

**Cruise Report for the
Surface Waters Ambient Monitoring Program (SWAMP)
Bioaccumulation of Mercury in Sport Fish and Small Prey Fish in California Lakes and
Reservoirs with Low Concentrations of Contaminants in Sport Fish.**

Sampling Dates: May 5- December 9, 2014

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1.0 Introduction

This work was performed as part of the State Water Resources Control Board's Surface Water Ambient Monitoring Program (SWAMP).

Oversight for this Project was provided by the SWAMP Roundtable. The Roundtable is composed of State and Regional Water Board staff and representatives from other agencies and organizations including USEPA, the California Department of Fish and Wildlife, the California Office of Environmental Health Hazard Assessment, and the University of California. Interested parties, including members of other agencies, consultants, and other stakeholders are also welcome to participate.

The Roundtable has formed a subcommittee, the Bioaccumulation Oversight Group (BOG), which focuses on bioaccumulation monitoring. The BOG is composed of State and Regional Water Board staff and representatives from other agencies and organizations including USEPA, the Department of Fish and Wildlife, the Office of Environmental Health Hazard Assessment, and the San Francisco Estuary Institute. The members of the BOG individually and collectively possess extensive experience with bioaccumulation monitoring.

The BOG has also convened a Bioaccumulation Peer Review Panel that is providing programmatic evaluation and review of specific deliverables emanating from this Project, including this Sampling Plan. The members of the Panel are internationally recognized authorities on bioaccumulation monitoring.

Twenty-four lakes and reservoirs were selected from the BOG two-year screening survey of bioaccumulation in sport fish of California lakes and reservoirs (2007 and 2008). The selected subset of lakes was identified as having relatively low concentrations of contaminants in the 2007-8 survey. The same basic design used in the 2007-8 survey will be repeated, as the goal is to obtain confirmation of the earlier results.

The goal of this study is to identify lakes and reservoirs with relatively low concentrations of contaminants. Given this goal, the study is focusing on indicator species that tend to accumulate the highest concentrations of the contaminants of concern - if these species have low concentrations, then, it is likely that the food web in general has a low degree of contamination. Different contaminants tend to reach their highest concentrations in different species. Methylmercury

biomagnifies primarily through its accumulation in muscle tissue, so top predators such as largemouth bass tend to have the highest concentrations. In contrast, although the organic contaminants of concern biomagnify, they do so primarily through accumulation in lipids. Concentrations of organics are therefore influenced by the lipid content of the species, with species that are higher in lipid having higher concentrations. Bottom-feeding species such as channel catfish and common carp tend to have the highest lipid concentrations in their muscle tissue, and therefore usually have the highest concentrations of organics.

Consequently, this study will target, where possible, two indicator species at each location: 1) a top predator (e.g., largemouth bass) as a mercury indicator, and 2) a high-lipid, bottom-feeding species (e.g., channel catfish, common carp) as an organics indicator.

Some lakes, particularly high elevation lakes, may have only one abundant top trophic level species (e.g., rainbow trout). In these cases in the 2007-2008 survey, the one species present was often sampled as an indicator of all the target analytes. In contrast, in this study a greater effort (more hours spent fishing per lake) will be made to collect both mercury and organics indicator species.

Prey fish (25-100 mm, total length) will be sampled using traps, seines, electro shocking and dip nets from shoreline areas adjacent to the locations where sport fish are collected. Ten individuals each from three different prey fish species will be sampled from each lake. We will target the following primary prey fish target species at all lakes: inland silversides, young-of-the-year largemouth bass, young-of-the-year bluegill, and threadfin shad. Other species that are within the target size range may be collected if the primary targets are not available. Efforts will be made to sample the same species across all lakes, and when not possible fish that overlap in trophic guilds will be sampled. Extra species of fish in the correct size ranges will be retained, and decisions from the BOG will be made on species to analyze for mercury after all fish are collected each year.

Additionally, water samples will be taken with the aim of obtaining information that is representative of the lake and where the sport fish are accumulating their mercury. Three locations will be sampled in each lake. At each location, near-surface (0.1 m depth) and near-bottom (0.5 m off the bottom) grab samples will be collected and analyzed for unfiltered total mercury, unfiltered methylmercury, DOC, sulfate, and chlorophyll a. If the lake has major tributary arms, then each of the arms will be sampled. If the lake has coves where the majority of the fish reside, these will be sampled. Depth profiles will be collected at each location using probes for temperature, conductivity, pH, dissolved oxygen, redox, and chlorophyll.

Sediment grab samples (top 2 cm) will be collected in the three water locations of each lake using a clam shell sediment grab. Sediment samples will be analyzed for total mercury and total organic carbon (TOC).

The State Water Quality Control Board (SWQCB) work was authorized via FY 13-14 in support of Work Order 13SWBG01.

1.0 Cruise Report

1.1 Objectives

The objectives were to collect designated sport fish species as identified by the California Office of Environmental Health Hazard Assessment. Three small (<100mm, total length) prey fish species samples were attempted to be collected.

Additionally, at each water body, three near-surface and three near-bottom water samples were to be collected. At the three water locations, sediment was also to be collected.

The fish tissue, water samples, and sediment samples were analyzed as directed by BOG and SWQCB in Work Order No. 13SWBG01 (see Section 1.3 below). Sample sites were reached by boating and fish were collected by electro-shocking, hook and line, fish traps and by nets.

1.2 MPSL/CDFW Sampling personnel

Dylan Service	Crew Lead
Gary Ichikawa	Crew Lead
William Jakl	Crew Lead
Sean Mundell	Crew Lead
Jon Goetzl	Research Tech
Keith Skaug	Research Tech

1.3 Authorization to collect samples

All sampling personnel are MPSL staff (through San Jose State University Foundation and the California Department of Fish and Wildlife) contracted through CDFW to conduct the sample collection activities listed herein. The funding and authorization to collect the samples described herein is contained in the State Water Resources Control Board (SWRCB) Work Order 13SWBG01, including the description of the locations, number samples and species necessary to be collected at each lake.

1.4 Station selection

Based upon the results of the BOG 2007-2008 Lakes and Reservoir Screening study, 24 lakes/reservoirs were selected to resample. OEHHA designed target species recommendations for up to 6 sport fish species. 2-3 prey species per water body were also requested.

BOG and SWQCB authorized all water bodies for fish, water and sediment collection and for mercury analyses as set forth in the Work Order 13SWBG01.

1.5 Summary of types of samples authorized to be collected

Up to six species of sport fish were collected to better determine health risks at the chosen lakes. For better biomagnification estimates, the 2-3 prey fish species were collected for mercury analysis. Physical parameters were collected for each individual fish, which included: weight, total length, fork length, standard length (for prey species only) and presence of any abnormalities. Each sport fish was individually tagged, wrapped in aluminum foil, placed in labeled zipper-closure bag and stored on dry ice for the duration of the trip.

YSI, water and sediment samples were taken following appropriate SOP's.

At the MPSL/CDFW lab, samples were stored in a freezer until they were processed for authorized analysis, per appropriate SOP's. Analysis authorization dictates tissue analysis (QA/QC requirements-preservatives, dissecting, cooling, etc.).

1.6 Discussion

There was much greater than normal equipment malfunctions this year which led to scheduling difficulties and several re-sampling trips. Drought conditions also made boat launching challenging. One lake, Gene Wash Reservoir, was not sampled, because it is fenced-off and not open to sport fishing. It was replaced by Loch Lomond Reservoir. A total of 23 of the 24 lakes were completed. Another group was to supply us with fish samples from Tahoe Keys, but they were unable to collect samples due to equipment malfunctions.

1.7 Results

Prey and Sport fish samples were collected for 23 of the 24 lakes authorized.

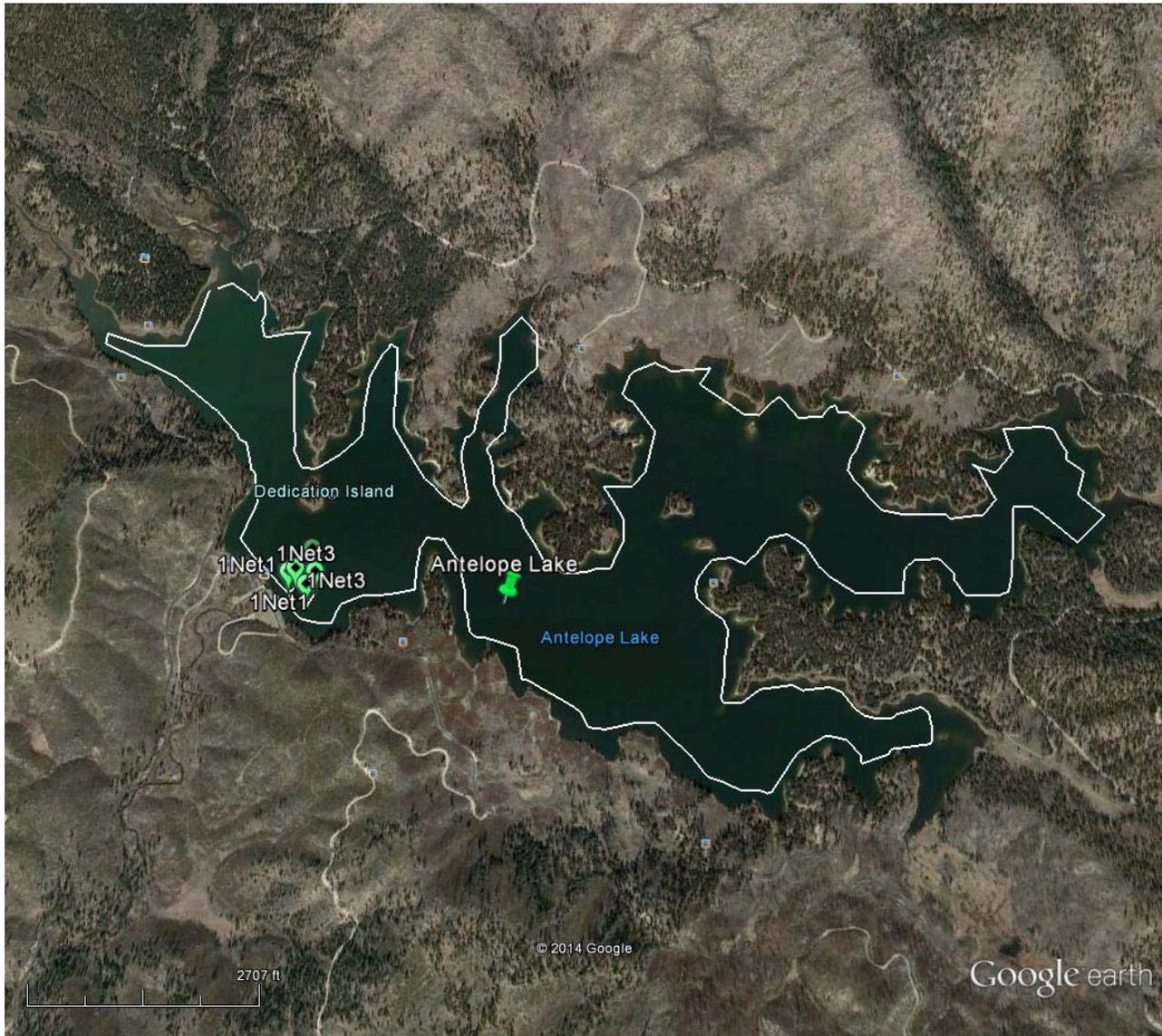
1.8 Description of Sample Collection Stations

Multiple CDFW/MPSL teams sampled the 23 sampled lakes. Descriptions and maps of sample collection for all lakes and species sampled are linked to Table 1.8.1 below.

1.8.1 Table of Contents for Clean Lakes Fish Study

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2014 BOG, Antelope Lake (518PAL175)



Latitude: 40.186237

Longitude: -120.590366

Collection Method: Electrofisher boat and gill nets

Date (s) of Collection: July 29, 2014

Samplers: Dylan Service, Brian Thompson, Gary Ichikawa, and Keith Skaug

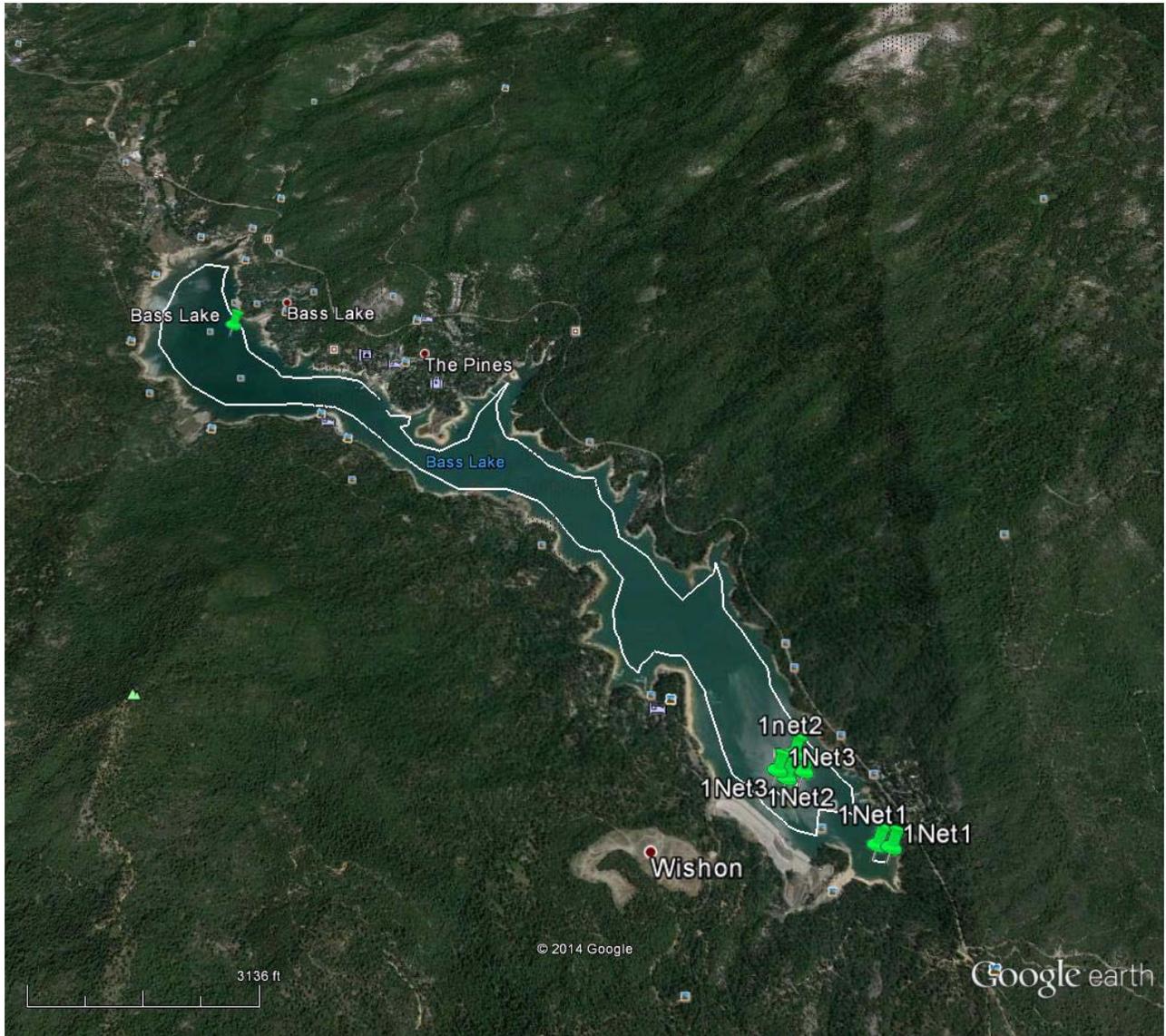
Prey Fish caught: Location 1: Largemouth Bass												
Length (mm)	47	48	48	51	54	62	63	63	64	65		
Prey Fish caught: Shock Location 1: Pumpkinseed												
Length (mm)	45	46	49	51	52	54	55	55	57	69		
Sport Fish caught: Location 1: Largemouth Bass												
Length (mm)	202	212	270	293	311	312	324	327	334	349	351	372

Sport Fish caught: Location 1: Brown Trout				Sport Fish caught: Location 1: Rainbow Trout							
Length (mm)	231	291		Length (mm)	209						
Sport Fish caught: Location 1: Brown Bullhead											
Length (mm)	369	375									
Sport Fish caught: Shock Location 1: Pumpkinseed											
Length (mm)	111	112	115	125	126	135	135	140	141	156	

Comments: The sampling vessel was launched from the main boat ramp. Two samples of prey fish were collected in addition to five sport fish species using the electrofisher boat. The entire lake was sampled.

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2014 BOG, Bass Lake (540PKS098)



Latitude: 37.29131

Longitude: -119.52387

Collection Method: Electrofisher boat and gill nets

Date (s) of Collection: September 17-18, 2014

Samplers: Dylan Service, Gary Ichikawa, Jon Goetzl and Keith Skaug

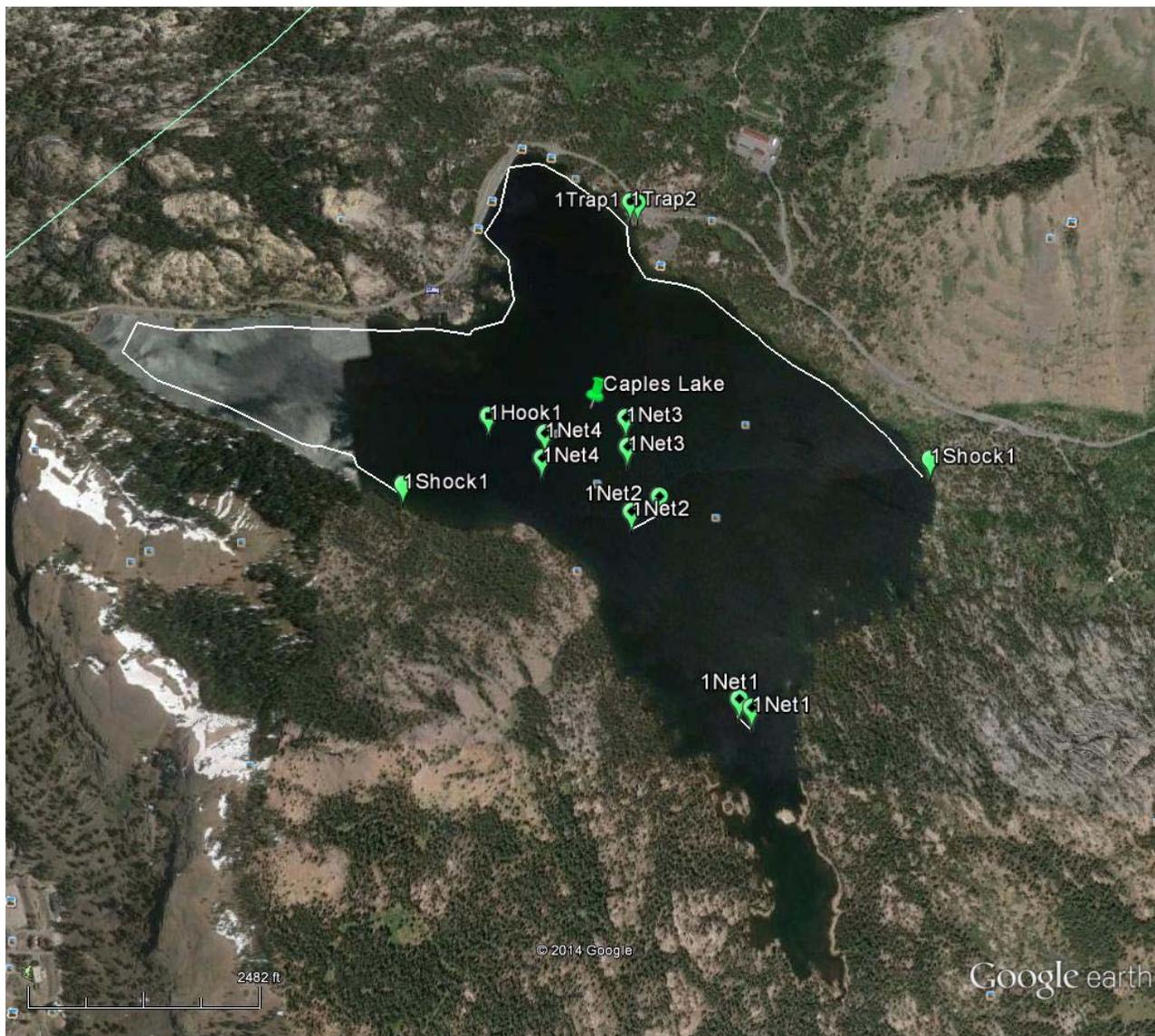
Prey Fish caught: Location 1: Black Crappie										
Length (mm)	52	55	58	61	65	65	70	71	82	85
Prey Fish caught: Location 1: Largemouth Bass										
Length (mm)	72	72	80	80	80	80	81	81	82	85

Prey Fish caught: Location 1: Pumpkinseed													
Length (mm)	75	75	81	82	85	85	89	89	92	95	99		
Sport Fish caught: Location 1: Largemouth Bass													
Length (mm)	280	285	305	312	318	340	340	340	350	388	405	425	570
Sport Fish caught: Location 1: Black Crappie													
Length (mm)	155	155	156	160	168	195	195	202	211	218			
Sport Fish caught: Location 1: Pumpkinseed													
Length (mm)	102	105	110	111	112	122	138	145	150				
Sport Fish caught: Location 1: Channel Catfish													
Length (mm)	215	225	230	256	315								
Sport Fish caught: Location 1: Brown Bullhead													
Length (mm)	320												
Sport Fish caught: Location 1: Kokanee													
Length (mm)	472	510											

Comments: The sampling vessel was launched from the private launch ramp at the Pines Resort. Three samples of prey fish were collected in addition to seven sport fish species using the electrofisher boat. The entire lake was sampled.

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2014 BOG, Caples Lake (514PCP024)



Latitude: 38.70637

Longitude: -120.04496

Collection Method: Electrofisher boat, gill nets, fish traps, hook and line

Date (s) of Collection: July 7-8, 2014

Samplers: William Jakl and Sean Mundell

Prey Fish caught: Location 1: Rainbow Trout															
Length (mm)	65	65	65	70	70	71	72	72	72	75	75	80	89	90	92
Prey Fish caught: Location 1: Sacramento Sucker															
Length (mm)	46	55	58	59	59	60	66	66	71	72	73	73	74	80	81
Sport Fish caught: Location 1: Rainbow Trout															
Length (mm)	290	301	305	306	345	415	420	430	430	450					

Sport Fish caught: Location 1: Lake Trout		
Length (mm)	300	

Comments: The sampling vessel was launched from off the main launch ramp. Two samples of prey fish were collected in addition to one sport fish species using the electrofisher boat, gill nets, fish traps, and hook and line.

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2014 BOG, Castaic Lagoon (403CSTLAG)



Latitude: 34.49895

Longitude: -118.60931

Collection Method: Electrofisher boat

Date (s) of Collection: May 6, 2014

Samplers: Dylan Service and Gary Ichikawa

Prey Fish caught: Location 1: Sculpin										
Length (mm)	43	49	59	60	61	66	68	72	82	89
Prey Fish caught: Location 1: Threadfin Shad										
Length (mm)	76	79	79	82	83	84	84	84	87	92
Prey Fish caught: Location 1: Bluegill										
Length (mm)	79	82	82	84	86	89	91	96	98	99

Prey Fish caught: Location 1: Inland Silverside											
Length (mm)	74	76	77	84	84	87	88	89	89	93	
Sport Fish caught: Location 1: Largemouth Bass											
Length (mm)	203	224	251	253	398	445	463	466	471	481	504
Sport Fish caught: Location 1: Common Carp											
Length (mm)	550	579	581	584	660	712	740	749	752	790	

Comments: The water levels were at historical low levels. The sampling vessel was launched from the main lagoon ramp. Four samples of prey fish were collected in addition to two sport fish species using the electrofisher boat at one location. The entire lagoon was sampled.

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2014 BOG, Castaic Lake (403CASTLK)



Latitude: 34.525539°

Longitude: -118.600466°

Collection Method: Electrofisher boat, gill nets, trot line

Date (s) of Collection: May 5-7, 2014

Samplers: Dylan Service and Gary Ichikawa

Location 1:

Prey Fish caught: Location 1: Largemouth Bass										
Length (mm)	76	84	84	84	87	88	89	89	90	98
Prey Fish caught: Location 1: Bluegill										
Length (mm)	57	60	64	64	67	75	80	85	86	87

Prey Fish caught: Location 1: Yellowfin Goby											
Length (mm)	49	50	54	62	69	71	72	78	79	82	
Sport Fish caught: Location 1: Striped Bass											
Length (mm)	362	371	376	379	381	384	386	404	404	411	411
Sport Fish caught: Location 1: Common Carp											
Length (mm)	549	561	587	594	598						
Sport Fish caught: Location 1: White Catfish						Sport Fish caught: Location 1: Channel Catfish					
Length (mm)	441					Length (mm)	633				

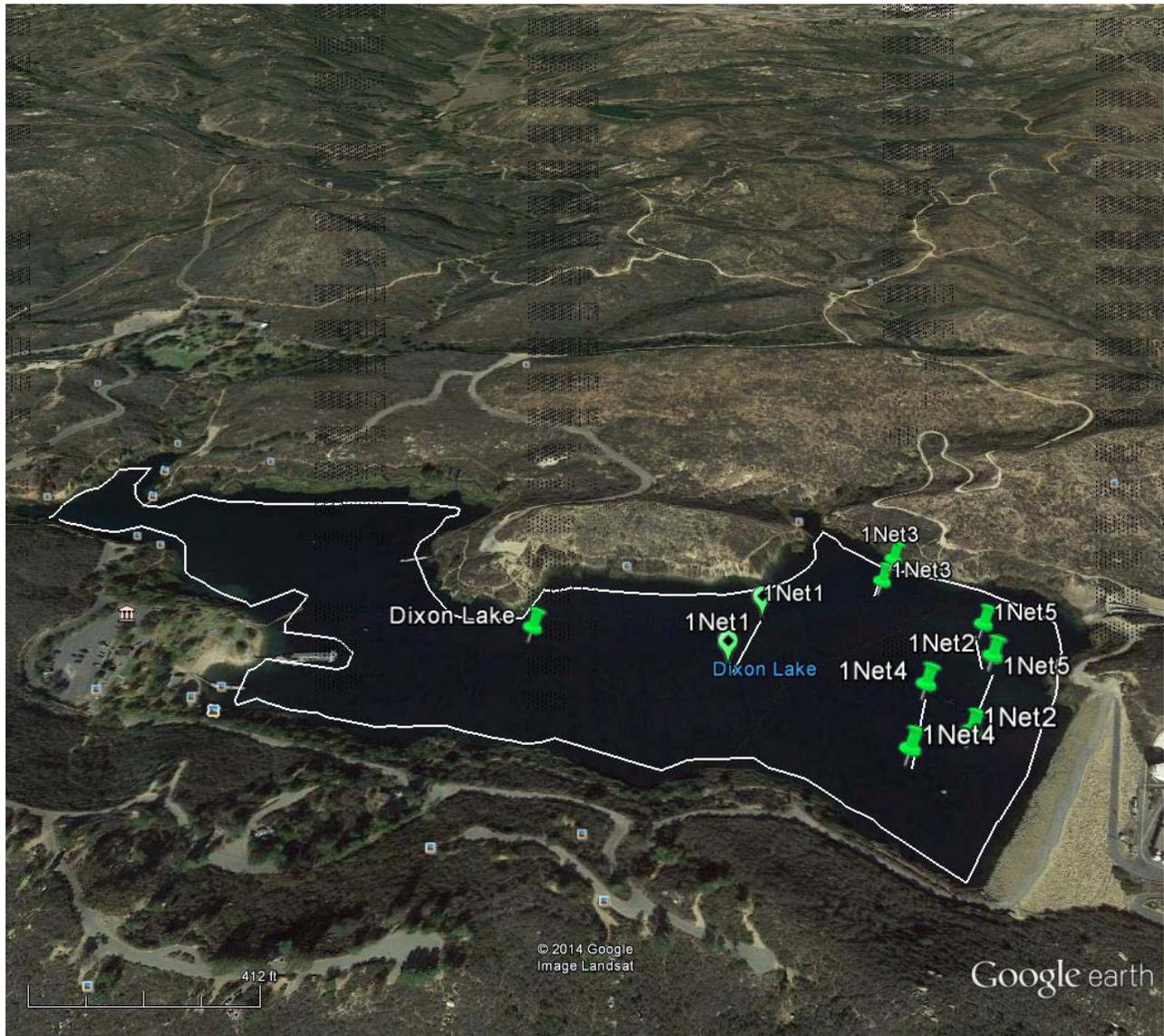
Location 2:

Prey Fish caught: Location 2: Threadfin Shad											
Length (mm)	83	85	87	89	92	93	93	96	96	98	
Prey Fish caught: Location 2: Bluegill											
Length (mm)	66	66	67	71	72	76	78	84	84	89	
Prey Fish caught: Location 2: Yellowfin Goby											
Length (mm)	54	57	59	59	61	69	71	72	74	78	
Sport Fish caught: Location 2: Striped Bass											
Length (mm)	327	341	351	374	384	386	396	409	409	416	694
Sport Fish caught: Location 2: Common Carp											
Length (mm)	564	568	650	700	714						
Sport Fish caught: Location 2: Bluegill											
Length (mm)	120	151	154	162	182	199					

Comments: The sampling vessel was launched from the main reservoir ramp on May 5th & 7th. On May 6th the high winds closed the ramp and we had to launch from the ramp on the west side of the dam. At the two locations, three samples of prey fish were collected in addition to two sport fish species, using the electrofisher boat and gill nets. Our trot line we set was vandalized and no fish were collected from it.

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2014 BOG, Dixon Lake (904PDL030)



Latitude: 33.16152

Longitude: -117.04235

Collection Method: Electrofisher boat and gill net

Date (s) of Collection: September 10, 2014

Samplers: William Jakl and Sean Mundell

Prey Fish caught: Location 1: Bluegill										
Length (mm)	65	65	65	68	70	72	75	77	85	86
Prey Fish caught: Location 1: Largemouth Bass										
Length (mm)	61	66	70	75	78	80	80	81	82	100

Sport Fish caught: Location 1: Largemouth Bass											
Length (mm)	245	256	278	292	329	340	350	355	384	450	502
Sport Fish caught: Location 1: Blue Catfish											
Length (mm)	385	405	421	445	450	470					

Comments: The sampling vessel was launched from the bank of the lake. Two samples of prey fish were collected in addition to two sport fish species using the electrofisher boat. The entire lake was sampled.

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2014 BOG, Lake Evans (801PEL155)



Latitude: 33.99532

Longitude: -117.37134

Collection Method: Electrofisher boat

Date (s) of Collection: June 2, 2014

Samplers: Dylan Service and Keith Skaug

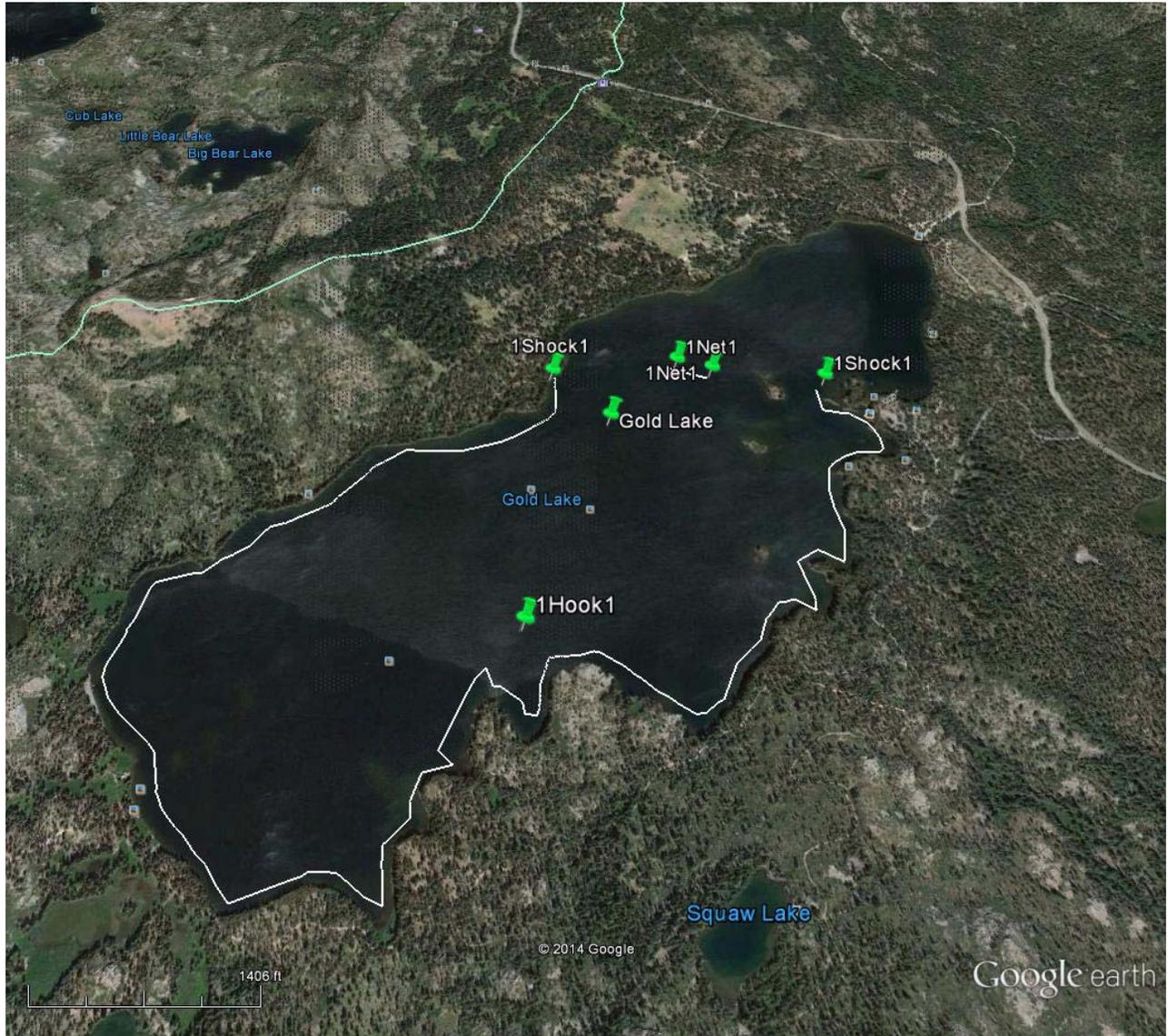
Prey Fish caught: Location 1: Bluegill												
Length (mm)	64	67	72	75	80	84	85	90	90	98		
Prey Fish caught: Location 1: Largemouth Bass												
Length (mm)	45	49	51	54	56	57	61	79	94	95		
Sport Fish caught: Location 1: Largemouth Bass												
Length (mm)	207	223	262	301	307	320	325	326	348	367	407	421

Sport Fish caught: Location 1: Bluegill											
Length (mm)	109	112	117	117	130	132	136	137	152	164	
Sport Fish caught: Location 1: Channel Catfish											
Length (mm)	449	502	529	542	572	576	594	600	666	670	671
Sport Fish caught: Location 1: White Crappie											
Length (mm)	130	137	141	145	145	148	151	152	168		

Comments: The sampling vessel was launched from the dirt boat ramp. Two samples of prey fish were collected in addition to four sport fish species using the electrofisher boat. The entire lake was sampled.

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2014 BOG, Gold Lake (518PLG065)



Latitude: 39.68139

Longitude: -120.64870

Collection Method: Electrofisher boat, fish traps, hook and line and gill net

Date (s) of Collection: July 21-22, 2014

Samplers: William Jakl and Sean Mundell

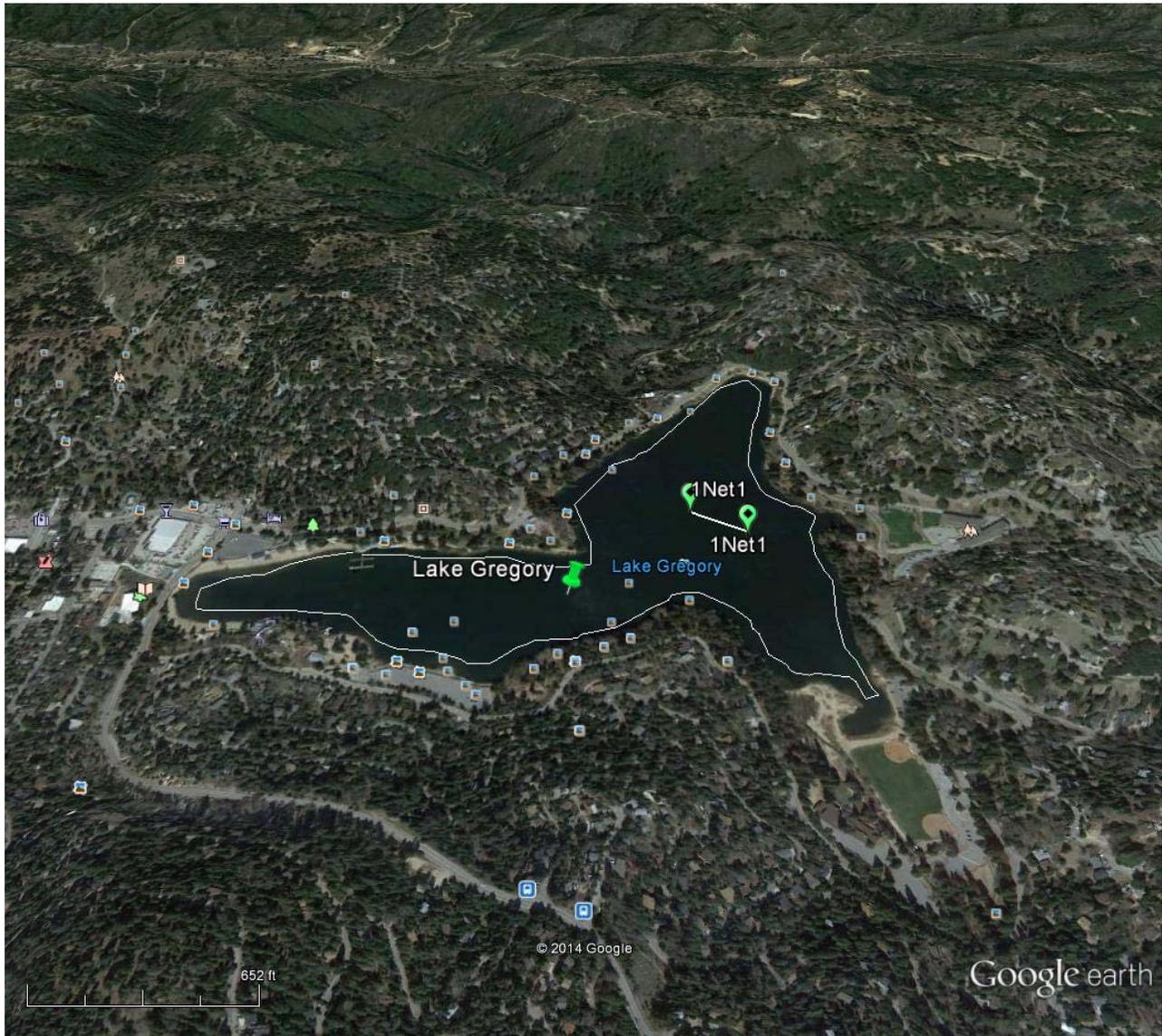
Prey Fish caught: Location 1: Rainbow Trout															
Length (mm)	57	58	60	68	70	70	70	70	70	72	75	90	90	90	99
Sport Fish caught: Location 1: Brown Trout															
Length (mm)	245	250	260	260	260	275	278	280	285	290	295				

Sport Fish caught: Location 1: Rainbow Trout					
Length (mm)	230	236	240	276	286

Comments: The sampling vessel was launched from the only boat ramp on the lake. One sample of prey fish was collected in addition to two sport fish species using the electrofisher boat.

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2014 BOG, Lake Gregory (628PGL147)



Latitude: 34.24352

Longitude: -117.26694

Collection Method: Electrofisher boat and gill net

Date (s) of Collection: June 18, 2014

Samplers: Dylan Service and Keith Skaug

Prey Fish caught: Location 1: Goby										
Length (mm)	44	51	61	69						
Prey Fish caught: Location 1: Largemouth Bass										
Length (mm)	33	34	36	37	37	37	38	38	39	40
Prey Fish caught: Location 1: Tule Perch										
Length (mm)	39	42	43	43	43	44	44	44	47	47

Sport Fish caught: Location 1: Largemouth Bass												
Length (mm)	344	347	357	371	372	381	392	394	401	406	414	433
Sport Fish caught: Location 1: Brown Trout						Sport Fish caught: Location 1: Rainbow Trout						
Length (mm)	240											
Sport Fish caught: Location 1: Brown Bullhead												
Length (mm)	202	202	204	211	231	261	266	272	273	281		
Sport Fish caught: Location 1: Tule Perch												
Length (mm)	106	109	114	116	119	119	119	126	130	136		
Sport Fish caught: Location 1: White Crappie												
Length (mm)	122	137	143	143	149	151	156	157	157	158		

Comments: The sampling vessel was launched from off the main launch ramp. Three samples of prey fish were collected in addition to six sport fish species using the electrofisher boat. The entire lake was sampled.

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2014 BOG, Henshaw Lake (903PLH214)



Latitude: 33.23976

Longitude: -116.75907

Collection Method: Electrofisher boat and gill net

Date (s) of Collection: September 9, 2014

Samplers: William Jakl and Sean Mundell

Prey Fish caught: Location 1: Black Crappie										
Length (mm)	77	80	80	80	80	82	82	82	84	87
Prey Fish caught: Location 1: Largemouth Bass										
Length (mm)	62	63	64	65	73	75	88	89	95	99

Prey Fish caught: Location 1: Threadfin Shad											
Length (mm)	66	70	73	75	77	81	82	83	84	85	
Sport Fish caught: Location 1: Largemouth Bass											
Length (mm)	217	261	275	320	350	360	366	382	408	410	442
Sport Fish caught: Location 1: Bluegill											
Length (mm)	149	152	158	161	166	168	175	180	188	190	
Sport Fish caught: Location 1: Channel Catfish											
Length (mm)	345	357	370	390	410	424	438	441	445	510	
Sport Fish caught: Location 1: Black Crappie											
Length (mm)	215	220	230	254	296	300	302	305			
Sport Fish caught: Location 1: Common Carp											
Length (mm)	400	424	450	468							

Comments: The lake water levels were extremely low. Originally, this lake was to be a 2 location lake, but due to the low water levels, it was agreed to be sampled as a 1 location lake. The sampling vessel was launched from the bank of the lake. Three samples of prey fish were collected in addition to five sport fish species using the electrofisher boat. The entire lake was sampled.

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2014 BOG, Lake Jennings (907PLJ102)



Latitude: 32.85316

Longitude: -116.88712

Collection Method: Electrofisher boat

Date (s) of Collection: August 26, 2014

Samplers: Dylan Service and Gary Ichikawa

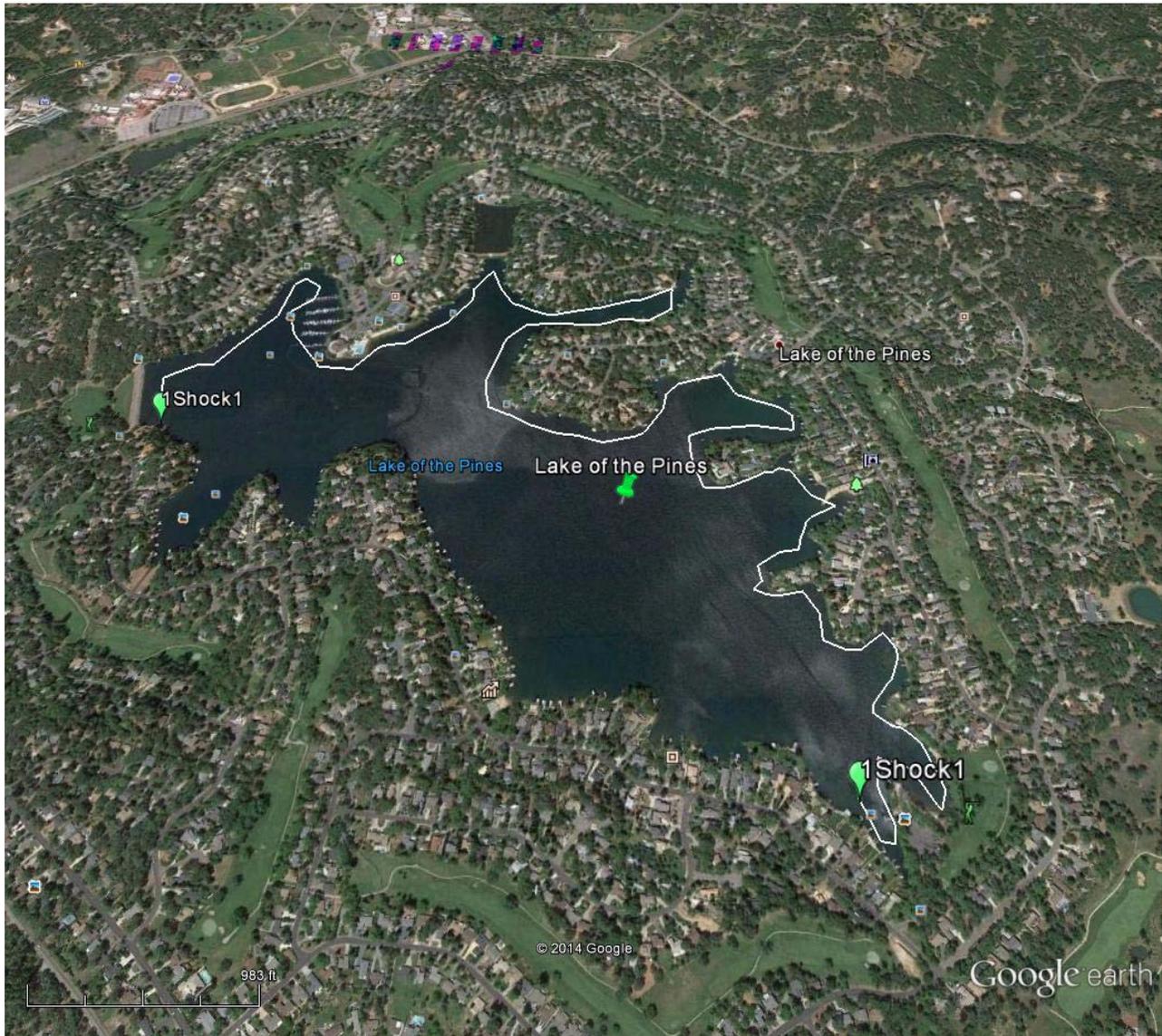
Prey Fish caught: Location 1: Bluegill											
Length (mm)	76	76	79	84	84	91	92	94	96	98	
Prey Fish caught: Location 1: Largemouth Bass											
Length (mm)	81	84	86	87	87	88	91	92	94	97	
Sport Fish caught: Location 1: Largemouth Bass											
Length (mm)	211	221	291	294	324	384	386	421	431	466	511

Sport Fish caught: Location 1: Channel Catfish				Sport Fish caught: Location 1: Brown Bullhead								
Length (mm)	532	641		Length (mm)	171	210						
Sport Fish caught: Location 1: Redear Sunfish												
Length (mm)	154	157	166	168	181	205	208	217	251	279	297	298

Comments: The sampling vessel was launched from the main launch ramp. Two samples of prey fish were collected in addition to four sport fish species using the electrofisher boat. There were extremely windy conditions on the lake. The entire lake was sampled.

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2014 BOG, Lake of the Pines (516TP0045)



Latitude: 39.03075

Longitude: -121.05568

Collection Method: Electrofisher boat

Date (s) of Collection: July 28, 2014

Samplers: Dylan Service and Brian Thompson

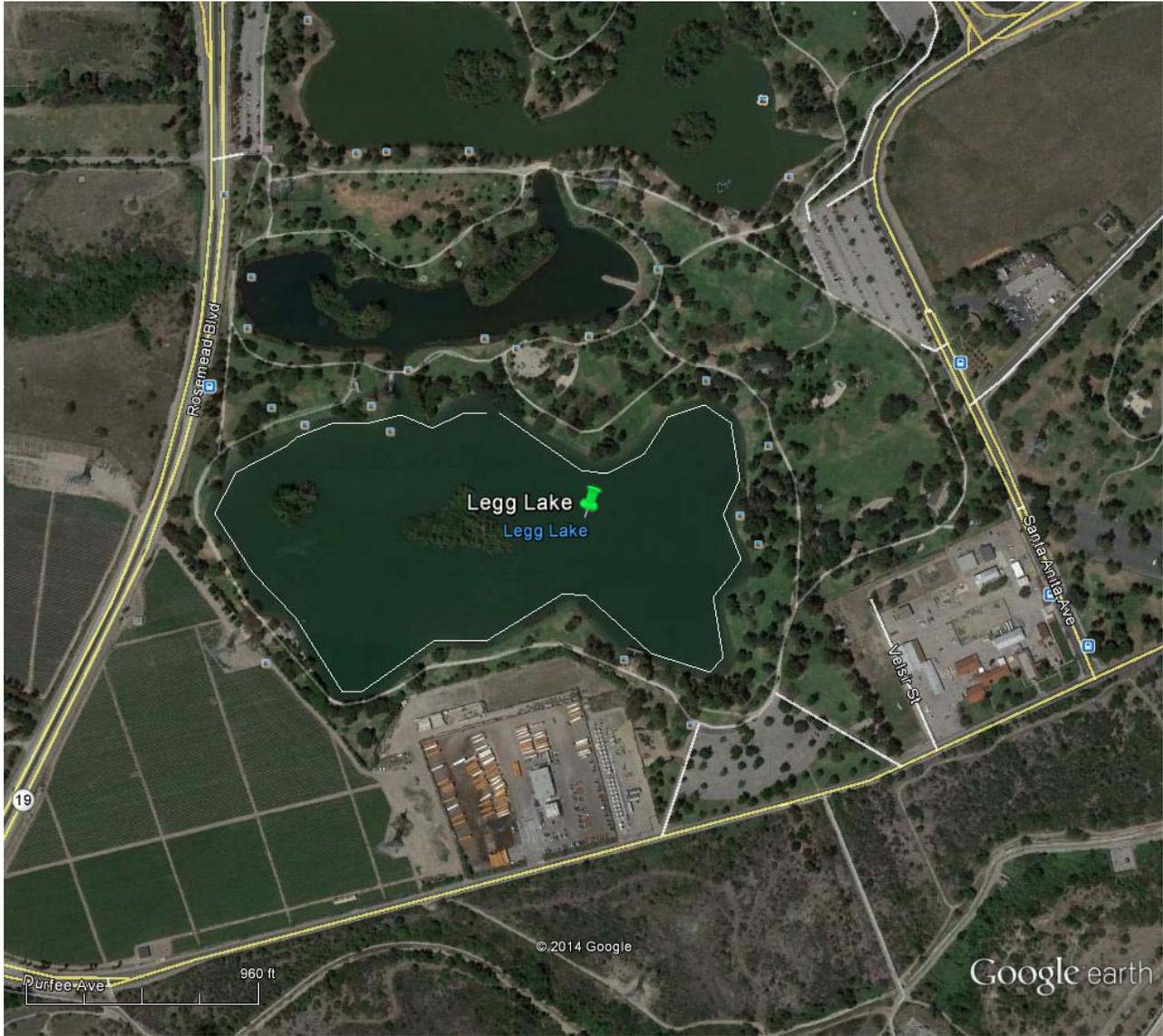
Prey Fish caught: Location 1: Green Sunfish										
Length (mm)	67	72	78	82	84	84	86	87	91	91
Prey Fish caught: Location 1: Largemouth Bass										
Length (mm)	36	38	39	44	46	46	47	47	47	52
Prey Fish caught: Location 1: Redear Sunfish										
Length (mm)	63	69	72	74	77	82	89	89	91	94

Sport Fish caught: Location 1: Largemouth Bass												
Length (mm)	212	233	257	261	436	444	454	455	456	461	502	511
Sport Fish caught: Location 1: Bluegill												
Length (mm)	114	120	121	122	122	131	135	143	144	153		
Sport Fish caught: Location 1: Green Sunfish												
Length (mm)	129	130	131	132	146	158	161	162	169	186		

Comments: The sampling vessel was launched from the main launch ramp. Three samples of prey fish were collected in addition to three sport fish species using the electrofisher boat.

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2014 BOG, Legg Lake (412LEGGLK)



Latitude: 34.03402

Longitude: -118.05795

Collection Method: Electrofisher boat

Date (s) of Collection: May 19, 2014

Samplers: Dylan Service and Gary Ichikawa

Prey Fish caught: Location 1: Largemouth Bass										
TL (mm)	64	59	56	54	49	52	61	58	77	91
Prey Fish caught: Location 1: Bluegill										
TL (mm)	47	59	54	55	60	68	54	58	60	60

Sport Fish caught: Location 1: Redear Sunfish													
TL (mm)	231	217	206	211	242	224	211	219	220	206			
Sport Fish caught: Location 1: Bluegill													
TL (mm)	140	157	160	144	154	146	174	147	150	166			
Sport Fish caught: Location 1: Largemouth Bass													
TL (mm)	446	439	201	218	256	281	296	346	371	366	404	381	384

Comments: The sampling vessel was launched from the main lake ramp. Two samples of prey fish were collected in addition to three sport fish species using the electrofisher boat. The entire lake was sampled.

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2014 BOG, Lewiston Lake (106PCL161)



Latitude: 40.73311

Longitude: -122.80286

Collection Method: Electrofisher boat and gill nets

Date (s) of Collection: August 5-6, 2014

Samplers: Dylan Service and Gary Ichikawa

Sport Fish caught: Location 1: Rainbow Trout										
Length (mm)	251	284	326	331	342	354	374	376	423	634
Sport Fish caught: Location 1: Chinook Salmon										
Length (mm)	238	253	274	297	299	308				

Sport Fish caught: Location 1: Steelhead Trout				
Length (mm)	487	511	526	543

Comments: The sampling vessel was launched from the boat ramp near the Pine Cove Marina. No samples of prey fish were collected. Two sport fish species using the electrofisher boat and 8 gill net sets.

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2014 BOG, Lincoln Park Lake (412LINPRK)



Latitude: 34.06599

Longitude: -118.202208

Collection Method: Electrofisher boat

Date (s) of Collection: May 20, 2014

Samplers: Dylan Service and Gary Ichikawa

Prey Fish caught: Location 1: Bluegill												
Length (mm)	61	75	77	77	77	79	82	82	94	98		
Prey Fish caught: Location 1: Largemouth Bass												
Length (mm)	65	66	74	82	82	84	84	86	91	91		
Sport Fish caught: Location 1: Largemouth Bass												
Length (mm)	201	214	286	299	312	314	326	333	334	340	436	496

Sport Fish caught: Location 1: Bluegill						
Length (mm)	124	163	170	171	180	181
Sport Fish caught: Location 1: Green Sunfish						
Length (mm)	101	109	109	114	116	
Sport Fish caught: Location 1: Common Carp						
Length (mm)	522	522	544	556	579	

Comments: The sampling vessel was launched from the only ramp. Two samples of prey fish were collected in addition four sport fish species using the electrofisher boat. The entire lake was sampled.

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2014 BOG, Loch Lomond Reservoir (304PLL184)



Latitude: 37.11018

Longitude: -122.06640

Collection Method: Electrofisher boat

Date (s) of Collection: December 9, 2014

Samplers: Jon Goetzl and Gary Ichikawa

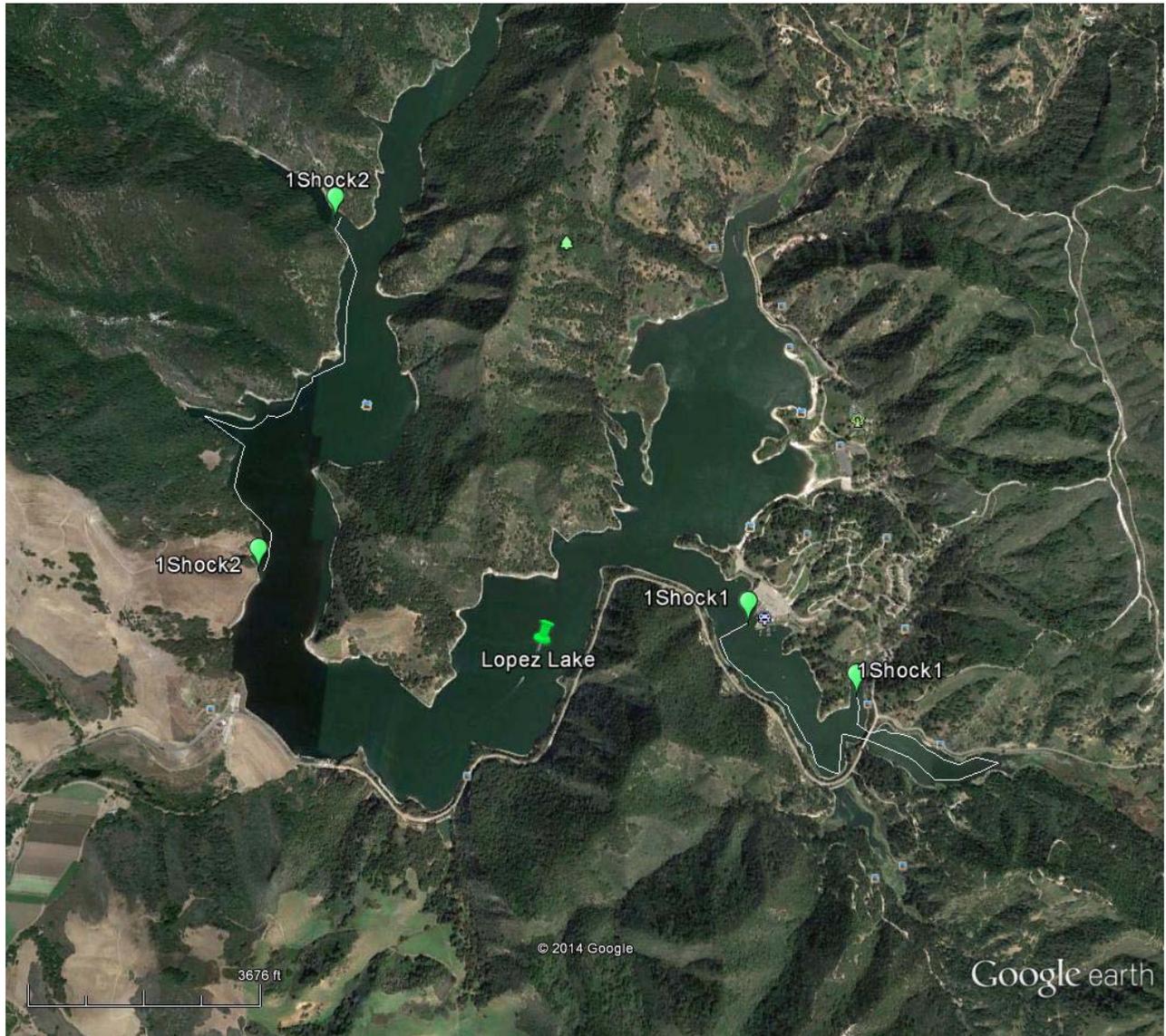
Prey Fish caught: Location 1: Bluegill										
Length (mm)	78	78	79	85	87	89	90	90	91	95
Prey Fish caught: Location 1: Largemouth Bass										
Length (mm)	65	65	68	74	80	85	85	86	90	93

Sport Fish caught: Location 1: Largemouth Bass											
Length (mm)	224	225	284	384	422	425	460	520	528	530	545
Sport Fish caught: Location 1: Bluegill											
Length (mm)	120	122	122	129	131	132	133	135	145	155	

Comments: The sampling vessel was launched from the main ramp of the lake. The reservoir had been closed to the public all summer due to low water levels. Two samples of prey fish were collected in addition to two sport fish species using the electrofisher boat.

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2014 BOG, Lopez Lake (310PLL106)



Latitude: 35.19212

Longitude: -120.46418

Collection Method: Electrofisher boat

Date (s) of Collection: May 27, 2014

Samplers: Dylan Service and Gary Ichikawa

Prey Fish caught: Location 1: Bluegill										
Length (mm)	45	46	47	48	53	61	64	64	67	72
Prey Fish caught: Location 1: Inland Silverside										
Length (mm)	71	78	82	84	95	98	98	99	99	99
Prey Fish caught: Location1: Threadfin Shad										
Length (mm)	81	82	82	83	85	86	89	94	94	98

Prey Fish caught: Location 1: Largemouth Bass												
Length (mm)	64	76	78	82	83	84	89	95	96	99		
Sport Fish caught: Location 1: Largemouth Bass												
Length (mm)	208	244	262	263	309	319	326	329	386	399	440	454
Sport Fish caught: Location 1: Bluegill												
Length (mm)	126	129	148	150	162	162	173	178	179	202		
Sport Fish caught: Location 1: Brown Bullhead												
Length (mm)	330	338	339	352	366	366	372	385	389	392		
Sport Fish caught: Location 1: Black Crappie												
Length (mm)	166	169	174	182	184	185	186	187	191	194		
Sport Fish caught: Location 1: Redear Sunfish												
Length (mm)	216	220	221	223	232	232	237	238	238	246		

Comments: The sampling vessel was launched from the main ramp. Four samples of prey fish were collected in addition to four sport fish species using the electrofisher boat. We had very windy conditions during sample collection.

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2014 BOG, Malibu Lake (404TM0284)



Latitude: 34.10933

Longitude: -118.75462

Collection Method: Electrofisher boat

Date (s) of Collection: May 28, 2014

Samplers: Dylan Service and Gary Ichikawa

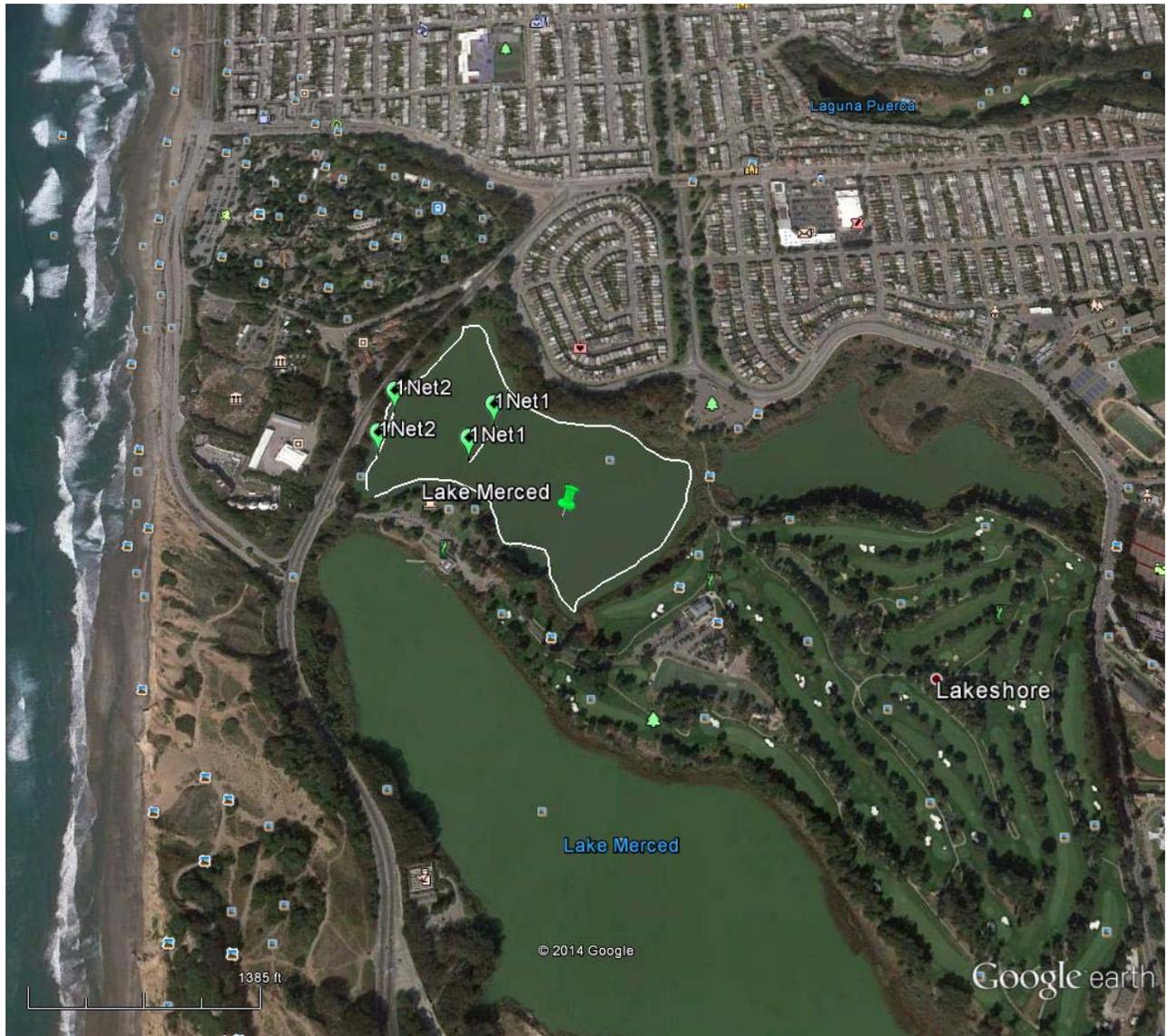
Prey Fish caught: Location 1: Bluegill										
Length (mm)	81	82	87							
Prey Fish caught: Location 1: Inland Silverside										
Length (mm)	86	88	89	92	92	92	92	93	96	97

Prey Fish caught: Location 1: Largemouth Bass												
Length (mm)	46	48	52	52	52	55	57	62	63	82		
Sport Fish caught: Location 1: Largemouth Bass												
Length (mm)	234	274	282	307	345	349	352	374	376	379	409	490
Sport Fish caught: Location 1: Bluegill												
Length (mm)	191	197	204	214	226	232	234	236	240	243		
Sport Fish caught: Location 1: Brown Bullhead						Sport Fish caught: Location 1: Common Carp						
Length (mm)	382	396				Length (mm)	444	450	462	468	474	
Sport Fish caught: Location 1: Black Crappie												
Length (mm)	300	304	324	326	327	333	342	351	361	365		

Comments: The sampling vessel was launched from the private Malibou Lake boat ramp. We sampled the entire lake. The lake water level was low. Three samples of prey fish were collected in addition to five sport fish species collected using the electrofisher boat.

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2014 BOG, Lake Merced (202LKMRCDD)



Latitude: 37372759

Longitude: -122.49910

Collection Method: Electrofisher boat and gill nets

Date (s) of Collection: September 3, 2014

Samplers: William Jakl and Sean Mundell

Prey Fish caught: Location 1: Hitch										
Length (mm)	62	63	65	66	67	70	73	75	80	88
Prey Fish caught: Location 1: Tule Perch										
Length (mm)	74	81	83	84	85	89	89	89	92	94

Sport Fish caught: Location 1: Largemouth Bass											
Length (mm)	200	200	266	276	377	378	385	395	405	410	415
Sport Fish caught: Location 1: Channel Catfish											
Length (mm)	445	496	590	665	675	700					
Sport Fish caught: Location 1: Rainbow Trout											
Length (mm)	274	275	276	290	290	304	306	306	324	344	

Comments: The sampling vessel was launched from off the main launch ramp. Two samples of prey fish were collected in addition to one sport fish species using the electrofisher boat, gill nets. The entire lake was sampled. Access to the other water bodies was not possible.

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2014 BOG, Lake Palmdale (626TU0279)



Latitude: 34.55301

Longitude: -118.12606

Collection Method: Electrofisher boat

Date (s) of Collection: June 16-17, 2014

Samplers: Dylan Service and Keith Skaug

Prey Fish caught: Location 1: Bluegill												
Length (mm)	80											
Prey Fish caught: Location 1: Largemouth Bass												
Length (mm)	39	44	44	45	45	46	46	52				
Sport Fish caught: Location 1: Largemouth Bass												
Length (mm)	243	248	258	271	312	329	341	380	382	394	431	433

Sport Fish caught: Location 1: Bluegill				Sport Fish caught: Location 1: Rainbow Trout		
Length (mm)	174	219		Length (mm)	340	
Sport Fish caught: Location 1: White Catfish						
Length (mm)	582	586	637	666	681	686

Comments: The sampling vessel was launched from off the private launch ramp. Two samples of prey fish were collected in addition to four sport fish species using the electrofisher boat. The entire lake was sampled over the two days.

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2014 BOG, Prado Dam Lake (801PPP187)



Latitude: 33.94355

Longitude: -117.64801

Collection Method: Electrofisher boat

Date (s) of Collection: August 25, 2014

Samplers: Dylan Service and Gary Ichikawa

Prey Fish caught: Location 1: Black Crappie										
Length (mm)	85	90	91	93	95	95	95	96	96	98
Prey Fish caught: Location 1: Largemouth Bass										
Length (mm)	72	78	89	90	92	92	94	94	96	98
Prey Fish caught: Location 1: Threadfin Shad										

Length (mm)	84	84	89	89	90	92	93	93	93	98	
Sport Fish caught: Location 1: Largemouth Bass											
Length (mm)	216	231	279	284	341	341	346	352	387	441	482
Sport Fish caught: Location 1: Bluegill											
Length (mm)	136	143	145	146	151	158	158	162	166	168	
Sport Fish caught: Location 1: Channel Catfish											
Length (mm)	439	454	456	486	503	504	522	531	534	548	

Comments: The sampling vessel was launched from the main launch ramp. Three samples of prey fish were collected in addition to three sport fish species using the electrofisher boat. The entire lake was sampled.

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2014 BOG, Senator Wash Reservoir (715TS0339)



Latitude: 32.78284

Longitude: -115.68584

Collection Method: Electrofisher boat, gill nets, fyke nets, yo-yo fishers, hook and line

Date (s) of Collection: October 21-22, November 3-4, 2014

Samplers: William Jakl, Sean Mundell and Gary Ichikawa

Prey Fish caught: Location 1: Bluegill										
Length (mm)	75	76	76	78	80	80	84	85	87	89
Prey Fish caught: Location 1: Largemouth Bass										
Length (mm)	90	90	90	90	98	99	100	100	100	100

Sport Fish caught: Location 1: Largemouth Bass															
Length (mm)	218	225	246	267	270	330	350	355	365	382	435	465			
Sport Fish caught: Location 1: Bluegill															
Length (mm)	123	132	136	142	142	143	144	150	150	155	156	160	160	166	180
Sport Fish caught: Location 1: Channel Catfish															
Length (mm)	235	250	270	270	270	310	350	360	365	370	445				
Sport Fish caught: Location 1: Common Carp															
Length (mm)	600	605	610	650	660										
Sport Fish caught: Location 1: Striped Bass															
Length (mm)	315	325	327	335	335	336	340	350	354	354	363	365	365	380	420

Comments: The sampling vessel was launched from the main ramp of the lake. The conditions were extremely windy. Two samples of prey fish were collected in addition to two sport fish species using the electrofisher boat. The entire lake was sampled.

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2014 BOG, Sunbeam Lake (723SUNBLK)



Latitude: 32.78284

Longitude: -115.68584

Collection Method: Electrofisher boat and gill net

Date (s) of Collection: October 20 & October 28, 2014

Samplers: William Jakl, Sean Mundell, Gary Ichikawa and Dylan Service

Prey Fish caught: Location 1: Bluegill										
Length (mm)	68	79	79	80	83	87	87	89	94	95
Prey Fish caught: Location 1: Largemouth Bass										
Length (mm)	61	62	64	67	68	76	76	79	84	100

Prey Fish caught: Location 1: Threadfin Shad												
Length (mm)	72	72	79	81	81	84	86	87	89	89		
Sport Fish caught: Location 1: Largemouth Bass												
Length (mm)	235	242	262	290	310	310	335	341	349	361	408	475
Sport Fish caught: Location 1: Pumpkinseed												
Length (mm)	390	410	535	625	637	680	686					
Sport Fish caught: Location 1: Flathead Catfish							Sport Fish caught: Location 1: Channel Catfish					
Length (mm)	205	247	270	449	710	930	Length (mm)		435	493	555	580
Sport Fish caught: Location 1: Redear Sunfish												
Length (mm)	110	114	119	126	129	130	145	149	164	175		

Comments: The sampling vessel was launched from the main ramp of the lake. The first sampling trip was cut short due to a problem with the electroshocking generator. Three samples of prey fish were collected in addition to five sport fish species using the electrofisher boat. The entire lake was sampled.

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References

Bonnema, A. 2014. Quality Assurance Project Plan: A Study of Lakes and Reservoirs with Low Concentrations of Contaminants in Sport Fish. Moss Landing Marine Labs. Prepared for SWAMP BOG, 64 pages plus appendices and attachments.