Appendix 1: Characteristics of the species sampled.

Group	Species	Trophic Level	Size Sampled (mm) range (median)	Age at Size Sampled Range (calculated mean from growth curve)	Primary Prey	Feeding Position	Habitat	Range	Depth
Hound Sharks (Triakidae)	Leopard Shark (*Triakis semifasciata*)	3.7±0.5	930-1410 (1238)	16 Kusher et al. 1992	nektonic and benthic fishes, crustaceans, octopi and clams	benthic	enclosed muddy bays, estuaries and lagoons	Oregon to Baja	0-91m
	Gray Smoothound (*Mustelus californicus*)	3.5±0.5	616-685 (630)	2 Yudin and Cailliet 1990	mostly crabs, ghost shrimp, and small fish	benthic	inshore and offshore soft bottom, entering shallow muddy bays	Northern CA to Baja	0-200m
	Brown Smoothhound (*Mustelus henlei*)	3.6±0.5	826-1144 (978)	15+ ? Yudin and Cailliet 1990	crabs, shrimp and some fishes	benthic	offshore, soft bottom	Northern CA to Baja	0-200m
Dogfish Sharks (Squalidae)	Spiny Dogfish (*Squalus acantias*)	4.3±0.7	995-1140 (1011)		fishes, crustaceans, squid and octopi	benthic/ mid-water	Near bottom in enclosed bays and estuaries, also mid-water and near surface	Bering Sea to Chile	0-1460m

Appendix 1: Characteristics of the species sampled.

Barracudas (Sphyraenidae)	Pacific Barracuda (*Sphyraena argentea*)	4 (4.5±0.8)	450-590 (479)		small anchovies, smelt, squid, and other small, schooling fish	Mid-water	Usually near shore or near the surface; Pelagic spawners; Young enter bays	Alaska to southern Baja California; rare north of Pt. Concep. in California	0-18m
Basses (Serranidae)	Spotted Sand bass (*Paralabrax maculatofasciatus*)	4 (4.2±0.6)	195-430 (327)		small fishes and benthic crustaceans, clams	demersal	sand or mud bottom near rocks and eelgrass	Monterey, CA to Mexico	0-60m
	Kelp Bass (*Paralabrax clathratus*)	3.9±0.6	185-512 (316)	5 (Young 1963) 7 (Love et al. 1996)	Small fishes (including anchovies, sardines, surfperch), squid, octopus, crabs, shrimps, and amphipods	mid-water	in or near kelp beds, but may be associated with any structure	Washington to Baja	0-50m
	Barred Sand bass (*Paralabrax nebulifer*)	3.5±0.5	257-590 (346)	7 (Love et al. 1996)	fishes and crustaceans	demersal	sandy bottom among or near rocks	Santa Cruz, CA to Baja	0-183m

Appendix 1: Characteristics of the species sampled.

Rockfish (Scorpaenidae)	Olive Rockfish (*Sebastes serranoides*)	3.9±0.6	208-425 (322)	4 Lea et al. 1999	fishes (particularly juvenile rockfishes), octopi, squid, copepods and crab larvae	mid-water	areas of reef or giant kelp, over hard, high relief	Northern CA to Baja (abundant SoCal to Mendocino County)	0-146m
	Yellowtail Rockfish (*Sebastes chrysomelas*)	3.5±0.5	290-350 (313)	5 Lea et al. 1999	Pelagic crustaceans, fish, krill, plankton	demersal	holes and crevices in rocky areas; Found in intertidal areas	Northern CA to Baja CA	0-37m
	Copper Rockfish (*Sebastes caurinus*)	4.1±0.7	340-522 (411)	9 Lea et al. 1999	Shrimp, crab, octopi, small fish	demersal	shallow, protected bays and inlets, among rocks and kelp beds	Alaska to central Baja California	10-183m
	Vermilion Rockfish (*Sebastes miniatus*)	3.8±0.6	229-551 (437)	7 Lea et al. 1999	Shrimp, squid, octopi, fish (mainly smaller rockfish)	demersal	shallow to deep rocky reefs, less common on deep ones	BC Canada to central Baja CA	183-274m
	Rosy Rockfish (*Sebastes rosaceus*)	3.6±0.6	175-257 (215)	8 Lea et al. 1999	Squid, crustaceans, fish	demersal		Washington to central Baja CA	15-128m
	Quillback Rockfish (*Sebastes maliger*)	3.8±0.6	423-439 (431)		shrimp, crab	demersal	rocky bottoms and reefs; never far from cover	Alaska to Central CA	0-274m

Appendix 1: Characteristics of the species sampled.

	Kelp Rockfish (*Sebastes atrovirens*)	3.4±0.5	269-335 (294)		shrimp, amphipods, small fish	demersal	found on or near bottom in kelp beds or rocky areas	Central CA to Baja CA	0-46m
	Gopher Rockfish (*Sebastes carnatus*)	3.6±0.5	147-371 (281)	7 Lea et al. 1999	crabs, brittle stars, mysids	demersal	Inhabit holes or crevices in rocky areas; territorial	Northern CA to central Baja CA	0-55m
	China Rockfish (*Sebastes nebulosus*)	3.8±0.6	245-385 (332)	11 Lea et al. 1999	brittle stars, shrimp, fish, other animals on the bottom	demersal	Inshore along rocks and reefs	Alaska to Redondo Beach, CA	3-128m
	Brown Rockfish (*Sebastes auriculatus*)	4.0±0.6	205-392 (302)		small fish, crab, shrimp, isopods, and polychaetes	demersal	hard bottom; aggregate near rocks, oil platforms, sewer pipes	Alaska to Baja	0-128m
	Black Rockfish (*Sebastes melanops*)	4.4±0.8	213-511 (380)	7 Lea et al. 1999	juvenile rockfish, euphausids and amphipods (upwelling), and invertebrates (non-upwelling)	mid-water	kelp beds	Alaska to SoCal	0-366m
	Black and Yellow Rockfish (*Sebastes chrysomelas*)	3.5±0.5	254-302 (270)	7 Lea et al. 1999	crustaceans, mollusks and fishes	demersal	holes and crevices in rocky areas; intertidal areas	Northern CA to central Baja CA	0-37m
	Blue Rockfish (*Sebastes mystinus*)	2.8±0.3	51-395 (293)	7-11 Miller and Geibel 1973	tunicates, hydroids, jellyfishes, and larval and juvenile fishes	mid-water	deep rocky reefs or hard, flat substrates	Bering Sea to Baja	0-100m
	Spotted Scorpionfish (*Scorpaena guttata*)	4 (3.8±0.6)	200-322 (290)		crab, squid, octopus, fishes and shrimp	demersal	rocky areas of bays and along	Santa Cruz, CA to Baja	0-183m

Appendix 1: Characteristics of the species sampled.

							shore, especially in caves and crevices	CA	
Mackerels (Scombridae)	Pacific Chub Mackerel (*Scomber japonicus*)	3.1±0.4	199-335 (240)	1 Hwang et al. 2008	copepods, crustaceans, euphausids, small fishes and squids	mid-water	pelagic	Indo-Pacific	0-300m
Croaker (Sciaenidae)	Yellowfin Croaker (*Umbrina roncador*)	3.5±0.5	121-376 (195)		crustaceans and fishes	benthic	coastal waters and estuaries	Pt. Concep. To Gulf of CA (old records have as far north as SF)	0-45m
	White Croaker (*Genyonemus lineatus*)	3.4±0.5	164-300 (220)	7-8	polychaetes, small shrimps, crabs and mollusks	benthic	Over sandy bottoms	BC to Baja	0-183m
	Spotfin Croaker (*Roncador stearnsii*)	3.3±0.4	138-372 (221)		marine worms, clams, crabs and small crustaceans	demersal	sandy shores and bays, mostly in shallow surf zones	Pt. Concep. to south Baja CA	0-15m
	Queenfish (*Seriphus politus*)	3.7±0.6	156-174 (165)		small shrimps, marine worms and fishes	demersal	inshore, often over sandy bottoms. Common in bays and tidal sloughs, around pilings	Oregon to south Baja CA	1-21m
	Black Croaker (*Cheilotrema saturnum*)	3.6±0.6	234-261 (242)		Crabs,shrimp	demersal	near the bottom, often in caves and crevices of exposed coasts	Northern CA to Baja CA	0-46m

Appendix 1: Characteristics of the species sampled.

							and open bays		
Sand Flounder (Paralichthyidae)	California Halibut (*Paralichthys californicus*)	4.5±0.6	266-810 (670)	7-9	fishes and squids	demersal	sandy bottoms, also in bays and estuaries	Northern WA to Baja	0-183m
Eagle and Manta Rays (Myliobatidae)	Bat Ray (*Myliobatis californica*)	3 (3.1±0.3)	176-921 (405)		bivalves, snails, polychaetes, shrimps, and crabs	demersal	sandy and muddy bays and sloughs, also on rocky bottom and in kelp beds	Oregon to Gulf of CA	0-46m
Temperate Basses (Moronidae)	Striped Bass (*Morone saxatilis*)	4.5±0.8	460-790 (600)	6 (Moyle 2002)	Zooplankton, invertebrates, fish	demersal	estuaries, bays, and coastal areas	British Columbia to northern Baja CA	0-30m
Tilefishes (Malacanthidae)	Ocean Whitefish (*Caulolatilus princeps*)	4 (3.9±0.6)	270-286 (279)	1-3	Worms, Shrimp, Crab, Octopi, Squid, small Fish	demersal	rocky bottoms; also found on soft sand and mud bottoms.	British Columbia to Peru	10-91m
Sea Chubs (Kyphosidae)	Opaleye (*Girella nigricans*)	2-3 (2.2±0.1)	194-230 (221)		Algae Sometimes eat Shrimp, Amphipods, Jellies	benthic	Intertidal tide pools; near or over rocks and in kelp beds	Oregon to south Baja CA	2-30m

Appendix 1: Characteristics of the species sampled.

Greenlings (Hexagrammidae)	Lingcod (*Ophiodon elongatus*)	4.3±0.7	551-932 (682)	5-6 (Miller and Geibel 1973)	mostly fishes but also crustaceans, octopi and squid	demersal	near rocks	Alaska to Baja	0-475m
	Kelp Greenling (*Hexagrammos decagrammus*)	3.6±0.6	220-422 (360)		crustaceans, polychaete worms, brittle stars, mollusks, and small fishes	demersal	rocky inshore areas, common on kelp beds, also on sand bottoms	Alaska to SoCal	0-46m
Surfperch (Embiotocidae)	White Surfperch (*Phanerodon furcatus*)	3.4±0.5	99-345 (202)	>7(?) Eckmayer 1979	Opportunistic Crabs, Worms, Amphipods	demersal	near piers, docks, in bays and sandy areas, but usually in quiet water and offshore areas near rocks	British Columbia to northern Baja CA	0-43m
	Shiner Surfperch (*Cymatogaster aggregata*)	3.0±0.3	50-199 (110)	2 Eckmayer 1979	calanoid copepods, crustaceans, mollusks	mid-water/ demersal	eelgrass beds, piers and pilings	Alaska to Baja	0-146m
	Rainbow Surfperch (*Hypsurus caryi*)	3.3±0.5	185-342 (280)		amphipods, crabs, worms, shrimp	demersal	rocky shores, often at edges of kelp beds, occasionally over sand but not in surf	Northern CA to northern Baja CA	0-40m
	Pile Surfperch (*Rhacochilus vacca*)	3xx	280-375 (340)		hard-shelled mollusks, crabs and barnacles	demersal	Rocky shore, kelp, pilings	Alaska to Baja CA	0-46m
	Barred surfperch (*Amphistichus argenteus*)	3.5±0.6	105-363 (186)	3 Carlisle et al. 1960	sand crabs, clams and other inverts	benthic	surf of sand beaches, also near rocks, pilings and	Bodega Bay, CA to Baja	0-7m

Appendix 1: Characteristics of the species sampled.

							other structures		
	Black perch (*Embiotoca jacksoni*)	3.2±0.5	152-316 (232)		amphipods, crabs, worms	benthic	rocky areas near kelp, sand bottoms of coastal bays and around piers and pilings	Ft Bragg, CA to Baja	0-46m
Sculpins (Cottidae)	Cabezon (*Scorpaenichthys marmoratus*)	3.6±0.5	380-575 (467)	3-4 (O'Connell 1953)	crustaceans, fish and mollusks	demersal	rocky, sandy and muddy bottoms, kelp beds	Southeastern AK to Baja	0-200m
New World Silversides (Atherinopsidae)	Topsmelt (*Atherinops affinis*)	2.8±0.3	80-377 (128)	xx	zooplankton, algae, benthic invertebrates (Lane and Hill 1975)	benthic/ mid-water	bays, muddy and rocky areas and kelp beds	Vancouver Island to Baja	0-26m
	Jacksmelt (*Atherinopsis californiensis*)	3.1±0.5	240-279 (265)	5-7	crustaceans, fish larvae	mid-water	inshore areas, including bays	Yaquina Bay, OR to Baja	0-29m

Benthic – feeding on the bottom Demersal – feeding on or near bottom

Trophic levels are the hierarchical strata of a food web characterized by organisms that are the same number of steps removed from the primary producers. The USEPA's 1997 Mercury Study Report to Congress used the following criteria to designate trophic levels based on an organism's feeding habits:

Trophic level 1: Phytoplankton.
Trophic level 2: Zooplankton and benthic invertebrates.
Trophic level 3: Organisms that consume zooplankton, benthic invertebrates, and TL2 organisms.
Trophic level 4: Organisms that consume trophic level 3 organisms.

Sources:
http://hmsc.oregonstate.edu/projects/msap/PS/masterlist/index.html
http://www.fishbase.org
http://www.dfg.ca.gov/marine/
http://biogeodb.stri.si.edu/sftep/

APPENDIX 2: Quality Assurance Summary for Year 2 of the Coast Survey

The data generated for this section summarize the quality of chemical analyses for the second year of the Coast Survey. Thorough objectives that meet or exceed those in the Surface Water Ambient Monitoring Program (SWAMP) Quality Assurance Program Plan (QAPrP) are outlined in the Screening Study of Bioaccumulation on the California Coast Quality Assurance Project Plan (Coastal QAPP). In general, data quality is demonstrated through analysis of the following quality control (QC) samples:

- Laboratory method blanks;
- Surrogate spikes;
- Matrix spikes (MSs) and matrix spike duplicates (MSDs);
- Certified reference materials (CRMs)/laboratory control spikes (LCSs);
- Laboratory duplicates (DUP); and
- Composite blind duplicates.

The results of the QC samples are used to assess the level of precision and accuracy that can be associated with the data. This information helps guide the data validation process that is used to determine whether or not the data helps to address the questions put forth by the project. In addition, the QC information collected by the project helps pinpoint the specific areas of the overall process where problems may arise so that corrective actions can be implemented. Quality control samples prepared and analyzed by the laboratory provide information specific to the preparation and analysis of the samples.

Were the samples prepared and analyzed in a manner free from significant contamination?

The results of laboratory method blanks provide information on this.

How accurate and precise are the results of the samples?

This question is answered by assessment of a combination of QC sample results. Reference materials and laboratory control spikes provide information regarding the accuracy of the analytical protocols. The results of laboratory duplicates provide information regarding the homogeneity of the samples and consistency of laboratory analytical procedures. The results of matrix spikes provide information on the analytical bias associated with the sample matrix. Only by considering all of the pieces of QC information available as a whole can a determination of the precision and accuracy of the data (or in other words to answer the question "how good are the data?") be made.

Following submittal from the laboratory, data are validated against the data quality requirements in the Coastal QAPP to determine whether or not the data are suitable for their intended use. Quality control samples are analyzed with a discrete batch of samples, with the results of the associated QC samples applied to each sample in the batch. Sample batches where the associated QC samples met criteria and laboratory performance indicators were within control limits are considered suitable for their intended use without further assessment.

Data associated with QC results outside of acceptance limits are not automatically considered unsuitable for use. However, the type and scope of the QC problems must be assessed during data validation. In most instances the data are found to be suitable for its intended use even when accounting for the QC failures. Data associated with significant QC failures, or which meet the rejection criteria specified in the Coastal QAPP are unusable for the purposes of this project.

Data validation results are summarized for each QC sample type.

APPENDIX 2: Quality Assurance Summary for Year 2 of the Coast Survey

Data for the Coast Survey Year 2 have been validated and compared against project-specific data quality objectives (DQOs). The counts in the following sections represent metal, Mercury, Organochlorine pesticide, and Polychlorinated Biphenyl as Congener (PCB) results from Coastal Year 2. The validation included verification of data according to SWAMP Standard Operating Procedures (SOPs) for chemistry data verification. Data were determined to be compliant with the individual measurement quality objectives (MQOs) specified in Tables 12a and 12b in the Coastal QAPP. Data were classified into one of the following classification levels:

Compliant

Data classified as "compliant" meet or exceed all of the MQOs and other data quality requirements specified in the Coastal QAPP. These data are considered usable for their intended purpose without additional scrutiny.

Qualified

Data classified as "qualified" do not meet one or more of the MQOs and other data quality requirements specified in the Coastal QAPP. These data are considered usable for its intended purpose following an additional assessment to determine the scope and impact of the quality control failure.

Estimated

Data classified as "estimated" are assigned to data batches and sample results that are not considered to be quantifiable. Included in this classification are results qualified with one of the following flags:

J–Estimated value (EPA Flag)

Rejected

Data classified as "rejected" do not meet the minimum data quality requirements specified in the Coastal QAPP. These data are not considered usable for its intended purpose.

Not applicable

Data classified as "not applicable" refers to data that were not validated since there were no project MQOs or QC requirements for the specific parameter, (i.e., Age) or a failure result was reported and could not be validated.

Quality Assurance Parameter Performance Assessment

Coastal Study criteria for percent recovery (%R) of surrogates, matrix spikes, Certified Reference Materials, laboratory control samples and relative percent difference (RPD) for field and laboratory duplicates for tissues are presented in Appendix 2, Table 1.

APPENDIX 2: Quality Assurance Summary for Year 2 of the Coast Survey

Laboratory Method Blanks

Laboratory method blanks are used to evaluate laboratory contamination during sample preparation and analysis. Blank samples undergo the same analytical procedure as samples with at least one blank analyzed per 20 samples. The required frequency was met for all 69 batches.

Data that met the MQO for method blanks are those with values less than the method limit (ML) for that particular analyte within each analytical batch. All 155 laboratory method blanks met the MQO, with the exception of one method blank in batch WPCL_L-040-11_BS626_T_OCH. Dieldrin was detected above the ML in the method blank and was classified as "qualified".

Target analyte concentrations detected above the method detection limit (MDL) in the field samples were compared to the associated method blank concentrations. Results for target analyte concentrations in batches with blank contamination that were less than 3X the blank contamination were classified as "rejected". There were 113 rejections in the dataset. Twelve results were classified as "qualified" based on the blank contamination validation QC criteria.

Surrogate Spikes

Surrogate spikes are used to assess analyte losses during sample extraction and clean-up procedures, and must be added to every composite and quality control sample prior to extraction. Whenever possible, isotopically-labeled analogs of the analytes should be used.

All surrogate percent recoveries were within the acceptance criteria listed in Appendix 2, Table 1, with the exception of one out of 605 (0.2%) surrogate percent recoveries spiked in 406 field and laboratory QA/QC samples analyzed for Polychlorinated Biphenyls and Organochlorine Pesticides (Appendix 2, Table 2). The associated analytes in matrix spike CRM L-734-10_BS 621_SRM 1946 were classified as "qualified" with regard to the MQO for surrogates. No data were rejected.

Matrix Spikes and Matrix Spike Duplicates

A laboratory-fortified sample matrix (matrix spike, or MS) and a laboratory fortified sample matrix duplicate (MSD) are both used to evaluate the effect of the sample matrix on the recovery of the target analyte(s). Individually, these samples are used to assess the bias from an environmental sample matrix plus normal method performance. In addition, these duplicate samples can be used collectively to assess analytical precision.

Aliquots of randomly selected field samples were spiked with known amounts of target analytes. The percent recovery (%R) of each spike was calculated as follows:

%R= (MS Result – Sample Result)/ (Expected Value – Sample Result) * 100

The %R acceptance criteria vary according to analyte groups (Appendix 2, Table1).

This process was repeated on the same native samples to create a laboratory fortified sample matrix spike duplicate (MSD). MSDs were used to assess laboratory precision and accuracy. MS/MSD RPDs were calculated as follows:

RPD = (|(Value1-Value2)|/(AVERAGE(Value1+Value2)))*100
where:
Value1=matrix spike value
Value2=matrix spike duplicate value.

According to the Coastal QAPP for metal and organic analyses, at least one MS/MSD pair should be performed per 20 samples or one per batch, whichever is more frequent. The required frequency was met for all 69 batches.

Laboratory batches with MS/MSD %R and RPD values outside of acceptance criteria were either classified as “compliant” or “qualified” based on the number of QC elements outside the acceptance criteria. No data were rejected. In several OCH and PCB batches, MS/MSD %Rs and RPDs were not reported since the native concentrations were greater than 2X the spiked concentration and the lab was unable to calculate these values. Since the non-reported results were not validated, they were classifed as “not applicable. Values outside the acceptance criteria are presented in Appendix 2, Table 3. All other MS/MSD %Rs and RPDs were within acceptance criteria.

Certified Reference Materials and Laboratory Control Samples

A CRM or LCS is analyzed to assess the accuracy of a given analytical method. As required by the Coastal QAPP, one CRM or LCS should be analyzed per 20 samples or per batch, whichever is more frequent. The required frequency was met for all 69 batches.

Laboratory batches with CRM or LCS %R values outside of acceptance criteria were classified as “compliant” based on the number of QC elements outside criteria. No data were rejected. These are presented in Appendix 2, Table 4. All other CRM and LCS %Rs were within acceptance criteria.

Laboratory Duplicates

A laboratory duplicate (DUP) is analyzed to assess laboratory precision. As required by the Coastal QAPP, a duplicate of at least one field sample per batch was processed and analyzed. The required frequency was met for all 69 batches.

The duplicate results reported above the method limit (ML) were compared and an RPD was calculated as described in the MS/MSD Section. Results reported below the ML or as “non-detect” in either the parent sample or duplicate were not evaluated as stated in the Coastal QAPP. Any RPDs <25% were considered acceptable and classified as compliant as specified in the QAPP. Those >25% but <50% were classified as qualified. Finally, RPDs >50% were classified as rejected. No data were rejected.

Composite Blind Duplicates

APPENDIX 2: Quality Assurance Summary for Year 2 of the Coast Survey

Composite blind duplicates are analyzed to assess composite homogeneity and laboratory precision. Although the Coastal QAPP does not address these samples or provide evaluation criteria, they were performed. Composite blind duplicates were obtained from homogenized tissue samples.

Holding Times

Eight percent of the results (1,524 out of 18,857 total results) in 699 tissue composites were classified as "qualified" due to holding time exceedances. Of the 1,524 results, 366 results were from 3 composites and 5 individuals that were archived beyond the 1 year holding time. The analysis of these composites was approved by the project lead. Three tissue samples analyzed for organochlorine pesticides and PCBs did not meet either the 12 month holding time criteria between collection and extraction and 18 tissue samples did not meet the 40 day holding time criteria from extraction to analysis. Fourteen tissue samples analyzed for metals and mercury exceeded the 12 month holding time criteria between collection and analysis.

QA/QC Summary

Were the samples prepared and analyzed in a manner free from significant contamination?

Review of lab blanks show that 0.6 % (113 out of 18,857) of the results are unusable because levels are <3X the concentration detected in the method blank. The remaining 18,744 (99.4%) results are unaffected. Overall, the samples were prepared and analyzed in a manner free from significant contamination.

How accurate and precise are the results of the samples?

Review of spiked QC samples show that all results are usable although there were percent recovery exceedances. Review of duplicate QC samples show that none of the 18,857 results were unusable due to percent difference exceedances. Overall, 100% of the data generated by laboratories met the accuracy and precision objectives.

There were 18,857 sample results for individual constituents including tissue composites and laboratory QA/QC samples. Of these:

- 16,772 (89%) were classified as "compliant"
- 1971 (10%) were classified as "qualified"
- 113 (0.6%) were classified as "rejected"; and
- 1 (0.005%) was classified as "NA", since the results were not reported due insufficient sample volume.

Classification of this dataset is summarized as follows:

- 113 results were classified as "rejected" and 12 results were classified as "qualified" due to blank contamination values.
- 1 result was classified as "qualified" due to surrogate recovery exceedances presented in Table 2.
- 73 results were classified as "qualified" due to recovery exceedances presented in Tables 3 and 4.
- 73 results were classified as "qualified" due to the RPD exceedances presented in Tables 3.
- 1,524 results were classified as "qualified" due to holding time exceedances.

APPENDIX 2: Quality Assurance Summary for Year 2 of the Coast Survey

Data that meet all MQOs as specified in the QAPP are classified as “compliant” and considered usable without further evaluation. Data that fail to meet all program MQOs specified in the Coastal QAPP were classified as qualified but considered usable for the intended purpose. Data that are >2X MQO requirements or the result of blank contamination were classified as “rejected” and considered unusable. Data batches where results were not reported and therefore not validated were classified as not applicable.

All data with the exception of the 113 rejected results were considered usable for the intended purpose. A 99% completeness level was attained which met the 90% project completeness goal specified in the Coastal QAPP.

Table 1. Percent recovery and relative percent difference acceptance criteria for different categories of analytes in fish tissue.

Analyte Category	% Surrogate Recovery Acceptance Criteria	% MS/MSD Recovery Acceptance Criteria	% CRM, LCM, & LCS Acceptance Criteria	Relative % Difference Criteria (MS/MSD, Laboratory Duplicate, Field Duplicate)
Trace Metals (Including Mercury)	NA	75-125	75-125	25
Synthetic Organics (PCBs, OCHs, OPs, Triazines, Phenols, VOCs,)	50-150	50-150	50-150, if certified then 70-130	25

Table 2. Surrogate recoveries that did not meet quality control acceptance criteria.

Surrogate	Composite ID	Batch ID	% Recovery	Laboratory
DBCE(Surrogate) %	L-734-10_BS 621_SRM 1946 (CRM)	WPCL_L-734-10_BS621_T_OCH	10.2	DFG-WPCL

Table 3. Matrix spikes (MS), matrix spike duplicates (MSD), percent recoveries (%R), and relative percent differences (RPD) that did not meet specified criteria. Boldface type indicates values that did not meet quality control criteria.

Analyte	Composite ID	Sample Date	Batch ID	MS %R	MSD %R	RPD	Lab
Endrin,Total ng/g ww	C1_11357PTARBOG09CAB	17/Aug/2010 0:00	WPCL_L-598-723-10_BS618_T_OCH	**153**	**154**	0.98	DFG-WPCL
PCB 008,Total ng/g ww	C1_11357PTARBOG09CAB	17/Aug/2010 0:00	WPCL_L-598-723-10_BS618_T_PCB	70.9	64.3	**29**	DFG-WPCL
HCH, beta,Total ng/g ww	C1_30442SCWBBOG09CAB	08/Jun/2010 0:00	WPCL_L-371-494-10_BS613_T_OCH	148	**162**	10	DFG-WPCL

Analyte	Composite ID	Sample Date	Batch ID	MS %R	MSD %R	RPD	Lab
PCB 066,Total ng/g ww	C1_30442SCWBBOG09CAB	08/Jun/2010 0:00	WPCL_L-371-494-10_BS613_T_PCB	120	89.9	**28**	DFG-WPCL
Chlordane, cis-,Total ng/g ww	C1_30443SCCABOG09OGR	17/Jun/2010 0:00	WPCL_L-040-11_BS626_T_OCH	**152**	131	15	DFG-WPCL
Chlordane, trans-,Total ng/g ww	C1_30443SCCABOG09OGR	17/Jun/2010 0:00	WPCL_L-040-11_BS626_T_OCH	**160**	144	10	DFG-WPCL
HCH, beta,Total ng/g ww	C1_30443SCCABOG09OGR	17/Jun/2010 0:00	WPCL_L-040-11_BS626_T_OCH	**164**	**175**	5.2	DFG-WPCL
Heptachlor epoxide,Total ng/g ww	C1_30443SCCABOG09OGR	17/Jun/2010 0:00	WPCL_L-040-11_BS626_T_OCH	**164**	**167**	0.91	DFG-WPCL
Nonachlor, cis-,Total ng/g ww	C1_30443SCCABOG09OGR	17/Jun/2010 0:00	WPCL_L-040-11_BS626_T_OCH	**153**	150	3.2	DFG-WPCL
Nonachlor, trans-,Total ng/g ww	C1_30443SCCABOG09OGR	17/Jun/2010 0:00	WPCL_L-040-11_BS626_T_OCH	**152**	141	8.2	DFG-WPCL
Oxychlordane,Total ng/g ww	C1_30443SCCABOG09OGR	17/Jun/2010 0:00	WPCL_L-040-11_BS626_T_OCH	**169**	145	16	DFG-WPCL
PCB 008,Total ng/g ww	C1_30443SCCABOG09OGR	17/Jun/2010 0:00	WPCL_L-040-11_BS626_T_PCB	82.7	109	**27**	DFG-WPCL
Endrin,Total ng/g ww	C1_30641ELKSBOG09TPS	27/Jul/2010 0:00	WPCL_L-307-597-10_BS617_T_OCH	**157**	**157**	1.1	DFG-WPCL
Mirex,Total ng/g ww	C1_30641ELKSBOG09TPS	27/Jul/2010 0:00	WPCL_L-307-597-10_BS617_T_OCH	68.1	94.9	**32**	DFG-WPCL

Analyte	Composite ID	Sample Date	Batch ID	MS %R	MSD %R	RPD	Lab
HCH, beta,Total ng/g ww	C1_30838CARMBOG09OVR	20/Oct/2010 0:00	WPCL_L-733-10_BS624_T_OCH	**151**	**158**	5.2	DFG-WPCL
Heptachlor epoxide,Total ng/g ww	C1_30838CARMBOG09OVR	20/Oct/2010 0:00	WPCL_L-733-10_BS624_T_OCH	150	**159**	6.4	DFG-WPCL
Endosulfan I,Total ng/g ww	C1_31031DIABBOG09K	17/May/2010 0:00	WPCL_L-371-716-10_BS620_T_OCH	68.3	90.5	**27**	DFG-WPCL
Aldrin,Total ng/g ww	C1_31033MRRBBOG09OLS	27/Jul/2010 0:00	WPCL_L-734-10_BS621_T_OCH	**176**	144	21	DFG-WPCL
Chlordane, trans-,Total ng/g ww	C1_31033MRRBBOG09OLS	27/Jul/2010 0:00	WPCL_L-734-10_BS621_T_OCH	**158**	144	9.8	DFG-WPCL
HCH, beta,Total ng/g ww	C1_31033MRRBBOG09OLS	27/Jul/2010 0:00	WPCL_L-734-10_BS621_T_OCH	**182**	**153**	19	DFG-WPCL
Heptachlor epoxide,Total ng/g ww	C1_31033MRRBBOG09OLS	27/Jul/2010 0:00	WPCL_L-734-10_BS621_T_OCH	**163**	**163**	1.2	DFG-WPCL
Heptachlor,Total ng/g ww	C1_31033MRRBBOG09OLS	27/Jul/2010 0:00	WPCL_L-734-10_BS621_T_OCH	**152**	138	11	DFG-WPCL
Nonachlor, trans-,Total ng/g ww	C1_31033MRRBBOG09OLS	27/Jul/2010 0:00	WPCL_L-734-10_BS621_T_OCH	**153**	131	17	DFG-WPCL
Selenium,Total ug/g ww	NPJC_2010-2219_MPSL-DFG	27/Jul/2010 0:00	MPSL-DFG_2010Dig65_T_Se	111	**66.9**	**49.4**	MPSL-DFG

Table 4. Batches containing certified reference material (CRM) or laboratory control spike (LCS) outside of acceptance criteria**.**

Analyte	Station Code	Batch ID	% Recovery	Laboratory
Oxychlordane,Total ng/g ww	L-040-11_BS 626_LCS	WPCL_L-040-11_BS626_T_OCH	153	DFG-WPCL
DDD(p,p'),Total ng/g ww	L-040-11_BS 626_SRM 1946	WPCL_L-040-11_BS626_T_OCH	50.6	DFG-WPCL
HCH, alpha ,Total ng/g ww	L-040-11_BS 626_SRM 1946	WPCL_L-040-11_BS626_T_OCH	166	DFG-WPCL
HCH, gamma,Total ng/g ww	L-040-11_BS 626_SRM 1946	WPCL_L-040-11_BS626_T_OCH	149*	DFG-WPCL
Heptachlor epoxide,Total ng/g ww	L-040-11_BS 626_SRM 1946	WPCL_L-040-11_BS626_T_OCH	155	DFG-WPCL
Mirex,Total ng/g ww	L-040-11_BS 626_SRM 1946	WPCL_L-040-11_BS626_T_OCH	45.6	DFG-WPCL
Nonachlor, trans-,Total ng/g ww	L-040-11_BS 626_SRM 1946	WPCL_L-040-11_BS626_T_OCH	145	DFG-WPCL
PCB 101,Total ng/g ww	L-040-11_BS 626_SRM 1946	WPCL_L-040-11_BS626_T_PCB	136*	DFG-WPCL
PCB 146,Total ng/g ww	L-040-11_BS 626_SRM 1946	WPCL_L-040-11_BS626_T_PCB	58.1	DFG-WPCL
PCB 153,Total ng/g ww	L-040-11_BS 626_SRM 1946	WPCL_L-040-11_BS626_T_PCB	142	DFG-WPCL
PCB 187,Total ng/g ww	L-040-11_BS 626_SRM 1946	WPCL_L-040-11_BS626_T_PCB	136	DFG-WPCL
DDD(p,p'),Total ng/g ww	L-371-10_BS 613_SRM 1946	WPCL_L-371-494-10_BS613_T_OCH	35.7	DFG-WPCL
Mirex,Total ng/g ww	L-371-10_BS 613_SRM 1946	WPCL_L-371-494-10_BS613_T_OCH	55.8	DFG-WPCL
PCB 138,Total ng/g ww	L-371-10_BS 613_SRM 1946	WPCL_L-371-494-10_BS613_T_PCB	131*	DFG-WPCL
PCB 146,Total ng/g ww	L-371-10_BS	WPCL_L-371-494-	54.8	DFG-WPCL

Analyte	Station Code	Batch ID	% Recovery	Laboratory
	613_SRM 1946	10_BS613_T_PCB		
PCB 153,Total ng/g ww	L-371-10_BS 613_SRM 1946	WPCL_L-371-494-10_BS613_T_PCB	142	DFG-WPCL
PCB 187,Total ng/g ww	L-371-10_BS 613_SRM 1946	WPCL_L-371-494-10_BS613_T_PCB	171	DFG-WPCL
DDD(p,p'),Total ng/g ww	L-494-10_BS 614_SRM 1946	WPCL_L-494-10_BS614_T_OCH	38.2	DFG-WPCL
DDT(p,p'),Total ng/g ww	L-494-10_BS 614_SRM 1946	WPCL_L-494-10_BS614_T_OCH	67.5*	DFG-WPCL
Nonachlor, cis-,Total ng/g ww	L-494-10_BS 614_SRM 1946	WPCL_L-494-10_BS614_T_OCH	68.2*	DFG-WPCL
Oxychlordane,Total ng/g ww	L-494-10_BS 614_SRM 1946	WPCL_L-494-10_BS614_T_OCH	64.6*	DFG-WPCL
PCB 095,Total ng/g ww	L-494-10_BS 614_SRM 1946	WPCL_L-494-10_BS614_T_PCB	137*	DFG-WPCL
PCB 146,Total ng/g ww	L-494-10_BS 614_SRM 1946	WPCL_L-494-10_BS614_T_PCB	56.1	DFG-WPCL
PCB 206,Total ng/g ww	L-494-10_BS 614_SRM 1946	WPCL_L-494-10_BS614_T_PCB	138*	DFG-WPCL
DDD(p,p'),Total ng/g ww	L-494-10_BS 615_SRM 1946	WPCL_L-494-10_BS615_T_OCH	38.1	DFG-WPCL
PCB 146,Total ng/g ww	L-494-10_BS 615_SRM 1946	WPCL_L-494-10_BS615_T_PCB	52.5	DFG-WPCL
DDD(p,p'),Total ng/g ww	L-495-10_BS 616_SRM 1946	WPCL_L-495-597-10_BS616_T_OCH	49.3	DFG-WPCL
HCH, alpha ,Total ng/g ww	L-495-10_BS 616_SRM 1946	WPCL_L-495-597-10_BS616_T_OCH	149	DFG-WPCL
PCB 146,Total ng/g/ ww	L-495-10_BS 616_SRM 1946	WPCL_L-495-597-10_BS616_T_PCB	52.2	DFG-WPCL
We will HCH, beta,Total ng/g ww	L-733-10_BS 624_LCS	WPCL_L-733-10_BS624_T_OCH	160	DFG-WPCL

Analyte	Station Code	Batch ID	% Recovery	Laboratory
Heptachlor epoxide,Total ng/g ww	L-733-10_BS 624_LCS	WPCL_L-733-10_BS624_T_OCH	154	DFG-WPCL
DDD(p,p'),Total ng/g ww	L-733-10_BS 624_SRM 1946	WPCL_L-733-10_BS624_T_OCH	39.9	DFG-WPCL
HCH, alpha ,Total ng/g ww	L-733-10_BS 624_SRM 1946	WPCL_L-733-10_BS624_T_OCH	135*	DFG-WPCL
Mirex,Total ng/g ww	L-733-10_BS 624_SRM 1946	WPCL_L-733-10_BS624_T_OCH	66.2*	DFG-WPCL
PCB 070,Total ng/g ww	L-733-10_BS 624_SRM 1946	WPCL_L-733-10_BS624_T_PCB	66.2	DFG-WPCL
PCB 146,Total ng/g ww	L-733-10_BS 624_SRM 1946	WPCL_L-733-10_BS624_T_PCB	51.2	DFG-WPCL
HCH, beta,Total ng/g ww	L-734-10_BS 621_LCS	WPCL_L-734-10_BS621_T_OCH	196	DFG-WPCL
Heptachlor epoxide,Total ng/g ww	L-734-10_BS 621_LCS	WPCL_L-734-10_BS621_T_OCH	163	DFG-WPCL
Chlordane, trans-,Total ng/g ww	L-734-10_BS 621_SRM 1946	WPCL_L-734-10_BS621_T_OCH	135*	DFG-WPCL
DDD(p,p'),Total ng/g ww	L-734-10_BS 621_SRM 1946	WPCL_L-734-10_BS621_T_OCH	47.1	DFG-WPCL
HCH, alpha ,Total ng/g ww	L-734-10_BS 621_SRM 1946	WPCL_L-734-10_BS621_T_OCH	158	DFG-WPCL
Heptachlor epoxide,Total ng/g ww	L-734-10_BS 621_SRM 1946	WPCL_L-734-10_BS621_T_OCH	146	DFG-WPCL
Nonachlor, trans-,Total ng/g ww	L-734-10_BS 621_SRM 1946	WPCL_L-734-10_BS621_T_OCH	137*	DFG-WPCL
PCB 070,Total ng/g ww	L-734-10_BS 621_SRM 1946	WPCL_L-734-10_BS621_T_PCB	69.8*	DFG-WPCL
PCB 146,Total ng/g ww	L-734-10_BS 621_SRM 1946	WPCL_L-734-10_BS621_T_PCB	56.5	DFG-WPCL

Note: *%R were outside the MQO but inside the CRM manufacture range