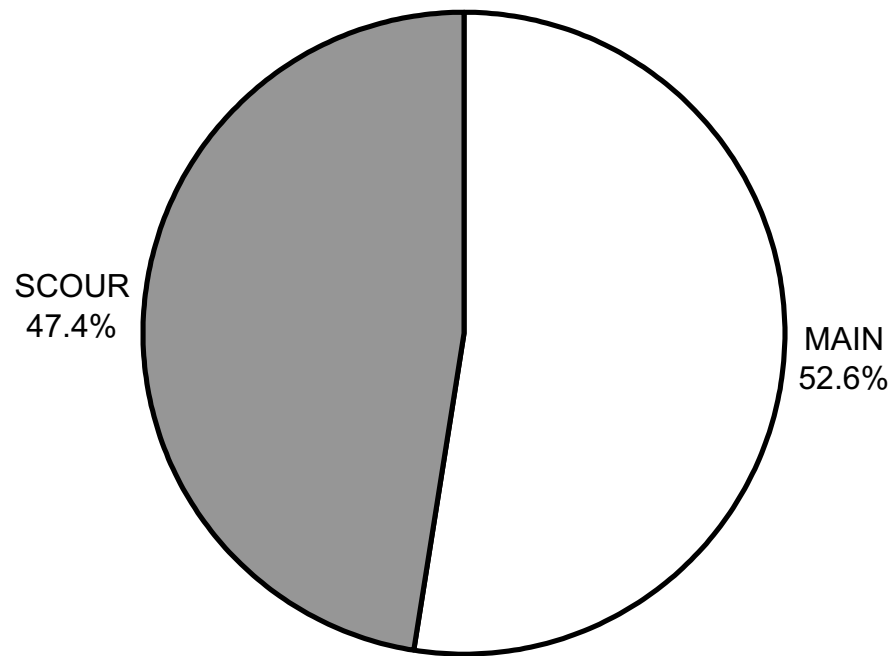
GRAPH 2

1240295408198 2008
HABITAT TYPES BY PERCENT OCCURRENCE



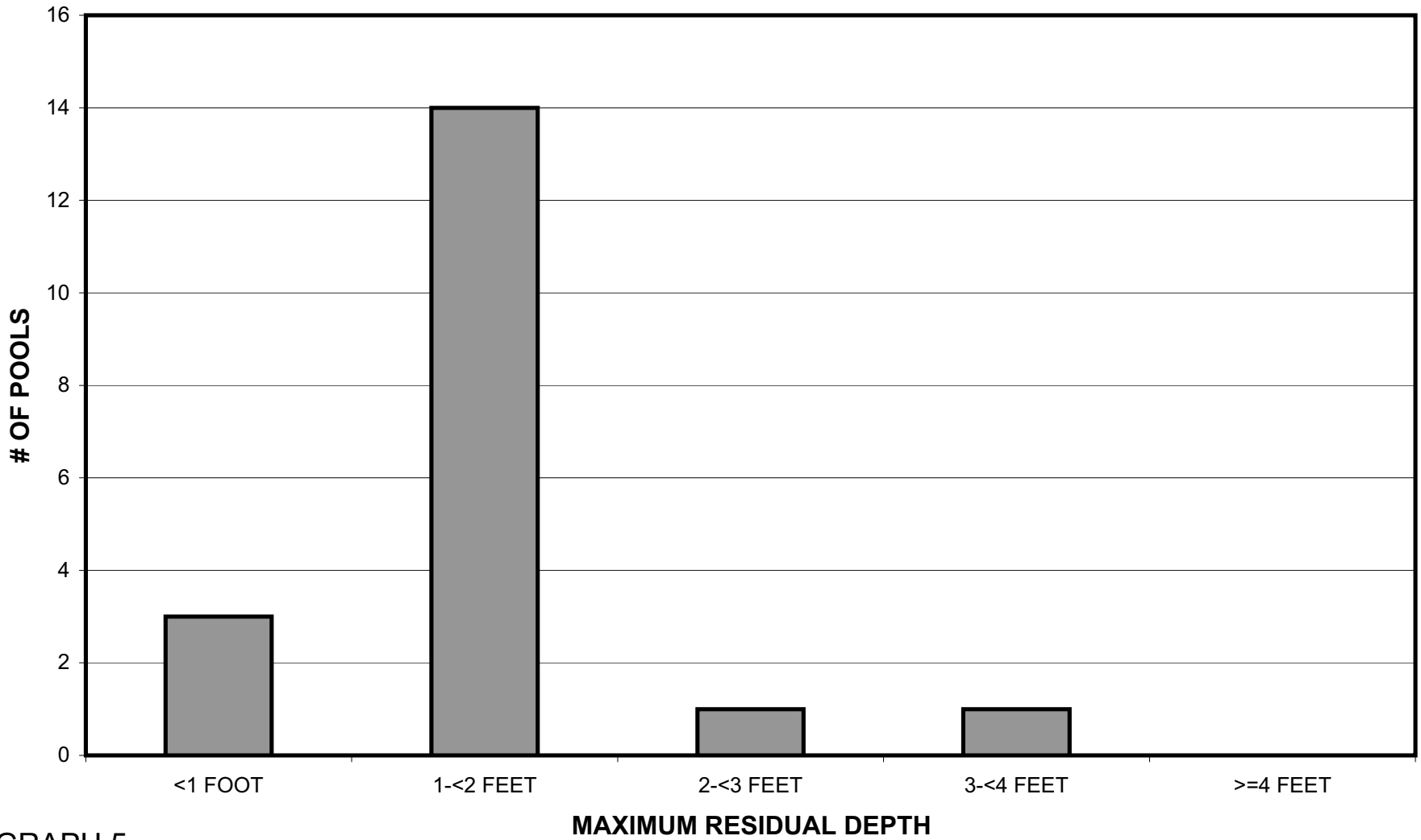
GRAPH 3

1240295408198 2008
POOL TYPES BY PERCENT OCCURRENCE



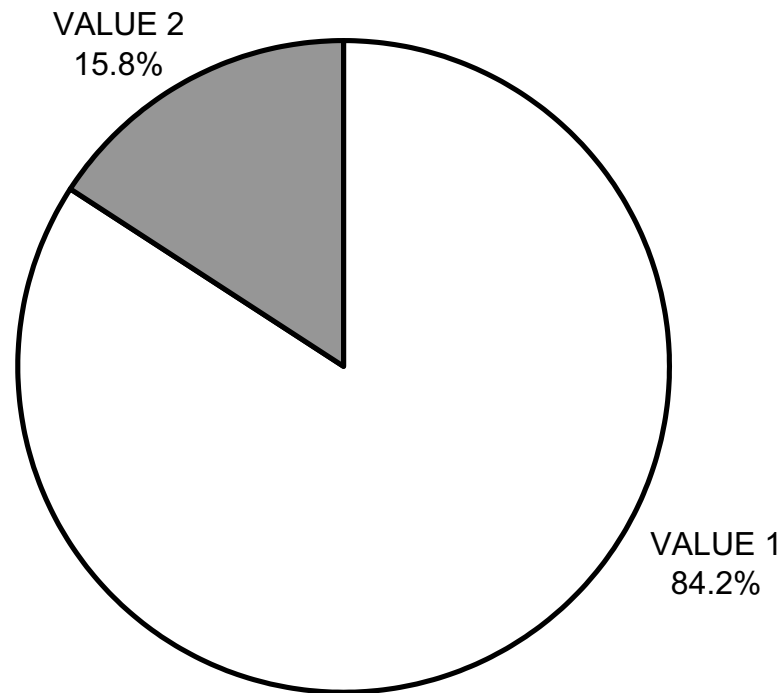
GRAPH 4

1240295408198 2008
MAXIMUM DEPTH IN POOLS



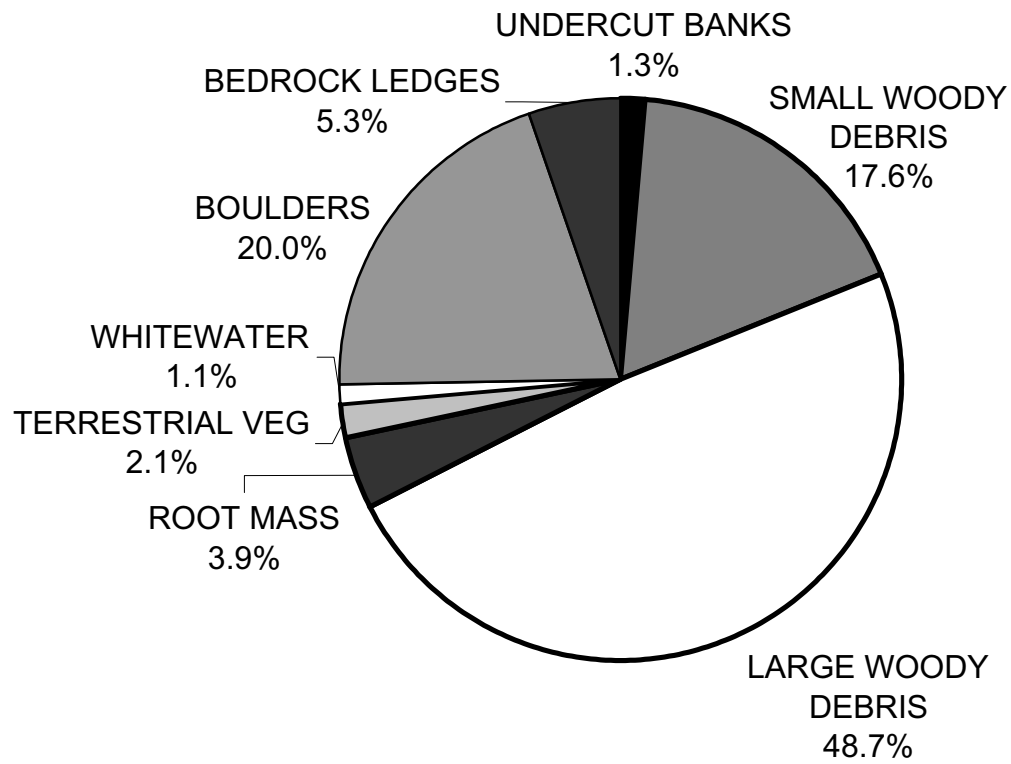
GRAPH 5

1240295408198 2008
PERCENT EMBEDDEDNESS



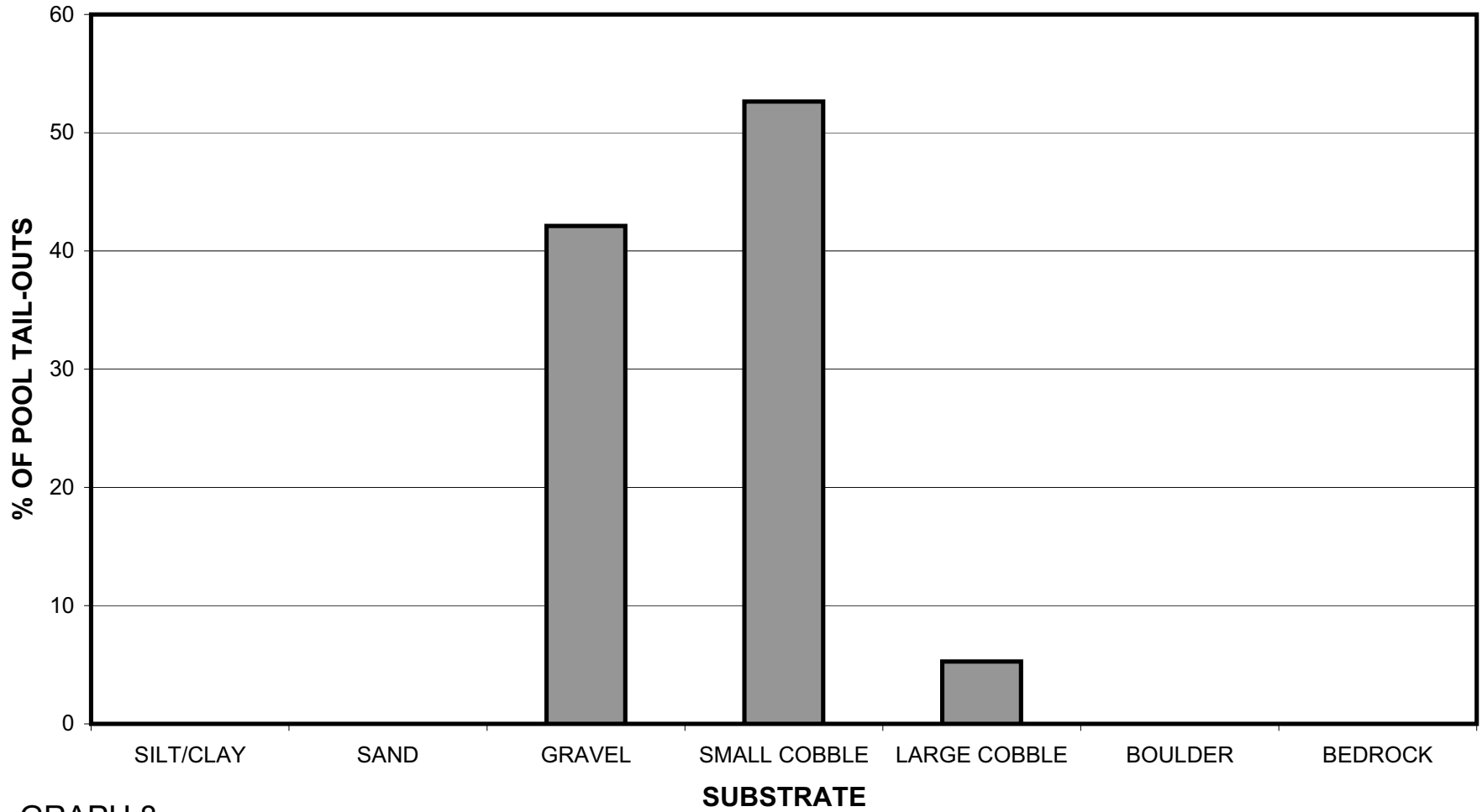
GRAPH 6

1240295408198 2008
MEAN PERCENT COVER TYPES IN POOLS



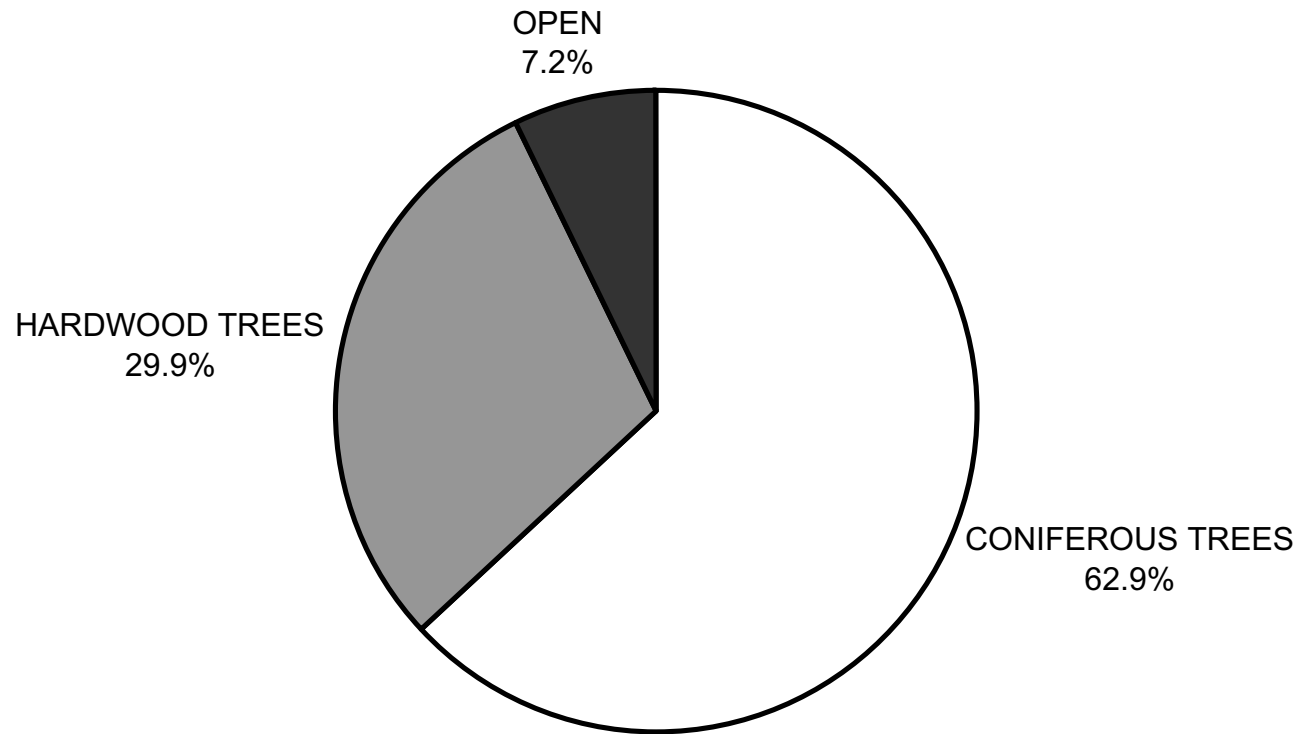
GRAPH 7

1240295408198 2008
SUBSTRATE COMPOSITION IN POOL TAIL-OUTS



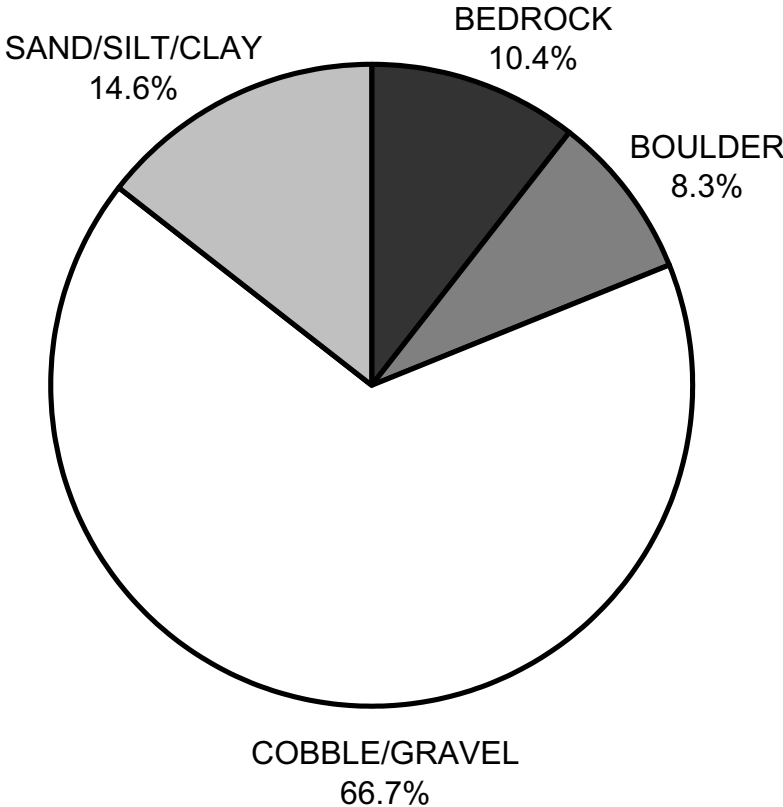
GRAPH 8

**1240295408198 2008
MEAN PERCENT CANOPY**



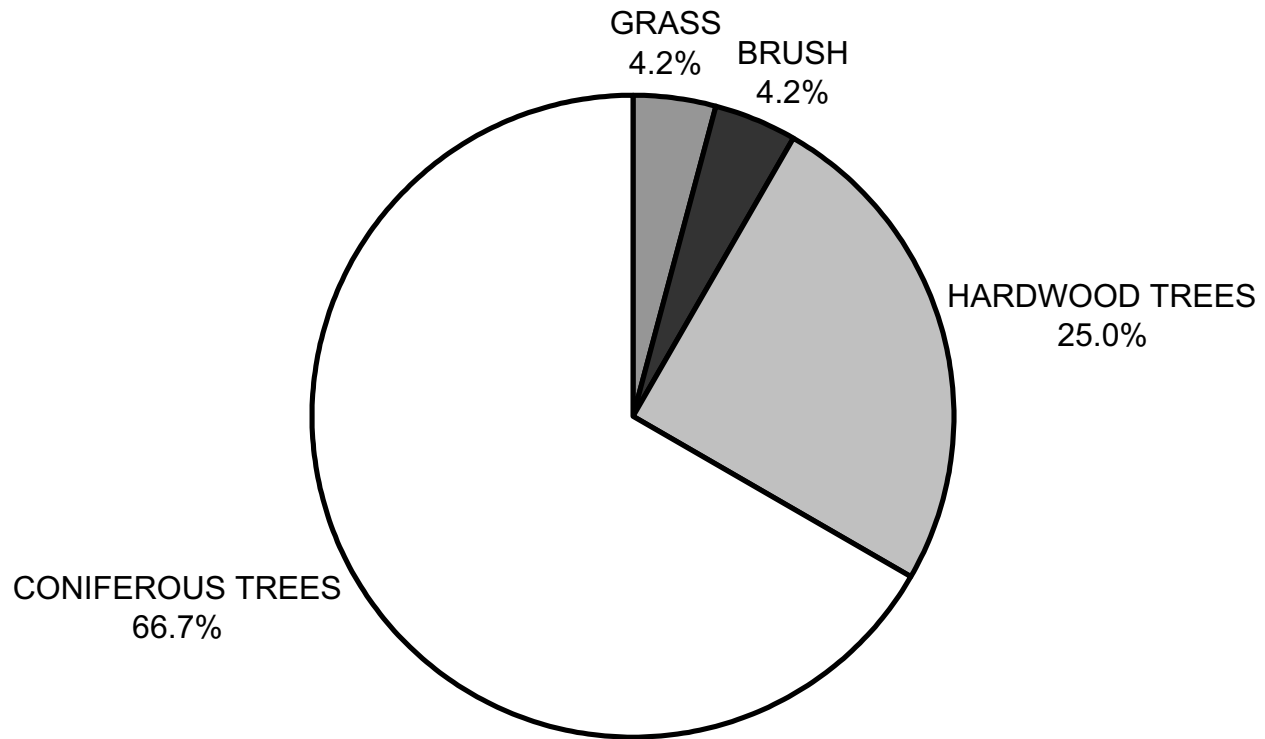
GRAPH 9

1240295408198 2008
DOMINANT BANK COMPOSITION IN SURVEY REACH



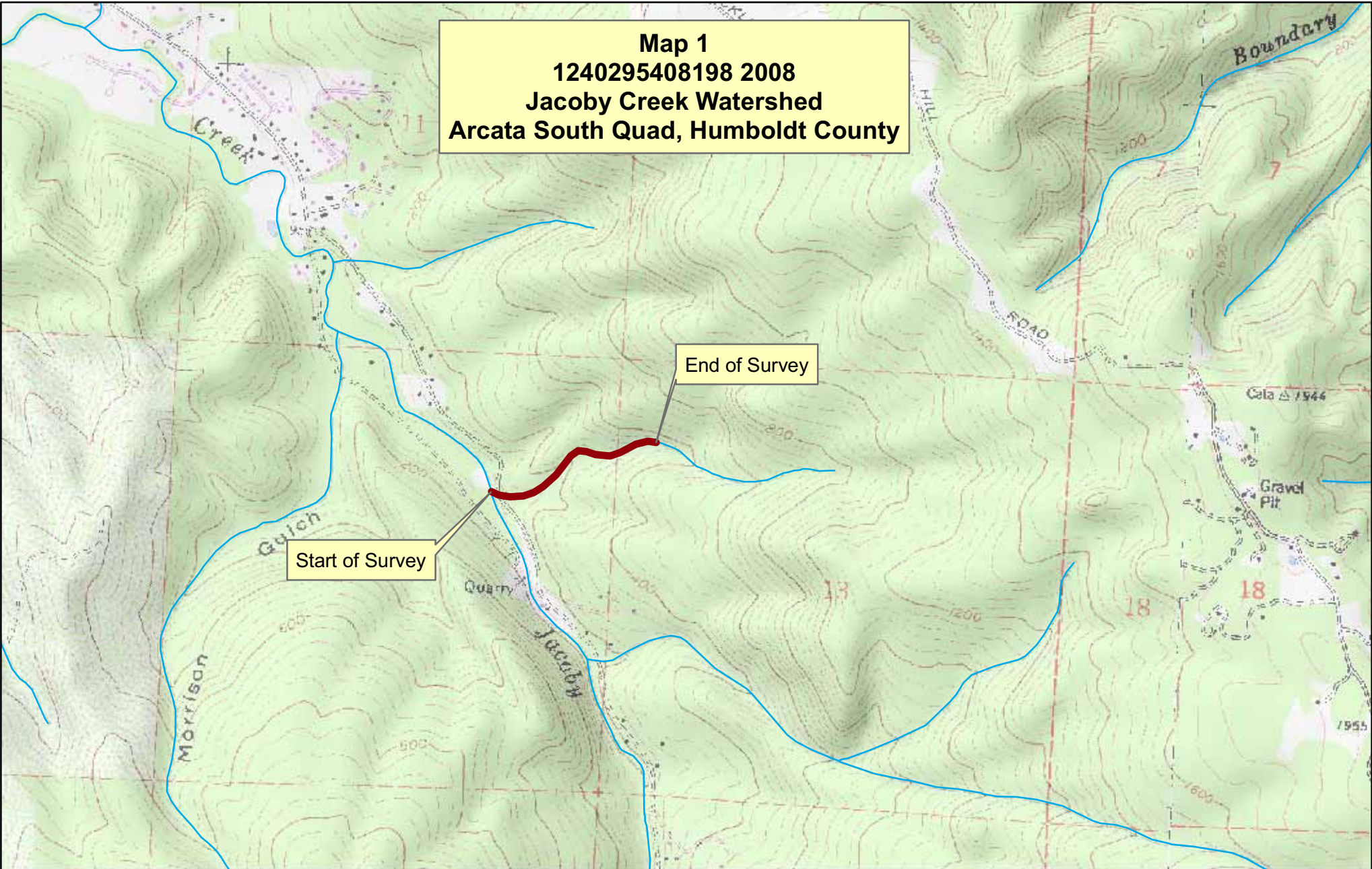
GRAPH 10

1240295408198 2008
DOMINANT BANK VEGETATION IN SURVEY REACH



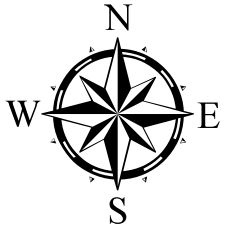
GRAPH 11

Map 1
1240295408198 2008
Jacoby Creek Watershed
Arcata South Quad, Humboldt County



Start of Survey

End of Survey



Legend

 Reach 1, G4 Channel Type

