2002 COHO SALMON SECTION 10 PERMIT REPORT

PERMIT #1046

PORE-NR-WR-03/02

A report from the
Coho and Steelhead Restoration Project

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GOAL / PURPOSE OF SAMPLING

The National Park Service (NPS) implemented a long term watershed restoration project in response to the Federal Endangered Species Act listing of coho salmon (*Oncorhynchus kisutch*) and steelhead trout *(O. mykiss*) along the central California coast. Funding for the Coho and Steelhead Restoration Project (CSRP), a five year cooperative effort between Golden Gate National Recreation Area, Muir Woods National Monument, and Point Reyes National Seashore in western Marin County, ended in 2002. NPS monitoring efforts initiated through the CSRP have continued through a combination of NPS and California Department of Fish and Game (CDFG) grants. The objectives of NPS monitoring are:

- Collect baseline data on the abundance and distribution of threatened juvenile, outmigrant, and adult salmonids.
- Collect baseline watershed and habitat data.
- Identify and implement habitat restoration projects.
- Develop and implement long term habitat and fish abundance monitoring programs.

The CSRP began monitoring trends in fish abundance and distribution in 1997 to prioritize habitat restoration efforts in the Olema, Lagunitas, Pine Gulch, and Redwood Creek watersheds in western Marin County (Figure 1). Field sampling continued during 2002 and covered select areas in each watershed (Table 1). Our efforts are currently focused on developing and implementing long term monitoring efforts initiated by the CSRP. Adult spawner surveys are conducted during the winter, juvenile abundance is estimated during summer, and fish distribution is assessed year round in large portions of each watershed. Smolt emigration is monitored in the spring on selected streams. Physical habitat measurements, including water quality and hydrologic characteristics, are collected in conjunction with each survey. Intensive fish sampling will continue and a long-term monitoring plan will be developed based on the results.

This report presents data from sampling pursuant to National Marine Fisheries Service (NMFS) permit #1046 for threatened coho salmon, originally issued August 1, 1997. The NPS requested an amendment to the permit in February 1998 to add pipe trapping to the approved sampling methods. In September 1998 the NPS applied to NMFS for a section 10 permit to take threatened steelhead trout, and this report includes data for both steelhead and coho. In response to additional amendments requested in March 2001, NMFS issued a modified permit on September 26, 2001 and established a new reporting period from January 1 to December 31 of each year. Reflecting this change in the reporting period, this report covers sampling activities conducted during the 2002 calendar year. In May 2002 the NPS applied to NMFS for an extension of this permit through 2007.

SAMPLING ACTIVITIES

Spawner and Carcass Surveys

NPS staff and trained volunteers conduct surveys each winter during the coho spawning season to quantify escapement and determine spawning density and distribution. Although surveys focus on coho, occasional steelhead spawners and redds are observed and counted incidental to coho observations. Surveys are spaced approximately every two weeks, although storms and high stream flows often dictate less frequent surveys. Teams of two to four observers walk upstream through 2-4 km reaches, along creek margins and banks where possible, and look for live fish, carcasses, and redds. Live fish are identified to species and sex, and lengths are visually estimated. Carcasses are measured (fork length), identified to species and sex, and marked to prevent double counting. Carcass scales and tissue samples are collected for age and genetic analysis. Redds are measured and marked with flagging. Particular care is taken not to disturb redds or actively spawning adults. Locations of all live fish, carcasses and redds are recorded in reference to permanent tags placed every 100 meters along each stream.

Because coho spawn over a period of several months and residence time on the spawning grounds is variable, live fish may be double counted during subsequent surveys. Spawning escapement estimates are made using the Peak Live + Cumulative Dead (PLD) index, which is calculated by adding the peak number of live fish observed during a single survey to the number of carcasses recovered on or prior to that date. Redd counts are used to describe spawning density and spatial distribution. Take during spawner surveys consists of occasional disturbance (observe/harass) of adult fish. Take numbers reported are the total number of observations, not the number of fish, and may include repeat sightings of the same fish.

Coho spawner surveys were conducted during the winters of 2001-02 and 2002-03 in the Olema, Pine Gulch and Redwood Creek watersheds, and on Cheda Creek, a tributary of Lagunitas Creek. Since the reporting period bisects the coho spawning run, this report includes data from surveys completed during the end of the 2001-02 spawner season and the beginning of the 2002-03 season.

Coho spawners were seen in Pine Gulch during both the 2001-02 and 2002-03 winter spawning seasons, representing the second and third consecutive year classes detected in this watershed from which coho were previously assumed extirpated. However, none of the sightings occurred during this reporting period. Small numbers of coho were also sighted in Cheda Creek (a Lagunitas Creek tributary) during both winters although none during this reporting period. The 2001-02 coho run was strong in the Olema Creek (PLD=110) and Redwood Creek (PLD=105) watersheds. The 2002-03 run appeared to be considerably smaller (Olema PLD=47, Redwood PLD=22). Results from Olema Creek spawner surveys since 1997-98 have been presented at the 2001, 2002, and 2003 annual meetings of the American Fisheries Society Cal-Neva Chapter.

Smolt Trapping

Smolts and other juvenile salmonids are trapped each spring using downstream migrant pipe traps. Traps are typically installed in mid March and removed in late May or early June. The pipe traps used by the NPS are designed to minimize impingement under high flows and in-trap predation of fry by larger juvenile salmonids and other fish. Each trap operates by impounding water behind a weir constructed of ¼ inch mesh hardware cloth, fence posts, rocks, and sand bags that spans the entire width of the stream. Flow is directed into a series of 20-foot long, 8-inch diameter PVC pipes. To decrease water velocity, the pipe empties onto a slanted, perforated metal McBain's ramp. The ramp is connected to a 125 x 74 x 50 cm live box constructed of plywood and $^{1}/_{16}$ inch mesh hardware cloth. The live box is situated in a shaded pool, and contains rocks, vegetation, and a ¼ inch mesh divider screen to provide cover and refuge for fry. In addition, the weir contains notches or vents that allow any late spawning adult steelhead to migrate upstream during high flows.

The traps are operated 24 hours per day, flow permitting, and checked daily. Stream temperature and water level are recorded when the traps are checked. All 1+ salmonids are anesthetized with carbon dioxide tablets (Alka Seltzer™), weighed to the nearest 0.1 g, and the fork length measured to the nearest mm. Fry are identified to species, counted, and a subsample measured. We are primarily interested in salmonid smolts, parr, and fry but the numbers and lengths of all captured fish are recorded. All fish are kept in aerated holding buckets before and after handling, and anesthetized fish are allowed to recover fully before release.

Sources of mortality include fish becoming stranded on the ramps, predation of fry by larger fish, and general stress and trauma to fry during trapping and handling. The first source is minimized by carefully checking the traps daily and making adjustments as needed to ensure adequate flows across the ramp to prevent stranding. Fry mortality is minimized by providing adequate refugia in the trap box, and by netting, handling, counting, and releasing them as expeditiously as possible. Fry are also kept in separate aerated holding buckets before and after handling to avoid predation by larger fish. Despite the divider screens in each live box, many of the fry remained in the unscreened areas and were subject to predation. Some of the 1+ steelhead captured had distended bellies or regurgitated fry during handling. The take figures include only known fry mortality numbers (i.e. regurgitated fry) since it is not possible to quantify total fry mortality due to predation. Protocols call for suspending trap operations if either smolt or fry mortality exceed five percent during a one week period.

During 2002, pipe traps were run on the John West Fork and the Pine Gulch mainstem. When an intermittent section of the John West Fork upstream of the trap began drying out in early May, a second trap was installed above the dry section to intercept fish swimming downstream and prevent them from becoming stranded.

In the John West Fork traps, fry mortality levels were 0% (0 of 269) for steelhead and 0.25% (14 of 5711) for coho. In addition to the known fry mortalities, 19 steelhead smolts/presmolts were observed to be "fat" and probably fry eaters. No age 1+ salmonid mortalities occurred.

On Pine Gulch, overall juvenile mortality levels were 4.1% (12 of 294) for steelhead and 1.6% (4 of 249) for coho. Eleven of the 12 steelhead mortalities were fry and of those, six were regurgitated by age 1+ steelhead. In addition to the known fry mortalities, six age 1+ steelhead and two sculpin were recorded as being "fat" and were probably fry eaters. The four coho smolt mortalities were either regurgitated by sculpin or sculpin observed with the outline of a smolt-sized fish (assumed coho) in its belly. To prevent further sculpin induced mortalities, we removed all rocks and the divider screen from the trap box to eliminate cover from which sculpin could ambush. There are no sculpin in the John West Fork above the Highway 1 culvert (probably because the creek went completely dry at some point after the culvert was installed and sculpin are not able to re-colonize), and it is worth noting that there were no mortalities of 1+ salmonids at this trap. For outmigrant studies on streams in which sculpin are present, it may prove beneficial to develop some sort of cover that sculpin prefer, but salmonids do not, such as a dark pipe.

Large numbers of coho fry were captured in the John West Fork trap for the second year in a row. Altogether 5711 coho fry were trapped in 2002, compared to 6500 in 2001, 14 in 2000, none in 1999, and 654 in 1998. This represents a dramatic increase in productivity for this tributary subsequent to culvert modifications in fall 1999, which facilitated access to over a kilometer of upstream spawning habitat. Also notable were the numerous coho smolts captured in the Pine Gulch trap. A population estimate of 589 juvenile coho was made the previous summer/fall, and 249 outmigrating smolts indicates excellent overwinter survival of the first coho year class detected in the watershed since the late 1960's. Five adult steelhead spawners were incidentally captured in the Pine Gulch trap; all were immediately released without further handling.

Index Site Electrofishing

In summer and fall NPS conducts surveys of index sites established for long term monitoring of juvenile salmonid density, abundance, and distribution. The following sites are currently monitored:

Stream	# of sites	Sampled since:
Olema Creek mainstem	7	1999
John West Fork	3	2000
Quarry Gulch	3	2000
Cheda Creek	3	2000
Pine Gulch mainstem	8	2000
Easkoot Creek	3	1998
Redwood Creek	3	2000

Each site consists of a 30-100 meter reach, containing from three to 10 contiguous habitat units. Sampling methods include electrofishing, snorkeling, seining, or combinations thereof. The Redwood Creek sites are intended to complement long-term juvenile salmonid monitoring sites established and surveyed by Dr. Jerry Smith of San Jose State University.

Within each index site, habitat units are isolated with seine nets and electrofished separately using standard multiple pass depletion methods. Most riffle units are sampled with a single pass. Captured fish are sedated using carbon dioxide, identified to species and age class, weighed to the nearest 0.1 g, and the fork length measured to the nearest mm. Some individuals are further handled to collect fin clips or scale samples for age and/or genetic analysis. Fish are kept in aerated holding buckets before and after handling, and allowed to recover fully before being released.

An electrofishing log is kept of all settings, pertinent environmental conditions, fish response, and total catch for each unit (see Appendix A). Fish population estimates are calculated for each unit using the computer program Microfish (VanDeventer and Platts 1989).

Attempts are made to minimize injuries during electrofishing activities by using state of the art electrofishing equipment, accepted sampling and fish handling protocols, and providing adequate training to personnel. NPS biologists use a programmable waveform backpack electrofisher (Smith-Root Model 12 B-POW) with an 11-inch ring anode. Fish are captured using either pulsed or straight direct current with the minimum voltage, pulse width, and frequency necessary for immobilization. Under most conditions, a setting of P16 (unpulsed DC) at 200 volts is found to be the most effective while preventing injury to the fish.

Potential sources of mortality or injury include general stress during capture and handling, respiratory failure, and hemorrhaging or spinal injuries associated with shocking. If a pattern of mortality or injury is recognized, techniques are altered to reduce impacts. As during smolt trapping activities, the smaller salmonids are kept in separate buckets from sculpin and other fish to prevent predation.

During 2002, most of the index sites were sampled using electrofishing. Total mortality rates associated with index site electrofishing surveys for the reporting period were 0.4% for coho (13/3678) and 1% for steelhead (29/2953). For the Redwood Creek index sites, some of the habitat units were seined to reduce fish densities prior to electrofishing and decrease the likelihood of density related electrofishing injuries to the fish. Index site #4 on Pine Gulch was sampled by two-pass snorkel counts. One additional site on the Olema mainstem was electrofished to assess the effects of an erosion control project on the upper reaches of the creek.

In Olema Creek, juvenile coho numbers were relatively high (1624 total juvenile coho captured in summer 2002) for the second year in a row (1207 captured summer 2001, 359 in 2000 and 216 in 1999), correlating to the strong spawning runs during the winters of 2000-01 and 2001-02. In Pine Gulch, juvenile coho were found in seven of the eight index sites in summer 2002, showing good distribution throughout the watershed of this cohort representing the second year class of this recently reestablished coho population. 2002 juvenile coho numbers were also relatively high in Cheda Creek, the Olema tributary sites, and Redwood Creek. Juvenile coho were also found in Easkoot Creek, representing the first coho year class ever detected in this creek.

Intermittent Pool Electrofishing

In addition to the index sites, several of the intermittent tributaries of Olema Creek are routinely electrofished as they dry up in the spring to determine numbers of potentially stranded fish. As of September 2001 NMFS has modified permit #1046 to allow for moving stranded salmonid juveniles to adjacent stream reaches not subject to desiccation. During the spring of 2002, 582 coho and 100 steelhead from isolated, drying pools in two Olema tributaries (John West Fork and Horse Camp Creek) were captured and transported to the mainstem. An effort was made to disperse the relocated fish over several different pools to avoid crowding. A single pool in Horse Camp Creek at the outflow of the Hwy 1 culvert yielded 238 juvenile coho, of which 28 were smolts.

Miscellaneous Electrofishing

As part of a culvert removal/stream restoration project encompassing several coastal drainages which flow into Drakes Estero, we electrofished reaches immediately above and below each culvert site to determine salmonid presence or absence. We sampled two culvert sites on East Schooner Creek, two sites on Laguna Creek, and one site each on Home Ranch Creek and North Home Ranch Creek. All sampled reaches contained steelhead but no coho.

Snorkel Surveys

Pine Gulch

A snorkel survey was conducted on Pine Gulch in September 2002, following electrofishing of the index sites, to further determine coho distribution and abundance within this watershed. One or two divers typically made one or more snorkel passes in each selected habitat unit to count the different salmonid species and size or age classes. Standard dive lights were used to search undercut banks and woody debris for fish. Occasional second passes were made in large or complex pools. The potential for injury or mortality from snorkel observations is minimal. No handling of fish occurs from snorkel observations, and only minimal disturbance/ harassment occurs.

A total of 239 coho juveniles were counted during the Pine Gulch survey. Electrofishing results indicated that divers undercounted the actual number of fish present, so a calibrated count of 271 was used to calculate the number of coho observed/harassed. An additional 13 coho were counted in McCurdy Creek, a Pine Gulch tributary. The presence of steelhead was noted but in most cases they were not counted, so an exact take estimate is not possible. However, previous snorkel counts in this creek found a maximum of 50 young of year and ten 1+ steelhead per pool. Applying a maximum estimate of 60 juvenile steelhead per pool to the 64 mainstem pools and five tributary pools snorkeled yields a rough estimate of 4,140 fish. A comprehensive report of coho monitoring in Pine Gulch during 2001 and 2002 is attached (Ketcham and Brown 2003).

Lagunitas Creek

Snorkel surveys were conducted on the mainstem of Lagunitas Creek June-October 2002 by Leslie Ferguson as part of her research conducted under Peter Moyle of UC Davis in collaboration with NPS and the Marin Municipal Water District (MMWD). The research is intended to characterize coho and steelhead habitat with an emphasis on the role of woody

debris during the summer rearing season, and specifically to assess the effectiveness of large woody debris (LWD) structures installed by MMWD in enhancing pool complexity and providing salmonid habitat.

A three-person team (2 divers and 1 recorder) conducted snorkel surveys in reaches from the campgrounds in Samuel P. Taylor Park to Peters Dam. Continuous surveys were conducted from Irving Bridge to Peters dam. Specific reaches were selected from the campground to Irving Bridge based on the presence or absence of MMWD LWD restoration structures. Additionally, specific reaches below the Tocaloma Bridge were selected over a 4-mile reach, approx. every mile. To characterize the quality of habitat associated with LWD structures, physical habitat variables were measured in all units that were snorkeled, including water velocity, depth, substrate composition, in-stream cover complexity, and cover. Altogether snorkelers counted a total of 3,487 juvenile coho and 11,804 steelhead, including 11,214 young of year steelhead and 590 age 1+ or greater. Complete results will be documented in a Master's thesis expected in 2003.

Bolinas Lagoon Tributaries

With the recent appearance of coho in Pine Gulch and Easkoot Creek, snorkel/visual surveys were conducted on five other Bolinas Lagoon tributaries in late October to determine presence/absence of coho and steelhead. A single diver conducted one snorkel pass on any pools in which fish could be seen from the bank or which appeared likely to support fish. Surveys only noted presence/absence of fish and numbers were not recorded; however, approximately 20 pools were snorkeled or visually surveyed from the bank and a maximum of five juvenile steelhead were seen per pool, yielding a rough estimate of 100 juvenile steelhead. No coho were detected.

Other Sampling Activities

Coho Broodstock Collection

The NPS is an active participant in the Russian River Coho Recovery Workgroup, a cooperative project between the California Department of Fish and Game (CDFG) and NMFS to restore coho populations in the Russian River. In August 2002 Workgroup biologists seined intermittent sections of the Olema Creek mainstem and the John West Fork under section 10 permit # 1067 issued to CDFG. Juvenile coho were rescued from drying pools to help start a captive population of wild coho to use as broodstock for future coho reintroduction efforts. Juvenile steelhead and extra coho not needed for the broodstock program were relocated to nearby perennial pools in the Olema mainstem. Since these sampling activities were conducted under a separate permit, associated take numbers are not included in this report.

Redwood Creek Salmonid Relocation

As part of a flood control project on the lower portion of Redwood Creek, in September and October 2002 juvenile steelhead and coho were captured and relocated elsewhere in the creek. These numbers are reported in a separate Section 7 report and are not included in this report.

Discussion of Take Exceedance

As during 2001, very high densities of juvenile coho in the Olema watershed during 2002 resulted in a much higher capture/handle take of coho than previous years. Our sampling effort and methods have been essentially the same since 1999, so the increased take during 2001 and 2002 was due entirely to the higher numbers of coho present. The NPS is applying for a permit renewal with higher capture/handle take limits for both juvenile coho and steelhead, reflecting the potential abundance of salmonids in some of the sampling areas.

The total capture/handle take from all sampling activities and watersheds during 2002 was 9,729 juvenile coho. The majority of this take (60%) was via passive capture at the John West Fork smolt trap, where 5,711 coho fry and 104 coho smolts were trapped in 2002. During 2001 smolt trapping activities, when it became apparent that the allowable take for juvenile coho might be exceeded, the NPS contacted NMFS to inform them of the situation. Several options were discussed, including modifying the trap to allow fry to pass through uncaptured or ceasing trapping activities altogether. It was decided that the value of the information collected (an accurate census of the relative productivity of the creek) merited continued trapping.

Relatively high numbers of juvenile coho were also captured by electrofishing at the John West Fork (1,009 coho) and Olema Creek mainstem (1,624 coho) index sites, together accounting for an additional 27% of the total 2002 capture/handle take. Altogether the John West Fork smolt trap and index sites on Olema Creek mainstem and John West Fork accounted for 87% of the 2002 juvenile coho capture/handle take. Results of these sampling activities conducted with equal effort in previous years is given in the table below.

Juvenile coho capture/handle take by year and sampling activity

		1998	1999	2000	2001	2002
JWF smolt trap	Fry	?1035	0	14	6560	5711
	Smolts	21	0	0	3	104
	total	?1056	0	14	6563	5815
Index Sites	JWF	-	-	25	763	1009
	Olema	-	216	359	1207	1624

?includes 1035 unidentified fry

DATA AND SAMPLE PROCESSING

All field data is entered into a Microsoft Access database, and double checked for accuracy and quality control before and after data entry. Take estimates are derived by querying the database for different species, age, and take categories. The estimates are therefore highly accurate, and in most cases represent exact counts of the actual numbers of fish taken in each category. All tissue and scale samples are air dried, catalogued, and stored in a desiccator. Tissue samples are sent to Dr. Carlos Garza at the NMFS Santa Cruz lab for genetic analysis. Scales will be mounted and read in-house for age analysis.

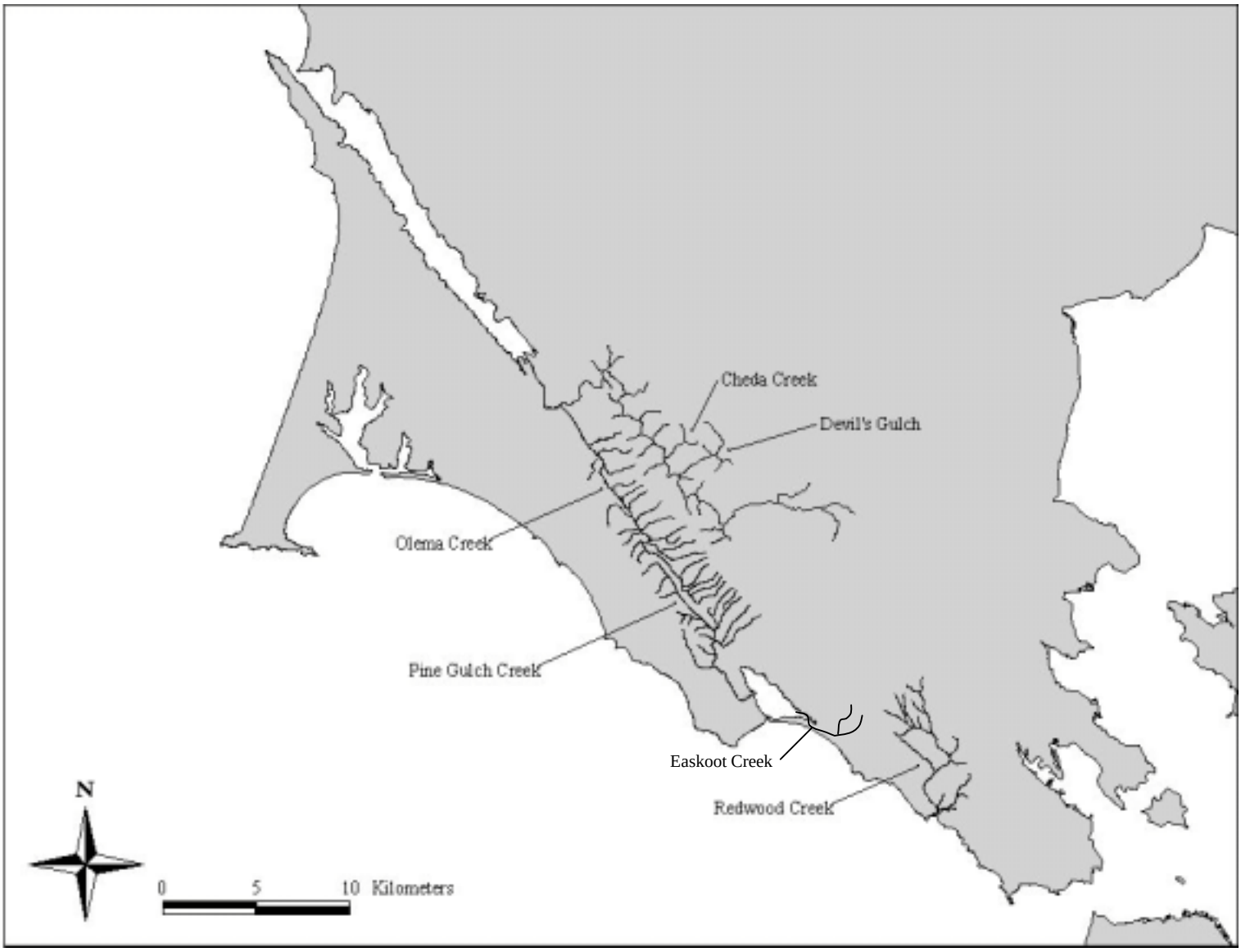

Figure1. Coho and Steelhead Restoration Project watersheds. Marin County, CA.

Table 1. Streams and sampling activities conducted by the National Park Service under permit #1046 during 2002.

Watershed	County	Stream	Activities
Lagunitas	Marin	Cheda Creek	Spawner Surveys, Index Site Electrofishing Surveys
		Lagunitas Creek (mainstem)	Snorkel Surveys
Olema	Marin	Olema Creek (mainstem)	Spawner Surveys, Index Site Electrofishing Surveys
		John West Fork (aka Blueline Creek)	Spawner Surveys, Smolt Trap, fish relocation electrofishing, Index Site Electrofishing Surveys
		Misc. Olema Tribs	Spawner Surveys, fish relocation electrofishing, Index Site Electrofishing Surveys
Drakes Estero	Marin	Laguna, E. Schooner, Home Ranch, N. Home Ranch creeks	Electrofishing presence/absence survey
Redwood	Marin	Redwood Creek (mainstem)	Spawner Surveys, Index Site Seine/Electrofishing Surveys
		Fern and Kent Creeks	Spawner Surveys
Pine Gulch	Marin	Pine Gulch (mainstem)	Spawner Surveys, Smolt Trap, Index Site Electrofishing Surveys, Snorkel Survey
Bolinas Lagoon	Marin	Easkoot Creek	Index Site Electrofishing Surveys
		Morse, Audubon Cyn, Mckinnan, Volunteer Cyn, Lewis	Snorkel/Visual Surveys

Table 2. Annual allowable versus actual take of ESA listed central California coast ESU coho salmon by age class during 2002. Permit #1046

Type of Take	Age Class					
	Juvenile		Adult		Carcass	
	Allowable	Actual	Allowable	Actual	Allowable	Actual
Observe/Harass	44,400	3,771	1,800	92		
Capture/Handle	5,250	*9,729			200	71
Capture/Handle/Mark	2,625	0				
Capture/Handle/ Transport/Release	5,000	582				
Indirect Mortality	236	34				

*see discussion p. 8

Table 3. National Park Service annual take of coho salmon and steelhead trout by stream, sampling activity, and age class on the Lagunitas/Olema Creek Watershed; 2002.

			Observe/harass				Capture/handle				Capture/handle/move		Indirect mortality			
			Coho		Steelhead		Coho		Steelhead		Coho	Steelhead	Coho		Steelhead	
Date	Activity	Stream/Location	adult	juve	adult	juve	adult	juve	adult	juve	juve	juve	adult	juve	adult	juve
1/11/02	Spawner Survey	Olema Mainstem	10		2		*20									
1/7/02-1/14/02	Spawner Surveys (2)	John West Fork (Olema)	3		0		*2									
1/4/02	Spawner Survey	Quarry Gulch (Olema)	1		0		0									
1/9/02	Spawner Survey	Cheda Creek (Lagunitas)	0		0		0									
3/19/02-6/3/02	Smolt Trapping	John West Fork						5815		300				14		0
4/25/02-4/30/02	Fish Rescue	Horse Camp Creek (Olema)									238	16		1		0
4/30/02-5/29/02	Fish Rescue	John West Fork									344	84		2		0
6/17/02	Index Site Electrofishing	Quarry Gulch						62		4				0		0
6/19/02-7/10/02	Index Site Electrofishing	John West Fork						1009		223				6		0
7/11/02-7/16/02	Index Site Electrofishing	Cheda Creek						162		76				0		0
7/17/02-8/28/02	Index Site Electrofishing	Olema mainstem						1624		1481				5		28
6/15/02-11/1/02	Snorkel Surveys	Lagunitas mainstem		3487		11804										
12/11/02	Spawner Survey	Olema mainstem	0		0		0									
12/18/02-12/23/02	Spawner Surveys (3)	John West Fork	57		1		0									
		Totals	71	3487	3	11804	*22	8659		2084	582	100		28		28

*carcasses

Table 4. National Park Service annual take of coho salmon and steelhead trout by stream, sampling activity, and age class on the Pine Gulch Watershed; 2002.

			Observe/harass				Capture/handle				Capture/handle/move		Indirect mortality			
			Coho		Steelhead		Coho		Steelhead		Coho	Steelhead	Coho		Steelhead	
Date	Activity	Stream/Location	adult	juve	adult	juve	adult	juve	adult	juve	juve	juve	adult	juve	adult	juve
1/10/02	Spawner Survey	Pine Gulch mainstem	0		2		**0									
3/23/02-5/29/02	Smolt Trapping	Pine Gulch mainstem						249	5	294				4		12
8/12/02-9/5/02	Index Site Electrofishing	Pine Gulch mainstem						60		787				0		1
9/19/02-9/26/02	Snorkel Survey	Pine Gulch mainstem + McCurdy Creek		284		*4140										
		Totals	0	284	2	*4140	**0	309	5	1081	0	0		4		13

*rough estimate **carcasses

Table 5. National Park Service annual take of coho salmon and steelhead trout by stream, sampling activity, and age class within Bolinas Lagoon Watershed; 2002.

			Observe/harass				Capture/handle				Capture/handle/move		Indirect mortality			
			Coho		Steelhead		Coho		Steelhead		Coho	Steelhead	Coho		Steelhead	
Date	Activity	Stream/Location	adult	juve	adult	juve	adult	juve	adult	juve	juve	juve	adult	juve	adult	juve
8/28/02-10/1/02	Index Site Electrofishing	Easkoot Creek						82		66				0		0
10/31/02	Snorkel/Visual Surveys	Morse, Audubon Cyn, Mckinnan, Volunteer Cyn, Lewis		0		*100										
		Totals	0	0	0	*100		82		66	0	0		0		0

*rough estimate

Table 6. National Park Service annual take of coho salmon and steelhead trout by stream, sampling activity, and age class on the Redwood Creek Watershed; 2002.

			Observe/harass				Capture/handle				Capture/handle/move		Indirect mortality			
			Coho		Steelhead		Coho		Steelhead		Coho	Steelhead	Coho		Steelhead	
Date	Activity	Stream/Location	adult	juve	adult	juve	adult	juve	adult	juve	juve	juve	adult	juve	adult	juve
1/10/02-2/6/02	Spawner Surveys (3)	Redwood mainstem + Kent & Fern Creeks	21		6		*49		*2							
9/23/02-9/25/02	Index Site Seine/ Electrofishing	Redwood mainstem						679		316				2		0
11/20/02-12/19/02	Spawner Surveys (2)	Redwood mainstem	0		0		*0									
		Totals	21	0	6	0	*49	679	*2	316	0	0		2		0

*carcasses

Table 7. National Park Service annual take of coho salmon and steelhead trout by stream, sampling activity, and age class within Drakes Estero watershed; 2002.

			Observe/harass				Capture/handle				Capture/handle/move		Indirect mortality			
			Coho		Steelhead		Coho		Steelhead		Coho	Steelhead	Coho		Steelhead	
Date	Activity	Stream/Location	adult	juve	adult	juve	adult	juve	adult	juve	juve	juve	adult	juve	adult	juve
11/19/02	Electrofishing	Laguna Creek						0		76				0		0
11/12/02	Electrofishing	Home Creek/N. Home Creek						0		8				0		0
11/12/02	Electrofishing	E. Schooner Creek						0		72				0		0
		Totals	0	0	0	0	0	0	0	156	0	0		0		0

Table 8. NPS total annual take by watershed, take category, and age class; 2002

	Observe/harass				Capture/handle				Capture/handle/move		Indirect mortality			
	Coho		Steelhead		Coho		Steelhead		Coho	Steelhead	Coho		Steelhead	
	adult	juve	adult	juve	adult	juve	adult	juve	juve	juve	adult	juve	adult	juve
Lagunitas/Olema Creek Watershed	71	3487	3	11804	**22	8659		2084	582	100		28		28
Pine Gulch Watershed	0	284	2	*4140	0	309	5	1081	0	0		4		13
Bolinas Lagoon Watershed	0	0	0	*100	0	82		66	0	0		0		0
Redwood Creek Watershed	21	0	6	0	**49	679	**2	316	0	0		2		0
Drakes Estero Watershed	0	0	0	0		0		156	0	0		0		0
Totals	92	3771	11	16044	**71	9729	7	3703	582	100		34		41

*rough estimates

**carcasses

Appendix A

2002 Annual Section 10 Permit Report

Permit #1046

Electrofishing Log

Point Reyes National Seashore **Golden Gate National Recreation Area**

Permit # 1046 Electrofishing Log 2002

Stream Horse Camp Creek **Site** culvert pool **Index Site #** **Date** 4/25/2002

Description pool below Hwy 1 culvert @ milepost 23.26

Unit # **Unit Type** PLP **Temp °C** 16.9 **Conductivity (µS/cm)** 164.5

Comments Olema Creek tributary-sampled intermittent part of creek to determine numbers of potentially stranded fish. Coho catch includes 28 smolts

	Time	Setting	Volts	CO	SH YOY	SH 1+
Pass 1	614	p16	200	224	0	15
Pass 2						
Pass 3						
Pass 4						

Total Mortality

CO	1
SH YOY	0
SH 1+	0

Stream Horse Camp Creek **Site** culvert pool **Index Site #** **Date** 4/30/2002

Description pool below Hwy 1 culvert @ milepost 23.26

Unit # **Unit Type** PLP **Temp °C** **Conductivity (µS/cm)**

Comments 2nd rescue at this pool--now only ~0.5 sq m, approx 25% of last week's size

	Time	Setting	Volts	CO	SH YOY	SH 1+
Pass 1	62	p16	200	14	0	1
Pass 2						
Pass 3						
Pass 4						

Total Mortality

CO	0
SH YOY	0
SH 1+	0

Stream John West Fork **Site** intermittent section-isolated pool **Index Site #** **Date** 4/30/2002

Description 1st pool below big fallen bay

Unit # **Unit Type** MCP/CR **Temp °C** **Conductivity (µS/cm)**

Comments sampled intermittent part of creek to determine numbers of potentially stranded fish

	Time	Setting	Volts	CO	SH YOY	SH 1+
Pass 1	463	p16	200	154	48	0
Pass 2						
Pass 3						
Pass 4						

Total Mortality

CO	0
SH YOY	0
SH 1+	0

Stream John West Fork **Site** intermittent section-isolated pool **Index Site #** **Date** 4/30/2002

Description rosebush pool, just upstream of cattle crossing

Unit # **Unit Type** CRP **Temp °C** **Conductivity (µS/cm)**

Comments 3 linked pools shocked--2 halves of rosebush pool plus small remnant pool immed. Downstream

	Time	Setting	Volts	CO	SH YOY	SH 1+
Pass 1	369	p16	200	39	0	0
Pass 2						
Pass 3						
Pass 4						

Total Mortality

CO	0
SH YOY	0
SH 1+	0

Stream John West Fork **Site** intermittent section-isolated pool **Index Site #** **Date** 5/22/2002

Description lower algae pool

Unit # **Unit Type** MCP **Temp °C** 25.7 **Conductivity (µS/cm)** 183.9

Comments no fish--lethal temp for salmonids

	Time	Setting	Volts	CO	SH YOY	SH 1+
Pass 1	29	p16	200	0	0	0
Pass 2						
Pass 3						
Pass 4						

Total Mortality

CO	0
SH YOY	0
SH 1+	0

Stream John West Fork **Site** intermittent section-isolated pool **Index Site #** **Date** 5/22/2002

Description upper algae pool

Unit # **Unit Type** MCP **Temp °C** 18.1 **Conductivity (µS/cm)** 159.5

Comments no live fish found, only 3 dead SH fry (several live fry seen 2 days ago)

	Time	Setting	Volts	CO	SH YOY	SH 1+
Pass 1	48	p16	200	0	0	0
Pass 2						
Pass 3						
Pass 4						

Total Mortality

CO	0
SH YOY	0
SH 1+	0

Stream John West Fork **Site** intermittent section-isolated pool **Index Site #** **Date** 5/22/2002

Description poison oak pool

Unit # **Unit Type** CCP/CRP **Temp °C** 21.1 **Conductivity (µS/cm)** 143.1

Comments

	Time	Setting	Volts	CO	SH YOY	SH 1+
Pass 1	330	p16	200	130	24	0
Pass 2						
Pass 3						
Pass 4						

Total Mortality

CO	0
SH YOY	0
SH 1+	0

Stream John West Fork **Site** intermittent section-isolated pool **Index Site #** **Date** 5/22/2002

Description 1st pool below big fallen bay and 1st pool above cattle crossing

Unit # **Unit Type** MCP/CR **Temp °C** 13.5 **Conductivity (µS/cm)** 127.1

Comments two pools

	Time	Setting	Volts	CO	SH YOY	SH 1+
Pass 1	238	p16	200	10	9	0
Pass 2						
Pass 3						
Pass 4						

Total Mortality

CO	0
SH YOY	0
SH 1+	0

Stream John West Fork **Site** intermittent section-isolated pool **Index Site #** **Date** 5/29/2002

Description fallen bay pool

Unit # **Unit Type** MCP **Temp °C** **Conductivity (µS/cm)**

Comments

	Time	Setting	Volts	CO	SH YOY	SH 1+
Pass 1	132	p16	200	0	1	0
Pass 2						
Pass 3						
Pass 4						

Total Mortality

CO	0
SH YOY	0
SH 1+	0

Stream John West Fork **Site** intermittent section-isolated pool **Index Site #** **Date** 5/29/2002

Description 1st pool above cattle crossing

Unit # **Unit Type** CRP/LSR **Temp °C** **Conductivity (µS/cm)**

Comments 1 coho fry in detached upper part of pool

	Time	Setting	Volts	CO	SH YOY	SH 1+
Pass 1	142	p16	200	1	0	0
Pass 2						
Pass 3						
Pass 4						

Total Mortality

CO	1
SH YOY	0
SH 1+	0

Stream John West Fork **Site** intermittent section-isolated pool **Index Site #** **Date** 5/29/2002

Description poison oak pool

Unit # **Unit Type** CCP/CRP **Temp °C** **Conductivity (µS/cm)**

Comments

	Time	Setting	Volts	CO	SH YOY	SH 1+
Pass 1	413	p16	200	10	2	0
Pass 2						
Pass 3						
Pass 4						

Total Mortality

CO	1
SH YOY	0
SH 1+	0

Stream Quarry Gulch **Site** **Index Site #** 1 **Date** 6/17/2002

Description

Unit # 1 **Unit Type** LSBo **Temp °C** **Conductivity (µS/cm)**

Comments Boulder in unit is actually an old refrigerator.

	Time	Setting	Volts	CO	SH YOY	SH 1+
Pass 1	442	P16	200	0	0	0
Pass 2						
Pass 3						
Pass 4						

Total Mortality

CO	0
SH YOY	0
SH 1+	0

Stream Quarry Gulch **Site** **Index Site #** 1 **Date** 6/17/2002

Description

Unit # 3 **Unit Type** MCP **Temp °C** **Conductivity (µS/cm)**

Comments Unit 2, LGR not shocked.

	Time	Setting	Volts	CO	SH YOY	SH 1+
Pass 1	202	P16	200	0	0	0
Pass 2						
Pass 3						
Pass 4						

Total Mortality

CO	0
SH YOY	0
SH 1+	0

Stream Quarry Gulch **Site** **Index Site #** 1 **Date** 6/17/2002

Description

Unit # 4 **Unit Type** LSR **Temp °C** **Conductivity (µS/cm)**

Comments Pool with staff gage.

	Time	Setting	Volts	CO	SH YOY	SH 1+
Pass 1	176	P16	200	0	0	0
Pass 2						
Pass 3						
Pass 4						

Total Mortality

CO	0
SH YOY	0
SH 1+	0

Stream Quarry Gulch **Site** **Index Site #** 1 **Date** 6/17/2002

Description

Unit # 6 **Unit Type** LSL **Temp °C** **Conductivity (µS/cm)**

Comments Unit 5 LGR not shocked. Pass terminated half way through due to RLF. 3 TRF's also captured.

	Time	Setting	Volts	CO	SH YOY	SH 1+
Pass 1	339	P16	200	5	0	0
Pass 2						
Pass 3						
Pass 4						

Total Mortality

CO	0
SH YOY	0
SH 1+	0

Stream Quarry Gulch **Site** **Index Site #** 2 **Date** 6/17/2002

Description

Unit # 1 **Unit Type** CRP **Temp °C** **Conductivity (µS/cm)**

Comments

	Time	Setting	Volts	CO	SH YOY	SH 1+
Pass 1	374	P16	200	0	0	0
Pass 2						
Pass 3						
Pass 4						

Total Mortality

CO	0
SH YOY	0
SH 1+	0

Stream Quarry Gulch **Site** **Index Site #** 2 **Date** 6/17/2002

Description

Unit # 2 **Unit Type** MCP **Temp °C** 14 **Conductivity (µS/cm)**

Comments H2O temp:14.

	Time	Setting	Volts	CO	SH YOY	SH 1+
Pass 1	227	P16	200	5	0	0
Pass 2	204	P16	200			
Pass 3						
Pass 4						

Total Mortality

CO	0
SH YOY	0
SH 1+	0

Stream Quarry Gulch **Site** **Index Site #** 2 **Date** 6/17/2002

Description

Unit # 3 **Unit Type** LGR **Temp °C** **Conductivity (µS/cm)**

Comments Unit four MCP not shocked, RLF present. Unit four length: 11.9 meters.

	Time	Setting	Volts	CO	SH YOY	SH 1+
Pass 1	177	P16	200	0	0	0
Pass 2						
Pass 3						
Pass 4						

Total Mortality

CO	0
SH YOY	0
SH 1+	0

Stream Quarry Gulch **Site** **Index Site #** 3 **Date** 6/17/2002

Description

Unit # 1 **Unit Type** LSR **Temp °C** **Conductivity (µS/cm)**

Comments

	Time	Setting	Volts	CO	SH YOY	SH 1+
Pass 1	905	P16	200	44	0	3
Pass 2	499	P16	200	1	0	0
Pass 3						
Pass 4						

Total Mortality

CO	0
SH YOY	0
SH 1+	0

Stream Quarry Gulch **Site** **Index Site #** 3 **Date** 6/17/2002

Description

Unit # 2 **Unit Type** **Temp °C** **Conductivity (µS/cm)**

Comments

	Time	Setting	Volts	CO	SH YOY	SH 1+
Pass 1	333	P16	200	7	1	0
Pass 2	390	P16	200	0	0	0
Pass 3						
Pass 4						

Total Mortality

CO	0
SH YOY	0
SH 1+	0

Stream Quarry Gulch **Site** **Index Site #** 3 **Date** 6/17/2002

Description

Unit # 3 **Unit Type** **Temp °C** **Conductivity (µS/cm)**

Comments

	Time	Setting	Volts	CO	SH YOY	SH 1+
Pass 1	360	P16	200	9	0	0
Pass 2	390	P16	200	0	0	0
Pass 3						
Pass 4						

Total Mortality

CO	0
SH YOY	0
SH 1+	0

Stream John West Fork **Site** **Index Site #** 3 **Date** 6/19/2002

Description

Unit # 1 **Unit Type** LSR **Temp °C** **Conductivity (µS/cm)**

Comments 2 Mort Coho.

	Time	Setting	Volts	CO	SH YOY	SH 1+
Pass 1	1125	P16	200	167	5	5
Pass 2	934	P16	200	41	0	0
Pass 3						
Pass 4						

Total Mortality

CO	2
SH YOY	0
SH 1+	0

Stream John West Fork **Site** **Index Site #** 3 **Date** 6/19/2002

Description

Unit # 3 **Unit Type** LSR **Temp °C** **Conductivity (µS/cm)**

Comments Coho not measured for units 3 and 5. Unit 2 LGR not shocked.

	Time	Setting	Volts	CO	SH YOY	SH 1+
Pass 1	483	P16	200	64	0	0
Pass 2	424	P16	200	10	0	0
Pass 3						
Pass 4						

Total Mortality

CO	0
SH YOY	0
SH 1+	0

Stream John West Fork **Site** **Index Site #** 3 **Date** 6/19/2002

Description

Unit # 5 **Unit Type** LSR **Temp °C** **Conductivity (µS/cm)**

Comments Unit 4 LGR not shocked.

	Time	Setting	Volts	CO	SH YOY	SH 1+
Pass 1	1504	P16	200	121	3	0
Pass 2	805	P16	200	43	1	0
Pass 3						
Pass 4						

Total Mortality

CO	1
SH YOY	0
SH 1+	0

Stream John West Fork **Site** **Index Site #** 1 **Date** 7/1/2002

Description

Unit # 3 **Unit Type** LSR **Temp °C** **Conductivity (µS/cm)**

Comments Unit 1 LSR (with lots of LWD) and unit 2 (almost dry) not sampled.

	Time	Setting	Volts	CO	SH YOY	SH 1+
Pass 1	247	P16	200	12	10	0
Pass 2	279	P16	200	1	4	0
Pass 3						
Pass 4						

Total Mortality

CO	0
SH YOY	0
SH 1+	0

Stream John West Fork **Site** **Index Site #** 1 **Date** 7/1/2002

Description

Unit # 4 **Unit Type** PLP **Temp °C** **Conductivity (µS/cm)**

Comments

	Time	Setting	Volts	CO	SH YOY	SH 1+
Pass 1	272	P16	200	19	4	0
Pass 2	239	P16	200	3	2	0
Pass 3						
Pass 4						

Total Mortality

CO	0
SH YOY	0
SH 1+	0

Stream John West Fork **Site** **Index Site #** 1 **Date** 7/1/2002

Description

Unit # 5 **Unit Type** LGR **Temp °C** **Conductivity (µS/cm)**

Comments

	Time	Setting	Volts	CO	SH YOY	SH 1+
Pass 1	279	P16	100	0	6	0
Pass 2						
Pass 3						
Pass 4						

Total Mortality

CO	0
SH YOY	0
SH 1+	0

Stream John West Fork **Site** **Index Site #** 1 **Date** 7/1/2002

Description

Unit # 6 **Unit Type** CRP **Temp °C** **Conductivity (µS/cm)**

Comments

	Time	Setting	Volts	CO	SH YOY	SH 1+
Pass 1	915	P16	200	86	0	3
Pass 2	824	P16	200	26	1	3
Pass 3						
Pass 4						

Total Mortality

CO	0
SH YOY	0
SH 1+	0

Stream John West Fork **Site** **Index Site #** 2 **Date** 7/10/2002

Description

Unit # 1 **Unit Type** LSBo **Temp °C** 15.4 **Conductivity (µS/cm)** 170.9

Comments

	Time	Setting	Volts	CO	SH YOY	SH 1+
Pass 1	370	P16	200	79	11	2
Pass 2	268	P16	200	4	1	0
Pass 3						
Pass 4						

Total Mortality

CO	0
SH YOY	0
SH 1+	0

Stream John West Fork **Site** **Index Site #** 2 **Date** 7/10/2002

Description

Unit # 3 **Unit Type** PLP **Temp °C** 15.4 **Conductivity (µS/cm)** 170.9

Comments unit 2 HGR not sampled.

	Time	Setting	Volts	CO	SH YOY	SH 1+
Pass 1	235	P16	200	54	6	4
Pass 2	236	P16	200	10	3	0
Pass 3						
Pass 4						

Total Mortality

CO	0
SH YOY	0
SH 1+	0

Stream John West Fork **Site** **Index Site #** 2 **Date** 7/10/2002

Description

Unit # 5 **Unit Type** DPL **Temp °C** 15.4 **Conductivity (µS/cm)** 170.9

Comments 2 Mort Coho.

	Time	Setting	Volts	CO	SH YOY	SH 1+
Pass 1	422	P16	200	75	32	0
Pass 2	317	P16	200	8	11	0
Pass 3						
Pass 4						

Total Mortality

CO	2
SH YOY	0
SH 1+	0

Stream John West Fork **Site** **Index Site #** 2 **Date** 7/10/2002

Description

Unit # 7 **Unit Type** PLP **Temp °C** 15.4 **Conductivity (µS/cm)** 170.9

Comments Unit 7 Fish Data entered manually. Pass 1: 174 CO, mass weight=400 g. Pass 2: 14 coho, mass weight=27.8. Pass 1: 37 SH, mass weight=100g. Pass 2 : 18 CO, mass weight=20.4.

	Time	Setting	Volts	CO	SH YOY	SH 1+
Pass 1	413	P16	200	174	87	1
Pass 2	329	P16	200	14	18	0
Pass 3						
Pass 4						

Total Mortality

CO	1
SH YOY	0
SH 1+	0

Stream Cheda Creek **Site** **Index Site #** 1 **Date** 7/11/2002

Description

Unit # 1 **Unit Type** LSR **Temp °C** **Conductivity (µS/cm)**

Comments lots of recent cow activity- Trampled banks and shit in the water. 1 California fresh water shrimp.

	Time	Setting	Volts	CO	SH YOY	SH 1+
Pass 1	774	P16	200	127	11	0
Pass 2	531	P16	200	14	1	0
Pass 3						
Pass 4						

Total Mortality

CO	0
SH YOY	0
SH 1+	0

Stream Cheda Creek **Site** **Index Site #** 1 **Date** 7/11/2002

Description

Unit # 2 **Unit Type** LGR **Temp °C** **Conductivity (µS/cm)**

Comments one pass only.

	Time	Setting	Volts	CO	SH YOY	SH 1+
Pass 1	354	P16	100	1	2	0
Pass 2						
Pass 3						
Pass 4						

Total Mortality

CO	0
SH YOY	0
SH 1+	0

Stream Cheda Creek **Site** **Index Site #** 1 **Date** 7/11/2002

Description

Unit # 3 **Unit Type** LSBk **Temp °C** **Conductivity (µS/cm)**

Comments

	Time	Setting	Volts	CO	SH YOY	SH 1+
Pass 1	191	P16	200	10	10	0
Pass 2	153	P16	200	0	1	0
Pass 3						
Pass 4						

Total Mortality

CO	0
SH YOY	0
SH 1+	0

Stream Cheda Creek **Site** **Index Site #** 1 **Date** 7/11/2002

Description

Unit # 4 **Unit Type** LGR **Temp °C** **Conductivity (µS/cm)**

Comments 1 pass only.

	Time	Setting	Volts	CO	SH YOY	SH 1+
Pass 1	235	P16	100	1	2	0
Pass 2						
Pass 3						
Pass 4						

Total Mortality

CO	0
SH YOY	0
SH 1+	0

Stream Cheda Creek **Site** **Index Site #** 1 **Date** 7/11/2002

Description

Unit # 5 **Unit Type** MCP **Temp °C** **Conductivity (µS/cm)**

Comments one pass only.

	Time	Setting	Volts	CO	SH YOY	SH 1+
Pass 1	82	P16	200	0	3	0
Pass 2						
Pass 3						
Pass 4						

Total Mortality

CO	0
SH YOY	0
SH 1+	0

Stream Cheda Creek **Site** **Index Site #** 1 **Date** 7/11/2002

Description

Unit # 7 **Unit Type** LSBk **Temp °C** **Conductivity (µS/cm)**

Comments Unit 6 LGR not shocked.

	Time	Setting	Volts	CO	SH YOY	SH 1+
Pass 1	153	P16	200	9	6	0
Pass 2	146	P16	200	0	1	0
Pass 3						
Pass 4						

Total Mortality

CO	0
SH YOY	0
SH 1+	0

Stream Cheda Creek **Site** **Index Site #** 2 **Date** 7/15/2002

Description

Unit # 1 **Unit Type** PLP **Temp °C** 16 **Conductivity (µS/cm)** 218

Comments Lots of algae mats, hard to e-fish. Approx 100 newts left in pool.

	Time	Setting	Volts	CO	SH YOY	SH 1+
Pass 1	287	P16	200	0	0	6
Pass 2	221	P16	200	0	0	0
Pass 3						
Pass 4						

Total Mortality

CO	0
SH YOY	0
SH 1+	0

Stream Cheda Creek **Site** **Index Site #** 2 **Date** 7/15/2002

Description

Unit # 3 **Unit Type** PLP **Temp °C** 16 **Conductivity (µS/cm)** 218.0

Comments Unit 2 LGR not shocked.

	Time	Setting	Volts	CO	SH YOY	SH 1+
Pass 1	224	P16	200	0	0	2
Pass 2	182	P16	200	0	0	0
Pass 3						
Pass 4						

Total Mortality

CO	0
SH YOY	0
SH 1+	0

Stream Cheda Creek **Site** **Index Site #** 2 **Date** 7/15/2002

Description

Unit # 5 **Unit Type** PLP **Temp °C** 16 **Conductivity (µS/cm)** 218

Comments Unit 4 LGR not sampled.

	Time	Setting	Volts	CO	SH YOY	SH 1+
Pass 1	298	P16	200	0	0	2
Pass 2	286	P16	200	0	0	1
Pass 3						
Pass 4						

Total Mortality

CO	0
SH YOY	0
SH 1+	0

Stream Cheda Creek **Site** **Index Site #** 2 **Date** 7/15/2002

Description

Unit # 7 **Unit Type** PLP **Temp °C** 16 **Conductivity (µS/cm)** 218

Comments Unit 6 LGR not shocked.

	Time	Setting	Volts	CO	SH YOY	SH 1+
Pass 1	239	P16	200	0	0	4
Pass 2	241	P16	200	0	0	1
Pass 3						
Pass 4						

Total Mortality

CO	0
SH YOY	0
SH 1+	0

Stream Cheda Creek **Site** **Index Site #** 2 **Date** 7/15/2002

Description

Unit # 8 **Unit Type** LGR **Temp °C** 16 **Conductivity (µS/cm)** 218

Comments

	Time	Setting	Volts	CO	SH YOY	SH 1+
Pass 1	66	P16	100	0	0	0
Pass 2						
Pass 3						
Pass 4						

Total Mortality

CO	0
SH YOY	0
SH 1+	0

Stream Cheda Creek **Site** **Index Site #** 2 **Date** 7/15/2002

Description

Unit # 9 **Unit Type** PLP **Temp °C** 16 **Conductivity (µS/cm)** 218

Comments

	Time	Setting	Volts	CO	SH YOY	SH 1+
Pass 1	190	P16	200	0	0	4
Pass 2	192	P16	200	0	0	0
Pass 3						
Pass 4						

Total Mortality

CO	0
SH YOY	0
SH 1+	0

Stream Cheda Creek **Site** **Index Site #** 2 **Date** 7/15/2002

Description

Unit # 10 **Unit Type** FW **Temp °C** 16 **Conductivity (µS/cm)** 218

Comments Only one pass.

	Time	Setting	Volts	CO	SH YOY	SH 1+
Pass 1	102	P16	200	0	0	0
Pass 2						
Pass 3						
Pass 4						

Total Mortality

CO	0
SH YOY	0
SH 1+	0

Stream Cheda Creek **Site** **Index Site #** 2 **Date** 7/15/2002

Description

Unit # 11 **Unit Type** PLP **Temp °C** 16 **Conductivity (µS/cm)** 218

Comments

	Time	Setting	Volts	CO	SH YOY	SH 1+
Pass 1	245	P16	200	0	0	6
Pass 2	258	P16	200	0	0	0
Pass 3						
Pass 4						

Total Mortality

CO	0
SH YOY	0
SH 1+	0

Stream Cheda Creek **Site** **Index Site #** 3 **Date** 7/16/2002

Description

Unit # 1 **Unit Type** LSBk **Temp °C** 13.5 **Conductivity (µS/cm)** 288.6

Comments

	Time	Setting	Volts	CO	SH YOY	SH 1+
Pass 1	215	P16	200	0	0	2
Pass 2	224	P16	200	0	0	0
Pass 3						
Pass 4						

Total Mortality

CO	0
SH YOY	0
SH 1+	0

Stream Cheda Creek **Site** **Index Site #** 3 **Date** 7/16/2002

Description

Unit # 2 **Unit Type** LGR **Temp °C** 13.5 **Conductivity (µS/cm)** 288.6

Comments 2 PGS larve observed, not captured.

	Time	Setting	Volts	CO	SH YOY	SH 1+
Pass 1	264	P16	100	0	0	0
Pass 2						
Pass 3						
Pass 4						

Total Mortality

CO	0
SH YOY	0
SH 1+	0

Stream Cheda Creek **Site** **Index Site #** 3 **Date** 7/16/2002

Description

Unit # 3 **Unit Type** LSBk **Temp °C** 13.5 **Conductivity (µS/cm)** 288.6

Comments 2 more PGS seen, not captured.

	Time	Setting	Volts	CO	SH YOY	SH 1+
Pass 1	208	P16	200	0	0	0
Pass 2						
Pass 3						
Pass 4						

Total Mortality

CO	0
SH YOY	0
SH 1+	0

Stream Cheda Creek **Site** **Index Site #** 3 **Date** 7/16/2002

Description

Unit # 4 **Unit Type** LSBo **Temp °C** 13.5 **Conductivity (µS/cm)** 288.6

Comments

	Time	Setting	Volts	CO	SH YOY	SH 1+
Pass 1	237	P16	200	0	0	5
Pass 2	203	P16	200	0	0	1
Pass 3						
Pass 4						

Total Mortality

CO	0
SH YOY	0
SH 1+	0

Stream Cheda Creek **Site** **Index Site #** 3 **Date** 7/16/2002

Description

Unit # 5 **Unit Type** LGR **Temp °C** 13.5 **Conductivity (µS/cm)** 288.6

Comments

	Time	Setting	Volts	CO	SH YOY	SH 1+
Pass 1	92	P16	100	0	0	0
Pass 2						
Pass 3						
Pass 4						

Total Mortality

CO	0
SH YOY	0
SH 1+	0

Stream Cheda Creek **Site** **Index Site #** 3 **Date** 7/16/2002

Description

Unit # 6 **Unit Type** LSBk **Temp °C** 13.5 **Conductivity (µS/cm)** 288.6

Comments

	Time	Setting	Volts	CO	SH YOY	SH 1+
Pass 1	204	P16	200	0	1	4
Pass 2	164	P16	200	0	0	0
Pass 3						
Pass 4						

Total Mortality

CO	0
SH YOY	0
SH 1+	0

Stream Olema Creek **Site** **Index Site #** 8 **Date** 7/17/2002

Description

Unit # 1 **Unit Type** LSR **Temp °C** 13 **Conductivity (µS/cm)** 269.9

Comments UNIT 2 DRY.

	Time	Setting	Volts	CO	SH YOY	SH 1+
Pass 1	332	P16	100	12	38	0
Pass 2	209	P16	100	4	19	0
Pass 3						
Pass 4						

Total Mortality

CO	0
SH YOY	0
SH 1+	0

Stream Olema Creek **Site** **Index Site #** 8 **Date** 7/17/2002

Description

Unit # 3 **Unit Type** LSL **Temp °C** 13 **Conductivity (µS/cm)** 269.9

Comments Pass1; 1 CO mort. 1PGS larvae collected. During Pass2, a serious oil slick was kicked up. UNIT 4 DRY.

	Time	Setting	Volts	CO	SH YOY	SH 1+
Pass 1	1155	P16	200	99	67	0
Pass 2	622	P16	200	22	15	0
Pass 3						
Pass 4						

Total Mortality

CO	0
SH YOY	0
SH 1+	0

Stream Olema Creek **Site** **Index Site #** 8 **Date** 7/17/2002

Description

Unit # 5 **Unit Type** LSL **Temp °C** 13 **Conductivity (µS/cm)** 269.9

Comments Pass1; 90CO unmeasured. Pass2; 35CO, 14 SH unmeasured. 1 Additional coho mort.

	Time	Setting	Volts	CO	SH YOY	SH 1+
Pass 1	1161	P16	200	140	42	0
Pass 2	1088	P16	200	35	22	0
Pass 3						
Pass 4						

Total Mortality

CO	1
SH YOY	0
SH 1+	0

Stream Olema Creek **Site** **Index Site #** 7 **Date** 7/24/2002

Description

Unit # 1 **Unit Type** FW **Temp °C** **Conductivity (µS/cm)**

Comments Pass1, 11SCU unmeasured. Pass2, 8SCU unmeasured

	Time	Setting	Volts	CO	SH YOY	SH 1+
Pass 1	732	P16	200	34	23	0
Pass 2	605	P16	200	10	5	0
Pass 3						
Pass 4						

Total Mortality

CO	0
SH YOY	0
SH 1+	0

Stream Olema Creek **Site** **Index Site #** 7 **Date** 7/24/2002

Description

Unit # 2 **Unit Type** LSBo **Temp °C** **Conductivity (µS/cm)**

Comments Pass1; 1CO unmeasured, 4SCU unmeasured. Pass2; 24CO (68g); 4SCU unmeasured

	Time	Setting	Volts	CO	SH YOY	SH 1+
Pass 1	802	P16	200	51	15	4
Pass 2	684	P16	200	24	4	0
Pass 3						
Pass 4						

Total Mortality

CO	0
SH YOY	0
SH 1+	0

Stream Olema Creek **Site** **Index Site #** 7 **Date** 7/24/2002

Description

Unit # 3 **Unit Type** LGR **Temp °C** **Conductivity (µS/cm)**

Comments

	Time	Setting	Volts	CO	SH YOY	SH 1+
Pass 1	1670	P16	100	12	40	0
Pass 2						
Pass 3						
Pass 4						

Total Mortality

CO	0
SH YOY	0
SH 1+	0

Stream Olema Creek **Site** **Index Site #** 7 **Date** 7/24/2002

Description

Unit # 4 **Unit Type** LSR **Temp °C** **Conductivity (µS/cm)**

Comments Pass 1; 26 co(53.4g) unmeasured. Pass2; 7co(10.8g), 4sh(5.7g) unmeasured.

	Time	Setting	Volts	CO	SH YOY	SH 1+
Pass 1	464	P16	200	26	30	0
Pass 2	516	P16	200	7	4	0
Pass 3						
Pass 4						

Total Mortality

CO	0
SH YOY	0
SH 1+	0

Stream Olema Creek **Site** **Index Site #** 7 **Date** 7/24/2002

Description

Unit # 5 **Unit Type** LSR **Temp °C** **Conductivity (µS/cm)**

Comments

	Time	Setting	Volts	CO	SH YOY	SH 1+
Pass 1	1636	P16	200	150	15	1
Pass 2	825	P16	200	18	3	0
Pass 3						
Pass 4						

Total Mortality

CO	2
SH YOY	0
SH 1+	0

Stream Olema Creek **Site** **Index Site #** 5 **Date** 7/29/2002

Description

Unit # 1 **Unit Type** LSBk **Temp °C** 15.2 **Conductivity (µS/cm)** 270.2

Comments unmeasued, CO:151, SH: 50 STK: 22, RO:3, SCU:14,

	Time	Setting	Volts	CO	SH YOY	SH 1+
Pass 1	1610	P16	200	201	100	14
Pass 2	1055	P16	200	49	25	1
Pass 3						
Pass 4						

Total Mortality

CO	0
SH YOY	0
SH 1+	0

Stream Olema Creek **Site** **Index Site #** 5 **Date** 7/29/2002

Description

Unit # 2 **Unit Type** LGR **Temp °C** 15.2 **Conductivity (µS/cm)** 270.2

Comments 1 pass only.

	Time	Setting	Volts	CO	SH YOY	SH 1+
Pass 1	570	P16	100	0	28	1
Pass 2						
Pass 3						
Pass 4						

Total Mortality

CO	0
SH YOY	0
SH 1+	0

Stream Olema Creek **Site** **Index Site #** 5 **Date** 7/29/2002

Description

Unit # 3 **Unit Type** GLD **Temp °C** 15.2 **Conductivity (µS/cm)** 270.2

Comments unmeasured, SH:72, SCU37

	Time	Setting	Volts	CO	SH YOY	SH 1+
Pass 1	806	P16	200	10	93	0
Pass 2	696	P16	200	0	21	0
Pass 3						
Pass 4						

Total Mortality

CO	0
SH YOY	0
SH 1+	0

Stream Olema Creek **Site** **Index Site #** 1 **Date** 7/30/2002

Description

Unit # 1 **Unit Type** LSR **Temp °C** 16.6 **Conductivity (µS/cm)** 252.8

Comments 1 Sh YOY with burn.

	Time	Setting	Volts	CO	SH YOY	SH 1+
Pass 1	765	P16	200	0	6	1
Pass 2	735	P16	200	0	1	0
Pass 3						
Pass 4						

Total Mortality

CO	0
SH YOY	0
SH 1+	0

Stream Olema Creek **Site** **Index Site #** 1 **Date** 7/30/2002

Description

Unit # 2 **Unit Type** LSR **Temp °C** **Conductivity (µS/cm)**

Comments

	Time	Setting	Volts	CO	SH YOY	SH 1+
Pass 1	728	P16	200	0	9	3
Pass 2	578	P16	200	0	1	0
Pass 3						
Pass 4						

Total Mortality

CO	0
SH YOY	0
SH 1+	0

Stream Olema Creek **Site** **Index Site #** 1 **Date** 7/30/2002

Description

Unit # 4 **Unit Type** LSR **Temp °C** 16.6 **Conductivity (µS/cm)** 252.8

Comments

	Time	Setting	Volts	CO	SH YOY	SH 1+
Pass 1	777	P16	200	2	0	1
Pass 2						
Pass 3						
Pass 4						

Total Mortality

CO	0
SH YOY	0
SH 1+	0

Stream Olema Creek **Site** **Index Site #** 1 **Date** 7/30/2002

Description

Unit # 5 **Unit Type** LSR **Temp °C** **Conductivity (µS/cm)**

Comments

	Time	Setting	Volts	CO	SH YOY	SH 1+
Pass 1	721	P16	200	1	5	2
Pass 2	676	P16	200	0	4	0
Pass 3						
Pass 4						

Total Mortality

CO	0
SH YOY	0
SH 1+	0

Stream Olema Creek **Site** **Index Site #** 3 **Date** 7/31/2002

Description

Unit # 1 **Unit Type** LSR **Temp °C** 16 **Conductivity (µS/cm)** 271.0

Comments Pass1: 22 SH morts; 2 CO mort. Pass 2, 1 SH mort (23 total SH morts)

	Time	Setting	Volts	CO	SH YOY	SH 1+
Pass 1	1622	P16	200	69	139	3
Pass 2	950	P16	200	16	16	0
Pass 3						
Pass 4						

Total Mortality

CO	2
SH YOY	23
SH 1+	0

Stream Olema Creek **Site** **Index Site #** 3 **Date** 7/31/2002

Description

Unit # 2 **Unit Type** GLD **Temp °C** 16 **Conductivity (µS/cm)** 271

Comments Pass 1, SH mort

	Time	Setting	Volts	CO	SH YOY	SH 1+
Pass 1	1383	P16	200	2	76	1
Pass 2	1121	P16	200	0	16	0
Pass 3						
Pass 4						

Total Mortality

CO	0
SH YOY	1
SH 1+	0

Stream Olema Creek **Site** **Index Site #** 3 **Date** 7/31/2002

Description

Unit # 3 **Unit Type** GLD **Temp °C** 16 **Conductivity (µS/cm)** 271

Comments lots of SWD, hard to work around, missed some fish.

	Time	Setting	Volts	CO	SH YOY	SH 1+
Pass 1	1000	P16	200	35	174	5
Pass 2	667	P16	200	1	18	0
Pass 3						
Pass 4						

Total Mortality

CO	0
SH YOY	0
SH 1+	0

Stream Olema Creek **Site** **Index Site #** 6 **Date** 8/5/2002

Description

Unit # 1 **Unit Type** LSR **Temp °C** 14.1 **Conductivity (µS/cm)** 285.2

Comments Missed 1 SH1+ on Pass1

	Time	Setting	Volts	CO	SH YOY	SH 1+
Pass 1	1394	P16	200	62	22	2
Pass 2	1314	P16	200	21	10	0
Pass 3						
Pass 4						

Total Mortality

CO	0
SH YOY	0
SH 1+	0

Stream Olema Creek **Site** **Index Site #** 6 **Date** 8/5/2002

Description

Unit # 2 **Unit Type** GLD **Temp °C** 14.1 **Conductivity (µS/cm)** 285.2

Comments

	Time	Setting	Volts	CO	SH YOY	SH 1+
Pass 1	946	P16	200	42	21	0
Pass 2	725	P16	200	17	7	0
Pass 3						
Pass 4						

Total Mortality

CO	0
SH YOY	0
SH 1+	0

Stream Olema Creek **Site** **Index Site #** 6 **Date** 8/5/2002

Description

Unit # 3 **Unit Type** LSR **Temp °C** 14.1 **Conductivity (µS/cm)** 285.2

Comments

	Time	Setting	Volts	CO	SH YOY	SH 1+
Pass 1	1252	P16	200	156	48	5
Pass 2	880	P16	200	25	8	0
Pass 3						
Pass 4						

Total Mortality

CO	0
SH YOY	0
SH 1+	0

Stream Olema Creek **Site** **Index Site #** 6 **Date** 8/5/2002

Description

Unit # 4 **Unit Type** LGR **Temp °C** 14.1 **Conductivity (µS/cm)** 285.2

Comments

	Time	Setting	Volts	CO	SH YOY	SH 1+
Pass 1	230	P16	200	0	2	0
Pass 2						
Pass 3						
Pass 4						

Total Mortality

CO	0
SH YOY	0
SH 1+	0

Stream Olema Creek **Site** **Index Site #** 2 **Date** 8/7/2002

Description

Unit # 1 **Unit Type** GLD **Temp °C** **Conductivity (µS/cm)**

Comments unit 1 pool from last year extended downstream by large log with rootwad.

	Time	Setting	Volts	CO	SH YOY	SH 1+
Pass 1	1168	P16	200	42	30	4
Pass 2	970	P16	200	4	2	0
Pass 3						
Pass 4						

Total Mortality

CO	0
SH YOY	0
SH 1+	0

Stream Olema Creek **Site** **Index Site #** 2 **Date** 8/7/2002

Description

Unit # 2 **Unit Type** LGR **Temp °C** **Conductivity (µS/cm)**

Comments

	Time	Setting	Volts	CO	SH YOY	SH 1+
Pass 1	224	P16	200	0	3	0
Pass 2						
Pass 3						
Pass 4						

Total Mortality

CO	0
SH YOY	0
SH 1+	0

Stream Olema Creek **Site** **Index Site #** 2 **Date** 8/7/2002

Description

Unit # 3 **Unit Type** GLD **Temp °C** **Conductivity (µS/cm)**

Comments lots of algae, many small stickleback not captured.

	Time	Setting	Volts	CO	SH YOY	SH 1+
Pass 1	903	P16	200	1	12	1
Pass 2	807	P16	200	1	2	0
Pass 3						
Pass 4						

Total Mortality

CO	0
SH YOY	0
SH 1+	0

Stream Olema Creek **Site** **Index Site #** 2 **Date** 8/7/2002

Description

Unit # 4 **Unit Type** LSR **Temp °C** **Conductivity (µS/cm)**

Comments

	Time	Setting	Volts	CO	SH YOY	SH 1+
Pass 1	901	P16	200	9	12	1
Pass 2	810	P16	200	1	3	0
Pass 3						
Pass 4						

Total Mortality

CO	0
SH YOY	0
SH 1+	0

Stream Olema Creek **Site** **Index Site #** 2 **Date** 8/7/2002

Description

Unit # 5 **Unit Type** LSR **Temp °C** **Conductivity (µS/cm)**

Comments ran out of time, only able to do one pass.

	Time	Setting	Volts	CO	SH YOY	SH 1+
Pass 1	1177	P16	200	56	36	1
Pass 2						
Pass 3						
Pass 4						

Total Mortality

CO	0
SH YOY	0
SH 1+	0

Stream Pine Gulch **Site** Lower Teixeira **Index Site #** 5 **Date** 8/12/2002

Description stream km 6.8

Unit # 1 **Unit Type** LSR **Temp °C** 14.2 **Conductivity (µS/cm)** 208.3

Comments Pass 1 AM2,

	Time	Setting	Volts	CO	SH YOY	SH 1+
Pass 1	691	P16	200	2	5	5
Pass 2	571	P16	200	1	0	0
Pass 3						
Pass 4						

Total Mortality

CO	0
SH YOY	0
SH 1+	0

Stream Pine Gulch **Site** Lower Teixeira **Index Site #** 5 **Date** 8/12/2002

Description stream km 6.8

Unit # 2 **Unit Type** GLD **Temp °C** 14.2 **Conductivity (µS/cm)** 208.3

Comments

	Time	Setting	Volts	CO	SH YOY	SH 1+
Pass 1	414	P16	200	0	14	2
Pass 2	325	P16	200	1	0	0
Pass 3						
Pass 4						

Total Mortality

CO	0
SH YOY	0
SH 1+	0

Stream Pine Gulch **Site** Lower Teixeira **Index Site #** 5 **Date** 8/12/2002

Description stream km 6.8

Unit # 3 **Unit Type** LGR **Temp °C** 14.2 **Conductivity (µS/cm)** 208.3

Comments

	Time	Setting	Volts	CO	SH YOY	SH 1+
Pass 1	321	P16	200	0	2	0
Pass 2						
Pass 3						
Pass 4						

Total Mortality

CO	0
SH YOY	0
SH 1+	0

Stream Pine Gulch **Site** Lower Teixeira **Index Site #** 5 **Date** 8/12/2002

Description stream km 6.8

Unit # 4 **Unit Type** LSR **Temp °C** 14.22 **Conductivity (µS/cm)** 208.3

Comments

	Time	Setting	Volts	CO	SH YOY	SH 1+
Pass 1	796	P16	200	9	30	8
Pass 2	609	P16	200	1	8	2
Pass 3						
Pass 4						

Total Mortality

CO	0
SH YOY	0
SH 1+	0

Stream Pine Gulch **Site** Lower Teixeira **Index Site #** 5 **Date** 8/12/2002

Description stream km 6.8

Unit # 5 **Unit Type** LSR **Temp °C** 14.2 **Conductivity (µS/cm)** 208.3

Comments

	Time	Setting	Volts	CO	SH YOY	SH 1+
Pass 1	824	P16	200	6	21	8
Pass 2	673	P16	200	4	10	0
Pass 3						
Pass 4						

Total Mortality

CO	0
SH YOY	0
SH 1+	0

Stream Pine Gulch **Site** Upper Teixeira **Index Site #** 6 **Date** 8/14/2002

Description stream km 7.8

Unit # 1 **Unit Type** LSR **Temp °C** 14.4 **Conductivity (µS/cm)** 191.3

Comments

	Time	Setting	Volts	CO	SH YOY	SH 1+
Pass 1	925	P16	200	3	14	5
Pass 2	713	P16	200	0	3	1
Pass 3						
Pass 4						

Total Mortality

CO	0
SH YOY	0
SH 1+	0

Stream Pine Gulch **Site** Upper Teixeira **Index Site #** 6 **Date** 8/14/2002

Description stream km 7.8

Unit # 2 **Unit Type** LSR **Temp °C** **Conductivity (µS/cm)**

Comments

	Time	Setting	Volts	CO	SH YOY	SH 1+
Pass 1	511	P16	200	0	10	2
Pass 2	400	P16	200	0	6	1
Pass 3						
Pass 4						

Total Mortality

CO	0
SH YOY	0
SH 1+	0

Stream Pine Gulch **Site** Upper Teixeira **Index Site #** 6 **Date** 8/14/2002

Description stream km 7.8

Unit # 3 **Unit Type** LGR **Temp °C** **Conductivity (µS/cm)**

Comments Units 3 and 4 are opposite sides of a split channel. Unit 3 is the Right Fork and Unit 4 is the left.

	Time	Setting	Volts	CO	SH YOY	SH 1+
Pass 1	229	P16	100	0	0	0
Pass 2						
Pass 3						
Pass 4						

Total Mortality

CO	0
SH YOY	0
SH 1+	0

Stream Pine Gulch **Site** Upper Teixeira **Index Site #** 6 **Date** 8/14/2002

Description stream km 7.8

Unit # 4 **Unit Type** LGR **Temp °C** **Conductivity (µS/cm)**

Comments Left Fork. (See unit 3 datasheet)

	Time	Setting	Volts	CO	SH YOY	SH 1+
Pass 1	430	P16	100	0	6	0
Pass 2						
Pass 3						
Pass 4						

Total Mortality

CO	0
SH YOY	0
SH 1+	0

Stream Pine Gulch **Site** Upper Teixeira **Index Site #** 6 **Date** 8/14/2002

Description stream km 7.8

Unit # 5 **Unit Type** LSR **Temp °C** **Conductivity (µS/cm)**

Comments scu16, w60.1g

	Time	Setting	Volts	CO	SH YOY	SH 1+
Pass 1	562	P16	200	1	12	3
Pass 2	430	P16	200	1	3	2
Pass 3						
Pass 4						

Total Mortality

CO	0
SH YOY	0
SH 1+	0

Stream Pine Gulch **Site** Upper Teixeira **Index Site #** 6 **Date** 8/14/2002

Description stream km 7.8

Unit # 6 **Unit Type** LSR **Temp °C** **Conductivity (µS/cm)**

Comments

	Time	Setting	Volts	CO	SH YOY	SH 1+
Pass 1	594	P16	200	1	20	4
Pass 2	425	P16	200	0	2	0
Pass 3						
Pass 4						

Total Mortality

CO	0
SH YOY	0
SH 1+	0

Stream Pine Gulch **Site** Gorge **Index Site #** 3 **Date** 8/20/2002

Description stream km 3.9

Unit # 1 **Unit Type** LSL **Temp °C** **Conductivity (µS/cm)**

Comments

	Time	Setting	Volts	CO	SH YOY	SH 1+
Pass 1	580	P16	200	1	83	4
Pass 2	509	P16	200	0	10	0
Pass 3						
Pass 4						

Total Mortality

CO	0
SH YOY	1
SH 1+	0

Stream Pine Gulch **Site** Gorge **Index Site #** 3 **Date** 8/20/2002

Description stream km 3.9

Unit # 2 **Unit Type** FW **Temp °C** **Conductivity (µS/cm)**

Comments

	Time	Setting	Volts	CO	SH YOY	SH 1+
Pass 1	325	P16	200	1	33	0
Pass 2	252	P16	200	0	3	0
Pass 3						
Pass 4						

Total Mortality

CO	0
SH YOY	0
SH 1+	0

Stream Pine Gulch **Site** Gorge **Index Site #** 3 **Date** 8/20/2002

Description stream km 3.9

Unit # 3 **Unit Type** LGR **Temp °C** **Conductivity (µS/cm)**

Comments

	Time	Setting	Volts	CO	SH YOY	SH 1+
Pass 1	366	P16	100	0	8	0
Pass 2						
Pass 3						
Pass 4						

Total Mortality

CO	0
SH YOY	0
SH 1+	0

Stream Pine Gulch **Site** Gorge **Index Site #** 3 **Date** 8/20/2002

Description stream km 3.9

Unit # 4 **Unit Type** LSBk **Temp °C** **Conductivity (µS/cm)**

Comments

	Time	Setting	Volts	CO	SH YOY	SH 1+
Pass 1	719	P16	200	3	28	5
Pass 2	591	P16	200	1	10	0
Pass 3						
Pass 4						

Total Mortality

CO	0
SH YOY	0
SH 1+	0

Stream Pine Gulch **Site** Gorge **Index Site #** 3 **Date** 8/20/2002

Description stream km 3.9

Unit # 5 **Unit Type** LSBk **Temp °C** **Conductivity (µS/cm)**

Comments

	Time	Setting	Volts	CO	SH YOY	SH 1+
Pass 1	930	P16	200	10	52	9
Pass 2	820	P16	200	0	17	0
Pass 3						
Pass 4						

Total Mortality

CO	0
SH YOY	0
SH 1+	0

Stream Pine Gulch **Site** Paradise Valley **Index Site #** 2 **Date** 8/27/2002

Description stream km 2.7

Unit # 1 **Unit Type** LSR **Temp °C** **Conductivity (µS/cm)**

Comments upper 3 m blocked by fallen tree, unable to fish.

	Time	Setting	Volts	CO	SH YOY	SH 1+
Pass 1	627	P16	200	1	23	3
Pass 2	504	P16	200	1	3	0
Pass 3						
Pass 4						

Total Mortality

CO	0
SH YOY	0
SH 1+	0

Stream Pine Gulch **Site** Paradise Valley **Index Site #** 2 **Date** 8/27/2002

Description stream km 2.7

Unit # 2 **Unit Type** LSR **Temp °C** **Conductivity (µS/cm)**

Comments L B side of split channel. Channel split by small plunge-log.

	Time	Setting	Volts	CO	SH YOY	SH 1+
Pass 1	484	P16	200	0	25	3
Pass 2	407	P16	200	0	4	0
Pass 3						
Pass 4						

Total Mortality

CO	0
SH YOY	0
SH 1+	0

Stream Pine Gulch **Site** Paradise Valley **Index Site #** 2 **Date** 8/27/2002

Description stream km 2.7

Unit # 3 **Unit Type** LGR **Temp °C** **Conductivity (µS/cm)**

Comments LB side of split channel. no fish.

	Time	Setting	Volts	CO	SH YOY	SH 1+
Pass 1	74	P16	100	0	0	0
Pass 2						
Pass 3						
Pass 4						

Total Mortality

CO	0
SH YOY	0
SH 1+	0

Stream Pine Gulch **Site** Paradise Valley **Index Site #** 2 **Date** 8/27/2002

Description stream km 2.7

Unit # 4 **Unit Type** LGR **Temp °C** **Conductivity (µS/cm)**

Comments RB side of split channel, small scour hole in middle.

	Time	Setting	Volts	CO	SH YOY	SH 1+
Pass 1	609	P16	100	0	15	1
Pass 2						
Pass 3						
Pass 4						

Total Mortality

CO	0
SH YOY	0
SH 1+	0

Stream Pine Gulch **Site** Paradise Valley **Index Site #** 2 **Date** 8/27/2002

Description stream km 2.7

Unit # 5 **Unit Type** LSR **Temp °C** **Conductivity (µS/cm)**

Comments huge unit with large log jam/ root wad. Hard to fish.

	Time	Setting	Volts	CO	SH YOY	SH 1+
Pass 1	1122	P16	200	9	26	5
Pass 2	760	P16	200	0	14	2
Pass 3						
Pass 4						

Total Mortality

CO	0
SH YOY	0
SH 1+	0

Stream Easkoot Creek **Site** North Parking Lot **Index Site #** **Date** 8/28/2002

Description adjacent to beach access parking lot for Stinson Beach

Unit # 1 **Unit Type** FW **Temp °C** 14.7 **Conductivity (µS/cm)** 340

Comments Drainage cuvlert on LB at downstream end of unit. Aquatic veg.=watercress. missed 6 stickleback (YOY) in pass 1

	Time	Setting	Volts	CO	SH YOY	SH 1+
Pass 1	81	P16	100/200	0	0	0
Pass 2						
Pass 3						
Pass 4						

Total Mortality

CO	0
SH YOY	0
SH 1+	0

Stream Easkoot Creek **Site** North Parking Lot **Index Site #** **Date** 8/28/2002

Description adjacent to beach access parking lot for Stinson Beach

Unit # 2 **Unit Type** R **Temp °C** 14.7 **Conductivity (µS/cm)** 340

Comments Aquatic Veg.= watercress.

	Time	Setting	Volts	CO	SH YOY	SH 1+
Pass 1	35	P16	100	0	0	0
Pass 2						
Pass 3						
Pass 4						

Total Mortality

CO	0
SH YOY	0
SH 1+	0

Stream Easkoot Creek **Site** North Parking Lot **Index Site #** **Date** 8/28/2002

Description adjacent to beach access parking lot for Stinson Beach

Unit # 3 **Unit Type** LSL **Temp °C** 14.7 **Conductivity (µS/cm)** 340

Comments pool was log formed. Aquatic veg = watercress.

	Time	Setting	Volts	CO	SH YOY	SH 1+
Pass 1	209	P16	200	9	3	1
Pass 2	161	P16	200	0	1	0
Pass 3						
Pass 4						

Total Mortality

CO	0
SH YOY	0
SH 1+	0

Stream Easkoot Creek **Site** North Parking Lot **Index Site #** **Date** 8/28/2002

Description adjacent to beach access parking lot for Stinson Beach

Unit # 4 **Unit Type** LSL **Temp °C** 14.7 **Conductivity (µS/cm)** 340

Comments Scour pool was log formed. Aquatic veg = watercress.

	Time	Setting	Volts	CO	SH YOY	SH 1+
Pass 1	91	P16	200	4	2	0
Pass 2	58	P16	200	1	0	0
Pass 3						
Pass 4						

Total Mortality

CO	0
SH YOY	0
SH 1+	0

Stream Easkoot Creek **Site** North Parking Lot **Index Site #** **Date** 8/28/2002

Description adjacent to beach access parking lot for Stinson Beach

Unit # 5 **Unit Type** FW **Temp °C** 14.7 **Conductivity (µS/cm)** 340

Comments Aquatic Veg = watercress.

	Time	Setting	Volts	CO	SH YOY	SH 1+
Pass 1	35	P16	100	0	0	0
Pass 2						
Pass 3						
Pass 4						

Total Mortality

CO	0
SH YOY	0
SH 1+	0

Stream Easkoot Creek **Site** North Parking Lot **Index Site #** **Date** 8/28/2002

Description adjacent to beach access parking lot for Stinson Beach

Unit # 6 **Unit Type** LSL **Temp °C** 14.7 **Conductivity (µS/cm)** 340

Comments Scour pool was log formed. Aquatic veg = watercress.

	Time	Setting	Volts	CO	SH YOY	SH 1+
Pass 1	214	P16	200/100	8	1	8
Pass 2	190	P16	200	1	1	0
Pass 3						
Pass 4						

Total Mortality

CO	0
SH YOY	0
SH 1+	0

Stream Easkoot Creek **Site** North Parking Lot **Index Site #** **Date** 8/28/2002

Description adjacent to beach access parking lot for Stinson Beach

Unit # 7 **Unit Type** FW **Temp °C** 14.7 **Conductivity (µS/cm)** 340

Comments Only Large SH found in watercress, rest found under willow. Aquatic veg = watercress. Portion under willow thicket not electrofished

	Time	Setting	Volts	CO	SH YOY	SH 1+
Pass 1	167	P16	200	1	0	1
Pass 2						
Pass 3						
Pass 4						

Total Mortality

CO	0
SH YOY	0
SH 1+	0

Stream Easkoot Creek **Site** North Parking Lot **Index Site #** **Date** 8/28/2002

Description adjacent to beach access parking lot for Stinson Beach

Unit # 8 **Unit Type** FW **Temp °C** 14.7 **Conductivity (µS/cm)** 340

Comments FW from willows to bridge. Aquatic veg = watercress.

	Time	Setting	Volts	CO	SH YOY	SH 1+
Pass 1	156	P16	200	1	1	2
Pass 2						
Pass 3						
Pass 4						

Total Mortality

CO	0
SH YOY	0
SH 1+	0

Stream Olema Creek **Site** **Index Site #** 9 **Date** 8/28/2002

Description

Unit # 1 **Unit Type** MCP **Temp °C** **Conductivity (µS/cm)**

Comments Small pool, will dry out.

	Time	Setting	Volts	CO	SH YOY	SH 1+
Pass 1	149	P16	100	7	16	0
Pass 2	121	P16	100	0	7	0
Pass 3						
Pass 4						

Total Mortality

CO	0
SH YOY	0
SH 1+	0

Stream Olema Creek **Site** **Index Site #** 9 **Date** 8/28/2002

Description

Unit # 2 **Unit Type** PLP **Temp °C** **Conductivity (µS/cm)**

Comments

	Time	Setting	Volts	CO	SH YOY	SH 1+
Pass 1	115	P16	200	10	11	0
Pass 2	80	P16	200	2	4	0
Pass 3						
Pass 4						

Total Mortality

CO	0
SH YOY	0
SH 1+	0

Stream Olema Creek **Site** **Index Site #** 9 **Date** 8/28/2002

Description

Unit # 4 **Unit Type** MCP **Temp °C** **Conductivity (µS/cm)**

Comments Unit 3 HGR dry.3 SH morts.

	Time	Setting	Volts	CO	SH YOY	SH 1+
Pass 1	502	P16	200	65	78	0
Pass 2	352	P16	200	5	19	0
Pass 3						
Pass 4						

Total Mortality

CO	0
SH YOY	3
SH 1+	0

Stream Olema Creek **Site** **Index Site #** 9 **Date** 8/28/2002

Description

Unit # 5 **Unit Type** PLP **Temp °C** **Conductivity (µS/cm)**

Comments Tiny, shallow pool.

	Time	Setting	Volts	CO	SH YOY	SH 1+
Pass 1	89	P16	100	1	1	0
Pass 2						
Pass 3						
Pass 4						

Total Mortality

CO	0
SH YOY	0
SH 1+	0

Stream Olema Creek **Site** **Index Site #** 9 **Date** 8/28/2002

Description

Unit # 6 **Unit Type** MCP **Temp °C** **Conductivity (µS/cm)**

Comments 1 SH mort.

	Time	Setting	Volts	CO	SH YOY	SH 1+
Pass 1	507	P16	200	70	32	0
Pass 2	382	P16	200	7	11	0
Pass 3						
Pass 4						

Total Mortality

CO	0
SH YOY	1
SH 1+	0

Stream Olema Creek **Site** **Index Site #** 9 **Date** 8/28/2002

Description

Unit # 7 **Unit Type** LGR **Temp °C** **Conductivity (µS/cm)**

Comments

	Time	Setting	Volts	CO	SH YOY	SH 1+
Pass 1	336	P16	100	0	6	0
Pass 2						
Pass 3						
Pass 4						

Total Mortality

CO	0
SH YOY	0
SH 1+	0

Stream Pine Gulch **Site** Weber's **Index Site #** 1c **Date** 8/29/2002

Description stream km 0.7

Unit # 1 **Unit Type** LSR **Temp °C** 15.2 **Conductivity (µS/cm)** 241.4

Comments

	Time	Setting	Volts	CO	SH YOY	SH 1+
Pass 1	772	P16	200	0	10	13
Pass 2	594	P16	200	0	3	0
Pass 3						
Pass 4						

Total Mortality

CO	0
SH YOY	0
SH 1+	0

Stream Pine Gulch **Site** Weber's **Index Site #** 1c **Date** 8/29/2002

Description stream km 0.7

Unit # 2 **Unit Type** LSR **Temp °C** **Conductivity (µS/cm)**

Comments

	Time	Setting	Volts	CO	SH YOY	SH 1+
Pass 1	680	P16	200	0	12	7
Pass 2	624	P16	200	0	3	0
Pass 3						
Pass 4						

Total Mortality

CO	0
SH YOY	0
SH 1+	0

Stream Pine Gulch **Site** Weber's **Index Site #** 1c **Date** 8/29/2002

Description stream km 0.7

Unit # 3 **Unit Type** LGR **Temp °C** **Conductivity (µS/cm)**

Comments Small scour pocket in middle; lots of leaves and small debris- hard to fish.

	Time	Setting	Volts	CO	SH YOY	SH 1+
Pass 1	429	P16	200	0	6	0
Pass 2	351	P16	200	0	1	0
Pass 3						
Pass 4						

Total Mortality

CO	0
SH YOY	0
SH 1+	0

Stream Pine Gulch **Site** Weber's **Index Site #** 1c **Date** 8/29/2002

Description stream km 0.7

Unit # 4 **Unit Type** LSR **Temp °C** **Conductivity (µS/cm)**

Comments

	Time	Setting	Volts	CO	SH YOY	SH 1+
Pass 1	485	P16	200	1	8	8
Pass 2	492	P16	200	1	8	1
Pass 3						
Pass 4						

Total Mortality

CO	0
SH YOY	0
SH 1+	0

Stream Easkoot Creek **Site** North Parking Lot **Index Site #** **Date** 8/30/2002

Description adjacent to beach access parking lot for Stinson Beach

Unit # 10 **Unit Type** LSR **Temp °C** 15.4 **Conductivity (µS/cm)** 340

Comments Starting at upstream end of car bridge. (area under bridge--unit 9-- skipped.). 1 SH caught was 255mm & 164.9g

	Time	Setting	Volts	CO	SH YOY	SH 1+
Pass 1	397	P16	100/200	24	1	10
Pass 2	369	P16	100/200	1	0	0
Pass 3						
Pass 4						

Total Mortality

CO	0
SH YOY	0
SH 1+	0

Stream Easkoot Creek **Site** North Parking Lot **Index Site #** **Date** 8/30/2002

Description adjacent to beach access parking lot for Stinson Beach

Unit # 11 **Unit Type** FW **Temp °C** 15.4 **Conductivity (µS/cm)** 340

Comments Unit type= FW/Riffle, therefore no Crest or Max depth.

	Time	Setting	Volts	CO	SH YOY	SH 1+
Pass 1	34	P16	100	0	0	0
Pass 2						
Pass 3						
Pass 4						

Total Mortality

CO	0
SH YOY	0
SH 1+	0

Stream Pine Gulch **Site** Open Space **Index Site #** 1a **Date** 9/5/2002

Description stream km 0.2

Unit # 1 **Unit Type** LGR **Temp °C** 14.2 **Conductivity (µS/cm)** 237.2

Comments

	Time	Setting	Volts	CO	SH YOY	SH 1+
Pass 1	217	P16	100	0	0	0
Pass 2						
Pass 3						
Pass 4						

Total Mortality

CO	0
SH YOY	0
SH 1+	0

Stream Pine Gulch **Site** Open Space **Index Site #** 1a **Date** 9/5/2002

Description stream km 0.2

Unit # 2 **Unit Type** LSR **Temp °C** 14.2 **Conductivity (µS/cm)** 237.2

Comments

	Time	Setting	Volts	CO	SH YOY	SH 1+
Pass 1	383	P16	200	0	3	2
Pass 2	303	P16	200	0	0	0
Pass 3						
Pass 4						

Total Mortality

CO	0
SH YOY	0
SH 1+	0

Stream Pine Gulch **Site** Open Space **Index Site #** 1a **Date** 9/5/2002

Description stream km 0.2

Unit # 3 **Unit Type** GLD **Temp °C** 14.2 **Conductivity (µS/cm)** 237.2

Comments MCOSD Index I a. SCU mass weight= 14.5.

	Time	Setting	Volts	CO	SH YOY	SH 1+
Pass 1	229	P16	200	0	0	0
Pass 2						
Pass 3						
Pass 4						

Total Mortality

CO	0
SH YOY	0
SH 1+	0

Stream Pine Gulch **Site** Open Space **Index Site #** 1a **Date** 9/5/2002

Description stream km 0.2

Unit # 4 **Unit Type** LSR **Temp °C** 14.2 **Conductivity (µS/cm)** 237.2

Comments

	Time	Setting	Volts	CO	SH YOY	SH 1+
Pass 1	333	P16	200	0	6	4
Pass 2	264	P16	200	0	2	0
Pass 3						
Pass 4						

Total Mortality

CO	0
SH YOY	0
SH 1+	0

Stream Pine Gulch **Site** Murch's **Index Site #** 1b **Date** 9/5/2002

Description stream km 0.4

Unit # 1 **Unit Type** FW **Temp °C** 15.1 **Conductivity (µS/cm)** 243.3

Comments

	Time	Setting	Volts	CO	SH YOY	SH 1+
Pass 1	646	P16	200	0	5	4
Pass 2	575	p16	200	0	0	0
Pass 3						
Pass 4						

Total Mortality

CO	0
SH YOY	0
SH 1+	0

Stream Pine Gulch **Site** Murch's **Index Site #** 1b **Date** 9/5/2002

Description stream km 0.4

Unit # 2 **Unit Type** LGR **Temp °C** 15.1 **Conductivity (µS/cm)** 243.3

Comments

	Time	Setting	Volts	CO	SH YOY	SH 1+
Pass 1	265	P16	100	0	3	0
Pass 2						
Pass 3						
Pass 4						

Total Mortality

CO	0
SH YOY	0
SH 1+	0

Stream Pine Gulch **Site** Murch's **Index Site #** 1b **Date** 9/5/2002

Description stream km 0.4

Unit # 3 **Unit Type** MCP **Temp °C** 15.1 **Conductivity (µS/cm)** 243.3

Comments

	Time	Setting	Volts	CO	SH YOY	SH 1+
Pass 1	331	P16	200	0	6	0
Pass 2	265	P16	200	0	0	0
Pass 3						
Pass 4						

Total Mortality

CO	0
SH YOY	0
SH 1+	0

Stream Pine Gulch **Site** Murch's **Index Site #** 1b **Date** 9/5/2002

Description stream km 0.4

Unit # 4 **Unit Type** MCP **Temp °C** 15.1 **Conductivity (µS/cm)** 243.3

Comments

	Time	Setting	Volts	CO	SH YOY	SH 1+
Pass 1	376	P16	200	0	10	0
Pass 2	321	P16	200	0	1	0
Pass 3						
Pass 4						

Total Mortality

CO	0
SH YOY	0
SH 1+	0

Stream Pine Gulch **Site** Murch's **Index Site #** 1b **Date** 9/5/2002

Description stream km 0.4

Unit # 5 **Unit Type** LSBo **Temp °C** 15.1 **Conductivity (µS/cm)** 243.3

Comments 2 Green Sunfish captured.

	Time	Setting	Volts	CO	SH YOY	SH 1+
Pass 1	943	P16	200	1	40	18
Pass 2	807	P16	200	0	8	0
Pass 3						
Pass 4						

Total Mortality

CO	0
SH YOY	0
SH 1+	0

Stream Redwood Creek **Site** Muir Woods Bathroom **Index Site #** **Date** 9/23/2002

Description stream km 5.3

Unit # 1 **Unit Type** LSR **Temp °C** 13.1 **Conductivity (µS/cm)**

Comments Pass 1 = 3 passes with 1/4" mesh, 25' x 4' minnow seine; pass 3, quit 1/2 on return pass. Subtracted 8 coho and 2 sh yoy from total. Fish were from Pacific Way flood control project

	Time	Setting	Volts	CO	SH YOY	SH 1+
Pass 1				81	1	0
Pass 2	1158	P16	200	27	6	4
Pass 3	649	P16	200	4	3	0
Pass 4						

Total Mortality

CO	0
SH YOY	0
SH 1+	0

Stream Redwood Creek **Site** Muir Woods Bathroom **Index Site #** **Date** 9/23/2002

Description stream km 5.3

Unit # 2 **Unit Type** LGR **Temp °C** 13.1 **Conductivity (µS/cm)**

Comments Subtracted 5 coho and 5 sh yoy from total. Fish were from Pacific Way flood control project

	Time	Setting	Volts	CO	SH YOY	SH 1+
Pass 1	550	P16	100	11	14	0
Pass 2						
Pass 3						
Pass 4						

Total Mortality

CO	1
SH YOY	0
SH 1+	0

Stream Redwood Creek **Site** Muir Woods Bathroom **Index Site #** **Date** 9/23/2002

Description stream km 5.3

Unit # 3 **Unit Type** LSR **Temp °C** 13.1 **Conductivity (µS/cm)**

Comments Pass 1 = 3 passes with 1/4" mesh, 25' x 4' minnow seine; "additional SH1+ sighted". Subtracted 2 coho and 6 sh yoy from total. Fish were from Pacific Way flood control project

	Time	Setting	Volts	CO	SH YOY	SH 1+
Pass 1				67	4	0
Pass 2	540	P16	200	3	4	1
Pass 3	363	P16	200	1	0	0
Pass 4						

Total Mortality

CO	0
SH YOY	0
SH 1+	0

Stream Redwood Creek **Site** Muir Woods Boardwalk **Index Site #** **Date** 9/23/2002

Description stream km 6.3

Unit # 1 **Unit Type** R/FW **Temp °C** 13 **Conductivity (µS/cm)**

Comments missed 1 8H YOY. Missed some tiny YOY SCU. Bottom of Unit is 9m below Monument TAG RW0163

	Time	Setting	Volts	CO	SH YOY	SH 1+
Pass 1	411	30MHz	100	0	9	0
Pass 2						
Pass 3						
Pass 4						

Total Mortality

CO	0
SH YOY	0
SH 1+	0

Stream Redwood Creek **Site** Muir Woods Boardwalk **Index Site #** **Date** 9/23/2002

Description stream km 6.3

Unit # 2 **Unit Type** MC **Temp °C** 13.8 **Conductivity (µS/cm)**

Comments Glare heavy in 1st pass. Missed some tiny YOY SCU

	Time	Setting	Volts	CO	SH YOY	SH 1+
Pass 1	410	30 MHz/DC	100/200	8	7	2
Pass 2	477	30 MHz/DC	100/200	12	4	0
Pass 3	370	30 MHz/DC	100/200	2	2	0
Pass 4						

Total Mortality

CO	0
SH YOY	0
SH 1+	0

Stream Redwood Creek **Site** Muir Woods Boardwalk **Index Site #** **Date** 9/23/2002

Description stream km 6.3

Unit # 3 **Unit Type** R **Temp °C** 13.7 **Conductivity (µS/cm)**

Comments also one crayfish. Setting = 30 MHz?

	Time	Setting	Volts	CO	SH YOY	SH 1+
Pass 1	325		100	0	2	0
Pass 2						
Pass 3						
Pass 4						

Total Mortality

CO	0
SH YOY	0
SH 1+	0

Stream Redwood Creek **Site** Muir Woods Boardwalk **Index Site #** **Date** 9/23/2002

Description stream km 6.3

Unit # 4 **Unit Type** FW **Temp °C** **Conductivity (µS/cm)**

Comments

	Time	Setting	Volts	CO	SH YOY	SH 1+
Pass 1	260	30 MHz	100	6	2	0
Pass 2						
Pass 3						
Pass 4						

Total Mortality

CO	0
SH YOY	0
SH 1+	0

Stream Redwood Creek **Site** Muir Woods Boardwalk **Index Site #** **Date** 9/23/2002

Description stream km 6.3

Unit # 5 **Unit Type** SC **Temp °C** 13.9 **Conductivity (µS/cm)**

Comments in Pass one, 2 CA Giant Salamanders and 2 Crayfish; in Pass two, one CA Giant Salamander

	Time	Setting	Volts	CO	SH YOY	SH 1+
Pass 1	589	30 MHz	100/200	28	5	0
Pass 2	400	30 MHz	100/200	2	1	0
Pass 3						
Pass 4						

Total Mortality

CO	0
SH YOY	0
SH 1+	0

Stream Redwood Creek **Site** Banducci **Index Site #** **Date** 9/24/2002

Description J. Smith sample site, stream km 0.8

Unit # 1 **Unit Type** LSR **Temp °C** **Conductivity (µS/cm)**

Comments SCU #'s correct? efishing data sheets list unit type as LSC. Pass 1 was seine instead of electrofishing. 2 co burned, 1 sh slight burn

	Time	Setting	Volts	CO	SH YOY	SH 1+
Pass 1				7	0	0
Pass 2	638			58	22	3
Pass 3	525			4	1	0
Pass 4						

Total Mortality

CO	0
SH YOY	0
SH 1+	0

Stream Redwood Creek **Site** Banducci **Index Site #** **Date** 9/24/2002

Description J. Smith sample site, stream km 0.8

Unit # 2 **Unit Type** R **Temp °C** **Conductivity (µS/cm)**

Comments efishing data sheet lists unit descr. as FW/SCR

	Time	Setting	Volts	CO	SH YOY	SH 1+
Pass 1	161	P16	200	1	6	0
Pass 2	111	P16	200	0	3	0
Pass 3						
Pass 4						

Total Mortality

CO	0
SH YOY	0
SH 1+	0

Stream Redwood Creek **Site** Banducci **Index Site #** **Date** 9/24/2002

Description J. Smith sample site, stream km 0.8

Unit # 3 **Unit Type** FW **Temp °C** **Conductivity (µS/cm)**

Comments on idx section efishing log, total catch for Unit 3 is reported as 8; on efishing data sheet secondary unit type listed as SCR, and 5 more SH than on efishing log

	Time	Setting	Volts	CO	SH YOY	SH 1+
Pass 1	237	P16	200	9	8	0
Pass 2	193	P16	200	4	5	0
Pass 3						
Pass 4						

Total Mortality

CO	0
SH YOY	0
SH 1+	0

Stream Redwood Creek **Site** Banducci **Index Site #** **Date** 9/24/2002

Description J. Smith sample site, stream km 0.8

Unit # 4 **Unit Type** LGR **Temp °C** **Conductivity (µS/cm)**

Comments efishing data sheet lists unit descr as LSR. Pass 2 time not logged; volts assumed

	Time	Setting	Volts	CO	SH YOY	SH 1+
Pass 1	163	P16	200	3	11	0
Pass 2	?	P16	200	0	1	0
Pass 3						
Pass 4						

Total Mortality

CO	0
SH YOY	0
SH 1+	0

Stream Redwood Creek **Site** Banducci **Index Site #** **Date** 9/24/2002

Description J. Smith sample site, stream km 0.8

Unit # 5 **Unit Type** SC **Temp °C** **Conductivity (µS/cm)**

Comments Pass 1 was seine instead of electrofishing

	Time	Setting	Volts	CO	SH YOY	SH 1+
Pass 1				48	6	0
Pass 2	650	P16	200	15	3	0
Pass 3	719	P16	200	9	0	0
Pass 4						

Total Mortality

CO	0
SH YOY	0
SH 1+	0

Stream Redwood Creek **Site** Banducci **Index Site #** **Date** 9/24/2002

Description J. Smith sample site, stream km 0.8

Unit # 6 **Unit Type** SC **Temp °C** **Conductivity (µS/cm)**

Comments Pass 1 was seine instead of electrofishing

	Time	Setting	Volts	CO	SH YOY	SH 1+
Pass 1				94	7	0
Pass 2	882			15	10	2
Pass 3						
Pass 4						

Total Mortality

CO	0
SH YOY	0
SH 1+	0

Stream Redwood Creek **Site** Bowling Alley **Index Site #** **Date** 9/25/2002

Description stream km 1.0

Unit # 1 **Unit Type** FW **Temp °C** 13.6 **Conductivity (µS/cm)**

Comments Pass 1 missed 16 SH on upstream / captured 9 on return pass; 1 SH injured; 3rd habitat unit transect was taken at weir 6,7,8

	Time	Setting	Volts	CO	SH YOY	SH 1+
Pass 1	1349	P16	100	0	28	0
Pass 2						
Pass 3						
Pass 4						

Total Mortality

CO	0
SH YOY	0
SH 1+	0

Stream Redwood Creek **Site** Bowling Alley **Index Site #** **Date** 9/25/2002

Description stream km 1.0

Unit # 2 **Unit Type** SC **Temp °C** 13.6 **Conductivity (µS/cm)**

Comments unit type: SC according to index section habitat unit transect data sheet. Pass 1 SCU=PS

	Time	Setting	Volts	CO	SH YOY	SH 1+
Pass 1	514	P16	200	31	36	0
Pass 2	344	P16	200	9	16	0
Pass 3						
Pass 4						

Total Mortality

CO	0
SH YOY	0
SH 1+	0

Stream Redwood Creek **Site** Bowling Alley **Index Site #** **Date** 9/25/2002

Description stream km 1.0

Unit # 3 **Unit Type** FW **Temp °C** 13.6 **Conductivity (µS/cm)**

Comments Pass 1 missed 15 SH / captured 10 on return pass; 1st habitat unit transect taken across weir 5

	Time	Setting	Volts	CO	SH YOY	SH 1+
Pass 1	1521	P16	100	0	31	0
Pass 2						
Pass 3						
Pass 4						

Total Mortality

CO	0
SH YOY	0
SH 1+	0

Stream Redwood Creek **Site** Muir Woods Bathroom **Index Site #** **Date** 9/25/2002

Description stream km 5.3

Unit # 10 **Unit Type** LSL **Temp °C** 13.2 **Conductivity (µS/cm)**

Comments Pass 1 was seine instead of electrofishing. Skipped units 4-9 (artificial step pools/fw units)

	Time	Setting	Volts	CO	SH YOY	SH 1+
Pass 1				23	1	0
Pass 2	689	P16	200	40	4	7
Pass 3	525	P16	200	11	2	3
Pass 4						

Total Mortality

CO	1
SH YOY	0
SH 1+	0

Stream Redwood Creek **Site** Muir Woods Bathroom **Index Site #** **Date** 9/25/2002

Description stream km 5.3

Unit # 11 **Unit Type** FW/SC **Temp °C** 13.2 **Conductivity (µS/cm)**

Comments 1 SH had lower half of tail fin chewed off, also 1 small crayfish in pass 2

	Time	Setting	Volts	CO	SH YOY	SH 1+
Pass 1	335	P16	200	4	5	0
Pass 2	262	P16	200	0	2	0
Pass 3						
Pass 4						

Total Mortality

CO	0
SH YOY	0
SH 1+	0

Stream Redwood Creek **Site** Muir Woods Bathroom **Index Site #** **Date** 9/25/2002

Description stream km 5.3

Unit # 12 **Unit Type** SC **Temp °C** 13.2 **Conductivity (µS/cm)**

Comments time not recorded for 2nd pass - ekim

	Time	Setting	Volts	CO	SH YOY	SH 1+
Pass 1	1174	P16	200	39	9	7
Pass 2	?	P16		3	5	1
Pass 3						
Pass 4						

Total Mortality

CO	0
SH YOY	0
SH 1+	0

Stream Easkoot Creek **Site** Hwy 1 **Index Site #** **Date** 10/1/2002

Description near Stinson Beach community center

Unit # 1 **Unit Type** MCP/FW **Temp °C** 12 **Conductivity (µS/cm)**

Comments no fish in unit 1, consists of 2 shallow pools & flatwater

	Time	Setting	Volts	CO	SH YOY	SH 1+
Pass 1	97	30 MHz/DC	100	0	0	0
Pass 2	?	30 MHz/DC	100	0	0	0
Pass 3						
Pass 4						

Total Mortality

CO	0
SH YOY	0
SH 1+	0

Stream Easkoot Creek **Site** Hwy 1 **Index Site #** **Date** 10/1/2002

Description near Stinson Beach community center

Unit # 2 **Unit Type** MCP **Temp °C** 13 **Conductivity (µS/cm)**

Comments

	Time	Setting	Volts	CO	SH YOY	SH 1+
Pass 1	?	30 MHz/DC	100	0	0	0
Pass 2	?	30 MHz/DC	100	0	0	0
Pass 3						
Pass 4						

Total Mortality

CO	0
SH YOY	0
SH 1+	0

Stream Easkoot Creek **Site** Hwy 1 **Index Site #** **Date** 10/1/2002

Description near Stinson Beach community center

Unit # 3 **Unit Type** MCP **Temp °C** 13.1 **Conductivity (µS/cm)**

Comments

	Time	Setting	Volts	CO	SH YOY	SH 1+
Pass 1	144	p16	200	9	4	7
Pass 2	101	p16	200	7	0	2
Pass 3						
Pass 4						

Total Mortality

CO	0
SH YOY	0
SH 1+	0

Stream Easkoot Creek **Site** Hwy 1 **Index Site #** **Date** 10/1/2002

Description near Stinson Beach community center

Unit # 4 **Unit Type** MCP **Temp °C** 13.3 **Conductivity (µS/cm)**

Comments

	Time	Setting	Volts	CO	SH YOY	SH 1+
Pass 1	110	30 MHz/DC	200	8	8	7
Pass 2	100	30 MHz/DC	200	8	6	0
Pass 3						
Pass 4						

Total Mortality

CO	0
SH YOY	0
SH 1+	0

Stream Easkoot Creek **Site** Hwy 1 **Index Site #** **Date** 10/1/2002

Description near Stinson Beach community center

Unit # 5 **Unit Type** FW/R **Temp °C** **Conductivity (µS/cm)**

Comments

	Time	Setting	Volts	CO	SH YOY	SH 1+
Pass 1	233	30 MHz/DC	100	0	0	0
Pass 2						
Pass 3						
Pass 4						

Total Mortality

CO	0
SH YOY	0
SH 1+	0

Stream E. Schooner Creek **Site** above Estero Rd. culvert **Index Site #** **Date** 11/12/2002

Description 17 meter reach above culvert @ Estero Rd.

Unit # **Unit Type** pool + flat **Temp °C** 13 **Conductivity (µS/cm)** 274.6

Comments 90% pool, 10% flatwater; avg. width ~1.75 m

	Time	Setting	Volts	CO	SH YOY	SH 1+
Pass 1	286	p16	200	0	5	6
Pass 2						
Pass 3						
Pass 4						

Total Mortality

CO	0
SH YOY	0
SH 1+	0

Stream E. Schooner Creek **Site** above Mt. Vision Rd. culvert **Index Site #** **Date** 11/12/2002

Description 16 meter reach above culvert @ Mt. Vision Rd.

Unit # **Unit Type** riffle + po **Temp °C** 12.6 **Conductivity (µS/cm)** 228.9

Comments 75% riffle, 25% pool; avg. width ~1.25 m

	Time	Setting	Volts	CO	SH YOY	SH 1+
Pass 1	235	p16	200	0	12	2
Pass 2						
Pass 3						
Pass 4						

Total Mortality

CO	0
SH YOY	0
SH 1+	0

Stream E. Schooner Creek **Site** below Estero Rd. culvert **Index Site #** **Date** 11/12/2002

Description 24 meter reach below culvert @ Estero Rd.

Unit # **Unit Type** pool + riff **Temp °C** 13 **Conductivity (µS/cm)** 274.6

Comments 60% pool, 40% riffle; avg. width ~1.5 m; substrate sand & silt

	Time	Setting	Volts	CO	SH YOY	SH 1+
Pass 1	534	p16	200	0	7	8
Pass 2						
Pass 3						
Pass 4						

Total Mortality

CO	0
SH YOY	0
SH 1+	0

Stream E. Schooner Creek **Site** below Mt. Vision Rd. culvert **Index Site #** **Date** 11/12/2002

Description 16 meter reach below culvert @ Mt. Vision Rd.

Unit # **Unit Type** riffle + po **Temp °C** 12.6 **Conductivity (µS/cm)** 228.9

Comments 75% riffle, 25% pool; avg. width ~1.25 m; substrate gravel & sand

	Time	Setting	Volts	CO	SH YOY	SH 1+
Pass 1	246	p16	200	0	28	4
Pass 2						
Pass 3						
Pass 4						

Total Mortality

CO	0
SH YOY	0
SH 1+	0

Stream Home Creek **Site** above culvert **Index Site #** **Date** 11/12/2002

Description 6 meter long pool above culvert @ ranch compound

Unit # **Unit Type** pool **Temp °C** 15 **Conductivity (µS/cm)** 311.1

Comments pool ~5 m wide, silt/sand substrate, lots of watercress

	Time	Setting	Volts	CO	SH YOY	SH 1+
Pass 1	212	p16	200	0	0	8
Pass 2						
Pass 3						
Pass 4						

Total Mortality

CO	0
SH YOY	0
SH 1+	0

Stream Home Creek **Site** below culvert **Index Site #** **Date** 11/12/2002

Description 10 meter reach below culvert @ ranch compound

Unit # **Unit Type** pool + riff **Temp °C** 15 **Conductivity (µS/cm)** 311.1

Comments 50% pool, 50% riffle/flatwater; substrate silt & sand; avg. width 1.5 m

	Time	Setting	Volts	CO	SH YOY	SH 1+
Pass 1	218	p16	200	0	0	0
Pass 2						
Pass 3						
Pass 4						

Total Mortality

CO	0
SH YOY	0
SH 1+	0

Stream N. Home Creek **Site** above culvert **Index Site #** **Date** 11/12/2002

Description 10 meter reach above culvert @ Estero/Home Ranch Rd.

Unit # **Unit Type** **Temp °C** 13.7 **Conductivity (µS/cm)** 369

Comments

	Time	Setting	Volts	CO	SH YOY	SH 1+
Pass 1	94	p16	100	0	0	0
Pass 2						
Pass 3						
Pass 4						

Total Mortality

CO	0
SH YOY	0
SH 1+	0

Stream N. Home Creek **Site** below culvert **Index Site #** **Date** 11/12/2002

Description 10 meter reach below culvert @ Estero/Home Ranch Rd.

Unit # **Unit Type** pool + riff **Temp °C** 13.7 **Conductivity (µS/cm)** 369

Comments no fish, substrate mostly silt & cow dung

	Time	Setting	Volts	CO	SH YOY	SH 1+
Pass 1	186	p16	100/200	0	0	0
Pass 2						
Pass 3						
Pass 4						

Total Mortality

CO	0
SH YOY	0
SH 1+	0

Stream Laguna Creek **Site** above Coast Trail culvert **Index Site #** **Date** 11/19/2002

Description 20 meter reach below culvert @ coast trail

Unit # **Unit Type** pool + riff **Temp °C** 10.1 **Conductivity (µS/cm)** 339.6

Comments 75% pool, 25% riffle; avg. width ~2.2 m; water murky & full of orange algae; channel more overgrown & full of woody debris than below culvert, hard to efish

	Time	Setting	Volts	CO	SH YOY	SH 1+
Pass 1	335	p16	200	0	3	2
Pass 2						
Pass 3						
Pass 4						

Total Mortality

CO	0
SH YOY	0
SH 1+	0

Stream Laguna Creek **Site** above Laguna Trailhead culvert **Index Site #** **Date** 11/19/2002

Description 34 meter reach above culvert @ Laguna Trailhead parking lot

Unit # **Unit Type** pool + riff **Temp °C** 8.7 **Conductivity (µS/cm)** 324.7

Comments 60% pool, 40% riffle; avg. width ~1.6 m

	Time	Setting	Volts	CO	SH YOY	SH 1+
Pass 1	505	p16	200	0	18	3
Pass 2						
Pass 3						
Pass 4						

Total Mortality

CO	0
SH YOY	0
SH 1+	0

Stream Laguna Creek **Site** below Coast Trail culvert **Index Site #** **Date** 11/19/2002

Description 31 meter reach below culvert @ coast trail

Unit # **Unit Type** pool + riff **Temp °C** 10.1 **Conductivity (µS/cm)** 339.6

Comments 80% pool, 20% riffle; avg. width ~1.8 m; water murky & full of orange algae; stopped 10m below culvert because of red legged frog

	Time	Setting	Volts	CO	SH YOY	SH 1+
Pass 1	387	p16	200	0	3	4
Pass 2						
Pass 3						
Pass 4						

Total Mortality

CO	0
SH YOY	0
SH 1+	0

Stream Laguna Creek **Site** below Laguna Trailhead culvert **Index Site #** **Date** 11/19/2002

Description 39 meter reach below culvert @ Laguna Trailhead parking lot

Unit # **Unit Type** pool + riff **Temp °C** 8.7 **Conductivity (µS/cm)** 324.7

Comments 60% pool, 40% riffle; avg. width ~1.5 m

	Time	Setting	Volts	CO	SH YOY	SH 1+
Pass 1	691	p16	200	0	32	11
Pass 2						
Pass 3						
Pass 4						

Total Mortality

CO	0
SH YOY	0
SH 1+	0