

WORKPLAN FOR YEAR 2 OF THE  
CALIFORNIA BAY-DELTA AUTHORITY  
FISH MERCURY PROJECT:  
FISH SAMPLING AND ANALYSIS

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## WORKPLAN FOR YEAR 1 OF THE FMP: FISH SAMPLING AND ANALYSIS

### I. INTRODUCTION

This document presents a plan for sampling and analysis of fish for year 2 of the Fish Mercury Project (FMP). The FMP is a multifaceted three-year project that will examine mercury in fish in the Bay-Delta watershed and increase public awareness of fish contamination issues, with the overall goal of reducing mercury exposure in humans and wildlife. Funding for the FMP is being provided by the California Bay-Delta Authority.

Oversight for this project is provided by a Peer Review Panel and a Steering Committee. The Peer Review Panel consists of five experts in fish mercury monitoring, advisory development, and risk communication on fish contamination issues. The Steering Committee is a multidisciplinary, multi-institutional participatory group with members from government agencies, scientific and academic institutions, community-based organizations, and other groups with interests in ecosystem health, environmental management, environmental justice, and public health. This Plan is being developed with Steering Committee and Review Panel input. The Steering Committee has provided input on sampling sites and species of interest.

The Fish Sampling and Analysis Plan for year 1 of the FMP (Davis et al. 2005) provided detailed background on the sampling design, including explicit discussion of how each element of the study addresses the goals and objectives established for the Project. Most of the sampling design has not changed. The one element that has changed significantly is the sampling of advisory development sites, where a new set of sites primarily focused on the Sacramento River has been selected and plans for sampling additional anadromous species (striped bass, white sturgeon, and American shad) have been developed.

This document supplements the year 1 plan by describing changes to the sampling design for each element of the Project.

### II. GENERAL ASPECTS OF THE SAMPLING DESIGN

The sampling design for 2006 includes four different types of sampling sites (index sites, intensive sites, restoration sites, and advisory development sites), in addition to sampling of three anadromous species (striped bass, white sturgeon, and American shad).

#### **Analysis of Other Pollutants**

While this project is focused on mercury, we recognize that sampling of other contaminants in fish, especially trace organics, is needed for development of comprehensive consumption advice. The project team is actively pursuing mechanisms

for funding analysis of organics through coordination with other programs and development of proposals. Currently, the following prospects for funding of organics analysis are being pursued. Collectively, these funding sources could cover organics analysis of FMP samples reasonably well. Additional opportunities for funding organics analysis will be pursued as they arise.

**Sacramento River Watershed Program (SRWP):** Fish monitoring in this program has been conducted annually since 1997 at varying levels of effort. A relatively large effort is planned for 2006. Extensive sampling by the FMP in the Sacramento River watershed in 2006 should free up a considerable amount of SRWP funds for analysis of organics in samples from the Sacramento River watershed (further information on the coordination of these programs is provided below).

**Regional Monitoring Program (RMP):** The RMP monitors chemical contamination of fish in San Francisco Bay on a three year cycle. This Program samples anadromous species like striped bass and white sturgeon. The RMP committees have approved providing funds for analysis of organics in FMP striped bass and white sturgeon samples – two species that are thought to spend a significant part of their lives in the Bay.

**Striped Bass Stamp Fund:** The Striped Bass Stamp Fund (SBSF) is a potential source of funding for analysis of organics in striped bass. Striped bass sampling will be a major emphasis of the FMP in 2006. A proposal has been submitted to the SBSF requesting \$30,000 for analysis of organics in FMP striped bass samples.

**Bay-Delta Sport Fishing Enhancement Stamp Fund (BDSFES):** The BDSFES is another potential source of funding for organics analysis in FMP fish samples. These funds could be used for analysis of samples from throughout the EMUs. A proposal has been submitted to the BDSFES requesting \$310,000 for analysis of organics in FMP samples.

### **Coordination with Other Programs**

One of the goals of the project (#4) is to “coordinate with the major ongoing science, management, and risk communication efforts to achieve efficiencies of scale and scope.” In 2006 there are two other major fish mercury sampling efforts planned for the Bay-Delta watershed – the Sacramento River Watershed Program and the Regional Monitoring Program. The FMP is coordinating closely with these projects to ensure that they collectively yield the maximum possible amount of information.

We are also coordinating with other types of mercury research projects. We are coordinating with the USGS Marvin-DiPasquale and Stewart mercury process study funded by CBDA through overlap at the Cosumnes River and Franks Tract, both to be FMP Intensive sites. Biosentinel sampling will also be linked to CBDA-funded USGS/USFWS bird mercury studies through direct overlap of collections in the north San Pablo Bay region, with a more general linkage to wildlife prey concerns throughout the watershed.

### **III. INDEX SITES**

#### **Sampling Design**

Sampling at 11 index sites (Table 2, Figure 1) in 2006 will include only biosentinels. Biosentinel sampling at index sites will occur during the early fall in all three years of the project. Following the recommendation of the Review Panel, sport fish sampling at index sites will not occur in 2006, but will occur again in 2007 at the same six index sites sampled in 2005. Biosentinels are being sampled at five additional index sites (for a total of 11 annually) along a downstream gradient moving westward beyond the zone of bass-based sport fishing, to provide index data at and downstream of extensive planned and potential restoration work in this region (Table 2, Figure 1). The same index sites will be sampled in all three years of the Project. The rationale for the sites selected was provided in the 2005 Sampling and Analysis Plan (Davis et al. 2005). The same procedures described in Davis et al. (2005) for sampling and sample analysis at these sites will be employed in 2006. An important new addition to the sampling plan, based on first year data, is the seasonal sampling of one or more index sites, with collections as described below for intensive site seasonal monitoring.

### **IV. INTENSIVE SITES**

#### **Sampling Design**

Sampling at the 3 intensive sites (Table 2, Figure 1) in 2006 will include only biosentinels. Biosentinel sampling at intensive sites for one of the primary target species will occur up to 5 times per year in all three years of the project. In addition, during the early fall collections of each year, up to 4 other biosentinel species will be collected for analysis as individuals and up to 5 other species will be collected and analyzed as multi-individual composites. The same intensive sites are being sampled in all three years of the Project. Additionally at the intensive sites, seasonal collections will be made at 3-5 additional times per year, focusing on individual collections of the primary species, with additional species typically processed as composites. The rationale for the sites selected was provided in the 2005 Sampling and Analysis Plan (Davis et al. 2005). The same procedures described in Davis et al. (2005) for sampling and sample analysis at these sites will be employed in 2006.

### **V. RESTORATION AND REMEDIATION SITES**

#### **Sampling Design**

Restoration and remediation site monitoring is being done primarily with biosentinels. Biosentinel monitoring is being conducted in each year of the Project at approximately 33 sites. Biosentinel collections will be supplemented with sport fish sampling at 9 restoration sites (Table 1) during the course of this project, with 3 sites to

be sampled in 2006 (Table 1). At sites where restoration or remediation occur during the course of the FMP, upstream and downstream areas will both be sampled. At sites being monitored in anticipation of future restoration, only downstream areas will be sampled. The same restoration sites are being sampled in all three years of the Project. The rationale for the sites selected was provided in the 2005 Sampling and Analysis Plan (Davis et al. 2005). The same procedures described in Davis et al. (2005) for sampling and sample analysis at these sites will be employed in 2006. An important new addition to the sampling plan, based on first year data, is the seasonal sampling of several key restoration sites, with collections as described above for intensive site seasonal monitoring.

## **VI. ADVISORY DEVELOPMENT SITES**

This is the one element of the monitoring that changes significantly from year to year, with a shifting geographic focus. The goals and objectives of advisory development site sampling remain the same as last year (Davis et al. 2005).

### **Sampling Design**

Sampling at multiple advisory development “sites” is occurring in each year of the Project (Table 1). The focus of sampling to develop advisories is to sample fish from individual water bodies at locations and in adequate numbers to characterize the concentration of mercury in a variety of fish species in the water body. The number of collections and mercury analyses allocated to about thirty advisory development sites will be totaled and spread across rivers, creeks, and reservoirs/lakes to provide adequate sampling where needed in order to develop advice based on sufficient sample sizes. Sites for 2006 are shown in Table 5. In general, a different set of sites is being visited each year. Only sport fish (not biosentinels) will be sampled at these sites. We are expected to sample at 35 sites in 2006.

In 2005, sampling focused on the Delta (south of and including the San Joaquin River), the San Joaquin River between Millerton Reservoir and the Delta, the eastside Delta tributaries (the Cosumnes and Mokelumne Rivers), and the Feather River. These areas were selected to complement the development of advisories for these waterbodies by filling data gaps. Sampling in 2006 will be focused in the Sacramento River watershed from the northern Delta up to and including Shasta Lake (Table 5). Several other lakes and reservoirs in the Sacramento River watershed will also be sampled.

Sampling sites and target species for advisory development sites were selected by OEHHA to fill information gaps related to advisory development for the regions being sampled. OEHHA took into account information on fishing activity obtained by DHS-EHIB through the Steering Committee, the LSAG, site surveys, focus groups, and other data gathering efforts. OEHHA will provide precise instructions on the desired sites and the targets for each sampling location. Active communication between the sampling crew and OEHHA and the project manager will ensure that the appropriate sites and

species are sampled. Maps and species lists will be agreed upon prior to sampling. As sampling proceeds, a report of the catch at each site will be provided to OEHHA and the project manager on a weekly basis. OEHHA and the project manager will review the catch and identify high priority gaps to be filled through followup sampling (i.e., repeat visits to specific sites).

### Site Selection

Advisory development sites were identified through articulation of data needs for advisories by OEHHA and through stakeholder input on popular fishing areas and species. Five criteria were used to develop a quantitative scheme for ranking each site: 1) data gaps in species sampled; 2) triangulation 2) fishing pressure (FP); 3) number of sources of information; and 4) presence of shore-based fishing (Table 4, Appendix 1). These criteria are slightly different from those used in 2005A summary of the rankings is provided in Table 5.

### *Data Gaps in Species*

Existing data for mercury and organics for each site were compiled and reviewed by OEHHA. The primary sources of data, as mentioned above in the discussion of index sites, are the CALFED Mercury Project (Davis et al. 2003), the 1998 Delta Fish study (Davis et al. 2000), the Toxic Substances Monitoring Program (Rasmussen and Blethrow 1990), and the Sacramento River Watershed Program (Larry Walker and Associates 2001). For some sites, very specific gaps exist that will be specifically addressed in the sampling. Precise site-specific guidance will be provided to the sampling crew in these cases.

### *Triangulation*

Triangulation was used to score fishing pressure when sites were identified by multiple sources but without a designation of "high, medium, or low fishing pressure." When two sources named a potential sampling site, it was scored 0.5; when three or more sources identified the same potential sampling site, it was scored as 1.0.

### *Fishing Pressure*

The fishing activity information used to develop this draft sampling plan was obtained from Steering Committee members, published information from fishing guides (Stienstra 2001, Fishsniffer.com), information from California Department of Fish and Game wardens and creel surveys, the Local Stakeholder Advisory Group (LSAG), and information gathered by DHS. Detailed information was obtained from several of these sources.

### *Number of Sources of Information*

Sites with multiple sources of information indicating significant fishing activity received a higher ranking. One point was awarded for each fishingperson source, including a) DHS focus group, site visit (tour), or angler survey; b) tribal stakeholder. In addition, increased effort to include fishing areas important to the Native American community was made, subsequently sites provided by Native American representatives were weighted more heavily (sites were given an additional score of 1 if the site was an important fishing area for Native Americans).

#### *Shore-based Fishing*

The presence of shore-based fishing was considered a priority, and one point awarded for these sites.

As a result of all of these considerations, the preliminary list of advisory development sites shown in listed in Table 5 have been selected for sampling in 2006.

## Sport Fish Sampling at Advisory Development Sites

Sport fish sampling at advisory development sites will generally occur once per site. Samples will be collected during the summer and early fall.

Species to sample at advisory development sites will vary according to which species are most common at a particular location, which are the most important species to stakeholders, and which species are lacking sufficient data for advisory development. Depending on these criteria, various species will be primary and secondary targets at given locations, and primary target species may differ from those identified at other sites. All samples of each species will be analyzed as individuals for mercury. Specific data gaps, as indicated in the site selection matrix (Appendix 1), will be filled by targeting particular species at particular locations. Detailed, site-specific guidance will be followed for each advisory development site. The complete list of target species from which priority species will be the same as last year (Table 11 in Davis et al. 2005). Target size ranges and minimum sizes will also be the same as last year (Table 12 in Davis et al. 2005).

For primary target species we will vary at each site, spanning a broad range of sizes, with the goal of establishing a regression between mercury and length at each location to provide a strong basis for statistical comparisons (Table 5). Multiple sites, or more species and numbers, may be sampled per water body to obtain a representative sample and geographic coverage for species in a water body. For the primary target and secondary species, the sampling crew will stay on site until the targets are obtained. Muscle tissue from primary target species will be analyzed individually for mercury. If funding for organic chemical analysis is found, composite samples comprised of 5 fish in a target size range will be analyzed following USEPA (2000) guidance. In the composites, the smallest fish will be at least 75% the size of the largest fish, as prescribed by USEPA (2000). Secondary target species will be collected to the extent possible with a reasonable sampling effort.

Other popular species collected in adequate numbers as bycatch with the effort expended on primary and secondary targets will also be retained and analyzed. These samples will be analyzed as individuals following the same protocols as for the primary and secondary targets and after discussion of appropriate species. Obtaining the primary and secondary targets will require a considerable sampling effort at each site, so all of the species that are out there in reasonable abundance and effectively collected using an e-boat will be sampled.

Many species will be processed and archived for potential organics analysis, including high lipid species (catfish, trout, salmon, sucker, carp) and low mercury species (bluegill and redear).

## **VI. SALMONID AND ANADROMOUS SPECIES SAMPLING**

### **Sampling Design**

The anadromous species to be sampled in Year 2 of the FMP (2006-2007) are shad, white sturgeon, and striped bass. These species are broadly distributed in water bodies in the Sacramento-San Joaquin-Delta and will be sampled in stretches of water bodies and seasons when angling activity is high. Shad will be sampled in the spring and early summer (May-June) of 2006 (Table 8). Sturgeon will be sampled in the fall (2006) and possibly the spring (2007) to collect enough samples (Table 7). Striped bass will be sampled in throughout the 2006 sampling season and in the spring of 2007 (Table 6). Striped bass will be collected as secondary/by-catch species from all sites during the sampling season and also at specific locations in the fall of 2006 and spring 2007 where they are present year-round and there is higher constant fishing pressure. Otoliths will be removed and preserved following collection. If possible, salinity and isotope analyses (carbon and/or strontium) will be performed on preserved otoliths to determine the relative proportion of their life histories that individuals spend in different parts of the estuary (i.e., the San Francisco Bay area, the Delta, rivers, or the ocean). This information will be used to test whether striped bass that spend more of their life history in one part of the estuary (e.g., the ocean, Bay area, Delta, or rivers) accumulate more mercury or other contaminants. Target sizes and compositing procedures are outlined in Table 9.

Table 1. Sampling design for sport fish sampling. Numbers of each type of site or anadromous species to be sampled in each year of the project. 24 restoration/remediation sites, in addition to the 9 indicated below, will be sampled for biosentinels only.

<b>Year</b>	<b>Index Sites</b>	<b>Intensive Sites</b>	<b>Restoration/ Remediation Sites</b>	<b>Advisory Development Sites</b>	<b>Chinook Salmon</b>	<b>Steelhead</b>	<b>Rainbow Trout</b>	<b>Striped Bass</b>	<b>Sturgeon</b>	<b>American Shad</b>
2005	6	3	4	30	35 fish	30 fish	50 fish			
2006			3	30				100 fish	15 fish	25 fish
2007	6	3	2	30						

Table 2. Preliminary list of biosentinel sampling sites for 2006.

Site Code	Site Names, Descriptions	GPS Site Coordinates (North)	GPS Site Coordinates (West)
<b>Sites in San Joaquin and East Side Drainages, Listed Generally: Upstream to Downstream</b>			
SJ165	San Joaquin River at Hwy. 165 <i>Most upstream project site on San Joaquin; above Salt and Mud Sloughs</i>	37° 17.710'	120° 51.110'
SALTSL	Salt Slough at Hwy. 165 <i>Draining San Luis Wildlife Area, secondary source of elevated aqueous MeHg</i>	37° 14.770'	120° 51.010'
MCUDSL	Mud Slough at Hwy. 140 <i>Draining Kesterson Wildlife Area, primary source of elevated aqueous MeHg</i>	37° 17.490'	120° 56.650'
MER1ADT	Merced River Above Tailings <i>Near upstream extent of mining tailings and salmon restoration; above Merced River</i>	37° 31.048'	120° 22.601'
MER2BDT	Merced River Below Tailings <i>Downstream end of salmon restoration zone below mine tailings; app. 1 km below E.</i>	37° 28.185'	120° 30.779'
MER3HSP	Merced R. at Hatfield St. Park <i>Downstream Merced River, near confluence with San Joaquin River</i>	37° 21.467'	120° 57.554'
TUO1LGR	Tuolumne R. at La Grange Rd. <i>Upstream of historic gold mining dredge tailings and salmon habitat restoration zone</i>	37° 39.995'	120° 27.803'
TUO2GEEER	Tuolumne River at Geer Rd. <i>Downstream end of mining tailings and salmon restoration zone</i>	37° 37.052'	120° 50.796'
TUO3SHI	Tuolumne River at Shiloh Rd. <i>Downstream Tuolumne River, near confluence with San Joaquin River</i>	37° 36.170'	121° 08.070'
SJVER	San Joaquin at Vernalis (Index) <i>San Joaquin Index below all above inputs and just prior to entering the Delta</i>	37° 38.470'	121° 13.720'
MRIND	Middle R. at Bulfrog (Index) <i>Representative of the southern part of the Central Delta, likely a function of filtered Sacramento River water more than San Joaquin, due to water conveyance patterns</i>	37° 56.142'	121° 31.675'
COS	Cosumnes River (Intensive) <i>Adjacent to seasonal floodplain and Nature Conservancy reserve and restoration re. documented zone of highly elevated MeHg exposure and bioaccumulation</i>	38° 15.258'	121° 25.291'

Table 2. Continued.

Site Code	Site Names, Descriptions	GPS Site Coordinates (North) (West)	
DHSL	<b>Dead Horse Sl (MW Tract)</b> <i>At base of McCormack-Williamson Tract, planned for extensive seasonal floodplain wetland restoration in which seasonal flows from the Cosumnes River may play a ro</i>	38° 13.970'	121° 29.748'
SJPOT	<b>San Joaquin at Potato Sl (Index)</b> <i>San Joaquin Inlet along lower main channel, linking to Sac. River confluence and 1</i>	38° 05.324'	121° 34.651'
FRTR	<b>Frank's Tract (Intensive)</b> <i>Extensive flooded tract in Central Delta; overlap with USGS project; slated for poss mgmt and restoration alterations; zone of aquatic weed beds and relatively clear wa</i>	38° 03.358'	121° 36.836'
BIGB	<b>Big Break (Index)</b> <i>Embayment off lowest reach of San Joaquin River; proposed water mgmt alterations to planned Dutch Slough extensive wetland restoration and downstream of Marsh C. Mt Diablo Mercury Mine; aquatic weed beds and relatively clear water</i>	38° 00.890'	121° 41.523'
DUTCH	<b>Emerson Slough (for Dutch Sl)</b> <i>A central channel in planned extensive Dutch Slough wetland restoration</i>	38° 00.226'	121° 40.683'
MCK4BB	<b>Marsh Creek at Big Break</b> <i>App. 1 km upstream of confluence with Big Break, adjacent to planned Dutch Slough restoration and directly downstream of Mt Diablo Mercury Mine (remediation target</i>	38° 00.439'	121° 41.469'
<b>Sites in the Sacramento River Drainage, Listed Generally Upstream to Downstream</b>			
CLCK1CCBR	<b>Clear Creek at Clear Ck. Bridge</b> <i>Near Redding and Lake Shasta off upper Sacramento River; above primary zone of historic mining tailings and ongoing floodplain salmon restor</i>	40° 29.642'	122° 29.811'
CLCK2273	<b>Clear Creek at Hwy 23</b> <i>Downstream of historic mining tailings and ongoing floodplain salmon restoration 2</i>	40° 30.340'	122° 23.570'
SACHC	<b>Sac. River at Hamilton City</b> <i>Sacramento River between Lake Shasta and downstream Delta in meandering, relat section; downstream of planned CBDA restoration zone of river</i>	39° 44.989'	121° 59.681'

Table 2. Continued.

Site Code	Site Names, Descriptions	GPS Site Coordinates (North) (West)	
CCRUM	Cache Creek at Runsey <i>Relative index site for Cache Creek, documented major loading source for total mer- site located downstream of all major point sources. Likely remediation targets upstr-</i>	38° 53.411'	122° 14.308'
SAC44	Sac. River at RM 44 (Index) <i>Sacramento River Index prior to entry to Delta proper, below Sacramento wastewa discharge and Sierra Gold mining rivers Feather, Yuba, Bear, and American</i>	38° 25.915'	121° 31.919'
MINSL	Miner Slough (for Prospect Is.) <i>Adjacent to planned Prospect Island restoration; Sacramento River water channel.</i>		
YBWAYB1	Mo Bypass WA E. Pond B1 <i>WA = Wildlife Area region of extensive wetland restoration; permanent pond at east Bypass south of Hwy 80; mixed flooded tiles, submerged weed habitat, semi-clear w</i>	38° 31.830'	121° 35.390'
YBWACP	Mo Bypass WA Central Pond <i>Long-established permanent pond located midway between E and W edges of YBWA restoration region; contrasts with YB1: exposed, open muddy water, relatively unifo.</i>	38° 31.506'	121° 36.191'
YBWATD	Toe Drain at Mo Bypass WA <i>Primary Bypass site, just off main circulation canal on and off extensive restoration</i>	38° 31.506'	121° 36.191'
YBWATDS	Toe Drain South of Lisbon <i>App. 1 km south of Lisbon passive tidal weir toward N Delta sites; downstream of YI during winter flood flows but source of reverse and mixed flows during summer</i>	38° 31.506'	121° 36.191'
NDLHC	Little Holland Tract Central <i>Naturally breached tract at E base of Yolo Bypass; largely muddy, open water flats; some natural revegetation in center and N portions</i>	38° 18.812'	121° 39.669'
NDLIN	Liberty Island North Marsh <i>Naturally breached tract at W base of Yolo Bypass; extensive natural revegetation in this site simulated deep within marsh region, contrasting with muddy, open water flats</i>	38° 19.355'	121° 40.827'
NDLIC	Liberty Island Central <i>Naturally breached tract at W base of Yolo Bypass; this site situated in muddy, open flats of central and south portion, contrasting with north area vegetated marsh.</i>	38° 16.812'	121° 40.852'
NDDPRSL	Prospect Slough (Intensive) <i>Relative integrative site with mixing from Yolo Bypass, Toe Drain, and N Delta floor</i>	38° 15.108'	121° 40.375'

Table 2. Continued.

Site Code	Site Names, Descriptions	GPS Site Coordinates (North)	GPS Site Coordinates (West)
SACRIO	Sac. River at Rio Vista (Index) <i>Sacramento River Index downstream of N Delta region, prior to confluence with San</i>	38° 08.021'	121° 41.217'
<b>West Delta and Suisun Marsh Region Sites</b>			
SHERM	Lower Sherman Island (Index) <i>Large naturally breached flooded tract at Sacramento-San Joaquin confluence</i>	38° 03.282'	121° 47.635'
HONK	Back Honker Bay (Index) <i>Next index site downstream of Sacramento-San Joaquin confluence, increasing salin</i>	38° 04.674'	121° 54.466'
GRIZNE	Grizby Bay NE (Index) <i>Index along northeast portion of large open water embayment at west extent of Delta</i>	38° 07.854'	121° 59.690'
SUMSE	Montezuma Slough East <i>Upstream end of Montezuma Slough, app. 1 km above tidal salinity gates</i>	38° 04.870'	121° 53.092'
SUMSW	Montezuma Slough West <i>Downstream end of Montezuma Slough, below numerous seasonally flooded Suisun Marsh tracts, app. 5 km prior to confluence with Grizzly Bay</i>	38° 10.250'	122° 02.102'
SUSLN	Suisun Slough North <i>A primary Suisun Marsh Channel, back end, exposed to flows off seasonally flooded</i>	38° 13.074'	122° 01.801'
SUISPBR	Back Spring Branch <i>Deep, back end of long, convoluted, small, tule lined slough in natural region of Suis</i>	38° 12.277'	122° 01.691'
SUSLS	Suisun Slough South <i>Lower portion of Suisun Slough, approaching confluence with Grizzly Bay</i>	38° 09.013'	122° 04.280'
SUBSW	Suisun Bay SW (Index) <i>Index along southwest portion of large open water embayment at west extent of Suisi</i>	38° 02.904'	122° 04.796'
<b>Napa Marsh Region Sites</b>			
NAPNAP	Napa River at Napa <i>Most upstream Napa River site, near Hwy 121 in city of Napa, above all major resto</i>	38° 17.407'	122° 16.905'

Table 2. Continued.

Site Code	Site Names, Descriptions	GPS Site Coordinates	
		(North)	(West)
NAP29	Napa River Hwy 29Wetlands <i>App. 1 km upstream of Hwy 129, immediately below large mudflat restoration</i>	38° 15.126'	122° 17.647'
NAPGLP	Napa R. at Good Luck Point <i>Napa River central site, adjacent to major planned and in-process wetland restoration</i>	38° 11.049'	122° 18.230'
NAPAMC	American Canyon Wetlands <i>Large CBDA restoration region on E side of Napa River, across from large DFG rea</i>	38° 10.218'	122° 16.515'
NAPP2A	Napa Marsh Pond 2A <i>One of the many west side former salt ponds; naturally breached in mid 1990s; now naturally revegetated throughout.</i>	38° 09.273'	122° 19.371'
NAPP3	Napa Marsh Pond 3 <i>Another west side former salt pond, vandal breached in 2002; little revegetation yet.</i>	38° 08.197'	122° 17.062'
NAPCHSL	Napa Marsh mid China Slough <i>Central, primary slough deep within salt pond restoration zone, between Ponds 2, 4,</i>	38° 10.026'	122° 18.737'
NAP37	Napa River at Hwy 3 <i>Most downstream Napa River site, at Vallejo approaching Carquinez Strait, south of all major restoration areas</i>	38° 06.738'	122° 16.712'
NAPSLW	Napa Slough West <i>Slough draining western extent of Napa Marsh, linking to San Pablo Bay</i>	38° 09.595'	122° 22.724'
SPBIND	San Pablo Bay (Index) <i>North San Pablo Bay Index, adjacent to Napa Marsh former salt ponds; open water</i>	38° 07.722'	122° 21.469'
<b>Petaluma River Sites</b>			
PET37	Petaluma R. at Highway 3 <i>Downstream Petaluma River near confluence with San Pablo Bay</i>	38° 06.893'	122° 30.264'
PETBJSL	Black John Sl. (Petaluma R.) <i>Back end of slough off Petaluma River in planned restoration region</i>	38° 08.294'	122° 32.593'

Table 3. Design of biosentinel sampling. A) Estimated numbers of each type of site to be sampled in each year of the project. B) Planned species and compositing scheme for each type of sampling site.

A)

Year	Index Sites	Intensive Sites	Restoration and Remediation Sites
2005	11	3	App. 30
2006	11	3	App. 30
2007	11	3	App 30

B)

Type of Site	Primary Targets <i>(up to 30 individ. analyses/sample)</i>	Secondary Targets <i>(multi-individual. composites)</i>
Index Sites SPATIAL/INTERAN.  SEASONAL	11 sites x 1 taxon  2-? sites x 3-5 dates x 1 taxon	11 sites x 1-5 taxa x 1-5 comps  2-? sites x 3-5 dates x other taxa comps
Intensive Sites SPATIAL/INTERAN.  SEASONAL	3 sites x 1 taxon 3 sites x 1 date x 1-5 other taxa  3 sites x 3-5 dates x 1 taxon	3 sites x 1-5 taxa x 1-5 comps 3 sites x 1 date x other taxa comps  3 sites x 3-5 dates x other taxa comps
Restoration and Remediation Sites SPATIAL/INTERAN.  SEASONAL	App. 30 sites x 1 taxon  3-? sites x 3-5 dates x 1 taxon	App. 30 sites x 1-5 taxa x 1-5 comps  3-? sites x 3-5 dates x other taxa comps



Table 5. 2006 FMP advisory sampling sites and primary/secondary target fish species.

Updated July 28, 2006

#	Fishing Sites	Site Code	Primary Target Species	Secondary Target Species
1	Sac River/West Sacramento	WSAC	CAR	*
2	Sacramento River nr Verona	SRVER	CCF, SPM	*
3	Sacramento River/Knights Landing	SRKNI	LMB, CF	*
4	Sacramento River nr Tisdale	SRTIS	No "priority" species but collect whatever is available from 2°	CCF, *
5	Sacramento River nr Hamilton (Scotty's)	SRHAM	RBT	HRH, *
6	Sacramento River at Bend Bridge near Red Bluff	SRBND	SPM, CF, RBT	*
7	Sacramento River nr Deschutes Rd	SRDES	RBT	
8	Georgiana Slough	GEORS	CF, BB, CRP, BG	ST, SB
9	Snodgrass Slough	SNODS	CF, BB, BG, CRP, CAR	
10	Steamboat Slough	STMSL	LMB, SMB, CF, CAR, CRP	
11	Sutter Bypass	SUTBY	As available	
12	Clear Creek	CCRES	LMB, RBT, SPM, CAR, BG	
13-14	Whiskeytown Lake	WHLBR WHLCC	KOK, RBT, BG	BB, other trout
15	Napa River <sup>1</sup>	NRNAP	BG, BRB, SPM <sup>2</sup>	ST, SB, CS, SH
16	Hat Creek @Baum	HATCR	BT, RBT	
17	Baum Lake	BAUM	BT, RBT	
18-19	Bullards Bar Reservoir	BULLB	CAR, SMB, KOK	
20	Butte Creek	BUTTE	CAR, BB, BG	
21	Cross Canal	CRCAN	SPM, RSF, BB	CCF
22	Deer Creek nr Lassen	DRCL	Trout	
23-24	Indian Valley Reservoir	IVRES	LMB, CCF, trout, KOK, CRP	
25-26	Lake Almanor	LALMA	BT, SMB	RBT
27	Lake Britton	LBRITT	Trout, SMB, CCF	
28-30	Shasta Lake	SLMCC SLSAR SHLMA	RBT, BG, CAR	BB, CS
31-32	Stony Gorge Reservoir	STONY	CCF, CRP	As available
33-34	East Park Reservoir	EPRES	LMB, CCF, SF, CAR, CRP	
35	Bucks Lake	BUCKS	RBT, BT	

\* The following species were identified for the Sacramento River as a whole, and therefore should be considered collectable as secondary and/or by-catch species when not named in the primary target

<sup>1</sup> Potential Sites = 1st St. south to Brazos Bridge, 3rd St. Bridge to Vallejo, Riverpark by yacht club, MI Bridge by Vallejo, Cutting Wharf, from 3rd St. to Carquinez north, from Vallejo to Sea Scout Base

<sup>2</sup> Do we want to target freshwater species?

species column: black bass, trout, sturgeon, catfish, bullhead, bluegill, crappie, Sacramento pikeminnow, striped bass, salmon (Sept).

### Species<sup>3</sup> Codes and Samples Sizes

<b>Code</b>	<b>Species Common Name</b>	<b>Target N</b>
BB	Black bass	12, at least 9 of legal size
LMB	Largemouth bass	12, at least 9 of legal size
SMB	Smallmouth bass	12, at least 9 of legal size
SPB	Spotted bass	12, at least 9 of legal size
CF	Catfish	At least 10
CCF	Channel catfish	At least 10
BRB	Brown bullhead	At least 10
RSF	Redear sunfish	At least 10
BG	Bluegill	At least 10
CRP	Crappie	At least 10
CAR	Carp	At least 10
ST	Sturgeon	As available
CS	Chinook salmon	As available
BT	Brown trout	9 - 12
RBT	Rainbow trout	9 - 12
SPM	Sacramento pikeminnow	9
KOK	Kokanee	9 - 12
HRH	Hardhead	9
SH	Steelhead	As available
SF	Sunfish	At least 10

<sup>3</sup> OEHHA's minimum size criteria same as 2005

**Table 6. Sampling and analysis plan for striped bass, CBDA Year 2 FMP.** SRWP\$ = Sacramento River Watershed Program, BDES\$ = Bay-Delta Sport Fishing Enhancement Stamp, RMP\$ = San Francisco Bay Regional Monitoring Program, SBF\$ = Striped Bass Fund

Species	Waterbody	Number of fish	Mercury analysis	Organics analysis*	Comments
<b>Striped bass</b>	Multiple sites, some during 2006 sampling season as secondary /by-catch, some fall 2006 and spring 2007. Good areas based on angling pressure and bass distribution are shown.	100	Run as individuals	Run as composites	Based on DFG creel survey info and experts, DHS and stakeholder surveys. Sampling to be coordinated with RMP in 2006 and DFG Striped Bass Survey <sup>1</sup> in spring 2007. Sources listed for each site.
<i>Organics Funding</i>	<b>Year round areas:</b> Sample in fall 2006 and spring 2007. <b>50 total fish from 5 sites.</b>	5 per site per season	5 per site per season	Composite <sup>2</sup> 3-5 individuals	
RMP\$	Brannon Island/Rio <sup>3</sup> Vista (RM 12-14)				DFG MH, EQ, DHS
SRWP\$	American R below Nimbus (near hatchery)				DFG MH
SRWP\$	Knights Landing (RM 90) <sup>4</sup>				DFG, MH, EQ, DHS
	Sample same 2 of the 3 sites below in fall 2006 and spring 2007.				
SBF\$	Franks Tract <sup>5</sup>				DFG MH
	<i>Or</i>				
SBF\$	Mildred Island (south) <sup>6</sup>				DFG MH
	<i>Or</i>				
SBF\$	Antioch to Middle River <sup>6</sup>				DFG MH

1 = Coordinate sampling in spring with the Striped Bass Survey in 2007.

- 2 = Composites for organics will be made from fish with similar otolith life-history patterns (e.g., fish that spent more time in rivers will be composited together).
- 3 = Coordinate sampling in the fall with the Rio Vista Derby in October.
- 4 = 2006 sample sites for other species.
- 5 = Index site, sampled in 2005 and 2007.
- 6 = Area sampled for other species in 2005.

<i>Organics Funding</i>	<b>Secondary/by-catch collections:</b> Collect striped bass as available during 2006 collections. A list of known fishing sites is given below but striped bass from any collection site can be used <sup>7</sup> . <b>Collect 50 fish total.</b>	As available	As available	composites <sup>2</sup> of 3-5 individuals	Based on DFG creel survey info and experts, DHS and stakeholder surveys. Sampling to be coordinated with RMP in 2006 and DFG Striped Bass Survey <sup>1</sup> in spring 2007. Sources listed for each site.
SBF\$	Ryer Island <sup>6</sup>				DFG MH, DHS
SBF\$	Grand Island <sup>6</sup>				DFG MH, DHS
SBF\$	Cache Slough <sup>6</sup>				DFG MH, DHS
SBF\$	Prospect Slough <sup>6</sup>				DFG MH, DHS
SBF\$	Georgiana Slough (near RM 20) <sup>4</sup>				EQ
BDES\$	Steamboat Slough, Snodgrass Slough/nr Delta Meadows, RM 22-32 (above Rio Vista) <sup>4</sup>				DFG MH, DHS
SRWPS\$	RM 44/ Clarksburg/Courtland				DFG MH, DHS
SRWPS\$	Freeport (RM 47) <sup>8</sup>				DFG MH, DHS
SRWPS\$	Garcia Bend (RM 50) <sup>8</sup>				DFG MH, DHS
SRWPS\$	Isleton/SR (RM 18)				EQ, DHS
SBF\$	Delta Cross Channel				EQ
SBF\$	Miner Slough				DHS
SRWPS\$	Hood (RM 38)				EQ, DHS
SRWPS\$	RM 47-60 (Freeport to Discovery Park) <sup>8</sup>				DHS
SRWPS\$	Veterans Bridge I-5 overcrossing (RM 70) <sup>8</sup>				EQ
SRWPS\$	Red Bluff, North San Slough Riffles				EQ
SRWPS\$	SR at Bend Bridge (RM 254) <sup>4</sup>				EQ
SBF\$	Ward Landing <sup>4</sup>				DHS
SBF\$	Glenn-Princeton				DHS
SRWPS\$	Feather River				Stienstra, DHS

2 = Composites for organics will be made from fish with similar otolith life-history patterns (e.g., fish that spent more time in rivers will be composited together).

4 = 2006 sample sites for other species.

6 = all between Deep Water Channel and Sacramento River.

7 = some by-catch from spring 2006 collections may be used as needed.

8 = Sampling at these Sacramento River sites can be coordinated with Miller Park (Anderson Pacific) Derby in May if more striped bass are needed.

\*Organics (especially PCBs) should be run on 20 composites of 3-5 fish. As noted above the composites will be made from fish with similar otolith life-history patterns (e.g., fish that spent more time in rivers will be composited together). The actual site or area of collection is less important in making composites than the life-history pattern which represents potentially different exposures through consumption of different prey from areas with more or less of a contaminant. In the event that otolith analyses cannot be run, composites will be made using fish from the same or nearby sites.

**SOURCES FOR SITES:**

DFG MH = Mike Harris with Striped Bass Survey

EQ = Elaine Quitiquit survey

DHS = DHS surveys

**KEY TO PROPOSED FUNDING SOURCES IN TABLES**

SRWP\$ = Sacramento River Watershed Program

BDES\$ = Bay-Delta Sport Fishing Enhancement Stamp

RMP\$ = San Francisco Bay Regional Monitoring Program

SBF\$ = Striped Bass Fund



Table 7. Sampling and analysis plan for white sturgeon, CBDA Year 2 FMP.

Species	Waterbody	Number of fish	Mercury analysis	Organics analysis*	Comments
<b>Sturgeon</b>	Collect on the rivers and in conjunction with DFG fishery surveys and or sturgeon derbies to be less destructive.	About 15, final # to be determined	Run as individuals	Run as composites	Based on DFG creel survey info and Stienstra/Internet
<i>Organics Funding</i>					
RMP\$	Sacramento River – Carquinez Bridge to Rio Vista Bridge <sup>1</sup>	5	5	1 of 3-5 individuals	Highest # in creel survey.
RMP\$ or SRWP\$	Sacramento River – Rio Vista Bridge to American River mouth				Much lower # in creel survey.
	<i>Or</i>	5	5	1 of 3-5 individuals	If these sites are not productive we could get more samples between the Carquinez Bridge and Rio Vista.
RMP\$ or SRWP\$	Sacramento River to Red Bluff				Per Stienstra
RMP\$	San Joaquin River -- Mossdale Crossing to confluence w/ Sacramento River	5	5	1 of 3-5 individuals	Much lower # in creel survey. If this site is not productive we could get all samples from the Sacramento River sites.

1 = Try to coordinate collections with February derby and DFG sturgeon collections if any are on the rivers or in the Delta.

\*Organics (especially PCBs) should be run on one or two composites of 3-5 fish from each of the sampling locations indicated.

Table 8. Sampling and analysis plan for American shad, CBDA Year 2 FMP.

Species	Waterbody	Number of fish	Mercury analysis	Organics analysis*	Comments
<b>American Shad</b>	Need to collect on the rivers.	25 in total	Run as individuals	Run as composites	Based on DFG creel survey info and Stienstra/Internet
<i>Organics Funding</i>					
SRWPS	Feather River – Verona to Sunset Pumps or to Yuba City/Marysville (e.g, Shanghai Bend)	10	10	2 of 3-5 individuals	Considered premier shad run; highest catch in May.
SRWPS	American River – I-80 Bridge to Hazel Ave Bridge	10	10	2 of 3-5 individuals	Highest # in creel survey
SRWPS	Sacramento River – Hamilton City to Red Bluff Diversion Dam <b>Or</b> Colusa to Garcia Bend	5	5	1 of 3-5 individuals	Lower # in creel survey.

\*Organics (especially PCBs) should be run on one or two composites of 3-5 fish from each of the sampling locations indicated.

Table 9. Size criteria and processing instructions for additional target species in 2006. REMINDER THAT THE WHITE STURGEON SIZE CRITERIA IS NOW 1168.4MM-1422.4MM – NEED TO DECREASE UPPER BOUND

<b>Species</b>	<b>Sample Preparation</b>	<b>Minimum Size (mm TL)</b>	<b>Process for Organics</b>
Sturgeon	Individual fish for Hg; composite for organics	1168-1829 <sup>4</sup>	X
Striped bass	Individual fish for Hg; composite for organics	457	X
American shad	5 fish per composite	400	X
Splittail	5 fish per composite	180	X

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<sup>4</sup> Target this legal size range as much as possible.

Figure 1. Preliminary set of biosentinel sampling sites for 2006.

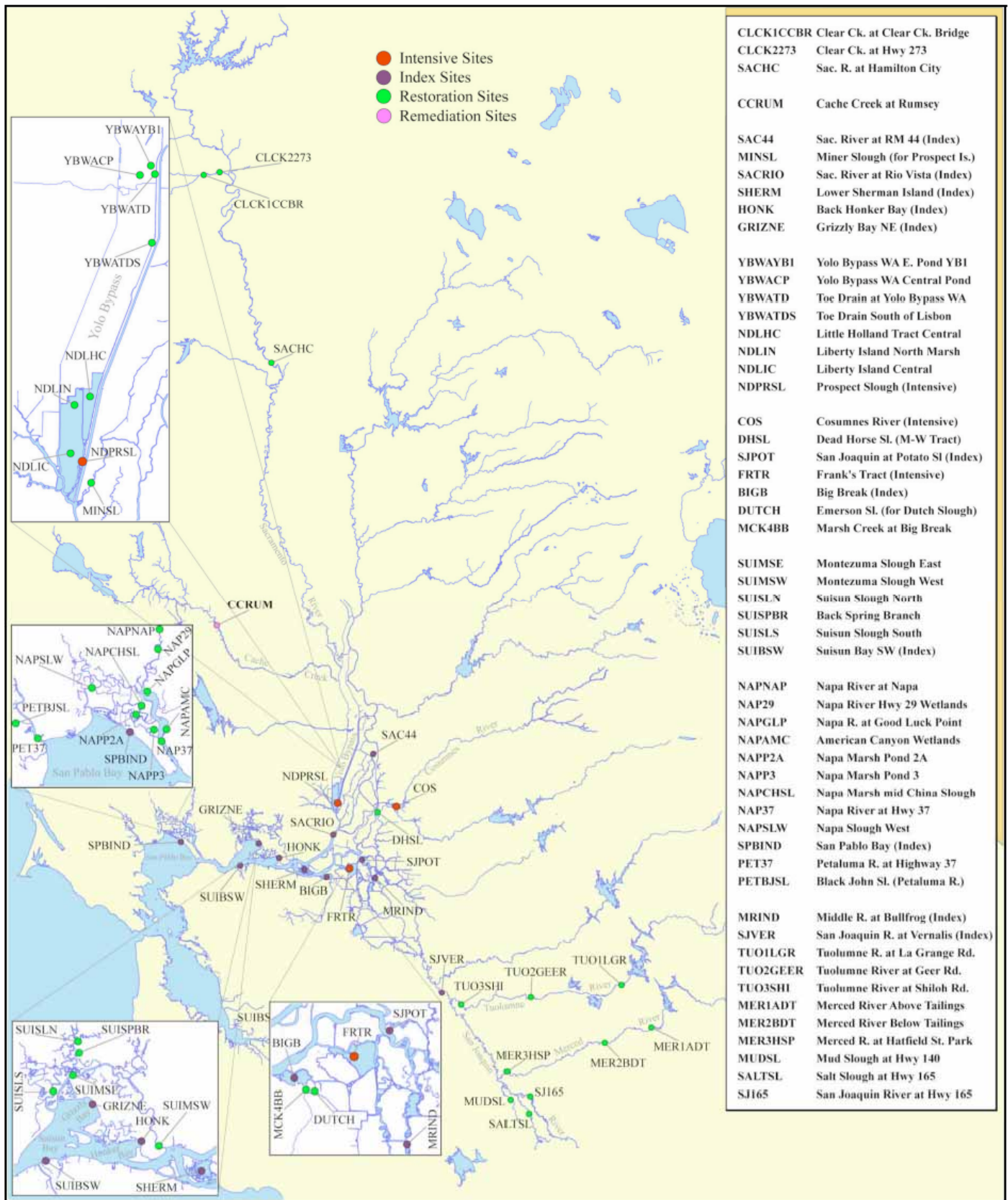
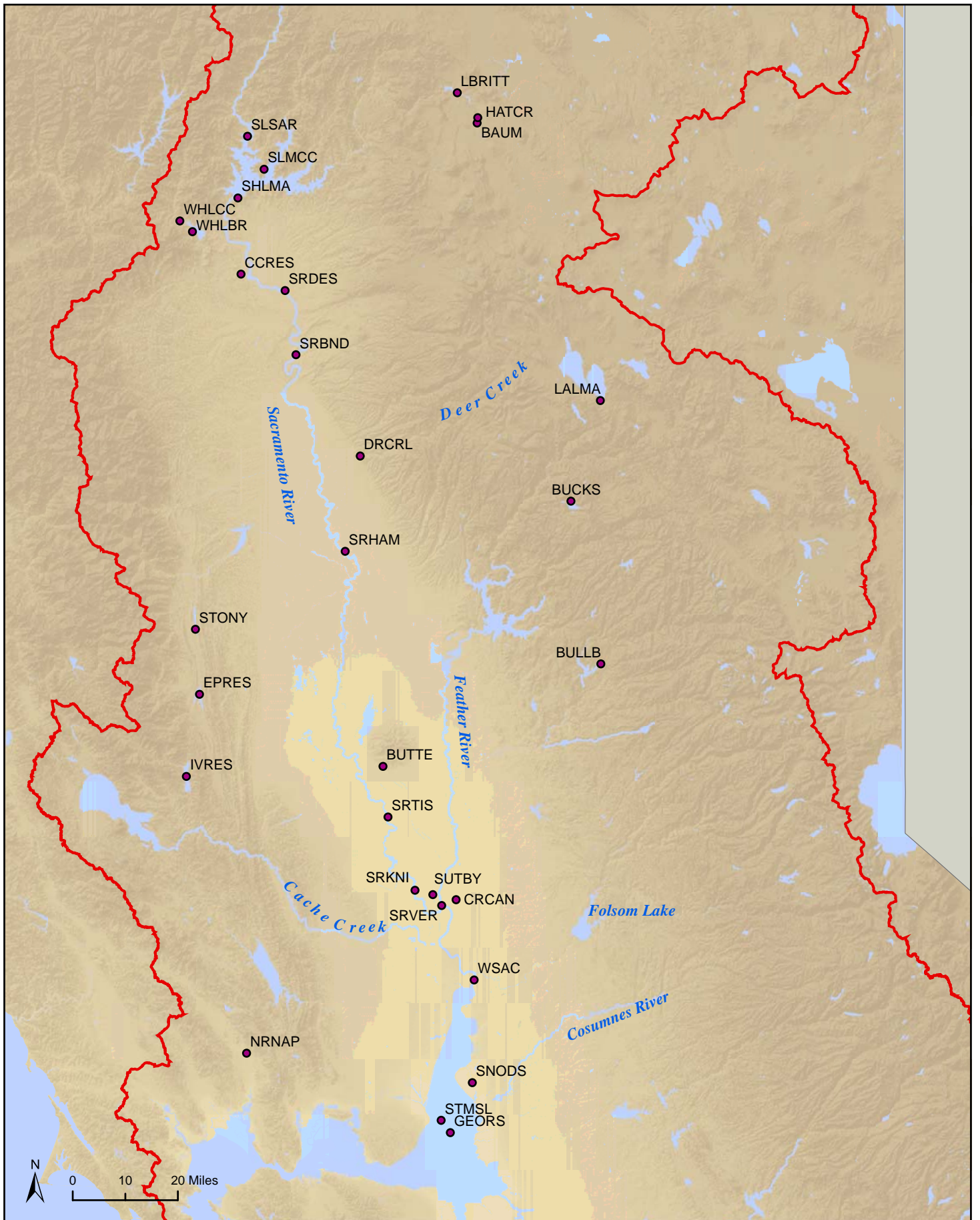


Figure 2. 2006 FMP advisory sampling sites. Site codes are cross referenced with Table 5.



Fishing Sites	Fishing Site Name Details	Combine into one sampling location (by number)	General Name	RM (river mile)	Points for Data Gaps (Species)	Points for Triangulation	Points for Fishing Pressure	Points for Source	Points for shore-based fishing	DG Total points	FP Total points (incl shore)	Total Points	Historical Data	Species high in creel survey	Species from EQ or ITC
Sacramento River/Decker Island	Sacramento River/Decker Island	1	Sacramento River	8	3		1	1	1	3	3	6			Salmon, striped, steelhead, catfish, sturgeon
Sacramento River/Decker Island	3 mile slough on Brannan Island State Recreation Area	1	North and West Delta	11	3		1	1	1		3			(CCF @ 10-15)	
Sacramento River/Decker Island	Rivermile 0 to 12	1	Sacramento River	0-12	3		1		1		2			(CCF @ 10-15)	
Sacramento River/Decker Island	Rivermile 7	1	Sacramento River	7	3		1				1				
Sacramento River/Decker Island	Sacramento River/Decker Island (inner channel)	1	Sacramento River	7.5	3		1				1		17 clam; 4 cray		
Cache Slough	Cache Slough	2	North and West Delta	14	1		1		1	1	2	3		(CCF @ 10-15)	
Cache Slough	Cache Slough (lower)	2	Delta	-1 mi N of RIF site	1		1				1		36 clam; 2 cray and see Cache Sl. nr Ryer Is. Ferry		
Cache Slough	Cache Slough near Ryer Island Ferry	2	Delta	nr Sac RM14	1		1				1		TOTAL ALL 3 SITES: 8 CP; 5 CRP; 43 LMB; 5 SS; 56 WCF		
Cache Slough	Cache Slough near Ryer Island Ferry 1	2	Delta	-3 mi N of RIF site	1		1				1		See Cache Sl. Nr Ryer Is. Ferry		
Cache Slough	Cache Slough near Ryer Island Ferry 2	2	Delta	-4.5 mi N of RIF site	1		1				1		See Cache Sl. Nr Ryer Is. Ferry		
Sacramento River nr Rio Vista	Sacramento River/Rio Vista	3	North and West Delta	12	0		1	2	1	0	4	4	9 LMB; 10 SPM; 5 SS; 12 WCF; 1 CCF; 8 BG; 10 RSF; 5 CP; 1 CRP; 5 HIT	(CCF @ 10-15)	Salmon, striped, steelhead, catfish, sturgeon
Sacramento River nr Rio Vista	Launching Ramp off Front St (Rio Vista)	3	North and West Delta	14	0		1	1			2		22 clam; 10 cray; 6 SPM; 7 SS	(CCF @ 10-15)	
Sacramento River nr Rio Vista	Sandy Beach, Rio Vista (Park St. Gertrudes to 2nd to left on beach)	3	North and West Delta	12	0		1	2	1		4		see Front St. (22 clam; 10 cray; 6 SPM; 7 SS)	(CCF @ 10-15)	Salmon, striped, steelhead, catfish, sturgeon
Sacramento River nr Rio Vista	Viera's Resort (private, Ida Island, N of Rio Vista)	3	North and West Delta	16	0		1	1			2		see Front St.	(BB @ 15-70)	
Sacramento River nr Isleton	Sacramento River/Isleton	4	Sacramento River	18	2					2	0	2	48 clam; 10 cray	(BB @ 15-70)	Salmon, striped, steelhead, catfish, sturgeon
Sacramento River nr Isleton	Sacramento River nr Isleton	4	Sacramento River	17	2						0		6 LMB; 10 SPM; 10 SS; 2 WCF	(BB @ 15-70)	
Sacramento River nr Isleton	Sacramento River/Isleton	4	Sacramento River	18	2						0		48 clam; 10 cray	(BB @ 15-70)	Salmon, striped, steelhead, catfish, sturgeon
Georgiana Slough	Georgiana Slough	5	Delta		3		1	1	1	3	3	6	10 cray		CF, ST, BB/LMB, CRP, BG, SB
Steamboat Slough	Steamboat Slough	6	Delta	nr Sac RM 21	3		1	1	1	3	3	6	9 clam; 11 cray		BB, LMB; CRP; CF; CP
Steamboat Slough	Steamboat Slough	6	North and West Delta	joins Sac R @ RM 14 and RM 32	3		1	1	1		3				BB, LMB; CRP; CF; CP
Steamboat Slough	Steamboat Slough @ Hogback Island Fishing Access (off Grand Island Rd 5 mi west of Ryde/Sac RM 24)	6	North and West Delta		3		1	1	1		3				
Delta Cross Canal (Channel)	Delta Cross Canal (Channel)	7	Delta	nr Sac RM 27	3		1	1	1	3	3	6	4 clam; 10 cray		CF, ST, BB/LMB, CRP, BG, SB
Sacramento River Deep Water Ship Channel	Sacramento River Deep Water Ship Channel	8	Delta	nr Sac RM 29 (W)	3		1	1	1	3	3	6	1 clam; 2 cray	(BB @ 15-70)	Salmon, striped, steelhead, catfish, sturgeon
Miner Slough	Miner Slough	9	North and West Delta	~3mi W of Sac RM32	3		1		1	3	2	5	20 cray		
Snodgrass Slough	Snodgrass Slough/nr Delta Meadows	10	Delta	nr Sac RM 30 (E)	3		1	1	1	3	3	6	45 clam. Also from Delta Meadows: 10 clam; 1 cray		BB, LMB; CRP; CF; CP
Sacramento River nr Hood	Sacramento River @Merritt Island	11	North and West Delta	34-40	1		1	1	1	1	3	5		(BB @ 15-70)	
Sacramento River nr Hood	Merritt Island	11	North and West Delta	34-40	1		1	1	1		3			(BB @ 15-70)	
Sacramento River nr Hood	Rivermile 39	11	Sacramento River	39	1		1		1		2			(BB @ 15-70)	
Sacramento River nr Hood	Sacramento River/Hood	11	Sacramento River	38	1		1	1			2		4 CCF; 18 CP; 21 cray; 8 LMB; 5 SMB; 97 WCF	(BB @ 15-70)	Salmon, striped, steelhead, catfish, sturgeon
Toe Drain	Toe Drain	12	Delta	nr Sac RM 41 (W)	3					3	0	3	1 clam		
Sacramento River/RM 44	Sacramento River/Rivermile 45 and 46	13	Sacramento River	45-46	0		1	1	1	0	3	3		(steelhead @ 45-80; CCF @ 40-105; BB @ 15-70)	
Sacramento River/RM 44	Clarksburg	13	Sacramento River	42	0		1		1		2			(CCF @ 40-105; BB @ 15-70)	
Sacramento River/RM 44	Rivermile 45 and 46	13	Sacramento River	45-46	0		1	1	1		3			(steelhead @ 45-80; CCF @ 40-105; BB @ 15-70)	

Fishing Sites	Fishing Site Name Details	Combine into one sampling location (by number)	General Name	RM (river mile)	Points for Data Gaps (Species)	Points for Triangulation	Points for Fishing Pressure	Points for Source	Points for shore-based fishing	DG Total points	FP Total points (incl shore)	Total Points	Historical Data	Species high in creel survey	Species from EQ or IITC
Sacramento River/RM 44	Sacramento River at RM 44 - 1	13	Sacramento River	44	0		1				1		5 BG; 51 LMB; 10 SPM; 25 SS; 5 SMB; 4 SPL; 42 WCF	(CCF @ 40-105; BB @ 15-70)	
Sacramento River/RM 44	Sacramento River at RM 44 - 2	13	Sacramento River	44	0		1				1		5 BG; 3 CP; 20 LMB; 2 SPM; 5 SS; 25 WCF	(CCF @ 40-105; BB @ 15-70)	
Sacramento River/RM 44	Sacramento River/RM 44	13	Sacramento River	44	0		1				1		2 LMB; 7 SPM; 10 SS; 5 RSF; 10 SPB; 4 SB; 3 SMB; 10 CS; 2 SH	(CCF @ 40-105; BB @ 15-70)	
Beach Lake	Beach Lake	14		nr Sac RM 44	2		1	1	1	2	3	5	24 LMB; 6 CP		BB, LMB; CRP; CF; CP
Sacramento River/Garcia Bend & Freeport	Sacramento River/Garcia Bend & Freeport	15	Sacramento River	50	3		1	1	1	3	3	6		Spittail peak: (steelhead @ 45-80; CCF @ 40-105; BB @ 15-70)	
Sacramento River/Garcia Bend & Freeport	Freeport	15	Sacramento River	47	3		1		1		2		(steelhead @ 45-80); spittail 40-60; BB @ 15-70)		
Sacramento River/Garcia Bend & Freeport	Garcia Bend	15	Sacramento River	50	3		1	1	1		3			Spittail peak: (steelhead @ 45-80; CCF @ 40-105; BB @ 15-70)	
West Sacramento	Sacramento River/Rivermile 59	16	Sacramento River	59	3		1		1	3	2	5		(spittail 40-60; CCF @ 40-105; BB @ 15-70)	
West Sacramento	Rivermile 59	16	Sacramento River	59	3		1		1		2			(spittail 40-60; CCF @ 40-105; BB @ 15-70)	
West Sacramento	West Sacramento	16	Sacramento River	58	3		1				1			(steelhead @ 45-80; spittail 40-60; CCF @ 40-105; BB @ 15-70)	
Sacramento River/Veteran's Bridge	Sacramento River/u/s I-5 Overcrossing	17	Sacramento River	71	1		1	1		1	2	3	15 cray	Spittail 70±5; carp @ 70; SPM @ 65-80; (steelhead @ 45-80; CCF @ 40-105)	Salmon, striper, steelhead, striper, catfish, sturgeon
Sacramento River/Veteran's Bridge	Sacramento River at Veterans Bridge	17	Sacramento River	72	1		1				1		16 LMB; 15 SPM; 13 SS; 10 WCF; 9 CCF; 5 RSF; 4 CP	Spittail 70±5; carp @ 70; (SPM @ 65-80)	
Sacramento River nr Verona	Sacramento River @ Verona Marina, Village Resort AKA Joe's Place	18	Sacramento River	79		3	1		1	3	2	5		CCF; SPM @ 65-80; (steelhead @ 45-80)	
Sacramento River nr Verona	Verona Marina, Village Resort AKA Joe's Place	18	Sacramento River	79	3		1		1		2			CCF; SPM @ 65-80; (steelhead @ 45-80)	
Cross Canal	Cross Canal	19	Sacramento River	joins Sac RM 79	1		1	1	1	1	3	4	12 CP; 8 LMB; 6 RSF	SPM @ 65-80; (steelhead @ 45-80; CCF @ 40-105)	Catfish, sturgeon, BIK/LMB, crappie, bluegill, striper
Reclamation Slough	Reclamation Slough	20			2		1			2	1	3	2 BBH; 5 CCF; 6 WCF		
Sacramento Slough	Sacramento Slough (Reclamation)	21	Sutter County	nr Sac RM 80	0		1			0	1	1	21 LMB; 9 RSF; 15 WCF; 9 CCF		
Sacramento River/Knights Landing	Sacramento River/Knights Landing	22	Sacramento River	90	2		2	1	1	2	4	6	6 LMB; 5 SS	sunfish; BB; (CCF @ 40-105)	Salmon, striper, steelhead, catfish, sturgeon
Sacramento River/Knights Landing	Rivermile 93	22	Sacramento River	93	2		1		1		2			(CCF @ 40-105)	
Sutter Bypass	Sutter Bypass Below Kirkville Rd	23	Sutter Bypass	119	3		1	1	1	3	3	6			
Sutter Bypass	Sutter Bypass	23	Sutter Bypass	nr Sac RM 90 (E)	2		1				1		6 CCF; 1 CP; 1 WCF		
Sutter Bypass	Sutter Bypass Sacramento Slough Reclamation Area	23	Sutter Bypass	nr Sac RM 90	2		1	1	1		3				
Sutter Bypass	Sutter Bypass Willow Slough Fish Ladder	23	Sutter Bypass	119	2		1	1	1		3				
Colusa Basin Drain	Colusa Drain/Knights Landing	24	Colusa Drain AKA Trough, Basin, Canal, "2047"	NW of Sac RM 90	2					2	0	2	14 CCF; 1 SS		
Colusa Basin Drain	Colusa Basin Drain	24	Colusa Drain AKA Trough, Basin, Canal, "2047"	W of Sac RM 91	1						0		18 CP; 5 CRP; 10 WCF		
Colusa Basin Drain	Colusa Basin Drain/Road 99E nr Knights Landing	24	Colusa Drain AKA Trough, Basin, Canal, "2047"		1						0		see Colusa Drain/Knight's Landing		
Colusa Basin Drain	Colusa Drain/Abel Road	24	Colusa Drain AKA Trough, Basin, Canal, "2047"	W of Sac RM 135	1						0		11 BBH; 9 CCF; 2 CP		

Fishing Sites	Fishing Site Name Details	Combine into one sampling location (by number)	General Name	RM (river mile)	Points for Data Gaps (Species)	Points for Triangulation	Points for Fishing Pressure	Points for Source	Points for shore-based fishing	DG Total points	FP Total points (incl shore)	Total Points	Historical Data	Species high in creel survey	Species from EQ or ITC
Colusa Basin Drain	Colusa Drain/Yolo-Colusa County Line	24	Colusa Drain AKA Trough, Basin, Canal, "2047"	~11 mi NW of Colusa Dr/Knight's Landing, W of Sac RM 109	1						0		5 CCF		
Sacramento River nr Tisdale	Sacramento River/Tisdale Boat Ramp AKA River Bend Marina (?)	25	Sacramento River	120	2		1		1	2	2	4	from Grimes: 9 SPM, 10 SS, 6 RSF, 6 CCF, 1 SH	(CCF @ 120-125)	
Sacramento River nr Tisdale	Rivermile 124	25	Sacramento River	124	2		1		1		2		See from Grimes	(CCF @ 120-125)	
Sacramento River nr Tisdale	Tisdale Boat Ramp AKA River Bend Marina (?)	25	Sacramento River	120	2		1		1		2		See from Grimes	(CCF @ 120-125)	
Butte Creek	Butte Creek/Colusa Highway	26	Sutter County	nr Sac RM 135	3	1				3	1	4	1 CP		
Gray Lodge Wildlife Area	Gray Lodge Wildlife Area (Butte Creek)	27	Butte County		3		1		1	3	2	5	see Butte Creek, but WA is ~ 8+mi N of sample site		
Colusa National Wildlife Refuge	Colusa National Wildlife Refuge - Powell Slough	28			3					3	0	3			
Delevan Nat'l Wildlife Refuge	Delevan Nat'l Wildlife Refuge	29	Colusa Drain AKA Trough, Basin, Canal, "2047"		3		1	1	1	3	3	6			
Sacramento River/Wards Landing to Colusa	Sacramento River/Colusa	30	Sacramento River	144	1		2	1		1	2	3	8 LMB, 19 SPM, 15 SS, 7 RSF, 10 CCF, 5 CP		
Sacramento River/Wards Landing to Colusa	Sacramento River/Wards Landing	30	Sacramento River	139	1		1			1	1				
Sacramento River/Wards Landing to Colusa	Wards Landing	30	Sacramento River	139	1		1				1				
Sacramento River/Wards Landing to Colusa	Colusa	30	Sacramento River	144	1		2	1			2				
Sacramento River/Wards Landing to Colusa	Sacramento River at Colusa	30	Sacramento River	144	1		2				2		SEE Sac R/Colusa		
Sacramento River nr Hamilton	Sacramento River @Scotty's Boat Landing	31	Sacramento River	196	2		1?		1	2	2?	4		RBT > 175	
Sacramento River nr Hamilton	Sacramento River at Hamilton	31	Sacramento River	198	2						0		10 SPM; 10 SS	RBT > 175	
Sacramento River nr Hamilton	Sacramento River/Hamilton City	31	Sacramento River	196	2						0		8 SPM; 20 SS; 2 RBT; 10 HRH; 1 SH. Also have data from Big Chico Creek (mouth) near Hamilton (a few river miles south )	RBT > 175	
Sacramento River nr Hamilton	Irvine Finch River Access	31	Sacramento River	200	3		2		1		3			RBT > 175	
Sacramento River nr Hamilton	Rivermile 206	31	Sacramento River	206	3		1				1			RBT > 175	
Sacramento River at Bend Bridge near Red Bluff	Red Bluff North- San Slough Riffles	32	Sacramento River	249	0		1	1	1	0	3	3	have samples from Bend Bridge at RM 258	RBT > 175, esp. 250-300	Salmon, striped, steelhead, catfish, sturgeon
Sacramento River at Bend Bridge near Red Bluff	Sacramento River at Bend Bridge near Red Bluff	32	Sacramento River	258	0		1	1	1		3	3	22 RBT, 15 SPM, 15 SS, 6 HRH		Salmon, striped, steelhead, catfish, sturgeon
Sacramento River nr Deschutes Rd	Sacramento River/Rivermile 271	33	Sacramento River	271	3		1		1	3	2	5		RBT > 175, esp. 250-300	
Sacramento River nr Deschutes Rd	Balls Ferry	33	Sacramento River	276	3		1				1			RBT > 175, esp. 250-300; steelhead @ 275; SS @ 275	
Sacramento River nr Deschutes Rd	Barge Hole	33	Sacramento River	272	3		1				1			RBT > 175, esp. 250-300; steelhead @ 275; SS @ 275	
Sacramento River nr Deschutes Rd	Deschutes Rd	33	Sacramento River	280	3		1		1		2			RBT > 175, esp. 250-300	
Sacramento River nr Deschutes Rd	Rivermile 271	33	Sacramento River	271	3		1		1		2			RBT > 175, esp. 250-300	
Sacramento River nr Redding	Sacramento River/Redding	34	Sacramento River	297-295	3					3	0	3		RBT > 175, esp. 250-300	
Sacramento River nr Redding	Redding- Posse Grounds/Convention Center Access at Sundial Bridge to Hwy 44	34	Sacramento River	297-295	3						0			RBT > 175, esp. 250-300	
Sacramento River nr Redding	Redding- Court Street Access at Fish ladder	34	Sacramento River	>297?	3						0			RBT > 175, esp. 250-300	

Fishing Sites	Fishing Site Name Details	Combine into one sampling location (by number)	General Name	RM (river mile)	Points for Data Gaps (Species)	Points for Triangulation	Points for Fishing Pressure	Points for Source	Points for shore-based fishing	DG Total points	FP Total points (incl shore)	Total Points	Historical Data	Species high in creel survey	Species from EQ or ITC
Shasta Lake	Shasta Lake. <i>Main Stem (Centimudi)</i>	35	Shasta County		2		2			2	2	4	10 RBT, 29 SPB (Lake, Pit R Arm, Bridge Bay, Hirz Arm)		
Shasta Lake	Shasta Lake. <i>Sacramento River Arm (Packers Bay Marina, Antlers Marina, Sugarloaf Resort, O'Brian)</i>	35	Shasta County		3		2				2		6 SPB (Sac Arm)		
Clear Creek	Clear Creek nr mouth	36	Shasta County	nr Sac RM 289	1	0.5	1	1	1		3.5		5 LMB; 15 RBT; 2 SPM; 8 SS; 5 HRH		Pike, Carp, Bluegill and Perch
Clear Creek	Clear Creek upstream	36	Shasta County		3	0.5	1	1	1	2	3.5	5.5			Pike, Carp, Bluegill and Perch
Whiskeytown Lake	Whiskeytown Lake	37	Reservoir -- Shasta County		3		1		1	3	2	5		kokanee; bluegill; trout/RBT; (BB). Also target other (unspecified) spp.	
Whiskeytown Lake	Whiskeytown Lake	37	Reservoir -- Shasta County												
Whiskeytown Lake	Whiskeytown Lake - Trinity River Diversion (?)	37	Reservoir -- Shasta County		3		1				1				
Lake Almanor	Lake Almanor	38	Reservoir -- N.F. Feather River (Plumas County)		2		1		1	2	2	4	4 BT; 6 SMB		
Bullards Bar Reservoir	Bullards Bar Reservoir	39	Reservoir -- Yuba River (Yuba County)		2		1		1	2	2	4	6 CP; 5 SMB	kokanee	
Bucks Lake	Bucks Lake	40	Plumas County		2		1	1	1	2	3	5	6 BT; 5 RBT		
Yuba River/ Marysville	Yuba River/ Marysville	41	Yuba River		1				1	1	1	2	8 RBT; 11 SPM; 21 SS		
Yuba River/d/s Englebright	Yuba River/d/s Englebright	42	Yuba River		1	1			1	1	2	3	9 RBT		
American River @ Hazel Ave and Nimbus Dam	American River @ Hazel Ave and Nimbus Dam	43	American River		1		1	1	1	1	3	4	8 LMB; 1 SPB; 8 SS; 25 BG; 3 RSF; 1 GSF; 1 RBT		
Folsom Lake	Folsom Lake	44	Reservoir -- American River		1		1		1	1	2	3	5 LMB; 11 CCF, 6 LMB, 1 SMB, 15 SPB, 6 RBT, 4 CS	RBT; chinook slamon; spotted bass; BB. Also target BBH	
Baum Lake	Baum Lake	45			3				1	3	1	4			
Hat Creek	Hat Creek	46			3				1	3	1	4			
Lake Britton	Lake Britton	47	Pit River		3				1	3	1	4	2 CCF, 5 SMB		
Pit River	Pit River	48			3					3	0	3	6 RBT		
Stony Gorge Reservoir	Stony Gorge Reservoir	49			3				1	3	1	4	7 CCF, 9 LMB, 5 CRP		
East Park Reservoir	East Park Reservoir	50			1				1	1	1	2	2 CCF, 15 LMB		
Indian Valley Reservoir	Indian Valley Reservoir	51	Upper Putah Creek		3			1		3	1	4	< 7 LMB, 5 SS 5 CCF		
Deer Creek nr Lassen	Deer Creek nr Lassen	52			3				1	3	1	4	4 BT, 1 RBT (nr Willow Valley Rd.)		

Fishing Sites	Fishing Site Name Details	Combine into one sampling location (by number)	General Name	RM (river mile)	Points for Data Gaps (Species)	Points for Triangulation	Points for Fishing Pressure	Points for Source	Points for shore-based fishing	DG Total points	FP Total points (incl shore)	Total Points	Historical Data	Species high in creel survey	Species from EQ or ITC
Battle Creek	Battle Creek	53	Shasta County		3				1	3	1	4			
"Cow Hole" on Rt 113 @ Dozier	"Cow Hole" on Rt 113 @ Dozier	54	Solano County		3	0.5			1	3	1.5	4.5			
Ag canals	Ag canals	55	Yolo County		3	1			1	3	2	5			
Ponds near Anderson River Park	Ponds near Anderson River Park	56	Shasta County		3	0.5			1	3	2.5	5.5			
Sacramento River/Anderson River Park	Sacramento River/Anderson River Park	56	Sacramento River	282	3				1	3	1	4			
Collins Lake	Collins Lake	57	Yuba County		3	1				3	1	4			
De Sabla Forebay (PG&E Reservoir)	De Sabla Forebay (PG&E Reservoir)	58	Butte County		3	0.5			1	3	1.5	4.5			
Green's Lake	Green's Lake	59			3					3	0	3	10 CRP, 10 CP, 1 LMB		
Hunter Creek	Hunter Creek	60	Glenn County		3				1	3	1	4			
Letts Lake	Letts Lake	61	Colusa County		3	1				3	1	4			
Lindsey Slough	Lindsey Slough	62			3					3	0	3	1 clam, 23 cray		
Little Hastings Tract	Little Hastings Tract	63			3					3	0	3	5 clam		
Little Holland Tract	Little Holland Tract	64			3					3	0	3	1 cray		
Lower Cottonwood Creek	Lower Cottonwood Creek	65	Shasta County		3	0.5			1	3	1.5	4.5			
Napa River	Napa River	66	Napa River		3?	1			1	3	2	5	3 Starry F, 1 CH, 60 clams, 33 GSF, 23 Hitch, 2 BG, 1 BBH, 1 SPM		
Old Prospect Slough	Old Prospect Slough	67			3					3	0	3	6 clam, 14 cray		
Paradise Lake	Paradise Lake	68	Butte County		3	0.5				3	0.5	3.5			
PG&E Reservoirs (private): Grace	PG&E Reservoirs (private): Grace	69	Shasta County		3	1				3	1	4			
PG&E Reservoirs (private): Nora	PG&E Reservoirs (private): Nora	70	Shasta County		3	1				3	1	4			
PG&E Reservoirs (private): North Battlecreek	PG&E Reservoirs (private): North Battlecreek	71	Shasta County		3	1				3	1	4			
Prospect Slough/Liberty Island	Prospect Slough/Liberty Island	72			3					3	0	3	5 LMB		
Rd 48 pond, Willows	Rd 48 pond, Willows	73	Glenn County		3	0.5			1	3	1.5	4.5			
Rice fields and ditches alongside them	Rice fields and ditches alongside them	74	Butte County		3	1		1	1	3	3	6			
Sevenmile Slough	Sevenmile Slough	75			3					3	0	3	1 clam		
Steelhead Creek/Arcade Creek	Steelhead Creek/Arcade Creek	76			3					3	0	3	20 BG		
Steelhead Creek/d/s W El Camino Ave	Steelhead Creek/d/s W El Camino Ave	76			3					3	0	3	3 CP, 3 SS		
Walker Creek	Walker Creek	77	Glenn County		3				1	3	1	4			
Willow Creek	Willow Creek	78	Glenn County		1				1	1	1	2	10 CCF, 9 BG, 13 RSF, 6 SS, 1 Black bullhead		
East side Antelope Creek	East side Antelope, Mill, Deer Creek		Shasta County		3				1	3	1	4			
Mill Creek	East side Antelope, Mill, Deer Creek		Shasta County		3				1	3	1	4			
Lake California (private community)	Lake California (private community)		Sacramento River	271										RBT > 175, esp. 250-300	
Lake Oroville	Lake Oroville		Reservoir -- Butte County					1	1			3		coho; spotted bass. Also target BB	
Dam	Dam		Feather River					1	1			2			
Between diversion dam/ fish barrier dam and 70	Between diversion dam/ fish barrier dam and 70		Feather River					1				1			

Fishing Sites	Fishing Site Name Details	Combine into one sampling location (by number)	General Name	RM (river mile)	Points for Data Gaps (Species)	Points for Triangulation	Points for Fishing Pressure	Points for Source	Points for shore-based fishing	DG Total points	FP Total points (incl shore)	Total Points	Historical Data	Species high in creel survey	Species from EQ or ITC
Boyd's Pump	Boyd's Pump		Feather River				1				1				
Jesus Hole	Jesus Hole		Feather River				2				2				
Oroville Wildlife Area/ River Refl. RV Park: Riffles Below 162	Oroville Wildlife Area/ River Refl. RV Park: Riffles Below 162		Feather River				1				1				
Rivermile 464	Rivermile 464		Feather River	FRM 464			1		1		2		10 LMB, 10 SPM, 5 SS from Feather R u/s Yuba R.		
Shanghai Bend	Shanghai Bend		Feather River				1		1		2				
Star Bend Boat Ramp	Star Bend Boat Ramp		Feather River				1				1				
Thermalito Forebay	Thermalito Forebay		Feather River				1	1	1		3				
Thermalito Outfall	Thermalito Outfall		Feather River				2	1	1		4				
Yuba City Boat Ramp/ Marysville Boat Ramp/	Yuba City Boat Ramp/ Marysville Boat Ramp/		Feather River				1				1				
Clarksburg to Courtland	Clarksburg to Courtland		Sacramento River	46-32										(steelhead @ 45-80); splittail 40-60; CCF @ 40-105BB @ 15-70)	
Glenn-Princeton	Glenn-Princeton		Sacramento River	174-166									only have samples from nearby creeks and drains	RBT > 175; (SPM @ 170)	
Rivermile 60-47	Rivermile 60-47		Sacramento River	60-47										(steelhead @ 45-80; CCF @ 40-105; BB @ 15-70)	
Rio Vista to Brannan	Rio Vista to Brannan		Sacramento River	22-12									see Front St.	(Steelhead @ 20) (SS @ 25; BB @ 15-70)	
Rivermile 32 to 22	Rivermile 32 to 22		Sacramento River	32-22										(BB @ 15-70)	

Species from DHS	Comments	Special considerations	Code for FP	Fishing Pressure	Named in DHS focus groups or surveys	Feedback from Sherri et al. (IITC)	Feedback from EQ	Shore fishing	Species w/Organics (last 10 yrs)
							yes	yes	
	highest in fall/ winter		H	high	yes; tour			yes	
SB, ST, salmon	mostly Asians. RM 12 is Brannan ls.		H	high				yes	
SAC R *(ALL). Species: salmon, SB, shad - also shad roe (high limits). Pikeminnow, BB and LMB, trout, sturgeon, catfish, bullhead, bluegill, crappie, clams, crayfish.			H	high					
	year round	mixing samples along entire slough	H	high				yes, mostly Asians	
SB, ST									
SB, ST									LMB 3 (16); WCF 2(15)
SB, ST									
SB, ST									
	striper season Oct-Feb. Run by Solano County Regional Parks		H	high	yes; tour		yes	yes-few boats because people can't find it.	See Front St.
	striper season Oct-Feb		H	high	yes; tour				clam 1(24)
	striper season Oct-Feb. Run by Solano County Regional Parks		H	high	yes; tour		yes	yes-few boats because people can't find it.	See Front St.
	Oct-April, popular in salmon season		H	high	yes; tour				See Front St.
SB, ST, CF; some splittail, carp, salmon; few LMB.									
SB, ST, CF; some splittail, carp, salmon; few LMB.	SPM 1 ppm								
SB, ST, CF; some splittail, carp, salmon; few LMB.									
			EQ				yes	yes	
SB, CF, SMB, Carp	strictly during SB season		EQ				yes	yes	
	strictly during SB season		H	high			yes	yes	
	striper season Oct-Feb		H	high	yes; tour			yes	
	nr Walnut Grove		EQ				yes	yes	
CF, ST, crappie			EQ				yes	yes	
SB, CF, SMB, Carp	strictly during SB season		H	high				yes	
SB, CF, BB, crappie, BG	NOT SURE IF DELTA MEADOWS IS SEPARATE SLOUGH OR SAME AS SNODGRASS SLOUGH. EQ responded yes to FP for both names		EQ				yes	yes	
	Sept-April		H	high	yes; tour			yes	
	Sept-April		H	high	yes; tour			yes	
	major shore site		H	high. major shore site				yes	
ST, SB, salmon, splittail, CF, ST, shad	potentially high Hg		EQ				yes		LMB 4 (11); SMB 1(5)
CF, ST, crappie									
	many Asians. major shore site, near Freeport; Beach Lake		H	high. major shore site	yes; tour			yes	
			H	high				yes	
	many Asians. major shore site, near Freeport; Beach Lake		H	high. major shore site	yes; tour			yes	



Species from DHS	Comments	Special considerations	Code for FP	Fishing Pressure	Named in DHS focus groups or surveys	Feedback from Sherri et al. (IITC)	Feedback from EQ	Shore fishing	Species w/Organics (last 10 yrs)
channel- and mud- catfish (night). Bass. Carp (AA eat). Pikeminnow for bait to catch SB.									
salmon.	Can only access the water when it is high enough because the river has shifted. (River Bend Marina). Garmire Road at levee on the Sacramento River		H	high (50-75)				yes	
	near Grimes, north of Sutters Bypass		H	high				yes	
salmon.	Can only access the water when it is high enough because the river has shifted. (River Bend Marina). Garmire Road at levee on the Sacramento River		H	high (50-75)				yes	
BB, LB, BG	From Oro-Chico Rd. bridge crossing south of Chico to Centerville Head Dam, located 300 yards d/s from De Sabla Powerhouse below De Sabla Reservoir = 0 trout, 0 salmon.								
	Butte Creek Reclamation Canal runs beside it.		H	heavy summer use				yes	
channel- and mud- catfish (night). Bass. Carp (AA eat). Pikeminnow for bait to catch SB.	Located more than 10 miles southwest of Colusa								
	African Americans and Hmong fish here. Ag can get us detailed maps. Located quite a ways northwest of Colusa, about halfway to Willows.		H	high	yes; Afr/Am and Hmong			yes	
	Colusa-Sacramento River State Recreation Area ?		VH	high (100-150)	yes; Hmong				CP 1(5); SPM 2(10); SS 1(5); ST 1(1)
salmon, sturgeon, SB, catfish, black bass	2701 Butte Slough Road. A few miles east of Colusa.		H	high (25-50)					
salmon, sturgeon, SB, catfish, black bass	2701 Butte Slough Road. A few miles east of Colusa.		H	high (25-50)					
	Colusa-Sacramento River State Recreation Area ?		VH	high (100-150)	yes; Hmong				CP 1(5); SPM 2(10); SS 1(5); ST 1(1)
	flat site has gravel banks.		H?	High. (100 per Sam Castillo. Larry Hanson calls it minor site.)				yes	
									SPM 2(10); SS 2(10)
	(west) side of the river, near Highway 32, about a ½ mile east of Hamilton City.		VH	high (100)				yes	
	Wilsons Landing, near Capay		H	high					
combat salmon fishing			H	high (20-25)			yes (Bend Br at Red Bluff)	yes	
			EQ				yes (Bend Br at Red Bluff)	yes	
	between Battle Creek and Cottonwood Creek		H	high (Peak boat activity on River with >20 anglers)				yes	
	Near Battle Creek and Cottonwood Creek wildlife areas		H	high					
salmon	at county line? Near Jellys Ferry and Bend Ferry Rd.		H	high (75 guided boats/hole).					
salmon can be kept below here only			H	high				yes	
	between Battle Creek and Cottonwood Creek		H	high (Peak boat activity on River with >20 anglers)				yes	
				medium (10-14 anglers heavily fished riffle)					
				medium (10-14 anglers heavily fished riffle)					
				low (7-9 anglers)					

Species from DHS	Comments	Special considerations	Code for FP	Fishing Pressure	Named in DHS focus groups or surveys	Feedback from Sherri et al. (IITC)	Feedback from EQ	Shore fishing	Species w/Organics (last 10 yrs)
	*Summers are too busy with houseboats for fishing- some fish at night to avoid crowds.		VH	High (300 people on weekday. Skyrockets weekend.)				95% boat. Shore fishing at Jones Valley Marina.	RBT 1(5)
	*Summers are too busy with houseboats for fishing- some fish at night to avoid crowds. LHO and EHD recommend sampling each arm separately. DFG biologists say this is not necessary.		VH	High (300 people on weekday. Skyrockets weekend.)					
						important for N/Am. (Redding R.)			LMB 1(5); RBT 1(5)
						important for N/Am. (Redding R.)			
	Most water from Trinity Lake (where Hg mined)		H	High				yes	
	Most water from Trinity Lake (where Hg mined)		H	20-25					
	salmon, RBT, BT or Eagle Lake Trout, SMB (per Stienstra)	trout data useful for green advisories	H	high				yes bank fishing is available, but there is a lot of boat fishing	
	all ethnicities from Santa Cruz to Reno	trout data useful for green advisories	H	high				yes. minor. all boat fishing except for a few locals	
Trout (most common), LMB, BG (not as often), Catfish (especially among African Americans, often at Lake Davis, Lake Almanor)	added after needs assessment with Plumas County; link to Feather River advisory		H	high			yes from Mike deSpain/Greenville Rancheria	yes and boat	
		trout data useful for green advisories						shore access here	clam 1(?)
		trout data useful for green advisories						access here and HWY 20, you can wade if you have access (well except in high water, then be careful)	
	peak of activity for shore anglers on American River		H	5 times higher than anywhere else on river	yes; 2005 angler survey			yes	
		sampling by others expected	H	high				yes	
	trout (BT, RBT). Next to DFG hatchery. Per Davis Flyfishers and Stienstra.	trout data useful for green advisories						easy access, can fish from shore or use float tubes and small boats	
	trout (Stienstra). major trout stream with lots of planted rainbow and brook trout; Upper Hat C stocked, access off HWY 89 streamside camping not just flyfishers; Middle Hat stocked and variety of fishers/campers; lower Hat not stocked, this is a flyfishing area, still accessible.	trout data useful for green advisories							
	SMB, trout, crappie (per Stienstra)	trout data useful for potential "green advisories"						easy access from McArthur-Burney St Park	
	trout area; accessible below dam at Lake Britton (near McArthur-Burney St Park); also may be more accessible in the Bend area to Powerhouses 3 & 4 but still requires some hiking; otherwise access limited expect to dedicated hikers/fishers.	trout data useful for green advisories							
	barren landscape. CF, BG, CRP, LMB early summer. Also SB (per Stienstra). less developed camping (no drinking water, pack out garbage; also boating.	supplement current advisory						probably shore access but fishing best by boat	
	big bass (10 lbs), crappie (per Stienstra)	supplement current advisory						probably shore access; better shallow areas for catching	
	good for bass. Early spring. Boat. RBT, Eagle Lake trout planted. kokanee, crappie, SMB (per Stienstra)	supplement current advisory			yes; Hmong				
	trout stream, (Stienstra). easy access from HWY 32, fishing trails	trout data useful for green advisories							

Species from DHS	Comments	Special considerations	Code for FP	Fishing Pressure	Named in DHS focus groups or surveys	Feedback from Sherri et al. (IITC)	Feedback from EQ	Shore fishing	Species w/Organics (last 10 yrs)
	closed to fishing from mouth to Coleman Hatchery. 1 hatchery trout or steelhead may be taken between the last Sat. in Apr. thru Sept. 30 from 250 ft. u/s from Coleman Hatchery to Coleman Powerhouse.	fishing limits	L	low				yes	
	near Ulatis Creek and Calhoun Cut, but apparently not the same place. Pond with cows wandering around.	species, size unknown	M	medium				yes	
		species, location unknown						yes	
	water table filled. Next to water treatment plant	no info on fish species							
	on Anderson Creek?? mid-way between Red Bluff and Redding							yes	
	If this is also called Collins Eddy, it is nr Sac RM 103 also nr Horseshoe Lake, Beaver lake, and Tyndall Lndg.	no info on fish species							
		no info on fish species or other sampling						yes	
	sloughs, drains. SE Asians caught sturgeon site 21 (?)	no info on fish species	L	Low. Used to be popular, not anymore				yes	
	Mendocino Natl Forest. No size limits for black bass.	no info on fish species							
		no info on fish species	L	low				yes	
	mainstem above Lincoln Bridge in Calistoga and all tribs closed to fishing. Main stem from Lincoln Br. To Trancas Br.: 1 hatchery trout or steelhead, 1 king salmon from 4th Sat. in May thru Mar. 31.		M	popular among Latinos	yes; survey			yes	
	lousy fishing	lousy fishing						yes	
		no info on fish species or other sampling	M	medium					
		no info on fish species or other sampling	M	medium					
		no info on fish species or other sampling	M	medium					
	DDT dump, other materials too	no info on fish species						yes, among SE Asians	
					yes; 2005 angler survey			yes	
	sloughs, drains. SE Asians caught sturgeon site 21 (?)	no info on fish species	L	Low. Used to be popular, not anymore				yes	
	sloughs, drains. SE Asians caught sturgeon site 21 (?)		L	Low. Used to be popular, not anymore				yes	
	catch and release	catch and release						yes	
	catch and release	catch and release						yes	
bass	Mostly catch and release. gravel extraction facility. ? south of Cottonwood creek. Planned community near Sac River and Cottonwood Cr in Tehama Cty	private access	H	high (locals)				yes. Access to residents of planned community only.	
	Feather RM 71.5. Southeast Asian populations fish here.	data pending from DWR/advy planned	H	high	yes; Hmong			Yes. mostly in spring, and in the warm water areas. Mostly locals.	CP 1(5); SPB 1(5)
		data pending from DWR/advy planned	H	high	yes; Hmong				
		data pending from DWR/advy planned	H	high (30-40)					

Species from DHS	Comments	Special considerations	Code for FP	Fishing Pressure	Named in DHS focus groups or surveys	Feedback from Sherri et al. (IITC)	Feedback from EQ	Shore fishing	Species w/Organics (last 10 yrs)
		advy pending for Feather R	H	high (50-75 cars.)					
	near Shanghai Bend	advy pending for Feather R	VH	high (100 people)					
		data pending from DWR/advy planned	H	high (20-29 per riffle)					
	major shore site. This is in Yuba City.	advy pending for Feather R	H	high.				yes	
	major boat site	advy pending for Feather R	H	high				yes	
		advy pending for Feather R	H	high (25-50 cars)					
	have data from Afterbay, but not sure about Forebay	data pending from DWR/advy planned	H		yes; Hmong			yes	
	Most popular shore fishing site on river by far	data pending from DWR/advy planned	VH	High (200 people/day at peak salmon season)	yes; Hmong			yes	
	50-75 cars both sides of river combined	advy pending for Feather R	H	high.					
SB, salmon, splittail, CF, ST, shad	always high but even higher in salmon season	supplementary info for stretches of river	H	always high but even higher in salmon season					
SB		supplementary info for stretches of river	H	high				yes	
ST, salmon, SB	Discovery Park to Freeport, inclu W. Sacto	supplementary info for stretches of river	H	high				yes	
SB, ST, CF; some splittail, carp, salmon; few LMB.		supplementary info for stretches of river	H	high	both named separately			yes	
SB, ST, SMB, CF, splittail, carp, salmon		supplementary info for stretches of river	H	high				yes	