

STREAM INVENTORY REPORT

Unnamed Tributary to Winery Gulch

WATERSHED OVERVIEW

The unnamed tributary is a tributary to Winery Gulch, a tributary to the South Fork Albion River, a tributary to the Albion River, which drains to the Pacific Ocean. It is located in Mendocino County, California (Map 1). The unnamed tributary's legal description at the confluence with Winery Gulch is T16N R16W S13. Its location is 39.2409 degrees north latitude and 123.6048 degrees west longitude, LLID number 1236047392409. The unnamed tributary is an intermittent stream according to the USGS Navarro 7.5 minute quadrangle. The unnamed tributary drains a watershed of approximately 0.7 square miles. Elevations range from about 340 feet at the mouth of the creek to 700 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 Flynn Creek Road or Comptche-Ukiah Road outside of Comptche, CA.

HABITAT INVENTORY RESULTS AND DISCUSSION

The habitat inventory of August 6, 2012 was conducted by R. Spencer and C. Tiffany (WSP). The total length of the stream surveyed was 549 feet.

Stream flow was not measured on the unnamed tributary to Winery Gulch.

The unnamed tributary is a B4 channel type for the entire length of the survey, 549 feet. B4 channels are moderately entrenched, moderate gradient, riffle dominated channel with infrequently spaced pools, very stable plan and profile, stable banks and gravel-dominant substrates.

The suitability of B4 channel types for fish habitat improvement structures is as follows: B4 channel types are excellent for low-stage plunge weirs, boulder clusters, bank placed boulders, single and opposing wing-deflectors, and log cover.

The water temperature recorded on the survey day August 6, 2012 was 54 degrees Fahrenheit. Air temperatures ranged from 66 to 67 degrees Fahrenheit. This is a good water temperature range for salmonids. To make any conclusions, temperatures need to be monitored throughout the warm summer months, and more extensive biological sampling needs to be conducted.

Flatwater habitat types comprised 16% of the total length of this survey, riffles 22%, and pools 19%. One of the six (17%) pools had a maximum residual depth greater than two 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. Installing structures that will increase or deepen pool habitat is recommended.

Unnamed Tributary to Winery Gulch

All six of the 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 not suitable 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.

All six of the 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 is 8. The shelter rating in the flatwater habitats is 0. A pool shelter rating of approximately 100 is desirable. The amount of cover that now exists is being provided primarily by root mass in the unnamed tributary. Small woody debris is the dominant cover type in pools followed by root mass. Log and root wad cover structures in the pool and flatwater habitats would enhance both summer and winter salmonid habitat. Log cover structures provide rearing fry with protection from predation, rest from water velocity, and also divide territorial units to reduce density related competition.

The mean percent canopy density for the stream was 99%. The percentage of right and left bank covered with vegetation was 92% and 89%, respectively.

RECOMMENDATIONS

- 1) The unnamed tributary to Winery Gulch 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.

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 Winery Gulch. The channel is a B4 for the entire length of the survey.
222	0014.00	Fish observed.
525	0025.00	End of survey. The channel is mostly dry, the gradient is increasing, and the channel is blocked by landslides and woody debris.

Stream Name:	1236047392409	LLID:	1236047392409	Drainage:	Albion River
Survey Dates:	8/6/2012 to 8/6/2012				
Confluence Location:	Quad: NAVARRO	Legal Description:	T16NR16WS13	Latitude:	39:14:27.0N
				Longitude:	123:36:17.0W

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
9	0	DRY	36.0	26	237	43.2									
5	2	FLATWATER	20.0	17	87	15.8	3.4	0.3	0.6	47	235	14	71		0
6	6	POOL	24.0	18	106	19.3	4.8	0.5	1.3	76	458	48	285	41	8
5	2	RIFFLE	20.0	24	119	21.7	1.8	0.2	0.5	10	52	3	15		3
Total Units	Total Units Fully Measured				Total Length (ft.)						Total Area (sq.ft.)		Total Volume (cu.ft.)		
25	10				549						745		371		

Table 2 - Summary of Habitat Types and Measured Parameters

Stream Name: 1236047392409

LLID: 1236047392409

Drainage: Albion River

Survey Dates: 8/6/2012 to 8/6/2012

Confluence Location: Quad: NAVARRO

Legal Description: T16NR16WS13

Latitude: 39:14:27.0N

Longitude: 123:36:17.0W

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 (%)
4	1	LGR	16.0	23	93	16.9	0	0.1	0.1	1	6	0	1		0	100
1	1	HGR	4.0	26	26	4.7	3	0.3	0.8	20	20	6	6		5	98
4	1	RUN	16.0	16	62	11.3	4	0.3	0.5	57	226	17	68		0	100
1	1	SRN	4.0	25	25	4.6	3	0.3	0.7	38	38	11	11		0	100
5	5	MCP	20.0	19	96	17.5	5	0.5	1.5	82	410	49	247	42	8	100
1	1	PLP	4.0	10	10	1.8	5	0.8	2.3	48	48	38	38	38	5	95
9	0	DRY	36.0	26	237	43.2										

Total Units
25

Total Units Fully Measured
10

Total Length (ft.)
549

Total Area (sq.ft.)
747

Total Volume (cu.ft.)
371

Table 3 - Summary of Pool Types

Stream Name: 1236047392409

LLID: 1236047392409

Drainage: Albion River

Survey Dates: 8/6/2012 to 8/6/2012

Confluence Location: Quad: NAVARRO

Legal Description: T16NR16WS13

Latitude: 39:14:27.0N

Longitude: 123:36:17.0W

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
5	5	MAIN	83	19	96	91	4.7	0.5	82	410	42	211	8
1	1	SCOUR	17	10	10	9	5.0	0.8	48	48	38	38	5
Total Units	Total Units Fully Measured				Total Length (ft.)				Total Area (sq.ft.)			Total Volume (cu.ft.)	
6	6				106				458			249	

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

Stream Name: 1236047392409

LLID: 1236047392409

Drainage: Albion River

Survey Dates: 8/6/2012 to 8/6/2012

Confluence Location: Quad: NAVARRO

Legal Description: T16NR16WS13

Latitude: 39:14:27.0N

Longitude: 123:36:17.0W

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
5	MCP	83	2	40	3	60	0	0	0	0	0	0
1	PLP	17	0	0	0	0	1	100	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
6	2	33	3	50	1	17	0	0	0	0

Mean Maximum Residual Pool Depth (ft.): 1.3

Table 5 - Summary of Mean Percent Cover By Habitat Type

Stream Name: 1236047392409

LLID: 1236047392409

Drainage: Albion River

Survey Dates: 8/6/2012 to 8/6/2012

Dry Units: 9

Confluence Location: Quad: NAVARRO

Legal Description: T16NR16WS13

Latitude: 39:14:27.0N

Longitude: 123:36:17.0W

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
4	1	LGR	0	0	0	0	0	0	0	0	0
1	1	HGR	0	10	0	90	0	0	0	0	0
5	2	TOTAL RIFFLE	0	10	0	90	0	0	0	0	0
4	1	RUN	0	0	0	0	0	0	0	0	0
1	1	SRN	0	0	0	0	0	0	0	0	0
5	2	TOTAL FLAT	0	0	0	0	0	0	0	0	0
5	5	MCP	3	47	17	33	0	0	0	0	0
1	1	PLP	0	0	0	5	0	0	0	95	0
6	6	TOTAL POOL	2	35	12	26	0	0	0	24	0
25	10	TOTAL	2	30	10	39	0	0	0	19	0

Table 6 - Summary of Dominant Substrates By Habitat Type

Stream Name: 1236047392409

LLID: 1236047392409

Drainage: Albion River

Survey Dates: 8/6/2012 to 8/6/2012

Dry Units: 9

Confluence Location: Quad: NAVARRO

Legal Description: T16NR16WS13

Latitude: 39:14:27.0N

Longitude: 123:36:17.0W

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
4	1	LGR	0	0	100	0	0	0	0
1	1	HGR	0	0	0	100	0	0	0
4	1	RUN	0	0	100	0	0	0	0
1	1	SRN	0	0	100	0	0	0	0
5	5	MCP	0	40	40	20	0	0	0
1	1	PLP	0	0	0	100	0	0	0

Table 7 - Summary of Mean Percent Canopy for Entire Stream

Stream Name: 1236047392409

LLID: 1236047392409

Drainage: Albion River

Survey Dates: 8/6/2012 to 8/6/2012

Confluence Location: Quad: NAVARRO

Legal Description: T16NR16WS13

Latitude: 39:14:27.0N

Longitude: 123:36:17.0W

Mean Percent Canopy	Mean Percent Conifer	Mean Percent Hardwood	Mean Percent Open Units	Mean Right Bank % Cover	Mean Left Bank % Cover
99	68	32	0	93	89

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.

Stream Name:	1236047392409	LLID:	1236047392409	Drainage:	Albion River		
Survey Dates:	8/6/2012 to 8/6/2012	Survey Length (ft.):	549	Main Channel (ft.):	549	Side Channel (ft.):	0
Confluence Location:	Quad: NAVARRO	Legal Description:	T16NR16WS13	Latitude:	39:14:27.0N	Longitude:	123:36:17.0W

STREAM REACH: 1										
Channel Type:	B4					Canopy Density (%):	99.3		Pools by Stream Length (%):	19.3
Reach Length (ft.):	549					Coniferous Component (%):	68.0		Pool Frequency (%):	24.0
Riffle/Flatwater Mean Width (ft.):	2.6					Hardwood Component (%):	32.0		Residual Pool Depth (%):	
BFW:						Dominant Bank Vegetation:	Coniferous Trees		< 2 Feet Deep:	83
Range (ft.):	8	to	11			Vegetative Cover (%):	90.8		2 to 2.9 Feet Deep:	17
Mean (ft.):	9					Dominant Shelter:	Root masses		3 to 3.9 Feet Deep:	0
Std. Dev.:	1					Dominant Bank Substrate Type:	Sand/Silt/Clay		>= 4 Feet Deep:	0
Base Flow (cfs.):	0.0					Occurrence of LWD (%):	5		Mean Max Residual Pool Depth (ft.):	1.3
Water (F):	54 - 54	Air (F):	66 - 67			LWD per 100 ft.:			Mean Pool Shelter Rating:	8
Dry Channel (ft):	237					Riffles:	1			
						Pools:	2			
						Flat:	3			
Pool Tail Substrate (%):	Silt/Clay: 0	Sand: 0	Gravel: 100	Sm Cobble: 0	Lg Cobble: 0	Boulder: 0	Bedrock: 0			
Embeddedness Values (%):	1. 50.0	2. 50.0	3. 0.0	4. 0.0	5. 0.0					

Table 9 - Mean Percentage of Dominant Substrate and Vegetation

Stream Name: 1236047392409

LLID: 1236047392409

Drainage: Albion River

Survey Dates: 8/6/2012 to 8/6/2012

Confluence Location: Quad: NAVARRO

Legal Description: T16NR16WS13

Latitude: 39:14:27.0N

Longitude: 123:36:17.0W

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	4	2	30.0
Sand / Silt / Clay	6	8	70.0

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	1	1	10.0
Hardwood Trees	0	4	20.0
Coniferous Trees	9	5	70.0
No Vegetation	0	0	0.0

Total Stream Cobble Embeddedness Values: 2

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

StreamName: 1236047392409

LLID: 1236047392409

Drainage: Albion River

Survey Dates: 8/6/2012 to 8/6/2012

Confluence Location: Quad: NAVARRO

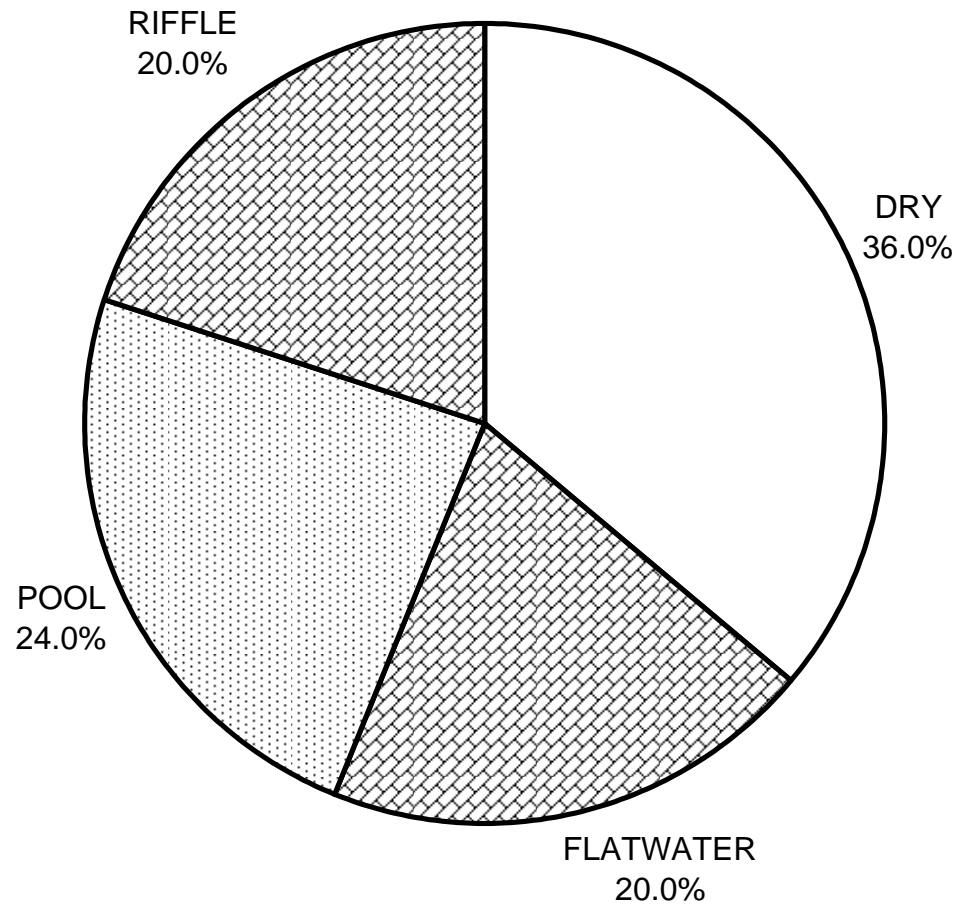
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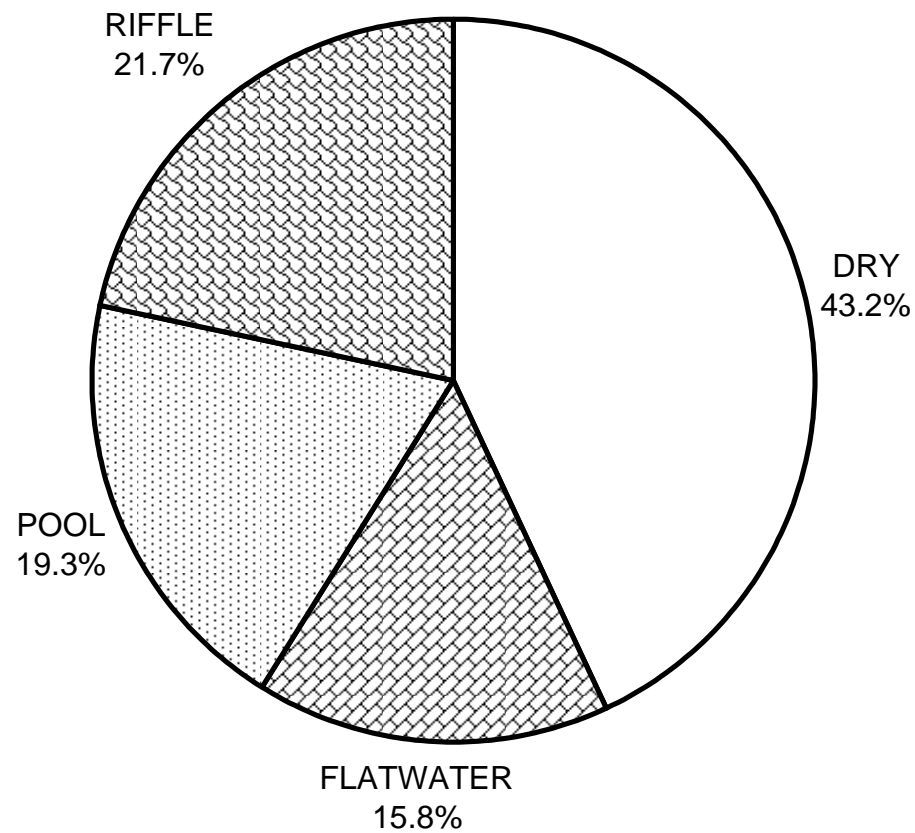
	Riffles	Flatwater	Pools
<hr/>			
UNDERCUT BANKS (%)	0	0	2
SMALL WOODY DEBRIS (%)	10	0	35
LARGE WOODY DEBRIS (%)	0	0	12
ROOT MASS (%)	90	0	26
TERRESTRIAL VEGETATION (%)	0	0	0
AQUATIC VEGETATION (%)	0	0	0
WHITEWATER (%)	0	0	0
BOULDERS (%)	0	0	24
BEDROCK LEDGES (%)	0	0	0

UNNAMED TRIBUTARY TO WINERY GULCH 2012
HABITAT TYPES BY PERCENT OCCURRENCE



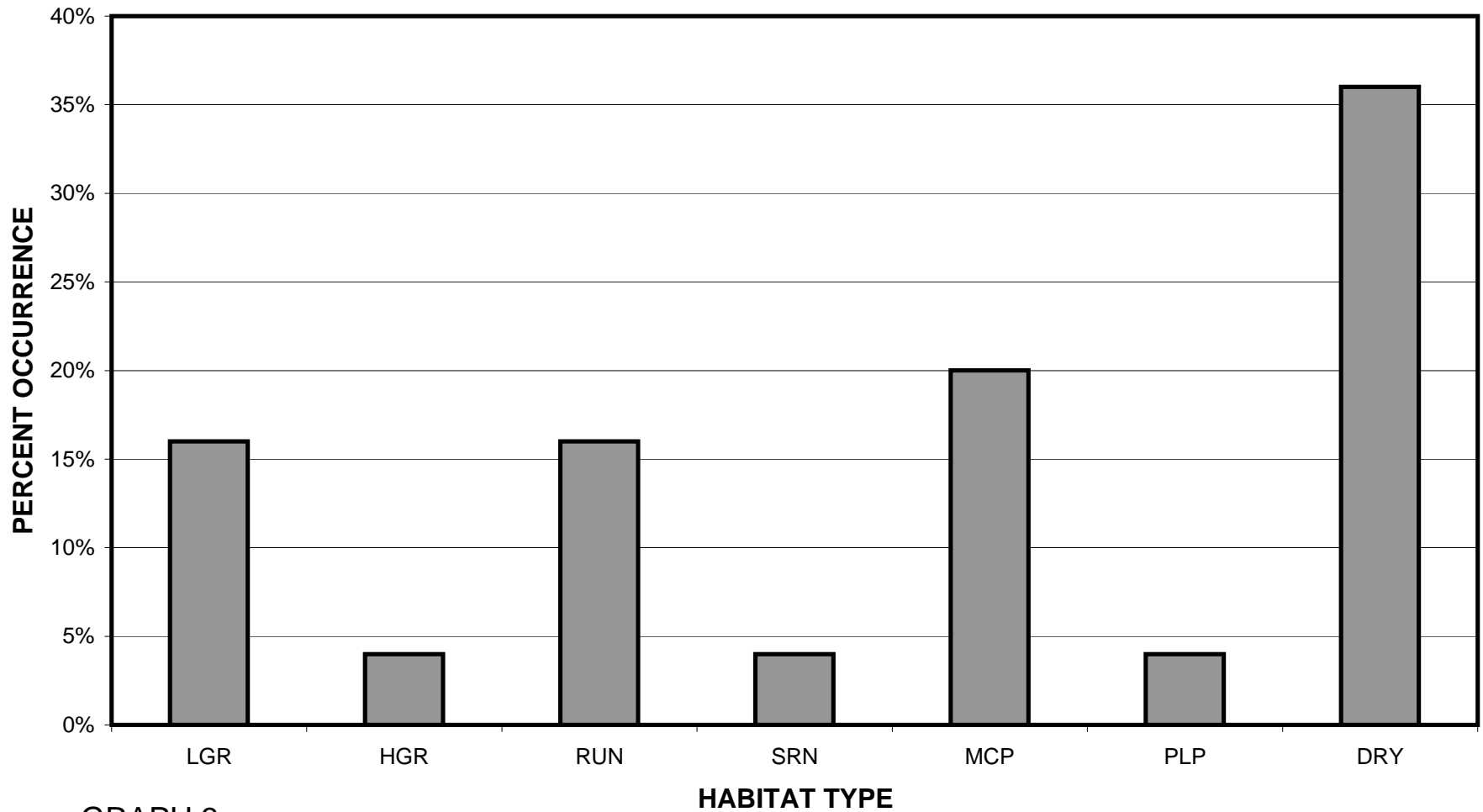
GRAPH 1

UNNAMED TRIBUTARY TO WINERY GULCH 2012
HABITAT TYPES BY PERCENT TOTAL LENGTH



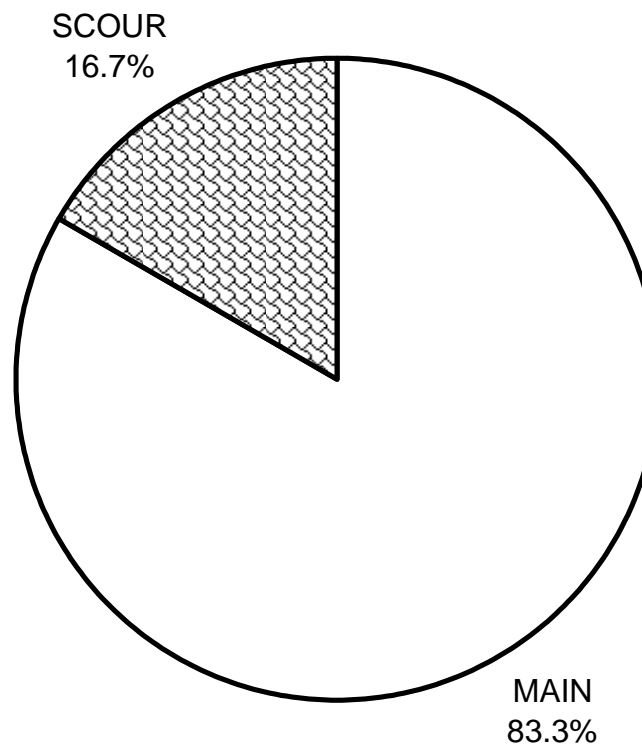
GRAPH 2

UNNAMED TRIBUTARY TO WINERY GULCH 2012
HABITAT TYPES BY PERCENT OCCURRENCE



GRAPH 3

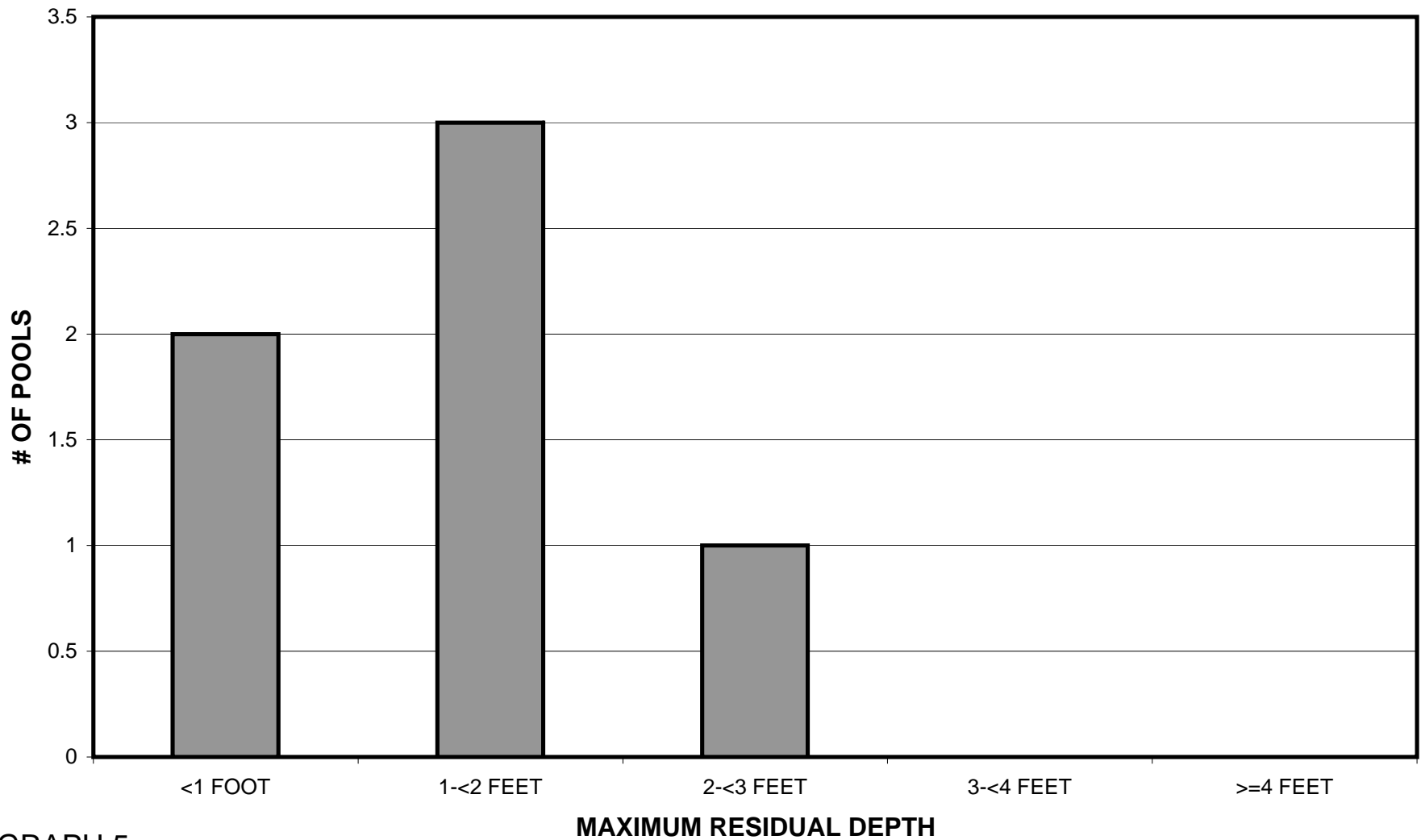
**UNNAMED TRIBUTARY TO WINERY GULCH 2012
POOL TYPES BY PERCENT OCCURRENCE**



GRAPH 4

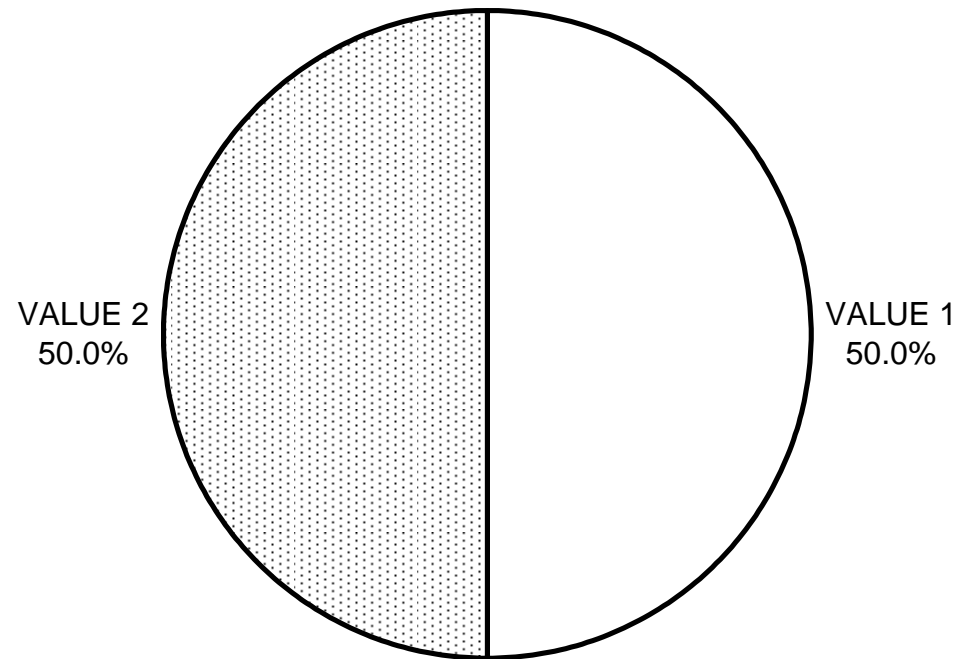
UNNAMED TRIBUTARY TO WINERY GULCH 2012

MAXIMUM DEPTH IN POOLS



GRAPH 5

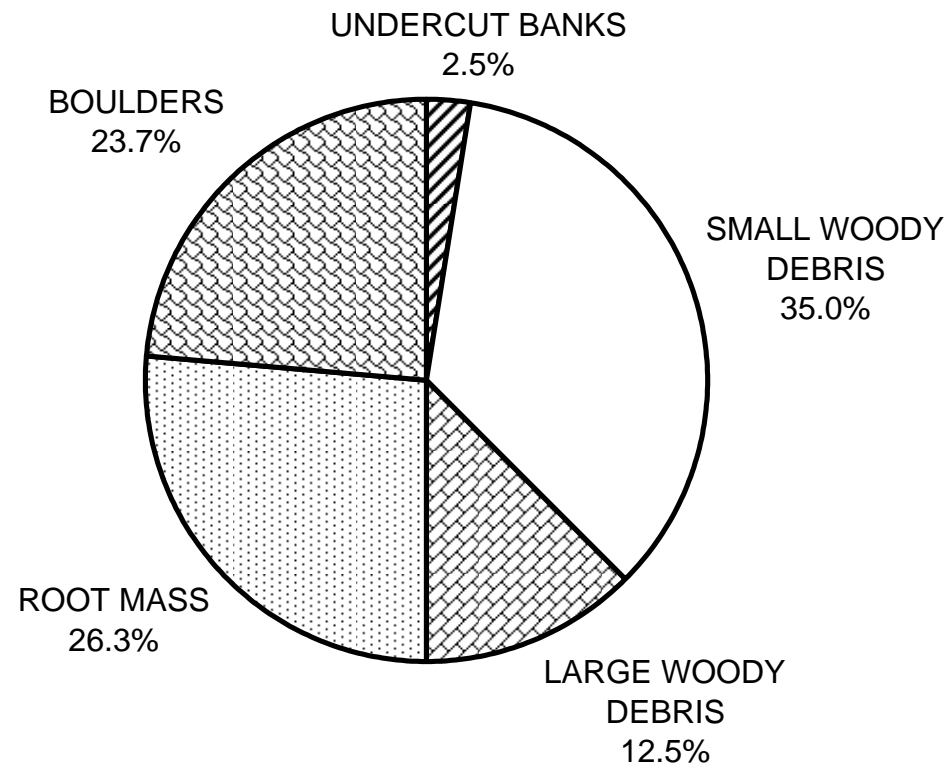
**UNNAMED TRIBUTARY TO WINERY GULCH 2012
PERCENT EMBEDDEDNESS**



GRAPH 6

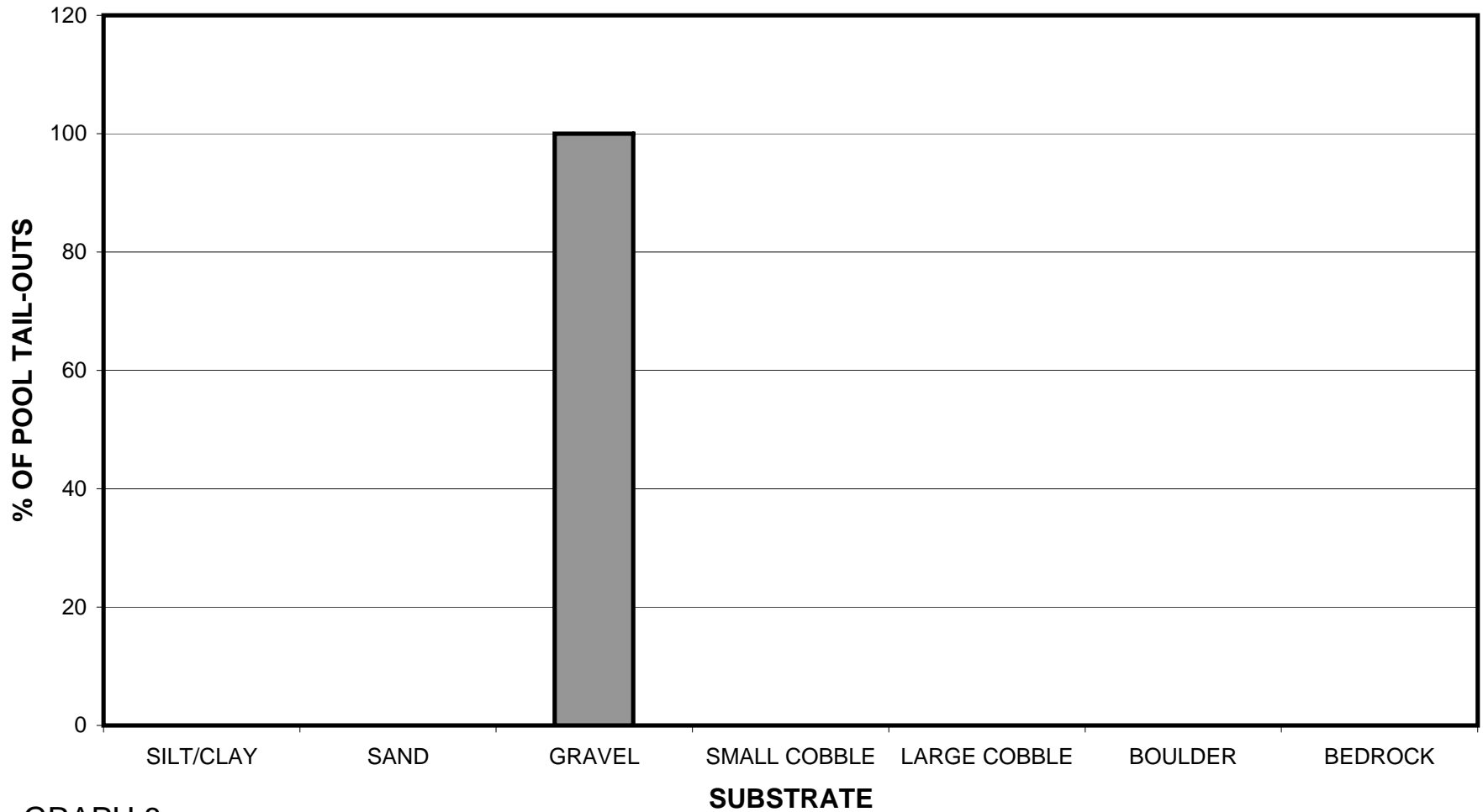
UNNAMED TRIBUTARY TO WINERY GULCH 2012

MEAN PERCENT COVER TYPES IN POOLS



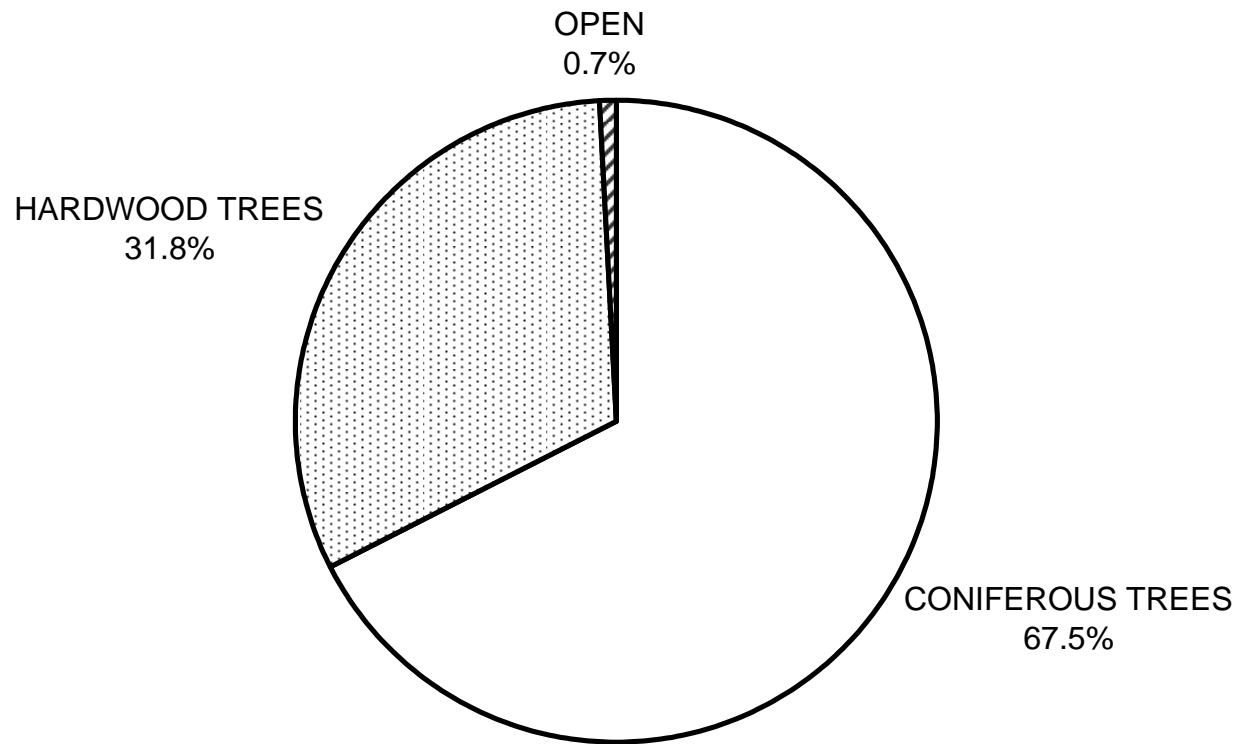
GRAPH 7

UNNAMED TRIBUTARY TO WINERY GULCH 2012
SUBSTRATE COMPOSITION IN POOL TAIL-OUTS



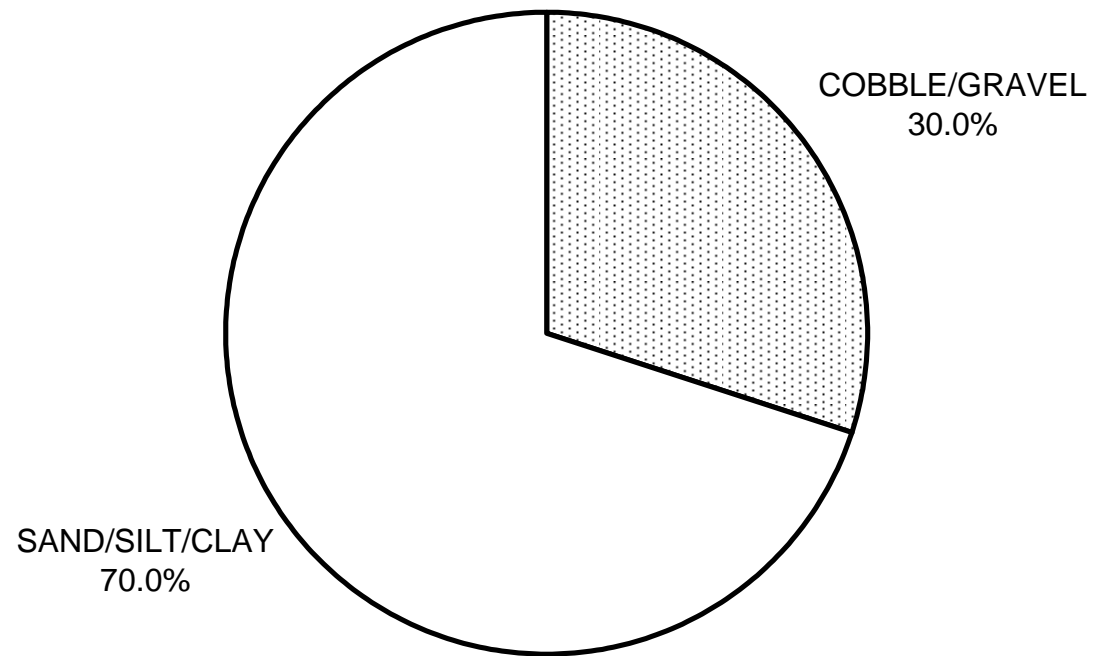
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UNNAMED TRIBUTARY TO WINERY GULCH 2012
MEAN PERCENT CANOPY



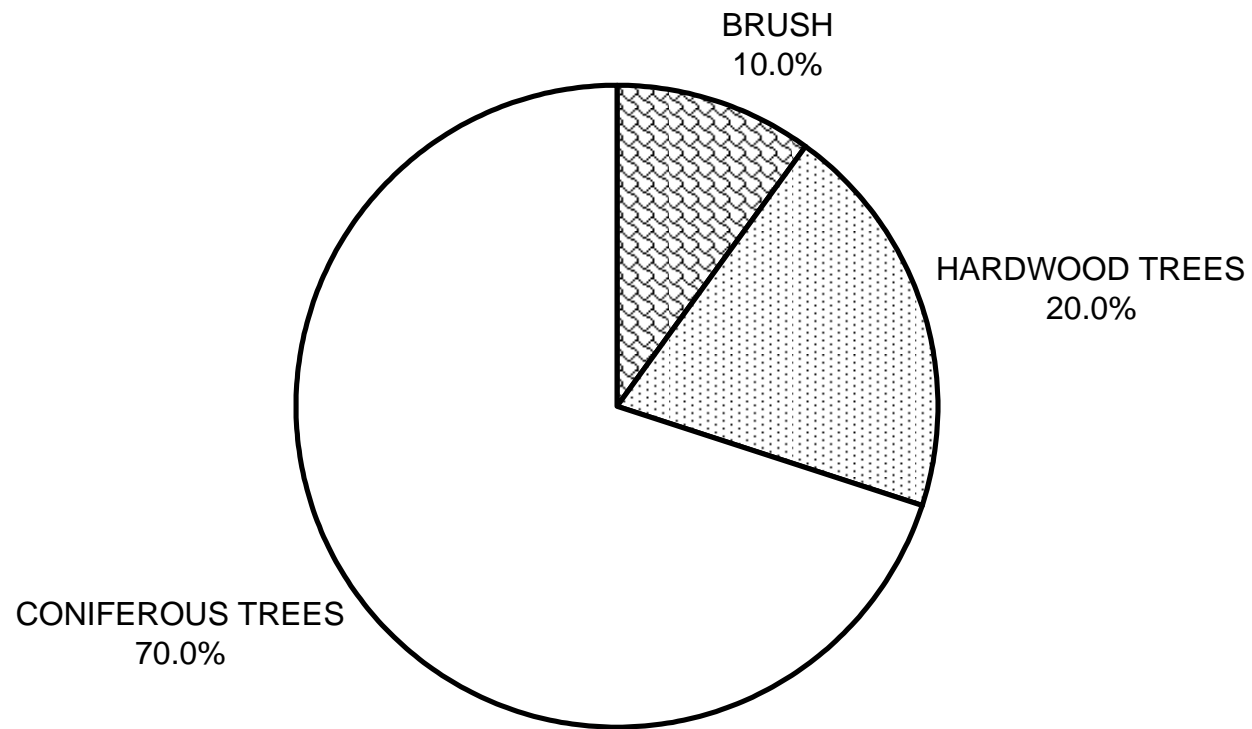
GRAPH 9

**UNNAMED TRIBUTARY TO WINERY GULCH 2012
DOMINANT BANK COMPOSITION IN SURVEY REACH**



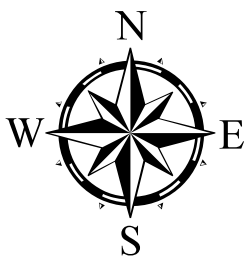
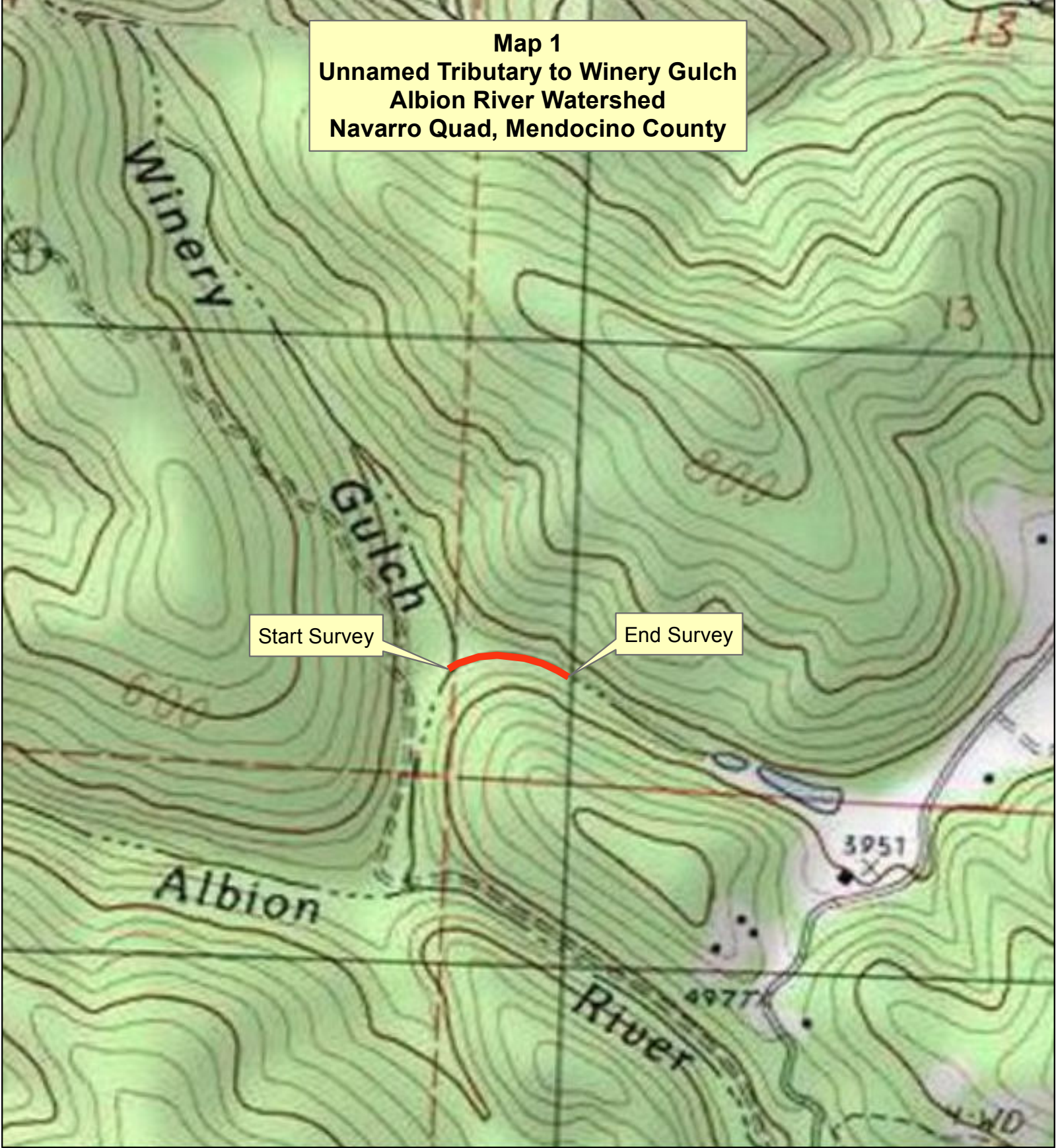
GRAPH 10

**UNNAMED TRIBUTARY TO WINERY GULCH 2012
DOMINANT BANK VEGETATION IN SURVEY REACH**



GRAPH 11

Map 1
Unnamed Tributary to Winery Gulch
Albion River Watershed
Navarro Quad, Mendocino County



Channel Type B4

0 500 1,000 Feet

