Pacific Gas and Electric Company

Power Generation

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June 27, 2024

Via Electronic Submittal (E-File)

Debbie-Anne Reese, Acting Secretary
Federal Energy Regulatory Commission
Division of Hydropower Administration and Compliance
888 First Street, NE
Washington, D.C. 20426

RE: Potter Valley Hydroelectric Project, FERC No. 77
Article 52 and RPA Measure 8
2023 Summer Rearing Monitoring Report

Dear Acting Secretary Reese:

This letter presents the 2023 Summer Rearing Monitoring Results Report (Report) related to Pacific Gas and Electric Company's (PG&E) Potter Valley Hydroelectric Project, Federal Energy Regulatory Commission (FERC) No. 77 (Project). On November 9, 2005, FERC issued an order approving PG&E's Summer Rearing Monitoring Plan (Plan). This Plan addresses Project license Article 52, Measure 8 of the Reasonable and Prudent Alternative. By May 1 of each year, PG&E is required to provide a draft of the Report to the National Marine Fisheries Service, the California Department of Fish and Wildlife, the United States Forest Service, the United States Department of Fish and Wildlife Service, and Round Valley Indian Tribes (Agencies). PG&E is required to file the final Report with FERC by June 30th, including copies of any comments or recommendations received from the Agencies.

On April 29, 2024, PG&E provided the Agencies with the draft Report via email. Round Valley Indian Tribes responded via email that they had no comments on the Report on June 15, 2024; however, they did request that PG&E conduct an analysis of fish populations trends in relation to summer water temperatures for all years surveyed. This analysis is outside the scope and requirements of the Plan. No other Agencies responded.

The final Report is included as Enclosure 1. In addition, the agency consultation record is included as Enclosure 2.

Should you have any technical questions, please call PG&E's aquatic biologist, Andrew Anderson, at (530) 531-7004. For general inquiries, please contact PG&E's license coordinator, Chadwick McCready, at (530) 685-5710.

Sincerely,

Chadwick McCready
Senior License Coordinator, Hydro License Compliance

Enclosures:
1. 2023 Summer Rearing Monitoring Results
2. Agency Consultation Record

ENCLOSURE 1

PACIFIC GAS AND ELECTRIC COMPANY

Potter Valley Project
FERC Project No. 77

2023 Summer Rearing Monitoring
Fish Population Surveys
Article 52(a); NMFS RPA Section G.2 and RPM 8

June 2024

PACIFIC GAS AND ELECTRIC COMPANY

Potter Valley Project
FERC Project No. 77

2023 Summer Rearing Monitoring
Fish Population Surveys

Article 52(a); NMFS RPA Section G.2 and RPM 8

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June 2024

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APPENDICES

1.0 INTRODUCTION

This annual data report presents the results of summer rearing monitoring for steelhead trout (*Oncorhynchus mykiss*) and Sacramento pikeminnow (*Ptychocheilus grandis*) populations conducted during 2023 in support of License compliance for PG&E's Potter Valley Project (Project; Federal Energy Regulatory Commission [FERC] No. 77).

1.1 Project Background

On January 28, 2004, the Federal Energy Regulatory Commission (FERC) issued an Order amending the PG&E Potter Valley Project License. This amendment is to be in effect throughout the remaining term of the License (ending in 2022) including any annual license(s) which may be issued by FERC. The January 28, 2004 FERC amendment incorporated (as part of Article 52) the National Marine Fisheries Service's (NMFS) Reasonable and Prudent Alternative (RPA) Section G.2, Reasonable and Prudent Measure (RPM) 8, which includes a temperature monitoring component and a summer rearing monitoring component in order to provide biological information on the performance of the RPA under different summer flow regimes. The summer rearing monitoring component of the RPM requires the Licensee to annually monitor rearing steelhead and pikeminnow in the mainstem Eel River from just below Cape Horn Dam to below the confluence with Outlet Creek. Previously established sites used for Article 39 studies and additional sites are to be monitored annually. Data from these studies provide useful information on how various summer flow releases from Cape Horn Dam affect steelhead and pikeminnow populations. A Summer Rearing Monitoring Plan (Plan; Appendix A) was filed with FERC on August 15, 2005, and approved on November 9, 2005.

The first year of summer rearing monitoring under the RPA occurred in 2005. The summer flow component of the RPA was to be re-evaluated after 10 years of monitoring (i.e., following 2014) based on results provided in the annual reports. If NMFS determined that the summer flow component of the RPA was not providing the anticipated benefits to salmonids, then NMFS was to re-evaluate this component of the RPA to determine if additional measures or changes in flow were necessary. At the annual agency meetings for the project in 2015–2023, the participating parties, including NMFS, did not recommend any changes to project flows but did decide to continue the collection of summer water temperature and fish rearing data at selected sites under the RPA to help inform future considerations.

PG&E is currently undertaking a multiyear engineering reevaluation of Scott Dam to assess its condition and expected performance under seismic and flood loading conditions. The results of a preliminary, simplified seismic stability analysis (submitted to FERC and California Department of Water Resources, Division of Safety of Dams [California DSOD] in March 2023) suggested that the dam may become structurally

unstable when subjected to updated seismic loading conditions when the water level in Lake Pillsbury is above the spillway crest elevation. Based on the results of the seismic risk analysis, PG&E identified two interim risk-reduction measures to implement until more detailed studies are complete; (1) establish a 10-foot reservoir restriction on the maximum reservoir operating level; and (2) leave Scott Dam's spillway gates open year-round to maintain water level in Lake Pillsbury at or below spillway crest elevation. FERC and the California DSOD agreed with PG&E's finding.

1.2 Study Plan Elements and Implementation

Fish population elements implemented in 2023 and reported herein are generally described in Section 2.3 of the Plan. These elements include backpack electrofishing and snorkel surveys at established monitoring sites located between Cape Horn Dam and the Middle Fork Eel River during the low flow/high temperature "pinch period" from August 1 to September 15. Results of the temperature monitoring component of RPM 8 are reported under separate cover in the 2023 Article 52 (a) Summer Water Temperature Annual Monitoring Report.

The minimum required summer flow in the Eel River below Cape Horn Dam at gage E-11, as stipulated in the RPA for the 2023 water year type (Wet), was 15 cfs. Actual releases at Cape Horn Dam declined from approximately 1270 cfs on May 1, slowly decreasing to 230 cfs by June 1, and gradually declining further to summer flows between 30 and 40 cfs by July 1. Flows remained between 26 and 40 cfs through mid-September. Streamflow records during the entire temperature monitoring period can be viewed in the 2023 Article 52 (b) Annual Performance Report.

1.3 2023 Spring Release Strategy

Under Section D of the RPA, 2,500 acre-feet are reserved for release at the discretion of NMFS, CDFW, and Round Valley Indian Tribes (resource agencies) each water year.

The Project area received significant inflows from storm activity in Spring 2023 with flows on the Eel River staying above 900 cfs at gage E-11 throughout the month of April. The storm activity and corresponding high flows provided natural pulse flows that encouraged salmonid outmigration. This enabled the resource agencies to preserve their blockwater allotment in the reservoir to support storage and cool water pool management.

PG&E is also required to cooperate in the release of warm surface water (Section B.3 of RPA) from the spillway of Scott Dam in the late winter/early spring period to promote timely downstream migration of juvenile Chinook salmon (*Oncorhynchus tshawytscha*) from the upper Eel River when surface water is accessible.

PG&E's ability to perform warm surface water releases from the spillway of Scott Dam in late winter/early spring is limited due to the decision to leave the spillway gates open year-round for risk reduction. However, favorable hydrologic conditions on the Eel River in spring 2023 resulted in spill conditions over Scott Dam through most of May, which allowed PG&E to cooperate with resource agency's request to maximize warm surface water releases under B.3 of the RPA. Starting on May 4, 2023, PG&E minimized releases from the reservoir through the low-level outlet and maximized surface releases over the spillway. Surface water releases continued until either release temperatures at PG&E's stream gage E-2 (E-2) exceeded 16 degrees Celsius or flows at E-2 receded to 500 cfs. On May 24, 2023, flows decreased to 500 cfs, at which time minimum flow releases were transferred back to the low-level outlet and the warm surface water release ended.

2.0 METHODS

2.1 Site Selection

The Plan originally identified 10 summer rearing monitoring locations for steelhead and pikeminnow populations (6 riffle/run electrofishing sites paired with nearby pool snorkel sites; 2 solitary riffle/run electrofishing sites; 1 solitary pool snorkel site; and 1 solitary run snorkel site) between Cape Horn Dam and the Middle Fork Eel River (see Appendix A Table 1 and Figure 1). However, as part of a series of study trade-offs developed in collaboration with NMFS, CDFW, and RVIT, several of the original sites have been eliminated since 2017. In 2023, a total of four sites: two riffle/run electrofishing sites (Eel below Cape Horn Dam, and Eel below Emandal) and two pool/run snorkel sites (Eel below Cape Horn Dam, Eel near Garcia Creek) were surveyed. The geographic coordinates for these sites are listed in Table 2.1-1.

Table 2.1-1. Geographic coordinates for 2023 Eel River summer rearing monitoring locations.

SITE NAME	DOWNSTREAM LAT/LONG	UPSTREAM LAT/LOG	TEMP SITE	RIVER MILE	LENGTH (m)	HABITAT TYPE
ELECTROFISHING SITES						
Eel below Cape Horn Dam	39°23'58.98" 123°6'59.54"	39°23'59.06" -123°6'59.52"	6R	155.7	100	Riffle/ Run
Eel below Emandal	39°29'42.05" 123°11'36.61"	39°29'42.01" -123°11'32.29"	14	145.9	100	Riffle/ Run
SNORKEL SITES						
Eel below Cape Horn Dam	39°23'59.58" 123°6'59.27"	39°23'53.10" -123°7'2.12"	6P	155.7	250	Pool
Eel near Garcia Creek	39°28'43.25" 123°9'10.58"	39° 28' 33.77" -123°9'2.72"	12/13 P	147.1	500	Run/ Pool

2.2 Backpack Electrofishing Surveys

Quantitative multiple-pass depletion surveys using backpack electrofishing were conducted at the two riffle/run sites listed above (Eel below Cape Horn Dam, and Eel below Emandal) in August 2023. At each of these sites, block nets were placed at the upstream and downstream boundaries during surveys to prevent any movement of fish into or out of the site. Electrofishing site lengths (originally specified as 300 feet in the Plan) have been modified over the years in order to locate nets in the most effective locations and to accommodate agency requests to include potentially favorable habitat formations. Block nets spanned the full width and depth of the river at each site.

A crew of approximately 12 biologists fished each site together from bottom to top using three backpack electrofishers (Smith-Root Model LR-20B or LR-24 units). Three teams consisting of one backpack electrofisher and two or three netters each fished upstream simultaneously across the width of the channel and worked together in deeper or more complex sections of the channel. Captured fish were temporarily placed in water-filled buckets before being transferred to holding or processing areas. Several crew members were dedicated to the care and transfer of captured fish and maintaining proper oxygenation and temperature of the holding water. A minimum of three passes were performed at each site.

Fish collected during each pass were processed during and/or immediately upon completion of that pass. All specimens were identified to species and measured to the nearest millimeter (mm) fork length (FL) using a metric fish board. Following each pass, processed fish were placed in a live car in an instream holding area located outside the site. After the completion of the survey, all collected fish were redistributed throughout the site with the exception of pikeminnow which were discarded.

Site dimensions were characterized along 11 transects set perpendicular to the flow and spaced equally along the length of the site. Using a stadia rod, stream depths were measured at one-quarter, one-half, and three-quarters of the stream width along each transect.

2.3 Snorkel Surveys

Qualitative single-pass snorkel surveys were conducted at the two pool/run sites listed above (Eel below Cape Horn Dam, and Eel near Garcia Creek) in August 2023. During the first year under the current monitoring program in 2005, a multiple-lane observation technique was initially tried, but proved inappropriate for Eel River pool settings due to the overall low density of fish and the concentration of small fish in pool margins. Thus, the technique was modified to include fewer divers inventorying pre-determined sections of a pool. This modification was made in concurrence with CDFW staff that participated

in the initial survey efforts. As in all years since 2005, 2023 snorkel surveys involved multiple divers inventorying different sections of each site independently and simultaneously, while calling out their observations to one or two bankside data recorders. Divers proceeded slowly and deliberately while enumerating, identifying, and visually estimating the lengths of all fish observed.

2.4 Data Analysis

For multiple pass electrofishing sites, population estimates with 95% confidence intervals were calculated for each species at each site using the depletion methodology of Van Deventer and Platts (1989) as referenced in the Plan. The updated 2017 version of the MicroFish 3.0 software program was used to analyze the data collected during 2023 surveys.

Historical (pre-RPA) electrofishing data are available for the two locations sampled (Eel below Cape Horn Dam and Eel below Emandal). Consistent methods were used in all study years, with the exception of some variation in station lengths between years. Therefore, fish data are standardized per unit distance and per unit area and reported as lineal density per kilometer (#fish/km) and area density per hectare (#fish/ha), respectively, to allow for direct comparisons with historical data.

3.0 RESULTS

Six different fish species were observed during the 2023 summer rearing surveys (Table 3.0-1).

Table 3.0-1. Fish species observed during the 2023 summer rearing monitoring.

FAMILY	COMMON NAME	SCIENTIFIC NAME
Salmonidae	Steelhead trout	*Oncorhynchus mykiss*
Cyprinidae	Sacramento pikeminnow	*Ptychocheilus grandis*
	California roach	*Lavinia symmetricus*
Catostomidae	Sacramento sucker	*Catostomus occidentalis*
Centrarchidae	Green sunfish	*Lepomis cyanellus*
Petromyzontidae	Pacific lamprey	*Entosphenus tridentatus*

3.1 Backpack Electrofishing Results

3.1.1 Eel below Cape Horn Dam

This site is located at river mile (RM) 155.7 just downstream of Cape Horn Dam (see Appendix A Figure 1) at an elevation of 1,450 ft. The site is 100 m long with a mean wetted width of 7.29 m and a mean depth of 36 cm. Discharge was approximately 34 cfs and average daily water temperature was 20.9°C (on 8/2/23). Catch data and fish densities are summarized by species in Table 3.1-1. Length-frequency distributions for all fish collected are presented in Figure 3.1-1.

Table 3.1-1. Summary of electrofishing data from Eel below Cape Horn Dam (8/2/23).

EEL BELOW CAPE HORN DAM	# Fish Collected	Population Estimate	Lower 95% CI	Upper 95% CI	Species Comp.	DENSITY	
						(#fish/ km)	(#fish /ha)
Steelhead trout	37	67	-5	139	7%	670	938
Sacramento pikeminnow	63	63	61	65	13%	630	882
California roach	356	467	403	531	72%	4670	6541
Sacramento sucker	21	50	-71	171	4%	500	700
Pacific lamprey	10	15	-276	306	2%	150	210
Lepomis spp.	2	2	-34	38	0.4%	20	28
Unidentified juveniles*	8	12	-263	287	2%	120	168
TOTAL	**497**	**676**			**100%**	**6760**	**9468**

**mostly larval minnows, but also may include some larval suckers*

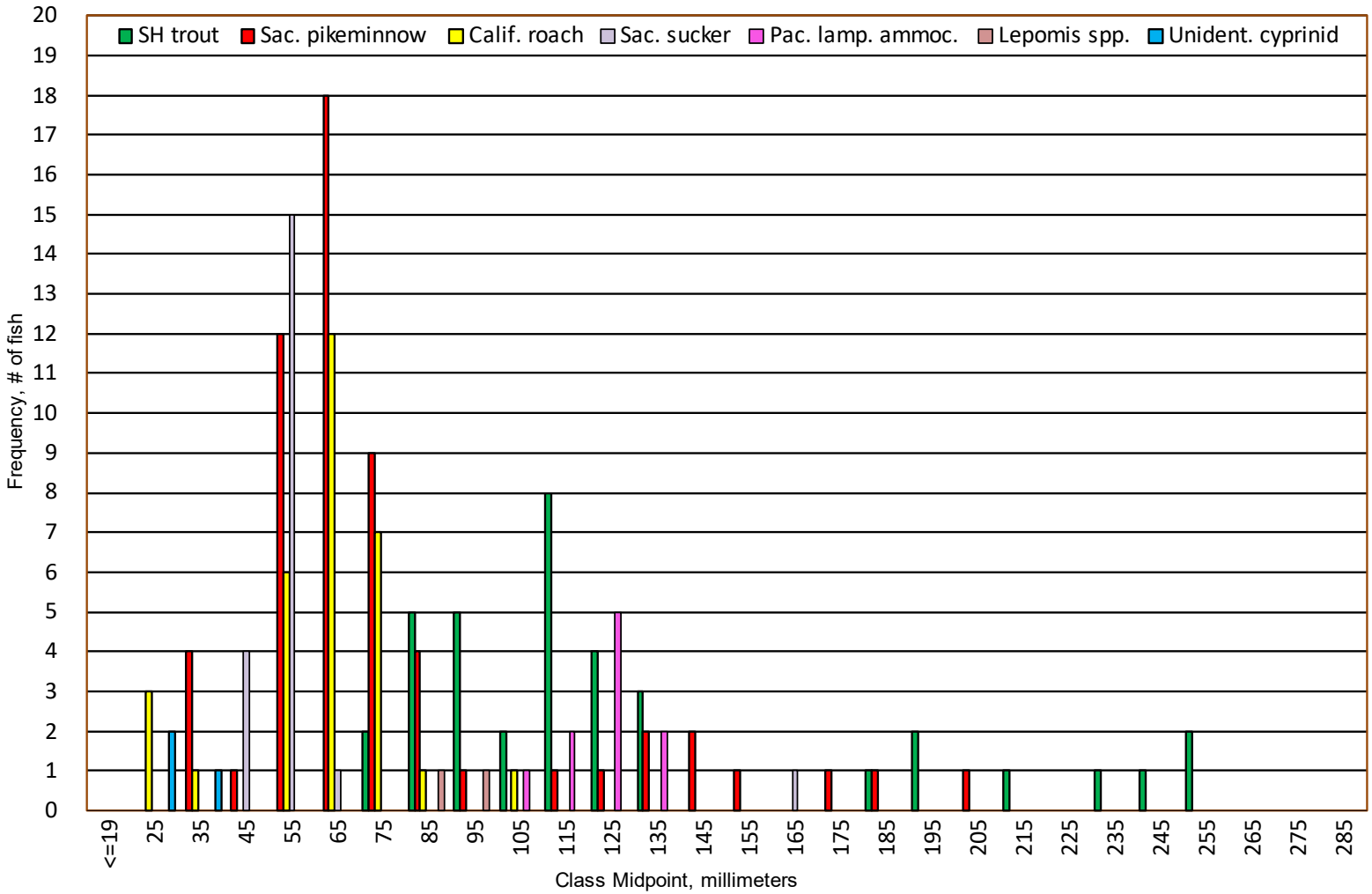

Figure 3.1-1. Length-frequency distribution for all fish collected during summer rearing monitoring electrofishing surveys: Eel River below Cape Horn Dam (8/2/23).

3.1.2 Eel below Emandal

This site is located at RM 145.9 just upstream of the Hearst Bridge (see Appendix A Figure 1) at an elevation of 1,271 ft. The site is 100 m long with a mean wetted width of 12.75 m and a mean depth of 36 cm. Discharge was approximately 33 cfs and the average daily water temperature was 24.4°C (on 8/1/23). Catch data and fish densities are summarized by species in Table 3.1-2. Length-frequency distributions for these species is presented in Figure 3.1-2.

Table 3.1-2. Summary of electrofishing data from Eel below Emandal (8/1/23).

EEL BELOW EMANDAL	#Fish Collected	Population Estimate	95% CI Lower	95% CI Upper	Species Comp.	DENSITY	
						(#fish /km)	(#fish /ha)
Steelhead trout	1	1			0.1%	10	8
Sacramento pikeminnow	278	287	278	296	37%	2870	2288
California roach	321	401	353	7	43%	4010	3196
Sacramento sucker	95	109	92	126	13%	1090	869
Pacific lamprey	35	61	-2	124	5%	610	486
Green sunfish	10	10	7	13	1.3%	100	80
Unidentified juveniles*	7	7			0.9%	70	56
TOTAL	**747**	**876**			**100%**	**8760**	**6983**

**mostly larval minnows, but also may include some larval suckers*

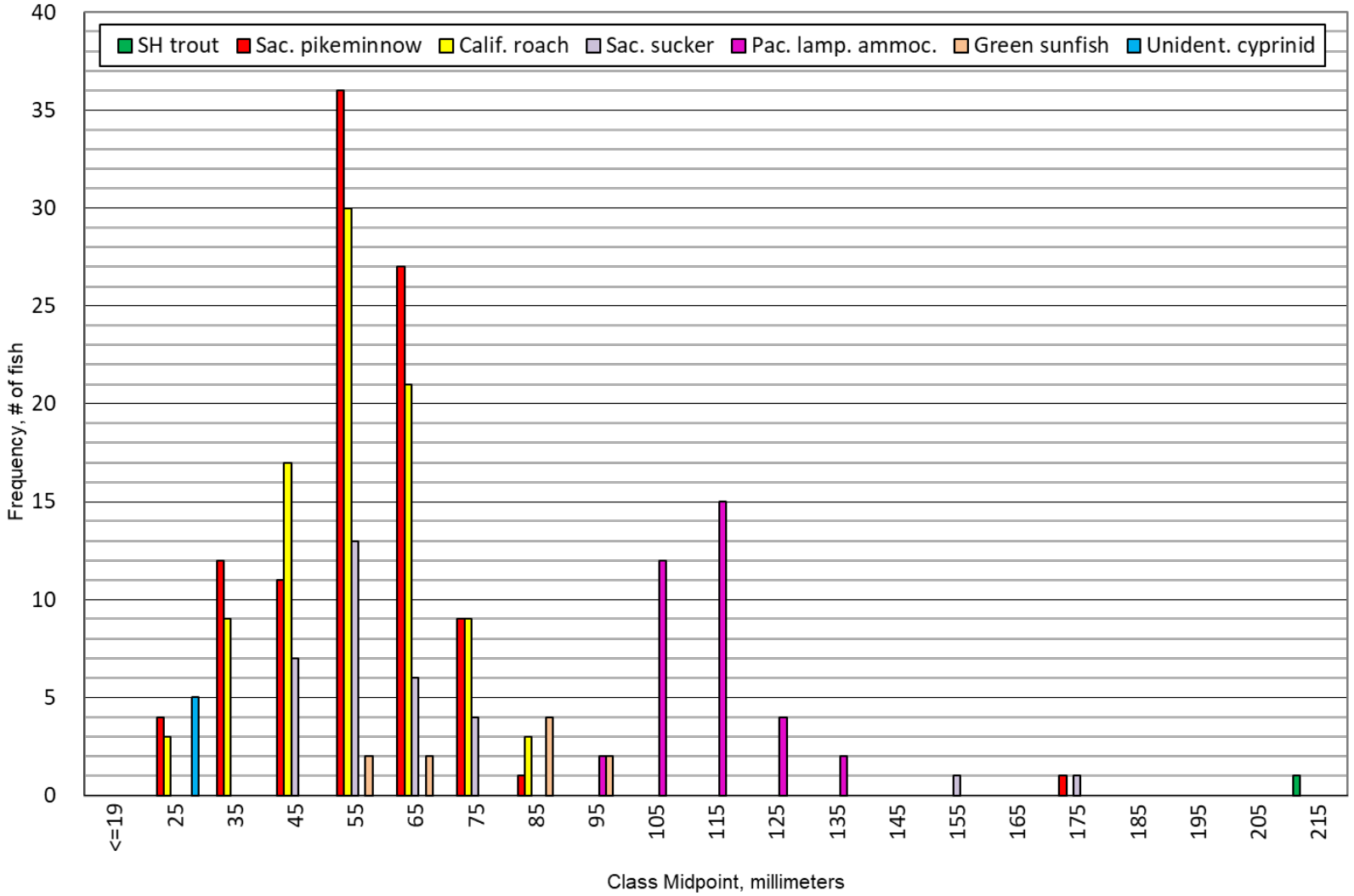

Figure 3.1-2. Length-frequency distribution for all fish collected during summer rearing monitoring electrofishing surveys: Eel River below Emandal (8/1/23).

3.1.3 Historical Electrofishing Results

As mentioned above, historical (pre-RPA) electrofishing data are available for two of the locations sampled most consistently since the 1980s (Eel below Cape Horn Dam and Eel below Emandal). Tables 3.1-3 and 3.1-4 summarize historical lineal densities for all fish species collected at these two sites, respectively. This information is presented graphically for steelhead and pikeminnow for each site in Figure 3.1-3 and Figure 3.1-4.

Table 3.1-3. Estimated historical lineal densities (#fish/km) for fish species captured during all summer rearing fish population monitoring surveys at the electrofishing site Eel below Cape Horn Dam.

YEAR*	Steelhead trout	Sacramento pikeminnow	California roach	Sacramento sucker	Pacific lamprey ammocete	*Lepomis* spp.	Unidentified juveniles
1981	3,633	0	35,033	233	267	0	0
1982	2,100	33	14,933	513	267	0	0
1986	0	2,467	5,300	400	200	0	0
1987	167	2,300	12,600	233	0	0	0
1988	967	1,733	3,833	0	0	0	0
1989	200	2,867	11,800	0	0	0	0
1995	233	733	1,867	233	67	0	0
2005	110	60	380	10	20	0	0
2006	125	760	94	21	0	0	0
2007	40	90	60	10	0	0	0
2008	186	1,255	1,549	0	392	0	2,843
2009	588	1,294	1,951	20	20	0	0
2010	4,755	157	618	0	29	0	10
2011	650	30	750	100	20	10	0
2012	468	397	539	0	10	0	0
2013	50	2,970	1,030	10	30	0	270
2014	120	1,250	2,670	10	60	0	160
2015	40	2,110	2,580	0	30	10	270
2016	110	380	1,510	10	40	0	110
2017	320	30	340	110	150	10	870
2018	30	1,080	2,840	60	0	10	50
2019	670	80	20	120	10	30	30
2020	160	1,160	2,170	10	10	0	20
2021	10	1,340	2,040	10	80	0	240
2022	290	910	650	10	30	0	10
2023	670	630	4670	500	150	20	120

**No data for the pre-RPA periods of 1983–1985, 1990–1994, or 1996–2004.*

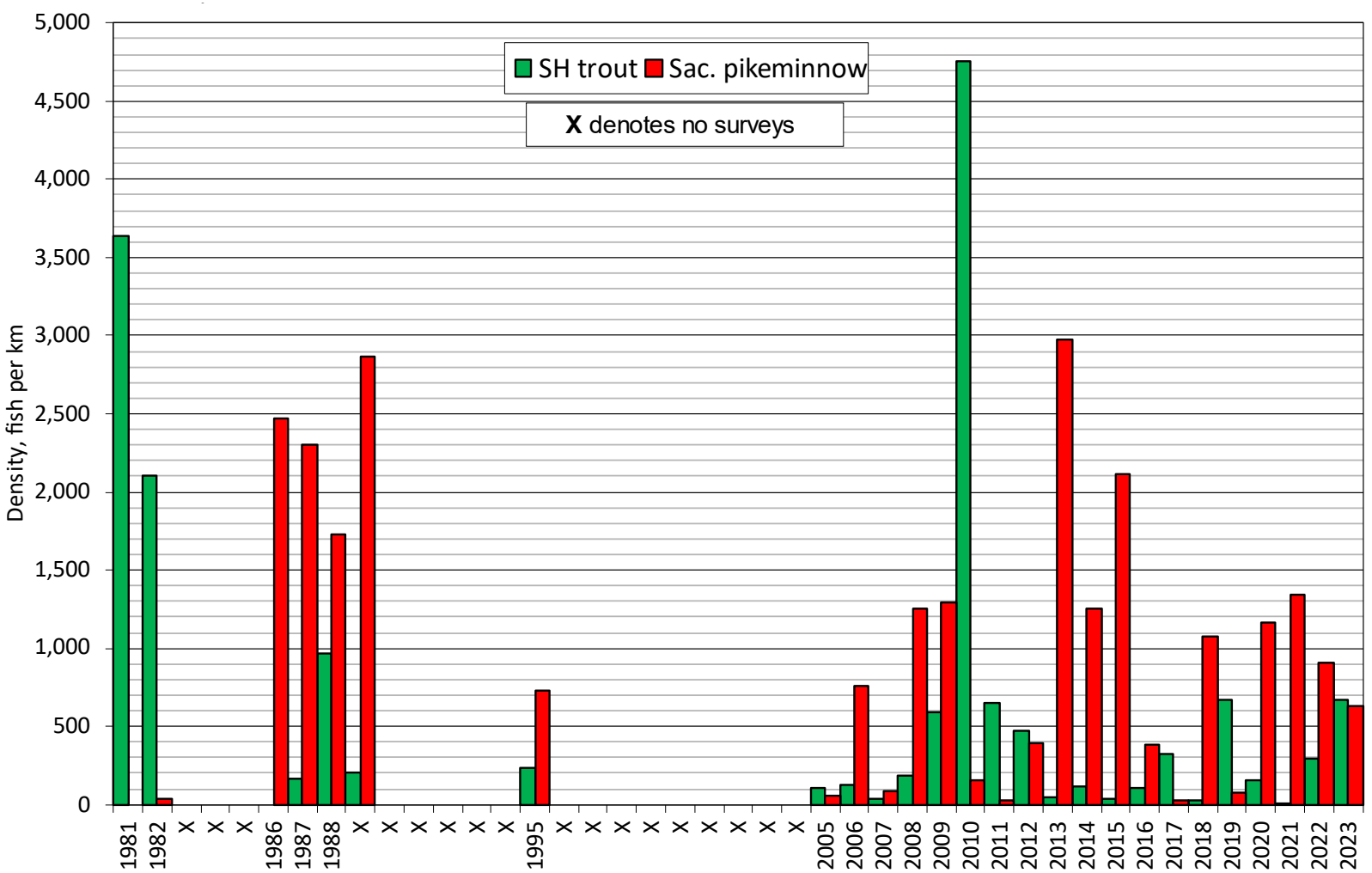

Figure 3.1-3. Estimated historical lineal densities for steelhead trout and Sacramento pikeminnow captured during all summer rearing fish population monitoring surveys at the electrofishing site Eel below Cape Horn Dam.

Table 3.1-4. Estimated historical lineal densities (#fish/km) for fish species captured during all summer rearing fish population monitoring surveys at the electrofishing site Eel below Emandal.

YEAR*	Steelhead trout	Sacramento pikeminnow	California roach	Sacramento sucker	Pacific lamprey ammocete	*Lepomis* spp.	Unidentified juveniles
1981	133	0	27,167	100	33	0	0
1982	2,133	0	13,367	200	0	0	0
1986	0	16,167	3,567	5,133	67	67	0
1987	0	12,467	2,067	0	0	0	0
1988	0	9,567	9,167	67	0	0	0
1995	67	20,700	233	800	33	0	0
2005	33	2,911	589	44	0	0	0
2006	0	1,904	0	23	459	0	0
2007	0	10,522	3,278	0	11	0	0
2008	0	7,690	720	0	350	10	860
2009	0	1,340	2,830	0	50	0	0
2010	310	5,050	570	850	800	10	1,400
2011	370	600	950	10	60	0	1,500
2012	40	1,510	80	0	0	0	10
2013	0	4,450	360	150	1,050	0	10
2014	0	3,330	960	50	160	30	10
2015	0	4,170	5,370	40	150	1,150	30
2016	0	7,040	4,130	710	1,450	100	40
2017	30	5,450	100	230	80	0	1,810
2018	0	2,535	4,545	20	0	40	0
2019	440	700	410	2,500	20	0	50
2020	0	380	1,390	0	240	0	30
2021	0	570	2,550	20	210	220	80
2022	0	2210	1860	90	300	590	90
2023	10	2870	4010	1090	610	100	70

**No data for the pre-RPA periods of 1983–1985, 1989–1994, or 1996–2004.*

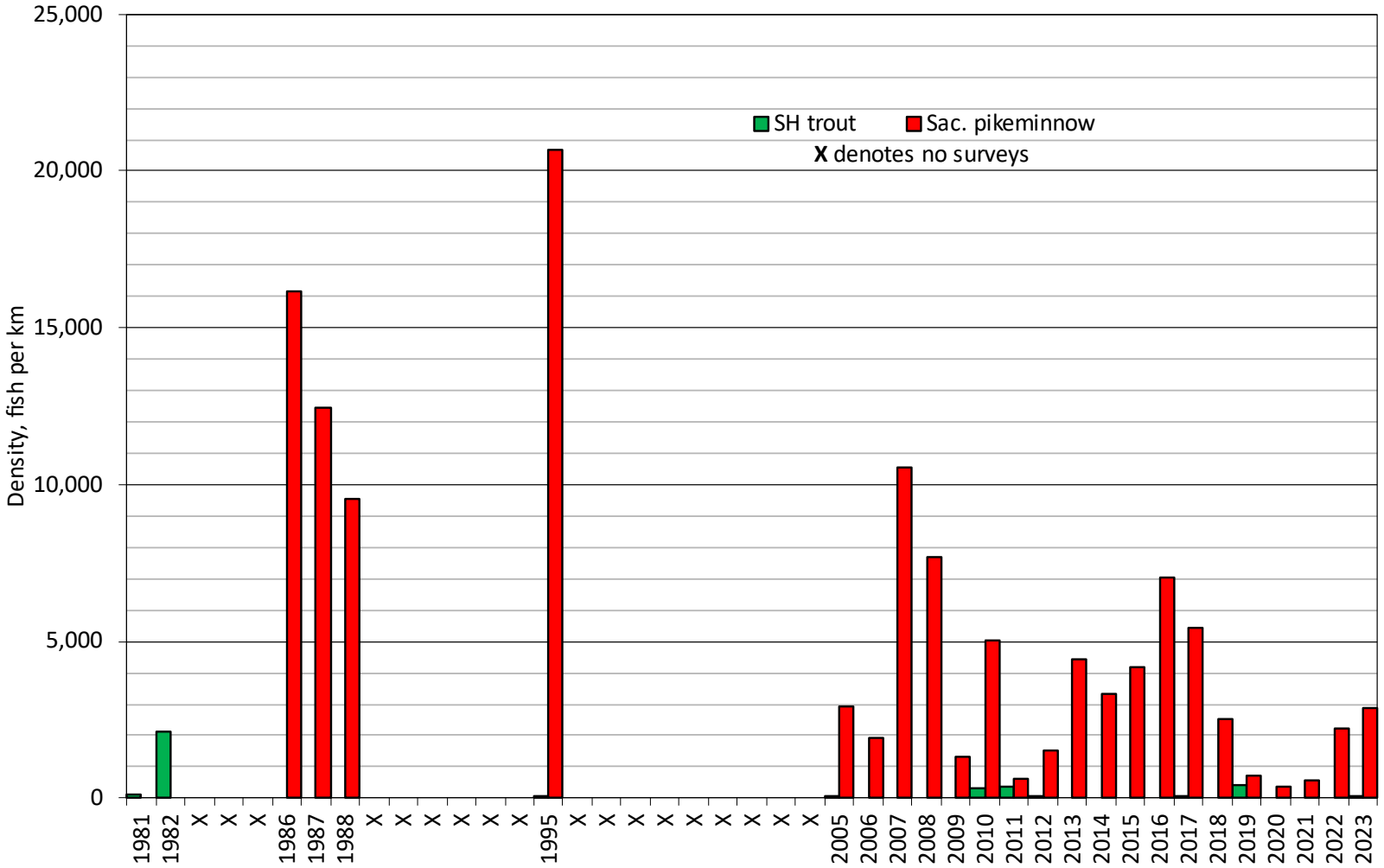

Figure 3.1-4. Estimated historical lineal densities for steelhead trout and Sacramento pikeminnow captured during all summer rearing fish population monitoring surveys at the electrofishing site Eel below Emandal.

3.2 Snorkel Survey Results

3.2.1 Eel below Cape Horn Dam

This site is located just downstream of Cape Horn Dam at river mile (RM) 155.7 (see Appendix A Figure 1) at an elevation of 1,450 ft. The snorkel site is a 250-m long pool immediately upstream of the electrofishing site. Discharge was approximately 34 cfs during the survey (on 8/2/23). Fish observations are summarized in Table 3.2-1.

Table 3.2-1. Summary of snorkel data from Eel below Cape Horn Dam (8/2/23).

SPECIES	SIZE/AGE CLASS	#FISH	TOTAL
Steelhead trout	YOY	3	**4**
	AGE 1+/OLDER	1	
Sacramento pikeminnow	FISH <100 mm	261	**512**
	FISH >100 mm	251	
California roach	ALL FISH	589	**589**
Sacramento sucker	ALL FISH	222	**222**
Adult Pacific lamprey	Living, Dead	1,4	**5**
Unidentified juveniles*	ALL FISH	260	**260**
TOTAL # FISH OBSERVED			***1,592***

**mostly larval minnows, but also may include some larval suckers*

3.2.2 Eel near Garcia Creek

This site is located at the Garcia Creek confluence at RM 154.2 (see Appendix A Figure 1) at an elevation of 1,333 ft. The snorkel site is a 500-m long run/pool with its downstream end approximately 180 m below the confluence. Discharge was approximately 33 cfs during the survey (on 8/1/23). Fish observations are summarized in Table 3.2-2.

Table 3.2-2. Summary of snorkel data from Eel near Garcia Creek (8/1/23).

SPECIES	SIZE/AGE CLASS	#FISH	TOTAL
Steelhead trout**	YOY	2	**2**
	AGE 1+/OLDER	0	
Sacramento pikeminnow	FISH <100 mm	71	**71**
	FISH >100 mm	0	
California roach	ALL FISH	238	**238**
Sacramento sucker	ALL FISH	85	**85**
Adult Pacific lamprey	Living, Dead	0	**0**
Unidentified juveniles*	ALL FISH	1,677	**1,677**
TOTAL # FISH OBSERVED			***2,073***

**mostly larval minnows, but also may include some larval suckers; ** observed in margins of cold-water flows from Garcia Creek.*

4.0 FUTURE MONITORING

Summer rearing fish population monitoring is scheduled to continue in 2024 at selected study sites along with temperature monitoring as specified by Article 52 RPM 8 and detailed in the Plan.

5.0 LITERATURE CITED

Van Deventer, J. S. and W. S. Platts. 1989. Microcomputer software system for generating population statistics from electrofishing data - User's guide for MicroFish 3.0. U.S.D.A. Forest Service, General Technical Report INT 254.

Appendix A

Summer Rearing Monitoring Plan

SUMMER REARING MONITORING PLAN

Addressing
NMFS Measure 8 (in part)

Potter Valley Hydroelectric Project
FERC Project No. 77

Prepared By:

Pacific Gas and Electric Company™

August 2005

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Section & Description **Page**

1.0 INTRODUCTION

The January 28, 2004 FERC amendment to the Potter Valley Project (PVP) license adopted, as part of Article 52, the Reasonable and Prudent Measure (RPM) 8 developed by NMFS for temperature monitoring in the reaches of the mainstem Eel River below Scott and Cape Horn dams, and summer rearing surveys below Cape Horn Dam. This document presents the Licensee's plan to comply with the summer rearing survey monitoring requirements of RPM 8 in Article 52. **This plan is being submitted to NMFS for approval.**

1.1 NMFS RPM 8 (specified by Article 52)

The relevant section of License Article 52 is quoted from the license and is shown in italic typeface below:

Article 52. Federally Threatened Salmonids. (a) No later than August 1, 2004, the Licensee shall submit for Commission approval a plan to implement and comply with NOAA Fisheries' Reasonable and Prudent Alternative, and Reasonable and Prudent Measures, which are found at pages 85-95 and page 106-100, respectively, of the Biological Opinion filed by NOAA Fisheries in Project No. 77-100 on November 29, 2002.

RPM 8 is quoted from the license and is shown in italic typeface below:

Measure 8. The Licensee shall develop in consultation with the resource agencies a suitable program to monitor and assess the summer flow component of the RPA with respect to the anticipated biological benefits to salmonids. This will include a temperature monitoring component and a summer rearing monitoring component in order to provide biological information on the performance of the RPA under different summer flow regimes.

The following terms and conditions implement Measure 8: By April 15, 2004, the Licensee shall file a temperature monitoring plan for NMFS approval. This plan should include annual water temperature monitoring from May to October in the mainstem Eel River from above Scott Dam to below the confluence with the South Fork Eel River. Monitoring sites that were established by the Humboldt County Resource Conservation District for the Eel River Water Quality Monitoring Project should be used. If the Eel River Water Quality Monitoring Project continues, then the Licensee can rely on that project to fulfill this water temperature monitoring plan requirement. The plan must include annual water temperature monitoring from spring to fall for the mainstem Eel River above Scott Dam to the mainstem Eel River below the confluence with the South Fork Eel River. This will provide useful information on how various summer flow releases from Cape Horn Dam affect water temperatures in the mainstem Eel River. Prior to filing its plan with NMFS, PG&E shall consult with the resource agencies and RVIT on the proposed plan. The NMFS reserves the right to require changes in the plan. The plan shall be delivered to the Northern California Supervisor-Protected Resources Division at the address indicated above.

By April 15, 2004, the Licensee shall file a summer rearing monitoring plan for NMFS approval.

This plan should include provisions of annual monitoring of rearing steelhead and pikeminnow in the mainstem Eel River below Cape Horn Dam to below the confluence with Outlet Creek. Previously established sites (VTN and ten-year study) with additional sites shall be monitored annually. This will provide useful information on how various summer flow releases from Cape Horn Dam affect steelhead and pikeminnow populations. Prior to filing its plan with NMFS, the Licensee shall consult with the resource agencies and RVIT on the proposed plan. The NMFS reserves the right to require changes in the plan. The plan shall be delivered to the Northern California Supervisor-Protected Resources Division at the address indicated above.

The Licensee shall file with NMFS annually the result of the temperature and summer rearing monitoring program in report form. Results shall be filed by May 1 of each year and shall be delivered to the Northern California Supervisor-Protected Resources Division at the address indicated above.

After ten years of monitoring, the summer flow component of the RPA will be reevaluated based on results provided in the annual reports. If NMFS determines that the summer flow component of the RPA is not providing the anticipated benefits to salmonids, then NMFS will re-evaluate this component of the RPA to determine if additional measures or changes in flow are necessary.

1.2 Agency Consultation

Licensee transmitted the initial draft of this plan for rearing monitoring to NMFS, the California Department of Fish and Game (CDFG), U.S. Forest Service, U.S. Fish and Wildlife Service (USFWS) (collectively, resource agencies) and the Round Valley Indian Tribes (Tribes) on June 22, 2004. Comments were received from NMFS, CDFG, and the Tribes. In response to FERC's letter dated January 31, 2005, which requested Licensee to renew consultations with NMFS, Licensee met with NMFS on March 2 and March 25, 2005, and with NMFS, CDFG and the Tribes on April 8, June 2, June 16, and July 7, 2005, to further discuss the scope of monitoring measures required under the RPA.

2.0 MAINSTEM SUMMER REARING SURVEYS

2.1 Background and Goals

The overall goal of summer rearing monitoring surveys is to collect data on rearing steelhead and pikeminnow populations and their respective habitats in an effort to quantify the effects of higher summer flows in the mainstem Eel River rearing habitat from Cape Horn Dam to below Outlet Creek. Annually variable summer flows prescribed by the RPA may have the potential to influence rearing conditions in the mainstem Eel River below the Project. RPA flows can also increase wetted stream area (relative to the Article 38 minimum release of 5 cfs). RPA summer flows may also modify stratification patterns in pools, and change patterns of intermixing with natural inflow and seepage, which may affect available thermal refugia for juvenile salmonids. Summer rearing surveys (along with water temperature monitoring) are intended to quantify habitat conditions and rearing steelhead populations affected by any or all of these factors.

Data collected may then be used to assist the resource agencies in assessing the impacts of those higher flows (and changes in temperatures as a result of those flows) on rearing salmonid and pikeminnow populations in those mainstem reaches, and may assist the resource agencies in answering the following questions:

1. What effect does the RPA summer flows (at all flow levels) have on rearing habitat available to salmonids in the subject Upper Eel River?
2. What effect does the RPA summer flows (at all flow levels) have on rearing salmonids in the subject Upper Eel River?
3. What effect does temperatures associated with RPA summer flows (at all levels and in all rearing habitats, i.e. riffles and pools) have on rearing habitat available to salmonids in the subject Upper Eel River?
4. What effect does temperature associated with RPA summer flows (at all levels and in all rearing habitats, i.e. riffles and pools) have on rearing salmonids in the subject Upper Eel River?
5. What effect does the RPA summer flows and associated temperatures have on salmonid rearing habitat in the subject Upper Eel River?
6. What effect does the RPA summer flows have on habitat available to pikeminnow in the subject Upper Eel River?
7. What effect does the RPA summer flows have on pikeminnow predation of salmonids in the subject Upper Eel River?
8. What area of the subject Upper Eel River most benefits from the RPA summer flows and why?
9. What area of the subject Upper Eel River least benefits from the RPA summer flows and why?
10. Does the salmonid fishery obtain a net gain as a result the RPA summer flows?
11. If the salmonid fishery obtains a net gain as a result of the RPA summer flows, is it a result of temperature, increased flows, improved salmonid habitat, increased available salmonid habitat, or other factors?
12. If the salmonid fishery does not obtain a net gain as a result of the RPA summer flows, is it a due to temperature, increased flows, habitat changes, loss of refugia rearing habitat, or other factors?
13. What is the relationship, real and potential, between summer flow regime change, pool stratification, habitat availability, and successful salmonid rearing?
14. What is the single most important factor leading to the improvement of salmonid summer rearing in the subject Upper Eel River?

All implementation decisions will be made with full consideration to the goal.

2.2 Criteria for Determining Success

The criteria for success will be that the rearing surveys have been successfully completed in accordance with **Section 2.3.4** (**Study Schedule**) to collect rearing data from the designated sites, and that the data from all the sites is collected, compiled as described and provided to the resource agencies and Tribes by May 1 of each year following data collection.

After 10 years of monitoring, NMFS will reevaluate the summer flow component of the RPA based on results provided in the annual reports. If NMFS determines that the summer flow component of the RPA is not providing the anticipated benefits to salmonids, then NMFS will reevaluate this component of the RPA to determine if additional measures or changes in flow are necessary.

2.3 Mainstem Summer Rearing Survey Plan

2.3.1 Available Summer Rearing Data

Two of the 10 selected sites [Eel below Cape Horn Dam (riffle but not pool) and Eel below Emandal] were monitored by VTN (1982) and SEC as part of Article 39 monitoring conducted by PG&E under the previous flow regimes. Previously obtained data from these survey sites is summarized in the 10-year final report (SEC 1998).

2.3.2 Selected Sites

Six paired sites (riffle/run electrofishing sites with a nearby pool snorkel sites), two solitary riffle/run electrofishing sites, one solitary pool snorkel site, and one solitary run snorkel site were selected allowing for the monitoring of both rearing steelhead and pikeminnow populations below Cape Horn Dam (Table 1). The summer rearing monitoring program will utilize two previous electrofishing sites in riffle/run habitat downstream of Cape Horn Dam. These previously monitored sites are identified as Eel River below Cape Horn Dam (site 6 R) and Eel below Emandal (site 13) (SEC 1998). Six new riffle sites were selected and also appear in Table 1. The specific locations for these sites were selected by the NMFS, CDFG, and the Tribes based their suitability to represent typical rearing conditions in the reach, and their proximity to temperature monitoring stations. Seven pool and one run sites, all in relatively close proximity to these riffle sites, were also selected and will be monitored by means of direct observation (snorkel surveys). Exact locations of riffle and pool sites were selected during meetings conducted with the NMFS, CDFG, and the Tribes during June and July, 2005, and field trips with NMFS and CDFG in July, 2005.

Table 1. Selected Mainstem Eel River summer rearing survey sites below Cape Horn Dam

Rearing Site Name	Analogous Thermo-graph Site Numbers	River Mile	Survey Technique	Habitat type	Previously monitored?	Rationale
Eel below Cape Horn Dam	6R	155.7	Backpack electrofishing	Riffle/ run	**Yes**	Representative riffle in close proximity to Project.
	6P	155.7	Snorkel survey	Pool	No	Representative pool in close proximity to Project.
Eel above Whitney Creek	7	154.2	Snorkel survey	Pool	No	Representative pool approximately 2.6 miles below Cape Horn Dam.
Eel above Tomki Creek	8	153.1	Backpack electrofishing	Riffle/ run	No	Representative riffle approximately 3.7 miles below Cape Horn Dam.
Eel below Thomas Creek	11R	148.8	Backpack electrofishing	Riffle/ run	No	Representative riffle in steep, wooded canyon habitat approximately 8.0 miles below Project.
	11P	148.8	Snorkel survey	Pool	No	Representative pool in steep, wooded canyon habitat approximately 8.0 miles below Project.
Eel near Garcia Creek	12	147.1	Snorkel survey	Run	No	Representative boulder run near terminus of steep, wooded canyon approximately 9.7 miles below Project.
Eel below Emandal	13	145.9	Backpack electrofishing	Riffle/ run	Yes	Representative riffle in broader, open canyon approximately 10.9 miles below Project.

Rearing Site Name	Analogous Thermo-graph Site Numbers	River Mile	Survey Technique	Habitat type	Previously monitored?	Rationale
Eel below Hearst	16P	143.9	Snorkel survey	Pool	No	Representative pool in broader, open canyon approximately 12.9 miles below Project.
	16R	143.9	Backpack electrofishing	Riffle/ run	No	Representative of rearing conditions in exposed bedrock canyon approximately 12.9 miles below Project.
Eel above Fish Creek	18P	134.2	Snorkel survey	Pool	No	Representative of rearing conditions in exposed bedrock canyon approximately 22.6 miles below Project.
	18R	134.2	Backpack electrofishing	Riffle/ run	No	Representative of rearing conditions in exposed canyon approximately 22.6 miles below Project.
Eel between Outlet Creek and Middle Fork Eel	22P	122.3	Snorkel survey	Pool	No	Representative of pool rearing conditions in exposed canyon approximately 34.5 miles below Project.
	22R	122.3	Backpack electrofishing	Riffle/ run	No	Representative of riffle rearing conditions in exposed canyon approximately 34.5 miles below Project.
Eel above Dos Rios	23P	119.3	Snorkel survey	Pool	No	Second pool site to assess rearing conditions in exposed canyon, slightly downstream, approximately 37.5 miles below Project.
	23R	119.3	Backpack electrofishing	Riffle/ run	No	Second riffle site to assess rearing conditions in exposed canyon, slightly downstream, approximately 37.5 miles below Project.

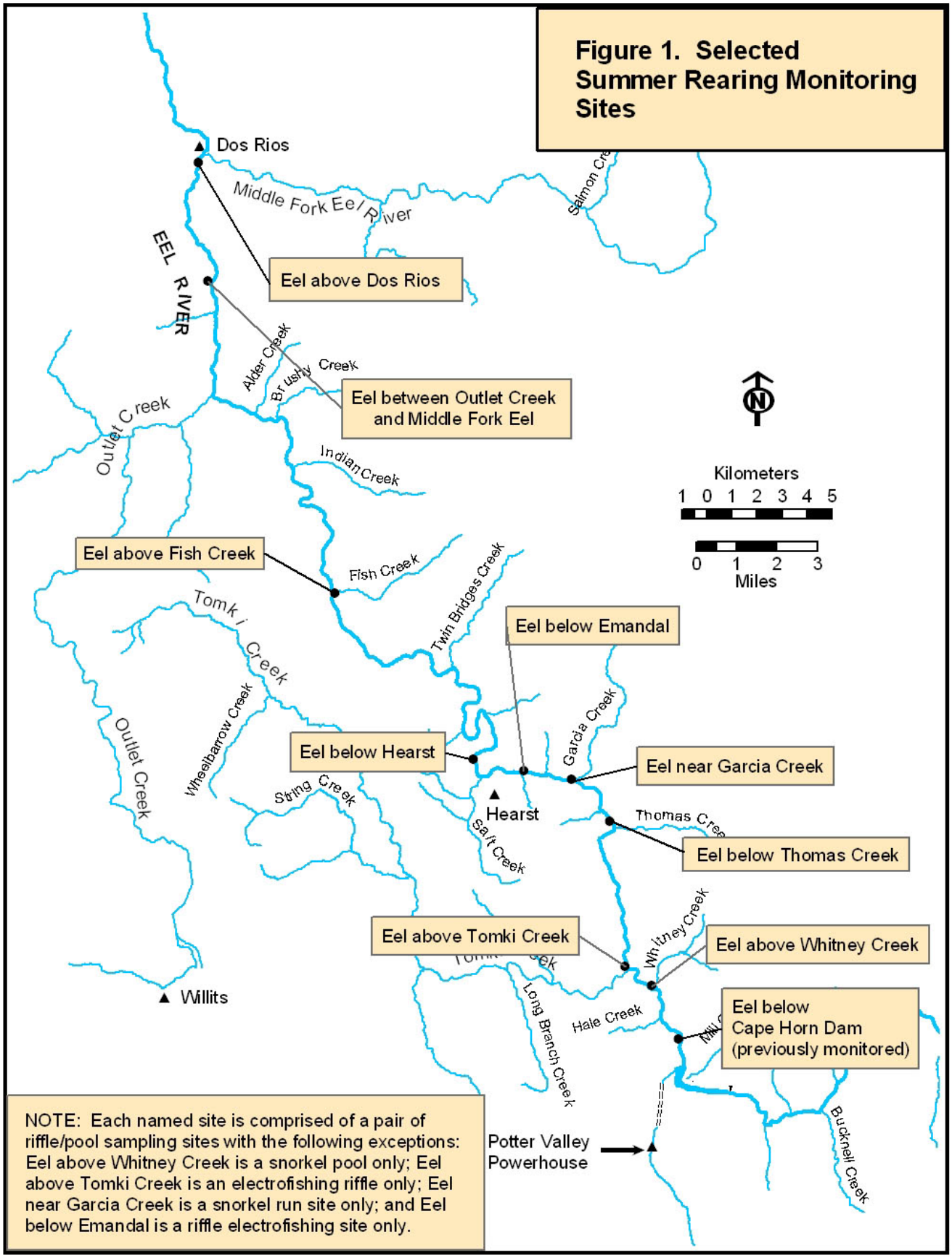
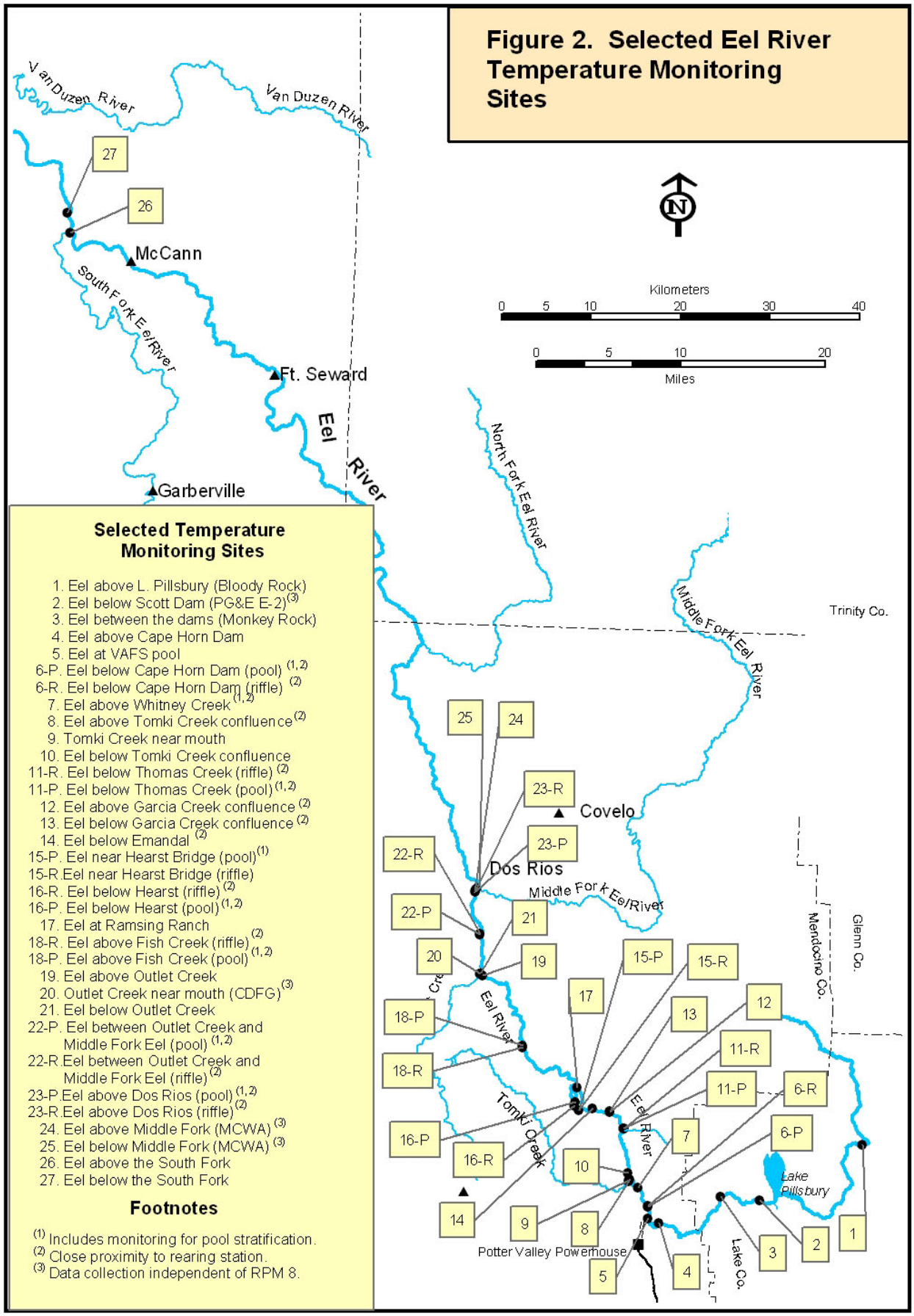


Figure 1. Selected Summer Rearing Monitoring Sites
Dos Rios
Middle Fork Eel River
EEL RIVER
Eel above Dos Rios
Alder Creek
Brushy Creek
Eel between Outlet Creek and Middle Fork Eel
Outlet Creek
Indian Creek
Kilometers
1 0 1 2 3 4 5
0 1 2 3
Miles
Eel above Fish Creek
Fish Creek
Twin Bridges Creek
Tomki Creek
Eel below Emandal
Wheelbarrow Creek
Outlet Creek
Garcia Creek
Eel below Hearst
Eel near Garcia Creek
String Creek
Hearst
Salt Creek
Thomas Creek
Eel below Thomas Creek
Eel above Tomki Creek
Whitney Creek
Eel above Whitney Creek
Willits
Long Branch Creek
Hale Creek
Eel below Cape Horn Dam (previously monitored)
Potter Valley Powerhouse
Bucknell Creek
NOTE: Each named site is comprised of a pair of riffle/pool sampling sites with the following exceptions: Eel above Whitney Creek is a snorkel pool only; Eel above Tomki Creek is an electrofishing riffle only; Eel near Garcia Creek is a snorkel run site only; and Eel below Emandal is a riffle electrofishing site only.

Figure 2. Selected Eel River Temperature Monitoring Sites



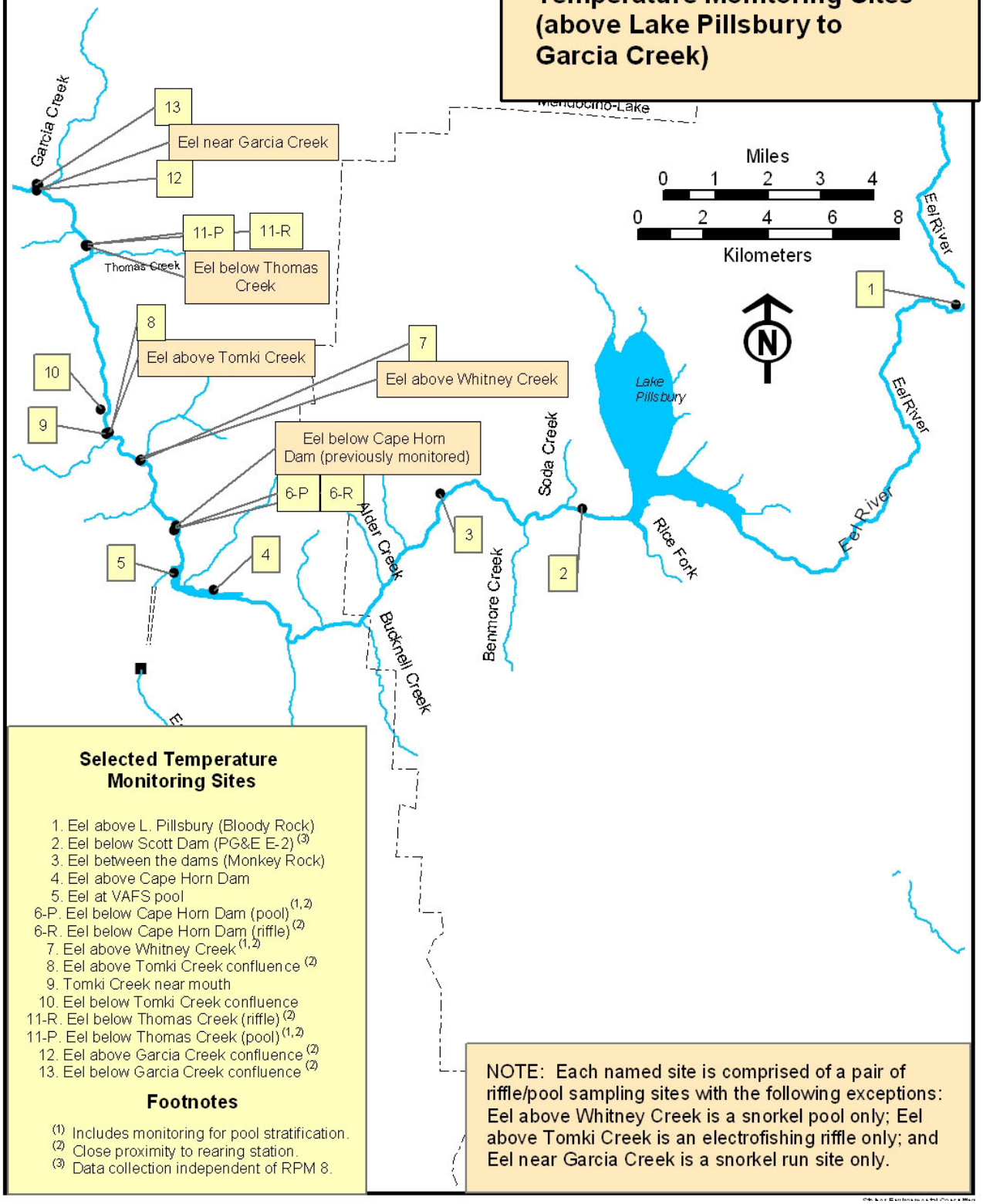
Selected Temperature Monitoring Sites

1. Eel above L. Pillsbury (Bloody Rock)
2. Eel below Scott Dam (PG&E E-2)[3]
3. Eel between the dams (Monkey Rock)
4. Eel above Cape Horn Dam
5. Eel at VAFS pool
6-P. Eel below Cape Horn Dam (pool) [1,2]
6-R. Eel below Cape Horn Dam (riffle) [2]
7. Eel above Whitney Creek [1,2]
8. Eel above Tomki Creek confluence [2]
9. Tomki Creek near mouth
10. Eel below Tomki Creek confluence
11-R. Eel below Thomas Creek (riffle) [2]
11-P. Eel below Thomas Creek (pool) [1,2]
12. Eel above Garcia Creek confluence [2]
13. Eel below Garcia Creek confluence [2]
14. Eel below Emandal [2]
15-P. Eel near Hearst Bridge (pool) [1]
15-R. Eel near Hearst Bridge (riffle)
16-R. Eel below Hearst (riffle) [2]
16-P. Eel below Hearst (pool) [1,2]
17. Eel at Ramsing Ranch
18-R. Eel above Fish Creek (riffle) [2]
18-P. Eel above Fish Creek (pool) [1,2]
19. Eel above Outlet Creek
20. Outlet Creek near mouth (CDFG) [3]
21. Eel below Outlet Creek
22-P. Eel between Outlet Creek and Middle Fork Eel (pool) [1,2]
22-R. Eel between Outlet Creek and Middle Fork Eel (riffle) [2]
23-P. Eel above Dos Rios (pool) [1,2]
23-R. Eel above Dos Rios (riffle) [2]
24. Eel above Middle Fork (MCWA) [3]
25. Eel below Middle Fork (MCWA) [3]
26. Eel above the South Fork
27. Eel below the South Fork

Footnotes

[1] Includes monitoring for pool stratification.
[2] Close proximity to rearing station.
[3] Data collection independent of RPM 8.

Figure 3. Detailed View of Selected Summer Rearing Sites in the Upper Mainstem Eel River and their Proximity to Temperature Monitoring Sites (above Lake Pillsbury to Garcia Creek)



Selected Temperature Monitoring Sites

1. Eel above L. Pillsbury (Bloody Rock)
2. Eel below Scott Dam (PG&E E-2) (3)
3. Eel between the dams (Monkey Rock)
4. Eel above Cape Horn Dam
5. Eel at VAFS pool

6-P. Eel below Cape Horn Dam (pool) (1,2)
6-R. Eel below Cape Horn Dam (riffle) (2)

7. Eel above Whitney Creek (1,2)
8. Eel above Tomki Creek confluence (2)
9. Tomki Creek near mouth
10. Eel below Tomki Creek confluence

11-R. Eel below Thomas Creek (riffle) (2)
11-P. Eel below Thomas Creek (pool) (1,2)

12. Eel above Garcia Creek confluence (2)
13. Eel below Garcia Creek confluence (2)

Footnotes

(1) Includes monitoring for pool stratification.
(2) Close proximity to rearing station.
(3) Data collection independent of RPM 8.

NOTE: Each named site is comprised of a pair of riffle/pool sampling sites with the following exceptions: Eel above Whitney Creek is a snorkel pool only; Eel above Tomki Creek is an electrofishing riffle only; and Eel near Garcia Creek is a snorkel run site only.

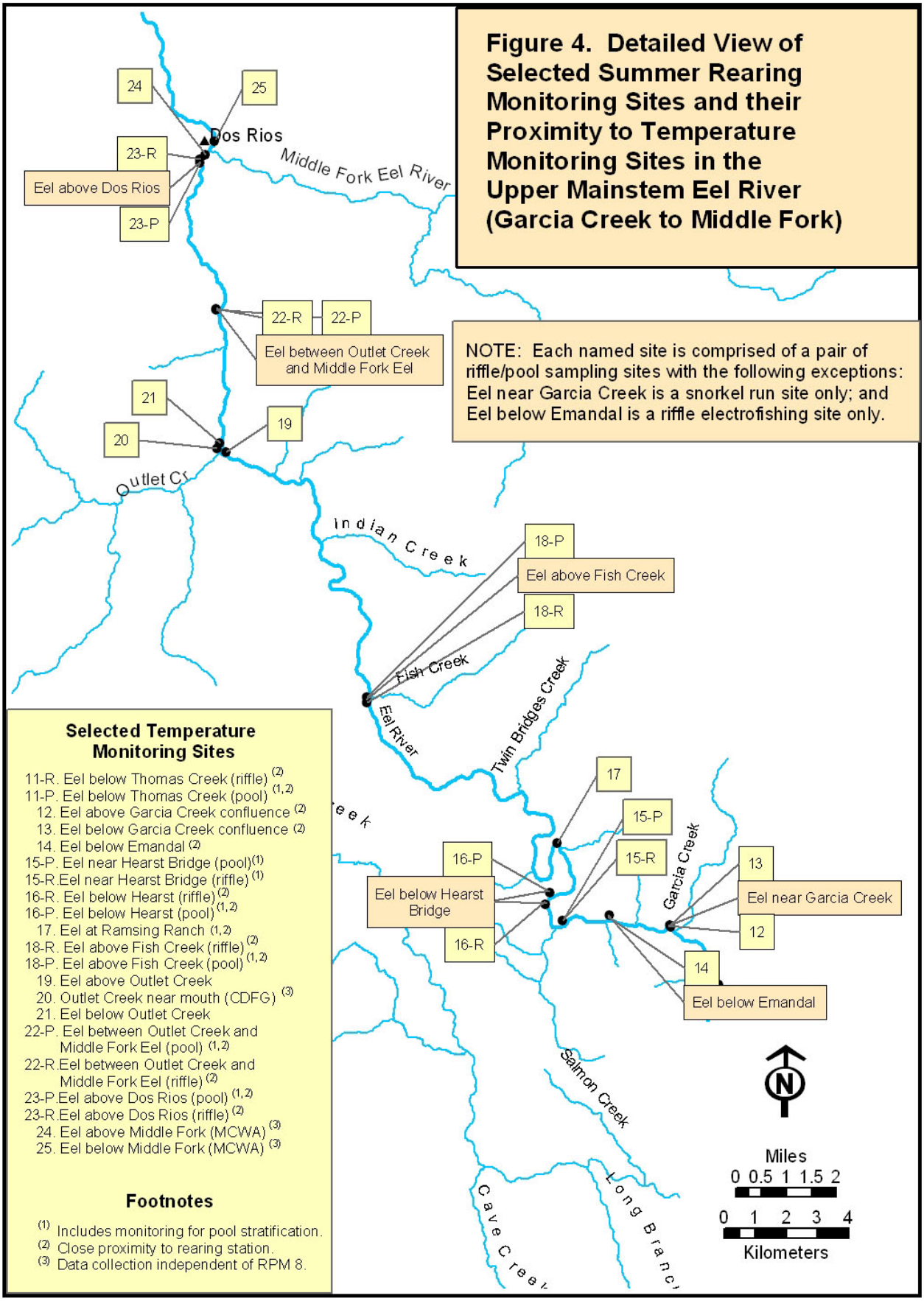


Figure 4. Detailed View of Selected Summer Rearing Monitoring Sites and their Proximity to Temperature Monitoring Sites in the Upper Mainstem Eel River (Garcia Creek to Middle Fork)
NOTE: Each named site is comprised of a pair of riffle/pool sampling sites with the following exceptions: Eel near Garcia Creek is a snorkel run site only; and Eel below Emandal is a riffle electrofishing site only.
24
25
Dos Rios
23-R
Eel above Dos Rios
23-P
Middle Fork Eel River
22-R
22-P
Eel between Outlet Creek and Middle Fork Eel
21
20
19
Outlet Cr
Indian Creek
18-P
Eel above Fish Creek
18-R
Fish Creek
Eel River
Twin Bridges Creek
17
15-P
15-R
16-P
Eel below Hearst Bridge
16-R
Garcia Creek
13
Eel near Garcia Creek
12
14
Eel below Emandal
Salmon Creek
Cave Creek
Long Branch
N
Miles
0 0.5 1 1.5 2
0 1 2 3 4
Kilometers
Selected Temperature Monitoring Sites
11-R. Eel below Thomas Creek (riffle) (2)
11-P. Eel below Thomas Creek (pool) (1,2)
12. Eel above Garcia Creek confluence (2)
13. Eel below Garcia Creek confluence (2)
14. Eel below Emandal (2)
15-P. Eel near Hearst Bridge (pool)(1)
15-R.Eel near Hearst Bridge (riffle) (1)
16-R. Eel below Hearst (riffle) (2)
16-P. Eel below Hearst (pool) (1,2)
17. Eel at Ramsing Ranch (1,2)
18-R. Eel above Fish Creek (riffle) (2)
18-P. Eel above Fish Creek (pool) (1,2)
19. Eel above Outlet Creek
20. Outlet Creek near mouth (CDFG) (3)
21. Eel below Outlet Creek
22-P. Eel between Outlet Creek and Middle Fork Eel (pool) (1,2)
22-R.Eel between Outlet Creek and Middle Fork Eel (riffle) (2)
23-P.Eel above Dos Rios (pool) (1,2)
23-R.Eel above Dos Rios (riffle) (2)
24. Eel above Middle Fork (MCWA) (3)
25. Eel below Middle Fork (MCWA) (3)
Footnotes
(1) Includes monitoring for pool stratification.
(2) Close proximity to rearing station.
(3) Data collection independent of RPM 8.

2.3.3 Methods for Data Collection and Reduction

PG&E will conduct multiple-pass electrofishing at eight of the selected sites. Methods will be similar to those of past VTN/SEC/PG&E Eel River surveys as described in VTN (1982) and SEC (1987), utilizing 300-foot survey sections bounded by block nets. The decision to use one, two, or three backpack electrofishing units will depend on the stream width and complexity at a given site during the surveys. Each shocker will be assisted by two netters with other personnel assisting in the enumeration of captured fish as needed. Multiple passes will be made in accordance with the depletion protocol; a single pass if no salmonids are captured in that pass, but more typically, two or three passes when salmonids are present.

In order to better assess the production of summer pool habitat, PG&E will conduct simultaneous snorkel surveys in pools or runs in the near vicinity to the riffle/run habitat being sampled by electrofishing. Based on an annual assessment of the data by the resource agencies and the Tribes, some of the riffle/run electrofishing sites below Cape Horn Dam may be phased out in favor of direct observation in the associated pools. An initial overlap period utilizing both protocols will provide an opportunity to evaluate the efficacy of the two methods.

When the conventional multiple-pass electrofishing technique is used, data reduction will employ the Van Deventer and Platts (1989) depletion methodology for estimating populations.

When fish are enumerated by direct observation, a single pass will be made by multiple observers. Provided that sufficient data are available, a bounded count will be calculated, whereby the upper limit is the highest count and the lower limit is the average of the lowest and mid-counts of a given survey section (Ed Pert, CDFG, pers. comm. 2002).

If sufficient numbers of juvenile steelhead and pikeminnow are captured and measured, length-frequency data will be provided to estimate age-class composition for these two species. Rearing densities and the relative composition of young-of-the-year versus older fish will be compared to data from the two previously surveyed sites.

2.3.4 Study Schedule

The mainstem summer rearing surveys will be conducted once per year beginning in 2005. Surveys will be conducted between August 1 and September 15 during the low flow/high temperature “pinch period”.

3.0 FUNDING

The actual cost of summer rearing monitoring and associated data management will be debited against the implementation fund for monitoring and pikeminnow control activities required by RPM 4. Under an agreement reached between Licensee and NMFS on March 25, 2005, the annual funding will be provided in 2004 and 2005 at the rate of $60,000/year (the funding limitation specified in RPM 4); beginning in 2006 Licensee will increase its annual contribution to this fund to $75,000/year. The scope of activities presented in this plan assumes that only PG&E contractor charges (based on current Steiner Environmental Consulting rates) will be debited against the $75,000 annual fund and that agency and PG&E biologist staff time will not be charged against the fund.

Table 4 offers an example of the potential distribution of contract costs and effort for all monitoring and suppression efforts subject to the RPM 4 funding limitations agreed to between NMFS and Licensee. The task costs presented in Table 4 are gross estimates and are provided only as an example of how budgets may vary from year to year. Actual element costs may vary based on modifications to scope or schedule as approved by NMFS, by difficulties or economies that may be experienced when implementing the individual tasks, or by other unforeseen contingencies. Budget surpluses from one year will be carried forward to the next year. Regardless of actual task costs, agreed-upon budget limits remained fixed, and changes to monitoring assumptions may require revisions to the proposed scope of work in order to stay within that budget. Any revisions to the plans must be approved by NMFS in consultation with the resource agencies and the Tribes.

Table 2. Example of effort and cost distribution necessary to implement proposed RPM tasks covered under the agreed-upon funding cap provision of the Biological Opinion RPM 4.

B.O. Measure (RPM)	Option	Study Element	2005	2006	2007
1&2	**1**	Pikeminnow Suppression and monitoring in the pools immediately above and below CHD – Gill Netting (possibly trammel nets)	$0	$25,000	$20,000
	3	Pikeminnow Monitoring in Accessible River Reaches above Van Arsdale Reservoir – Raft Electrofishing	$14,000	$11,000	$11,000
8	**1**	Summer Rearing Studies Below Cape Horn Dam and Above Outlet Cr. - Riffles and Direct Observation	$40,000	$29,000	$29,000

B.O. Measure (RPM)	Option	Study Element	2005	2006	2007
	3	Spring and Summer Temperature Monitoring in Eel River	$24,000	$12,000	$12,000
Total cost for all current listed options			**$78,000**	**$77,000**	**$72,000**
Current value for $60K / $75K cap			**$120,000**	**$75,000**	**$75,000**

4.0 PRODUCTS FROM STUDIES

4.1 Annual Report

The work product resulting from the summer rearing surveys at mainstem index sites in the Eel River will be an annual report presenting data gathered relative to the RPA summer flow releases and resulting changes in habitat and fish populations. The report will include tabular and graphical data depicting the relationship between streamflows, the resultant summer thermal regime, and populations of rearing steelhead and pikeminnow in the downstream reaches of the Eel River affected by Project releases. Rearing study results will be integrated with concurrent temperature monitoring data, allowing for agency interpretation of the effectiveness of the RPA summer releases at promoting improved conditions for rearing salmonids in the affected river reaches.

GIS technology, if requested by the resource agencies, can be used to graphically present information in the data presentations. This technology provides a standardized geographically-based framework for sharing study products with resource agencies and other interested parties. Utilization of GIS presentation will likely increase the costs for this task.

4.2 Reporting Schedule

The annual reports on temperatures and summer rearing will be submitted to the resource agencies and Tribes annually by May 1 of the year following data collection.

5.0 PG&E PRIMARY CONTACT

Personnel from PG&E's Technical and Ecological Services (TES) will oversee summer rearing surveys. The lead TES contact will be: Gene Geary (925) 866-5846, reg2@pge.com.

6.0 LITERATURE CITED

Brown, L.R., and P.B. Moyle. 1991. Changes in habitat and microhabitat partitioning within an assemblage of stream fishes in response to predation by Sacramento squawfish (Ptychocheilus grandis). Can. J. Fish. Aquat. Sci. 48: 849-856.

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SEC 1998. Potter Valley Project (FERC No. 77, Article 39). Effects of Operations on Upper Eel River Anadromous Salmonids. Final Report. March 1998. Prepared for PG&E, Technical and Ecological Services, San Ramon CA.

Van Deventer, J. S. and W. S. Platts. 1989. Microcomputer software system for generating population statistics from electrofishing data - User's guide for MicroFish 3.0. U.S.D.A. Forest Service, General Technical Report INT-254.

VTN Oregon, Inc. 1982. Potter Valley Project (FERC No. 77) Fisheries Study. Final Report Vols. I & II. Prepared for Pacific Gas and Electric Company, San Ramon, CA. 320 pp. + app.

Appendix B

2023 Summer Rearing Monitoring
Field Data Summaries

Site: Eel below Cape Horn Dam

General Station Data:

Date:	August 2, 2023
Start time, PDST:	7:42
Stop time, PDST:	11:30
GIS coordinate: deg. Latitude:	39.495050
GIS coordinate: deg. Longitude:	-123.192669
Elevation, ft:	1271
Personnel:	EH, KW, RT, AA, JR, CS, NE, KM, IC, TG, DH, SS, DL, GC, KB
Air temperature, deg. C:	11.1 @ 8:22, 23.0 11:13
Water temperature, deg. C:	Daily maximum: 22.9 Seasonal MWAT: 22.8
	Daily mean: 20.9
Station length, m:	100.0
Minimum RPA flow, cfs:	15 Conductivity: 155.4 DO: 9.8 mg/L, 106% saturation
Estimated flow, cfs:	34 Provisional value from nightly operators' report
Measured flow, cfs:	34 Final USGS value for E11 gage
Water surface area, hectares:	0.071
Water volume, cu. m.:	181

Catch Data [1]:

Species	Pac. lamp. ammoc.	SH trout	Calif. roach	Sac. pikeminnow	Sac. sucker	Lepomis spp.	Unident. cyprinid	Largemouth bass	Br. bullhead
Pass 1:	2	12	169	53	6	1	2	0	0
Pass 2:	4	18	126	6	10	1	1	0	0
Pass 3:	4	7	61	4	5	0	5	0	0
Total catch:	10	37	356	63	21	2	8	0	0
Population estimate:	**15**	**67**	**467**	**63**	**50**	**2**	**12**	**0**	**0**
Chi square:	3.05	4.39	3.49	4.35	2.13	0.93	7.61		
Pop est standard err:	135.90	36.14	32.70	0.91	60.09	2.87	124.94		
95% lower conf Interval:	-276	-5	403	61	-71	-34	-263		
95% upper conf Interval:	306	139	531	65	171	38	287		
Estimate code(s) [3]:	1				0		1		
Lineal Density, fish per km:	150	670	4,670	630	500	20	120	0	0
Area Density, fish per hectare:	210	938	6,541	882	700	28	168	0	0

[1] One adult Pacific Lamprey captured on first pass.

[3] Microfish population estimate code key:
Code 1: Iterative calculations stopped at five times the total catch, creating a non-MLE estimate of 1.5 times the total catch.
Code 2: Chi square stat suggests inconsistent removal pattern.
Code 3: Only one fish caught on all passes, unable to calculate maximum likelihood estimate.
Code 4: All fish caught on pass one, unable to calculate maximum likelihood estimate.
Code 5: Microfish program did not generate estimate, population estimate set to total catch.

Site: Eel below Emandal

General Station Data:

Date:	August 1, 2023
Start time, PDST:	8:52
Stop time, PDST:	15:38
GIS coordinate: deg. Latitude:	39.495050
GIS coordinate: deg. Longitude:	-123.192669
Elevation, ft:	1271
Personnel:	DL, GC, AA, TG, DH, EH, KM, RT, JR, IC, SS, KW, NE, CS, DK
Air temperature, deg. C:	21.2 @ 9:55, 31.5 @15:00
Water temperature, deg. C:	Daily maximum: 26.5 Seasonal MWAT: 26.5
	Daily mean: 24.4
Station length, m:	100.0
Minimum RPA flow, cfs:	15 Conductivity: 180.8 DO: 9.5 mg/L, 113% saturation
Estimated flow, cfs:	32 Provisional from operators' nightly report
Measured flow, cfs:	33 Final USGS value for E11 gage
Water surface area, hectares:	0.125
Water volume, cu. m.:	322

Catch Data:

Species	Pac. lamp. ammoc.	SH trout	Calif. roach	Sac. pikeminnow	Sac. sucker	Lepomis spp.	Unident. cyprinid	Largemouth bass	Br. bullhead
Pass 1:	15	0	160	202	52	7	7	0	0
Pass 2:	10	1	109	49	29	2	0	0	0
Pass 3:	10	0	52	27	14	1	0	0	0
Total catch:	35	1	321	278	95	10	7	0	0
Population estimate:	**61**	**1**	**401**	**287**	**109**	**10**	**7**	**0**	**0**
Chi square:	0.41		2.07	5.63	0.15	0.31			
Pop est standard err:	31.38		24.52	4.33	8.49	1.39			
95% lower conf Interval:	-2		353	278	92	7			
95% upper conf Interval:	124		7	296	126	13			
Estimate code(s) [1]:		4		2			4, 5		
Lineal Density, fish per km:	610	10	4,010	2,870	1,090	100	70	0	0
Area Density, fish per hectare:	486	8	3,196	2,288	869	80	56	0	0

[1] Microfish population estimate code key:
Code 1: Iterative calculations stopped at five times the total catch, creating a non-MLE estimate of 1.5 times the total catch.
Code 2: Chi square stat suggests inconsistent removal pattern.
Code 3: Only one fish caught on all passes, unable to calculate maximum likelihood estimate.
Code 4: All fish caught on pass one, unable to calculate maximum likelihood estimate.
Code 5: Microfish program did not generate estimate, population estimate set to total catch.

ENCLOSURE 2

From:	McCready, Chadwick
To:	Joshua Fuller - NOAA Federal; Bob Coey - NMFS; Boyce, Josh; Myers, Matt@Wildlife; Renger, Allan@Wildlife; Scott McBain; Frank Aebly - USFS; Abel, Joshua - FS; "Tom Daugherty - NMFS"
Cc:	Ramirez-Doble, Sky; Anderson, Andrew
Subject:	For Review- Draft 2023 Potter Valley Summer Rearing and Water Temperature Reports
Date:	Monday, April 29, 2024 9:50:00 AM
Attachments:	2023_PV_Summer_Rearing_Report_DRAFT.pdf 2023_PV_Temperature_DRAFT.pdf

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Greetings Agencies,

Attached for your review are the Draft 2023 Summer Rearing and Water Temperature Monitoring Reports. Please provide any comments or edits by **June 15, 2024**, so we can update the report before submitting to FERC by June 30, 2024.

Let me know if you have any questions.

Thanks,

Chadwick McCready
Hydro License Coordinator| Power Generation
Pacific Gas & Electric Company
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June 15, 2024

Mr. Chadwick McCready
Pacific Gas & Electric Company
P.O. Box 770000, Mail Code N13E
San Francisco, CA 94177

RE: Comments on Potter Valley Project, FERC No. 77, 2023 Summer Rearing Monitoring, Article 52(a); NMFS RPA Section G.2 and RPM 8

Dear Mr. McCready:

Thank you for providing the opportunity to review and provide comments on the draft 2023 Summer Rearing Monitoring Fish Population Surveys Report, Article 52(a); NMFS RPA Section G.2 and RPM 8, for the Potter Valley Hydroelectric Project. We don't have any comments to provide at this time on how the data were presented in the 2023 report. However, as we discussed in last year's comment letter for the 2022 report, we would like to request an analysis of fish populations trends in relation to summer water temperatures for all years surveyed to help inform future variance flows until the Potter Valley Project is decommissioned. We'd be happy to discuss how this summer water temperature analysis could be conducted.

Please don't hesitate to reach out if you have any questions.

Sincerely yours,

Andrea Hamilton
Fisheries Biologist
707-367-3427

Timothy Caldwell
Aquatic Ecologist
707-329-0725

cc: Mr. Curtis Berkey, Berkey Williams LLP
Mr. Josh Fuller, National Marine Fisheries Service
Mr. Allan Renger, California Department of Fish and Wildlife