CALIFORNIA DEPARTMENT OF FISH AND GAME
STREAM INVENTORY REPORT
Fall Creek
Report Revised April 14, 2006
Report Completed 2000
Assessment Completed 1998

INTRODUCTION

A stream inventory was conducted during the summer of 1998 on Fall Creek. The inventory was conducted in two parts: habitat inventory and biological inventory. The objective of the habitat inventory was to document the amount and condition of available habitat to fish, and other aquatic species with an emphasis on anadromous salmonids in Fall Creek. The objective of the biological inventory was to document the salmonid and other aquatic species present and their distribution.

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

Fall Creek is a tributary to Dry Creek which flows into the Russian River, located in Sonoma, California (see Fall Creek map, page 2). The legal description at the confluence with Dry Creek is T10N, R10W, S16. Its location is 38°41'57" N. latitude and 122°58'43" W. longitude. Year round vehicle access exists from Highway 101 near Healdsburg, via West Dry Creek Road.

Fall Creek and its tributaries drain a basin of approximately 1.8 square miles. Fall Creek is a second order stream and has approximately 2.5 miles of blue line stream, according to the USGS Geyserville 7.5 minute quadrangle. Summer flow was measured as approximately 0.27 cfs at the West Dry Creek Road Bridge on August 26,1998. Elevations range from about 190 feet at the mouth of the creek to 750 feet in the headwaters. No sensitive plants or animals were listed in the CDFG's Natural Diversity Database as occurring within the Fall Creek watershed.

METHODS

The habitat inventory conducted in Fall Creek follows the methodology presented in the California Salmonid Stream Habitat Restoration Manual (Flosi et al. 1998). The AmeriCorps Volunteers 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 and was supervised by Bob Coey, Russian River Basin Planner (DFG).

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 Fall Creek to record measurements and observations. There are nine components to the inventory form: flow, channel type, temperatures, habitat type, embeddedness, shelter rating, substrate composition, canopy, and bank composition.

1. Flow:

Flow is measured in cubic feet per second (cfs) at the bottom of the stream survey reach using standard flow measuring equipment, if available. In some cases flows are estimated. Flows were also measured or estimated at major tributary confluences.

2. Channel Type:

Channel typing is conducted according to the classification system developed and revised by David Rosgen (1985 rev. 1994). This methodology is described in the California Salmonid Stream Habitat Restoration Manual. Channel typing is conducted simultaneously with habitat typing and follows a standard form to record measurements and observations. There are five measured parameters used to determine channel type: 1) water slope gradient, 2) entrenchment, 3) width/depth ratio, 4) substrate composition, and 5) sinuosity.

3. Temperatures:

Water and air temperatures, and time, are measured by crew members with hand held thermometers and recorded at each tenth unit typed. Temperatures are measured in Fahrenheit at the middle of the habitat unit and within one foot of the water surface. Temperatures are also recorded using remote Temperature recorders which log temperature every two hours, 24 hours/day.

4. Habitat Type:

Habitat typing uses the 24 habitat classification types defined by McCain and others (1988). Habitat units are numbered sequentially and assigned a type identification number selected from a standard list of 24 habitat types. Dewatered units are labeled "DRY". Fall 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 unit lengths were measured, additionally, the first occurrence of each unit type and a randomly selected 10% subset of all units were completely sampled (length, mean width, mean depth, maximum depth and pool tail crest depth). All measurements were in feet to the nearest tenth.

5. Embeddedness:

The depth of embeddedness of the cobbles in pool tail-out reaches is measured by the percent of the cobble that is surrounded or buried by fine sediment. In Fall Creek, embeddedness was visually estimated. The values were recorded using the following ranges: 0 - 25% (value 1), 26 - 50% (value 2), 51 - 75% (value 3), 76 - 100% (value 4) or "not suitable" (value 5) was assigned to tail-outs deemed unsuited for spawning due to inappropriate substrate particle size, having a bedrock tail-out,

or other considerations.

6. Shelter Rating:

Instream shelter is composed of those elements within a stream channel that provide salmonids protection from predation, reduce water velocities so fish can rest and conserve energy, and allow separation of territorial units to reduce density related competition. Using an overhead view, a quantitative estimate of the percentage of the habitat unit covered is made. All shelter is then classified according to a list of nine shelter types. In Fall Creek, a standard qualitative shelter value of 0 (none), 1 (low), 2 (medium), or 3 (high) was assigned according to the complexity of the shelter. The shelter rating is calculated for each habitat unit by multiplying shelter value and percent covered. 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 measured habitat units, dominant and sub-dominant substrate elements were visually estimated using a list of seven size classes.

8. Canopy:

Stream canopy density was estimated using modified handheld spherical densiometers as described in the California Salmonid Stream Habitat Restoration Manual, 1998. Canopy density relates to the amount of stream shaded from the sun. In Fall 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 visually into percentages of evergreen or deciduous trees.

9. Bank Composition:

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 Fall Creek, the dominant composition type and the dominant vegetation type of both the right and left banks for each fully measured unit were selected from the habitat inventory form. Additionally, the percent of each bank covered by vegetation was estimated and recorded.

BIOLOGICAL INVENTORY

Biological sampling during stream inventory is used to determine fish species and their distribution in the stream. Biological inventory is conducted using one or more of three basic methods: 1) stream bank observation, 2) underwater observation, 3) electrofishing. These sampling techniques are discussed in the California Salmonid Stream Habitat Restoration Manual.

DATA ANALYSIS

Data from the habitat inventory form are entered into Habitat, a dBASE IV data entry program developed CDFG. This program processes and summarizes the data, and produces the following tables and appendices:

- Riffle, flatwater, and pool habitat types
- Habitat types and measured parameters
- Pool types
- Maximum pool depths by habitat types
- Shelter by habitat types
- Dominant substrates by habitat types
- Vegetative cover and dominant bank composition
- Fish habitat elements by stream reach

Graphics are produced from the tables using Lotus 1,2,3. Graphics developed for Fall Creek include:

- Level II Habitat Types by % Occurrence and % Total Length
- Level IV Habitat Types by % Occurrence
- Pool Habitat Types by % Occurrence
- Maximum Depth in Pools
- Pool Shelter Types by % Area
- Substrate Composition in Low Gradient Riffles
- Percent Cobble Embeddedness by Reach
- Mean Percent Canopy
- Mean Percent Canopy by Reach
- Percent Bank Composition and Bank Vegetation

HISTORICAL STREAM SURVEYS:

No historical stream surveys exist for Fall Creek.

HABITAT INVENTORY RESULTS

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

The habitat inventory of August 19, 1998 was conducted by Janet Lester and Jennifer Jenkins (AmeriCorps) with supervision and analysis by CDFG. The survey began at the confluence with Dry Creek and extended up Fall Creek to the end of anadromous fish passage at a rock falls. The total length of the stream surveyed was 1135 feet, with no additional feet of side channel.

A flow of 0.27 cfs was measured August 26, 1998 at habitat unit #003, 100' above the West Dry

Creek Road Bridge with a Marsh-McBirney Model 2000 flowmeter.

This section of Fall Creek has one channel type, from the mouth to 1135 feet a B1. B1 channel types are moderately entrenched, moderate gradient (2-4%), riffle dominated channels, with infrequently spaced pools, a very stable plan and profile, stable banks and have a predominantly bedrock substrate.

Water temperatures ranged from 69°F to 70°F. Air temperatures ranged from 78°F to 81°F. Summer temperatures were also measured using a remote temperature recorder placed in a pool (see Temperature Summary graphs at end of report). A recorder placed 60' downstream of the West Dry Creek Road Bridge in Reach 1 logged temperatures every 2 hours from July 15 - September 22, 1998. The highest temperature recorded was 80°F in July and the lowest was 58°F in September.

Table 1 summarizes the Level II riffle, flatwater, and pool habitat types. Based on frequency of occurrence there were 40% flatwater units, 33% pool units, and 20% riffle units. Based on total length there were 67% flatwater units, 17% riffle units, and 14% pool units.

Fifteen habitat units were measured and 40% were completely sampled. Six Level IV habitat types were identified. The data is summarized in Table 2. The most frequent habitat types by percent occurrence were mid-channel pools at 27%, bedrock sheets 20%, step runs 20% and runs 13% (Graph 2). By percent total length, runs made up 36%, step runs 26%, bedrock sheets 17%, and mid-channel pools 11%.

Five pools were identified (Table 3). Main Channel pools were most often encountered at 80%, and comprised 81% of the total length of pools (Graph 3).

Table 4 is a summary of maximum pool depths by pool habitat types. Pool quality for salmonids increases with depth. Three of the 5 pools (60%) had a depth of two feet or greater (Graph 4). These deeper pools comprised 9% of the total length of stream habitat.

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. Flatwater types had the highest shelter rating at 80. Riffle had the lowest rating with 5 and pools rated 19 (Table 1). Of the pool types, the scour pools had the highest mean shelter rating at 60 and main channel pools rated 5 (Table 3).

Table 5 summarizes fish shelter by habitat type. By percent area, the dominant pool shelter types were bedrock ledges at 25%, root masses 25%, terrestrial vegetation 17%, and boulders 14%. Graph 5 describes the pool shelter in Fall Creek.

Table 6 summarizes the dominant substrate by habitat type (Graph 6). There were no low gradient riffles observed during the survey.

No mechanical gravel sampling was conducted in 1998 surveys.

The depth of cobble embeddedness was estimated at pool tail-outs. Of the five pool tail-outs measured, one had a value of 3 (20%). Four (80%) pool tail-outs rated a 5 (unsuitable substrate type for spawning). On this scale, a value of one is best for fisheries. Bedrock was the dominant substrate observed at pool tail-outs.

The mean percent canopy density for the stream reach surveyed was 53%. Deciduous trees made up 100% of the canopy. Graph 8 describes the canopy for the entire survey.

For the entire stream reach surveyed, the mean percent right bank vegetated was 98% and the mean percent left bank vegetated was 93%. For the habitat units measured, the dominant vegetation types for the stream banks were: 69% deciduous trees and 31% brush. The dominant substrate for the stream banks were: 63% silt/clay/sand and 38% bedrock (Graph 10).

BIOLOGICAL INVENTORY

JUVENILE SURVEYS:

On September 10, 1998 a recent biological inventory was conducted in one site of Fall Creek to document the fish species composition and distribution. The site was single pass electrofished using one Smith Root Model 12 electrofisher. Fish from the site were counted by species, and returned to the stream. The air temperature was 73°F and the water temperature was 64°F. The observers were Paul Retherford and Janet Lester (AmeriCorps).

The inventory of Reach 1 started 510 feet upstream from the confluence with Dry Creek and ended approximately 95 feet upstream. In glide, run, and pool habitat types seven 0+ and two 1+ steelhead were observed along with nine sculpin, two roach, and one sunfish.

During the habitat inventory, no anadromous salmonids were observed upstream of unit #015, where a 60' falls impedes further passage. The habitat inventory ended at the waterfall, but a resident trout survey was conducted from the waterfall to approximately 5910' upstream. One 2+ *Oncorhynchus mykiss* was observed above this fish barrier.

A summary of recent data collected appears in the table below.

Table 1. Species Observed in Recent Surveys

YEARS	SPECIES	SOURCE	Native/Introduced
1998	Steelhead	DFG	N
1998	Sculpin	DFG	N

Table 1. Species Observed in Recent Surveys			
YEARS	**SPECIES**	**SOURCE**	**Native/Introduced**
1998	Roach	DFG	N
1998	Sunfish	DFG	I

Historical records reflect that fish stocking/transfer operations occurred in 1986.

Table 2. Summary of fish hatchery stocking/transfers into Fall Creek				
YEAR	**SOURCE**	**SPECIES**	#	**SIZE**
1986	Dry Creek	SH	16500	FING

SH = steelhead

ADULT SURVEYS:

On February 3, 1998 a recent spawning/carcass survey was conducted in two sites of Fall Creek. The air temperature was 52°F and the water temperature was 44°F. The observers were Sean Higgins, Mike Lucas, Dez Mikkelsen (AmeriCorps), and Bob Coey (DFG).

The first survey started at the mouth of Fall Creek and ended approximately 500 feet upstream. Five redds were observed in Dry Creek around the confluence with Fall Creek and one questionable redd was observed in Fall Creek. Two adult salmonids were observed at Yoakim Bridge in Dry Creek.

The next survey started at the West Dry Creek Bridge and ended approximately 1655 feet upstream at the 60' falls. Six resident salmonids were observed approximately 150 upstream from the West Dry Creek Bridge. Twenty smolts and one adult salmonid were observed in the pool above habitat unit #010. Four smolts were observed approximately 70 feet downstream of the falls. One dead steelhead smolt of hatchery origin was also observed during the survey. A landowner stated that the pond above the falls was stocked with rainbow trout and that there was fishing activity at the falls.

DISCUSSION

Fall Creek has one channel type: a B1 (1135 ft.).

According to the DFG Salmonid Stream Habitat Restoration Manual, B1 channel types are excellent for bank-placed boulders and bank cover and good for log cover.

These channel types have suitable gradients and the stable stream banks that are necessary for the installation of instream structures designed to increase pool habitat, trap spawning gravels, and provide protective shelter for fish.

The water temperatures recorded on the survey days August 19, 1998 ranged from 69°F to 70°F. Air temperatures ranged from 78°F to 81°F. These higher temperatures, if sustained, are above the threshold stress level (65°F) for salmonids.

Summer temperatures measured using remote temperature recorders placed in pools ranged from 58° to 80°F for Reach 1. The Temperature Summary graph shows that for much of the summer (July through August) the lower watershed exhibited temperatures above the optimal for salmonids.

Pools comprised 14% of the total length of this survey. In first and second order streams a primary pool is defined to have a maximum depth of at least two feet, occupy at least half the width of the low flow channel, and be as long as the low flow channel width. In Fall Creek, the pools are relatively deep with 60% having a maximum depth of at least 2 feet. These pools comprised only 9% of the total length of stream habitat. In coastal coho and steelhead streams, it is generally desirable to have primary pools comprise approximately 50% of total habitat length.

The mean shelter rating for pools was 19. However, a pool shelter rating of approximately 80 is desirable. The relatively small amount of pool shelter that now exists is being provided primarily by bedrock ledges (25%), root masses (25%), terrestrial vegetation (17%), and boulders (14%). Log and root wad cover in the pool and flatwater habitats would improve both summer and winter salmonid habitat. Log cover provides rearing fry with protection from predation, rest from water velocity, and also divides territorial units to reduce density related competition.

There were no low gradient riffles found in this survey, which typically provide the gravel or small cobble dominant substrate, and other habitat factors, necessary for salmonid egg survival.
Twenty percent of the pool tail-outs measured had embeddedness ratings of either 3 or 4. None had a rating of 1. Cobble embeddedness measured to be 25% or less, a rating of 1, is considered best for the needs of salmon and steelhead. Eighty percent of the pool tail-outs measured had a rating of 5, which is considered unsuitable for spawning due to the natural geomorphology.

The higher the percent of fine sediment, the lower the probability that eggs will survive to hatch. This is due to the reduced quantity of oxygenated water able to percolate through the gravel, or because of fine sediment capping the redd and preventing fry emergence. In Fall Creek, sediment sources should be mapped and rated according to their potential sediment yields, and control measures taken.

The mean percent canopy for the survey was 53%. This is a very low percentage of canopy, since 80 percent is generally considered desirable. Cooler water temperatures are desirable in Fall Creek. Elevated water temperatures could be reduced by increasing stream canopy. The large trees required for adequate stream canopy would also eventually provide a long term source of large woody debris

needed for instream shelter and bank stability.

SUMMARY

Biological surveys were conducted to document fish distribution and are not necessarily representative of population information. The 1998 Fall survey documented 0+ fish indicating successful spawning in the lower reaches of Fall Creek. Adult Steelhead are known to spawn in the 1100 foot section of Fall Creek every year, with limited rearing habitat for juveniles.

The 1100 foot section of Fall Creek has numerous opportunities for habitat work to improve rearing conditions. Above the falls, habitat is adequate and suitable for resident populations. This could possibly be explored by the owner.

GENERAL MANAGEMENT RECOMMENDATIONS

Lower Fall Creek should be managed as an anadromous, natural production stream.

Recent winter storms brought down many large trees and other woody debris into the stream, which increased the number and quality of pools since the drought years. This woody debris, if left undisturbed, will provide fish shelter and rearing habitat, and offset channel incision. Efforts to increase flood protection or improve fish access in the short run, have led to long term problems in the system. Landowners should be sensitive about the natural and positive role woody debris plays in the system, and encouraged not to remove woody debris from the stream, except under extreme buildup and only under guidance by a fishery professional.

PRIORITY FISHERY ENHANCEMENT OPPORTUNITIES

1) Increase the canopy on Fall Creek by planting willow, alder, redwood, and Douglas fir along the stream where shade canopy is not at acceptable levels (portions of Reach 1). The reach above the survey section should be assessed for planting and treated as well, since water temperatures throughout are effected from upstream. In some cases, planting may need to be coordinated to follow bank stabilization or upslope erosion control projects.

2) Where feasible, increase woody cover in the pool and flatwater habitat units along the entire stream. Most of the existing shelter is from vegetation and undercut banks. Adding high quality complexity with larger woody cover is desirable. Combination cover/scour structures constructed with boulders and woody debris would be effective in many flatwater and pool locations in the upper reaches. This must be done where the banks are stable or in conjunction with stream bank armor to prevent erosion. In some areas the material is at hand.

3) Spawning gravels on Fall Creek are limited to relatively few reaches. Structures to decrease

channel incision and recruit spawning gravel (using gravel retention structures), should be installed to trap, sort and expand redd distribution in the stream.

4) Where feasible, design and engineer pool enhancement structures to increase the number of pools in the upper reaches. This must be done where the banks are stable or in conjunction with stream bank armor to prevent erosion.

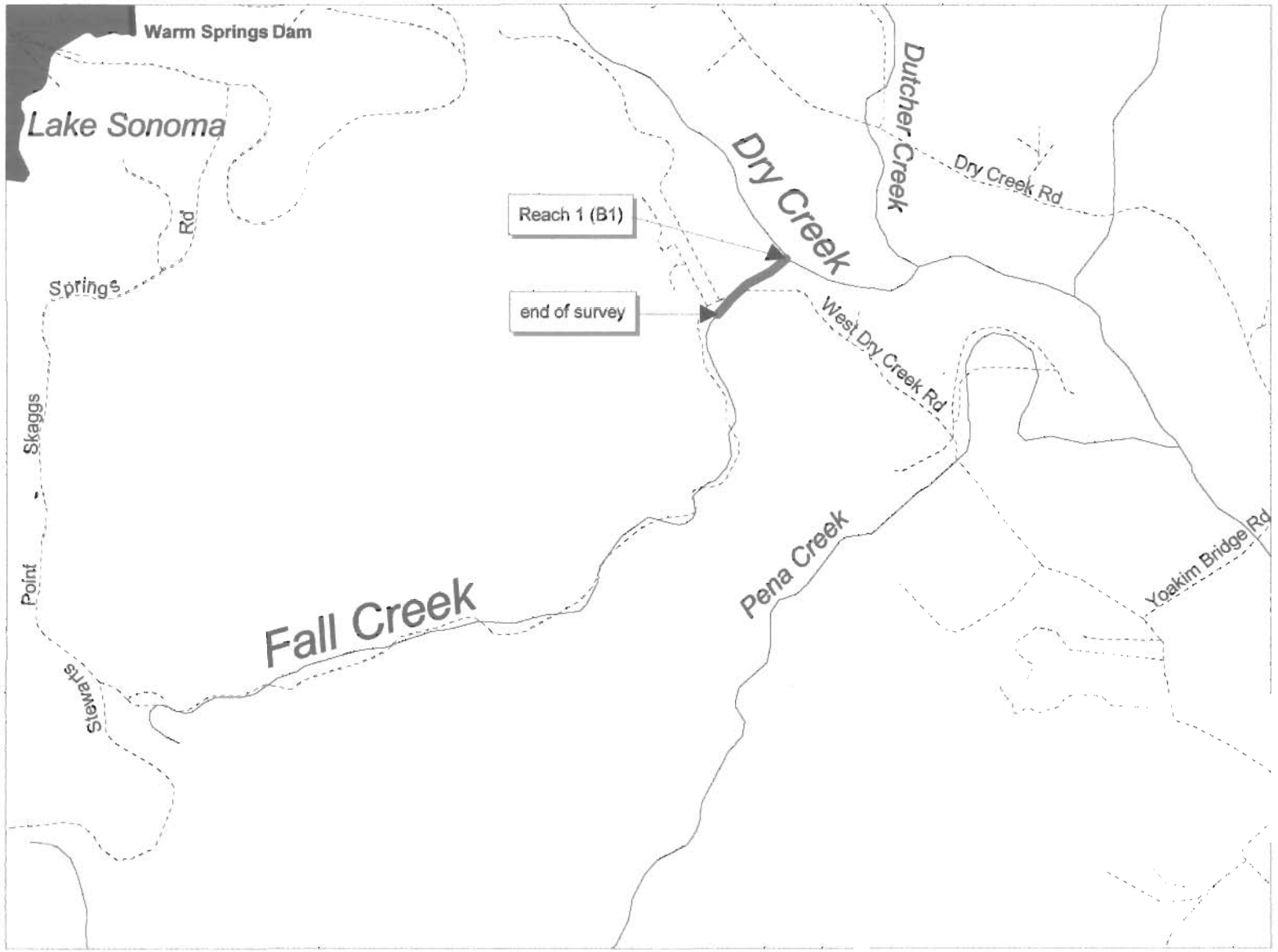
PROBLEM SITES AND LANDMARKS - FALL CREEK SURVEY COMMENTS

The following landmarks and possible problem sites were noted. All distances are approximate and taken from the beginning of the survey reach.

Habitat Unit #	Stream Length (ft.)	Comments
1.00	394	Begin survey at confluence with Dry Creek. Throughout entire unit flow is very low and the creek is completely overgrown with blackberries. A wooden fence runs along the RB, it has almost fallen into the stream because of the blackberries overgrowing it.
2.00	417	Concrete bridge is West Dry Creek Road crossing, 8'H x 8'W x 23'L.
14.00	1105	Substrate is bedrock.
15.00	1135	~60'H waterfall. An observation was done above the waterfall to record resident trout habitat.

***END OF SURVEY ***

Fall Creek



Central Coast Region
Department of Fish and Game

February 9, 2001
I:/mondo3/data/stream-projects/fall.apr

Fall Creek Tables Graphs Map
Assessment Completed 1998

Fall Creek Drainage: Dry Creek, Russian River

Table 1 - SUMMARY OF RIFFLE, FLATWATER, AND POOL HABITAT TYPES Survey Dates: 08/19/98

Confluence Location: QUAD: Geyersvill LEGAL DESCRIPTION: T10NR10WS16 LATITUDE: 38°41'57" LONGITUDE: 122°58'43"

HABITAT UNITS	UNITS FULLY MEASURED	HABITAT TYPE	HABITAT PERCENT OCCURRENCE	MEAN LENGTH (ft.)	TOTAL LENGTH (ft.)	PERCENT TOTAL LENGTH	MEAN WIDTH (ft.)	MEAN 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
3	1	RIFFLE	20	65	196	17	6.0	0.5	367	1102	184	551	0	5
6	2	FLATWATER	40	126	757	67	9.3	0.6	1204	7225	544	3262	0	80
5	3	POOL	33	32	159	14	14.6	2.4	472	2362	1588	7939	1491	19
1	0	CULVERT	7	23	23	2	0.0	0.0	0	0	0	0	0	0

TOTAL UNITS	TOTAL UNITS	TOTAL LENGTH (ft.)	TOTAL AREA (sq. ft.)	TOTAL VOL. (cu. ft.)
15	6	1135	10688	11752

Fall Creek

Drainage: Dry Creek, Russian River

Table 2 - SUMMARY OF HABITAT TYPES AND MEASURED PARAMETERS

Survey Dates: 08/19/98

Confluence Location: QUAD: Geyersvill LEGAL DESCRIPTION: T10NR10WS16 LATITUDE: 38°41'57" LONGITUDE: 122°58'43"

HABITAT UNITS #	UNITS FULLY MEASURED	HABITAT TYPE	HABITAT OCCURRENCE %	MEAN LENGTH ft.	TOTAL LENGTH ft.	TOTAL LENGTH %	MEAN WIDTH ft.	MEAN DEPTH ft.	MAXIMUM DEPTH ft.	MEAN AREA sq.ft.	TOTAL AREA EST. sq.ft.	MEAN VOLUME cu.ft.	TOTAL VOLUME EST. cu.ft.	MEAN RESIDUAL POOL VOL cu.ft.	MEAN SHELTER RATING	MEAN CANOPY %
3	1	BRS	20	65	196	17	6	0.5	0.7	367	1102	184	551	0	5	38
1	1	GLD	7	58	58	5	11	1.0	1.3	638	638	638	638	0	0	85
2	1	RUN	13	204	408	36	5	0.3	1.0	1970	3940	591	1182	0	80	5
3	0	SRN	20	97	291	26	12	0.4	0.6	1004	3013	402	1205	0	0	98
4	3	MCP	27	32	129	11	11	1.5	3.0	366	1462	635	2539	537	5	53
1	0	PLP	7	30	30	3	30	6.0	8.0	900	900	5400	5400	5310	60	0
1	0	CUL	7	23	23	2	0	0.0	0.0	0	0	0	0	0	0	0

TOTAL UNITS	TOTAL UNITS	LENGTH (ft.)	AREA (sq.ft)	TOTAL VOL. (cu.ft)
15	6	1135	11055	11516

Fall Creek

Drainage: Dry Creek, Russian River

Table 3 - SUMMARY OF POOL TYPES

Survey Dates: 08/19/98

Confluence Location: QUAD: Geyersvill LEGAL DESCRIPTION: T10NR10WS16 LATITUDE: 38°41'57" LONGITUDE: 122°58'43"

HABITAT UNITS	UNITS FULLY MEASURED	HABITAT TYPE	HABITAT PERCENT OCCURRENCE	MEAN LENGTH (ft.)	TOTAL LENGTH (ft.)	PERCENT TOTAL LENGTH	MEAN WIDTH (ft.)	MEAN DEPTH (ft.)	MEAN AREA (sq.ft.)	TOTAL AREA EST. (sq.ft.)	MEAN VOLUME (cu.ft.)	TOTAL VOLUME EST. (cu.ft.)	MEAN RESIDUAL POOL VOL. (cu.ft.)	MEAN SHELTER RATING
4	3	MAIN	80	32	129	81	10.8	1.5	366	1462	635	2539	537	5
1	0	SCOUR	20	30	30	19	30.0	6.0	900	900	5400	5400	5310	60

TOTAL UNITS	TOTAL UNITS	TOTAL LENGTH (ft.)	TOTAL AREA (sq.ft.)	TOTAL VOL. (cu.ft.)
5	3	159	2362	7939

Fall Creek Drainage: Dry Creek, Russian River

Table 4 - SUMMARY OF MAXIMUM POOL DEPTHS BY POOL HABITAT TYPES Survey Dates: 08/19/98

Confluence Location: QUAD: Geyersvill LEGAL DESCRIPTION: T10NR10WS16 LATITUDE: 38°41'57" LONGITUDE: 122°58'43"

UNITS MAX DPTH MEASURED	HABITAT TYPE	HABITAT PERCENT OCCURRENCE	<1 FOOT MAXIMUM DEPTH	<1 FOOT PERCENT OCCURRENCE	1-<2 FT. MAXIMUM DEPTH	1-<2 FOOT PERCENT OCCURRENCE	2-<3 FT. MAXIMUM DEPTH	2-<3 FOOT PERCENT OCCURRENCE	3-<4 FT. MAXIMUM DEPTH	3-<4 FOOT PERCENT OCCURRENCE	>=4 FEET MAXIMUM DEPTH	>=4 FEET PERCENT OCCURRENCE
4	MCP	80	0	0	2	50	1	25	1	25	0	0
1	PLP	20	0	0	0	0	0	0	0	0	1	100

TOTAL UNITS
5

Fall Creek

Drainage: Dry Creek, Russian River

Table 5 - Summary of Shelter by Habitat Type

Survey Dates: 08/19/98

Confluence Location: QUAD: Geyersvill LEGAL DESCRIPTION: T10NR10WS16 LATITUDE: 38°41'57" LONGITUDE: 122°58'43"

UNITS MEASURED	UNITS SHELTER MEASURED	HABITAT TYPE	% TOTAL UNDERCUT BANKS	% TOTAL SWD	% TOTAL LWD	% TOTAL ROOT MASS	% TOTAL TERR. VEGETATION	% TOTAL AQUATIC VEGETATION	% TOTAL WHITE WATER	% TOTAL BOULDERS	% TOTAL BEDROCK LEDGES
3	1	BRS	0	0	0	0	0	100	0	0	0
1	0	GLD	0	0	0	0	0	0	0	0	0
2	1	RUN	0	0	0	0	100	0	0	0	0
3	0	SRN	0	0	0	0	0	0	0	0	0
4	3	MCP	12	20	0	0	26	8	0	30	4
1	1	PLP	0	0	0	30	15	0	15	10	30
1	0	CUL	0	0	0	0	0	0	0	0	0
15	6	ALL HABITAT TYPES	0	0	0	3	89	1	1	2	3
5	4	POOLS ONLY	2	4	0	25	17	1	12	14	25

Fall Creek

Drainage: Dry Creek, Russian River

Table 6 - SUMMARY OF DOMINANT SUBSTRATES BY HABITAT TYPE

Survey Dates: 08/19/98

Confluence Location: QUAD: Geyersvill LEGAL DESCRIPTION: T10NR10WS16 LATITUDE: 38°41'57" LONGITUDE: 122°58'43"

TOTAL HABITAT UNITS	UNITS SUBSTRATE MEASURED	HABITAT TYPE	% TOTAL SILT/CLAY DOMINANT	% TOTAL SAND DOMINANT	% TOTAL GRAVEL DOMINANT	% TOTAL SM COBBLE DOMINANT	% TOTAL LG COBBLE DOMINANT	% TOTAL BOULDER DOMINANT	% TOTAL BEDROCK DOMINANT
3	1	BRS	0	0	0	0	0	0	100
1	1	GLD	0	0	0	0	100	0	0
1	1	RUN	0	0	100	0	0	0	0
1	1	SRN	0	0	100	0	0	0	0
3	3	MCP	0	33	0	0	0	0	67
1	1	PLP	0	100	0	0	0	0	0
1	0	CUL	0	0	0	0	0	0	0

Fall Creek

APPENDIX A. Summary of Mean Percent Vegetative Cover for Entire Stream

Mean Percent Canopy	Mean Percent Evergreen	Mean Percent Deciduous	Mean Right bank % Cover	Mean Left Bank % Cover
52.56	0.00	100.00	97.50	92.50

APPENDIX B.

Mean Percentage of Dominant Substrate

Dominant Class of Substrate	Number Units Right Bank	Number Units Left Bank	Percent Total Units
Bedrock	4	2	37.50
Boulder	0	0	0
Cobble/Gravel	0	0	0
Silt/clay	4	6	62.50

Mean Percentage of Dominant Vegetation

Dominant Class of Vegetation	Number Units Right Bank	Number Units Left Bank	Percent Total Units
Grass	0	0	0
Brush	2	3	31.25
Deciduous Trees	6	5	68.75
Evergreen Trees	0	0	0
No Vegetation	0	0	0

APPENDIX C. FISH HABITAT INVENTORY DATA SUMMARY

STREAM NAME: Fall Creek
SAMPLE DATES:
SURVEY LENGTH:
MAIN CHANNEL: 1135 ft. SIDE CHANNEL: 0 ft.
LOCATION OF STREAM MOUTH:
USGS Quad Map: Geyersvill Latitude: 38°41'57"
Legal Description: T10NR10WS16 Longitude: 122°58'43"

SUMMARY OF FISH HABITAT ELEMENTS BY STREAM REACH

STREAM REACH 1 (Units 1-15)

Channel Type: B1	Mean Canopy Density: 53%
Main Channel Length: 1135 ft.	Evergreen Component: 0%
Side Channel Length: 0 ft.	Deciduous Component: 100%
Riffle/Flatwater Mean Width: 8.5 ft.	Pools by Stream Length: 14%
Pool Mean Depth: 2.4 ft.	Pools >=2 ft. Deep: 60%
Base Flow: 0.3 cfs	Pools >=3 ft. Deep: 40%
Water: 69-70°F Air: 78-81°F	Mean Pool Shelter Rtn: 19
Dom. Bank Veg.: Deciduous Trees	Dom. Shelter: Terrestrial Veg.
Bank Vegetative Cover: 95%	Occurrence of LOD: 0%
Dom. Bank Substrate: Silt/Clay/Sand	Dry Channel: 0 ft.

Embeddness Value: 1. 0% 2. 0% 3. 20% 4. 0% 5. 80%