Stream Monitoring Report — SF Gualala Assessment Area — 40,784 Total Acres

Station	Year	Temperature		LWD Bank Full (> 6 " > 4 ' or > 10 CuFt)		Substrate	Streambed			Riparian Zone				Fish per Mile		Macroinvertebrates				
		Seasonal Daily Max	MWAT	CuFt/ 1000'	Pieces/ 1000'	< 0.85 mm	D50	Slope	VI	A/D	Canopy % WLPZ	Canopy % Cr.	Basal Area	Tree Ht.	Coho	SH (1+)	Richness	Hilsenhoff Simpson	% Dominant Russian R	Index
Hydrologic Unit		SF Gualala																		
Planning Watershed		Big Pepperwood Creek																1113.850201		
Stream		**Big Pepperwood**																		
218	Ppw3	1994		15.9	14.4															
218	Ppw3	1995		16.5	15.0															
218	Ppw3	1996		16.2	14.3															
218	Ppw3	1997		17.3	15.6															
218	Ppw3	1998		17.2	15.2	2,490	88	41	1.37%	14						0	153				
218	Ppw3	1999		15.9	14.4	2,324	84	30	1.46%	13	-0.3	90%	88%	348	87	0	132				
218	Ppw3	2000		16.2	14.5											0	21	32	0.79	4.7	15	39
218	Ppw3	2001														0	48					
218	Ppw3	2002		15.6	14.1	6,534	150	45	1.40%	13	-0.7	96%	87%	563	58	0	37				
218	Ppw3	2003		15.5	14.1	7,303	152	35	1.40%	16	-1.2										
218	Ppw3	2004		16.0	14.7	8,154	152	28	1.43%	15	-1.0					0	28				
218	Ppw3	2005		15.6	14.2	8,112	150	37	1.43%	17	-1.1										
218	Ppw3	2006				10,221	178	22	1.56%	16	-1.2										
218	Ppw3	2007				10,268	183	35	1.50%	15	-1.1										
218	Ppw3	2008		15.9	14.8	10,246	197	31	1.52%	17	-1.3	90%	87%				5				
218	Ppw3	2009		15.4	14.3	10,625	203	38	1.52%	16	-1.1					0	84				
218	Ppw3	2010		14.6	13.2	10,777	207	33	1.53%	15	-1.1										
218	Ppw3	2011		14.8	13.5	11,095	215	38	1.51%	16	-1.4	88%	87%			0	153				
219	Ppw2	1995		17.0	14.9																
219	Ppw2	1996		16.7	14.7																
219	Ppw2	1997		17.8	15.0																
219	Ppw2	1998		17.3	14.9																
219	Ppw2	2009		14.3	13.5																
219	Ppw2	2011		14.1	13.1																
248	PPW	1994		17.2	14.6																
		Avg		**16.0**	**14.4**	**8,179**	**163**		**1.47%**	**15**	**-1.0**	**91%**	**87%**	**455**	**72**	**0**	**74**	**32**	**0.79**	**4.7**	**15**	**39**

Station		Year	Temperature	LWD Bank Full		Substrate		Streambed			Riparian Zone			Fish per Mile		Macroinvertebrates		
				> 6 " > 4 ' or > 10 CuFt														
			Seasonal Daily Max	MWAT	CuFt/ 1000'	Pieces/ 1000'	< 0.85 mm	D50	Slope	VI	A/D	Canopy % WLPZ	Canopy % Cr.	Basal Area	Tree Ht.	Coho	SH (1+)	Richness / Simpson	Hilsenhoff / Russian R Index	% Dominant
Stream		**Groshong Gulch**																
250	Gros	1996		14.1	13.1													
250	Gros	2002		16.2	13.3													
277	GrG	1998		13.9	13.4													
277	GrG	2000		17.8	14.5													
277	GrG	2011		13.4	12.9													
		Avg		**15.1**	**13.5**													
Stream		**Gualala River**																
614	Gua8	2000		22.9	18.4													
614	Gua8	2001																
614	Gua8	2009		21.7	18.1													
750		2009		22.5	19.2													
750		2011		23.2	19.7													
751		2009																
		Avg		**22.6**	**18.8**													
Stream		**Little Pepperwood**																
220	Lpw	1994		15.8	14.3													
220	Lpw	1995		19.4	16.0													
220	Lpw	1996		17.8	15.0													
220	Lpw	1997		16.7	16.0													
220	Lpw	1998		17.8	15.6													
220	Lpw	2002		15.1	13.8													
220	Lpw	2003		15.9	14.8											0	121	
220	Lpw	2004		14.8	14.3											0	8	
220	Lpw	2005		16.0	14.6													
220	Lpw	2008		14.7	14.3													
220	Lpw	2009		14.4	13.7													
		Avg		**16.2**	**14.8**											**0**	**65**	
Stream		**South Fork Gualala River**																
217	Gua1	1994		22.7	19.2													
217	Gua1	1995		25.3	20.6													

Station		Year		Temperature		LWD Bank Full > 6 " > 4 ' or > 10 CuFt		Substrate	Streambed			Riparian Zone				Fish per Mile		Macroinvertebrates				
				Seasonal Daily Max	MWAT	CuFt/ 1000'	Pieces/ 1000'	< 0.85 mm	D50	Slope	VI	A/D	Canopy % WLPZ	Canopy % Cr.	Basal Area	Tree Ht.	Coho	SH (1+)	Richness	Hilsenhoff Simpson		% Dominant Russian R Index	
217	Gua1	1996		24.4	20.1																	
217	Gua1	1997		24.6	22.4																	
217	Gua1	1998				934	17		24	0.11%	23		93%	16%								
217	Gua1	1999															0	32				
217	Gua1	2000		23.2	19.2	804	15		25	0.03%	22	-0.1	96%	17%	239	90	0	21	28	0.87	4.4	16	28
217	Gua1	2001		23.3	19.1	1,639	34		20	0.07%	20	0.19					0	11				
217	Gua1	2002				1,479	28		22	0.10%	27	0.008					0					
217	Gua1	2003				1,084	24		12	0.11%	22	0.1					0	149				
217	Gua1	2004		23.2	20.0	1,254	27		19	0.09%	26	0.18					0	97				
217	Gua1	2006				1,016	20		20													
217	Gua1	2007				1,087	22		15	0.13%	21	-0.2										
217	Gua1	2008		24.5	19.8	1,110	29		19	0.10%	23	-0.2						26				
217	Gua1	2009		23.2	18.9	1,109	30		16	0.06%	22	-0.1					0	166				
217	Gua1	2010		22.4	18.3																	
217	Gua1	2011		22.5	18.8												0	465				
			Avg	**23.6**	**19.7**	**1,152**	**24**			**0.09%**	**23**	**-0.03**	**95%**	**17%**	**239**	**90**	**0**	**121**	**28**	**0.87**	**4.4**	**16**	**28**
Big Pepperwood Creek			**Avg**	**18.0**	**15.8**	**4,985**	**100**		**28**	**0.88%**	**19**	**-0.6**	**92%**	**64%**	**383**	**78**	**0**	**93**	**30**	**0.83**	**4.6**	**16**	**33**
			Min	**13.4**	**12.9**	**804**	**15**		**12**	**0.03%**	**13**	**-1.4**	**88%**	**16%**	**239**	**58**	**0**	**5**	**28**	**0.79**	**4.4**	**4,961**	**28**
			Max	**25.3**	**22.4**	**11,095**	**215**		**45**	**1.56%**	**27**	**0.19**	**96%**	**88%**	**563**	**90**	**0**	**465**	**32**	**0.87**	**4.7**	**16**	**39**

Planning Watershed Lower Marshall Creek 1113.850102

Stream Marshall Creek

607	Mar	2004		22.5	19.7																		
			Avg	**22.5**	**19.7**																		
Lower Marshall Creek			**Avg**	**22.5**	**19.7**																		
			Min	**22.5**	**19.7**																		
			Max	**22.5**	**19.7**																		

Planning Watershed Mouth of the Gualala River 1113.850202

Stream South Fork Gualala River

16	280	2009								0.10%	22												
17	295	2009								0.18%	25												
18	310	2009								0.23%	32												

Station		Year		Temperature		LWD Bank Full > 6 " > 4 ' or > 10 CuFt			Substrate	Streambed			Riparian Zone				Fish per Mile		Macroinvertebrates		
				Seasonal Daily Max	MWAT	CuFt/ 1000'	Pieces/ 1000'	< 0.85 mm	D50	Slope	VI	A/D	Canopy % WLPZ	Canopy % Cr.	Basal Area	Tree Ht.	Coho	SH (1+)	Richness Simpson	Hilsenhoff Russian R Index	% Dominant
19	SFGr	2009								0.13%	28										
20	370	2009								0.31%	20										
225	SFG	1995		24.8	20.8																
225	SFG	1997		22.1	20.6																
229	SFG	1995		23.4	19.9																
229	SFG	1996		22.1	19.0																
229	SFG	1997		25.6	20.5																
230	SFG	1995		22.9	18.9																
230	SFG	1996		21.8	18.4																
230	SFG	1997		24.4	22.3																
230	SFG	1998		22.6	19.5																
230	SFG	2009		20.6	17.6																
230	SFG	2011		20.2	17.6																
402	SFG	1998		22.1	19.7												0	961			
402	SFG	1999				1,473	33		18	0.33%	29		76%	26%	197	108	0	400			
402	SFG	2000		22.4	18.9												0	268			
402	SFG	2001															0	153			
402	SFG	2002															0	121			
402	SFG	2008				1,391	31		19	0.41%	31	-0.1						1,327			
			Avg	**22.7**	**19.5**	**1,432**	**32**			**0.24%**	**27**	**-0.1**	**76%**	**26%**	**197**	**108**	**0**	**539**			
Mouth of the Gualala Ri			**Avg**	**22.7**	**19.5**	**1,432**	**32**		**19**	**0.24%**	**27**	**-0.1**	**76%**	**26%**	**197**	**108**	**0**	**539**			
			Min	**20.2**	**17.6**	**1,391**	**31**		**18**	**0.10%**	**20**	**-0.1**	**76%**	**26%**	**197**	**108**	**0**	**121**			
			Max	**25.6**	**22.3**	**1,473**	**33**		**19**	**0.41%**	**32**	**-0.1**	**76%**	**26%**	**197**	**108**	**0**	**1,327**			

Planning Watershed Upper Marshall Creek 1113.850101

Stream Camper Creek

699	Cmp	2004		17.9	16.5																
699	Cmp	2005		17.9	16.3																
			Avg	**17.9**	**16.4**																

Stream Carson Cr

605	Car	2004		16.8	15.6																
605	Car	2005		18.1	16.8																
631	Car1	2004				2,724	39		39	1.45%	42		88%	98%	143	106					

Station		Year		Temperature		LWD Bank Full > 6 " > 4 ' or > 10 CuFt		Substrate	Streambed			Riparian Zone				Fish per Mile		Macroinvertebrates		
				Seasonal Daily Max	MWAT	CuFt/ 1000'	Pieces/ 1000'	< 0.85 mm	D50	Slope	VI	A/D	Canopy % WLPZ	Canopy % Cr.	Basal Area	Tree Ht.	Coho	SH (1+)	Richness Simpson	Hilsenhoff Russian R Index	% Dominant
			Avg	17.4	16.2	2,724	39			1.45%	42		88%	98%	143	106					
Stream		**McKenzie Creek**																			
615	McK1	2000		16.0	15.1																
615	McK1	2001		20.6	17.5																
615	McK1	2004		19.8	17.5	997	8		38	1.24%	27		95%	95%	262	133					
615	McK1	2005		20.2	17.8																
617	McK1	2000		20.7	18.3																
617	McK1	2001		20.2	17.5																
617	McK1	2003		20.6	18.7																
617	McK1	2004		18.7	17.2																
617	McK1	2005		20.6	18.1																
			Avg	19.7	17.5	997	8			1.24%	27		95%	95%	262	133					
Stream		**Palmer Creek**																			
621	Plm	2000		23.6	19.3																
621	Plm	2001																			
621	Plm	2003		20.5	18.2																
621	Plm	2004		20.6	17.5																
621	Plm	2005		20.6	17.9																
			Avg	21.3	18.2																
Stream		**Wild Hog Creek**																			
604	Whg	2004		14.9	14.6																
604	Whg	2005		17.9	17.2																
			Avg	16.4	15.9																
Upper Marshall Creek			Avg	19.3	17.2	1,861	24		39	1.35%	34		92%	97%	202	120					
			Min	14.9	14.6	997	8		38	1.24%	27		88%	95%	143	106					
			Max	23.6	19.3	2,724	39		39	1.45%	42		95%	98%	262	133					
Planning Watershed		Upper South Fork Gualala Ri 1113.850104																			
Stream		**South Fork Gualala River**																			
616	SFG4	2000		19.4	16.7																
616	SFG4	2001		19.8	16.4																

Station		Year		Temperature	LWD Bank Full (> 6 " > 4 ' or > 10 CuFt)			Substrate	Streambed			Riparian Zone				Fish per Mile		Macroinvertebrates		
				Seasonal Daily Max	MWAT	CuFt/ 1000'	Pieces/ 1000'	< 0.85 mm	D50	Slope	VI	A/D	Canopy % WLPZ	Canopy % Cr.	Basal Area	Tree Ht.	Coho	SH (1+)	Richness / Simpson	Hilsenhoff / Russian R Index	% Dominant
616	SFG4	2003		19.5	17.4															
616	SFG4	2004		18.7	16.7															
616	SFG4	2005		19.0	17.2															
			Avg	**19.3**	**16.9**															
Upper South Fork Gual			**Avg**	**19.3**	**16.9**															
			Min	**18.7**	**16.4**															
			Max	**19.8**	**17.4**															

Station	Year	Temperature		LWD Bank Full (> 6 " > 4 ' or > 10 CuFt)		Substrate	Streambed			Riparian Zone				Fish per Mile		Macroinvertebrates			
		Seasonal Daily Max	MWAT	CuFt/ 1000'	Pieces/ 1000'	< 0.85 mm	D50	Slope	VI	A/D	Canopy % WLPZ	Canopy % Cr.	Basal Area	Tree Ht.	Coho	SH (1+)	Richness	Hilsenhoff Simpson	% Dominant Russian R Index
Summary for Assessment Are SF Gualala																			(177 detail records)
	Avg	**19.1**	**16.7**	**4,471**	**89**		**28**	**0.76%**	**21**	**-0.6**	**90%**	**67%**	**292**	**97**	**0**	**200**	**30**	**0.83**	**4.6**	**16**	**33**
	Min	**13.4**	**12.9**	**804**	**8**		**12**	**0.03%**	**13**	**-1.4**	**76%**	**16%**	**143**	**58**	**0**	**5**	**28**	**0.79**	**4.4**	**15**	**28**
	Max	**25.6**	**22.4**	**11,095**	**215**		**45**	**1.56%**	**42**	**0.19**	**96%**	**98%**	**563**	**133**	**0**	**1,327**	**32**	**0.87**	**4.7**	**16**	**39**
Old Growth Watersheds (HRSP)		18.5	16.6			21.6%	62										26.2	0.89			
Poor-Normal-Good									>20								26-35	.8-.89	4.6-3.1	12-17	39-15
NCWQCB Target		18.3	16.8			<14%															

Temperature

- Seasonal Maximum – The highest water temperature recorded during the summer.
- Maximum weekly average temperature (MWAT) - The highest average temperature for any seven day rolling average

Large Woody Debris (LWD)

- LWD must be at least 8 inches on the small end and longer than 4 feet.
- Cubic Feet per 1,000 feet – The cubic volume of LWD located between the bankfull lines.
- Pieces per 1,000' – The number of LWD pieces per 1000'

Stream Substrate

- <0.85mm – The percent fines less than 0.85 millimeters in a McNeal sample.
- D50- The pebble size of the median pebble of a 100 pebble sample. Three sample sites on each reach are averaged.

Fish Surveys

- Presence/absence snorkel surveys were conducted. Rough estimates were made of fish numbers per mile.
- Coho – Coho salmon any age.
- SH (1+) – Steelhead one year old or older.

Streambed (Thalweg) Survey

- Slope – the slope of the channel
- VI – The variation index is the [(SD of residual depth/bank full depth) *100]. This is a way of quantifying roughness and hence suitability for fish. Greater than 20 is a good indication of recovery.
- A/D – The change in elevation of the channel (aggradation or degradation) relative to the first year of measurement.

Riparian Condition

- Canopy Cover percent as measured with a spherical densiometer. Every 200', canopy percent is measured in the center of the channel. And at bank full and 50' into the riparian zone from bankfull on both sides of the channel. Four measurements are averaged at each point.
- WLPZ (Watercourse and Lake Protection Zone) – The average of all the measurements taken on either side of the channel 50' into the riparial zone.
- Cr. – The average of all the measurements taken in the center of the channel.
- Riparian inventory plots were locate both sides of the channel every 200'
- Basal Area – Is the average basal area in square feet of all the riparian plots
- Tree Ht. – Is the average height of the 100 tallest trees per acre.

Macroinvertebrates

- Richness – Total number of Genuses represented.
- Simpson Diversity Index – Measures the evenness of species diversity
- Hilsenhoff – This is a locally modified Hilsenhoff index. It indicates levels of organic pollution
- Russian River Index – A localized index that combines several standard metrics.
- Percent Dominant Taxon – this is a species distribution index

- The information presented in this report is the result of data collected by variety of organizations. Release of the underlying data is by permission of the organization that collected it.