Pacific Gas and Electric Company®

Power Generation

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May 26, 2016

Via Electronic Submittal (E-Filing)

Ms. Kimberly D. Bose, Secretary
Federal Energy Regulatory Commission
Division of Hydropower Administration and Compliance
888 First Street, NE
Washington, DC 20426

RE: Potter Valley Project (FERC No. 77)
Pikeminnow Monitoring and Suppression Annual Report
Reasonable and Prudent Measures 1 & 2

Dear Secretary Bose:

On November 23, 2005, the Federal Energy Regulatory Commission (FERC) issued an Order approving Pacific Gas and Electric Company's (PG&E) Pikeminnow Adaptive Management and Suppression Operation Plans (Plans) for the Potter Valley Project (FERC No. 77). These Plans address Reasonable and Prudent Alternative Section G.2 and Reasonable and Prudent Measures 1 and 2, incorporated into License Article 52 in FERC's Order issued January 28, 2004. As required by these Plans, enclosed is a copy of the 2015 Pikeminnow Monitoring and Suppression Results, which provides a summary of the selected index reaches, study methods, and the monitoring and suppression results collected in 2015. PG&E provided a draft copy of the report to the resource agencies and Round Valley Indian Tribes on April 12, 2016 and did not receive any comments.

If you have any questions, please contact PG&E's Senior License Coordinator, Ms. Elisabeth Rossi at (415) 973- 2032.

Sincerely,

for

Neil J. Wong
Supervisor, Hydro Licensing

Enclosure:
- 2015 Pikeminnow Monitoring and Suppression Results

cc: Attached List

cc: Mr. Matthew Myers
California Department of Fish and Wildlife
Northern Region
601 Locust Street
Redding, CA 96001

Mr. Joshua Fuller
National Marine Fisheries Service
777 Sonoma Avenue, Room 325
Santa Rosa, CA 95404

Mr. Steve Kramer
U.S. Department of Interior
Fish and Wildlife Service
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Arcata, CA 95521

Mr. Walter Feather, Jr.
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Round Valley Indian Tribes
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243 East Covelo Road
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Ms. Paula Britton
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2030 Addison Street, Suite 410
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Article 52(a)

PIKEMINNOW MONITORING AND SUPPRESSION RESULTS, 2015

Addressing
NMFS RPA Section G.2
and
Measures 1 and 2 (in part)

Potter Valley Hydroelectric Project
FERC Project No. 77

Prepared By:

Pacific Gas and Electric Company™

May, 2016

Article 52(a)

Reasonable and Prudent Measures 1 and 2: Pikeminnow monitoring and suppression, 2015

Table of Contents

PIKEMINNOW MONITORING AND SUPPRESSION, 2015

Task Overview

Background and Introduction

On January 28, 2004 the Federal Energy Regulatory Commission (FERC) issued an Order amending the PG&E Potter Valley Project operations license (Project No. 77-110). This amendment is to be in effect throughout the remaining term of the License, ending in 2022. The January 28, 2004 FERC amendment to the Potter Valley Project (Project) license incorporated (as part of Article 52) NMFS' Reasonable and Prudent Alternative (RPA) Section G.2, Reasonable and Prudent Measure (RPM) 1, and RPM 2. RPM 1 requires the Licensee to prepare an Adaptive Management Plan for the suppression of Sacramento pikeminnow in and around the Project area. RPM 2 requires the Licensee to file annual Pikeminnow Suppression Operations Plans for the remaining term of the Project license. Pikeminnow Adaptive Management and Suppression Operation Plans (Appendix A) were filed with FERC on October 7, 2005, and approved on November 23, 2005. It was anticipated that after five or more years of adaptive management, the annual Pikeminnow Suppression Operations Plans would reflect the best pikeminnow management and monitoring practices identified through the adaptive management process, and would not materially change from year to year.

Plan Elements and Implementation

The elements of the "Pikeminnow Adaptive Management and Suppression Operation Plans" covered in this annual data presentation are subsections of Section 3.0, Pikeminnow Suppression Operation Plan (RPM 2). The reportable monitoring and suppression as defined in that section are defined in two subsections, 3.2, "Monitoring Upstream of Van Arsdale Reservoir (*Goal 1*)", and 3.3, "Pikeminnow Suppression and Monitoring In Van Arsdale Reservoir and In the Pools Immediately Below Cape Horn Dam (*Goals 2 – 4*)".

Monitoring Upstream of Van Arsdale Reservoir

Compliance Requirement - The plan scope for pikeminnow monitoring adopted in October 2005 states:

1. Selected Index Reaches

Initially, the three index reaches identified on Figure 1 [see Appendix A] will be monitored. The geographic coordinates for the upstream and downstream boundaries of these reaches are presented in Table 1 below. Consistent with the adaptive management process, additional index reaches may be added or less productive index reaches may be eliminated in future years. The geographic coordinates for the upper and lower boundaries of each sampling reach are presented in Table 1 below.

Table 1. ***Geographic coordinates for the upstream and downstream boundaries of the selected index reaches for monitoring pikeminnow and steelhead distribution, abundance, and size class structure in the Eel River between Scott and Cape Horn Dams.***

Index Reach	*Upstream Boundary*	*Downstream Boundary*
Below Trout Creek	*N 39.37165°* *W 123.07301°*	*N 39.37511°* *W 123.07642°*
Above Bucknell Creek	*N 39.38209°* *W 123.04557°*	*N 39.37679°* *W 123.05040°*
Above Benmore Creek	*N 39.40759°* *W 122.98914°*	*N 39.40509°* *W 122.99341°*

Implementations Details for 2015 – Monitoring of pikeminnow populations using raft electrofishing at index sites between Scott and Cape Horn dams was specified by the plan to occur "during the period from early August to early September". The actual sampling dates in 2015 fell on August 10 and 13, meeting the goals of the plan. Individual site dates accompany data sets. The index sites were those specified in the

plan. An additional site, previously monitored between Scott Dam and the Soda Creek bridge in 2005, was discontinued in 2006 due to adverse and hazardous field conditions (encroaching riparian vegetation and high velocities) in that reach. However, in 2015, at the request of NMFS, the pool immediately below Scott Dam was surveyed using the same raft electrofishing methods as used at the other sites between the dams. Results of this effort appear in this report as supplemental data in Appendix B. Sampling was conducted at all sites following the methods of previous studies (SEC 1991 as referenced in plan). All captured pikeminnow were discarded, as has been the practice in previous monitoring years.

Data Format - Raft electrofishing results are presented in two tables for each of the reaches: a catch summary with relevant general station data and a length frequency table for all captured species. Length-frequency plots for steelhead trout and pikeminnow are presented separately for each of the reaches. A historical table summarizes dates and pikeminnow catch totals for current and previous suppression raft electrofishing efforts dating back to 1990. A side-by-side bar graph depicting historical pikeminnow catch results for the three index sites is also included.

Pikeminnow Suppression and Monitoring in Van Arsdale Reservoir and In the Pools Immediately Below Cape Horn Dam

After evaluation of gillnetting data from the summer of 2006, NMFS, CDFG, and RVIT concluded that these suppression efforts had a detrimental impact on rearing steelhead, an ESA-listed species. Accordingly, NMFS, in an email communication to PG&E dated May 15, 2007 (Enclosure 3 of PG&E's May 30, 2007 submittal to FERC of the 2006 Pikeminnow Monitoring and Suppression Annual Report), requested that PG&E not conduct gillnetting in 2007, pending further investigation into other less harmful methods of suppressing pikeminnow. Then, NMFS, in a letter dated April 15, 2008 (Enclosure 3 of PG&E's May 28, 2008 submittal to FERC of the 2007 Pikeminnow Monitoring and Suppression Annual Report), stated that pikeminnow suppression activities would not need to be implemented during 2008, nor in future years, unless an alternate suppression method was submitted for consideration. Despite continued consultation on this topic by PG&E, NMFS, CDFW, and RVIT, no acceptable alternate pikeminnow suppression method has been identified. However, in 2015, at the request of NMFS, the pool immediately below Cape Horn Dam was surveyed using the same raft electrofishing methods as used at sites between the dams, and all captured pikeminnow were discarded. Results of this survey appear as supplemental data in Appendix B.

Monitoring Results

Tables 1 - 7 and Figures 1 - 7 present the results of the pikeminnow monitoring effort in 2015. Results from the two supplemental monitoring sites, Eel below Scott Dam and Eel below Cape Horn Dam, are presented in Appendix B.

Table 1. Catch data for raft electrofishing surveys in the upper mainstem Eel River, 2015

Site: Eel above Benmore Creek

General Station Data:

Date:	August 10, 2015
Start time, PDST:	10:59
Stop time, PDST:	14:12
GIS coordinate: deg. Latitude:	39.40756 to 39.40508
GIS coordinate: deg. Longitude:	-122.98917 to -122.99342
Elevation, ft:	1700
Personnel:	DH, LH, RT, GC, PK, PS
Air temperature, deg. C:	21.5 @ 09:32; 27.4 @ 14:38
Water temperature, deg. C:	20.5 @ 09:35, 22.1 @ 14:45
Station length, m:	615
Minimum RPA flow, cfs:	60
Estimated flow, cfs:	75
Measured flow, cfs:	75.8 E2 gage site, USGS final approved value
Water surface area, hectares:	No Data
Water volume, cu. m.:	No Data

Catch Data:

Species	Pac. lamp. ammoc.	SH trout	Calif. roach	Sac. pikeminnow	Sac. sucker	Lepomis spp.	Unident. cyprinid	Largemouth bass	Br. bullhead
Catch Total [1]	3	2	11	74	12	0	16	0	0

[1] One adult Pacific lamprey , 445 mm length, was also captured.

Table 2. Fork length distribution for raft electrofishing surveys in the mainstem Eel River

Site: Eel above Benmore Creek
Date: August 10, 2015

Class Midpoint, mm	Pac. lamp. ammoc.	SH trout	Calif. roach	Sac. pikeminnow	Sac. sucker	Lepomis spp.	Unident. cyprinid	Largemouth bass	Br. bullhead
<=19	.	.	.	.	.	.	4	.	.
25	.	.	.	7	1	.	11	.	.
35	.	.	.	31	3	.	1	.	.
45	.	.	1	8	3	.	.	.	.
55	.	.	4	1	4	.	.	.	.
65	.	.	3	.	.	.	.	.	.
75	.	.	3	1	.	.	.	.	.
85	.	.	.	1	.	.	.	.	.
95	.	.	.	3	.	.	.	.	.
105	1	1	.	1	.	.	.	.	.
115	.	.	.	1	.	.	.	.	.
125	2	.	.	4	.	.	.	.	.
135	.	.	.	1	.	.	.	.	.
145	.	.	.	3	.	.	.	.	.
155	.	.	.	5	.	.	.	.	.
165	.	.	.	2	.	.	.	.	.
175	.	1	.	.	.	.	.	.	.
185	.	.	.	.	1	.	.	.	.
195	.	.	.	.	.	.	.	.	.
205	.	.	.	.	.	.	.	.	.
215	.	.	.	.	.	.	.	.	.
225	.	.	.	.	.	.	.	.	.
235	.	.	.	.	.	.	.	.	.
245	.	.	.	1	.	.	.	.	.
255	.	.	.	1	.	.	.	.	.
265	.	.	.	.	.	.	.	.	.
275	.	.	.	.	.	.	.	.	.
285	.	.	.	1	.	.	.	.	.
295	.	.	.	.	.	.	.	.	.
305	.	.	.	.	.	.	.	.	.
315	.	.	.	1	.	.	.	.	.
325	.	.	.	.	.	.	.	.	.
335	.	.	.	.	.	.	.	.	.
345	.	.	.	.	.	.	.	.	.
355	.	.	.	.	.	.	.	.	.
365	.	.	.	.	.	.	.	.	.
375	.	.	.	1	.	.	.	.	.
385	.	.	.	.	.	.	.	.	.
395	.	.	.	.	.	.	.	.	.
>399	.	.	.	.	.	.	.	.	.

Table 3. Catch data for raft electrofishing surveys in the upper mainstem Eel River, 2015

Site: Eel above Bucknell Creek

General Station Data:

Date:	August 13, 2015
Start time, PDST:	10:09
Stop time, PDST:	12:55
GIS coordinate: deg. Latitude:	39.38056 to 39.37681
GIS coordinate: deg. Longitude:	-123.04697 to -123.05039
Elevation, ft:	1540
Personnel:	LH, DH, GC, RT, PK, PS
Air temperature, deg. C:	14.6 @ 09:05; 23.4 @ 11:30; 27.0 @ 13:32
Water temperature, deg. C:	18.5 @ 09:05; 19.5 @ 09:27; 20.5 @ 11:32; 21.2 @ 13:32
Station length, m:	520
Minimum RPA flow, cfs:	60
Estimated flow, cfs:	75
Measured flow, cfs:	79.1 E2 gage site, USGS final approved value
Water surface area, hectares:	No Data
Water volume, cu. m.:	No Data

Catch Data [1]:

Species	Pac. lamp. ammoc.	SH trout	Calif. roach	Sac. pikeminnow	Sac. sucker	Lepomis spp.	Unident. cyprinid	Largemouth bass	Br. bullhead
Catch Total	1	14	49	65	11	0	4	0	0

[1] One dead steelhead trout, 711 mm FL, was also observed.

Table 4. Fork length distribution for raft electrofishing surveys in the mainstem Eel River

Site: Eel above Bucknell Creek
Date: August 13, 2015

Class Midpoint, mm	Pac. lamp. ammoc.	SH trout	Calif. roach	Sac. pikeminnow	Sac. sucker	Lepomis spp.	Unident. cyprinid	Largemouth bass	Br. bullhead
<=19	.	.	.	.	.	.	.	.	.
25	.	.	.	.	.	.	4	.	.
35	.	.	9	3	.	.	.	.	.
45	.	.	10	11	2	.	.	.	.
55	.	.	7	19	4	.	.	.	.
65	.	.	10	6	3	.	.	.	.
75	.	2	11	4	1	.	.	.	.
85	.	3	1	4	.	.	.	.	.
95	.	5	1	10	.	.	.	.	.
105	.	.	.	5	.	.	.	.	.
115	.	1	.	2	.	.	.	.	.
125	.	1	.	.	.	.	.	.	.
135	1	.	.	.	.	.	.	.	.
145	.	1	.	.	.	.	.	.	.
155	.	.	.	.	.	.	.	.	.
165	.	.	.	.	1	.	.	.	.
175	.	.	.	.	.	.	.	.	.
185	.	.	.	.	.	.	.	.	.
195	.	.	.	.	.	.	.	.	.
205	.	.	.	.	.	.	.	.	.
215	.	.	.	.	.	.	.	.	.
225	.	.	.	.	.	.	.	.	.
235	.	.	.	.	.	.	.	.	.
245	.	.	.	.	.	.	.	.	.
255	.	.	.	.	.	.	.	.	.
265	.	.	.	.	.	.	.	.	.
275	.	.	.	.	.	.	.	.	.
285	.	.	.	.	.	.	.	.	.
295	.	.	.	.	.	.	.	.	.
305	.	.	.	.	.	.	.	.	.
315	.	1	.	.	.	.	.	.	.
325	.	.	.	.	.	.	.	.	.
335	.	.	.	.	.	.	.	.	.
345	.	.	.	.	.	.	.	.	.
355	.	.	.	.	.	.	.	.	.
365	.	.	.	.	.	.	.	.	.
375	.	.	.	.	.	.	.	.	.
385	.	.	.	.	.	.	.	.	.
395	.	.	.	.	.	.	.	.	.
>399	.	.	.	1	.	.	.	.	.

Table 5. Catch data for raft electrofishing surveys in the upper mainstem Eel River, 2015

Site: Eel below Trout Creek

General Station Data:

Date:	August 13, 2015
Start time, PDST:	15:30
Stop time, PDST:	18:41
GIS coordinate: deg. Latitude:	39.37164 to 39.37511
GIS coordinate: deg. Longitude:	-123.07303 to -123.07642
Elevation, ft:	1520
Personnel:	DH, LH, RT, GC, PK, PS
Air temperature, deg. C:	28.0 @ 15:00, 27.1 @ 18:34
Water temperature, deg. C:	22.5 @ 15:00, 22.8 @ 18:38
Station length, m:	962
Minimum RPA flow, cfs:	60
Estimated flow, cfs:	75
Measured flow, cfs:	79.1 E2 gage site, USGS final approved value
Water surface area, hectares:	No Data
Water volume, cu. m.:	No Data

Catch Data [1]:

Species	Pac. lamp. ammoc.	SH trout	Calif. roach	Sac. pikeminnow	Sac. sucker	Lepomis spp.	Unident. cyprinid	Largemouth bass	Br. bullhead
Catch Total	0	3	303	48	8	1	1	0	0

[1] One dead female steelhead trout, 635 mm FL, was also observed.

Table 6. Fork length distribution for raft electrofishing surveys in the mainstem Eel River

Site: Eel below Trout Creek
Date: August 13, 2015

Class Midpoint, mm	Pac. lamp. ammoc.	SH trout	Calif. roach	Sac. pikeminnow	Sac. sucker	Lepomis spp.	Unident. cyprinid	Largemouth bass	Br. bullhead
<=19	.	.	.	.	.	.	.	.	.
25	.	.	.	.	.	.	1	.	.
35	.	.	1	3	.	.	.	.	.
45	.	.	.	14	.	.	.	.	.
55	.	.	4	11	1	.	.	.	.
65	.	.	39	1	5	.	.	.	.
75	.	1	39	.	1	.	.	.	.
85	.	1	10	2	.	.	.	.	.
95	.	.	5	4	.	1	.	.	.
105	.	.	2	4	.	.	.	.	.
115	.	1	.	3	.	.	.	.	.
125	.	.	.	1	1	.	.	.	.
135	.	.	.	1	.	.	.	.	.
145	.	.	.	.	.	.	.	.	.
155	.	.	.	.	.	.	.	.	.
165	.	.	.	1	.	.	.	.	.
175	.	.	.	1	.	.	.	.	.
185	.	.	.	.	.	.	.	.	.
195	.	.	.	.	.	.	.	.	.
205	.	.	.	.	.	.	.	.	.
215	.	.	.	.	.	.	.	.	.
225	.	.	.	.	.	.	.	.	.
235	.	.	.	.	.	.	.	.	.
245	.	.	.	.	.	.	.	.	.
255	.	.	.	.	.	.	.	.	.
265	.	.	.	.	.	.	.	.	.
275	.	.	.	.	.	.	.	.	.
285	.	.	.	1	.	.	.	.	.
295	.	.	.	.	.	.	.	.	.
305	.	.	.	.	.	.	.	.	.
315	.	.	.	1	.	.	.	.	.
325	.	.	.	.	.	.	.	.	.
335	.	.	.	.	.	.	.	.	.
345	.	.	.	.	.	.	.	.	.
355	.	.	.	.	.	.	.	.	.
365	.	.	.	.	.	.	.	.	.
375	.	.	.	.	.	.	.	.	.
385	.	.	.	.	.	.	.	.	.
395	.	.	.	.	.	.	.	.	.
>399	.	.	.	.	.	.	.	.	.

Table 7. Historical raft electrofishing survey dates and catch results for Sacramento pikeminnow

SECTION NAME	LOWER BOUNDARY	UPPER BOUNDARY		Early May 1990	Late August 1990	Early August 1991	Late August 1991	Late August 1992	Early Sept. 1992	Late August 1995	Late August 2005	Late August 2006	Early August 2007	Mid-August 2008	Mid-August 2009	Mid-August 2010	Mid-August 2011	Mid-August 2012	Mid-August 2013	Mid-August 2014	Mid-August 2015
Pool below Scott Dam	1st riffle below Scott Dam	Scott Dam		No Survey	No Survey	No Survey	No Survey	No Survey	No Survey	No Survey	No Survey	No Survey	No Survey	No Survey	No Survey	No Survey	No Survey	No Survey	No Survey	No Survey	No Survey	AUG 11
			Total pikeminnow catch =																		2
Above Soda Cr.	Soda Cr. Bridge	Scott Dam		MAY 8	AUG 27	AUG 7	AUG 26	No Survey	1 POOL *	No Survey	AUG 16	No Survey	No Survey	No Survey	No Survey	No Survey	No Survey	No Survey	No Survey	No Survey	No Survey	No Survey
			Total pikeminnow catch =	**24**	**78**	**30**	**111**		**0**		**6**										
Above Benmore Cr.	Benmore Cr.	1/2 mi. upstream		MAY 8	AUG 27	AUG 7	AUG 28	AUG 31	SEP 2	AUG 30	AUG 25	AUG 29	AUG 7	AUG 19	AUG 11	AUG 12 / 19	No Survey	AUG 13	AUG 12	AUG 14	AUG 10
			Total pikeminnow catch =	**16**	**88**	**57**	**66**	**32**	**27**	**39**	**3**	**20**	**20**	**34**	**35**	**25**		**18**	**71**	**90**	**74**
Above Bucknell Cr.	Bucknell Cr.	1/2 mi. upstream		MAY 8	No Survey	AUG 6	No Survey	No Survey	No Survey	No Survey	AUG 26	AUG 28	AUG 7	AUG 18	AUG 11	AUG 11	No Survey	AUG 14	AUG 13	AUG 20	AUG 13
			Total pikeminnow catch =	**5**		**2**					**0**	**3**	**11**	**11**	**4**	**1**		**4**	**26**	**33**	**65**
Below Trout Cr.	3/4 mi below Hippy Rock	Hippy Rock		MAY 8	AUG 29	AUG 6	AUG 28	AUG 31	SEP 3	AUG 31	AUG 26	AUG 29	AUG 6	AUG 18	AUG 12	AUG 11	No Survey	AUG 14	AUG 13	AUG 20	AUG 13
			Total pikeminnow catch =	**28**	**55**	**24**	**148**	**53**	**20**	**38**	**5**	**19**	**85**	**71**	**97**	**12**		**68**	**140**	**101**	**48**
Mill	L.P. Mill ***	Pioneer Bridge		MAY 7	No Survey	AUG 7	No Survey	No Survey	No Survey	No Survey	No Survey	No Survey	No Survey	No Survey	No Survey	No Survey	No Survey	No Survey	No Survey	No Survey	No Survey	No Survey
			Total pikeminnow catch =	**11**		**38**															
Van Arsdale	Cape Horn Dam	L.P. Mill ***		MAY 7	AUG 30	No Survey	No Survey	No Survey	No Survey	No Survey	No Survey	No Survey	No Survey	No Survey	No Survey	No Survey	No Survey	No Survey	No Survey	No Survey	No Survey	No Survey
			Total pikeminnow catch =	**13**	**14**																
Pool below Cape Horn Dam	Middle of pool	Cape Horn Dam		No Survey	No Survey	No Survey	No Survey	No Survey	No Survey	No Survey	No Survey	No Survey	No Survey	No Survey	No Survey	No Survey	No Survey	No Survey	No Survey	No Survey	No Survey	AUG 11
			Total pikeminnow catch =																		**7**

* On Sept. 2, 1992, a large pool above Soda Cr. was sampled; the rest of the station was not shocked.

*** Was "Lower L.P. Mill" in 1990 and renamed "Fish Rescue Site" in 1991.
"L.P. Mill" now includes both of these specific locations.

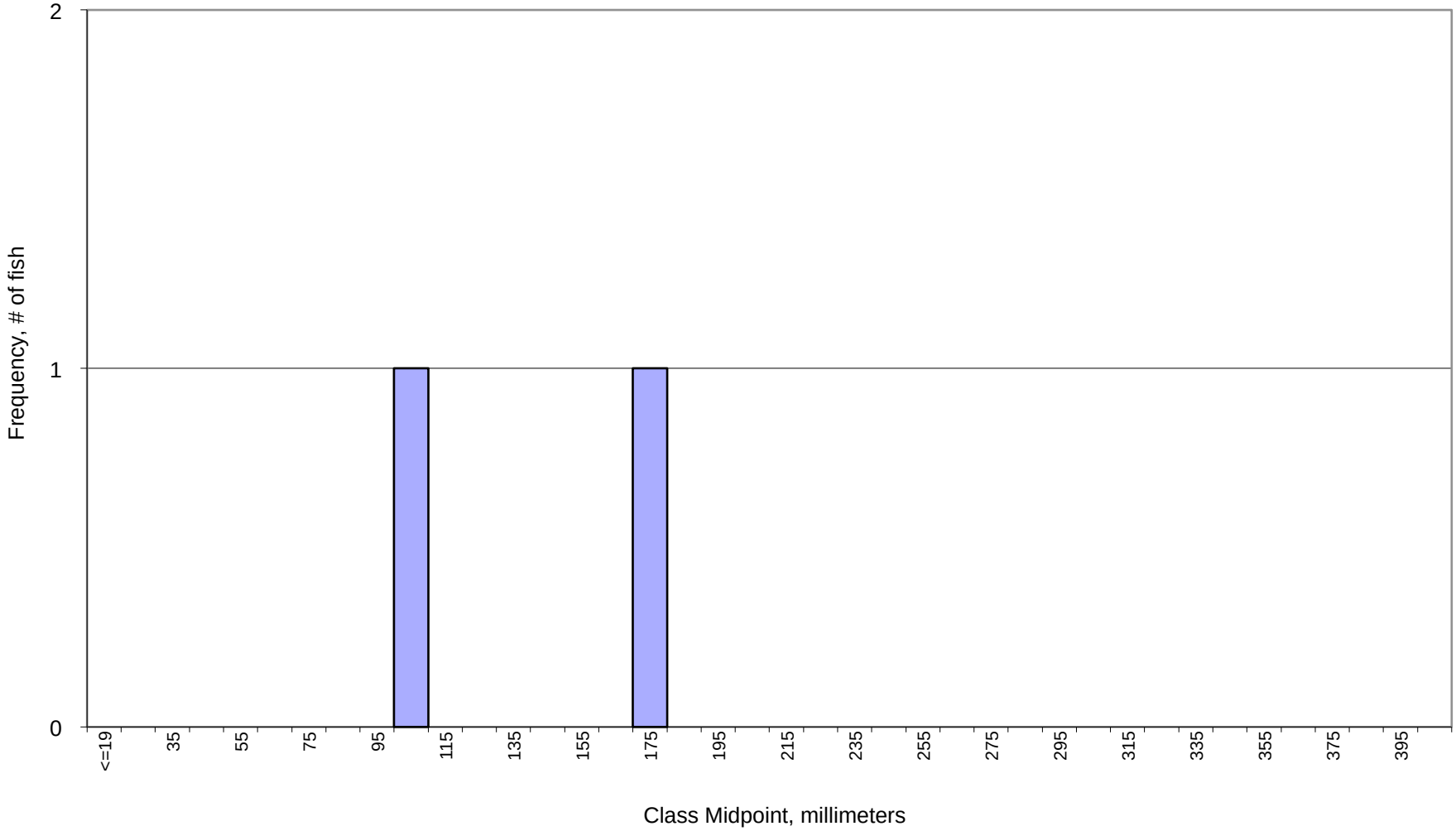
No raft surveys were done in 1993-94, 1996-2004, and 2011.

Eel above Benmore Creek

Figure 1. Fork length distribution for raft electrofishing surveys in the mainstem Eel River

August 10, 2015

Species: steelhead trout



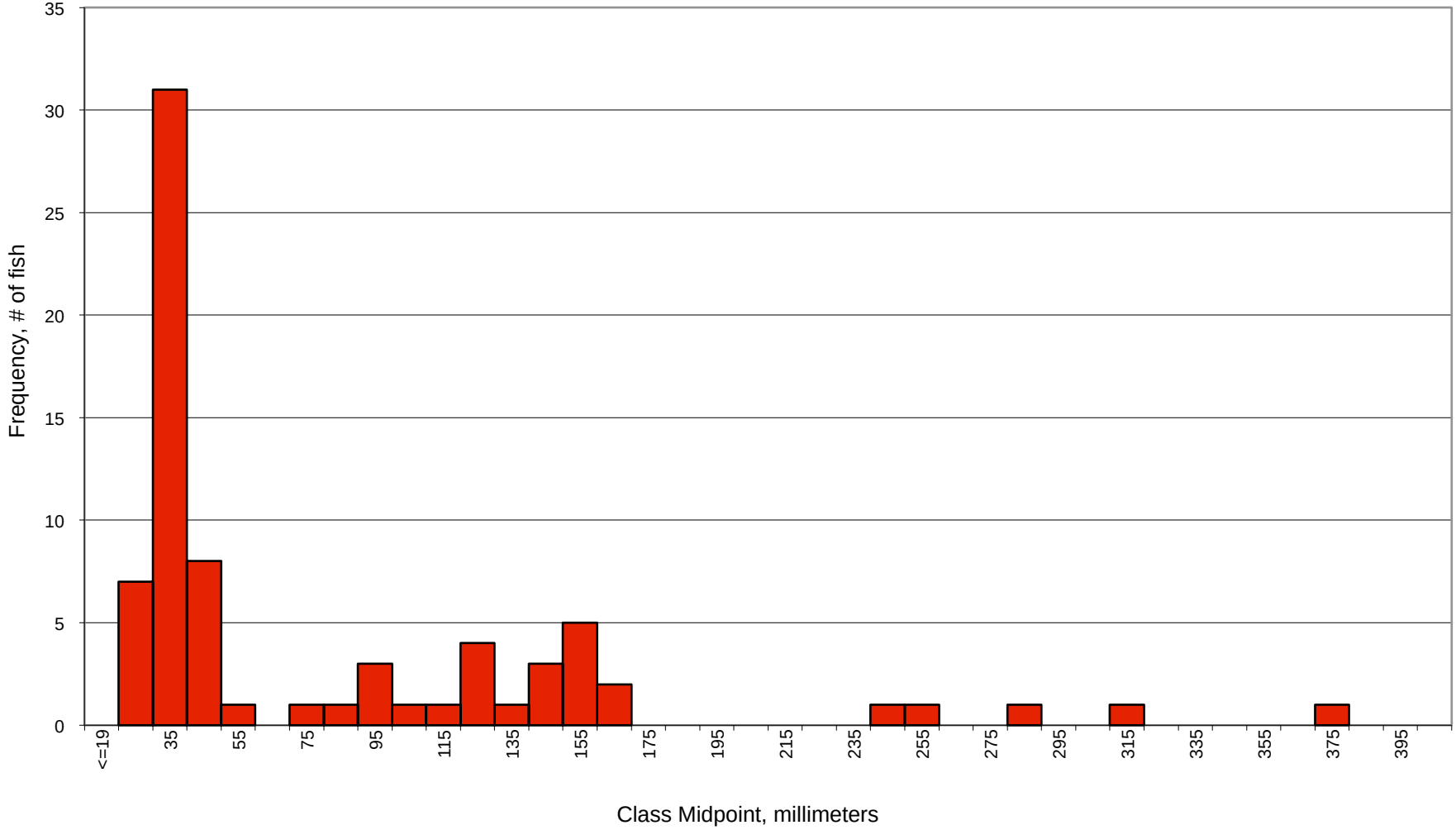
E_Raft_BENM.xls steelhead

Eel above Benmore Creek

Figure 2. Fork length distribution for raft electrofishing surveys in the mainstem Eel River

August 10, 2015

Species: Sacramento pikeminnow



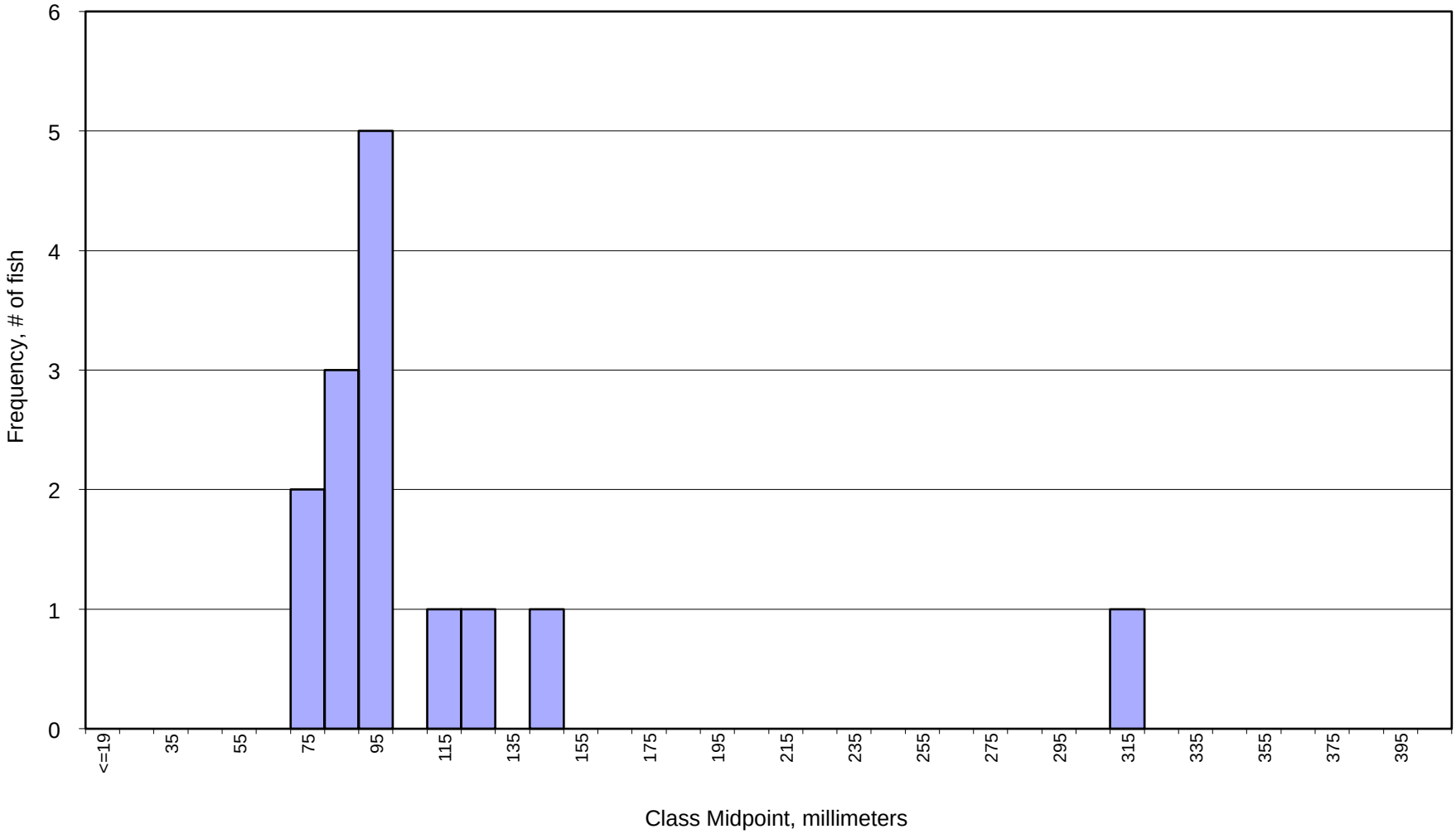
E_Raft_BENM.xls pikeminnow

Eel above Bucknell Creek

Figure 3. Fork length distribution for raft electrofishing surveys in the mainstem Eel River

August 13, 2015

Species: steelhead trout

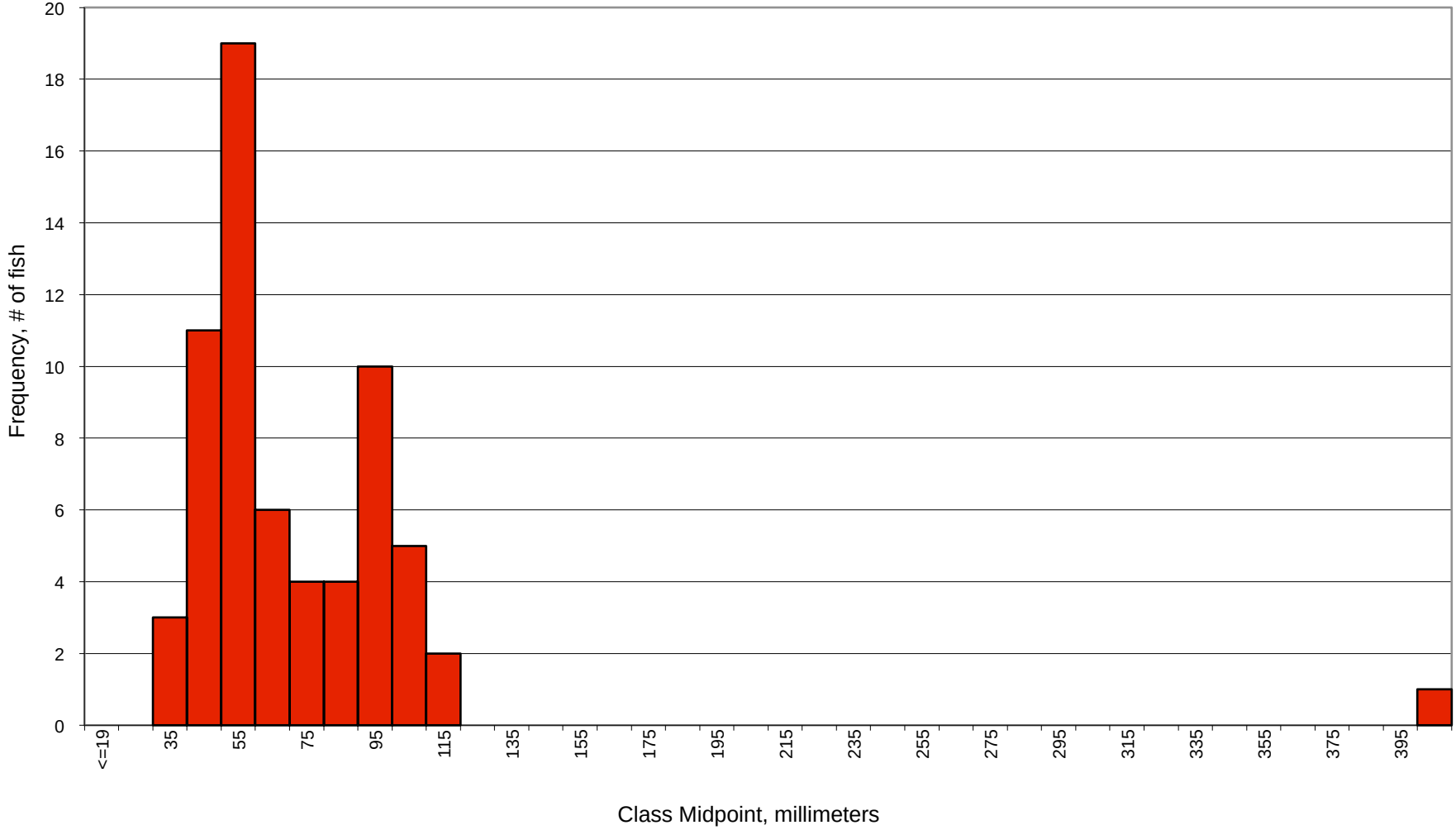


Eel above Bucknell Creek

Figure 4. Fork length distribution for raft electrofishing surveys in the mainstem Eel River

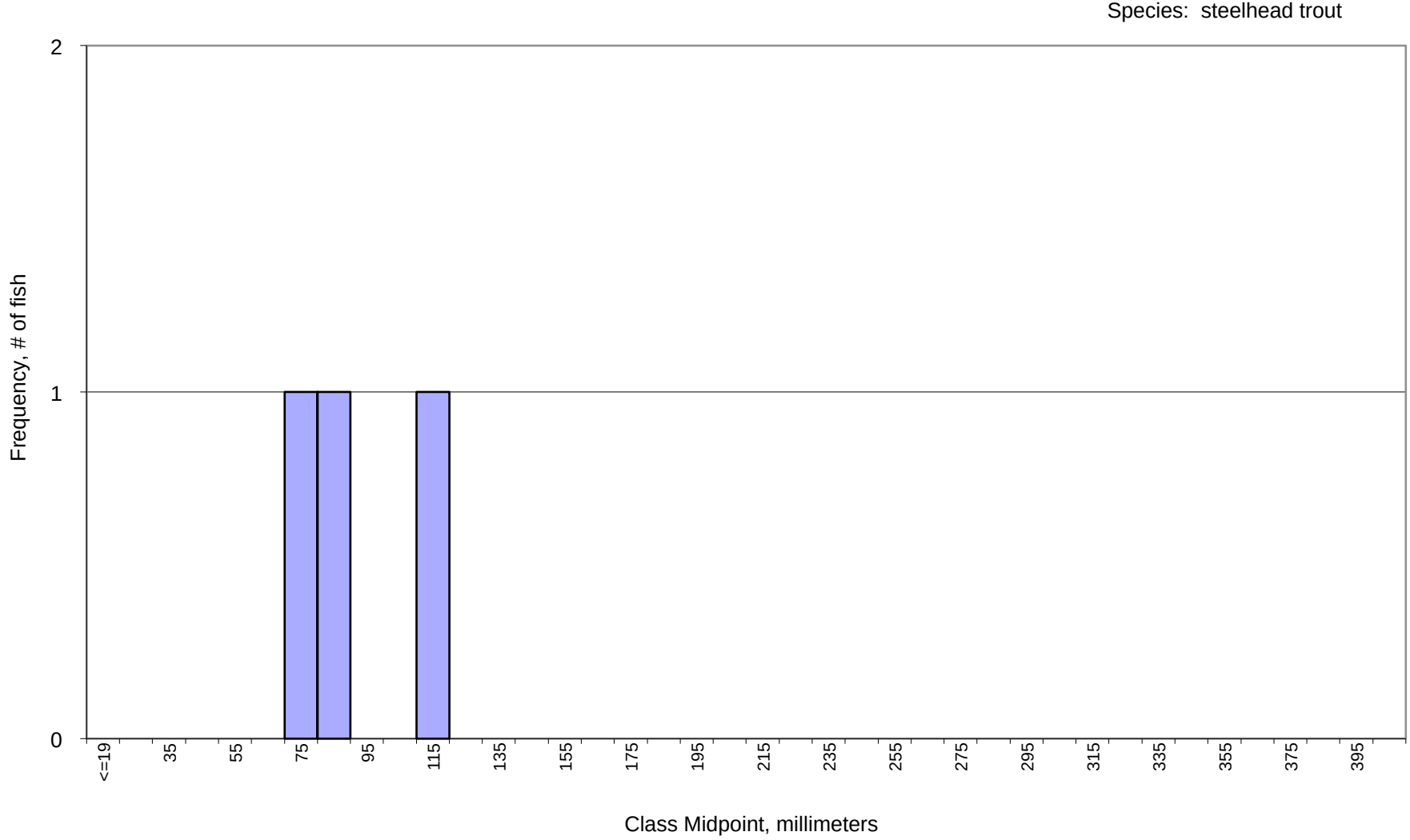
August 13, 2015

Species: Sacramento pikeminnow



E_Raft_BUCK.xls pikeminnow

Figure 5. Fork length distribution for raft electrofishing surveys in the mainstem Eel River

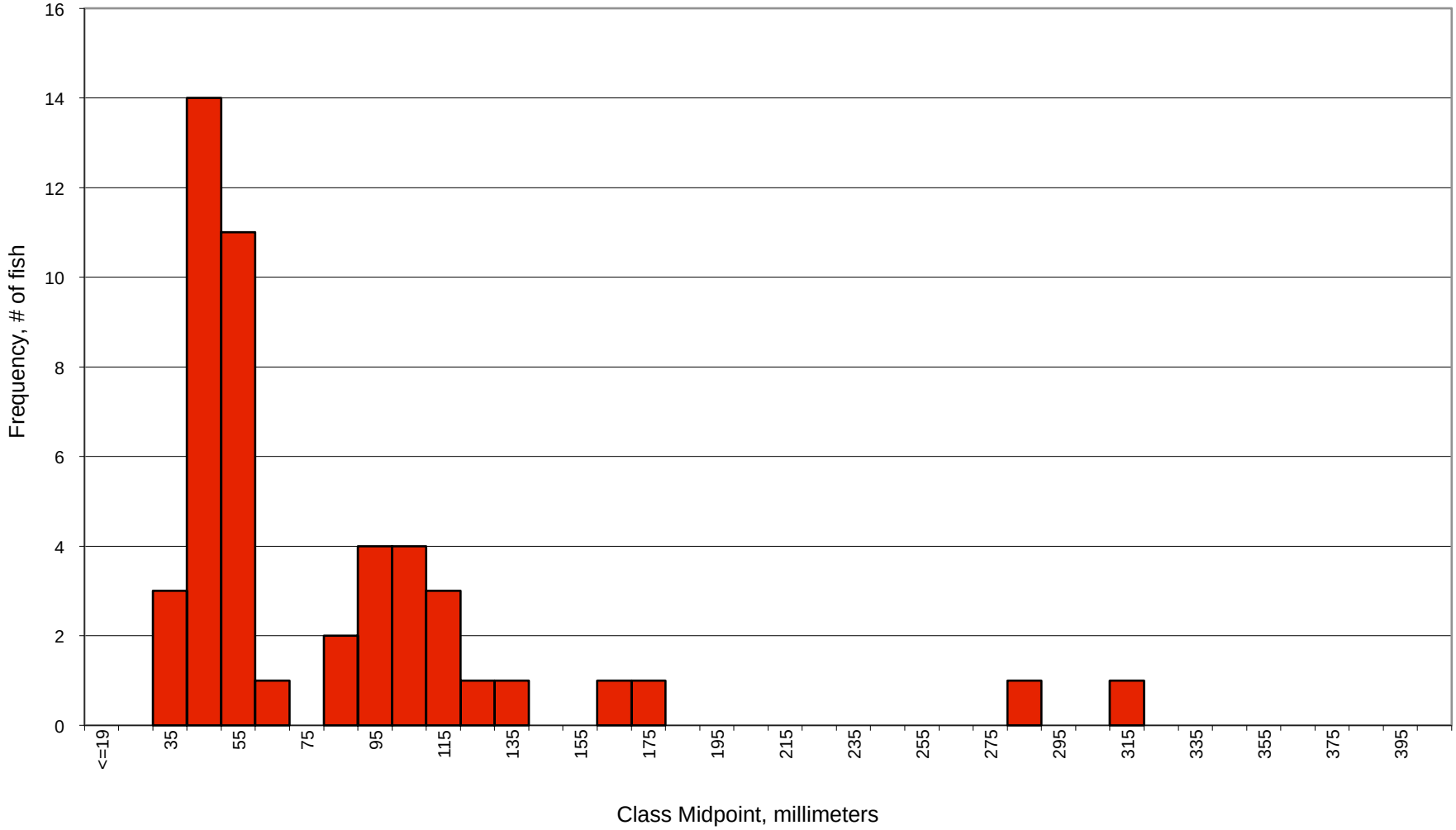


Eel below Trout Creek

Figure 6. Fork length distribution for raft electrofishing surveys in the mainstem Eel River

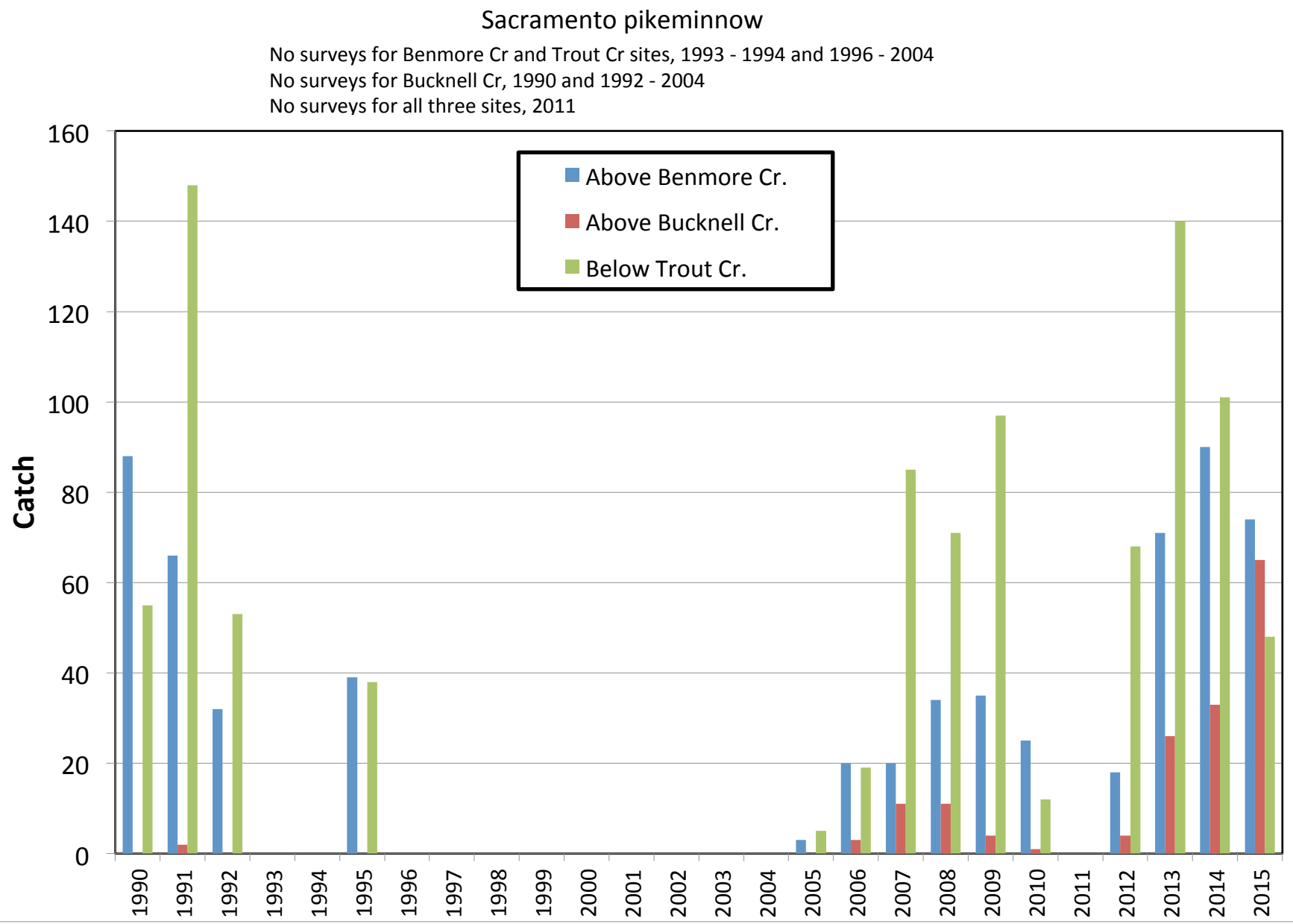
August 13, 2015

Species: Sacramento pikeminnow



E_Raft_HIPY.xls pikeminnow

Figure 7. Historical raft electrofishing catch data for surveys during August in the Mainstem Eel River above Cape Horn Dam



PIKEMINNOW ADAPTIVE MANAGEMENT AND SUPPRESSION OPERATION PLANS

Addressing
RPA Section G.2
and
RPM 1 and RPM 2

Potter Valley Hydroelectric Project
FERC Project No. 77

Prepared By:

Pacific Gas and Electric Company™

October 2005

Appendix A

Pikeminnow Monitoring and Suppression Results, 2015

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Section & Description **Page**

1.0 INTRODUCTION

The January 28, 2004 FERC amendment to the Potter Valley Project (Project) license incorporated as part of Article 52 NMFS' Reasonable and Prudent Alternative (RPA) Section G.2, Reasonable and Prudent Measure (RPM) 1, and RPM 2. RPM 1 requires the Licensee to prepare an Adaptive Management Plan for the suppression of Sacramento pikeminnow in and around the Project area. RPM 2 requires the Licensee to file annual Pikeminnow Suppression Operations Plans for the remaining term of the Project license. Because these two RPMs are significantly related, Licensee has combined the two plans into this one document. As described more fully below, for at least the first five years of implementation, Licensee's compliance with the Adaptive Management Plan described in Section 2.0 below will satisfy the obligation in RPM 2 to file an annual Pikeminnow Suppression Operations Plan. It is anticipated that after five or more years of adaptive management, the annual Pikeminnow Suppression Operations Plans will reflect the best pikeminnow management and monitoring practices identified through the adaptive management process, and will not materially change from year to year.

1.1 RPA Section G.2, RPM 1 and RPM 2

The relevant section of the RPA Section G.2 quoted from Appendix A of the license and is shown in italic typeface below:

PG&E shall, in coordination with the resource agencies, develop a five year adaptive management plan for the suppression of Sacramento pikeminnow. The plan should concentrate on efforts to suppress pikeminnow in the reach of the Eel River between Scott Dam and Van Arsdale Reservoir, in Van Arsdale Reservoir and around and below both dams. The adaptive management plan should accomplish the following objectives:

- *Quantify pikeminnow and steelhead distribution, abundance, and size-class structure in the Eel River between Scott and Cape Horn Dams.*
- *Employ and evaluate various techniques for pikeminnow suppression.*
- *Monitor immediate effects of suppression efforts on rearing steelhead, pikeminnow, and other species.*
- *Monitor the response of pikeminnow and rearing juvenile steelhead at the end of the summer following suppression efforts.*

RPM 1 and RPM 2 are quoted from the Appendix B of the license and are shown in italic typeface below:

Measure 1. Pikeminnow Supression (sic). *The licenses shall develop in consultation with the National Marine Fisheries Service (NMFS), U.S. Fish and Wildlife Service (USFWS), U.S. Forest Service (USFS), Round Valley Indian Tribes (RVIT), and California Department of Fish and Game (CDFG) an adaptive management plan for the suppression of pikeminnow in and around the Project area as specified in the Reasonable and Prudent Measures (RPA) attached to*

the body of this order as Appendix A. The plan shall specify details of activities to suppress pikeminnow, including methods, the establishment of index pools, and shall define success criteria.

The following terms and conditions implement Measure 1: By April 15, 2003, the Licensee shall file a pikeminnow adaptive management plan for the suppression of pikeminnow for NMFS approval. Prior to filing its plan with NMFS, the Licensee shall consult with NMFS, USFWS, USFS, RVIT, and CDFG on the proposed pikeminnow adaptive management plan. The Licensee shall include with the plan documentation of any consultation with RVIT and the agencies, copies of comments and recommendations on the completed plan after it has been prepared and provided to the RVIT and agencies, and specific descriptions of how the RVIT's and agencies' comment and recommendations are accommodated by the plan. The licensee shall allow a minimum of 30 days for the agencies to comment and make recommendations before filing the plan with NMFS. If the Licensee does not adopt a recommendation, the filing shall include its reasons, based on site-specific information. The NMFS shall reserve the right to require changes to the plan. The plan shall be delivered to:

Northern California Supervisor
Protected Resources Division
777 Sonoma Avenue, Room 325
Santa Rosa, California 95404-4731

Measure 2. Pikeminnow Supresion (sic) *Operation Plan. For each year of the remaining term of the license, including any extensions or annual licenses which may be issued, the Licensee shall with NMFS for approval a pikeminnow suppression operations plan. The operations plan shall include at a minimum: 1) specific activities planned, and provisions for funding and monitoring; 2) the status of ongoing activities and results of any salmonid or pikeminnow related monitoring studies; 3) the success of pikeminnow suppression efforts; 4) any recommended modifications to project facilities or operations and other recommended actions to minimize pikeminnow predation on listed salmonids in the Eel River system.*

The following terms and conditions implement Measure 2: The Licensee shall annually filed (sic) with NMFS for approval a pikeminnow suppression operations plan. The plan shall include details of specific activities planned for pikeminnow suppression, specify flow manipulations, and specify areas to be treated. Suppression efforts should focus on suppressing pikeminnow in the reach of Eel River between Scott Dam and the Van Arsdale Reservoir, in the Van Arsdale Reservoir, and around and below both dams. Also, each annual operations plan shall consider the results of previous year plans in justification of the current year operations. The operations plan for the current year shall be filed with NMFS by June 1 of each year. The NMFS shall reserve the right to require changes in the plan. The plan shall be delivered to the Northern California Supervisor of the Protected Resources Division at address indicated above.

The Licensee shall annually file with NMFS the results of salmonid or pikeminnow related monitoring studies, and report on the success of pikeminnow suppression efforts. In addition, the Licensee may make recommendations for modifications to the Project facilities or operations and other recommended actions to minimize pikeminnow predation on listed salmonids in the

Eel River system. Results shall be filed by April 15 of each year. Results shall be delivered to the Northern California Supervisor of the Protected Resources Division at the address indicated above.

1.2 Agency Consultation

The Licensee transmitted the initial draft of these plans 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, July 7, and August 4, 2005, to further discuss the scope of monitoring measures required under the RPA and RPMs.

2.0 PIKEMINNOW ADAPTIVE MANAGEMENT PLAN (RPM 1)

2.1 Background

The 12-mile section of the Eel River between Scott and Cape Horn dams historically provided excellent cool-water rearing habitat for juvenile steelhead trout during the summer. Growth rates of approximately 25 mm per month were documented during the 10-year Article 39 Monitoring Study (SEC, 1998). However, the production of juvenile steelhead in this section appears to have been compromised by high densities of the non-native, predatory Sacramento pikeminnow since about 1986. Prior to 1986, summer rearing populations in this 12-mile section were sufficient to maintain wild adult steelhead returns in excess of 1,000 fish in many years. By the 1988/89 season (when juveniles from the 1986 brood year would begin returning as adults), wild steelhead returns to Van Arsdale Fisheries Station had dropped to 138 fish. Since that time, wild steelhead returns have ranged from 19 to 355 fish. Brown and Moyle (1991a) observed that juvenile steelhead in the South Fork Eel and Van Duzen rivers were restricted almost exclusively to riffles in the presence of pikeminnow. This shift in habitat away from pools and deeper parts of the stream channel may be a significant dynamic limiting production of smolts between the two dams.

In addition to effects on rearing habitat, Chinook salmon and steelhead are also adversely affected by pikeminnow predation during downstream migration. Brown and Moyle (1997) documented the opportunistic consumption of juvenile salmonids (mainly Chinook salmon) primarily during outmigration. Predation by pikeminnow in the vicinity of the Project is summarized by Brown and Moyle (1991b): "The potential for significant predation is highest in the area between Pillsbury and Van Arsdale reservoirs, where large populations of adult [pikeminnow] and over summering juvenile steelhead co-occur, and in the area below Van Arsdale where late emigrating salmonids encounter [pikeminnow] when the water is clear and warm, conditions which favor [pikeminnow] predation."

2.2 Goals

The overall goal of the Pikeminnow Adaptive Management Plan is to employ and evaluate various techniques for pikeminnow suppression to determine whether it is possible to reduce

pikeminnow predation and improve conditions for rearing salmonids (primarily steelhead) in the vicinity of the Project. Initially, Licensee shall implement the pikeminnow suppression and monitoring activities described in Section 3.0 below. These activities may be modified as described below through the adaptive management process.

2.3 Adaptive Management Process

2.3.1 Overview

The adaptive management process is specific for pikeminnow planning, monitoring, and suppression activities, the elements provided for under RPMs 1 and 2. This process will begin in 2006 and continue for at least the following five years. Adaptive management offers the opportunity to try various management applications, assess their value, then pursue those deemed most beneficial in the long term. A non-exhaustive list of pikeminnow suppression and monitoring elements considered for potential inclusion in the Pikeminnow Suppression Operation Plan is attached as Exhibit A (original list of options that might be considered). This list was reviewed and discussed by NMFS and Licensee at a meeting on March 25, 2005. Based on this review and further consultation with NMFS, CDFG and the Tribes, the specific study elements listed in Section 4, Table 2 and described in Sections 3.2 and 3.3 below have been selected for implementation in the 2005 and 2006 study seasons.

Changes to the Pikeminnow Suppression Operation Plan adopted through the adaptive management process are intended to be minor changes to plan details (e.g. refinement of suppression and monitoring sites, changes in equipment or specific methodologies) consistent with: (1) Article 52[a] and Appendix A, Section G2 of the Order Amending the License for the Project, and (2) the goals of RPMs 1 and 2. Wholesale changes to the plan are not intended. Any proposed changes must be necessary for the further effective implementation or improvement of the plan and must be justifiable to be considered as a potential adaptive change.

2.3.2 Process and Timeline for Management Adaptations (Plan changes)

The process and timeline for the consideration and approval of proposed adaptive changes to the Operational Plan are as follows:

1. Written adaptive change(s) shall be submitted and received by NMFS no later than February 1st to be considered for a change in that same year. The proposing party is responsible for distributing copies of the proposed adaptive change(s) to designated representatives of Licensee, the resource agencies, and the Tribes within the same time period described in the previous sentence.

2. Each written proposed adaptive change must include: (a) the proposed change; (b) a description of why the proposed change is necessary; and (c) a readily recognizable justification for the proposed change.

3. NMFS shall notify designated representatives of Licensee, the resource agencies, and the Tribes and shall set-up consultation with the parties via telephone conference, e-mail

exchange, or a meeting. Notification shall be made no later than February 15th, and consultation shall be completed no later than March 15th. At the conclusion of consultation, NMFS shall make a final decision to either approve or reject the proposed adaptive change(s).

4. If NMFS rejects the proposed change(s), it shall submit a letter to its file documenting its rejection, and shall distribute a copy of the letter to designated representatives of Licensee, the resource agencies, and the Tribes. The rejection letter shall state the decision to reject and provide a brief explanation for the decision.

5. Directly following consultation, and if and upon NMFS' approval of a proposed adaptive change and/or changes, NMFS must notify Licensee of its decision to approve, including the approved revised plan language (adaptive change), received no later than March 31st. The notification shall include the approved revised plan adaptive change language.

6. Upon receipt of NMFS' notification (described immediately above), Licensee shall modify the previous plans and distribute the revised plan to NMFS, the resource agencies, the Tribes, and FERC no later than April 15th.

7. The revised plan reflecting the approved adaptive change(s) shall be effective April 15th of the year the adaptive change was approved.

Proposed adaptive changes shall be considered, the review process completed, and approved changes in the plan will be implemented in the same year they are proposed. During the period the Adaptive Management Plan is in effect, the adaptive management process satisfies the requirement in RPM 2 for Licensee to file annual pikeminnow suppression operation plans.

3.0 PIKEMINNOW SUPPRESSION OPERATION PLAN (RPM 2)

3.1 Goals

The primary goals of the Pikeminnow Suppression Operation Plan are to:

Goal 1. Quantify the pikeminnow and steelhead distribution, abundance, and class-size structure in the Eel River between Scott and Cape Horn dams;

Goal 2. Employ and evaluate various techniques for pikeminnow suppression;

Goal 3.. Monitor the immediate effects of suppression efforts on rearing juvenile steelhead, pikeminnow, and other species; and

Goal 4. Monitor the response of rearing juvenile steelhead and pikeminnow at the end of the summer following suppression efforts.

The first goal will be accomplished through monitoring efforts upstream of Van Arsdale Reservoir, as described in Section 3.2 below. Data collected annually at specified index reaches

will provide an ongoing index-based trend analysis that will be utilized to quantify pikeminnow and steelhead distribution, abundance, and size class structure in the Eel River between Scott and Cape Horn dams.

The second through fourth goals will be accomplished initially through pikeminnow suppression and monitoring activities in Van Arsdale Reservoir and in the pools immediately below Cape Horn Dam, as described in Section 3.3 below. Consistent with the Adaptive Management Plan set forth in Section 2.0 above, the monitoring and pikeminnow suppression activities described in Sections 3.2 and 3.3 may be modified in future years.

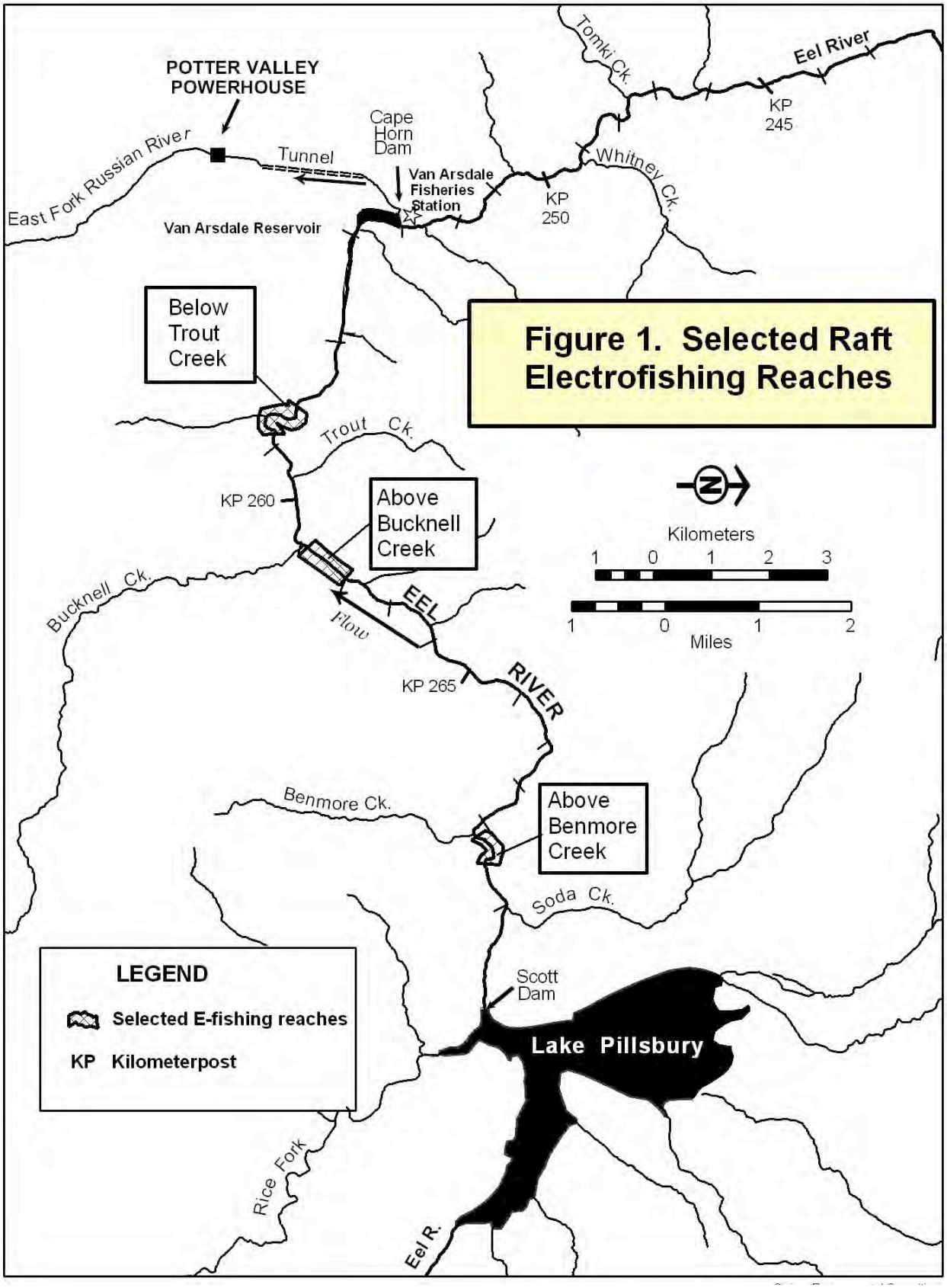
3.2 Monitoring Upstream of Van Arsdale Reservoir (*Goal 1*)

3.2.1 Selected Index Reaches

Initially, the three index reaches identified on Figure 1 will be monitored. The geographic coordinates for the upstream and downstream boundaries of these reaches are presented in Table 1 below. Consistent with the adaptive management process, additional index reaches may be added or less productive index reaches may be eliminated in future years. The geographic coordinates for the upper and lower boundaries of each sampling reach are presented in Table 1 below.

Table 1. Geographic coordinates for the upstream and downstream boundaries of the selected index reaches for monitoring pikeminnow and steelhead distribution, abundance, and size class structure in the Eel River between Scott and Cape Horn Dams.

Index Reach	Upstream Boundary	Downstream Boundary
Below Trout Creek	N 39.37165° W 123.07301°	N 39.37511° W 123.07642°
Above Bucknell Creek	N 39.38209° W 123.04557°	N 39.37679° W 123.05040°
Above Benmore Creek	N 39.40759° W 122.98914°	N 39.40509° W 122.99341°


POTTER VALLEY POWERHOUSE
East Fork Russian River
Tunnel
Cape Horn Dam
Van Arsdale Fisheries Station
Van Arsdale Reservoir
Tomki Ck.
Eel River
KP 245
KP 250
Whitney Ck.
Below Trout Creek
Figure 1. Selected Raft Electrofishing Reaches
Trout Ck.
KP 260
Above Bucknell Creek
Bucknell Ck.
EEL
flow
RIVER
KP 265
Kilometers
1 0 1 2 3
1 0 1 2
Miles
Benmore Ck.
Above Benmore Creek
Soda Ck.
Scott Dam
Lake Pillsbury
LEGEND
Selected E-fishing reaches
KP Kilometerpost
Rice Fork
Eel R.

3.2.2 Methods for Data Collection and Reduction

Initially, raft electrofishing will be used for sampling at each selected index reach. A single pass will be made and species, size, and numbers of fish will be recorded for all sampled fish. Collected Sacramento pikeminnow will be removed from the river after enumeration. These data will be entered in a database. Length frequency distributions will be calculated and graphed for pikeminnow and steelhead. Age-class composition will be inferred from length frequency distributions using available literature as a guideline (assuming comparable data are available), provided that relatively distinct modal distributions are present. Catch numbers for these two species will be tabulated, graphed, and referenced against previously collected data to facilitate analysis of possible trends. Catch data for pikeminnow and juvenile steelhead are available for these index reaches from previous studies conducted cooperatively by Licensee, CDFG, and the University of California at Davis (SEC 1992). These historic data may be useful in evaluating trends. Consistent with the Adaptive Management Plan set forth in Section 2.0, other monitoring techniques may be evaluated or employed in future years.

3.2.3 Study Schedule

Monitoring surveys will be conducted annually during the period from early August to early September beginning in 2005 to maximize compatibility with previously collected data.

3.2.4 Criteria for Determining Success

The criteria for success will be to accomplish the following: (1) index reaches in the Eel River between Scott and Cape Horn dams are monitored in accordance with Section 3.2.3 (Study Schedule) to quantify steelhead and pikeminnow distribution, abundance, and size class structure; (2) provisional data are provided to the resource agencies and Tribes by November 15 of each year in which the data was collected; and (3) final data are compiled and provided to the resource agencies and Tribes by April 15 of each year following data collection.

3.3 Pikeminnow Suppression and Monitoring In Van Arsdale Reservoir and In the Pools Immediately Below Cape Horn Dam (*Goals 2 – 4*)

3.3.1 Available Previously Collected Data

CDFG conducted trial suppressions of pikeminnow in Van Arsdale Reservoir and in pools below Cape Horn Dam using detonation cord in 1996, and are documented in a field report (CDFG 1996). In a separate suppression trial, CDFG deployed a gill net about 50 yards below the dam in 1990 (A. Grass personal communication) though little data resulted from this effort. Also, there are numerous anecdotal observations of large adult pikeminnow staged under the cover of various structures near the diversion throughout the period from 1986 to the present.

3.3.2 Selected Sites

Initially, the pikeminnow suppression and monitoring activities will be conducted in Van Arsdale Reservoir, in the pool between Cape Horn Dam and the velocity barrier structure, and in the pool immediately below the velocity barrier (figures 2-5). Exact netting locations will be selected during pretreatment observations based upon areas of highest pikeminnow densities.

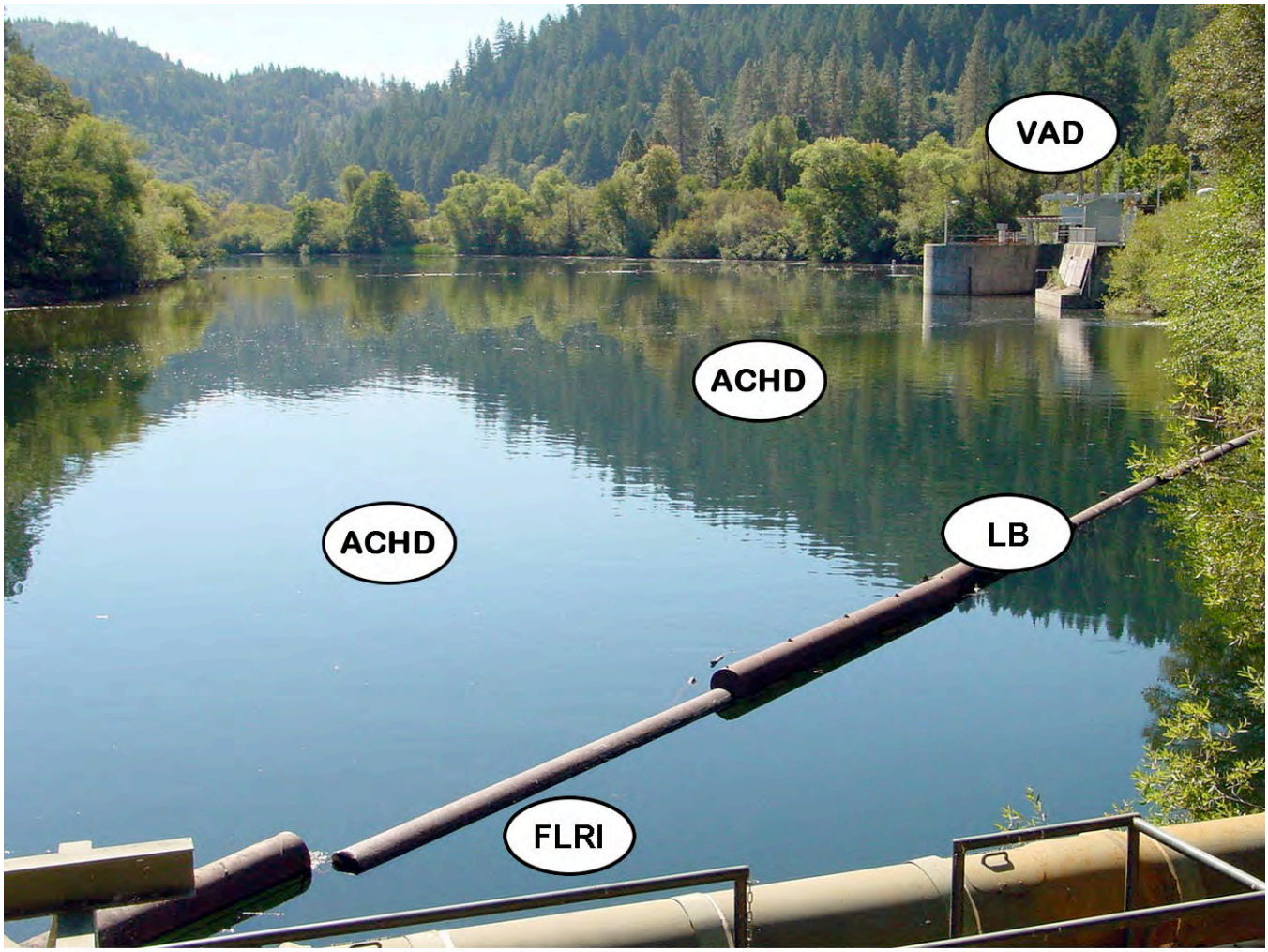


Figure 3: Example of pikeminnow suppression area near the Van Arsdale diversion.

LEGEND

ACHD - suppression pool above Cape Horn Dam
FLRI - fish ladder/reservoir interface
LB - "log boom"
VAD - Van Arsdale diversion intake and fish screen

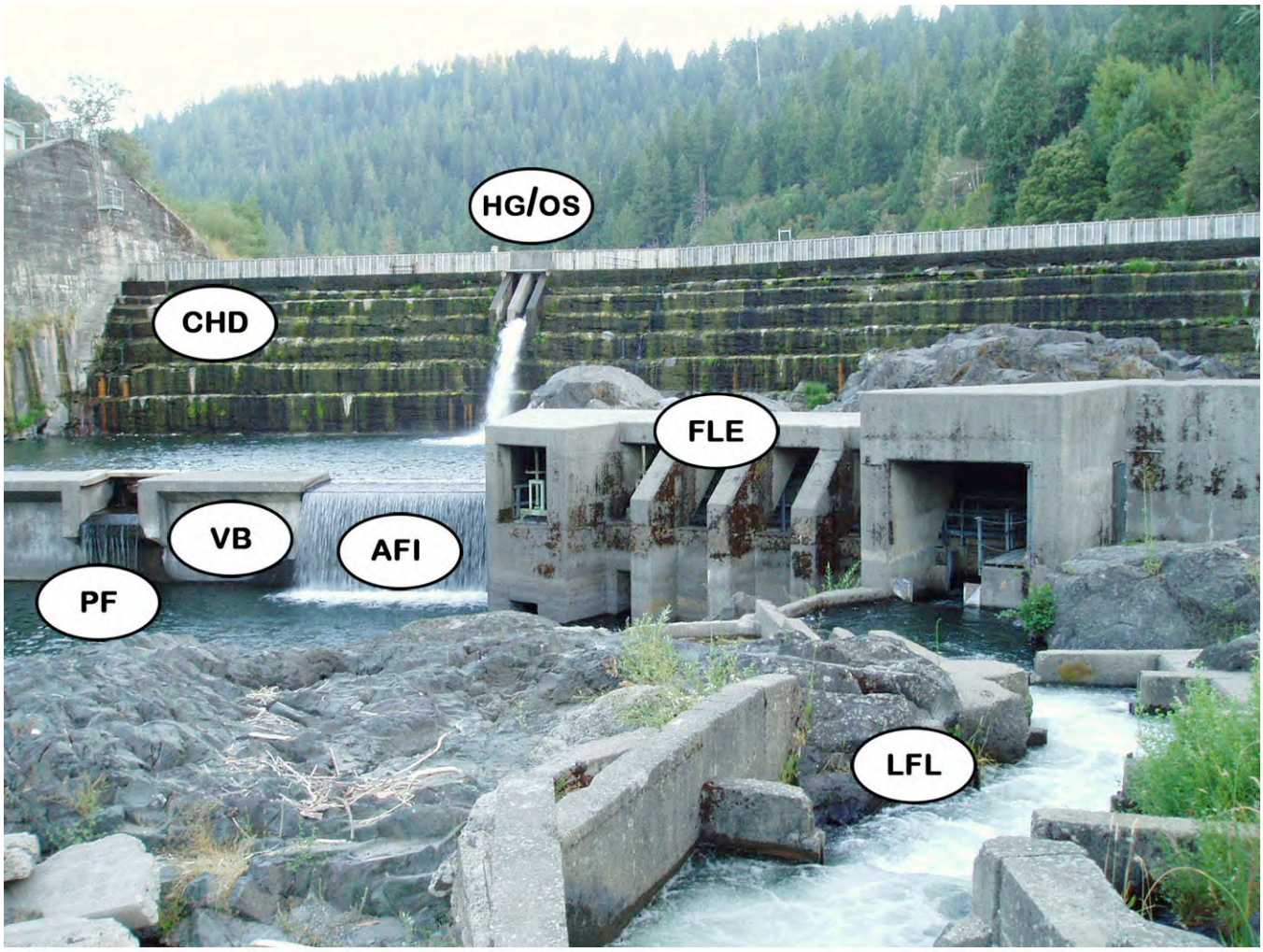


Figure 4: Structures below Cape Horn Dam.

LEGEND

AFI - supplemental attraction flow intake with fish screen
CHD - Cape Horn Dam (shown with 4-foot flash boards in place)
FLE - fish ladder entrance (*fish hotel, bunker*)
HG/OS - hydraulic gates with ogee spillway (east and west gates)
LFL - lower fish ladder
PF - Parshall flume
VB - velocity barrier (fish barrier)

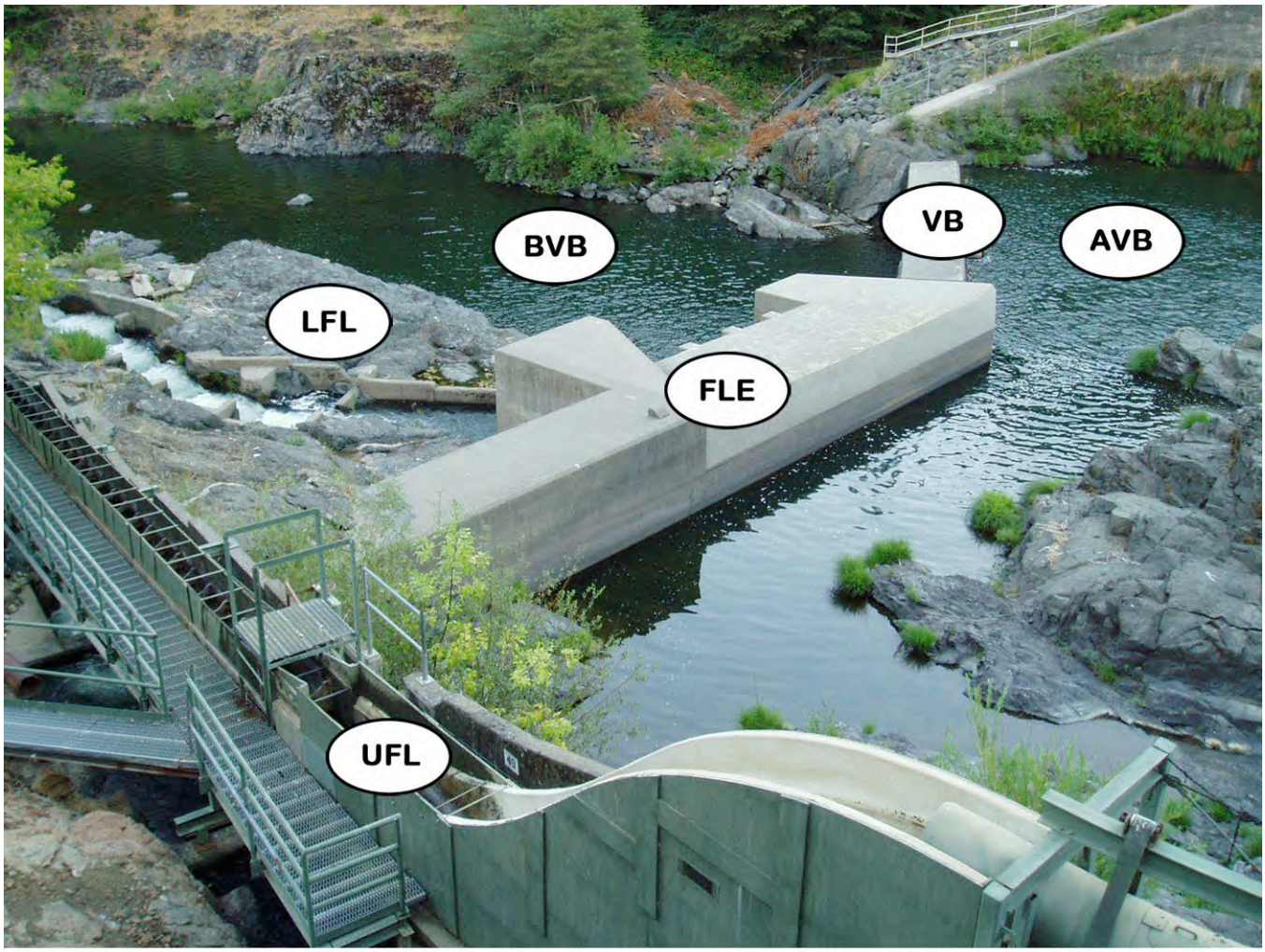


Figure 5: Pikeminnow suppression areas below Cape Horn Dam.

LEGEND

AVB - suppression pool above the velocity barrier
BVB - suppression pool below the velocity barrier
FLE - fish ladder entrance (*fish hotel, bunker*)
LFL - lower fish ladder
UFL - upper fish ladder shown with ogee spillway and outmigrant *mini-ladder*
VB - velocity barrier (fish barrier)

3.3.3 Methods for Data Collection and Reduction

Gill netting will be the primary means for capturing and removing pikeminnow from the treated areas. Trammel nets also will be considered as an alternative to gill nets because they tend to minimize mortality to non-target steelhead and they sample a broader size range of fish. Consistent with the Adaptive Management Plan set forth in Section 2.0, other methods may be evaluated or employed in future years in an effort to evaluate various techniques for pikeminnow suppression.

Prior to setting the gill (or trammel) nets, a visual surface count will enumerate pikeminnow in a fixed location where they are frequently observed (such as the floating debris barrier known as the "log boom" located in front of the Cape Horn Dam fish ladder). Pretreatment observations will assist in determining the locations for gillnet deployment. Multiple nets will be set from dusk to dawn for four consecutive nights. This four-night effort will constitute a single suppression period (one of two periods conducted annually during the summer, see Section 3.3.4 Study Schedule below).

Species, size, and numbers of fish will be recorded for all harvested fish and entered in a database. Length-frequency distributions will be calculated and graphed for pikeminnow and steelhead. Age-class composition will be derived from length-frequency distributions using available literature as a guideline (assuming comparable data are available), taking into account modal distributions that are present in the specific catch data. Catch numbers for each day's suppression effort, and each suppression period will be tabulated and appropriately graphed to demonstrate potential effects (i.e. changes in numbers and/or age-class composition) that may result from these efforts.

Data will be collected and presented with the intent of allowing comparison of pikeminnow populations before and after each individual treatment, between the first and second annual treatments, and for a longer term perspective, between years. Pre-treatment observational counts, harvest data, and post-treatment observational counts may reflect relative changes in population due to a single suppression effort. Comparison of these data between the first and second annual treatments may provide insight into seasonal removal success and recolonization rates. Comparison of both observational and harvest data between years may reflect longer term cumulative removal success or cyclical population trends. Data will be provided in tabular and graphical format.

3.3.4 Study Schedule

Pikeminnow suppression in the vicinity of the Project structures by use of gill nets will be conducted twice annually beginning in 2006. These suppression activities will be conducted during mid- to late summer to maximize comparability with previously collected data. The two suppression periods will occur in summer when the risk of rearing steelhead bycatch is lowest and when pikeminnow are known to congregate near the structures. The first suppression effort will occur after summer flow reductions are complete, when accretion has declined to stable summer levels, and when it is believed that spring fish movements have subsided (based on

observations of stable pikeminnow populations in and around Van Arsdale Reservoir). The second suppression period is proposed to occur approximately one month after the initial effort.

3.3.5 Criteria for Determining Success

The criteria for success will be to accomplish the following: (1) the gill (or trammel) nets are set in accordance with Section 3.3.4 (Study Schedule) to evaluate these techniques for pikeminnow suppression; (2) data described in Section 3.3.3 are collected to assist in monitoring the immediate and end-of-summer responses of rearing juvenile steelhead and pikeminnow to the suppression efforts; (3) provisional data are provided to the resource agencies and Tribes by November 15 of each year in which the data was collected; and (4) final data are compiled and provided to the resource agencies and Tribes by April 15 of each year following data collection.

4.0 FUNDING

The actual cost of implementing the Pikeminnow Adaptive Management and Suppression Operation Plans, including associated data management, will be debited against the implementation fund for monitoring and pikeminnow control activities required by RPM 4. Likewise, the water temperature monitoring and rearing monitoring activities covered under RPM 8 will also be debited against this same implementation fund. 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 and thereafter 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 fund and that agency and PG&E biologist staff time will not be charged against the fund.

Table 2 offers an example of the potential distribution of contract costs and effort for all monitoring and suppression elements subject to the RPM 4 funding limitations agreed to between NMFS and Licensee. The task costs presented in Table 1 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 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
	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**

5.0 PRODUCTS FROM STUDIES

5.1 Annual Monitoring Report

Catch data from pikeminnow suppression and monitoring of pikeminnow and salmonids between Cape Horn and Scott dams will be compiled in tabular and graphical formats and presented in annual reports. The reports will document the rationale for choosing the strategies and netting sites chosen for suppression near Project structures. The report will also present the results of raft electrofishing at index monitoring sites. Presentation of the study elements will include catch numbers, species composition, relative abundance, length frequency for pikeminnow and steelhead, and trends over time.

5.2 Reporting Schedule

Licensee shall provide provisional data to the resource agencies and Tribes by November 15th of each year of the year the data was collected. Licensee shall provide the resource agencies and Tribes with a report containing the final data by April 15th of each year following data collection.

During the period in which the Pikeminnow Adaptive Management Plan set forth in Section 2.0 is in effect, the adaptive management process will satisfy the requirement for PG&E to file an annual Pikeminnow Suppression Operations Plan pursuant to RPM 2. After the Adaptive Management Plan is no longer in effect (which is anticipated to be five or more years), Licensee shall file annual Pikeminnow Suppression Operations Plans by June 1st of each year, provided however, that Licensee shall not be required to file such a plan if it is not proposing to make any changes to the prior year's plan.

6.0 PG&E PRIMARY CONTACT

Personnel from the Licensee's Technical and Ecological Services (TES) will oversee preparation of the performance report. The lead TES contact will be: Gene Geary (925) 866-5846, reg2@pge.com.

7.0 LITERATURE CITED

Brown, L.R., and P.B. Moyle. 1991a. 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, para. 849-856.

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Appendix B

Pikeminnow Monitoring and Suppression Results, 2015

Supplemental pikeminnow monitoring data for two selected sites, Eel below Scott Dam (pool immediately below dam) and Eel below Cape Horn Dam (pool immediately below dam), 2015 WY

Appendix B Table 1. Catch data for raft electrofishing surveys in the upper mainstem Eel River, 2015

Site: Eel below Scott Dam (pool immediately below dam)

General Station Data:

Date:	August 11, 2015
Start time, PDST:	11:47
Stop time, PDST:	12:55
GIS coordinate: deg. Latitude:	39.40717 to 39.41041
GIS coordinate: deg. Longitude:	-122.96547 to -122.97900
Elevation, ft:	1720
Personnel:	PS, GC, PK, RT, JC, LH, DH, JF, ZR
Air temperature, deg. C:	19.8 @ 09:42; 27.8 @ 12:50
Water temperature, deg. C:	21.2 @ 9:44; 21.2 @ 12:54
Station length, m:	140
Minimum RPA flow, cfs:	60
Estimated flow, cfs:	75
Measured flow, cfs:	71.9 E2 gage site, USGS final approved value
Water surface area, hectares:	No Data
Water volume, cu. m.:	No Data

Catch Data: [1]

Species	Pac. lamp. ammoc.	SH trout	Calif. roach	Sac. pikeminnow	Sac. sucker	Lepomis spp.	Unident. cyprinid	Largemouth bass	Br. bullhead
Catch Total	0	0	0	2	17	0	0	0	0

[1] Two juvenile steelhead trout, approx. 25 cm FL, observed but not captured.

Appendix B Table 2. Fork length distribution for raft electrofishing surveys in the mainstem Eel River

Site: Eel below Scott Dam (pool immediately below dam)
Date: August 11, 2015

Class Midpoint, mm	Pac. lamp. ammoc.	SH trout	Calif. roach	Sac. pikeminnow	Sac. sucker	Lepomis spp.	Unident. cyprinid	Largemouth bass	Br. bullhead
<=19	.	.	.	.	.	.	.	.	.
25	.	.	.	.	.	.	.	.	.
35	.	.	.	.	.	.	.	.	.
45	.	.	.	.	.	.	.	.	.
55	.	.	.	.	.	.	.	.	.
65	.	.	.	.	.	.	.	.	.
75	.	.	.	.	.	.	.	.	.
85	.	.	.	.	.	.	.	.	.
95	.	.	.	.	.	.	.	.	.
105	.	.	.	.	.	.	.	.	.
115	.	.	.	.	.	.	.	.	.
125	.	.	.	.	.	.	.	.	.
135	.	.	.	.	.	.	.	.	.
145	.	.	.	.	.	.	.	.	.
155	.	.	.	.	.	.	.	.	.
165	.	.	.	.	.	.	.	.	.
175	.	.	.	.	.	.	.	.	.
185	.	.	.	.	.	.	.	.	.
195	.	.	.	.	.	.	.	.	.
205	.	.	.	.	.	.	.	.	.
215	.	.	.	.	.	.	.	.	.
225	.	.	.	.	.	.	.	.	.
235	.	.	.	.	1	.	.	.	.
245	.	.	.	.	.	.	.	.	.
255	.	.	.	.	1	.	.	.	.
265	.	.	.	.	.	.	.	.	.
275	.	.	.	.	.	.	.	.	.
285	.	.	.	.	1	.	.	.	.
295	.	.	.	.	.	.	.	.	.
305	.	.	.	.	.	.	.	.	.
315	.	.	.	.	.	.	.	.	.
325	.	.	.	.	.	.	.	.	.
335	.	.	.	.	.	.	.	.	.
345	.	.	.	.	1	.	.	.	.
355	.	.	.	.	1	.	.	.	.
365	.	.	.	1	.	.	.	.	.
375	.	.	.	.	1	.	.	.	.
385	.	.	.	.	.	.	.	.	.
395	.	.	.	.	3	.	.	.	.
>399	.	.	.	1	8	.	.	.	.

Appendix B Table 3. Catch data for raft electrofishing surveys in the upper mainstem Eel River, 2015

Site: Eel below Cape Horn Dam (pool immediately below dam)

General Station Data:

Date:	August 11, 2015
Start time, PDST:	16:35
Stop time, PDST:	17:20
GIS coordinate: deg. Latitude:	39.38672
GIS coordinate: deg. Longitude:	123.11633
Elevation, ft:	1462
Personnel:	PS, GC, PK, RT, JC, LH, DH, JF, ZR
Air temperature, deg. C:	28.6 @ 15:43; 22.4 @ 17:36
Water temperature, deg. C:	21.5 @ 15:47; 21.5 @ 17:39
Station length, m:	125
Minimum RPA flow, cfs:	9
Estimated flow, cfs:	18
Measured flow, cfs:	18.4 E11 gage site, USGS final approved value
Water surface area, hectares:	No Data
Water volume, cu. m.:	No Data

Catch Data:

Species	Pac. lamp. ammoc.	SH trout	Calif. roach	Sac. pikeminnow	Sac. sucker	Lepomis spp.	Unident. cyprinid	Largemouth bass	Br. bullhead
Catch Total	0	0	19	7	7	0	0	0	0

Appendix B Table 4. Fork length distribution for raft electrofishing surveys in the mainstem Eel River

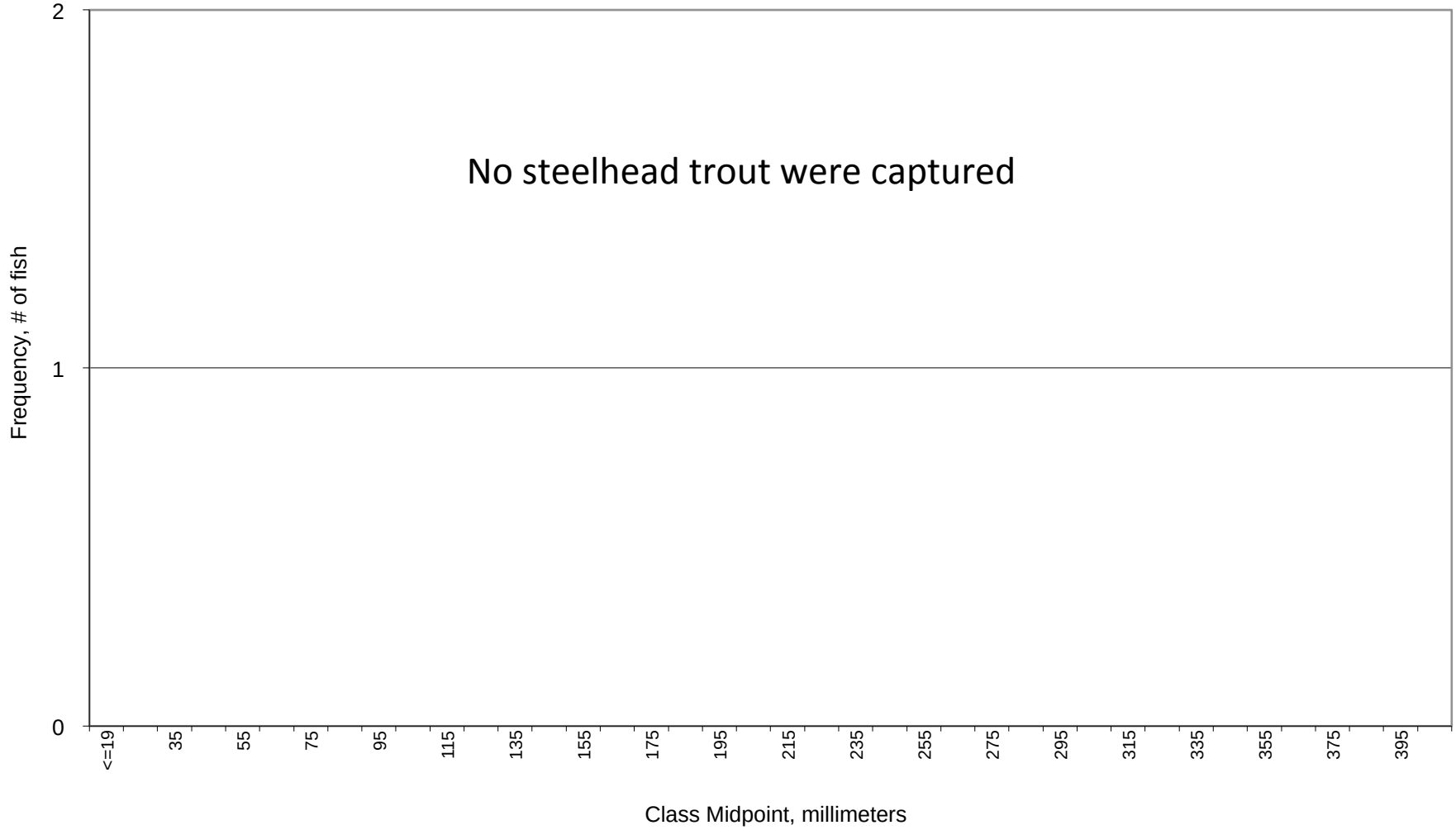
Site: Eel below Cape Horn Dam (pool immediately below dam)
Date: August 11, 2015

Class Midpoint, mm	Pac. lamp. ammoc.	SH trout	Calif. roach	Sac. pikeminnow	Sac. sucker	Lepomis spp.	Unident. cyprinid	Largemouth bass	Br. bullhead
<=19	.	.	.	.	.	.	.	.	.
25	.	.	.	.	.	.	.	.	.
35	.	.	4	.	.	.	.	.	.
45	.	.	14	.	.	.	.	.	.
55	.	.	.	2	.	.	.	.	.
65	.	.	.	.	.	.	.	.	.
75	.	.	1	.	.	.	.	.	.
85	.	.	.	1	.	.	.	.	.
95	.	.	.	1	.	.	.	.	.
105	.	.	.	.	.	.	.	.	.
115	.	.	.	.	.	.	.	.	.
125	.	.	.	.	.	.	.	.	.
135	.	.	.	.	.	.	.	.	.
145	.	.	.	.	.	.	.	.	.
155	.	.	.	.	.	.	.	.	.
165	.	.	.	.	.	.	.	.	.
175	.	.	.	.	.	.	.	.	.
185	.	.	.	.	.	.	.	.	.
195	.	.	.	.	.	.	.	.	.
205	.	.	.	.	.	.	.	.	.
215	.	.	.	.	.	.	.	.	.
225	.	.	.	.	.	.	.	.	.
235	.	.	.	.	.	.	.	.	.
245	.	.	.	.	.	.	.	.	.
255	.	.	.	.	.	.	.	.	.
265	.	.	.	.	2	.	.	.	.
275	.	.	.	.	.	.	.	.	.
285	.	.	.	.	1	.	.	.	.
295	.	.	.	.	1	.	.	.	.
305	.	.	.	.	1	.	.	.	.
315	.	.	.	.	.	.	.	.	.
325	.	.	.	.	1	.	.	.	.
335	.	.	.	.	.	.	.	.	.
345	.	.	.	.	.	.	.	.	.
355	.	.	.	1	1	.	.	.	.
365	.	.	.	.	.	.	.	.	.
375	.	.	.	.	.	.	.	.	.
385	.	.	.	.	.	.	.	.	.
395	.	.	.	.	.	.	.	.	.
>399	.	.	.	2	.	.	.	.	.

Eel below Scott Dam (pool immediately below dam)

Appendix B Figure 1. Fork length distribution for raft electrofishing surveys in the mainstem Eel River August 11, 2015

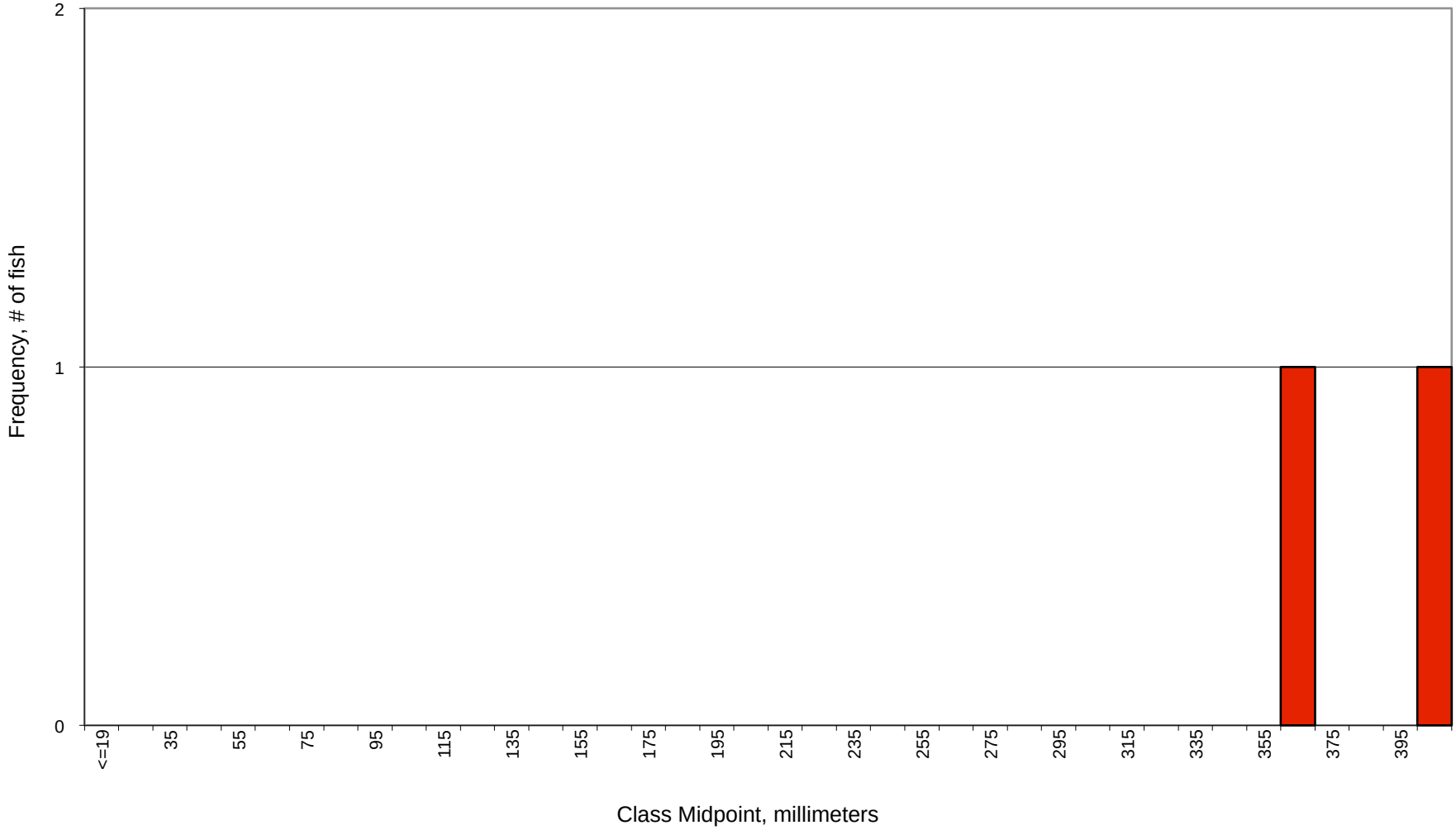
Species: steelhead trout



Eel below Scott Dam (pool immediately below dam)

Appendix B Figure 2. Fork length distribution for raft electrofishing surveys in the mainstem Eel River August 11, 2015

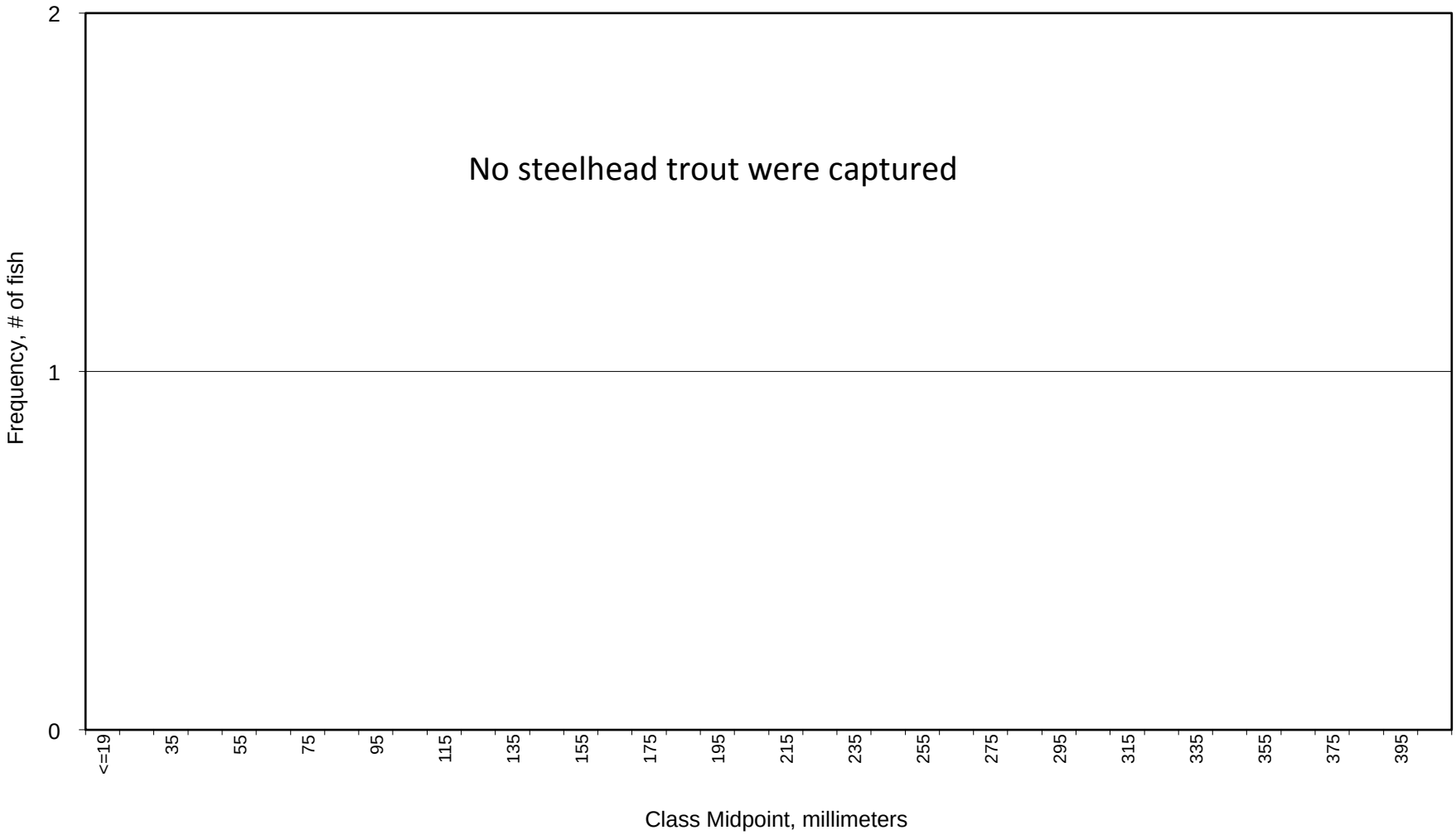
Species: Sacramento pikeminnow



Eel below Cape Horn Dam (pool immediately below dam)

Appendix B Figure 3. Fork length distribution for raft electrofishing surveys in the mainstem Eel River August 11, 2015

Species: steelhead trout



Eel below Cape Horn Dam (pool immediately below dam)

Appendix B Figure 4. Fork length distribution for raft electrofishing surveys in the mainstem Eel River August 11, 2015

Species: Sacramento pikeminnow