

STREAM INVENTORY REPORT

Winery Gulch

INTRODUCTION

A stream inventory was conducted on July 31, 2012 on Winery Gulch. The survey began at the confluence with the South Fork Albion River and extended upstream 0.3 miles. A stream inventory and report was also completed for one tributary to Winery Gulch.

The Winery Gulch 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 Winery Gulch. 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

Winery Gulch is 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). Winery Gulch's legal description at the confluence with the South Fork Albion River is T16N R16W S23. Its location is 39.2376 degrees north latitude and 123.6065 degrees west longitude, LLID number 1236053392377. Winery Gulch is an intermittent stream according to the USGS Navarro 7.5 minute quadrangle. Winery Gulch drains a watershed of approximately 0.6 square miles. Elevations range from about 300 feet at the mouth of the creek to 650 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.

METHODS

The habitat inventory conducted in Winery Gulch 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 Wildlife (CDFW). 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 Winery Gulch 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". Winery Gulch 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 Winery Gulch, 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 not suitable 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. Using an overhead view, a quantitative estimate of the percentage of the habitat unit covered is made. All cover is classified according to a list of nine cover types. In Winery Gulch, a standard qualitative shelter value of 0 (none), 1 (low), 2 (medium), or 3 (high) was assigned according to the complexity of the cover. The shelter rating is then calculated for each fully-described habitat unit by multiplying shelter value and percent 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 Winery Gulch, 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 Winery Gulch, 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.

10. Large Woody Debris Count:

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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 Winery Gulch. In addition, underwater observations were made at eight sites using techniques 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 Wildlife. 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

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Graphics are produced from the tables using Microsoft Excel. Graphics developed for Winery Gulch 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 31, 2012 was conducted by R. Spencer and A. Garcia (WSP). The total length of the stream surveyed was 1,453 feet.

Stream flow was not measured on Winery Gulch.

Winery Gulch is a B4 channel type for the entire length of the survey, 1,453 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.

Water temperatures taken during the survey period ranged from 54 to 58 degrees Fahrenheit. Air temperatures ranged from 68 to 74 degrees Fahrenheit.

Table 1 summarizes the Level II riffle, flatwater, and pool habitat types. Based on frequency of occurrence there were 36% pool units, 24% flatwater units, 20% dry units, 19% riffle units, and 2% unsurveyed units (Graph 1). Based on total length of Level II habitat types there were 40% pool units, 26% flatwater units, 23% dry units, 10% riffle units, and 1% unsurveyed units (Graph 2).

Nine Level IV habitat types were identified (Table 2). The most frequent habitat types by percent occurrence were mid-channel pool units, 32%; dry units, 20%; and low gradient riffle units, 15% (Graph 3). Based on percent total length, mid-channel pool units made up 38%, dry units 23%, step run units 15%.

A total of 21 pools were identified (Table 3). All of the pools encountered were main channel pools (Graph 4).

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Table 4 is a summary of maximum residual pool depths by pool habitat types. Pool quality for salmonids increases with depth. Seven of the 21 pools (33%) had a residual depth of two feet or greater (Graph 5).

The depth of cobble embeddedness was estimated at pool tail-outs. Of the 21 pool tail-outs measured, three had a value of 1 (14%); 12 had a value of 2 (57%); six had a value of 4 (29%); (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 not suitable 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 0, flatwater habitat types had a mean shelter rating of 13, and pool habitats had a mean shelter rating of 38 (Table 1).

Table 5 summarizes mean percent cover by habitat type. Undercut banks are the dominant cover type in Winery Gulch. Graph 7 describes the pool cover in Winery Gulch. Undercut banks are 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 90% of the pool tail-outs. Sand and bedrock were the next most frequently observed dominant substrate types; each occurred in 5% of the pool tail-outs.

The mean percent canopy density for the surveyed length of Winery Gulch was 100%. Of the canopy present, the mean percentages of hardwood and coniferous trees were 30% and 70%, respectively. Graph 9 describes the mean percent canopy in Winery Gulch.

For the stream reach surveyed, the mean percent right bank vegetated was 98%. The mean percent left bank vegetated was 99%. The dominant elements composing the structure of the stream banks consisted of 73% sand/silt/clay, 16% bedrock, 10% cobble/gravel, and 2% boulders (Graph 10). Coniferous trees were the dominant vegetation type observed in 77% of the units surveyed. Additionally, 19% of the units surveyed had deciduous trees as the dominant vegetation type, and 3% had brush as the dominant vegetation type (Graph 11).

BIOLOGICAL INVENTORY RESULTS

Survey teams conducted a snorkel survey at eight sites for species composition and distribution in Winery Gulch on August 23, 2012. The sites were sampled by I. Mikus and M. Groff (CDFW).

Eight sites were sampled within the first 1,102 feet of Winery Gulch. The reach sites yielded seven young-of-the-year steelhead/rainbow trout (SH/RT), and five age 1+ SH/RT.

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The following chart displays the information yielded from these sites:

2012 Winery Gulch underwater observations.

Date	Survey Site #	Habitat Unit #	Habitat Type	Approx. Dist. from mouth (ft.)	SH/RT			Coho	
					YOY	1+	2+	YOY	1+
B4 Channel Type									
08/23/12	1	003	Pool	30	0	1	0	0	0
	2	008	Pool	161	3	2	0	0	0
	3	009	Pool	181	4	0	0	0	0
	4	012	Pool	228	0	2	0	0	0
	5	019	Pool	382	0	0	0	0	0
	6	031	Pool	756	0	0	0	0	0
	7	041	Pool	1,031	0	0	0	0	0
	8	044	Pool	1,102	0	0	0	0	0

DISCUSSION

Winery Gulch is a B4 channel type. 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 temperatures recorded on the survey day July 31, 2012 ranged from 54 to 58 degrees Fahrenheit. Air temperatures ranged from 68 to 74 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 26% of the total length of this survey, riffles 10%, and pools 40%. Seven of the 21 (33%) 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.

Fifteen of the 21 pool tail-outs measured had embeddedness ratings of 1 or 2. Six 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.

Nineteen of the 21 pool tail-outs measured had gravel or small cobble as the dominant substrate. This is generally considered good for spawning salmonids.

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The mean shelter rating for pools is 38. The shelter rating in the flatwater habitats is 13. A pool shelter rating of approximately 100 is desirable. The amount of cover that now exists is being provided primarily by undercut banks in Winery Gulch. Undercut banks are 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 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 100%. The percentage of right and left bank covered with vegetation was 98% and 99%, respectively.

RECOMMENDATIONS

- 1) 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.
- 3) Increase woody cover in the pools and flatwater habitat units. Most of the existing cover in the pools is from undercut banks. 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 (ft):	Habitat unit #:	Comments:
0	0001.00	Start of survey at the confluence with the South Fork Albion River. The channel is a B4 for the entire length of the survey.
774	0033.00	There is a 1.5' high plunge over log.
946	0038.00	There is a 2.5' high plunge over woody debris and root mass.
1031	0042.00	Right bank seep.
1081	0044.00	Log debris accumulation (LDA) #01 contains one piece of large woody debris (LWD) and measures 6' high x 5' wide x 15' long. Most of the LDA consists of root mass. Water does not flow through the LDA; the channel is dry for 60' above it. There are no visible gaps in the LDA.

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Retained sediment ranges from sand to gravel and measures 10' wide x 60' long x 5' deep. There is a 6' high plunge over the LDA. Fish were not observed above the LDA.

- | | | |
|------|---------|---|
| 1257 | 0050.00 | Tributary #01 enters on the left bank. It contributes approximately 90% to Winery Gulch's flow. For more information, see the 2012 Unnamed Tributary to Winery Gulch Stream Habitat Inventory Report. |
| 1419 | 0059.00 | End of survey. There is a 7' high plunge over root mass with no jump pool below it. |

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: Winery Gulch

LLID: 1236053392377 Drainage: Albion River

Survey Dates: 7/31/2012 to 7/31/2012

Confluence Location: Quad: COMPTCHE Legal Description: T16NR16WS23 Latitude: 39:14:16.0N Longitude: 123:36:19.0W

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
12	0	DRY	20.3	27	329	22.6									
14	5	FLATWATER	23.7	27	381	26.2	4.6	0.3	0.8	97	1358	29	407		13
1	0	NOSURVEY	1.7	15	15	1.0									180
21	21	POOL	35.6	28	578	39.8	5.6	0.7	1.7	161	3381	143	3008	122	38
11	4	RIFFLE	18.6	14	150	10.3	2.5	0.2	0.3	25	280	5	56		0
Total Units	Total Units Fully Measured				Total Length (ft.)					Total Area (sq.ft.)			Total Volume (cu.ft.)		
59	30				1453					5018			3471		

Table 2 - Summary of Habitat Types and Measured Parameters

Stream Name: Winery Gulch

LLID: 1236053392377

Drainage: Albion River

Survey Dates: 7/31/2012 to 7/31/2012

Confluence Location: Quad: COMPTCHE

Legal Description: T16NR16WS23

Latitude: 39:14:16.0N

Longitude: 123:36:19.0W

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 (%)
9	3	LGR	15.3	15	134	9.2	3	0.2	0.3	31	283	6	57		0	100
1	0	HGR	1.7	6	6	0.4										
1	1	BRS	1.7	10	10	0.7	2	0.2	0.4	8	8	2	2		0	100
8	3	RUN	13.6	20	159	10.9	5	0.3	0.8	111	884	33	265		8	100
6	2	SRN	10.2	37	222	15.3	4	0.3	1	77	460	23	138		20	98
1	1	TRP	1.7	10	10	0.7	6	1.3	2	60	60	78	78	78	45	97
19	19	MCP	32.2	29	556	38.3	6	0.7	2.8	172	3267	152	2892	129	39	100
1	1	CCP	1.7	12	12	0.8	4	0.7	1	54	54	38	38	38	0	100
12	0	DRY	20.3	27	329	22.6										100
1	0	NS	1.7	15	15	1.0									180	100

Total Units
59

Total Units Fully Measured
30

Total Length (ft.)
1453

Total Area (sq.ft.)
5015

Total Volume (cu.ft.)
3469

Table 3 - Summary of Pool Types

Stream Name: Winery Gulch

LLID: 1236053392377

Drainage: Albion River

Survey Dates: 7/31/2012 to 7/31/2012

Confluence Location: Quad: COMPTCHE

Legal Description: T16NR16WS23

Latitude: 39:14:16.0N

Longitude: 123:36:19.0W

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
21	21	MAIN	100	28	578	100	5.6	0.7	161	3381	122	2561	38

Total Units	Total Units Fully Measured	Total Length (ft.)	Total Area (sq.ft.)	Total Volume (cu.ft.)
21	21	578	3381	2561

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

Stream Name: Winery Gulch

LLID: 1236053392377

Drainage: Albion River

Survey Dates: 7/31/2012 to 7/31/2012

Confluence Location: Quad: COMPTCHE

Legal Description: T16NR16WS23

Latitude: 39:14:16.0N

Longitude: 123:36:19.0W

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	0	0	1	100	0	0	0	0
19	MCP	90	2	11	11	58	6	32	0	0	0	0
1	CCP	5	0	0	1	100	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
21	2	10	12	57	7	33	0	0	0	0

Mean Maximum Residual Pool Depth (ft.): 1.7

Table 5 - Summary of Mean Percent Cover By Habitat Type

Stream Name: Winery Gulch

LLID: 1236053392377

Drainage: Albion River

Survey Dates: 7/31/2012 to 7/31/2012

Dry Units: 12

Confluence Location: Quad: COMPTCHE

Legal Description: T16NR16WS23 Latitude: 39:14:16.0N

Longitude: 123:36:19.0W

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
9	3	LGR	0	0	0	0	0	0	0	0	0
1	0	HGR									
1	1	BRS	0	0	0	0	0	0	0	0	0
11	4	TOTAL RIFFLE	0	0	0	0	0	0	0	0	0
8	3	RUN	32	25	0	43	0	0	0	0	0
6	2	SRN	25	23	3	0	0	0	0	50	0
14	5	TOTAL FLAT	29	24	1	21	0	0	0	25	0
1	1	TRP	50	0	0	50	0	0	0	0	0
19	19	MCP	37	26	11	17	2	0	0	4	3
1	1	CCP	0	0	0	0	0	0	0	0	0
21	21	TOTAL POOL	38	24	10	19	2	0	0	4	3
1	1	NS	0	40	40	20	0	0	0	0	0
59	31	TOTAL	35	25	10	20	1	0	0	7	2

Table 6 - Summary of Dominant Substrates By Habitat Type

Stream Name: Winery Gulch

LLID: 1236053392377

Drainage: Albion River

Survey Dates: 7/31/2012 to 7/31/2012

Dry Units: 12

Confluence Location: Quad: COMPTCHE

Legal Description: T16NR16WS23

Latitude: 39:14:16.0N

Longitude: 123:36:19.0W

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
9	3	LGR	0	0	67	0	0	0	33
1	0	HGR	0	0	0	0	0	0	0
1	1	BRS	0	0	0	0	0	0	100
8	3	RUN	0	33	67	0	0	0	0
6	2	SRN	0	0	50	50	0	0	0
1	1	TRP	0	0	100	0	0	0	0
19	19	MCP	0	26	63	0	0	0	11
1	1	CCP	0	0	100	0	0	0	0

Table 7 - Summary of Mean Percent Canopy for Entire Stream

Stream Name: Winery Gulch

LLID: 1236053392377

Drainage: Albion River

Survey Dates: 7/31/2012 to 7/31/2012

Confluence Location: Quad: COMPTCHE

Legal Description: T16NR16WS23

Latitude: 39:14:16.0N

Longitude: 123:36:19.0W

Mean Percent Canopy	Mean Percent Conifer	Mean Percent Hardwood	Mean Percent Open Units	Mean Right Bank % Cover	Mean Left Bank % Cover
100	70	30	0	98	99

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: Winery Gulch

LLID: 1236053392377

Drainage: Albion River

Survey Dates: 7/31/2012 to 7/31/2012

Confluence Location: Quad: COMPTCHE

Legal Description: T16NR16WS23

Latitude: 39:14:16.0N

Longitude: 123:36:19.0W

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	6	4	16.1
Boulder	1	0	1.6
Cobble / Gravel	3	3	9.7
Sand / Silt / Clay	21	24	72.6

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	0	0	0.0
Brush	1	1	3.2
Hardwood Trees	7	5	19.4
Coniferous Trees	23	25	77.4
No Vegetation	0	0	0.0

Total Stream Cobble Embeddedness Values: 2

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

StreamName: Winery Gulch

LLID: 1236053392377

Drainage: Albion River

Survey Dates: 7/31/2012 to 7/31/2012

Confluence Location: Quad: COMPTCHE

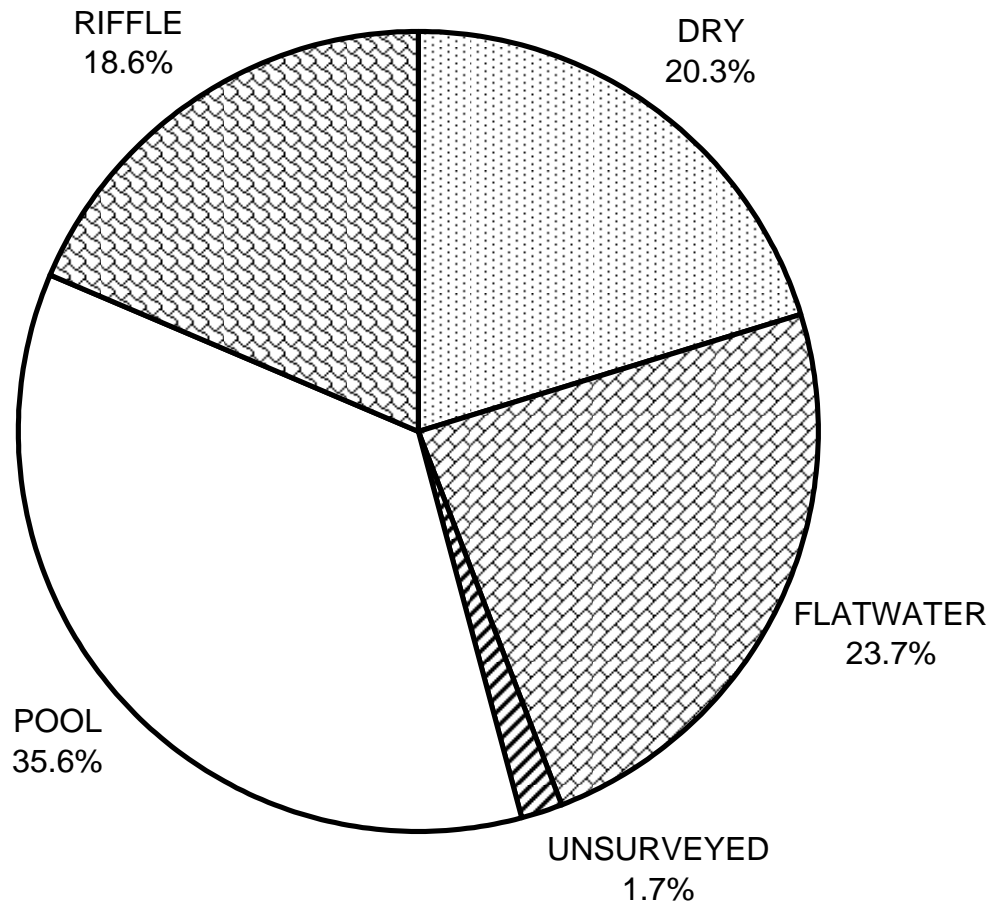
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Longitude: 123:36:19.0W

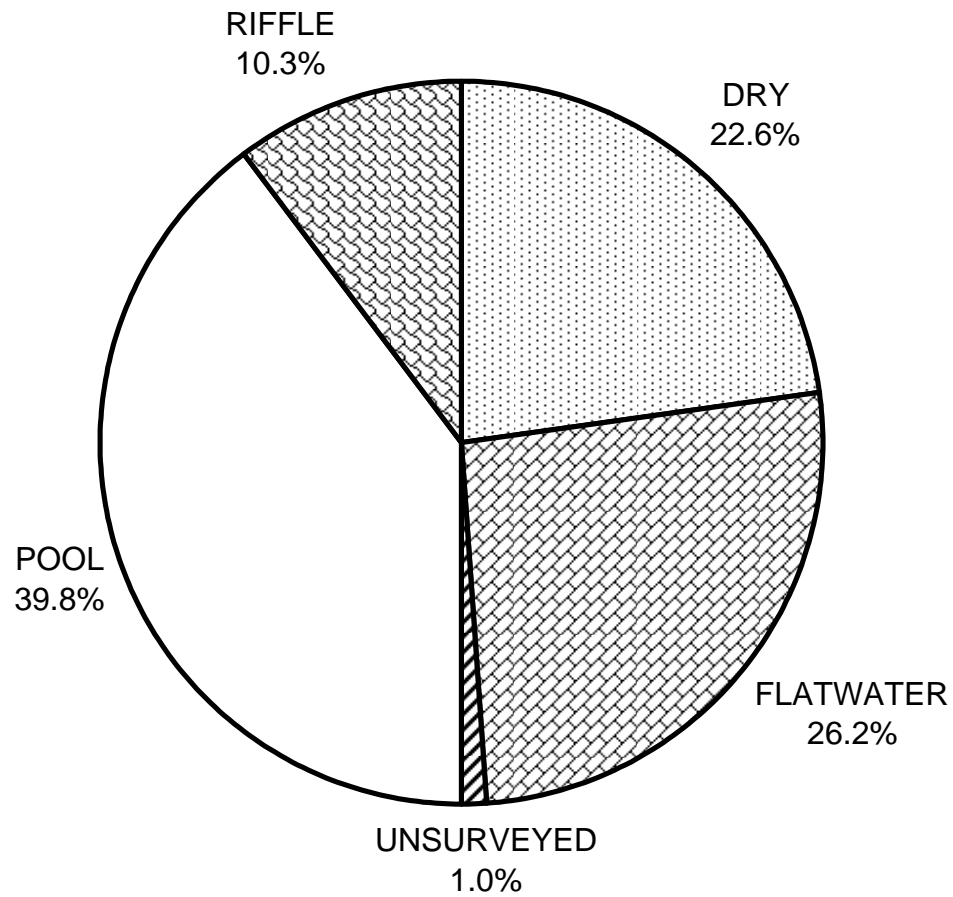
	Riffles	Flatwater	Pools
UNDERCUT BANKS (%)	0	29	38
SMALL WOODY DEBRIS (%)	0	24	24
LARGE WOODY DEBRIS (%)	0	1	10
ROOT MASS (%)	0	21	19
TERRESTRIAL VEGETATION (%)	0	0	2
AQUATIC VEGETATION (%)	0	0	0
WHITEWATER (%)	0	0	0
BOULDERS (%)	0	25	4
BEDROCK LEDGES (%)	0	0	3

WINERY GULCH 2012 HABITAT TYPES BY PERCENT OCCURRENCE



GRAPH 1

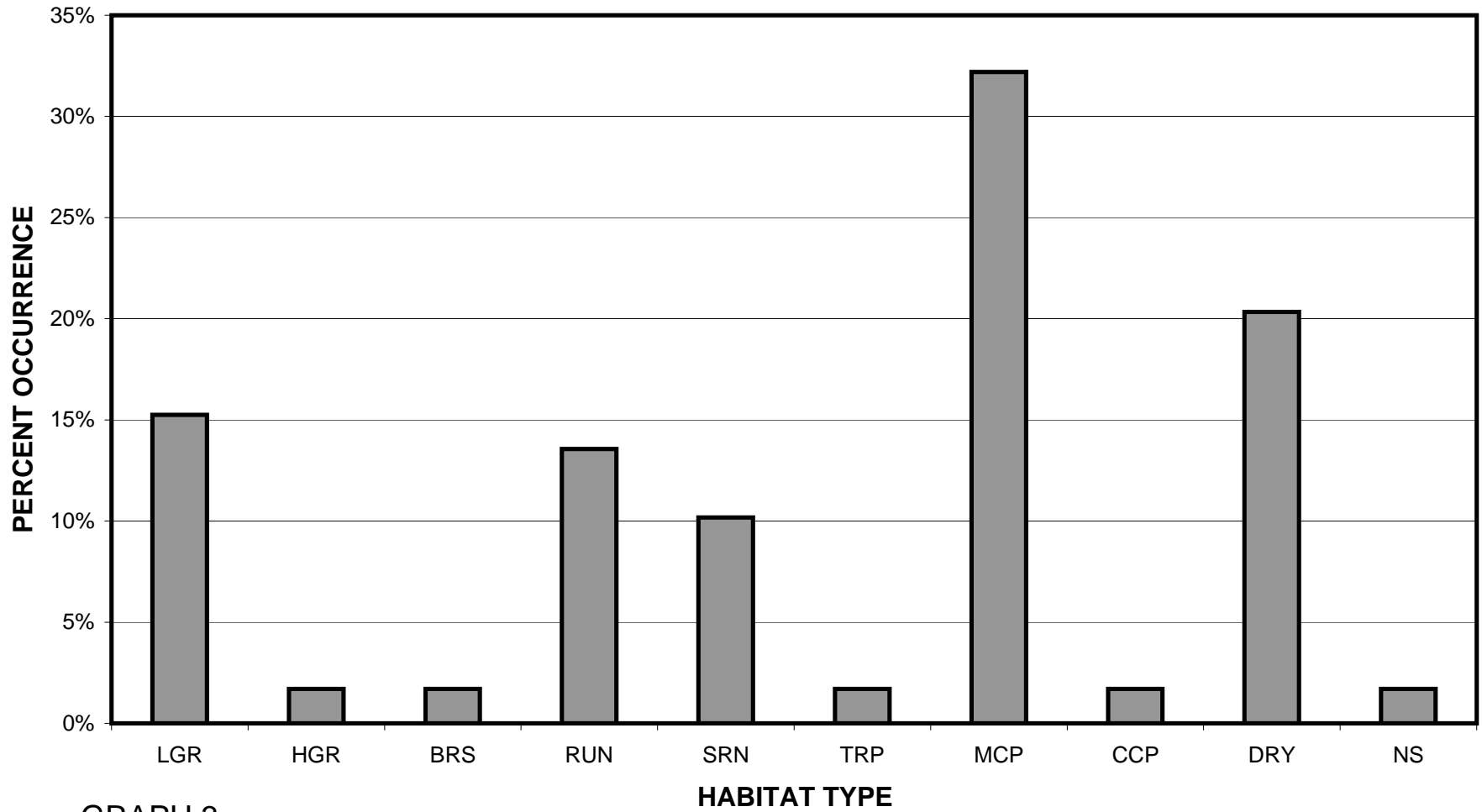
WINERY GULCH 2012 HABITAT TYPES BY PERCENT TOTAL LENGTH



GRAPH 2

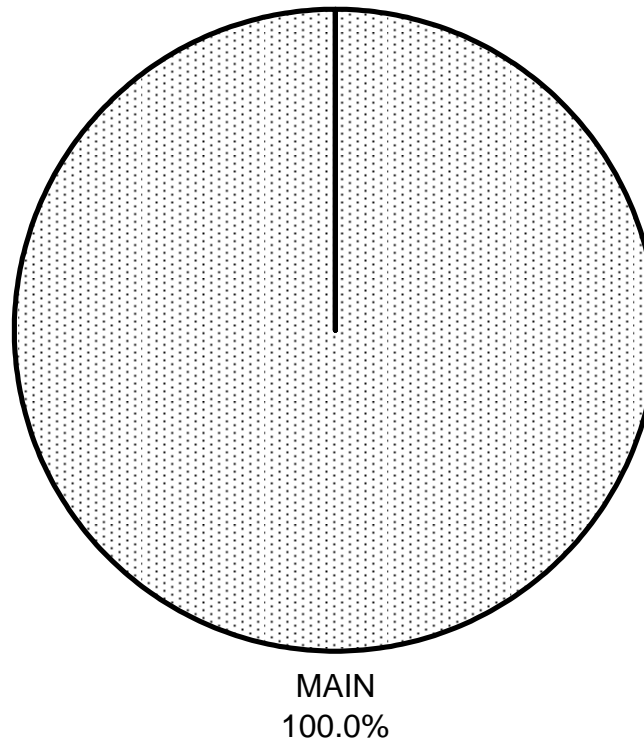
WINERY GULCH 2012

HABITAT TYPES BY PERCENT OCCURRENCE



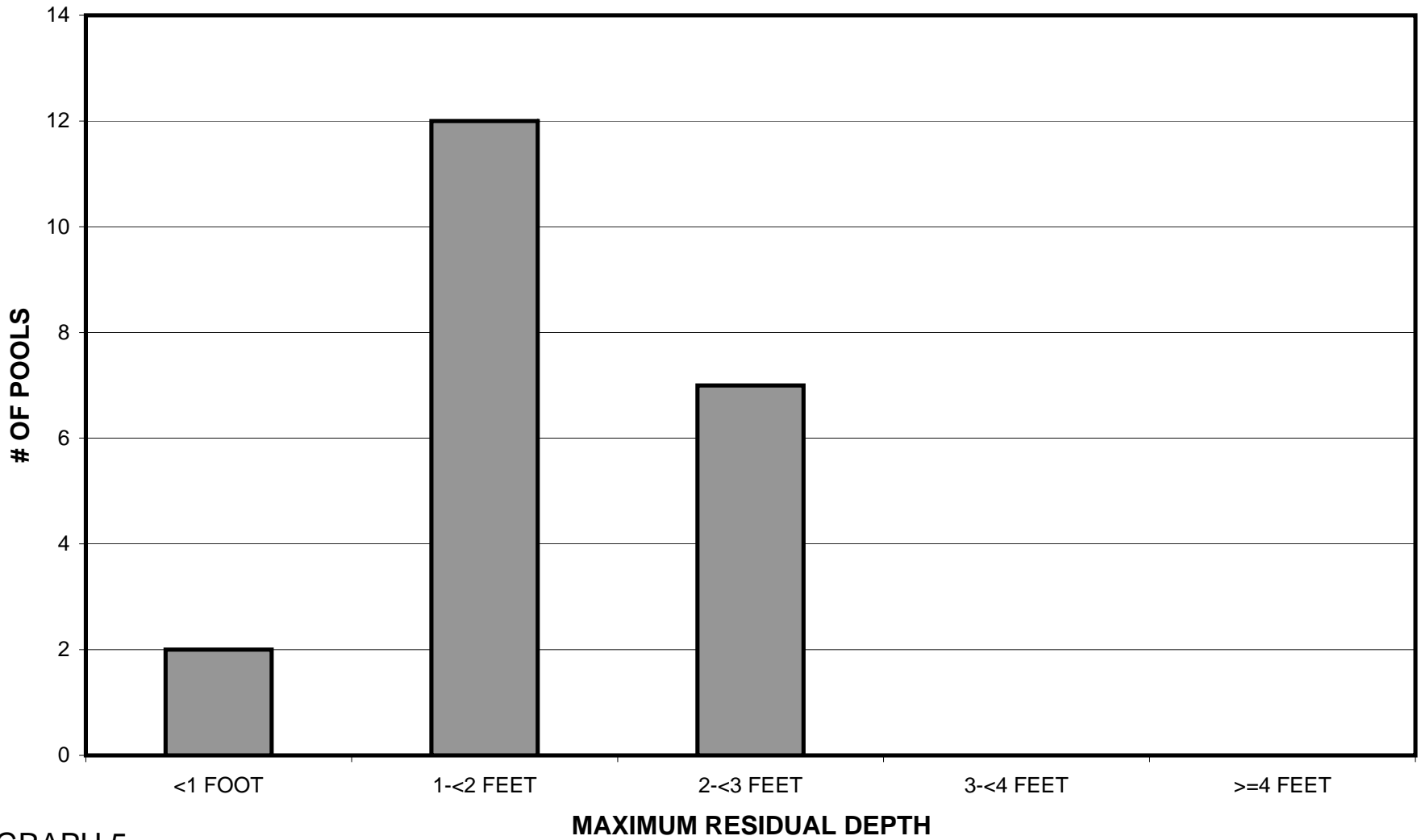
GRAPH 3

**WINERY GULCH 2012
POOL TYPES BY PERCENT OCCURRENCE**



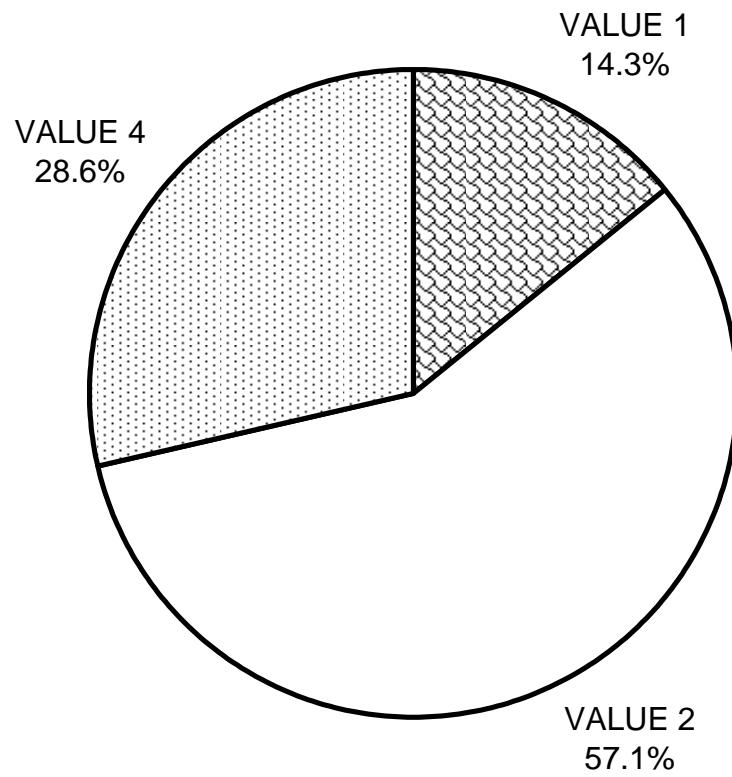
GRAPH 4

WINERY GULCH 2012 MAXIMUM DEPTH IN POOLS



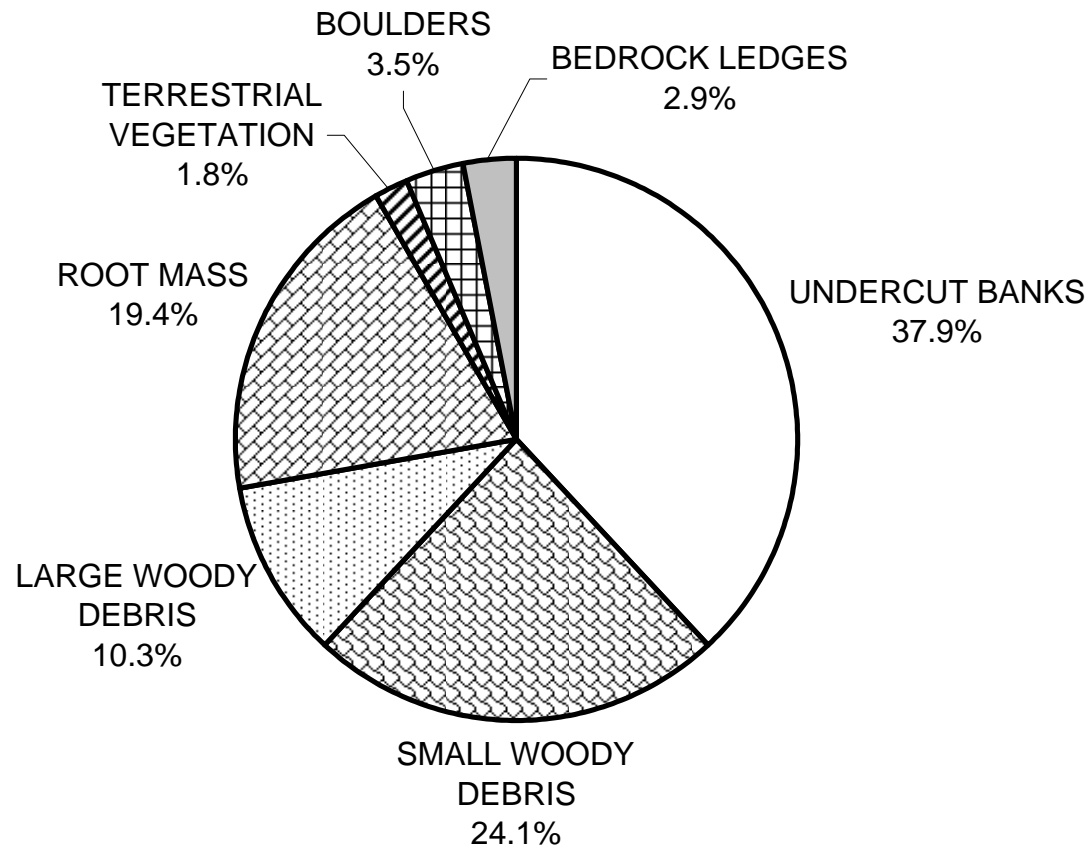
GRAPH 5

WINERY GULCH 2012 PERCENT EMBEDDEDNESS



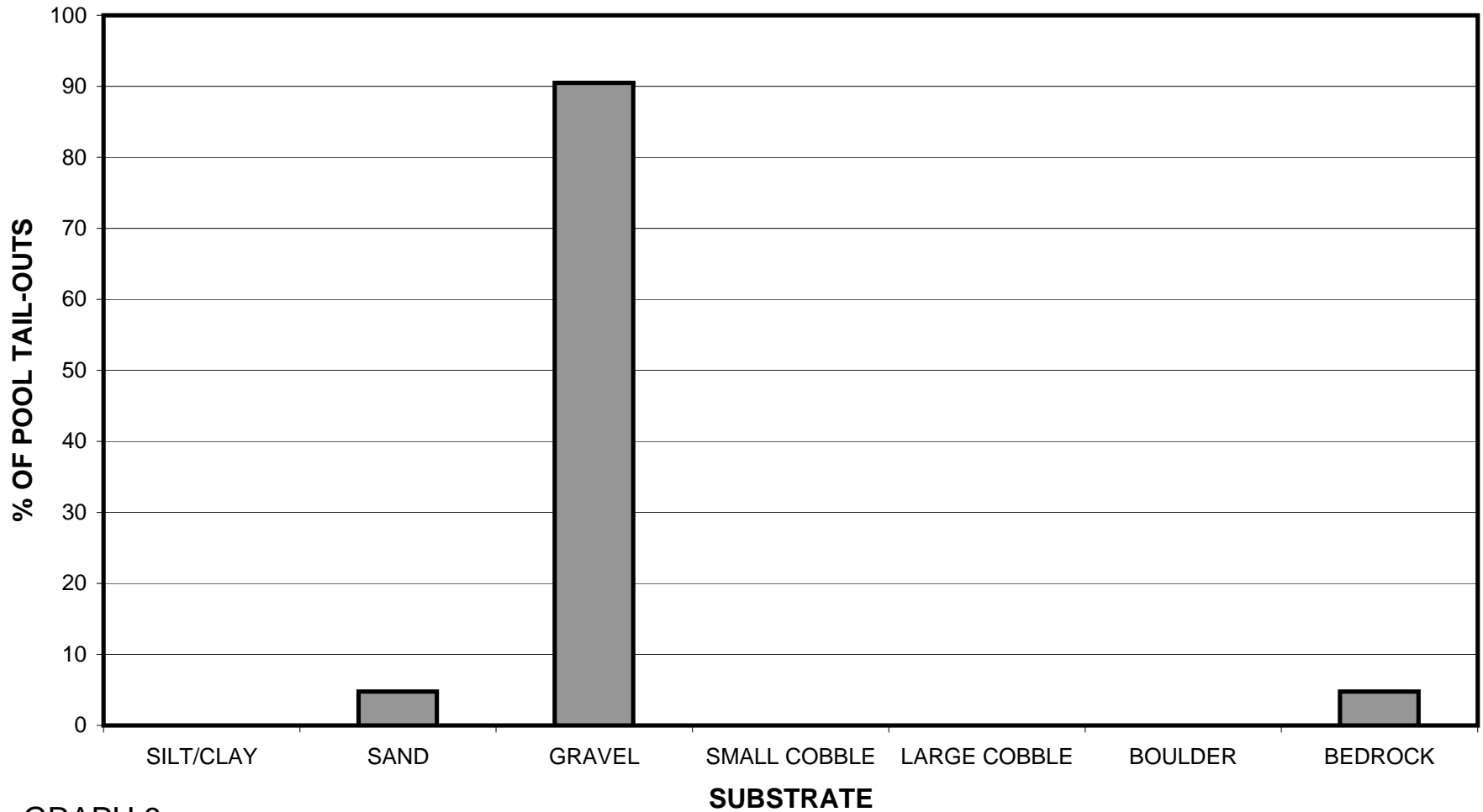
GRAPH 6

WINERY GULCH 2012 MEAN PERCENT COVER TYPES IN POOLS



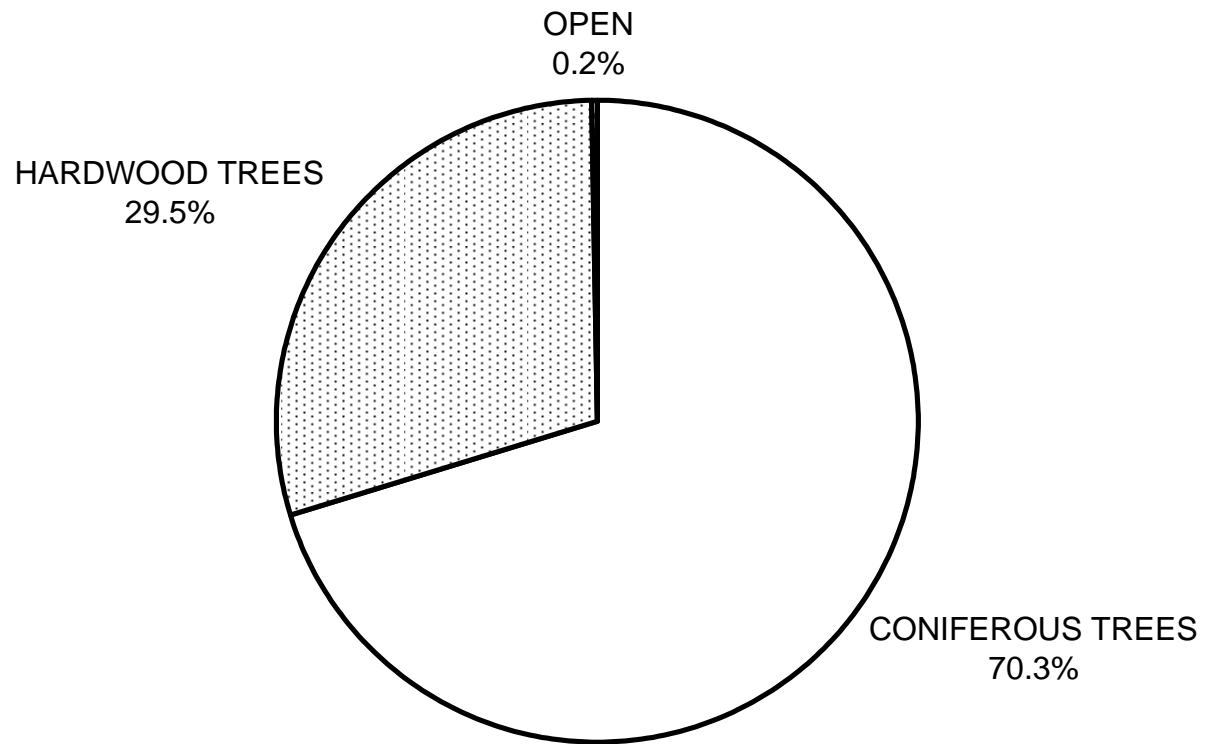
GRAPH 7

WINERY GULCH 2012 SUBSTRATE COMPOSITION IN POOL TAIL-OUTS



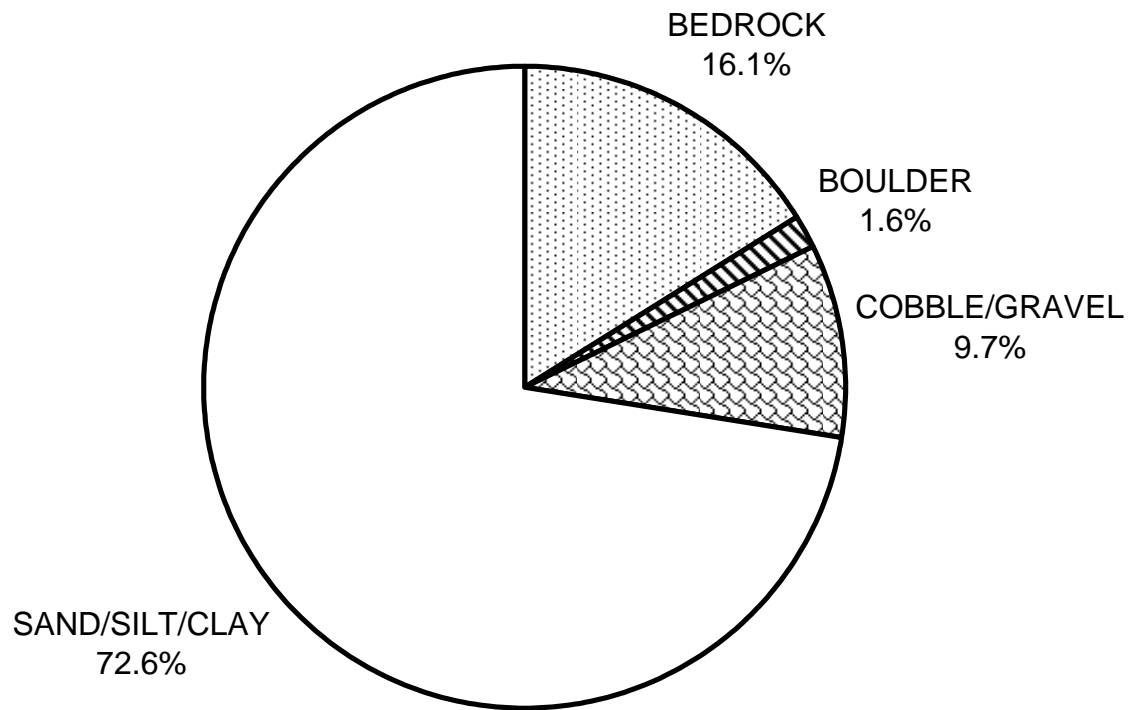
GRAPH 8

WINERY GULCH 2012 MEAN PERCENT CANOPY



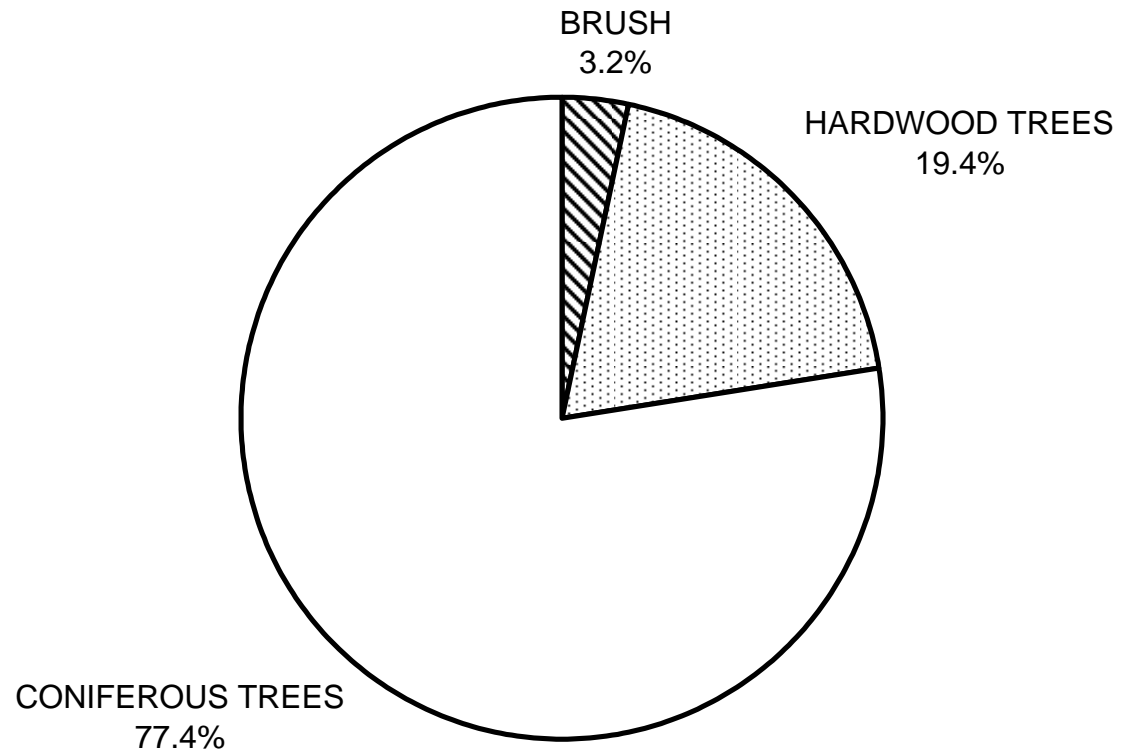
GRAPH 9

WINERY GULCH 2012 DOMINANT BANK COMPOSITION IN SURVEY REACH



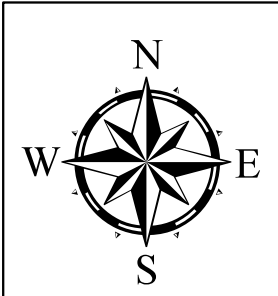
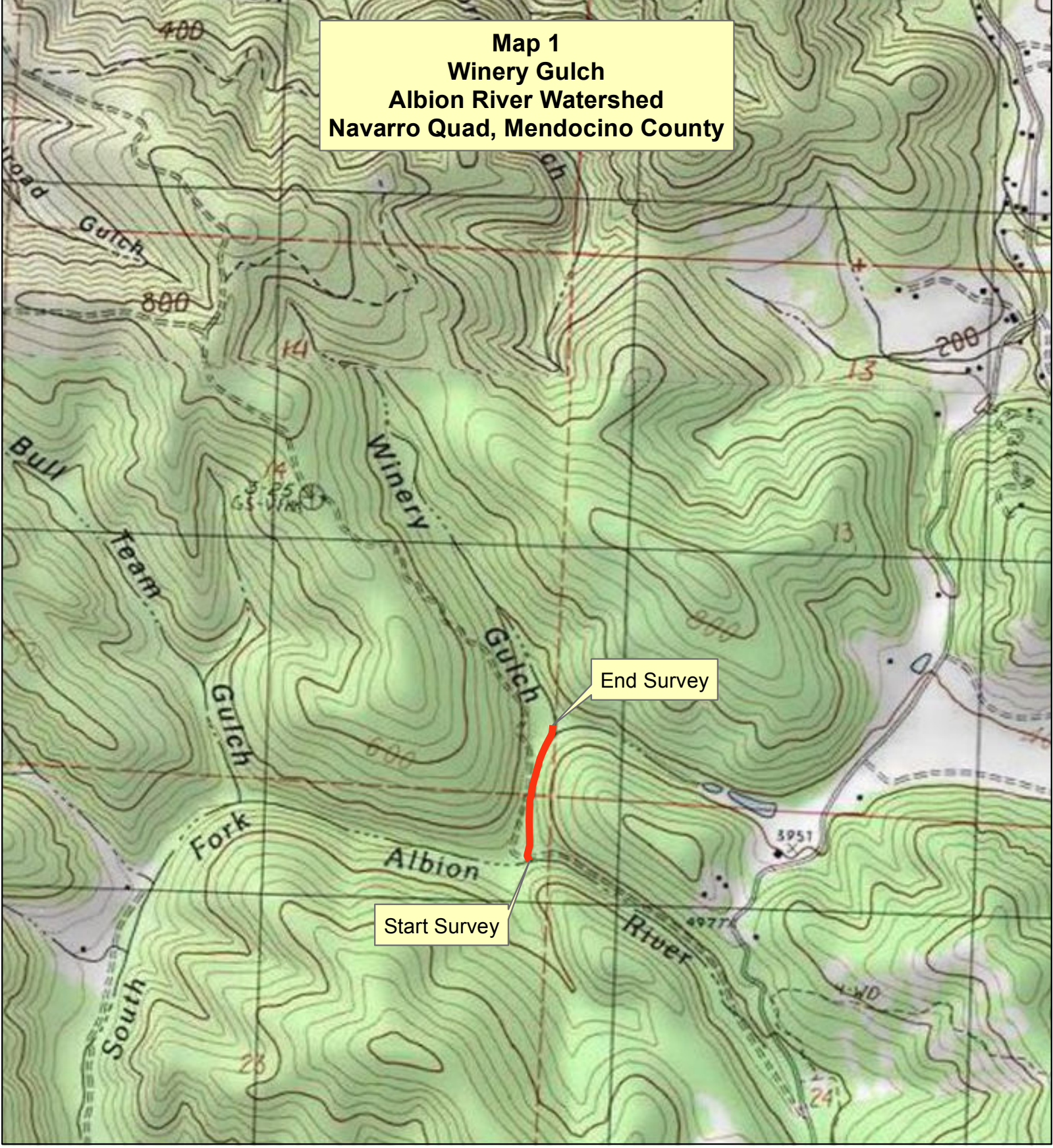
GRAPH 10


WINERY GULCH 2012
DOMINANT BANK VEGETATION IN SURVEY REACH



GRAPH 11

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



 Channel Type B4

