

STREAM INVENTORY REPORT

“East Branch Abalobadiah Creek”

INTRODUCTION

A stream inventory was conducted July 22 to July 23, 2008 on an unnamed tributary to Abalobadiah Creek commonly known as, and herein after referred to as, East Branch Abalobadiah Creek. The survey began at the confluence with Abalobadiah Creek and extended upstream 0.5 miles.

The objective of the habitat inventory was to document the habitat available to anadromous salmonids in East Branch Abalobadiah Creek.

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

East Branch of Abalobadiah Creek is a tributary to Abalobadiah Creek which drains to Pacific Ocean, located in Mendocino County, California. The East Branch of Abalobadiah Creek's legal description at the confluence with Abalobadiah Creek is T20N R17W S21. Its location is 39.5786 north latitude and 123.7592 west longitude, LLID number 1237591395785. East Branch Abalobadiah Creek is a first order stream and has approximately 1.4 miles of blue line stream according to the USGS Inglebrook 7.5 minute quadrangle. East Branch Abalobadiah Creek drains a watershed of approximately 0.4 square miles. Elevations range from about 70 feet at the mouth of the creek to 600 feet in the headwater areas. Mixed hardwood and conifer forest dominates the watershed. The watershed is privately owned and is managed for timber production and rangeland. Vehicle access exists via private road from Highway 1.

METHODS

The habitat inventory conducted in East Branch Abalobadiah Creek follows the methodology presented in the *California Salmonid Stream Habitat Restoration Manual* (Flosi et al, 1998). The 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 their lengths are measured. All pool units are measured for maximum depth, depth of pool tail

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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 East Branch Abalobadiah Creek 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". East Branch Abalobadiah 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.

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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 East Branch Abalobadiah 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 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 East Branch Abalobadiah 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.

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 East Branch Abalobadiah 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 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 East Branch Abalobadiah 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.

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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.

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
- Mean Percent Shelter Cover Types for Entire Stream

Graphics are produced from the tables using Microsoft Excel. Graphics developed for East Branch Abalobadiah Creek 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

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- 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 22 to July 23, 2008, was conducted by R. Swan and J. Johnson (WSP). The total length of the stream surveyed was 2,534 feet. A section of the East Branch of Abalobadiah Creek from 1,517 feet to 1,657 feet was not surveyed due to a narrow and entrenched channel that was not accessible to the surveyors. The data included in this report is for the 2,394 feet actually surveyed.

Stream flow was measured near the bottom of the survey reach with a Marsh-McBirney Model 2000 flowmeter at 0.37 cfs on July 22, 2008.

East Branch Abalobadiah Creek is a G4 channel type for 2,534 feet of the stream surveyed. G4 channels are entrenched “gully” step-pool channels on moderate gradients with low width /depth ratios and gravel-dominant substrates.

Water temperatures taken during the survey period ranged from 56 to 58 degrees Fahrenheit. Air temperatures ranged from 47 to 52 degrees Fahrenheit.

Table 1 summarizes the Level II riffle, flatwater, and pool habitat types. Based on frequency of occurrence there were 45% pool units, 32% flatwater units, and 18% riffle units (Graph 1). Based on total length of Level II habitat types there were 74% flatwater units, 15% pool units, and 10% riffle units (Graph 2).

Six Level IV habitat types were identified (Table 2). The most frequent habitat types by percent occurrence were lateral scour pool - log enhanced units, 39%; step run units, 32%; low gradient riffle units, 18% (Graph 3). Based on percent total length, step run units made up 74%, lateral scour pool - log enhanced units 14%, and low gradient riffle units 10%.

A total of 17 pools were identified (Table 3). Scour pools were the most frequently encountered at 100% (Graph 4), and comprised 100% 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. One of the 17 pools (6%) had a residual depth of two feet or greater (Graph 5).

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The depth of cobble embeddedness was estimated at pool tail-outs. Of the 17 pool tail-outs measured, 8 had a value of 1 (47.1%); 6 had a value of 2 (35.3%); 3 had a value of 3 (17.6%) (Graph 6). On this scale, a value of 1 indicates the best spawning conditions and a value of 4 the worst.

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 19, flatwater habitat types had a mean shelter rating of 22, and pool habitats had a mean shelter rating of 61 (Table 1). Of the pool types, the scour pools had the highest mean shelter rating at 61 (Table 3).

Table 5 summarizes mean percent cover by habitat type. Large woody debris is the dominant cover type in East Branch Abalobadiah Creek. Graph 7 describes the pool cover in East Branch Abalobadiah Creek. Large woody debris is the dominant pool cover type followed by small woody debris.

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 100% of the pool tail-outs.

The mean percent canopy density for the surveyed length of East Branch Abalobadiah Creek was 98%. Two percent of the canopy was open. Of the canopy present, the mean percentages of hardwood and coniferous trees were 85% and 15%, respectively. Graph 9 describes the mean percent canopy in East Branch Abalobadiah Creek.

For the stream reach surveyed, the mean percent right bank vegetated was 86%. The mean percent left bank vegetated was 88%. The dominant elements composing the structure of the stream banks consisted of 54% cobble/gravel and 46% sand/silt/clay (Graph 10). Brush was the dominant vegetation type observed in 100% of the units surveyed.

DISCUSSION

East Branch Abalobadiah Creek is a G4 channel type for 2,534 feet of the stream surveyed. 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 22 to July 23, 2008, ranged from 56 to 58 degrees Fahrenheit. Air temperatures ranged from 47 to 52 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 74% of the total length of this survey, riffles 10%, and pools 15%. One of the 17 (6%) pools had a maximum residual depth greater than 2 feet. In general,

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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. Installing structures that will increase or deepen pool habitat is recommended.

Fourteen of the 17 pool tail-outs measured had embeddedness ratings of 1 or 2. Three 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. Sediment sources in East Branch Abalobadiah Creek should be mapped and rated according to their potential sediment yields, and control measures should be taken.

All of the 17 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 61. The shelter rating in the flatwater habitats was 22. 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 East Branch Abalobadiah Creek. Large woody debris is the dominant cover type in pools followed by small woody debris. 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 98%. In general, revegetation projects are considered when canopy density is less than 80%.

The percentage of right and left bank covered with vegetation was 86% and 88%, respectively. In areas of stream bank erosion or where bank vegetation is sparse, planting endemic species of coniferous and hardwood trees, in conjunction with bank stabilization, is recommended.

RECOMMENDATIONS

- 1) East Branch Abalobadiah Creek should be managed as an anadromous, natural production stream.
- 2) The limited water temperature data available suggest that maximum temperatures are within the acceptable range for juvenile salmonids. To establish more complete and meaningful temperature regime information, 24-hour monitoring during the July and August temperature extreme period should be performed for 3 to 5 years.
- 3) Inventory and map sources of stream bank erosion and prioritize them according to present and potential sediment yield. Identified sites should then be treated to reduce the amount of fine sediments entering the stream.

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- 4) Active and potential sediment sources related to the road system need to be identified, mapped, and treated according to their potential for sediment yield to the stream and its tributaries.

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 (ft):	Habitat unit #:	Comments:
0	0001.00	Start of survey at the confluence with Abalobadiah Creek. A road crosses directly through the creek.
102	0004.00	There is a right bank failure.
226	0009.00	There is a left bank failure. There is a sediment accumulation and small woody debris plugging up the width of the stream. The water runs under the wood to the other side.
251	0010.00	There is a sediment accumulation along the left bank.
419	0011.00	There is a right bank failure.
471	0013.00	There is a right bank failure.
560	0015.00	There is a right bank failure. There is a left bank failure.
765	0016.00	There is a right bank failure.
788	0017.00	There is a left bank failure. There is sediment accumulation in the middle of the channel.
1236	0018.00	There is a road and/or cattle crossing through the middle of the stream. There is a right bank failure.
1500	0019.00	Stream is choked with vegetation.
1517	0020.00	Stream is choked with vegetation. Stream is too narrow and entrenched to survey for 140 feet.
1657	0021.00	The survey resumed here. The stream is very narrow and there is an increase in gradient.

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1769	0022.00	There is a sediment accumulation on the right bank. Stream is very entrenched with a log debris accumulation (LDA).
1857	0023.00	Stream is choked with vegetation.
2211	0029.00	There is an LDA with sediment accumulation in the middle of the stream. Water runs under the surface to the other side.
2256	0031.00	The stream gradient is increasing.
2475	0036.00	There is a left bank failure. There is a sediment accumulation on the right bank.
2534	0038.00	End of survey due to the increasing gradient and lack of fish habitat. The stream is choked with vegetation. No fish were observed during the survey.

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: East Branch Abalobadiah Creek

LLID: 1237591395785 Drainage: Rockport

Survey Dates: 7/22/2008 to 7/23/2008

Confluence Location: Quad: INGLENOOK Legal Description: T20NR17WS21 Latitude: 39:34:43.0N Longitude: 123:45:33.0

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	DRY	2.6	22	22	0.9									
12	3	FLATWATER	31.6	147	1763	73.6	3.8	0.2	0.8	374	4489	94	1127		22
1	0	NOSURVEY	2.6	140	140										
17	17	POOL	44.7	21	364	15.2	7.8	0.4	1.3	166	2819	101	1719	63	61
7	5	RIFFLE	18.4	35	245	10.2	5.0	0.2	0.5	116	812	24	167		19
Total Units	Total Units Fully Measured				Total Length (ft.)					Total Area (sq.ft.)			Total Volume (cu.ft.)		
38	25				2534					8120			3014		

Table 2 - Summary of Habitat Types and Measured Parameters

Stream Name: East Branch Abalobadiah Creek

LLID: 1237591395785

Drainage: Rockport

Survey Dates: 7/22/2008 to 7/23/2008

Confluence Location: Quad: INGLENOOK

Legal Description: T20NR17WS21

Latitude: 39:34:43.0N

Longitude: 123:45:33.0W

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 (%)
7	5	LGR	18.4	35	245	10.2	5	0.2	1	116	812	24	167		19	96
12	3	SRN	31.6	147	1763	73.6	4	0.2	1.1	374	4489	94	1127		22	99
1	1	CRP	2.6	14	14	0.6	8	0.4	1.5	113	113	79	79	45	50	99
15	15	LSL	39.5	22	327	13.7	8	0.4	2.3	171	2564	106	1583	68	63	97
1	1	LSR	2.6	23	23	1.0	6	0.1	0.7	142	142	57	57	14	50	100
1	0	DRY	2.6	22	22	0.9										100
1	0	NS	2.6	140	140											100

Total Units
38

Total Units Fully Measured
25

Total Length (ft.)
2534

Total Area (sq.ft.)
8120

Total Volume (cu.ft.)
3014

Table 3 - Summary of Pool Types

Stream Name: East Branch Abalobadiah Creek

LLID: 1237591395785

Drainage: Rockport

Survey Dates: 7/22/2008 to 7/23/2008

Confluence Location: Quad: INGLENOOK

Legal Description: T20NR17WS21

Latitude: 39:34:43.0N

Longitude: 123:45:33.0W

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	SCOUR	100	21	364	100	7.8	0.4	166	2819	63	1078	61

Total Units	Total Units Fully Measured	Total Length (ft.)	Total Area (sq.ft.)	Total Volume (cu.ft.)
17	17	364	2819	1078

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

Stream Name: East Branch Abalobadiah Creek

LLID: 1237591395785

Drainage: Rockport

Survey Dates: 7/22/2008 to 7/23/2008

Confluence Location: Quad: INGLENOOK

Legal Description: T20NR17WS21

Latitude: 39:34:43.0N

Longitude: 123:45:33.0W

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	CRP	6	0	0	1	100	0	0	0	0	0	0
15	LSL	88	2	13	12	80	1	7	0	0	0	0
1	LSR	6	1	100	0	0	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
17	3	18	13	76	1	6	0	0	0	0

Mean Maximum Residual Pool Depth (ft.): 1.3

Table 5 - Summary of Mean Percent Cover By Habitat Type

Stream Name: East Branch Abalobadiah Creek

LLID: 1237591395785

Drainage: Rockport

Survey Dates: 7/22/2008 to 7/23/2008

Dry Units: 1

Confluence Location: Quad: INGLENOOK

Legal Description: T20NR17WS21

Latitude: 39:34:43.0N

Longitude: 123:45:33.0W

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
7	5	LGR	10	42	0	0	42	6	0	0	0
7	5	TOTAL RIFFLE	10	42	0	0	42	6	0	0	0
12	3	SRN	0	5	5	0	90	0	0	0	0
12	3	TOTAL FLAT	0	5	5	0	90	0	0	0	0
1	1	CRP	80	0	0	0	20	0	0	0	0
15	15	LSL	3	21	56	1	19	0	0	0	0
1	1	LSR	0	10	40	40	10	0	0	0	0
17	17	TOTAL POOL	7	19	51	4	18	0	0	0	0
1	0	NS									
38	25	TOTAL	7	22	36	2	32	1	0	0	0

Table 6 - Summary of Dominant Substrates By Habitat Type

Stream Name: East Branch Abalobadiah Creek

LLID: 1237591395785

Drainage: Rockport

Survey Dates: 7/22/2008 to 7/23/2008

Dry Units: 1

Confluence Location: Quad: INGLENOOK

Legal Description: T20NR17WS21 Latitude: 39:34:43.0N

Longitude: 123:45:33.0W

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
7	5	LGR	0	20	60	20	0	0	0
12	3	SRN	0	0	100	0	0	0	0
1	1	CRP	0	0	100	0	0	0	0
15	15	LSL	7	27	67	0	0	0	0
1	1	LSR	0	0	100	0	0	0	0

Table 7 - Summary of Mean Percent Canopy for Entire Stream

Stream Name: East Branch Abalobadiah Creek

LLID: 1237591395785

Drainage: Rockport

Survey Dates: 7/22/2008 to 7/23/2008

Confluence Location: Quad: INGLENOOK

Legal Description: T20NR17WS21

Latitude: 39:34:43.0N

Longitude: 123:45:33.0W

Mean Percent Canopy	Mean Percent Conifer	Mean Percent Hardwood	Mean Percent Open Units	Mean Right Bank % Cover	Mean Left Bank % Cover
98	15	85	0	86	88

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: East Branch Abalobadiah Creek

LLID: 1237591395785

Drainage: Rockport

Survey Dates: 7/22/2008 to 7/23/2008

Confluence Location: Quad: INGLENOOK

Legal Description: T20NR17WS21

Latitude: 39:34:43.0N

Longitude: 123:45:33.0W

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	0	0	0.0
Boulder	0	0	0.0
Cobble / Gravel	14	13	54.0
Sand / Silt / Clay	11	12	46.0

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	0	0	0.0
Brush	25	25	100.0
Hardwood Trees	0	0	0.0
Coniferous Trees	0	0	0.0
No Vegetation	0	0	0.0

Total Stream Cobble Embeddedness Values: 2

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

StreamName: East Branch Abalobadiah Creek

LLID: 1237591395785

Drainage: Rockport

Survey Dates: 7/22/2008 to 7/23/2008

Confluence Location: Quad: INGLENOOK

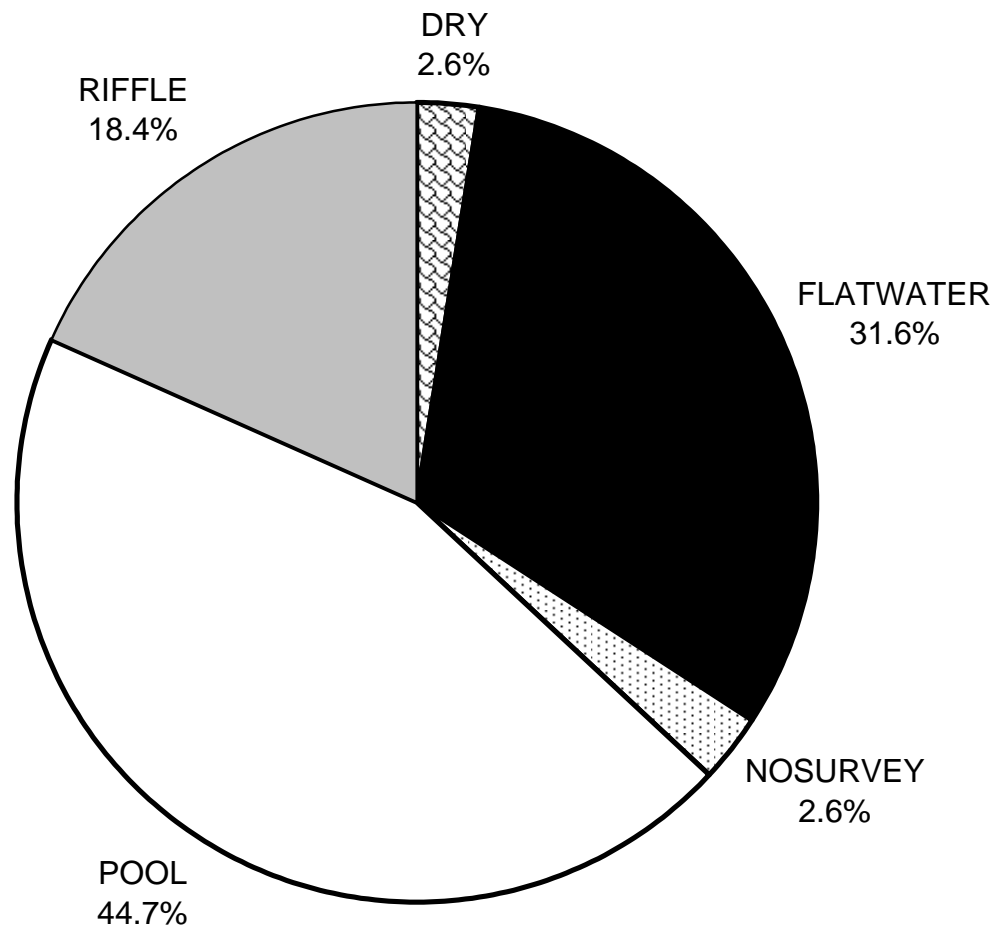
Legal Description: T20NR17WS21

Latitude: 39:34:43.0N

Longitude: 123:45:33.0W

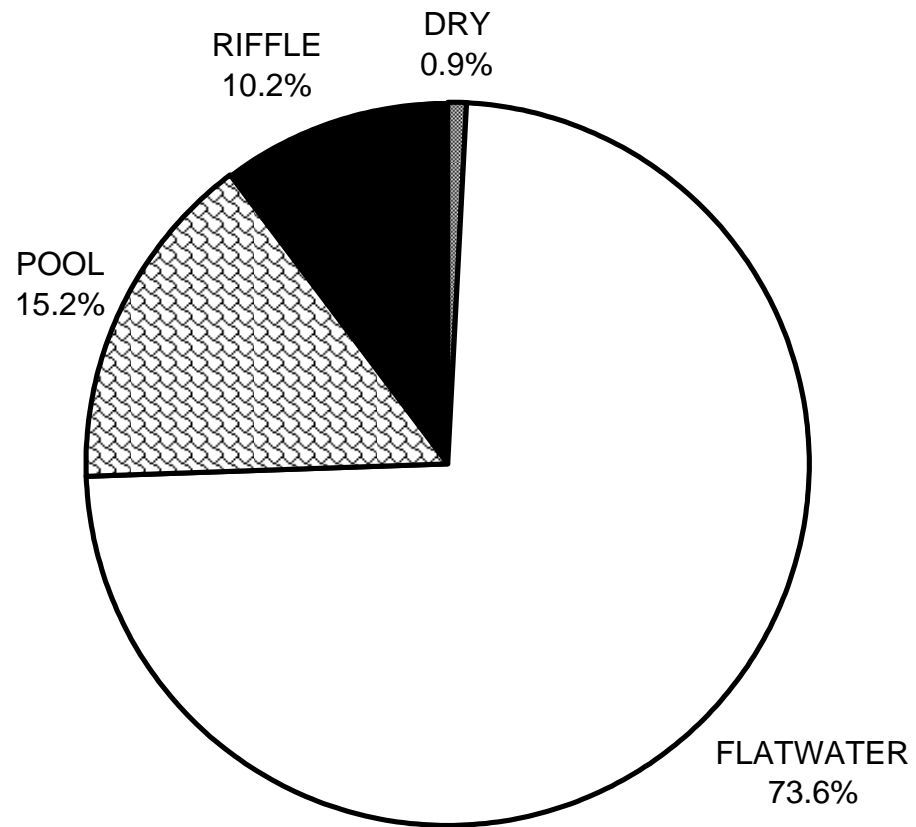
	Riffles	Flatwater	Pools
UNDERCUT BANKS (%)	10	0	7
SMALL WOODY DEBRIS (%)	42	5	19
LARGE WOODY DEBRIS (%)	0	5	51
ROOT MASS (%)	0	0	4
TERRESTRIAL VEGETATION (%)	42	90	18
AQUATIC VEGETATION (%)	6	0	0
WHITEWATER (%)	0	0	0
BOULDERS (%)	0	0	0
BEDROCK LEDGES (%)	0	0	0

EAST BRANCH ABALOBADIAH CREEK 2008 HABITAT TYPES BY PERCENT OCCURRENCE



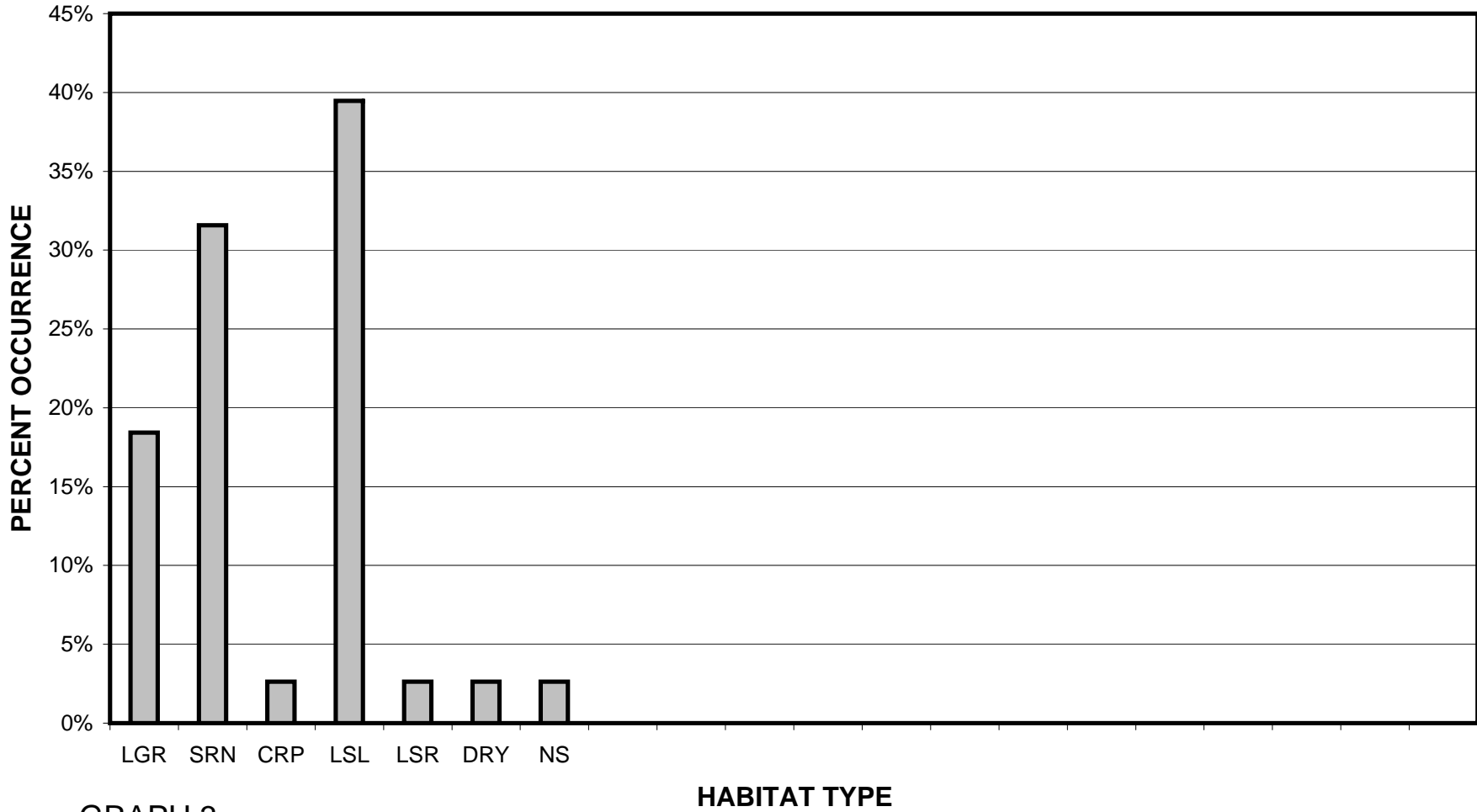
GRAPH 1

EAST BRANCH ABALOBADIAH CREEK 2008 HABITAT TYPES BY PERCENT TOTAL LENGTH



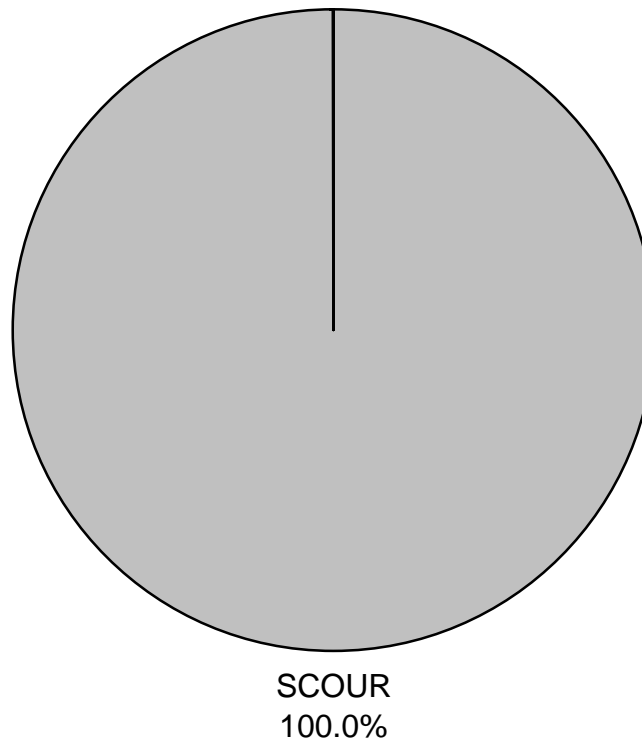
GRAPH 2

EAST BRANCH ABALOBADIAH CREEK 2008 HABITAT TYPES BY PERCENT OCCURRENCE



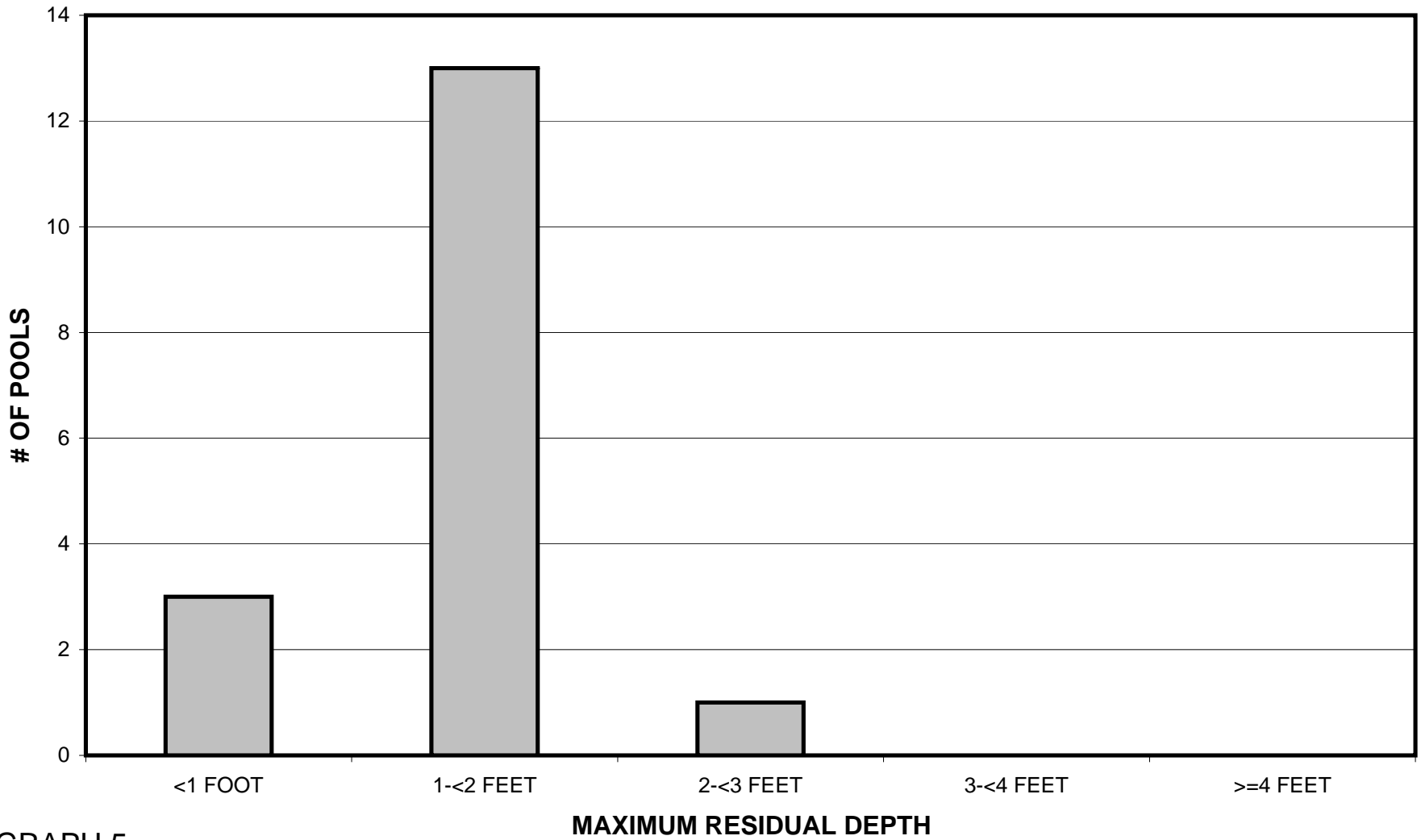
GRAPH 3

**EAST BRANCH ABALOBADIAH CREEK 2008
POOL TYPES BY PERCENT OCCURRENCE**



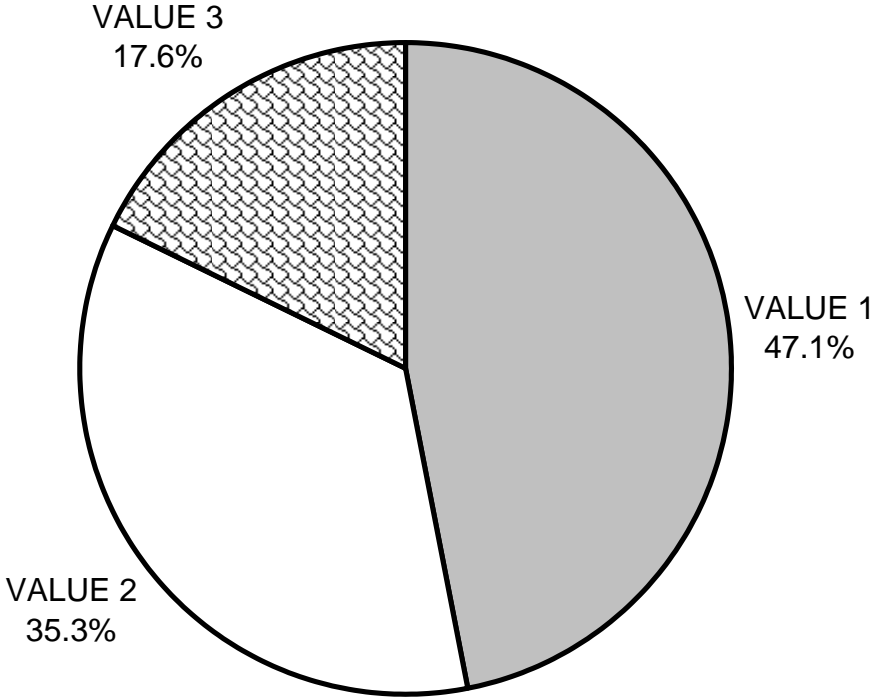
GRAPH 4

EAST BRANCH ABALOBADIAH CREEK 2008 MAXIMUM DEPTH IN POOLS



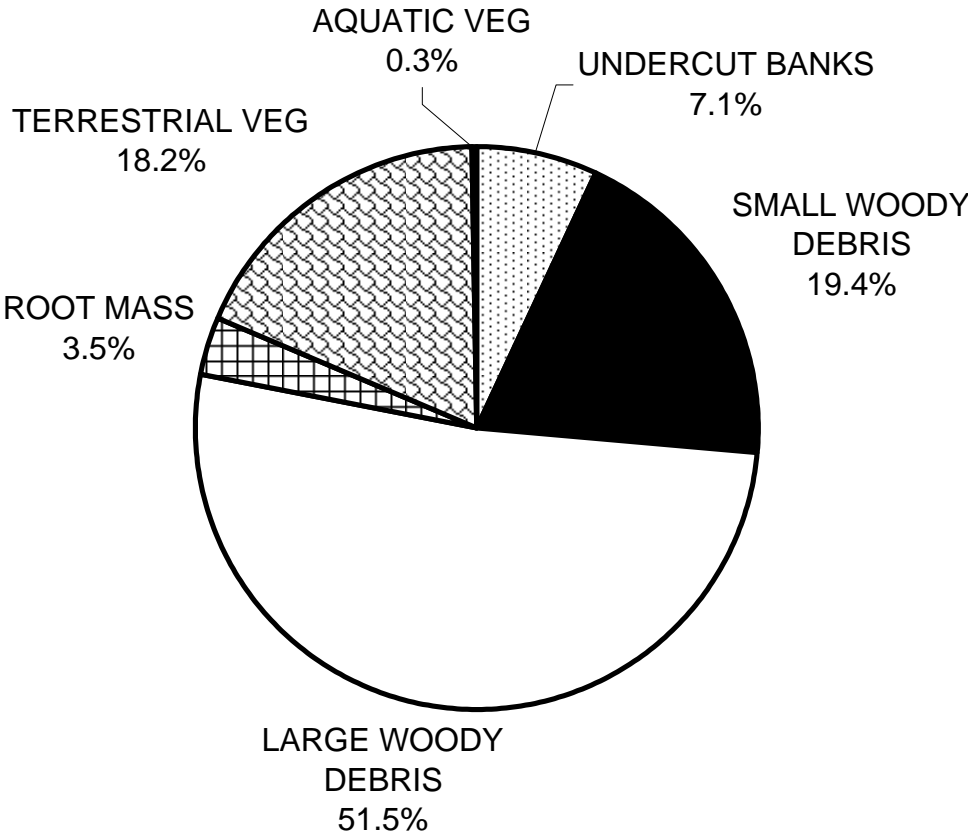
GRAPH 5

**EAST BRANCH ABALOBADIAH CREEK 2008
PERCENT EMBEDDEDNESS**



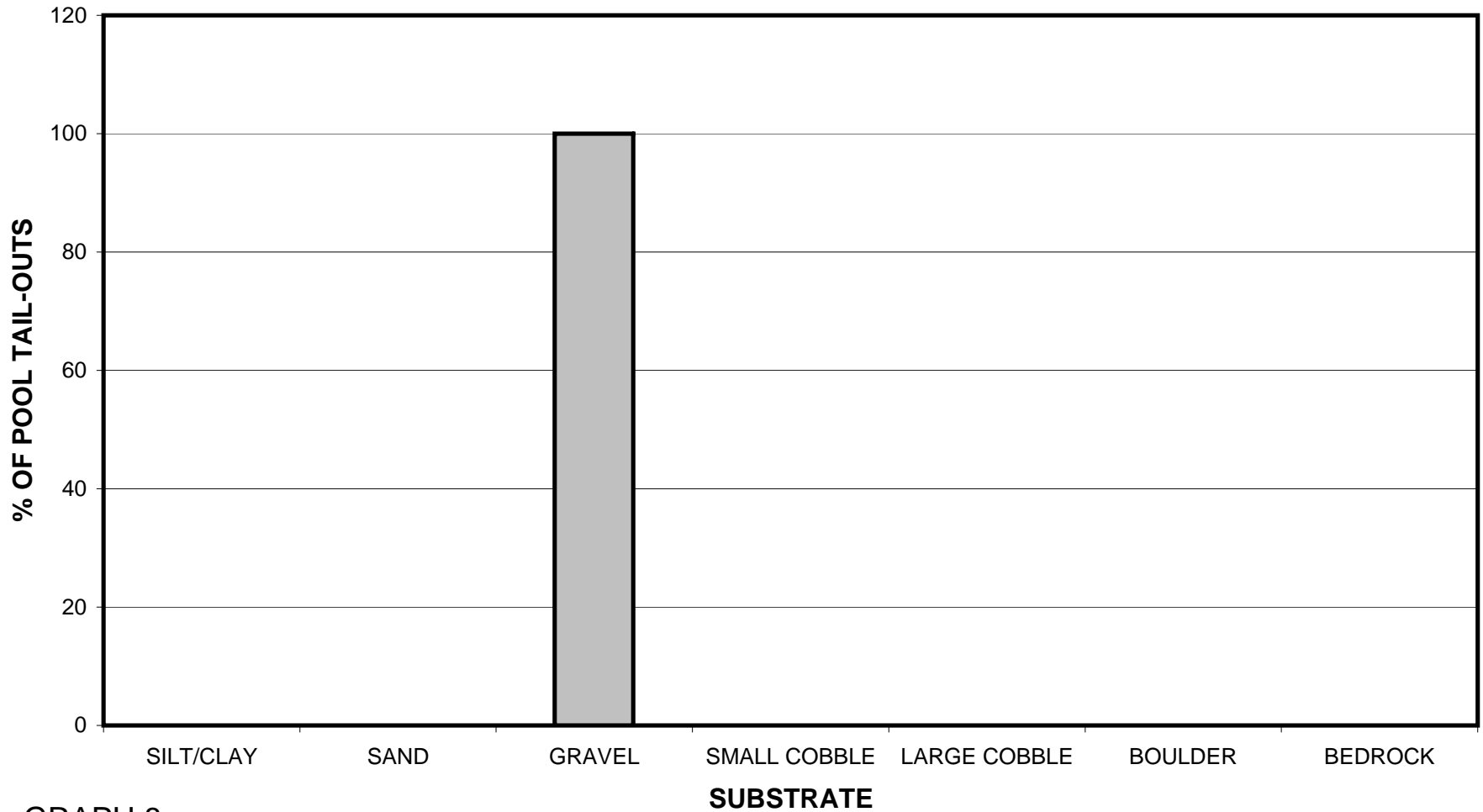
GRAPH 6

**EAST BRANCH ABALOBADIAH CREEK 2008
MEAN PERCENT COVER TYPES IN POOLS**



GRAPH 7

EAST BRANCH ABALOBADIAH CREEK 2008 SUBSTRATE COMPOSITION IN POOL TAIL-OUTS



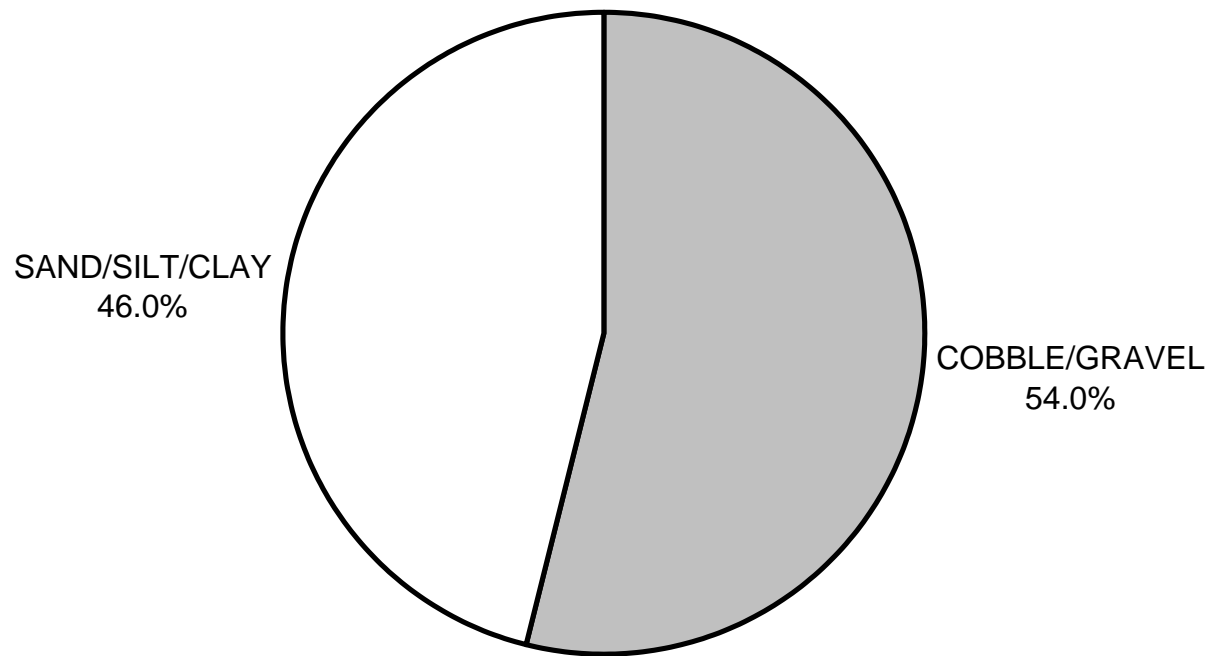
GRAPH 8

**EAST BRANCH ABALOBADIAH CREEK 2008
MEAN PERCENT CANOPY**



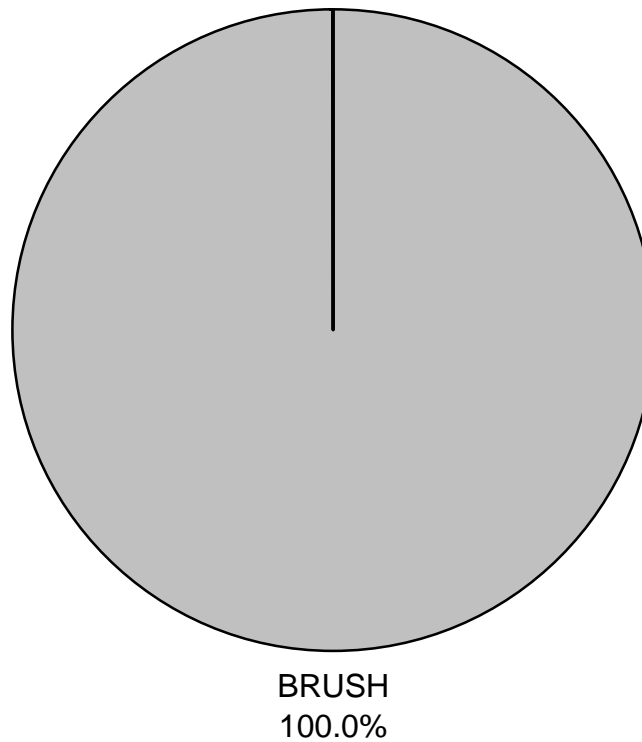
GRAPH 9

**EAST BRANCH ABALOBADIAH CREEK 2008
DOMINANT BANK COMPOSITION IN SURVEY REACH**



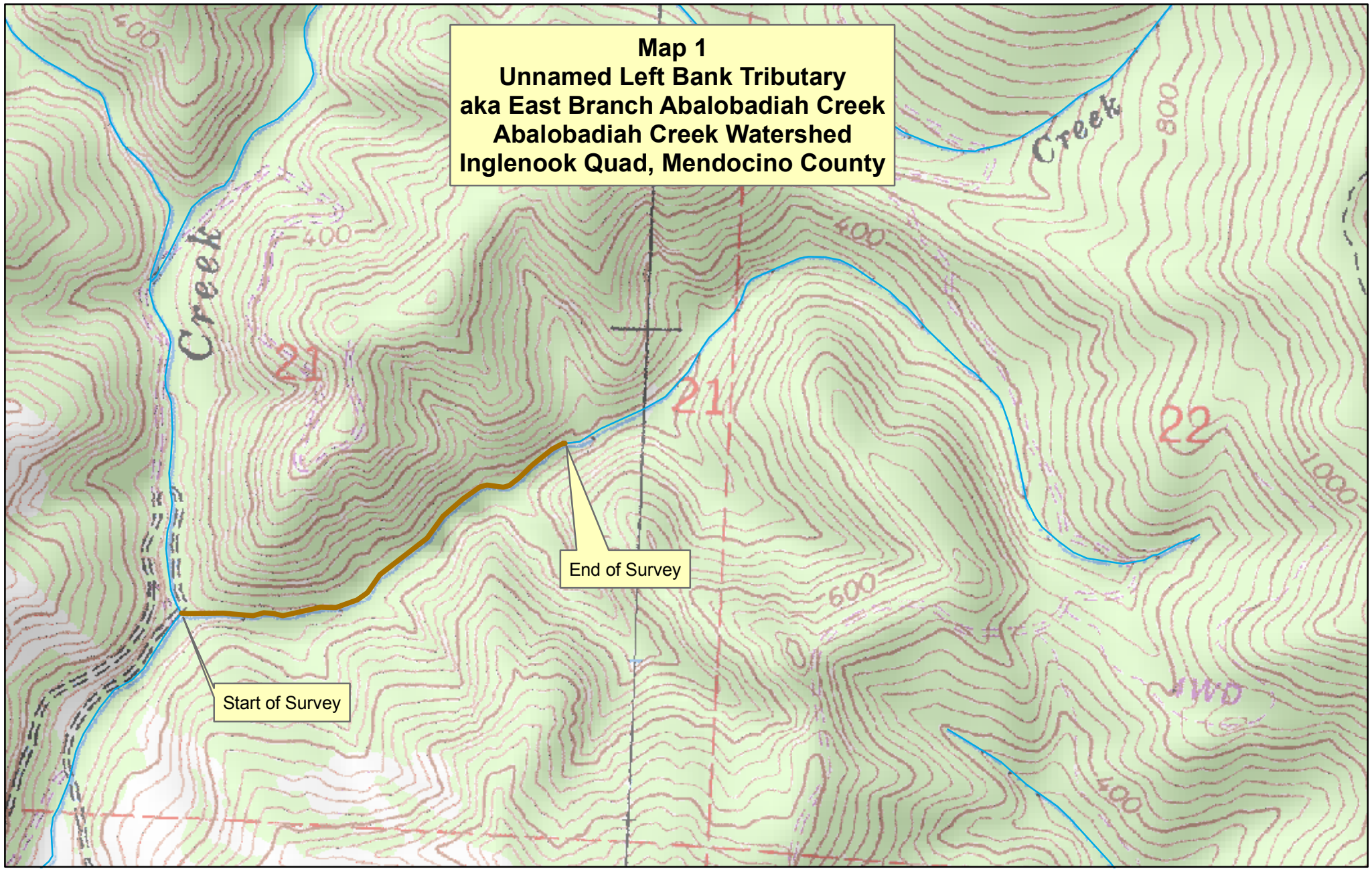
GRAPH 10

**EAST BRANCH ABALOBADIAH CREEK 2008
DOMINANT BANK VEGETATION IN SURVEY REACH**

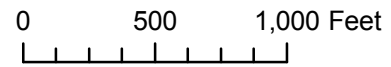


GRAPH 11

Map 1
Unnamed Left Bank Tributary
aka East Branch Abalobadiah Creek
Abalobadiah Creek Watershed
Inglenook Quad, Mendocino County



Legend
— 2008 Surveyed Length



End survey point is approximate.

