STATE MUSSEL WATCH PROGRAM
1993-95 DATA REPORT

96-2WQ

November 1996

STATE WATER RESOURCES CONTROL BOARD
CALIFORNIA ENVIRONMENTAL PROTECTION AGENCY

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State Mussel Watch Program 1993-95 Data Report

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1993 – 1995 DATA REPORT

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Moss Landing Laboratory and
Water Pollution Control Laboratory
California Department of Fish and Game

STATE WATER RESOURCES CONTROL BOARD
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LIST OF ABBREVIATIONS

DDD	Dichlorodiphenyldichloroethane
DDE	Dichlorodiphenyldichloroethylene
DDT	Dichlorodiphenyltrichloroethane
DDMS	Dichlorodiphenylmonochlorosaturatedethane
DDMU	Dichlorodiphenylmonochlorounsaturatedethane
DFG	California Department of Fish and Game
EDL	Elevated Data Level(s)
FDA or (USFDA)	United States Food and Drug Administration
HCH	Hexachlorocyclohexane
MIS	Median International Standard(s)
MTRL	Maximum Tissue Residue Level(s)
NAS	National Academy of Sciences
PAH	Polynuclear Aromatic Hydrocarbon(s)
PCB	Polychlorinated Biphenyl(s)
PCP	Pentachlorophenol
PCT	Polychlorinated Terphenyl
ppb	Parts Per Billion (ng/g)
ppm	Parts Per Million (µg/g)
RWQCB	Regional Water Quality Control Board(s)
SMWP	State Mussel Watch Program
SWRCB	State Water Resources Control Board
TCP	Tetrachlorophenol
TBT	Tributyltin
USEPA	United States Environmental Protection Agency

1. STATE MUSSEL WATCH PROGRAM
1993 - 1995

Introduction

The California State Mussel Watch Program (SMWP), initiated in 1977 by the State Water Resources Control Board (SWRCB), was organized to provide a uniform statewide approach to the detection and evaluation of the occurrence of toxic substances in the waters of California's bays, harbors, and estuaries. This is accomplished through the analysis of transplanted and resident mussels and clams. The SMWP primarily targets areas with known or suspected impaired water quality and is not intended to give an overall water quality assessment. The California Department of Fish and Game (DFG) carries out the statewide SMWP for the SWRCB by collecting and analyzing samples. The SWRCB provides funding under an ongoing interagency agreement with the DFG. Sampling stations are selected primarily by the six coastal Regional Water Quality Control Boards (RWQCB) which are identified on the inside back cover.

The DFG reports annual sampling results to the SWRCB which distributes the information to the coastal RWQCBs and to other federal, State, and local agencies through annual preliminary data reports. These preliminary data reports are also routinely transmitted to the Office of Environmental Health Hazard Assessment of the California Environmental Protection Agency which has responsibility for evaluating pollutant levels based on human health concerns and issuing consumption health advisories if indicated. This report is the formal report presenting the results of the 1993-94 and 1994-95 sampling and analysis programs.

Information collected in the SMWP is used by the SWRCB, RWQCB, and other agencies to identify waters impacted by toxic pollutants. Through the SWRCB's statewide Water Quality Assessment, SMWP results are used to help classify water bodies from good to impaired water quality relative to each other. SMWP results are also used in the SWRCB's Bay Protection Program in helping identify "Toxic Hot Spots". Lastly, SMWP results are used in the normal regulatory activities of the RWQCBs and other State agencies such as the Department of Pesticide Regulation.

Summary

Appendix A shows area map locations for each station sampled from September 1993 through April 1995. Also included are map locations of five stations in the San Francisco Bay Region (Region 2) where archive samples collected in 1982, 1985, and 1988 were analyzed. Appendix B contains station location information such as latitude and longitude, county, and region identification. A total of 67 samples from 43 stations were analyzed (Appendix C) including eight archive mussel samples and four sediment samples. Samples were analyzed for trace elements (metals), organic chemicals (pesticides and PCBs), polynuclear aromatic hydrocarbons (PAHs), and tributyltin (TBT). Forty-six of the samples were transplanted California mussels (*Mytilus californianus*), 15 were resident California mussels samples, and two were resident bay mussels (*Mytilus edulis*) samples. No freshwater clams were collected or analyzed in the 1993-94 and 1994-95 programs. A complete station sampling history of the SMWP from 1978 to 1995 is provided in Appendix D.

Wet weight sampling results were compared to the following criteria: U.S. Food and Drug Administration (FDA) criteria, Maximum Tissue Residue Levels (MTRLs), Median International Standards (MIS), and Elevated Data Levels (EDLs). Data were not compared to the National Academy of Sciences (NAS) recommended guidelines for predator protection since no freshwater shellfish were collected in 1993-95. A discussion of each criterion can be found in Section 3, Administrative and Comparative Criteria on Page 5. The MTRL criterion was developed from water quality objectives from the 1990 *California Ocean Plan* (SWRCB 1990a), the *Draft November 26, 1990 Functional Equivalent Document - Development of Water Quality Plans For: Inland Surface Waters of California and Enclosed Bays and Estuaries of California* (SWRCB 1990b), and the *Draft April 9, 1991 Supplement to the Functional Equivalent Document* (SWRCB 1991). Only one sample collected from 1993 to 1995 exceeded FDA criteria (Appendix E). Transplanted California mussels collected in 1995 from San Diego Bay/Harbor Island/East Basin/Storm Drain contained 2,305 ppb PCBs which exceeded the FDA tolerance level of 2,000 ppb for PCBs. A similar sample collected in 1988 from the same location also exceeded the FDA tolerance level for PCBs containing 2,738 ppb PCBs. MTRL criteria for ocean waters were exceeded in 16 samples from 9 stations (Appendix F). MTRLs for enclosed bays and estuaries were exceeded in 39 samples from 26 stations (Appendix G) including all eight archive samples from five stations in Region 2. The MIS for trace elements were exceeded in 59 samples from 40 stations including at least one sample from all archive stations (Appendix H). Samples exceeding EDLs for trace elements and organic chemicals can be found in Appendices I and E.

Tabular summaries of all chemistry data are provided in Appendices J through Q. Summaries of all trace element data are provided in Appendix J (wet weight) and Appendix K (dry weight). Summaries of all organic chemical data are provided in Appendix L (wet weight), Appendix M (dry weight), and Appendix N (lipid weight). PAH data summaries can be found in Appendix O (wet weight), Appendix P (dry weight), and Appendix Q (lipid weight).

2. FIELD AND LABORATORY OPERATIONS

The presence of many toxic substances in the State's waters is determined by analyzing tissues from aquatic organisms. Concentrations of these substances in water are often too low or transitory to be reliably detected through the more traditional methods of analysis of water samples. Also, many toxic substances are not water soluble, but can be found associated with sediment or organic matter. Aquatic organisms are sampled because they bioaccumulate and bioconcentrate toxic substances to levels which may be many hundreds of times the levels actually in the water. This concentration factor facilitates detection of toxic pollutants. Mussels are excellent subjects for this purpose because they (1) are sessile, (2) are long-lived, (3) can be successfully transplanted to and maintained in areas where they do not naturally occur, and (4) reliably concentrate toxic pollutants from the water. The following is a general overall discussion of field and laboratory procedures. A detailed discussion is provided in Appendix R.

Substances Measured

Samples are regularly analyzed for up to 13 trace elements (Table R-1) and approximately 45 synthetic organic chemicals including pesticides and PCBs (Table R-6). Arsenic, nickel, selenium, polynuclear aromatic hydrocarbons (PAHs), pentachlorophenol (PCP), and tetrachlorophenol (TCP), and tributyltin (TBT) are looked for on a request basis only. Not every sample is analyzed for all trace elements or organic chemicals. Each sample at each station is handled individually. The requesting agency, usually the RWQCBs, will specify the type of analysis for each sample.

Sample Size and Collection

Forty-five mussels or clams are composited and analyzed for organic chemicals. Three analytical replicates of 15 individuals each of mussels or clams are analyzed for trace elements (trace element results reported herein are mean values). Concentrations in bivalves of certain trace elements and organic chemicals can be directly correlated with several variables such as size of the animal, location of habitation within the tidal zone, and season of collection (Stephenson et al. 1987). In the SMWP, mussels of 55 to 65 mm in length are collected whenever possible in order to reduce size-related effects. In an attempt to minimize variability introduced by location of collection within the intertidal zone, mussels are collected from the highest point in the zone where adequate numbers occur.

Mussels are transplanted where a suitable resident population does not exist and where sampling can be accomplished using scuba equipment. The mussel transplant system used is one of the following three systems; 1) In an area of deep water and no structures, a bottom anchored submerged buoy system is used; 2) In areas with structures (i.e. pilings, floating docks, etc.), a polypropylene line may be tied between two pilings or a line hung beneath a dock; 3) In areas of shallow water, samples may be placed on PVC or wooden stakes that are pounded into the substrate. A two month transplant period is adequate in most cases where pollutant uptake rates are expected to be high, but for trace elements in less contaminated environments a six month interval may be necessary for an adequate sample (Stephenson et al. 1980). A four to six month transplant interval is used for organic chemicals to be consistent with transplant periods for trace elements. Transplanted mussels (M. californianus) were collected from Trinidad Head and Bodega Head.

Dry, Wet, and Lipid Weight Measurements

Metal data are presented in parts per million (ppm) while organic chemical data are presented in parts per billion (ppb). Tissue concentrations of trace elements and organic chemicals are measured on a dry weight basis to reduce data variability due to moisture content. Wet and lipid data are back calculated from dry weight measurements. Wet weight data are used to compare to wet weight or fresh weight criteria listed in this report (see Section 3, Administrative and Comparative Criteria). In addition, organic chemicals are expressed on a lipid weight basis. Lipid weight measurements offer several advantages. Because chlorinated hydrocarbons are much more soluble in lipids (fat tissues) than in water, they partition into lipid-rich tissues of aquatic organisms (Stout and Beezhold 1981). Animals with higher proportions of lipid in their tissue usually have had higher concentrations of chlorinated hydrocarbon pollutants (Phillips 1980). Factors such as season, water temperature, health of the organism, stress on the organism, and type of species can affect the lipid levels of samples collected for analysis and can, therefore, cause variability in results. Use of lipid weight measurements may reduce this source of variability, although disadvantages have also been noted (Phillips 1980). As a result, lipid weight values may represent a more realistic measure of environmental availability of chlorinated hydrocarbons than wet weight values. Wet weight measures, however, remain the preferred measure for most readers because all criteria for human health and for predator protection are based on wet weight measures. Also, wet weight measures better reflect the exposure of predators or humans to the actual concentration in fresh mussels or clams.

3. ADMINISTRATIVE AND COMPARATIVE CRITERIA

In this report the term “criteria” is used to refer to the criteria against which a particular trace element or organic chemical is being compared. More than one criterion may apply to any one metal or organic compound. In general, FDA action levels, Maximum Tissue Residue Levels (MTRLs), and Median International Standards (MIS), all human health-related criteria, are considered more important or critical. Following human health criteria are NAS guidelines for predator protection and Elevated Data Levels (EDLs). All five criteria are discussed below.

In interpreting the SMWP data by any of the criteria provided, the reader is cautioned that there is no simple relationship between concentrations of toxic substances observed in tissue samples and actual concentrations in water. Different aquatic organisms tend to bioaccumulate a given toxic substance in water to different levels; however, the differences usually do not prevent a general interpretation of the data. The reader is cautioned that the limited number of samples obtained and analyzed at each station in a single year is generally too small to provide a statistically sound basis for making absolute statements on toxic substance concentrations. The values reported herein should be accepted as indicators of relative levels of toxic pollution in water, not as absolute values. In this sense, trends over time and ranking values of a toxic substance provide only an indication of areas where mussels are evidently accumulating concentrations which are above normal.

FDA Action Levels and NAS Guidelines

The FDA has established maximum concentration levels for some toxic substances in human foods (USFDA 1985). The levels are based on specific assumptions of the quantities of food consumed by humans and the frequency of their consumption. The FDA limits are intended to protect humans from the chronic effects of toxic substances consumed in foodstuffs. The National Academy of Sciences (NAS) has established recommended maximum concentrations of toxic substances in animals (NAS 1973). They were established not only to protect the organisms containing the toxic compounds, but also to protect the species that consume these contaminated organisms. The NAS has set guidelines for marine fish but not for marine shellfish. Only two guidelines apply to freshwater clams. The FDA limits and NAS guidelines are shown in Table 1.

Maximum Tissue Residue Levels (MTRLs)

MTRLs were developed by SWRCB staff from human health water quality objectives in the *1990 California Ocean Plan* (SWRCB 1990a), the *Draft November 26, 1990 Functional Equivalent Document - Development of Water Quality Plans For: Inland Surface Waters of California and Enclosed Bays and Estuaries of California* (SWRCB 1990b), and the *Draft April 9, 1991 Supplement to the Functional Equivalent Document* (SWRCB 1991). The objectives represent concentrations in water that protect against consumption of fish, shellfish, and water (freshwater only) that contain substances at levels which could result in significant human health problems. MTRLs are used as alert levels or guidelines indicating water bodies with potential human health concerns and are an assessment tool and not compliance or enforcement criteria. Tables 2 and 3 lists MTRLs for those substances monitored in ocean waters and enclosed bays and estuaries. The MTRLs for a number of substances listed as carcinogens in the MTRL tables are below the current tissue detection limit for those substances. Detection limits can be found in

Tables R-1, R-6, and R-10 in Appendix R.

The MTRLs were calculated by multiplying the human health water quality objectives by the bioconcentration factor (BCF) for each substance as recommended in the USEPA *Draft Assessment and Control of Bioconcentratable Contaminants in Surface Waters* (USEPA 1991). BCFs were taken from the USEPA 1980 Ambient Water Quality Criteria Documents for each substance. MTRLs were not calculated for objectives that are based on maximum contaminant levels (MCLs) or taste and odor criteria.

Median International Standards (MIS) for Trace Elements

The MIS is an in-house criterion developed from a Food and Agriculture Organization of the United Nations publication of a survey of health protection criteria used by member nations (Nauen 1983). A description of how the Median International Standards were compiled by SWRCB staff is provided in Appendix S. These criteria vary somewhat in the tissues to be analyzed or the level of protection desired but may be compared qualitatively. Table 4 summarizes these standards as an indication of what other countries have determined to be unsafe levels of trace elements. Though the standards do not apply within the United States, they provide an indication of what other nations consider to be an elevated concentration of trace elements in shellfish.

Elevated Data Levels

The "elevated data level" (EDL) was introduced by SWRCB staff in 1983 as an internal comparative measure which ranks a given concentration of a particular substance with previous data from the SMWP. The EDL is calculated by ranking all of the results for a species and exposure condition (resident or transplant) and a given chemical from the highest concentration measured down to and including those records where the chemical was not detected. From this, a cumulative distribution is constructed and percentile rankings are calculated. For example, the 50^{th} percentile corresponds to the median or "middle" value rather than to the mean. With a large number of records, the median can be approximately compared to the mean.

The 85^{th} percentile (EDL 85) was chosen as an indication that a chemical is markedly elevated from the median. The 85^{th} percentile corresponds to measures used by the U.S. Fish and Wildlife Service in its National Contaminant Biomonitoring Program and would represent approximately one and one-half standard deviations from the mean, if the data were normally distributed. The 95^{th} percentile (EDL 95) was chosen to indicate values that are highly elevated above the median. The 95^{th} percentile would represent two standard deviations from the mean, if the data were normally distributed. When used along with other information, these measures provide a useful guideline to determine if a chemical has been found in unusually high concentrations. A more detailed description of EDL rankings is provided in Appendix T. The reader is cautioned that EDLs are not directly related to potentially adverse human or animal health effects; they are only a way to compare findings in a particular area with the larger data base of findings from all over the state. The 1977-95 EDLs and the number of data points used to calculate each EDL are provided in Tables 5 through 9.

TABLE 1

NAS Guidelines and FDA Action Levels for Toxic Chemicals in Shellfish
(wet weight)

Chemical	NAS[a] Recommended Guideline for Freshwater Shellfish µg/g (ppm)	ng/g (ppb)	FDA[b] Action Level for Freshwater and Marine Shellfish µg/g (ppm)	ng/g (ppb)
Mercury	-	-	1.0[c]	1,000
DDT (total)	1.0	1,000	-	-
PCB (total)	0.5	500	2.0[d]	2,000
aldrin	-	-	0.3	300
dieldrin	-	-	0.3	300
endrin	-	-	0.3	300
heptachlor	-	-	0.3	300
heptachlor epoxide	-	-	0.3	300

a National Academy of Sciences-National Academy of Engineering. 1973. Water Quality Criteria, 1972 (Blue Book). U.S. Environmental Protection Agency, Ecological Research Series.

b U. S. Food and Drug Administration. 1984. Shellfish Sanitation Interpretation: Action Levels for Chemical and Poisonous Substances, June 21, 1984. U.S.F.D.A., Shellfish Sanitation Branch, Washington, D.C.

c As methyl mercury.

d A tolerance, rather than an action level, has been established for PCBs (21CFR 109, published May 29, 1984). An action level is revoked when a regulation establishes a tolerance for the same substance and use.

TABLE 2

Maximum Tissue Residue Levels (MTRLs) in Ocean Waters

Carcinogens [a]

Substance	Water Quality Objective [b] (µg/l)	BCF [c] (l/kg)	MTRL [d] (µg/kg, ppb wet weight)
aldrin	0.000022	**e**	0.1
chlordane (total)	0.000023	14100	0.32
DDT (total)	0.00017	53600	9.1
dieldrin	0.00004	4670	0.2
heptachlor	0.00072	11200	8.1
hexachlorobenzene (HCB)	0.00021	8690	2.0
PAHs (total)	0.0088	30	0.26
PCBs (total)	0.000019	31200	0.6
toxaphene	0.00021	13100	2.75

a. The SMWP does not analyze for any of the non-carcinogens listed in the human health section of Table B of the 1990 Ocean Plan.
b. From Table B, Objectives for Human Health, "*California Ocean Plan*" (SWRCB 1990a).
c. Bioconcentration Factors taken from the USEPA 1980 Ambient Water Quality Criteria Documents for each substance.
d. MTRLs were calculated by multiplying the Water Quality Objective by the BCF, except for aldrin.
e. Aldrin MTRL is derived from a combination of aldrin and dieldrin risk factors and BCFs as recommended in the USEPA 1980 "*Ambient Water Quality Criteria for Aldrin/Dieldrin*" (USEPA 1980).

TABLE 3

Maximum Tissue Residue Levels (MTRLs) in Enclosed Bays and Estuaries

Carcinogens

Substance	Water Quality Objective [a] (µg/l)	BCF [b] (l/kg)	MTRL [c] (µg/kg, ppb)
aldrin	0.00014	**d**	0.33
chlordane (total)	0.000081	14100	1.2
DDT (total)	0.0006	53600	32.0
dieldrin	0.00014	4670	0.7
heptachlor	0.00017	11200	1.9
heptachlor epoxide	0.00007	11200	0.8
hexachlorobenzene (HCB)	0.00069	8690	6.0
hexachlorocyclohexane (HCH), alpha	0.0013	130	1.7
hexachlorocyclohexane (HCH), beta	0.046	130	6.0
hexachlorocyclohexane (HCH), gamma	0.062	130	8.1
PAHs (total)	0.031	30	0.93
PCBs (total)	0.00007	31200	2.2
pentachlorophenol (PCP)	8.2	11	90.0
toxaphene	0.00069	13100	9.0

Non-carcinogens

Substance	Water Quality Objective [a] (mg/l)	BCF [b] (l/kg)	MTRL [c] (mg/kg, ppm)
endosulfan (total)	0.002	270	0.5 (500 ppb)
endrin	0.0008	3970	3.2 (3,200 ppb)
mercury	0.000025	**e**	1.0
nickel	4.6	47	220.0

a. From the *Draft November 26, 1990 Functional Equivalent Document - Development of Water Quality Plans For: Inland Surface Waters of California and Enclosed Bays and Estuaries of California* (SWRCB 1990b), the *Draft April 9, 1991 Supplement to the Functional Equivalent Document* (SWRCB 1991).

b. Bioconcentration Factors taken from the USEPA 1980 Ambient Water Quality Criteria Documents for each substance.

c. MTRLs were calculated by multiplying the Water Quality Objective by the BCF, except for aldrin and mercury.

d. Aldrin MTRL is derived from a combination of aldrin and dieldrin risk factors and BCFs as recommended in the USEPA 1980 "*Ambient Water Quality Criteria for Aldrin/Dieldrin*" (USEPA 1980).

e. The MTRL for mercury is the FDA action level. The water quality objective for mercury in the Enclosed Bays and Estuaries Plan is based on the FDA action level as recommended in the USEPA 1985 "*Ambient Water Quality Criteria for Mercury*" (USEPA 1985).

TABLE 4

Median International Standards for Trace Elements[a]
(edible portion, ppm, wet weight)

Element	Freshwater Fish	Shellfish	Range	Number of Countries with Standards
Arsenic	1.5	1.4	0.1 to 5.0	11
Cadmium	0.3	1.0	0.05 to 2.0	10
Chromium	1.0	1.0	1.0	1
Copper	20.0	20.0	10 to 100	8
Lead	2.0	2.0	0.5 to 10.0	19
Mercury	0.5	0.5	0.1 to 1.0	28
Selenium	2.0	0.3	0.3 to 2.0	3
Zinc	45.0	70.0	40 to 100	6

a Based on: Nauen, C. C., Compilation of Legal Limits for Hazardous Substances in Fish and Fishery Products, Food and Agriculture Organization of the United Nations, 1983.

TABLE 5

State Mussel Watch Program

EDL 85 and EDL 95 for Trace Elements in California Mussels (*Mytilus californianus*)

Calculated Using 1977 - 1995 Data

(ppm, wet weight)

Resident

Element	EDL 85	EDL 95	Number of Samples
Aluminum	77.90	127.96	589
Arsenic	3.79	4.94	133
Cadmium	1.50	2.03	589
Chromium	0.53	0.93	588
Copper	1.55	2.01	589
Lead	0.96	2.49	588
Manganese	2.06	2.80	589
Mercury	0.06	0.11	586
Nickel	0.62	0.82	277
Selenium	0.53	0.83	51
Silver	0.45	1.55	589
Titanium	5.71	9.95	167
Zinc	33.67	38.87	589

Transplanted

Element	EDL 85	EDL 95	Number of Samples
Aluminum	130.00	224.27	906
Arsenic	2.24	3.39	214
Cadmium	1.59	1.93	906
Chromium	0.63	1.36	905
Copper	5.00	11.82	906
Lead	1.57	2.72	914
Manganese	4.53	6.09	906
Mercury	0.06	0.08	896
Nickel	0.72	0.99	214
Selenium	0.61	0.87	136
Silver	0.10	0.19	906
Titanium	7.55	14.65	139
Zinc	54.48	76.86	906

TABLE 6

State Mussel Watch Program

EDL 85 and EDL 95 for Trace Elements in Bay Mussels (*Mytilus edulis*)

Calculated Using 1977 - 1995 Data

(ppm, wet weight)

Resident

Element	EDL 85	EDL 95	Number of Samples
Aluminum	134.53	189.92	88
Arsenic	IS	IS	6
Cadmium	1.02	1.25	88
Chromium	0.52	1.18	88
Copper	2.15	3.76	88
Lead	1.85	4.39	88
Manganese	5.08	6.53	88
Mercury	0.05	0.09	87
Nickel	0.74	0.97	22
Selenium	IS	IS	7
Silver	0.06	0.16	88
Titanium	IS	IS	1
Zinc	43.14	53.86	88

IS = Insufficient number of samples to calculate an EDL.

TABLE 7

State Mussel Watch Program

EDL 85 and EDL 95 for Organic Chemicals in Resident California Mussels (*Mytilus californianus*)

Calculated Using 1977 - 1995 Data

(ppb, wet weight)

Chemical	EDL 85	EDL 95	Number of Samples
Aldrin	ND	ND	165
Chlordene, alpha	ND	ND	136
Chlordene, gamma	ND	ND	135
cis-Chlordane	1.6	3.2	165
cis-Nonachlor	0.2	1.2	141
Oxychlordane	0.2	0.3	165
trans-Chlordane	1.3	2.2	165
trans-Nonachlor	1.4	2.3	165
Total Chlordane	4.4	7.6	175
Chlorbenside	ND	0.5	130
Chlorpyrifos	ND	ND	164
Dacthal	ND	0.4	164
DDD, o,p'	1.2	2.0	287
DDD, p,p'	3.1	7.5	287
DDE, o,p'	5.8	12.3	168
DDE, p,p'	30.3	105.1	287
DDMS, p,p'	ND	2.4	153
DDMU, p,p'	4.4	8.9	168
DDT, o,p'	0.4	1.2	287
DDT, p,p'	1.8	3.4	287
Total DDT	46.0	128.9	297
Diazinon	ND	ND	138
Dichlorobenzophenone, p,p'	ND	ND	80
Dicofol	ND	ND	54
Dieldrin	1.6	2.5	164
Endosulfan I	0.4	1.3	165
Endosulfan II	ND	ND	69
Endosulfan Sulfate	ND	ND	69
Total Endosulfan	0.3	1.3	175
Endrin	ND	ND	165
Ethion	ND	ND	80
HCH, alpha	1.3	1.7	165
HCH, beta	ND	1.2	164
HCH, delta	ND	ND	164
HCH, gamma	0.2	0.3	164
Heptachlor	ND	ND	165
Heptachlor Epoxide	ND	ND	164
Hexachlorobenzene	ND	0.03	165
Methoxychlor	ND	ND	164
Oxadiazon	ND	0.5	55
Parathion, ethyl	ND	ND	137
Parathion, methyl	ND	ND	137
PCB 1248	ND	ND	391
PCB 1254	14.6	33.3	391
PCB 1260	ND	ND	391
Total PCB	15.1	34.9	391
PCT 5460	ND	ND	69
Pentachlorophenol	1.2	2.7	14
Phenol	0.3	0.4	14
Tetrachlorophenol	1.1	3.0	14
Tetradifon	ND	ND	137
Toxaphene	ND	ND	165
Tributyltin	ND	ND	23

ND = EDL lies below the detection limit.

TABLE 8

State Mussel Watch Program

EDL 85 and EDL 95 for Organic Chemicals in Transplanted California Mussels (*Mytilus californianus*)

Calculated Using 1977 - 1995 Data

(ppb, wet weight)

Chemical	EDL 85	EDL 95	Number of Samples
Aldrin	ND	ND	540
Chlordene, alpha	0.5	1.0	486
Chlordene, gamma	0.2	0.4	486
cis-Chlordane	7.3	13.4	543
cis-Nonachlor	2.2	3.9	493
Oxychlordane	0.4	0.9	543
trans-Chlordane	6.1	9.9	543
trans-Nonachlor	5.4	9.9	543
Total Chlordane	21.6	35.9	552
Chlorbenside	ND	1.7	437
Chlorpyrifos	0.4	1.5	538
Dacthal	0.7	6.4	519
DDD, o,p'	6.0	12.7	564
DDD, p,p'	23.9	67.4	564
DDE, o,p'	6.1	10.5	564
DDE, p,p'	97.5	170.1	564
DDMS, p,p'	3.4	6.2	533
DDMU, p,p'	6.5	10.4	564
DDT, o,p'	2.4	8.6	564
DDT, p,p'	7.8	32.6	564
Total DDT	152.5	311.5	573
Diazinon	ND	ND	438
Dichlorobenzophenone, p,p'	ND	ND	279
Dicofol	ND	ND	196
Dieldrin	6.0	18.2	520
Endosulfan I	1.2	23.5	524
Endosulfan II	1.4	15.4	270
Endosulfan Sulfate	8.4	26.8	271
Total Endosulfan	1.6	46.5	533
Endrin	ND	1.4	517
Ethion	ND	ND	279
HCH, alpha	0.6	1.1	535
HCH, beta	ND	ND	519
HCH, delta	ND	ND	518
HCH, gamma	0.4	0.7	518
Heptachlor	ND	0.03	535
Heptachlor Epoxide	0.2	0.5	535
Hexachlorobenzene	ND	0.1	535
Methoxychlor	ND	ND	520
Oxadiazon	1.1	2.3	181
Parathion, ethyl	ND	ND	417
Parathion, methyl	ND	ND	417
PCB 1248	ND	28.3	704
PCB 1254	170.0	374.3	704
PCB 1260	ND	ND	704
Total PCB	176.1	426.1	704
PCT 5460	ND	ND	189
Pentachlorophenol	22.6	34.0	90
Phenol	0.5	0.9	37
Tetrachlorophenol	2.0	5.4	90
Tetradifon	ND	ND	423
Toxaphene	ND	83.3	543
Tributyltin	1474.5	2639.3	150

ND = EDL lies below the detection limit.

TABLE 9

State Mussel Watch Program

EDL 85 and EDL 95 for Organic Chemicals in Resident Bay Mussels (Mytilus edulis)

Calculated Using 1977 - 1995 Data

(ppb, wet weight)

Chemical	EDL 85	EDL 95	Number of Samples
Aldrin	ND	0.3	63
Chlordene, alpha	0.4	1.1	42
Chlordene, gamma	0.5	1.2	42
cis-Chlordane	11.9	17.9	64
cis-Nonachlor	2.8	4.5	53
Oxychlordane	0.5	0.9	64
trans-Chlordane	13.1	17.2	64
trans-Nonachlor	11.3	16.5	64
Total Chlordane	38.8	56.2	64
Chlorbenside	ND	5.8	55
Chlorpyrifos	ND	1.0	64
Dacthal	9.2	21.2	62
DDD, o,p'	12.1	23.6	83
DDD, p,p'	45.3	83.3	83
DDE, o,p'	7.9	15.6	76
DDE, p,p'	173.9	321.8	83
DDMS, p,p'	3.1	5.3	74
DDMU, p,p'	7.0	11.3	76
DDT, o,p'	7.2	23.1	83
DDT, p,p'	32.2	96.7	83
Total DDT	297.8	496.9	83
Diazinon	ND	ND	54
Dichlorobenzophenone, p,p'	ND	ND	16
Dicofol	IS	IS	9
Dieldrin	12.2	22.2	61
Endosulfan I	93.6	125.9	64
Endosulfan II	53.1	74.3	27
Endosulfan Sulfate	48.7	72.6	26
Total Endosulfan	119.5	231.8	64
Endrin	2.4	4.1	62
Ethion	ND	ND	16
HCH, alpha	0.4	0.5	63
HCH, beta	ND	0.3	62
HCH, delta	ND	ND	62
HCH, gamma	0.3	0.4	62
Heptachlor	0.2	0.6	63
Heptachlor Epoxide	0.2	0.5	63
Hexachlorobenzene	0.1	0.2	63
Methoxychlor	ND	ND	62
Oxadiazon	0.7	1.9	12
Parathion, ethyl	ND	ND	54
Parathion, methyl	ND	ND	54
PCB 1248	ND	14.0	88
PCB 1254	127.9	192.7	88
PCB 1260	ND	ND	88
Total PCB	130.5	192.7	88
PCT 5460	ND	ND	12
Pentachlorophenol	IS	IS	1
Phenol	IS	IS	0
Tetrachlorophenol	IS	IS	1
Tetradifon	ND	ND	53
Toxaphene	108.6	238.7	66
Tributyltin	IS	IS	5

ND = EDL lies below the detection limit.
IS = Insufficient number of samples to calculate an EDL.

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Stephenson, M.D., S.L. Coale, M. Martin, and J. H. Martin. 1980. California State Mussel Watch 1979-1980. Trace metal concentrations in the California mussel, *Mytilus californianus*, and the Bay Mussel, *Mytilus edulis*, along the California coast and selected harbors and bays. Water Quality Monitoring Report No. 79-22. State Water Resources Control Board, California Environmental Protection Agency, Sacramento, California

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(USFDA) U.S. Food and Drug Administration, Bureau of Foods. 1985. Action Levels for Poisonous or Deleterious Substances in Human Food and Animal Feed. USFDA, Washington, D.C.

STATE WATER RESOURCES CONTROL BOARD
STATE MUSSEL WATCH LOCATIONS

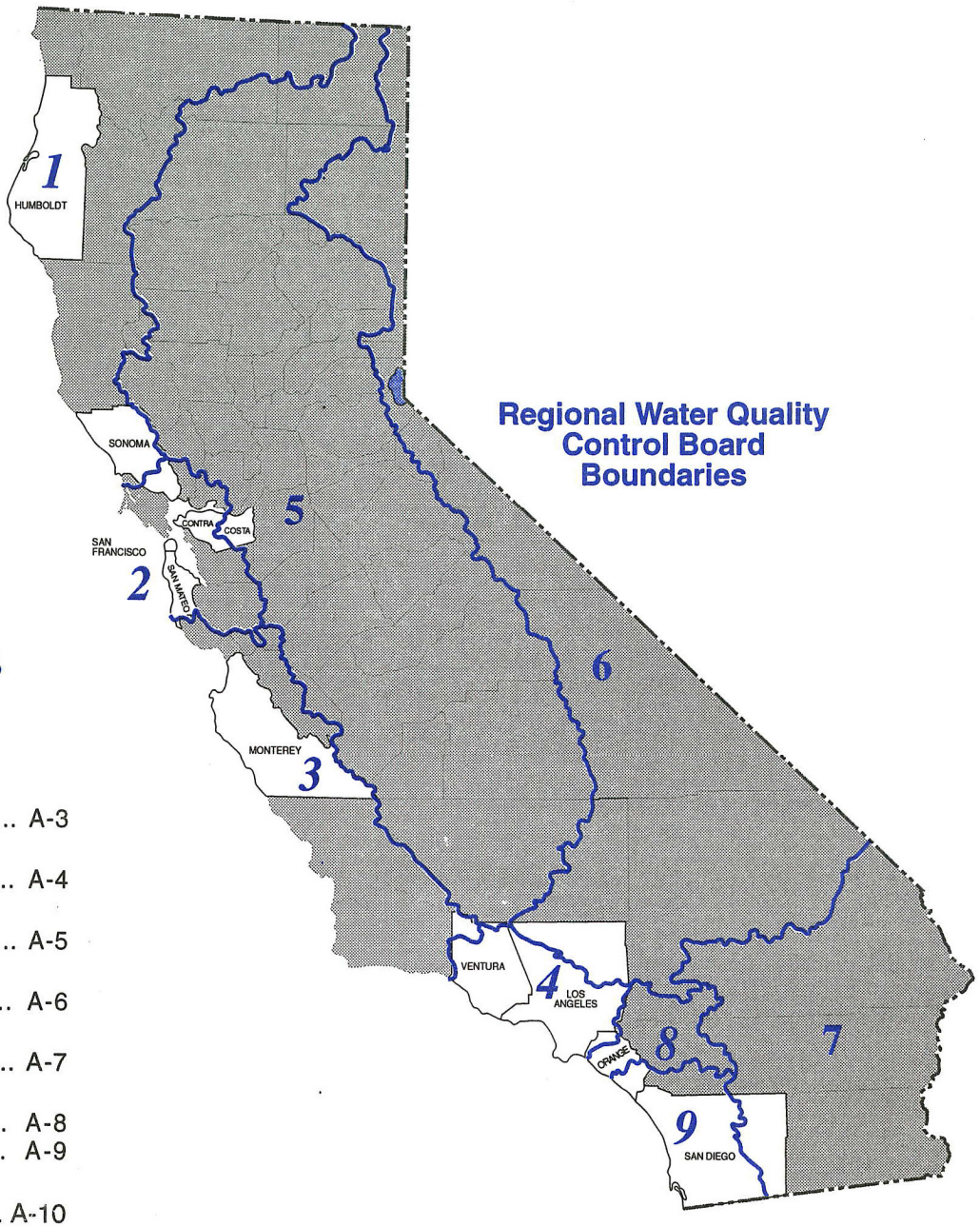


Table of Contents

APPENDIX A

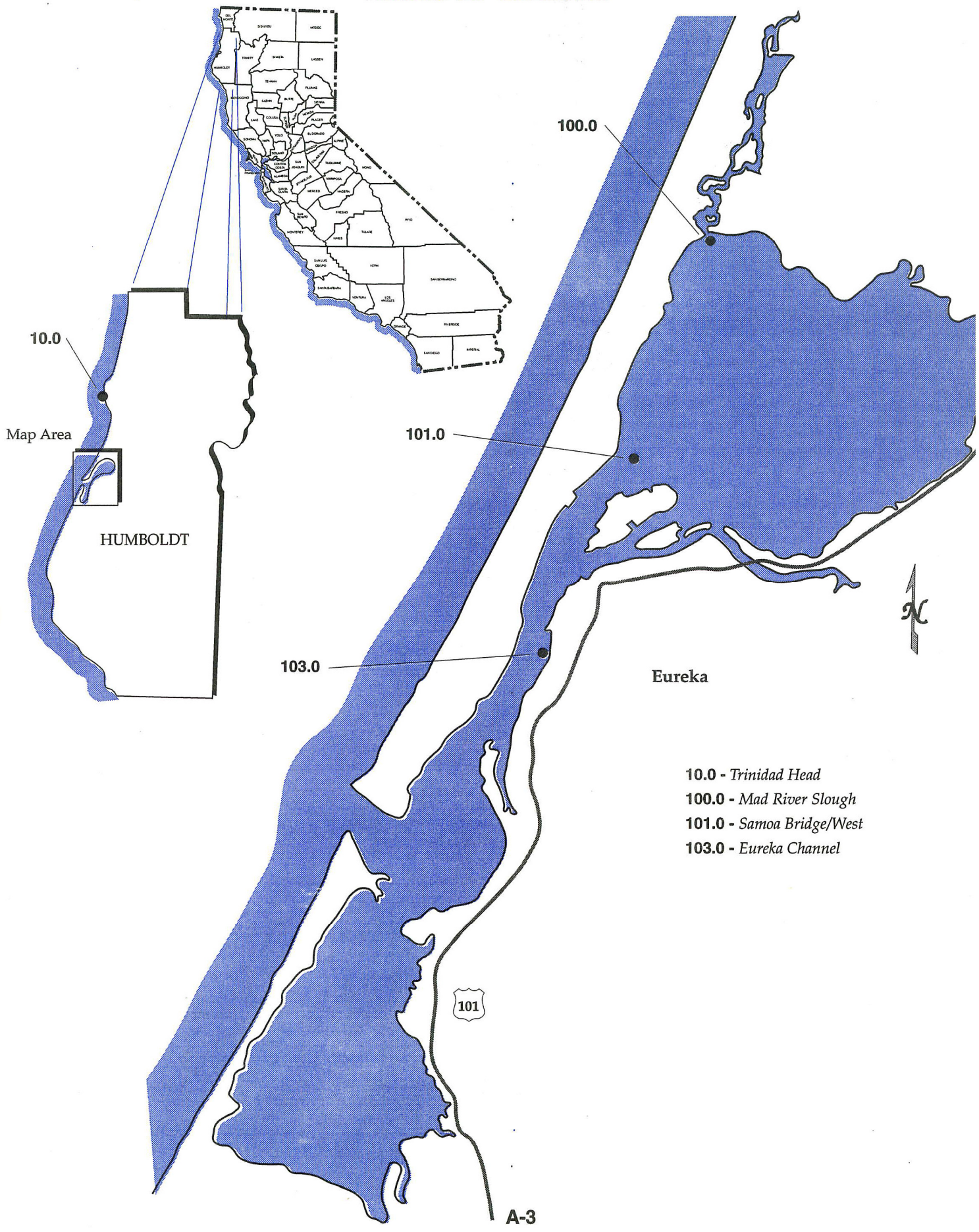
State Mussel Watch Program

1993-95 Sampling Stations

* = New Station. Sampled for the first time in 1993-94.

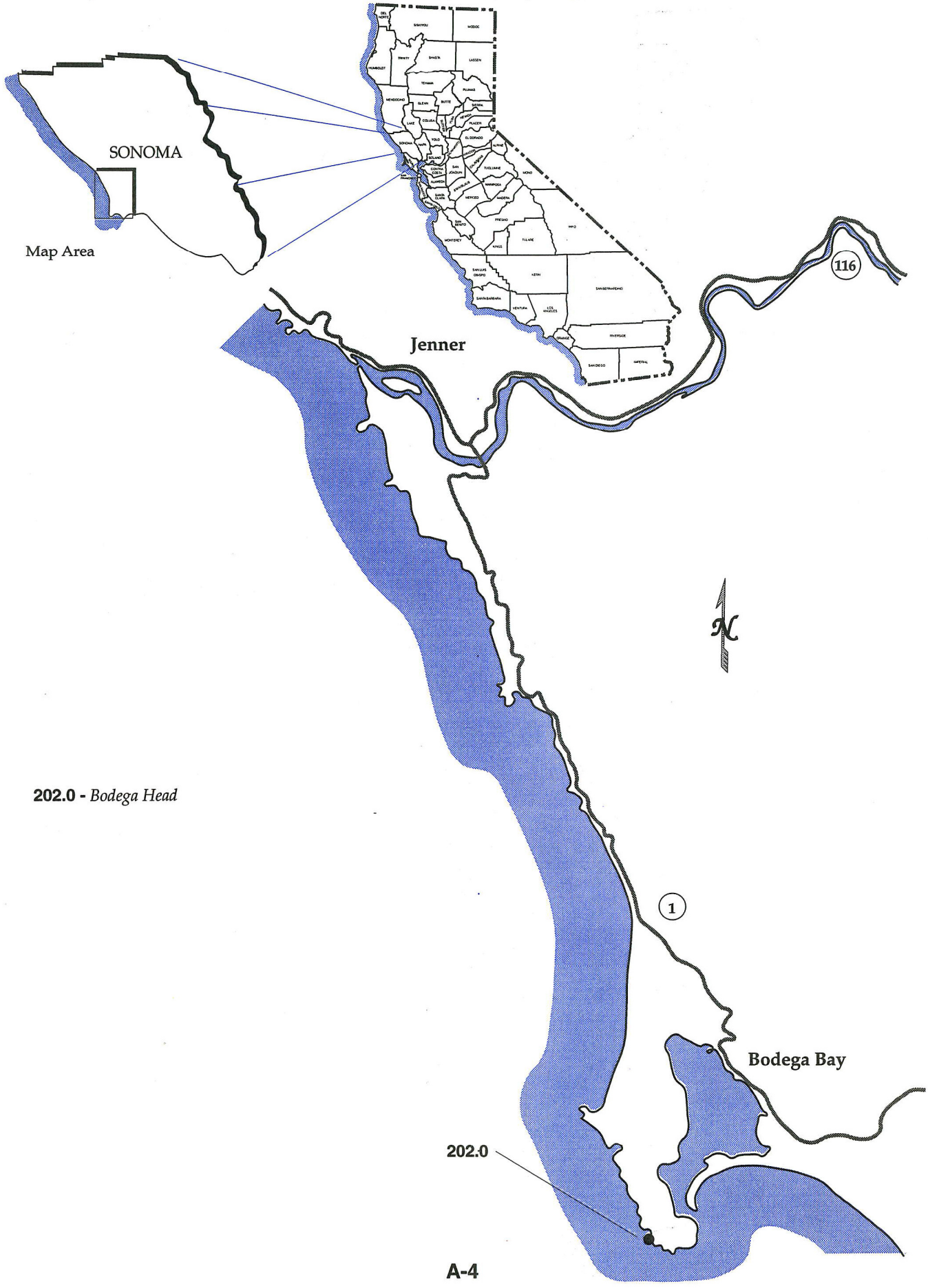
STATE MUSSEL WATCH 1993-95 SAMPLING STATIONS

Humboldt Co. - Eureka Area



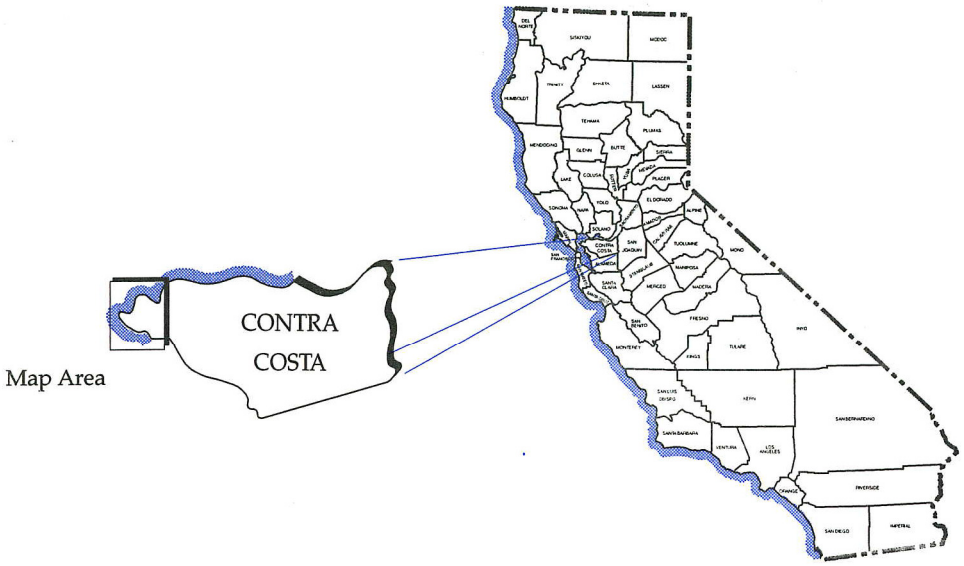
STATE MUSSEL WATCH 1993-95 SAMPLING STATIONS

Sonoma Co. - Jenner Area

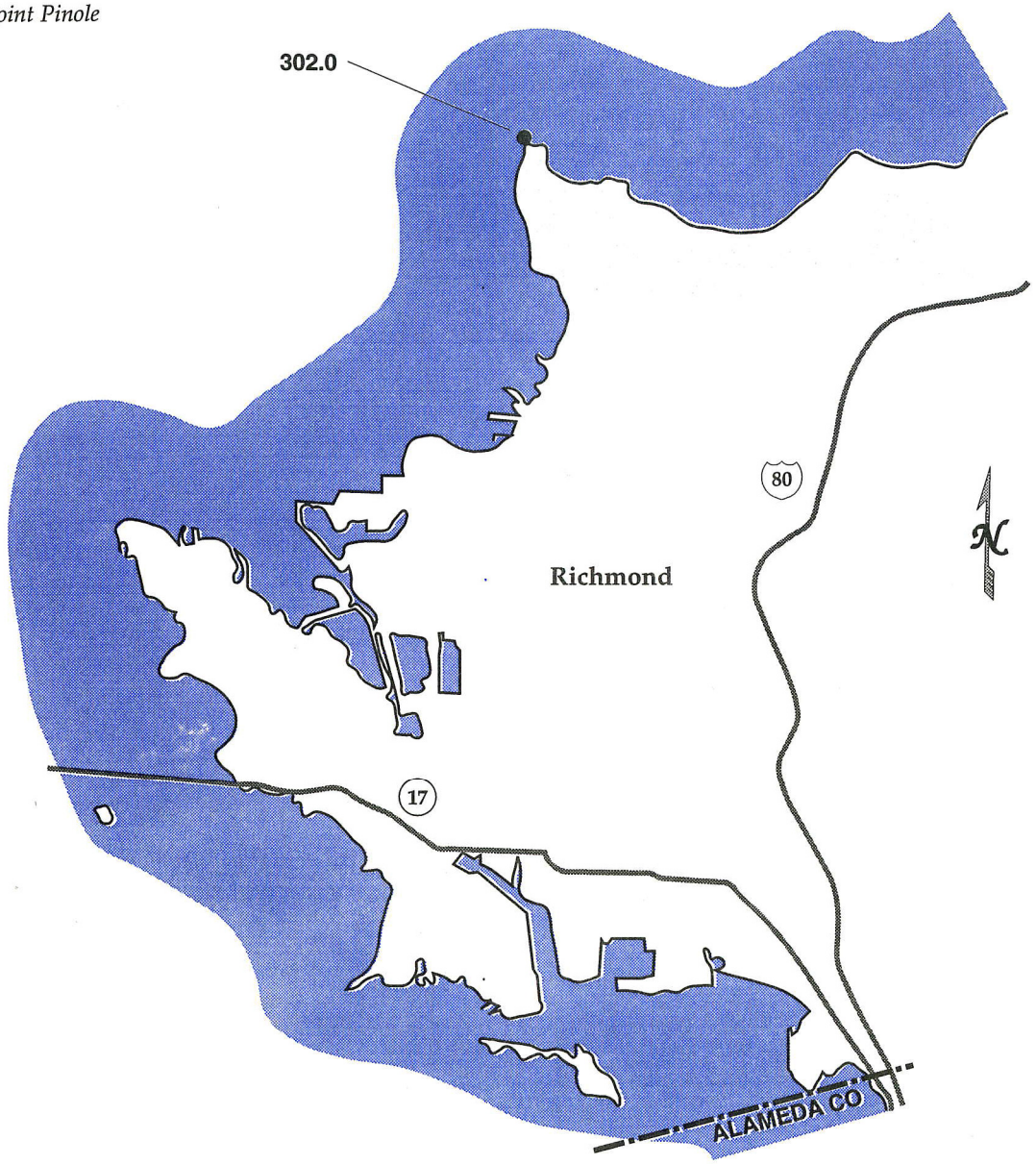


STATE MUSSEL WATCH 1993-95 SAMPLING STATIONS

Contra Costa Co. - Richmond Area

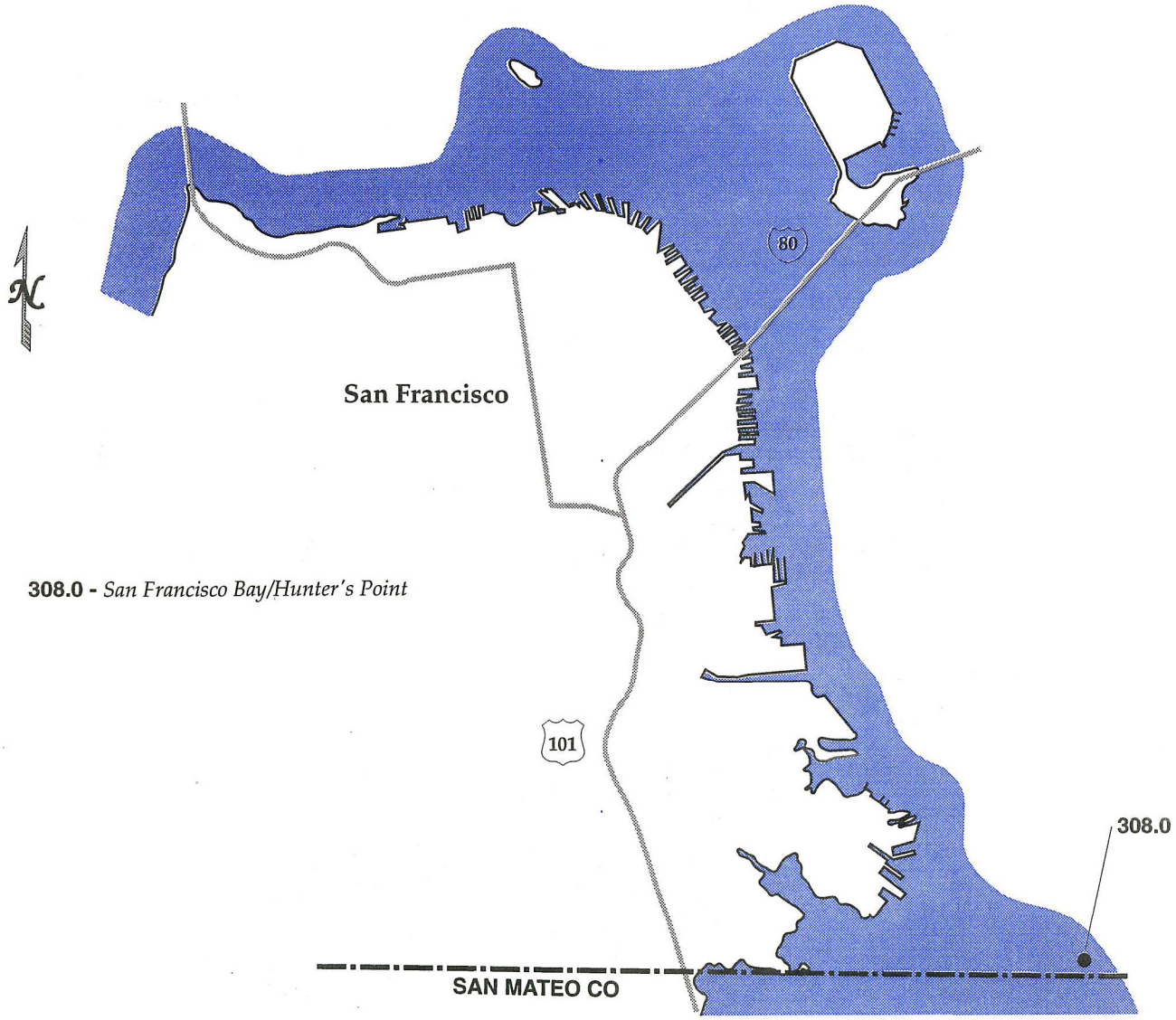


302.0 - *Point Pinole*



STATE MUSSEL WATCH 1993-95 SAMPLING STATIONS

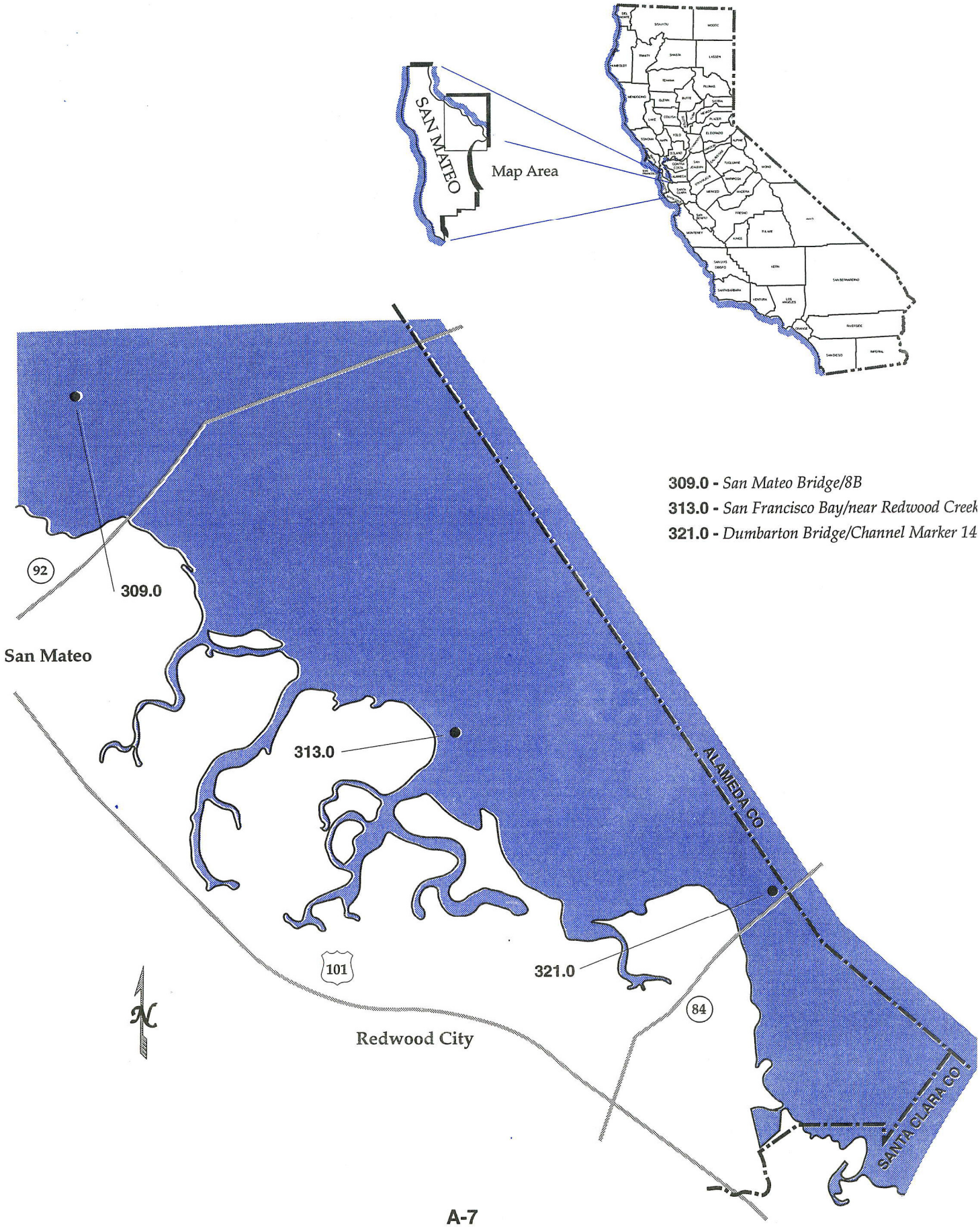
San Francisco Co. - San Francisco Area



308.0 - *San Francisco Bay/Hunter's Point*

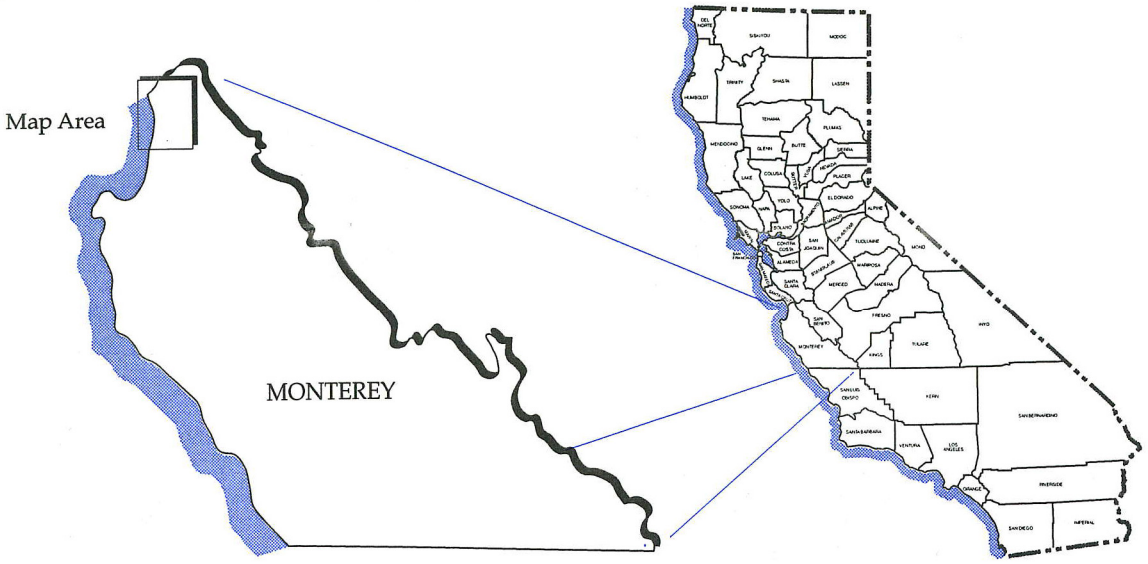
STATE MUSSEL WATCH 1993-95 SAMPLING STATIONS

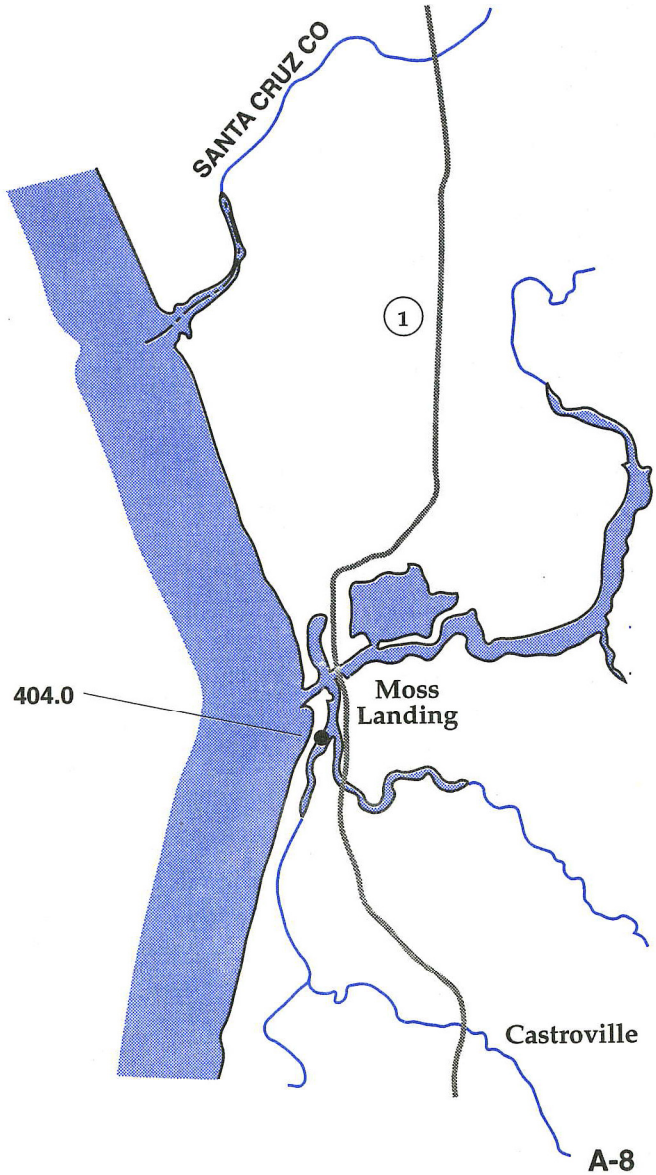
San Mateo Co. - Redwood City Area



STATE MUSSEL WATCH 1993-95 SAMPLING STATIONS

Monterey Co. - Moss Landing Area

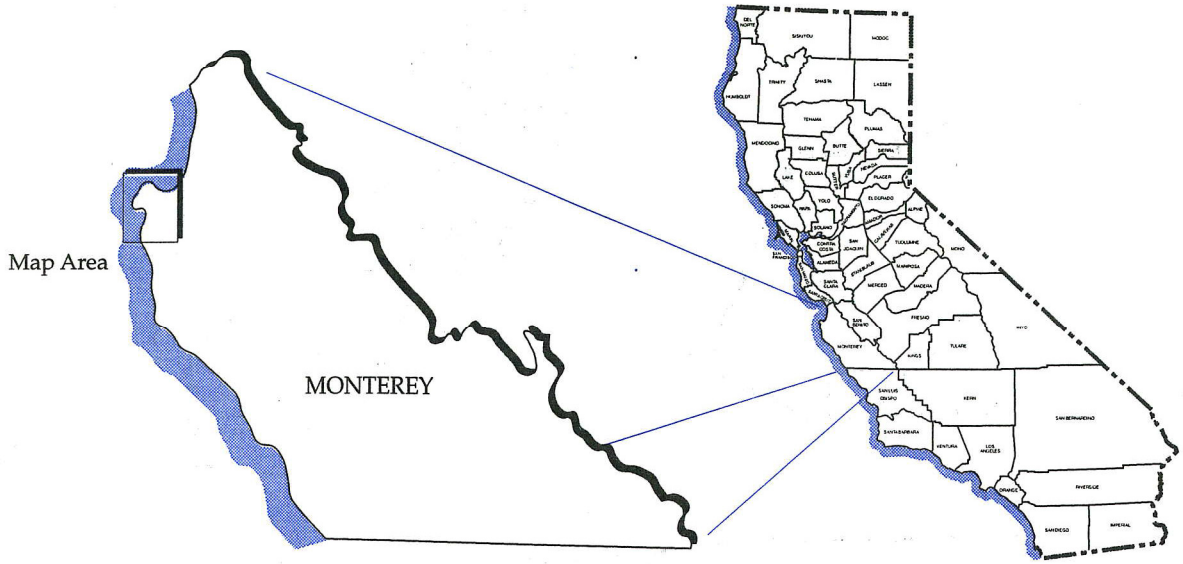


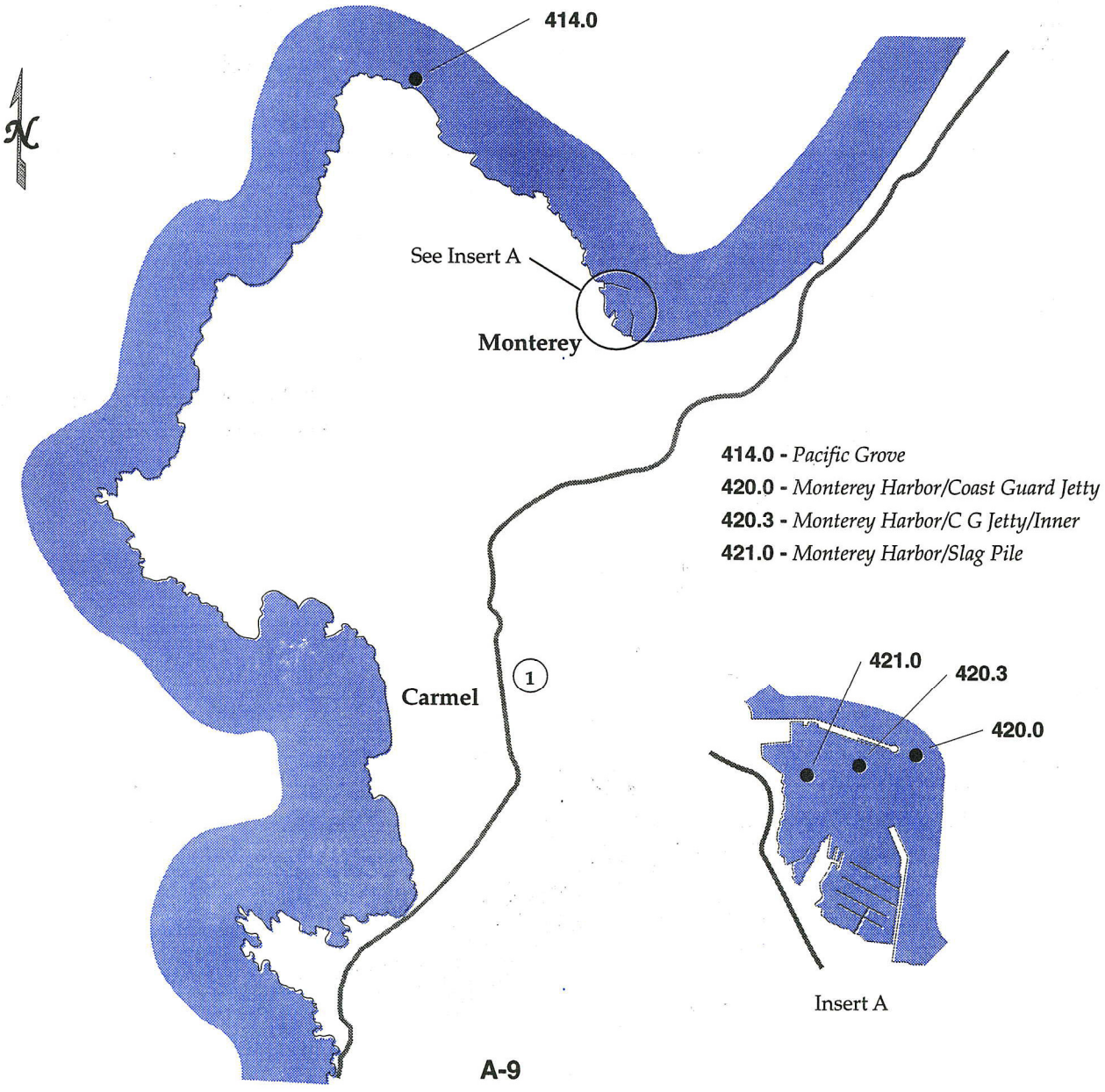


404.0 - *Sandholdt Bridge*

STATE MUSSEL WATCH 1993-95 SAMPLING STATIONS

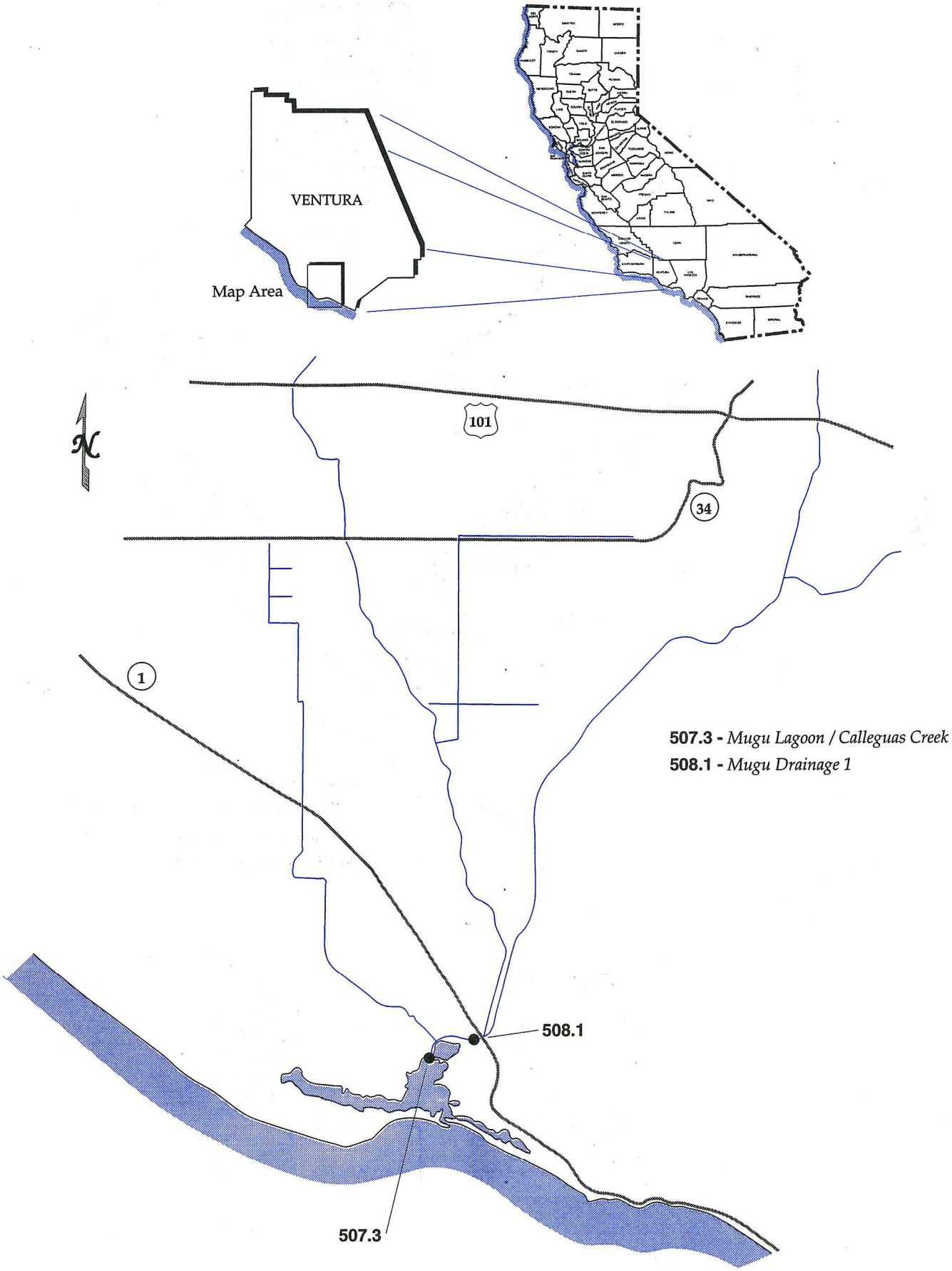
Monterey Co. - Monterey Area





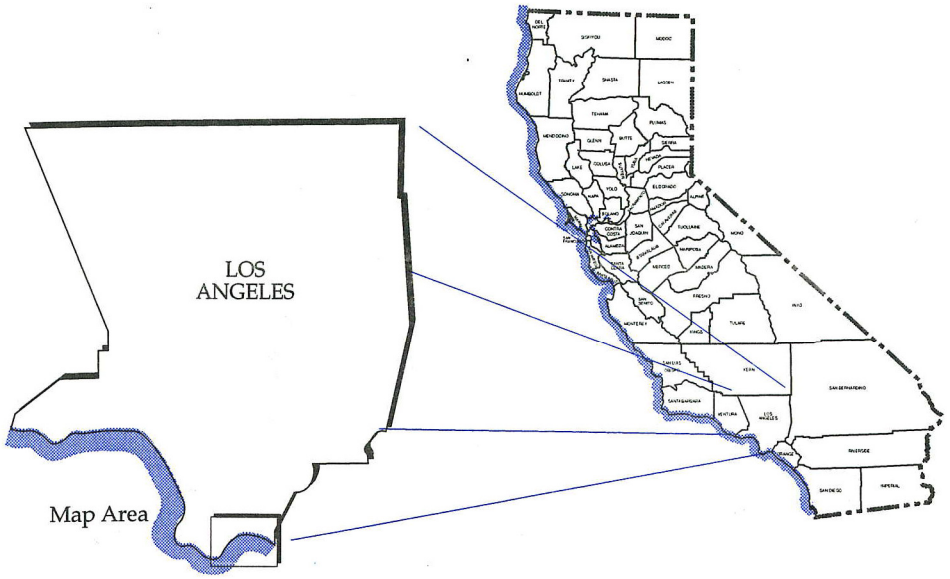
STATE MUSSEL WATCH 1993-95 SAMPLING STATIONS

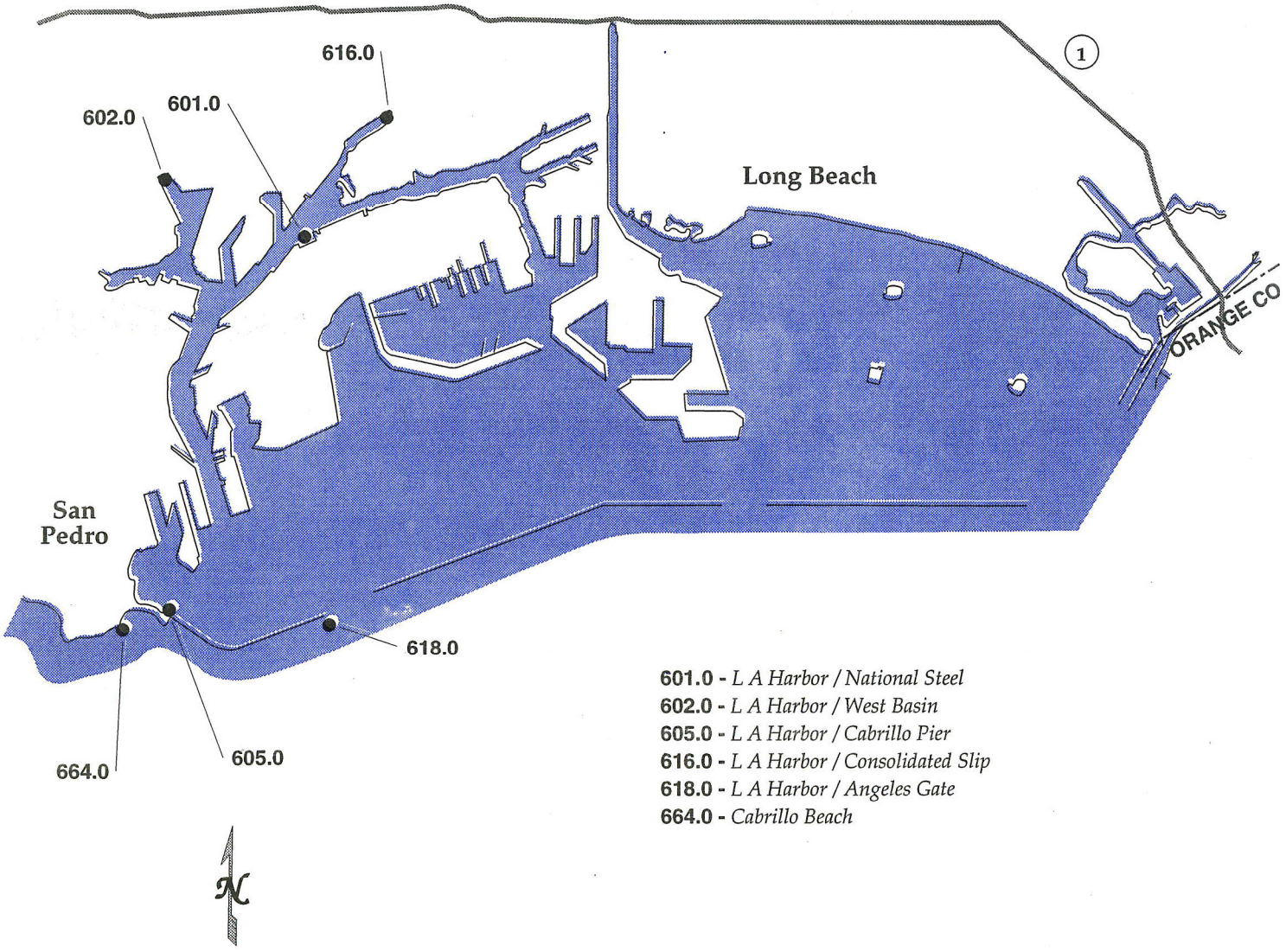
Ventura Co. - Mugu Lagoon Area



STATE MUSSEL WATCH 1993-95 SAMPLING STATIONS

Los Angeles Co. - Long Beach Area

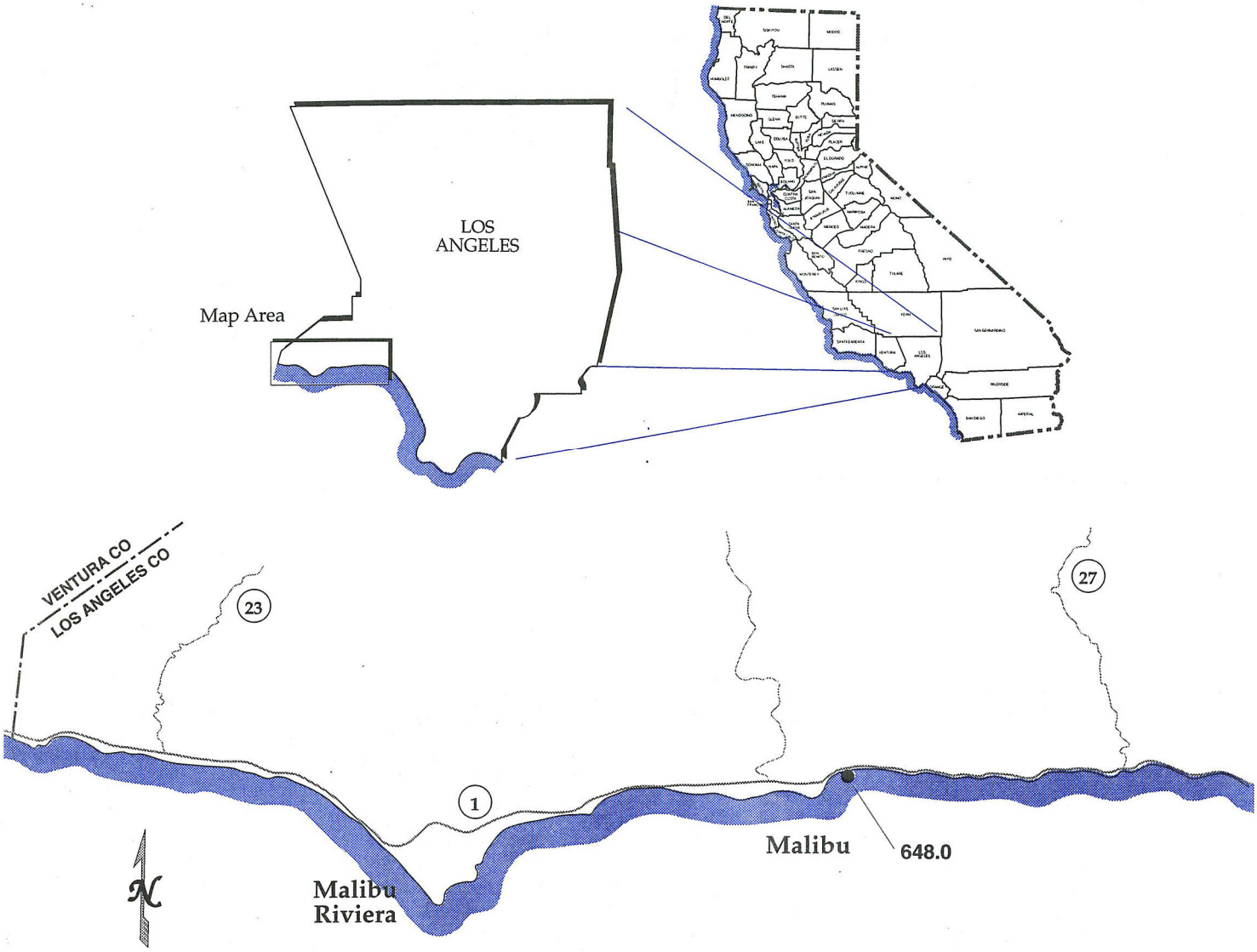




601.0 - *L A Harbor / National Steel*
602.0 - *L A Harbor / West Basin*
605.0 - *L A Harbor / Cabrillo Pier*
616.0 - *L A Harbor / Consolidated Slip*
618.0 - *L A Harbor / Angeles Gate*
664.0 - *Cabrillo Beach*

STATE MUSSEL WATCH 1993-95 SAMPLING STATIONS

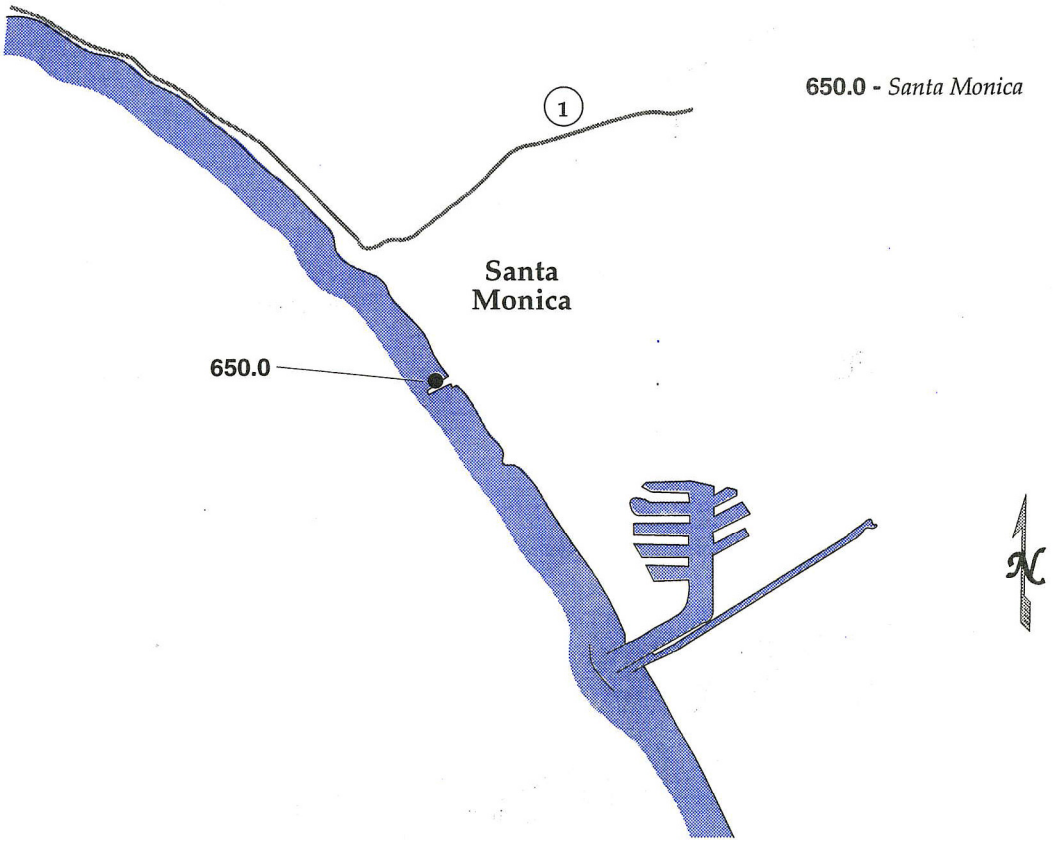
Los Angeles Co. - Malibu Area



648.0 - *Malibu*

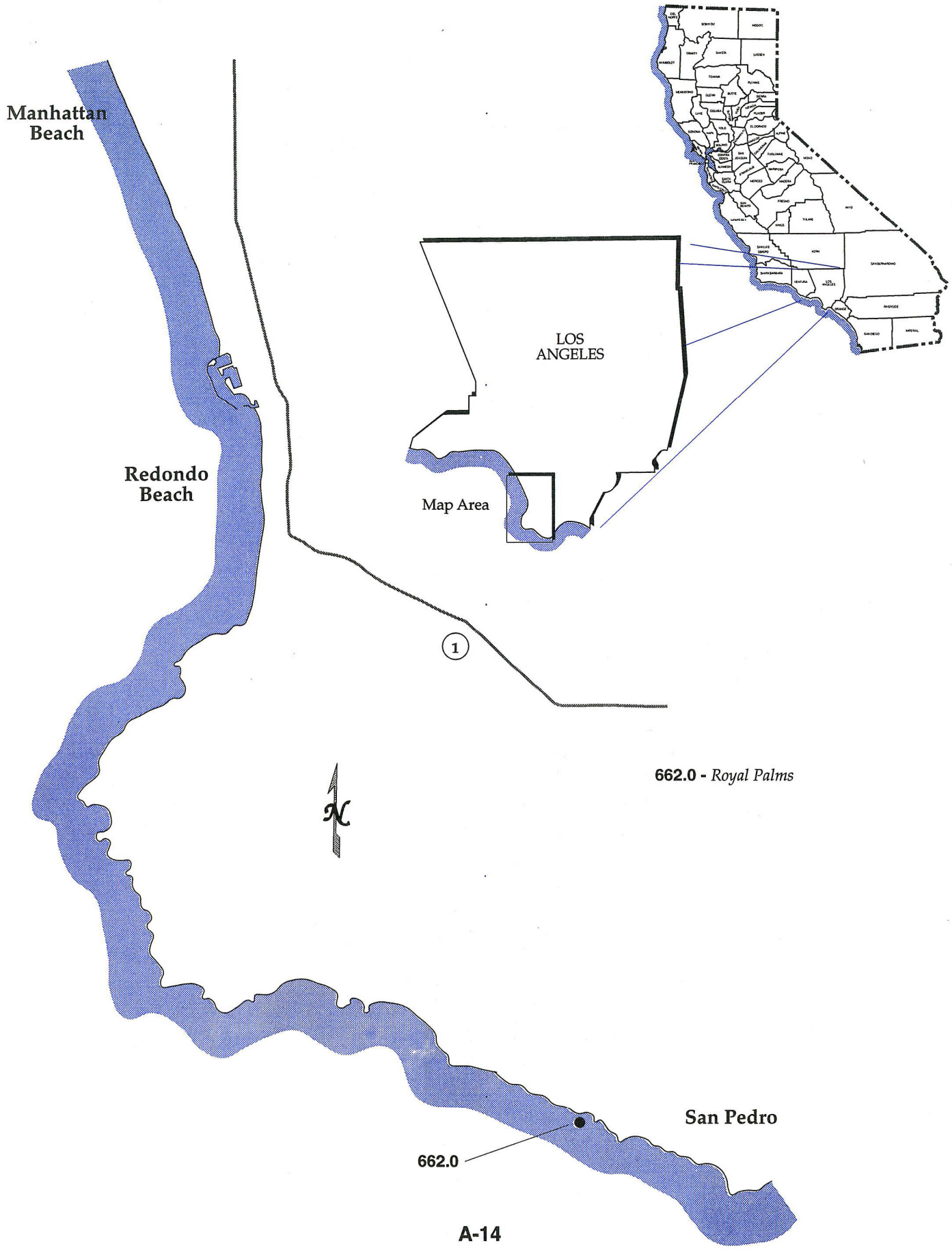
STATE MUSSEL WATCH 1993-95 SAMPLING STATIONS

Los Angeles Co. - Santa Monica Area



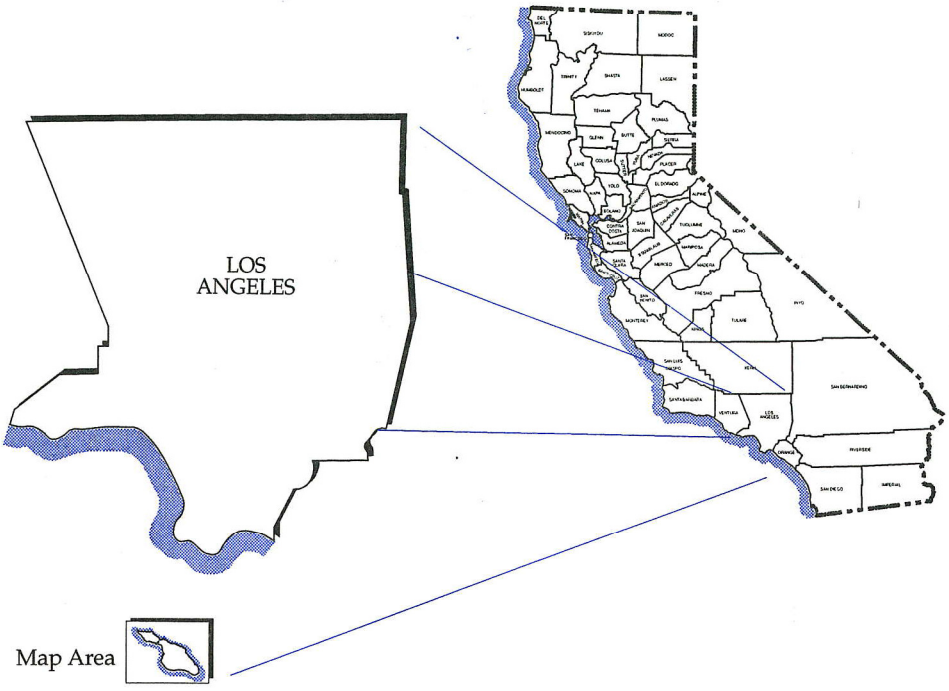
STATE MUSSEL WATCH 1993-95 SAMPLING STATIONS

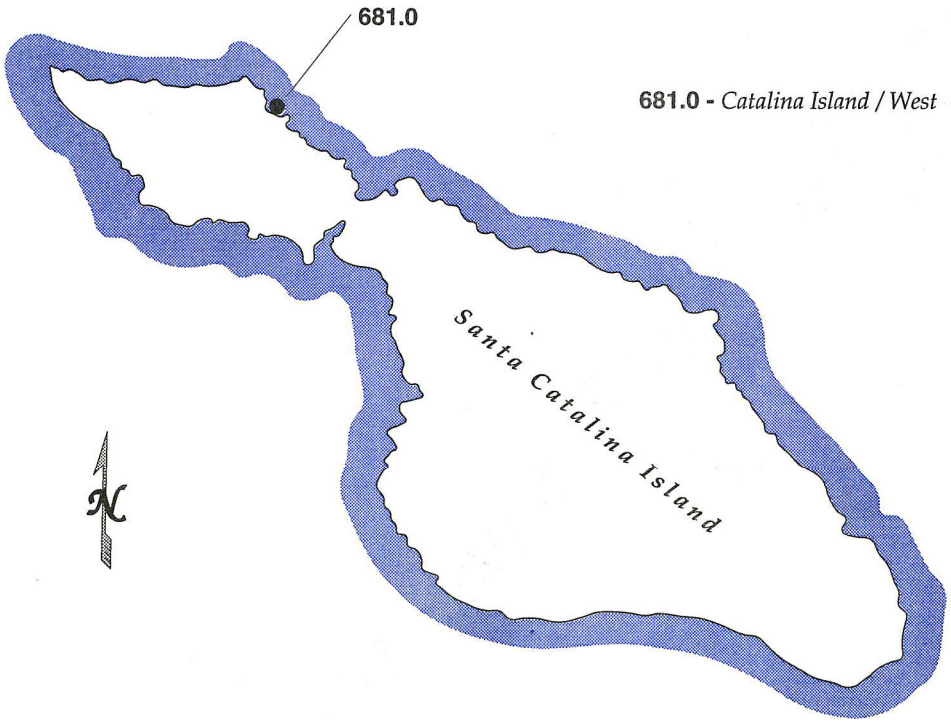
Los Angeles Co. - Redondo Beach Area



STATE MUSSEL WATCH 1993-95 SAMPLING STATIONS

Los Angeles Co. - Santa Catalina Island

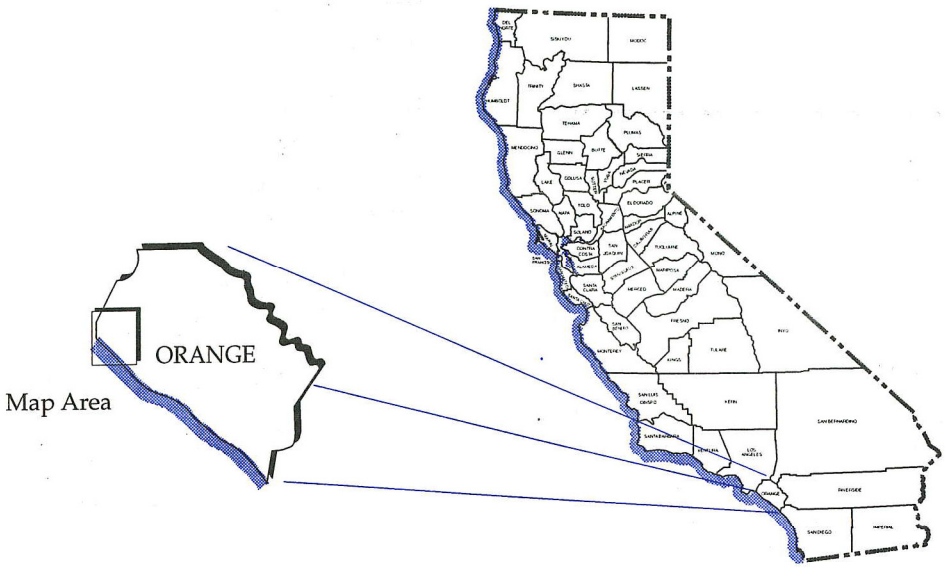




681.0 - *Catalina Island / West*

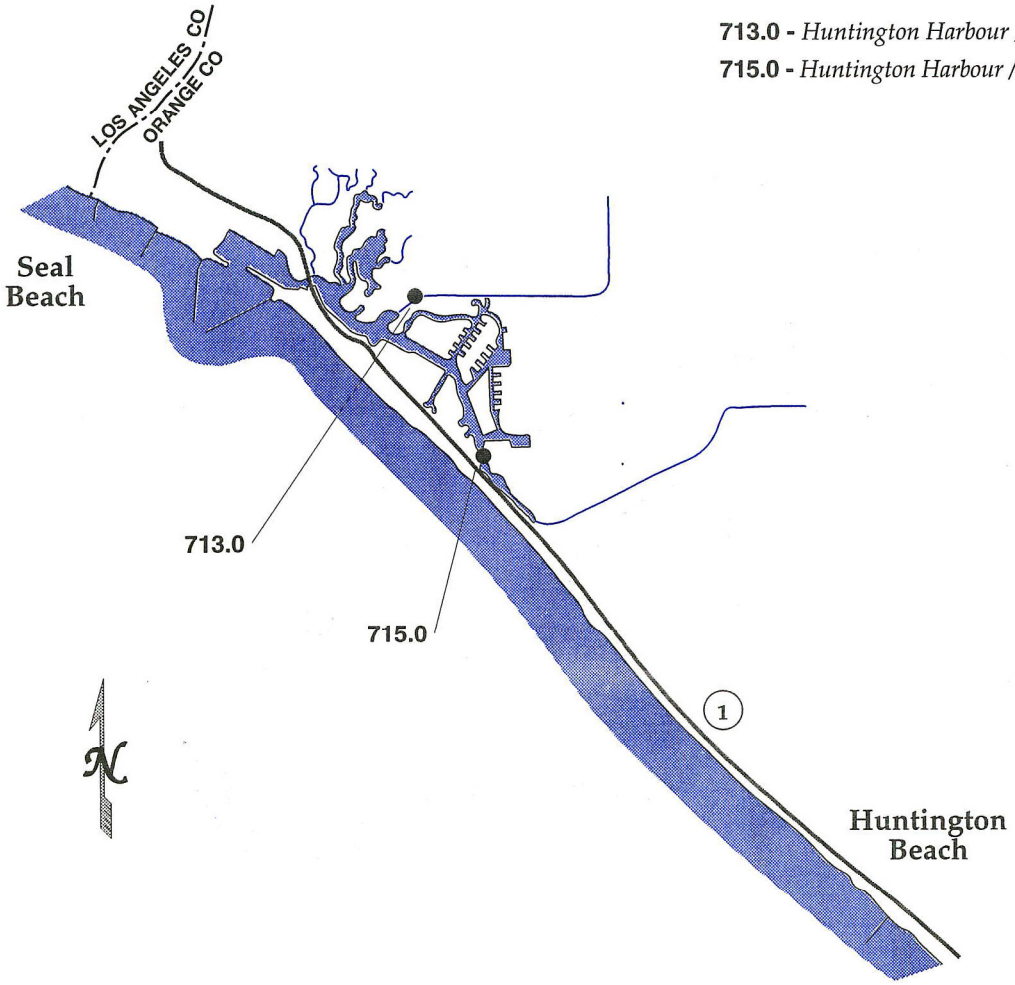
STATE MUSSEL WATCH 1993-95 SAMPLING STATIONS

Orange Co. - Anaheim Bay Area



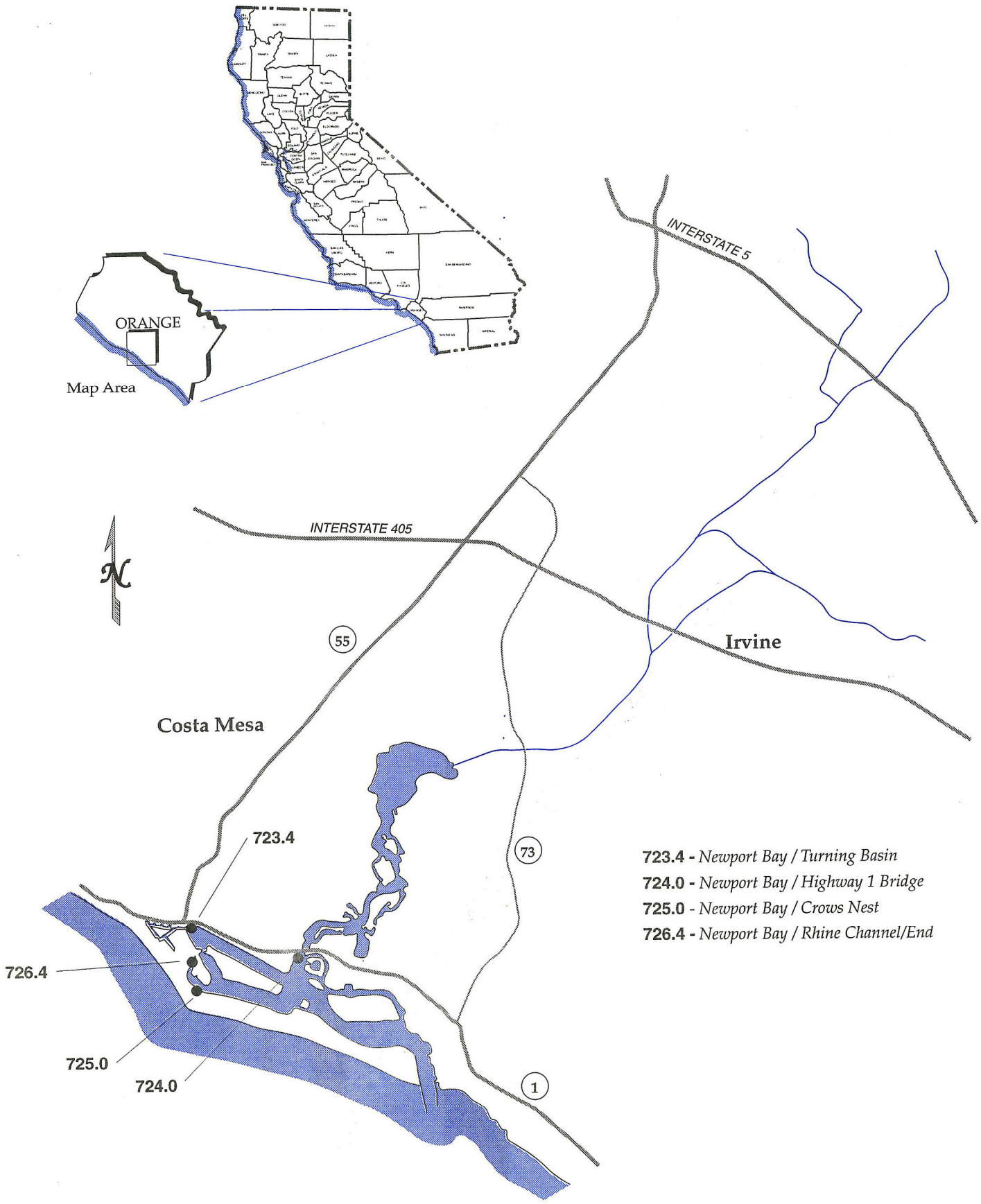
713.0 - *Huntington Harbour / Edinger Street*

715.0 - *Huntington Harbour / Warner Ave. Bridge*



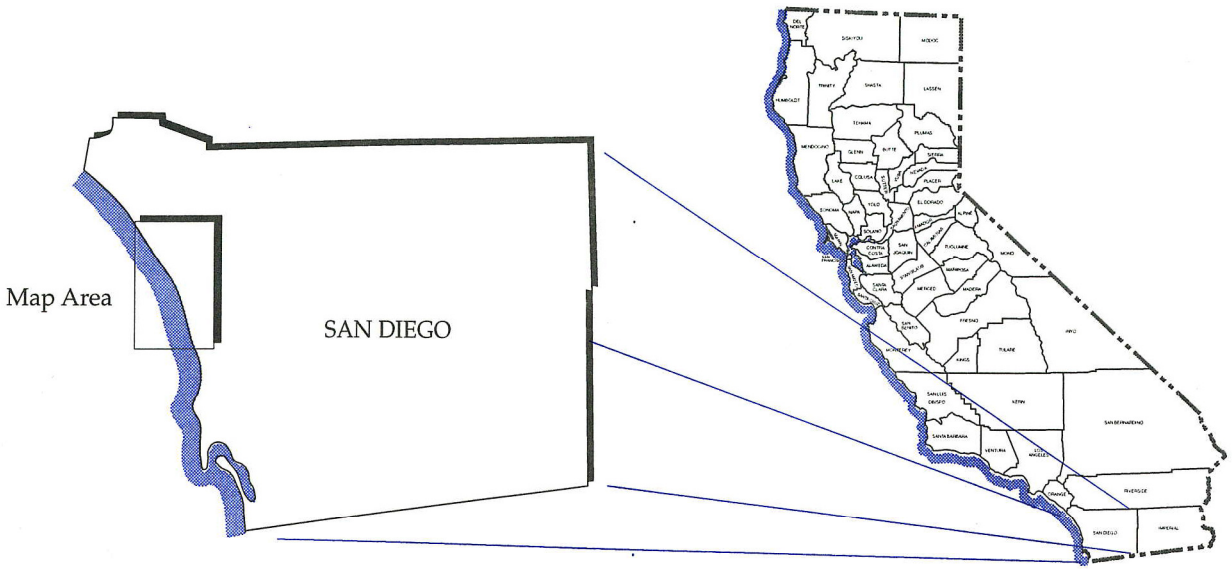
STATE MUSSEL WATCH 1993-95 SAMPLING STATIONS

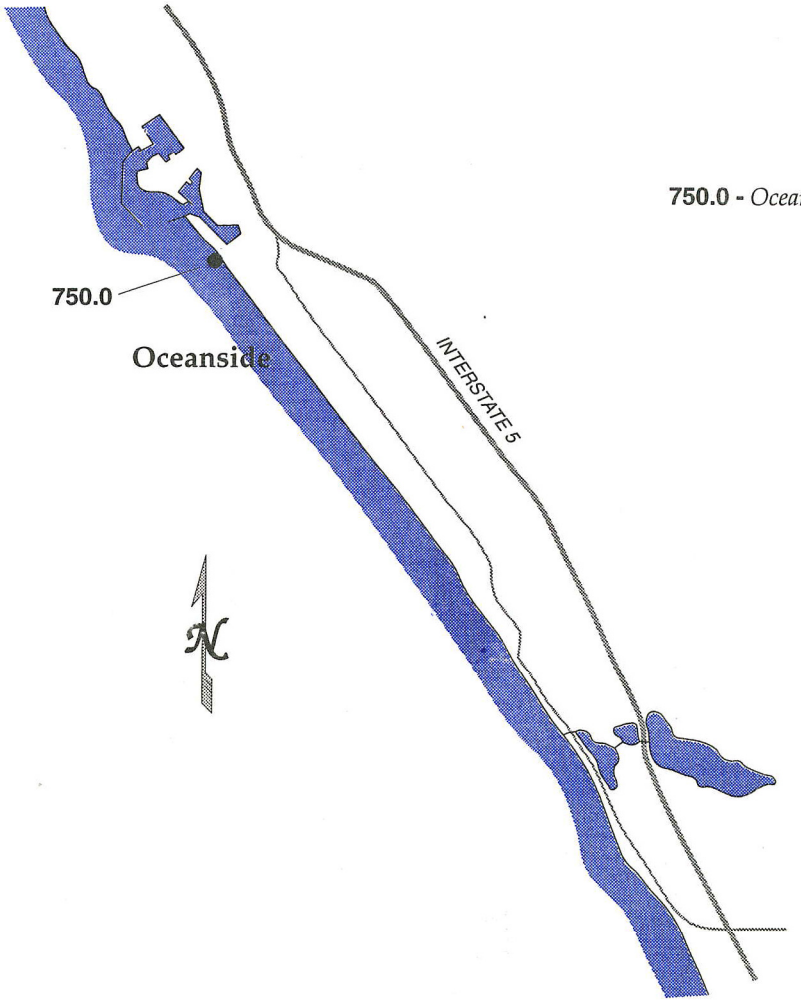
Orange Co. - Newport Bay Area



STATE MUSSEL WATCH 1993-95 SAMPLING STATIONS

San Diego Co. - Oceanside Area

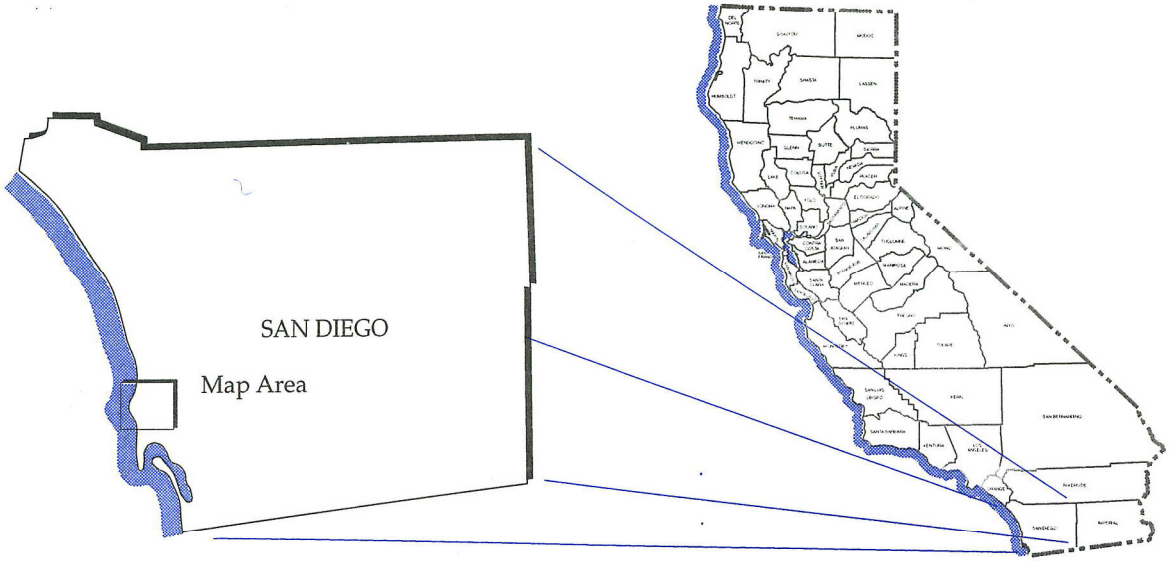


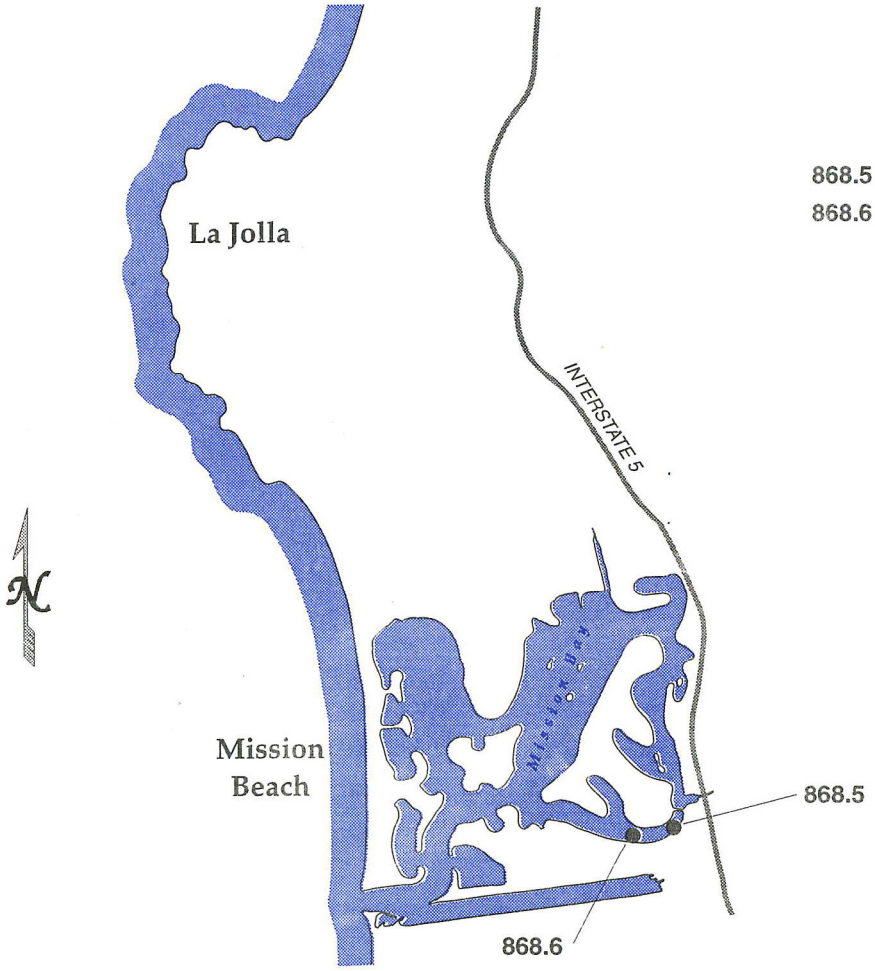


750.0 - *Oceanside*

STATE MUSSEL WATCH 1993-95 SAMPLING STATIONS

San Diego Co. - Mission Bay Area



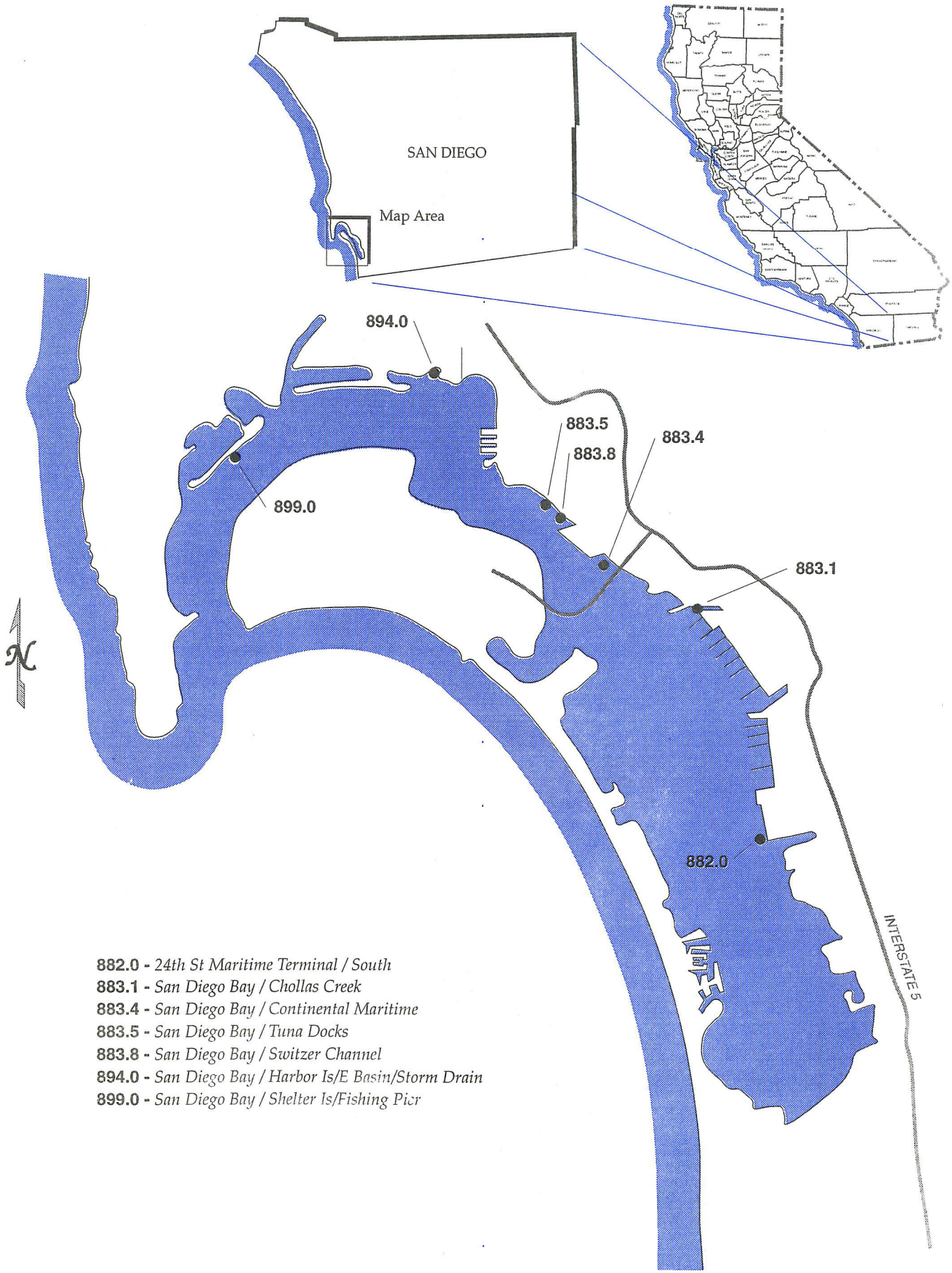


868.5 - *Mission Bay / Landfill 1*

868.6 - *Mission Bay / Landfill 2*

STATE MUSSEL WATCH 1993-95 SAMPLING STATIONS

San Diego Co. - San Diego Bay Area



882.0 - *24th St Maritime Terminal / South*
883.1 - *San Diego Bay / Chollas Creek*
883.4 - *San Diego Bay / Continental Maritime*
883.5 - *San Diego Bay / Tuna Docks*
883.8 - *San Diego Bay / Switzer Channel*
894.0 - *San Diego Bay / Harbor Is/E Basin/Storm Drain*
899.0 - *San Diego Bay / Shelter Is/Fishing Pier*

APPENDIX B

1993-95 Sampling Stations - Latitude and Longitude

APPENDIX B

State Mussel Watch Program

1993-95 Sampling Stations - Latitude and Longitude

Station Number	Station Name	Region	County	Latitude (o ' ")	Longitude (o ' ")
10.0	Trinidad Head	1	Humboldt	41 03 30	124 09 00
100.0	Mad River Slough	1	Humboldt	40 51 56	124 08 53
101.0	Samoa Bridge/West	1	Humboldt	40 49 24	124 10 10
103.0	Eureka Channel	1	Humboldt	40 47 20	124 11 17
202.0	Bodega Head	1	Sonoma	38 18 42	123 04 07
302.0	Point Pinole	2	Contra Costa	38 01 00	122 21 48
308.0	San Francisco Bay/Hunter's Point	2	San Francisco	37 41 42	122 20 27
309.0	San Mateo Bridge/8B	2	San Mateo	37 36 21	122 17 20
313.0	San Francisco Bay/near Redwood Cr	2	San Mateo	37 33 09	122 11 45
321.0	Dumbarton Bridge/Channel Marker 14	2	San Mateo	37 30 50	122 07 58
404.0	Sandholdt Bridge	3	Monterey	36 48 01	121 47 12
414.0	Pacific Grove	3	Monterey	36 38 18	121 55 46
420.0	Monterey Harbor/Coast Guard Jetty	3	Monterey	36 36 34	121 53 30
420.3	Monterey Harbor/C G Jetty/Inner	3	Monterey	36 36 30	121 53 31
421.0	Monterey Harbor/Slag Pile	3	Monterey	36 36 23	121 53 24
507.3	Mugu Lagoon/Calleguas Creek	4	Ventura	34 06 24	119 05 15
508.1	Mugu Drainage 1	4	Ventura	34 06 03	119 04 55
601.0	LA Harbor/National Stee	4	Los Angeles	33 45 41	118 15 07
602.0	LA Harbor/West Basin	4	Los Angeles	33 46 03	118 16 43
605.0	LA Harbor/Cabrillo Pier	4	Los Angeles	33 42 29	118 16 31
616.0	LA Harbor/Consolidated Slip	4	Los Angeles	33 46 36	118 14 30
618.0	LA Harbor/Angels Gate	4	Los Angeles	33 42 30	118 15 00
648.0	Malibu	4	Los Angeles	34 01 48	118 40 48
650.0	Santa Monica	4	Los Angeles	34 00 48	118 30 18
662.0	Royal Palms	4	Los Angeles	33 43 00	118 19 15
664.0	Cabrillo Beach	4	Los Angeles	33 42 22	118 17 11
682.0	Catalina Island/Ribbon Rock	4	Los Angeles	33 26 18	118 34 18
713.0	Huntington Harbour/Edinger Street	8	Orange	33 44 00	118 04 12
715.0	Huntington Harbour/Warner Ave Brdg	8	Orange	33 42 40	118 03 35
723.4	Newport Bay/Turning Basin	8	Orange	33 37 13	117 55 38
724.0	Newport Bay/Highway 1 Bridge	8	Orange	33 36 57	117 54 19
725.0	Newport Bay/Crows Nest	8	Orange	33 36 43	117 55 38
726.4	Newport Bay/Rhine Channel/End	8	Orange	33 36 51	117 55 35
750.0	Oceanside	9	San Diego	33 11 35	117 23 15
868.5	Mission Bay/Landfill 1	9	San Diego	32 45 00	117 13 22
868.6	Mission Bay/Landfill 2	9	San Diego	32 47 19	117 13 27
882.0	24th St Maritime Terminal/South	9	San Diego	32 39 24	117 07 18
883.1	San Diego Bay/Chollas Creek	9	San Diego	32 41 16	117 07 58
883.4	San Diego Bay/Continental Maritime	9	San Diego	32 41 38	117 08 58
883.5	San Diego Bay/Tuna Docks	9	San Diego	32 42 08	117 09 25
883.8	San Diego Bay/Switzer Creek	9	San Diego	32 41 54	117 09 29
894.0	SD Bay/Harbor Is/E Basin/Storm Dr	9	San Diego	32 43 38	117 11 05
899.0	San Diego Bay/Shelter Is/Fshg Pier	9	San Diego	32 42 42	117 13 42

APPENDIX C

1993-95 Sample Information

APPENDIX C

State Mussel Watch Program
1993-95 Sample Information

Station Number	Station Name	Sample Type*	Sample Date**	Transplant Duration (months)	Percent Water TE/SO	Percent Lipid	Length (mm) TE/SO	Sample Analysis Type***
10.0	Trinidad Head	RCM	10/14/93	NA	80.7/84.1	0.78	52.2/57.7	TESO
10.0	Trinidad Head	RCM	11/28/94	NA	81.3/79.9	0.87	52.2/56.7	TESO
100.0	Mad River Slough	TCM	02/24/94	4.4	86.2/89.5	0.45	63.1/60.3	TESO
101.0	Samoa Bridge/West	TCM	02/24/94	4.4	84.5/NA	NA	52.8/NA	TE
103.0	Eureka Channel	TCM	02/24/94	4.4	84.1/84.0	0.87	56.0/56.9	TESO
202.0	Bodega Head	RCM	09/16/93	NA	82.1/83.9	0.79	52.1/53.9	TESO
202.0	Bodega Head	RCM	09/19/94	NA	85.6/85.0	0.53	50.8/55.2	TESO
302.0	Point Pinole	TCM	02/02/82	5.7	NA/85.3	0.96	NA/62.3	SO
308.0	San Francisco Bay/Hunter's Point	TCM	01/15/88	4.6	81.8/81.4	1.42	55.9/55.9	TESO
309.0	San Mateo Bridge/8B	TCM	02/12/85	5.3	82.3/83.3	1.22	61.5/58.3	TESO
313.0	San Francisco Bay/near Redwood Cr	TCM	02/12/85	5.3	84.6/85.1	1.22	62.5/62.5	TESO
313.0	San Francisco Bay/near Redwood Cr	TCM	01/15/88	4.6	82.5/83.2	1.12	49.7/49.7	TESO
321.0	Dumbarton Bridge/Channel Marker 14	TCM	01/18/82	5.3	NA/88.0	0.98	NA/62.3	SO
321.0	Dumbarton Bridge/Channel Marker 14	TCM	02/12/85	5.3	86.2/85.3	1.02	62.7/64.7	TESO
321.0	Dumbarton Bridge/Channel Marker 14	TCM	01/15/88	4.6	NA/85.1	0.79	NA/58.3	SO
404.0	Sandholdt Bridge	TCM	03/07/94	5.3	84.4/82.7	0.92	68.2/56.9	TESO
404.0	Sandholdt Bridge	TCM	02/22/95	5.1	86.4/85.9	0.84	55.6/59.9	TESO
414.0	Pacific Grove	RCM	04/14/94	NA	86.4/84.9	0.52	54.5/55.7	TESO
414.0	Pacific Grove	RCM	04/19/95	NA	83.9/85.6	0.54	57.8/63.8	TESO
420.0	Monterey Harbor/Coast Guard Jetty	TCM	05/26/94	1.4	78.9/80.4	0.59	57.3/51.9	TESO
420.3	Monterey Harbor/C G Jetty/Inner	TCM	05/26/94	1.4	78.6/NA	NA	54.1/NA	TE
421.0	Monterey Harbor/Slag Pile	TCM	05/26/94	1.4	84.1/NA	NA	64.5/NA	TE
507.3	Mugu Lagoon/Calleguas Creek	TCM	02/08/94	4.2	85.2/87.0	0.64	57.2/54.7	TESO
508.1	Mugu Drainage 1	SED	01/31/95	NA	41.1/NA	NA	NA/NA	TE
601.0	LA Harbor/National Steel	SED	11/09/93	NA	45.5/46.2	NA	NA/NA	TESO
601.0	LA Harbor/National Steel	TCM	02/08/94	4.2	88.2/89.9	0.50	54.7/57.0	TESO
601.0	LA Harbor/National Steel	TCM	01/31/95	4.0	89.5/91.5	0.17	47.5/56.2	TESO
602.0	LA Harbor/West Basin	TCM	02/08/94	4.2	87.3/89.2	0.46	51.9/54.9	TESO
605.0	LA Harbor/Cabrillo Pier	SED	11/09/93	NA	48.0/52.1	NA	NA/NA	TESO
605.0	LA Harbor/Cabrillo Pier	TCM	02/08/94	4.2	78.9/81.7	1.04	63.4/63.7	TESO
605.0	LA Harbor/Cabrillo Pier	TCM	01/31/95	4.0	82.8/83.5	0.64	57.7/58.9	TESO
616.0	LA Harbor/Consolidated Slip	SED	11/09/93	NA	52.5/54.2	NA	NA/NA	TESO
616.0	LA Harbor/Consolidated Slip	TCM	02/08/94	4.2	87.2/90.1	0.42	57.3/56.5	TESO
616.0	LA Harbor/Consolidated Slip	TCM	01/31/95	4.0	89.4/90.4	0.29	48.5/56.2	TESO
618.0	LA Harbor/Angels Gate	RCM	02/08/94	NA	81.6/84.8	0.82	63.5/66.3	TESO
618.0	LA Harbor/Angels Gate	RCM	01/31/95	NA	84.7/84.9	0.86	64.6/63.1	TESO
648.0	Malibu	RBM	02/07/94	NA	82.2/83.4	1.76	47.7/48.9	TESO
648.0	Malibu	RBM	01/31/95	NA	83.3/82.8	1.51	35.1/44.8	TESO

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SED = Sediment

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APPENDIX C (continued)

State Mussel Watch Program
1993-95 Sample Information

Station Number	Station Name	Sample Type*	Sample Date**	Transplant Duration (months)	Percent Water TE/SO	Percent Lipid	Length (mm) TE/SO	Sample Analysis Type***
650.0	Santa Monica	RCM	02/07/94	NA	82.9/86.0	1.00	48.9/48.3	TESO
650.0	Santa Monica	RCM	01/31/95	NA	78.5/79.2	1.00	48.7/47.0	TESO
662.0	Royal Palms	RCM	02/08/94	NA	85.6/86.2	0.47	59.2/56.5	TESO
662.0	Royal Palms	RCM	01/31/95	NA	83.0/84.1	0.48	48.9/46.1	TESO
664.0	Cabrillo Beach	RCM	11/11/94	NA	83.6/82.4	0.56	50.4/53.2	TESO
681.0	Catalina Island/West	RCM	03/30/94	NA	87.0/87.5	0.40	42.6/42.1	TESO
713.0	Huntington Harbour/Edinger Street	TCM	02/07/94	4.2	85.2/88.2	0.44	60.8/59.1	TESO
713.0	Huntington Harbour/Edinger Street	TCM	01/30/95	4.0	87.7/87.2	0.43	41.9/54.3	TESO
715.0	Huntington Harbour/Warner Ave Brdg	TCM	02/07/94	4.2	86.9/87.8	0.55	55.5/55.4	TESO
715.0	Huntington Harbour/Warner Ave Brdg	TCM	01/30/95	4.0	87.4/87.3	0.49	46.3/47.4	TESO
723.4	Newport Bay/Turning Basin	TCM	01/30/95	4.0	89.7/90.4	0.26	52.2/57.8	TESO
724.0	Newport Bay/Highway 1 Bridge	TCM	02/07/94	4.2	86.6/90.4	0.37	53.0/51.7	TESO
724.0	Newport Bay/Highway 1 Bridge	TCM	01/30/95	4.0	89.4/86.9	0.56	49.9/53.1	TESO
725.0	Newport Bay/Crows Nest	TCM	02/07/94	4.2	88.3/90.3	0.46	51.5/53.1	TESO
725.0	Newport Bay/Crows Nest	TCM	01/30/95	4.0	85.9/93.3	0.16	58.9/60.8	TESO
726.4	Newport Bay/Rhine Channel/End	TCM	02/07/94	4.2	88.9/91.8	0.18	64.4/48.6	TESO
726.4	Newport Bay/Rhine Channel/End	TCM	01/30/95	4.0	88.9/89.6	0.28	50.2/53.8	TESO
750.0	Oceanside	RCM	01/30/95	NA	79.0/80.3	0.83	50.5/52.7	TESO
868.5	Mission Bay/Landfill 1	TCM	01/30/95	3.9	81.0/80.4	0.99	59.9/56.0	TESO
868.6	Mission Bay/Landfill 2	TCM	01/30/95	3.9	78.3/79.7	1.22	62.6/56.1	TESO
882.0	24th St Maritime Terminal/South	TCM	02/08/94	4.2	82.8/NA	NA	65.1/NA	TE
882.0	24th St Maritime Terminal/South	TCM	01/31/95	4.0	84.6/86.1	0.62	50.5/57.8	TESO
883.1	San Diego Bay/Chollas Creek	TCM	02/08/94	4.2	87.5/90.2	0.12	55.1/58.5	TESO
883.4	San Diego Bay/Continental Maritime	TCM	02/08/94	4.2	87.4/89.6	0.42	54.2/54.1	TESO
883.5	San Diego Bay/Tuna Docks	TCM	02/08/94	4.2	87.5/87.5	NA	63.8/63.8	TESO
883.8	San Diego Bay/Switzer Creek	TCM	02/08/94	4.2	87.5/88.5	0.08	60.8/53.9	TESO
894.0	SD Bay/Harbor Is/E Basin/Storm Dr	TCM	02/08/94	4.2	88.5/91.2	0.42	61.9/57.7	TESO
894.0	SD Bay/Harbor Is/E Basin/Storm Dr	TCM	01/31/95	4.0	87.1/87.4	0.44	53.9/59.4	TESO
899.0	San Diego Bay/Shelter Is/Fshg Pier	TCM	01/31/95	4.0	82.4/84.1	0.67	51.1/68.5	TESO

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APPENDIX D

Station Sampling History

APPENDIX D

State Mussel Watch Program
Station Sampling history

Station Number	Station Name	Sample Year* 1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
1.0	Crescent City Harbor	--	--	TE	--	--	--	--	--	--	--	--	--	--	--	SO	--	--	--
2.0	Crescent City/STP Outfall	--	--	--	--	--	TESO	TESO	TESO	TESO	TESO	TESO	TESO	TESO	TESO	TESO	--	--	--
2.1	Crescent City Harbor Jetty	--	--	--	--	--	--	--	--	--	--	--	--	SO	--	--	--	--	--
3.0	Crescent City/Control	--	--	--	--	--	TESO	TESO	TESO	TESO	TESO	TESO	TESO	TESO	TESO	TESO	--	--	--
5.0	Redwoods/North	TESO	TESO	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
7.0	Redwoods/South	TESO	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
10.0	Trinidad Head	TESO	TESO	SO	TESO	TESO	TESO	TESO	TESO	TESO	TESO	TESO	TESO	TESO	TESO	TESO	TESO	TESO	TESO
95.0	McDaniel Slough	--	--	--	--	--	--	--	--	--	--	--	--	SO	SO	SO	--	--	--
99.0	Mad River/Oyster Docks	--	--	--	--	--	--	--	--	--	--	SO	--	--	--	--	--	--	--
100.0	Mad River Slough	--	--	--	--	--	TESO	TESO	TESO	TESO	TESO	SO	SO	SO	SO	TESO	--	TESO	--
100.5	Arcata Dock	--	--	--	--	--	--	TESO	SO	SO	SO	--	--	--	SO	SO	--	--	--
100.6	Mad River/Oyster Bed	--	--	--	--	--	--	SO	--	--	--	--	--	SO	--	--	--	--	--
100.8	Bird Island	--	--	--	--	--	--	--	--	--	--	--	--	SO	--	--	--	--	--
101.0	Samoa Bridge/West	--	--	TESO	TESO	TESO	TESO	TESO	TESO	--	TESO	SO	--	--	TESO	--	--	TE	--
101.2	Arcata Bay/Channel Marker	--	--	--	--	--	--	--	SO	--	--	--	--	--	--	--	--	--	--
102.0	Samoa Bridge/East	--	SO	TESO	TESO	TESO	--	--	--	--	--	--	TESO	--	SO	TESO	--	--	--
102.5	Woodley Island	--	--	--	--	--	--	TESO	TESO	TESO	TESO	SO	--	--	--	--	--	--	--
103.0	Eureka Channel	--	--	TESO	TESO	TESO	TESO	--	--	--	--	--	TESO	SO	SO	TESO	TESO	TESO	--
103.2	Louisiana Pacific Dock	--	--	--	--	--	--	--	TESO	TESO	TESO	TESO	--	--	--	--	--	--	--
103.3	E Street	--	--	--	--	--	--	--	--	--	--	--	--	--	SO	TESO	--	--	--
103.4	Humboldt Del Norte Pier	--	--	--	--	--	--	--	SO	--	--	--	--	--	--	--	--	--	--
103.6	Simpson Dock	--	--	--	--	--	--	--	TESO	TESO	TESO	--	--	--	--	--	--	--	--
103.7	Eda Dock	--	--	--	--	--	--	--	--	--	--	--	--	--	SO	TE	--	--	--
104.0	Eureka STP/Outfall	--	--	--	--	--	--	TESO	TESO	--	TESO	TESO	--	TESO	TESO	TESO	--	--	--
104.5	Eureka STP/Control	--	--	--	--	--	--	TESO	TESO	TESO	TESO	TESO	TESO	TESO	TESO	TESO	TESO	--	--
105.0	Humboldt Bay/Entrance	TESO	TESO	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
106.0	Fields Landing	--	--	--	--	TESO	--	--	TESO	TE	TE	--	--	--	SO	TESO	--	--	--
130.0	Shelter Cove	TESO	TESO	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
150.0	Glass Beach	--	--	--	--	SO	--	--	--	--	--	--	--	--	--	--	--	--	--
150.4	Noyo Harbor	--	--	--	--	--	--	--	--	--	--	--	--	SO	--	--	TESO	--	--
151.0	Shell Beach	--	--	--	--	SO	--	--	--	--	--	--	--	--	--	--	--	--	--
152.0	Pudding Creek	--	--	--	--	SO	--	--	--	--	--	--	--	--	--	--	--	--	--
153.0	Pygmy Forest	TESO	TESO	SO	SO	SO	--	--	--	--	--	--	--	--	--	--	--	--	--
155.1	Lake Pillsbury 1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	TESO	--	--
155.3	Lake Pillsbury 2	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	TESO	--	--

* Sample Year = State Fiscal Year (July 1 - June 30). For example, Sample Year 1978 = 1977-78 Fiscal Year.
-- = Not Sampled. SO = Synthetic Organics Only. TE = Trace Elements Only. TESO = Trace Elements and Synthetic Organics.

APPENDIX D (continued)

State Mussel Watch Program

Station Sampling history

Station Number	Station Name	Sample Year* 1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
159.0	Russian River West Fork	--	--	--	--	--	--	--	--	--	--	--	--	TE	TE	TESO	TESO	--	--
160.0	Lake Mendocino	--	--	--	--	--	--	--	--	--	--	--	--	TESO	--	--	--	--	--
165.0	Russian River Below Ukiah	--	--	--	--	--	--	--	--	--	--	--	--	TESO	--	TESO	TESO	--	--
170.0	Gerstle Cove	TESO	TESO	SO	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
175.0	Big Sulfur Creek	--	--	--	--	--	--	--	--	--	--	--	--	TE	TE	--	TESO	--	--
176.0	Lake Sonoma	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	TESO	--	--
190.0	Estero Americano	--	--	--	--	--	--	--	--	--	--	--	TESO	TESO	TESO	TESO	--	--	--
200.0	Russian River/N Goat Rock	--	--	--	--	--	--	TESO	--	--	--	--	--	--	--	--	--	--	--
201.0	Bodega Bay	--	--	TESO	TESO	--	--	--	--	--	--	--	--	--	--	--	--	--	--
202.0	Bodega Head	TESO	TESO	TE	TESO	TESO	TESO	TE	TESO	TESO	TESO	TESO	TESO	TESO	TESO	TESO	TESO	TESO	TESO
203.0	Tomales Bay	--	SO	TESO	TESO	TESO	--	--	--	--	--	--	--	--	TESO	TESO	--	--	--
204.0	Estero De San Antonio	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	TESO	--	--
205.0	Bodega Harbor/Spud Point Marina	--	--	--	--	--	--	--	--	--	--	--	TESO	SO	TESO	TESO	TESO	--	--
207.0	Point Reyes	TESO	TESO	--	--	--	--	--	--	--	--	--	--	--	TESO	--	--	--	--
208.0	Bolinas	--	--	TESO	TESO	--	--	--	--	--	--	--	--	--	--	--	--	--	--
280.0	Russian River/S Goat Rock	--	--	--	--	--	--	--	--	--	TE	TE	TE	--	--	--	TESO	--	--
290.0	Russian River/near Moscow	--	--	--	--	--	--	--	--	TESO	TE	TE	--	--	--	--	TESO	--	--
292.0	Gualala River/Twin Bridge	--	--	--	--	--	--	--	--	--	TE	--	--	--	--	--	--	--	--
294.1	Mark West Creek/Slusser Road	--	--	--	--	--	--	--	--	--	--	--	--	--	--	TE	--	--	--
294.2	Windsor Creek/Mark West Station Rd	--	--	--	--	--	--	--	--	--	--	--	--	--	--	TESO	--	--	--
294.5	Green Valley Creek 1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	TESO	--	--
294.6	Green Valley Creek 2	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	TESO	--	--
295.1	Santa Rosa Fl Con Ch/Willowside Rd	--	--	--	--	--	--	--	--	--	--	--	TESO	TESO	TESO	--	--	--	--
295.2	Laguna de Santa Rosa/Stony Point	--	--	--	--	--	--	--	--	--	--	--	TESO	TESO	TESO	TE	--	--	--
295.3	Mark West Creek/Wholer Road	--	--	--	--	--	--	--	--	--	--	--	TESO	TESO	--	TESO	--	--	--
295.4	Russian River/Wholer Bridge	--	--	--	--	--	--	--	--	--	--	--	TESO	TESO	TESO	TESO	--	--	--
295.5	Russian River/Hacienda Bridge	--	--	--	--	--	--	--	--	--	--	--	TESO	TESO	--	TESO	--	--	--
297.0	Putah Creek	--	--	--	--	--	--	--	--	--	--	--	--	SO	--	--	--	--	--
298.0	Brannan Island	--	--	--	--	--	--	--	--	--	TESO	TESO	TESO	--	--	--	--	--	--
298.3	Concord Naval/Pier 4	--	--	--	--	--	--	--	--	--	--	TE	--	--	--	--	--	--	--
298.4	Concord Naval/Seal Island	--	--	--	--	--	--	--	--	--	--	TESO	--	--	--	--	--	--	--
299.1	Selby Slag 4	--	--	--	--	--	--	--	--	--	--	TE	--	--	--	--	--	--	--
299.2	Selby Slag 5	--	--	--	--	--	--	--	--	--	--	TE	--	--	--	--	--	--	--
299.3	Selby Slag 6	--	--	--	--	--	--	--	--	--	--	TE	--	--	--	--	--	--	--
299.4	Selby Slag 7	--	--	--	--	--	--	--	--	--	--	TE	--	--	--	--	--	--	--

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-- = Not Sampled. SO = Synthetic Organics Only. TE = Trace Elements Only. TESO = Trace Elements and Synthetic Organics.

APPENDIX D (continued)

State Mussel Watch Program

Station Sampling history

Station Number	Station Name	Sample Year* 1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
300.2	Mare Island	--	--	--	--	--	--	--	TESO	TESO	TESO	TESO	TESO	--	--	--	--	--	--
301.0	Davis Point	--	--	TE	--	--	TESO	--	--	--	--	TE	--	--	--	--	--	--	--
301.4	Union Oil Outfall	--	--	--	--	--	--	--	--	--	--	TE	TE	--	--	--	--	--	--
302.0	Point Pinole	--	--	TE	TESO	TESO	TESO	TESO	TESO	TESO	TESO	TESO	TESO	TESO	TESO	TESO	TESO	--	SO
302.4	Castro Cove Bridge	--	--	--	--	--	--	--	--	--	--	TESO	TESO	SO	--	--	--	--	--
303.0	Richmond/San Rafael Bridge	--	--	TESO	TESO	TESO	TESO	--	--	--	--	--	--	--	--	--	--	--	--
303.1	Santa Fe Channel/Mouth	--	--	--	--	--	--	--	--	TESO	--	--	--	--	TESO	--	--	--	--
303.2	Lauritzen Canal/Mouth	--	--	--	--	--	--	--	SO	SO	SO	SO	--	--	--	--	--	--	--
303.3	Lauritzen Canal/End	--	--	--	--	--	--	--	--	SO	SO	SO	--	--	TESO	--	--	--	--
303.4	Santa Fe Channel/End	--	--	--	--	--	--	--	SO	SO	SO	--	--	--	TESO	--	--	--	--
303.6	Richmond Inner Harbor Basin	--	--	--	--	--	--	--	TE	SO	TESO	TESO	TESO	--	--	--	--	--	--
304.0	Staufer's	--	--	--	--	TE	--	--	--	--	--	--	--	--	--	--	--	--	--
304.4	Serl Intake	--	--	--	--	--	--	--	--	--	--	--	--	--	TESO	--	--	--	--
304.6	Point Isabel	--	--	--	--	--	--	--	--	--	--	TE	--	--	--	--	--	--	--
305.0	San Francisco Bay/Angel Island	--	--	TESO	TESO	TE	TESO	--	--	--	--	--	--	--	--	--	--	--	--
306.0	San Francisco Bay/Fort Baker	--	--	--	TESO	--	TESO	--	--	--	--	--	--	--	TESO	TESO	TESO	--	--
306.5	Alcatraz Island	--	--	--	--	--	--	--	--	--	--	--	TESO	--	--	--	--	--	--
307.0	San Francisco Bay/Treasure Is	--	SO	TESO	TESO	TESO	TESO	TESO	TESO	TE	TESO	TESO	TESO	TESO	TESO	TESO	TESO	--	--
307.2	Alameda Yacht Harbor	--	--	--	--	--	--	--	TE	TESO	TESO	TESO	TESO	--	--	--	--	--	--
307.3	Oakland Inner Harbor/West	--	--	--	--	--	--	--	--	TESO	TESO	--	--	--	--	--	--	--	--
307.4	Oakland Inner Hbr/Embarcadero Cove	--	--	--	--	--	--	--	SO	TESO	TESO	TESO	TESO	--	TESO	TESO	TESO	--	--
307.5	Lake Merritt	--	--	--	--	--	--	--	--	--	--	--	--	--	--	TESO	TESO	--	--
307.6	Oakland Back Harbor	--	--	--	--	--	--	--	SO	TESO	TESO	TESO	--	--	--	--	--	--	--
307.8	San Francisco Outfall	--	--	--	--	--	--	--	--	--	--	--	TESO	--	--	--	--	--	--
307.9	San Francisco/Islais Channel	--	--	--	--	--	--	--	--	--	TESO	TESO	--	--	--	--	--	--	--
308.0	San Francisco Bay/Hunter's Point	--	--	--	TESO	TESO	TESO	--	--	--	--	--	--	--	TESO	TESO	TESO	--	TESO
308.2	Hunter's Point/Shipyard	--	--	--	--	--	--	--	--	--	--	TESO	TESO	--	--	--	--	--	--
309.0	San Mateo Bridge/8B	--	--	TE	TESO	TESO	TESO	TESO	TE	TE	TE	--	--	TE	TESO	TESO	TESO	--	TESO
310.0	San Mateo Bridge/8A	--	--	--	--	TESO	--	--	--	--	--	--	--	--	--	--	--	--	--
311.0	San Mateo Old Bridge	--	--	--	--	TE	--	--	--	--	--	--	--	--	--	--	--	--	--
312.0	Belmont Slough	--	--	--	--	TE	--	--	--	--	--	--	--	--	--	--	--	--	--
313.0	San Francisco Bay/near Redwood Cr	--	--	--	TESO	TESO	TESO	TESO	TE	--	--	--	--	--	TESO	TESO	TESO	--	TESO
314.0	Redwood Creek/Channel Marker 10	--	--	--	--	TE	--	--	--	--	--	--	--	--	--	--	--	--	--
315.0	Redwood Creek/Towers	--	--	--	--	TE	TE	--	--	--	--	--	--	--	--	--	--	--	--
316.0	Redwood Creek/Tradewinds	--	--	TESO	--	TE	TE	--	--	--	--	--	--	--	--	--	--	--	--

* Sample Year = State Fiscal Year (July 1 - June 30). For example, Sample Year 1978 = 1977-78 Fiscal Year.

-- = Not Sampled. SO = Synthetic Organics Only. TE = Trace Elements Only. TESO = Trace Elements and Synthetic Organics.

APPENDIX D (continued)

State Mussel Watch Program
Station Sampling history

Station Number	Station Name	Sample Year* 1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
317.0	Redwood City/STP Outfall	--	--	--	--	--	TE	--	--	--	--	--	--	--	--	--	--	--	--
318.0	Redwood Creek/Pete's Marina	--	--	--	--	--	TE	--	--	--	--	--	--	--	--	--	--	--	--
318.4	Redwood Creek/Bair Island	--	--	--	--	--	--	--	--	--	TESO	--	--	--	--	--	--	--	--
319.0	Redwood Creek/Pulgas	--	--	--	--	--	TE	--	--	--	--	--	--	--	--	--	--	--	--
320.0	San Francisco Airport	--	--	--	--	--	TE	--	--	--	--	--	--	--	--	--	--	--	--
321.0	Dumbarton Bridge/Channel Marker 14	--	--	TE	TESO	TESO	TE	TESO	TE	TE	TE	TE	TESO	--	TESO	TESO	--	--	TESO
323.3	Palo Alto Outfall	--	--	--	--	--	--	--	--	--	--	--	TESO	TESO	--	--	--	--	--
324.0	Newark Slough	--	--	--	--	TE	--	--	--	--	--	--	--	--	--	--	--	--	--
325.0	Channel Marker 17	--	--	--	--	TE	--	--	--	--	--	--	--	--	--	--	--	--	--
326.0	Palo Alto/Channel Marker 8	--	--	--	--	TE	TE	--	--	--	--	--	--	--	TESO	TESO	TESO	--	--
327.0	Palo Alto/Yacht Club	--	--	--	--	TE	--	--	--	--	--	--	--	--	--	--	--	--	--
328.0	Alviso Slough	--	--	--	--	TE	--	--	--	--	--	--	--	--	--	--	--	--	--
330.0	Duxbury Reef	--	--	TESO	SO	--	--	--	--	--	--	--	--	--	--	--	--	--	--
331.0	Muir Beach	--	--	TE	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
332.0	Point Bonita	--	--	TE	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
333.0	Farallon Islands	TESO	TESO	TE	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
334.0	Cliff House	--	--	TE	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
335.0	Pacifica	--	--	TE	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
336.0	J. Fitzgerald	TESO	TESO	SO	SO	--	--	--	--	--	--	--	--	--	TESO	--	--	--	--
399.2	Pescadero Creek	--	--	--	--	--	--	--	--	--	--	SO	SO	--	--	--	--	--	--
399.3	Waddell Creek	--	--	--	--	--	--	--	--	--	--	SO	SO	--	--	--	--	--	--
399.5	San Lorenzo River	--	--	--	--	--	--	--	--	--	--	--	--	--	TESO	--	--	--	--
399.7	San Lorenzo River/Felton	--	--	--	--	--	--	--	--	--	--	--	--	--	TESO	--	--	--	--
400.0	Ano Nuevo Island	TESO	TESO	TE	--	--	TESO	--	--	--	--	--	--	--	--	--	--	--	--
400.2	Younger Lagoon	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	TESO	--	--
400.5	Santa Cruz/Long Marine Laboratory	--	--	--	--	--	TE	--	--	--	--	--	--	--	--	--	--	--	--
400.6	Santa Cruz/Natural Bridges	--	--	--	--	--	--	--	--	--	TE	TE	TE	--	--	--	--	--	--
400.8	Aptos Creek	--	--	--	--	--	--	--	--	--	--	--	--	TESO	TESO	TESO	--	--	--
401.0	Santa Cruz Harbor	--	--	TESO	TESO	--	--	--	--	--	--	--	--	--	--	--	--	--	--
401.1	Santa Cruz/T Dock	--	--	--	--	--	--	--	--	--	--	--	TESO	--	--	--	--	--	--
401.2	Watsonville Slough/Mouth	--	--	--	--	--	SO	SO	--	SO	--	--	--	--	--	--	--	--	--
401.3	Moss Landing/Yacht Harbor	--	--	--	--	--	--	TESO	--	--	TESO	--	SO	--	--	--	--	--	--
401.4	Elkhorn Slough	--	--	--	--	--	SO	SO	--	--	--	--	--	--	--	--	--	--	--
401.5	Watsonville Slough/Bridge	--	--	--	--	--	--	--	--	--	--	SO	--	--	--	--	SO	--	--
401.6	Harkins Slough Bridge	--	--	--	--	--	--	--	--	--	SO	SO	--	--	--	--	--	--	--

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APPENDIX D (continued)

State Mussel Watch Program

Station Sampling history

Station Number	Station Name	Sample Year*																	
		1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
401.8	San Andreas Road	--	--	--	--	--	--	--	--	SO	SO	SO	--	--	--	--	--	--	--
401.9	Pajaro River Estuary	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	SO	--	--
402.0	Elkhorn Slough/Duck Club	--	--	--	--	SO	--	TE	--	--	--	--	--	--	--	--	--	--	--
402.1	Azevedo Pond	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	TESO	--	--
402.2	Parson's Slough	--	--	--	--	--	SO	SO	SO	SO	SO	SO	SO	--	--	--	TESO	--	--
402.3	Elkhorn Slough/Pacific Mariculture	--	SO	TE	SO	--	--	SO	SO	--	--	--	SO	--	--	--	--	--	--
402.4	Elkhorn Slough/PG & E	--	--	--	--	--	SO	--	--	--	--	--	--	--	--	--	--	--	--
402.5	Elkhorn Slough/Tidal Pond	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	TESO	--	--
402.8	Elkhorn Slough/Skippers	--	--	--	--	--	--	SO	--	--	--	--	--	--	--	--	--	--	--
403.0	Elkhorn Slough/Highway 1 Bridge	--	--	TESO	TESO	--	--	--	SO	SO	SO	SO	SO	--	--	--	--	--	--
403.2	Moro Cojo	--	--	--	--	--	SO	--	--	--	--	--	SO	--	--	--	--	--	--
403.5	Moss Landing/South Harbor	--	--	--	--	--	--	--	--	--	--	TESO	TESO	--	--	--	--	--	--
403.6	Moro Cojo Slough	--	--	--	--	--	--	--	--	--	--	SO	--	--	--	--	--	--	--
404.0	Sandholdt Bridge	--	--	--	--	SO	SO	SO	SO	SO	TESO	TESO	TESO	TESO	TESO	TESO	TESO	TESO	TESO
405.0	Espinosa Slough	--	--	--	--	--	--	SO	--	--	--	--	--	--	--	--	--	--	--
405.2	Old Salinas River 2	--	--	--	--	--	--	--	--	--	--	--	--	--	--	TESO	SO	--	--
405.3	Old Salinas River 1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	TESO	SO	--	--
405.4	Old Salinas River Channel 1	--	--	--	--	--	--	SO	--	--	--	--	--	--	--	--	--	--	--
405.6	Salinas River Lag 1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	TESO	SO	--	--
405.7	Salinas River Lag 2	--	--	--	--	--	--	--	--	--	--	--	--	--	--	TESO	--	--	--
405.8	Salinas River Lagoon	--	--	--	--	--	--	SO	--	--	--	--	--	--	--	--	--	--	--
406.0	Westley Station	--	--	--	--	--	--	SO	--	--	--	--	SO	--	--	--	--	--	--
406.5	Tembladero Slough	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	SO	--	--
407.1	Moss Landing/Ag Drain/Old River	--	--	--	--	--	--	--	TESO	--	--	--	--	--	--	--	--	--	--
407.2	Moss Landing/Ag Drain/Espinosa	--	--	--	--	--	--	--	TESO	--	SO	--	--	--	--	--	--	--	--
407.3	Moss Landing/Ag Drain/Davis Rd	--	--	--	--	--	--	--	--	SO	SO	--	--	--	--	--	--	--	--
407.4	Blanco Pump/West	--	--	--	--	--	--	--	TESO	SO	--	--	--	--	--	--	SO	--	--
407.5	Blanco Pump/East	--	--	--	--	--	--	--	TESO	SO	SO	--	--	--	--	--	--	--	--
407.6	Moss Landing/Ag Drain/Blanco dstrm	--	--	--	--	--	--	--	TESO	--	--	--	--	--	--	--	--	--	--
407.8	Blanco/Hitchcock	--	--	--	--	--	--	--	--	SO	SO	--	--	--	--	--	--	--	--
407.9	Salinas Sewage Treatment Plant	--	--	--	--	--	--	--	--	SO	--	--	--	--	--	--	--	--	--
408.0	Pacific Grove/Offshore	--	--	TE	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
408.1	Canal Airport	--	--	--	--	--	--	--	--	SO	--	--	--	--	--	--	--	--	--
408.2	Produce Wash/Downstream/West	--	--	--	--	--	--	--	--	SO	--	--	--	--	--	--	--	--	--
408.3	Produce Wash/Downstream/East	--	--	--	--	--	--	--	--	SO	--	--	--	--	--	--	--	--	--

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APPENDIX D (continued)

State Mussel Watch Program

Station Sampling history

Station Number	Station Name	Sample Year* 1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
408.5	Associated Chemicals	--	--	--	--	--	--	--	--	SO	--	--	--	--	--	--	--	--	--
408.8	Salinas/Reclamation Canal 2	--	--	--	--	--	--	--	--	SO	--	--	--	--	--	--	--	--	--
408.9	Salinas/Reclamation Canal 3	--	--	--	--	--	--	--	--	SO	SO	SO	--	--	--	--	--	--	--
409.0	Salinas/Reclamation Canal 4	--	--	--	--	--	--	--	--	SO	SO	SO	--	--	--	--	--	--	--
410.0	Monterey Bay/Point Pinos/Shallow	--	--	--	--	--	SO	--	--	--	--	--	--	--	--	--	--	--	--
411.0	Monterey Bay/Point Pinos	--	--	TE	TE	TE	TESO	TE	--	TE	TE	--	--	--	--	--	--	--	--
413.0	Monterey Bay/Asilomar	--	--	--	TE	--	TESO	--	--	--	--	--	--	--	--	--	--	--	--
414.0	Pacific Grove	TESO	TESO	TESO	TESO	TE	TESO	TESO	TESO	TESO	TESO	TESO	TESO	TESO	TESO	TESO	TESO	TESO	TESO
415.0	Lover's Point	--	--	--	--	TE	TESO	--	--	--	--	--	--	--	--	--	--	--	--
416.0	Monterey Bay/Hopkins Marine Lab	--	--	TE	TE	TE	TESO	--	--	--	--	--	--	--	--	--	--	--	--
417.0	Monterey Bay/Aquarium	--	--	--	--	--	--	--	TE	--	TE	--	--	--	--	--	--	--	--
418.0	Pacific Grove/Outrigger	--	--	--	TE	TE	--	--	--	--	--	--	--	--	--	--	--	--	--
418.8	Monterey Bay/Charthouse	--	--	--	--	--	--	--	TE	--	--	--	--	--	--	--	--	--	--
419.0	Coast Guard Jetty/South Rocks	--	--	--	TE	TE	TESO	--	--	--	--	--	--	--	--	--	--	--	--
420.0	Monterey Harbor/Coast Guard Jetty	--	--	--	TE	--	--	TE	--	--	--	--	--	--	--	--	--	TESO	--
420.2	Monterey/Coast Guard Jetty/Outer	--	--	--	--	--	--	--	TE	--	--	--	--	--	--	--	--	--	--
420.3	Monterey Harbor/C G Jetty/Inner	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	TE	--
421.0	Monterey Harbor/Slag Pile	--	--	--	--	--	--	TE	--	--	--	--	--	--	--	--	--	TE	--
421.1	Monterey Harbor/Slag Heap	--	--	--	--	--	--	--	TE	--	--	--	--	--	--	--	--	--	--
421.3	Monterey Harbor/Restaurant Wharf	--	--	--	--	--	--	TE	TE	--	--	--	--	--	--	--	--	--	--
421.4	Monterey Harbor/Commercial Wharf	--	--	--	--	--	--	TE	TE	--	--	--	--	--	--	--	--	--	--
421.5	Monterey/Coast Guard Jetty/Docks	--	--	--	--	--	--	--	TE	--	--	--	--	--	--	--	--	--	--
421.6	Monterey/Coast Guard Jetty/End	--	--	--	--	--	--	--	TE	--	--	--	--	--	--	--	--	--	--
421.7	Monterey Harbor/Marina	--	--	--	--	--	--	--	--	--	TESO	TESO	TESO	--	--	--	--	--	--
421.8	Monterey Harbor/Marina/Pier B	--	--	--	--	--	--	--	--	--	--	SO	SO	--	--	--	--	--	--
422.0	Monterey Bay/Holiday Inn	--	--	--	--	--	--	--	TE	--	--	--	--	--	--	--	--	--	--
422.5	Cypress Point	--	--	TE	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
423.0	Carmel Bay	TESO	TESO	--	--	--	TESO	--	--	--	--	--	--	--	--	--	--	--	--
423.1	Carmel Bay/New Control	--	--	--	--	--	--	--	--	--	--	--	--	--	--	TE	--	--	--
423.2	Carmel STP/Control	--	--	--	--	--	--	TESO	TE	TE	TE	TE	TE	--	--	--	--	--	--
423.3	Carmel River	--	--	--	--	--	--	--	TE	TE	TE	--	TE	--	--	--	--	--	--
423.4	Carmel STP/10m North	--	--	--	--	--	--	TESO	TE	TE	TE	TE	TE	--	--	--	--	--	--
423.5	Carmel STP/30m South	--	--	--	--	--	--	--	--	--	--	--	--	--	TE	TE	--	--	--
423.6	Carmel STP/10m South	--	--	--	--	--	--	TESO	TE	--	TE	TE	TE	--	--	--	--	--	--
423.7	Carmel STP/100m South	--	--	--	--	--	--	--	--	--	--	--	--	--	TE	TE	--	--	--

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APPENDIX D (continued)

State Mussel Watch Program

Station Sampling history

Station Number	Station Name	Sample Year* 1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
423.8	Carmel River/Upstream	--	--	--	--	--	--	--	--	TE	TE	--	--	--	--	--	--	--	--
423.9	Carmel STP/300m South	--	--	--	--	--	--	--	--	--	--	--	--	--	TE	TE	--	--	--
424.0	Soberanes Point	TESO	TESO	--	--	--	TESO	--	--	--	--	--	--	--	--	--	--	--	--
424.5	Granite Canyon/Control	--	--	--	--	--	--	--	--	--	--	--	TE	--	--	--	--	--	--
425.0	J.P. Burns	TESO	TESO	SO	SO	--	TESO	--	--	--	--	--	--	--	--	--	--	--	--
425.4	Lake San Antonio/Buoy	--	--	--	--	--	--	--	TESO	TESO	TESO	TESO	--	--	--	--	--	--	--
425.6	Lake San Antonio	--	--	--	--	--	--	--	TESO	TESO	TESO	TESO	TESO	TESO	--	TESO	--	--	--
425.7	Nacimiento/East	--	--	--	--	--	--	--	TE	--	--	--	--	--	--	--	--	--	--
425.8	Nacimiento/West	--	--	--	--	--	--	--	TE	--	--	--	--	--	--	--	--	--	--
426.0	Salmon Creek	TESO	TESO	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
426.5	Cayucos Pier	--	--	--	--	--	--	TE	TESO	TESO	TESO	TESO	TESO	TESO	TESO	--	--	--	--
427.0	Morro Bay/Upper	--	--	TESO	TESO	--	--	--	--	--	--	--	--	--	--	--	--	--	--
428.0	Cayucos	--	--	--	--	--	--	TE	TE	TE	TE	TE	TE	TE	TE	TE	--	--	--
428.5	Morro Bay/Virg's	--	SO	TESO	TESO	--	--	--	--	--	--	--	--	--	--	--	--	--	--
429.0	Morro Rock	--	--	--	--	TE	TE	--	--	--	--	--	--	--	--	--	--	--	--
429.2	Morro Bay/Boat Works	--	--	--	--	--	--	--	--	--	TE	TESO	TESO	TESO	--	--	TE	--	--
430.0	Montana De Oro	--	--	TE	--	TE	TESO	TESO	TESO	TESO	TESO	TESO	TESO	TESO	TESO	TESO	--	--	--
430.1	Montana De Oro/South	TESO	TESO	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
430.2	Montana De Oro 1	--	--	--	--	--	--	--	--	--	--	--	--	--	TESO	TESO	--	--	--
430.4	Montana De Oro 2	--	--	--	--	--	--	--	--	--	--	--	--	--	TESO	TESO	--	--	--
431.0	Lion Rock	--	--	--	--	TE	TE	TE	TE	TE	TE	TE	TE	TE	--	--	--	--	--
432.0	Pup Rock	--	--	--	--	TE	TE	TE	TE	TE	TE	TE	TE	TE	--	--	--	--	--
433.0	Diablo Cove/North	--	--	--	--	TE	TESO	TE	TE	TE	TE	TE	TE	TE	TE	TE	--	--	--
434.0	Diablo Cove/South	--	--	--	--	TE	TESO	TESO	TESO	TESO	TESO	TESO	TESO	TESO	TESO	TESO	--	--	--
435.0	Intake Cove	--	--	--	--	TE	TESO	TESO	TESO	TESO	TESO	TESO	TESO	TESO	TESO	TESO	--	--	--
436.0	Pecho Rock	--	--	--	--	TE	TESO	TESO	TESO	TESO	TESO	TESO	TESO	TESO	--	--	--	--	--
437.0	Point San Luis	--	--	--	--	TE	TE	TESO	TESO	TESO	TESO	TESO	TESO	TESO	TESO	TESO	--	--	--
438.0	Avila	--	--	--	--	TE	TESO	TE	TESO	TESO	TESO	TE	TE	TE	TE	TE	--	--	--
440.0	Lion Rock/Transplant	--	--	--	--	--	TESO	TE	TESO	TESO	TESO	TE	TESO	TESO	TE	TE	--	--	--
441.0	Lion/Diablo/Transplant	--	--	--	--	--	TESO	TESO	TESO	TESO	TESO	TESO	TESO	TESO	TE	TE	--	--	--
442.0	Diablo Cove/North/Transplant	--	--	--	--	--	--	TE	TESO	TESO	TE	TESO	TESO	TESO	TE	TE	--	--	--
442.1	Diablo Cove/N/Transplant/Shallow	--	--	--	--	--	--	--	--	--	--	--	--	--	TE	TE	--	--	--
443.0	Diablo Cove/South/Transplant	--	--	--	--	--	TESO	TESO	TESO	TESO	TESO	TESO	TESO	TESO	TESO	TESO	--	--	--
443.1	Diablo Cove/S/Transplant/Shallow	--	--	--	--	--	--	--	--	--	--	--	--	--	TESO	TESO	--	--	--
444.0	Intake Cove/Transplant	--	--	--	--	--	--	TESO	TESO	TESO	TESO	TESO	TESO	TESO	TESO	TESO	--	--	--

* Sample Year = State Fiscal Year (July 1 - June 30). For example, Sample Year 1978 = 1977-78 Fiscal Year.

-- = Not Sampled. SO = Synthetic Organics Only. TE = Trace Elements Only. TESO = Trace Elements and Synthetic Organics.

APPENDIX D (continued)

State Mussel Watch Program

Station Sampling history

Station Number	Station Name	Sample Year* 1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
445.0	San Luis Harbor/Transplant	--	--	--	--	--	TESO	TESO	TESO	TESO	TESO	TESO	TESO	TESO	TESO	TESO	--	--	--
446.0	San Luis Obispo Creek 1	--	--	--	--	--	--	--	--	--	--	--	--	--	TESO	--	--	--	--
446.1	San Luis Obispo/Creek 2	--	--	--	--	--	--	--	--	--	--	--	--	--	--	TESO	--	--	--
446.2	San Luis Obispo Creek 3	--	--	--	--	--	--	--	--	--	--	--	--	--	TE	TESO	--	--	--
446.4	San Luis Obispo/Creek 4	--	--	--	--	--	--	--	--	--	--	--	--	--	--	TESO	--	--	--
449.0	Point Arguello	TESO	TESO	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
450.0	Point Conception	TESO	TESO	--	--	--	--	--	--	--	--	--	TE	TE	TESO	--	--	--	--
455.0	Gaviota	--	--	--	--	--	--	--	--	--	--	TESO	TESO	TE	--	--	--	--	--
460.0	Goleta Slough 1	--	--	--	--	--	--	--	--	--	--	--	TESO	TESO	TESO	--	--	--	--
460.1	Goleta Slough 2	--	--	--	--	--	--	--	--	--	--	--	--	TESO	TESO	--	--	--	--
460.2	Goleta Slough 3	--	--	--	--	--	--	--	--	--	--	--	--	--	TESO	--	--	--	--
460.3	Goleta Slough 4	--	--	--	--	--	--	--	--	--	--	--	--	--	TESO	--	--	--	--
470.0	Santa Barbara Harbor	--	--	--	--	--	--	--	--	--	--	TESO	TESO	--	--	--	--	--	--
471.0	Mission Creek	--	--	--	--	--	--	--	--	--	--	--	--	--	TESO	--	--	--	--
472.0	Waste Slough/Laguna Drainage	--	--	--	--	--	--	--	--	--	--	--	--	--	TESO	--	--	--	--
475.0	Carpinteria Marsh	--	--	--	--	--	--	--	--	--	--	SO	SO	--	--	--	--	--	--
480.0	Lake Isabella	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	TESO	--	--
485.0	Ventura Marina	--	--	--	--	--	--	--	--	--	--	TESO	--	--	--	--	--	--	--
485.2	Ventura River Estuary	--	--	--	--	--	--	--	--	--	--	--	--	--	--	SO	--	--	--
487.1	Santa Clara River Estuary 1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	SO	--	--	--
487.3	Santa Clara River Estuary 2	--	--	--	--	--	--	--	--	--	--	--	--	--	--	SO	--	--	--
500.0	San Miguel Island/West	TESO	TESO	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
501.0	San Miguel Island/East	TESO	TESO	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
502.0	Santa Cruz Island	TESO	TESO	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
503.0	Anacapa Island	TESO	TESO	TESO	TESO	--	--	--	--	--	--	--	--	--	--	--	--	--	--
504.0	Santa Barbara Island	TESO	TESO	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
505.0	Channel Island Harbor	--	--	TE	TESO	SO	--	--	--	--	--	--	--	--	--	--	--	--	--
505.2	Channel Island Harbor/North	--	--	--	--	--	--	--	--	--	TESO	--	--	--	--	--	--	--	--
506.0	Port Hueneme	--	--	TESO	TESO	SO	--	--	--	--	--	--	--	--	--	--	--	--	--
506.1	Port Hueneme/Wharf B	--	--	--	--	--	--	--	--	SO	SO	TESO	SO	--	--	--	--	--	--
506.2	Port Hueneme/Wharf 1	--	--	--	--	--	--	--	--	SO	TESO	TESO	SO	--	--	--	--	--	--
506.3	Port Hueneme/Entrance	--	--	--	--	--	--	--	--	--	--	TESO	--	--	--	--	--	--	--
507.0	Point Mugu	TESO	TESO	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
507.1	Mugu Lagoon/L Street	--	--	--	--	--	--	--	--	--	TESO	--	--	--	SO	--	--	--	--
507.2	Mugu Lagoon/Laguna Road	--	--	--	--	--	--	--	--	SO	TESO	--	--	--	SO	--	--	--	--

* Sample Year = State Fiscal Year (July 1 - June 30). For example, Sample Year 1978 = 1977-78 Fiscal Year.

-- = Not Sampled. SO = Synthetic Organics Only. TE = Trace Elements Only. TESO = Trace Elements and Synthetic Organics.

APPENDIX D (continued)

State Mussel Watch Program
Station Sampling history

Station Number	Station Name	Sample Year* 1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
507.3	Mugu Lagoon/Calleguas Creek	--	--	--	--	--	--	--	--	SO	TESO	--	TESO	SO	SO	SO	SO	TESO	--
507.4	Ag Drain/Etting Road	--	--	--	--	--	--	--	--	--	--	--	--	--	SO	--	--	--	--
507.6	Ag Drain/Pleasant Valley Road	--	--	--	--	--	--	--	--	--	--	--	--	--	SO	--	--	--	--
507.7	Revolon Slough/Las Posas Rd	--	--	--	--	--	--	--	--	--	--	--	--	--	SO	--	--	--	--
507.8	Revolon Slough	--	--	--	--	--	--	--	--	--	TESO	SO	SO	SO	SO	--	--	--	--
508.1	Mugu Drainage 1	--	--	--	--	--	--	--	--	--	--	--	--	SO	--	--	--	--	TE
508.2	Mugu Drainage 2	--	--	--	--	--	--	--	--	--	--	--	--	SO	--	--	--	--	--
508.3	Mugu Drainage 3	--	--	--	--	--	--	--	--	--	--	--	--	SO	--	--	--	--	--
508.4	Mugu Drainage 4	--	--	--	--	--	--	--	--	--	--	--	--	SO	--	--	--	--	--
508.5	Mugu Drainage 5	--	--	--	--	--	--	--	--	--	--	--	--	SO	--	--	--	--	--
508.6	Mugu Drainage 6	--	--	--	--	--	--	--	--	--	--	--	--	SO	--	--	--	--	--
508.7	Mugu Drainage 7	--	--	--	--	--	--	--	--	--	--	--	--	SO	--	--	--	--	--
509.0	Calleguas	--	--	--	--	--	--	--	--	--	--	--	--	SO	--	--	--	--	--
553.0	Marina Del Rey/Entrance	--	--	--	--	--	--	--	--	--	--	--	TESO	--	--	--	--	--	--
554.0	Marina Del Rey/Harbor Patrol Docks	--	--	--	--	--	--	--	--	TESO	--	TESO	TESO	--	--	--	--	--	--
555.0	Marina Del Rey/Basin G	--	--	--	--	--	--	--	--	TESO	TESO	TESO	TESO	--	--	--	--	--	--
555.2	Marina Del Rey/Basin D	--	--	--	--	--	--	--	--	--	--	TESO	--	--	--	--	--	--	--
556.0	Marina Del Rey/Basin E	--	--	--	--	--	--	--	--	TESO	TESO	TESO	TESO	--	--	--	--	--	--
557.0	Marina Del Rey/Ballona Creek	--	--	--	--	--	--	--	--	TESO	TESO	TESO	--	--	--	--	--	--	--
559.0	King Harbor	--	--	--	--	--	--	--	--	--	--	TESO	--	--	--	--	--	--	--
601.0	LA Harbor/National Steel	--	--	--	--	TESO	--	TESO	TESO	TESO	TESO	TESO	TESO	SO	SO	TESO	TESO	TESO	TESO
602.0	LA Harbor/West Basin	--	--	--	--	TESO	--	TE	TESO	TESO	TESO	TESO	--	--	--	--	--	TESO	--
602.5	LA Harbor/Todd Shipyards	--	--	--	--	--	--	--	TESO	TESO	--	TESO	TESO	SO	SO	--	--	--	--
602.6	LA Harbor/Berth 50	--	--	--	--	--	--	--	--	--	--	--	--	TE	--	--	--	--	--
602.7	LA Harbor/Pacific Ave/Storm Drain	--	--	--	--	--	--	--	--	--	--	TESO	--	--	--	--	--	--	--
602.8	LA Harbor/Berth 49	--	--	--	--	--	--	--	--	--	TESO	TESO	TE	TE	TE	--	--	--	--
602.9	LA Harbor/Berth 51	--	--	--	--	--	--	--	--	--	--	--	--	TE	--	--	--	--	--
603.0	LA Harbor/Berth 151	--	--	--	--	TESO	--	TESO	TESO	TESO	--	TESO	SO	--	--	--	--	--	--
603.6	LA Harbor/Slip 240	--	--	--	--	--	--	--	--	--	TESO	TESO	--	--	--	--	--	--	--
603.8	LA Harbor/West Channel	--	--	--	--	--	--	--	--	--	TESO	TESO	--	--	--	--	--	--	--
604.0	LA Harbor/GATX Terminal	--	--	--	SO	TESO	SO	--	--	TESO	--	--	--	--	--	--	--	--	--
604.5	LA Harbor/Berth 212	--	--	--	--	--	--	--	--	--	--	--	TE	--	--	--	--	--	--
605.0	LA Harbor/Cabrillo Pier	--	SO	SO	--	TESO	--	TESO	--	--	--	--	TESO	--	--	SO	SO	TESO	TESO
606.0	LA Harbor/Fish Harbor/Outer	--	--	--	--	TESO	--	--	--	--	--	--	--	--	--	--	--	--	--
606.2	LA Harbor/Fish Harbor	--	--	--	--	--	--	--	--	--	TESO	TESO	--	--	--	--	--	--	--

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APPENDIX D (continued)

State Mussel Watch Program

Station Sampling history

Station Number	Station Name	Sample Year* 1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
606.3	LA Harbor/Watchorn Basin	--	--	--	--	--	--	--	--	--	--	TESO	--	--	--	--	--	--	--
607.0	LA Harbor/Terminal Island	--	--	--	SO	TESO	--	TE	--	TESO	--	--	--	--	--	--	--	--	--
607.4	LB Harbor/Berth 214	--	--	--	--	--	--	--	--	--	TESO	--	--	--	--	--	--	--	--
607.6	LB Harbor/Channel 2	--	--	--	--	--	--	--	--	--	TESO	--	--	--	--	--	--	--	--
607.7	LB Harbor/Navy Mole Jetty	--	--	--	--	--	--	--	--	--	SO	--	--	--	--	--	--	--	--
607.8	LB Harbor/Pier J	--	--	--	--	--	--	--	--	--	TESO	--	--	--	--	--	--	--	--
608.0	LB Harbor/Navy Mole	--	--	--	TESO	--	SO	--	--	--	--	--	--	--	--	--	--	--	--
609.0	LB Harbor/Tide Gauge	--	--	TESO	TESO	TESO	SO	TESO	--	TESO	--	SO	--	--	--	--	--	--	--
609.4	Long Beach/Queensway Bay	--	--	--	--	--	--	--	--	--	TESO	--	--	--	--	--	--	--	--
610.0	LA River/Mouth	--	--	--	SO	--	SO	--	TESO	--	--	--	--	--	--	--	--	--	--
611.0	LB Harbor/Pier F	--	--	--	--	TESO	--	--	--	--	--	--	--	--	--	--	--	--	--
611.5	LB Harbor/LAPD Ramp	--	--	--	SO	--	--	--	--	--	--	--	--	--	--	--	--	--	--
612.0	LB Harbor/Navy Channel	--	--	--	SO	--	SO	--	--	--	--	--	--	--	--	--	--	--	--
613.0	LB Harbor/Southern Calif Edison	--	--	--	--	TESO	--	TESO	--	TESO	--	--	--	--	--	--	--	--	--
614.0	LB Harbor/Channel 3	--	--	--	--	TESO	--	--	--	--	--	--	--	--	--	--	--	--	--
615.0	LB Harbor/Henry Ford Bridge	--	--	--	--	TESO	--	--	--	TESO	TESO	--	--	--	--	--	--	--	--
616.0	LA Harbor/Consolidated Slip	--	--	--	--	TESO	SO	SO	TESO	TESO	TESO	TESO	TESO	SO	SO	TESO	TESO	TESO	TESO
617.0	White's Point	--	--	--	--	TESO	--	--	--	--	--	--	--	--	--	--	--	--	--
617.6	Point Fermin	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	SO	--	--
617.9	Cabrillo Beach/Ocean Side	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	SO	--	--
618.0	LA Harbor/Angels Gate	--	--	--	--	--	--	--	--	--	--	--	--	--	TESO	SO	SO	TESO	TESO
619.0	LA Harbor/San Pedro Boatworks	--	--	--	--	--	--	--	--	--	--	--	--	--	TESO	--	--	--	--
619.2	San Pedro Breakwater	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	SO	--	--
620.0	LB Harbor/JH Baxter 80	--	--	--	--	--	--	--	--	--	--	--	--	--	SO	--	--	--	--
620.5	LA River/Upstream	--	--	--	--	--	--	--	--	SO	--	--	--	--	--	--	--	--	--
621.0	LA Harbor/Berth 120	--	--	--	--	--	--	--	--	--	--	--	--	--	SO	--	--	--	--
622.0	LA Harbor/Commer Marine	--	--	--	--	--	--	--	--	--	--	--	--	--	TESO	--	--	--	--
625.0	Alamitos Bay/West 2nd Street	--	--	--	--	--	--	--	--	TESO	--	--	--	--	--	--	--	--	--
626.0	Alamitos Bay/Cerritos Channel	--	--	--	--	--	--	--	--	TESO	--	--	--	--	--	--	--	--	--
627.0	Alamitos Bay/Marine Stadium	--	--	--	--	--	--	--	--	TESO	--	--	--	--	--	--	--	--	--
627.4	Alamitos Bay/Marine Stadium/North	--	--	--	--	--	--	--	--	--	TESO	--	--	--	--	--	--	--	--
647.0	Point Dume	--	--	--	TE	--	--	--	--	--	--	--	--	--	--	--	--	--	--
648.0	Malibu	--	--	--	TE	--	--	--	--	--	--	--	--	--	TESO	--	TESO	TESO	TESO
648.1	Malibu Lagoon/Channel A	--	--	--	--	--	--	--	--	--	--	--	--	--	--	TESO	TESO	--	--
648.3	Malibu Lagoon/Channel C	--	--	--	--	--	--	--	--	--	--	--	--	--	--	TESO	TESO	--	--

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APPENDIX D (continued)

State Mussel Watch Program

Station Sampling history

Station Number	Station Name	Sample Year* 1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
648.5	Malibu Lagoon/PCH	--	--	--	--	--	--	--	--	--	--	--	--	--	--	TESO	TESO	--	--
649.0	Big Rock Beach	--	--	--	TE	--	--	--	--	--	--	--	--	--	--	--	--	--	--
650.0	Santa Monica	--	--	--	TE	--	--	--	--	--	--	--	TE	--	TESO	--	TESO	TESO	TESO
651.0	Marina Del Rey/North Docks	--	--	TE	TESO	--	--	--	--	--	--	--	--	--	--	--	--	--	--
652.0	Marina Del Rey/North Docks Jetty	--	--	TE	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
653.0	Marina Del Rey/South Docks Jetty	--	--	--	--	TESO	--	--	--	--	--	--	--	--	--	--	--	--	--
654.0	Playa Del Rey	--	--	--	TE	--	--	--	--	--	--	--	--	--	--	--	--	--	--
655.0	El Segundo/Grand Avenue	--	--	--	TE	--	--	--	--	--	--	--	--	--	--	--	--	--	--
656.0	Manhattan Beach	--	--	--	TE	--	--	--	--	--	--	--	TE	--	--	--	--	--	--
657.0	Hermosa Beach	--	--	--	TE	--	--	--	--	--	--	--	--	--	--	--	--	--	--
658.0	Redondo Beach	--	--	--	TE	--	--	--	--	--	--	--	TE	--	--	--	--	--	--
659.0	Palos Verdes Point	--	--	--	TE	--	--	--	--	--	--	--	--	--	--	--	--	--	--
660.0	Point Vicente	--	--	TE	TESO	--	--	--	--	--	--	--	--	--	--	--	--	--	--
661.0	Royal Palms/North	--	--	TE	TE	--	--	--	--	--	--	--	--	--	--	--	--	--	--
662.0	Royal Palms	TESO	TESO	TESO	SO	TESO	TESO	TESO	TESO	TESO	TESO	TESO	TESO	TESO	TESO	TESO	TESO	TESO	TESO
663.0	Royal Palms/South	--	--	TE	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
664.0	Cabrillo Beach	--	--	TE	SO	--	--	--	--	--	--	--	--	--	--	SO	--	--	TESO
664.2	Cabrillo Beach Buoy	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	SO	--	--
680.0	Catalina Island/East	--	TESO	TE	TESO	--	--	--	--	--	--	--	--	--	--	--	--	--	--
681.0	Catalina Island/West	TESO	TESO	TE	TE	--	--	--	--	--	--	--	--	--	--	TE	--	--	--
682.0	Catalina Island/Ribbon Rock	--	--	--	TE	--	--	--	--	--	--	--	--	--	TE	--	TESO	TESO	--
683.0	Catalina Island/Ben Weston	--	--	--	TESO	--	--	--	--	--	--	--	--	--	--	--	--	--	--
684.0	Catalina Island/Silver Canyon	--	--	--	TE	--	--	--	--	--	--	--	--	--	--	--	--	--	--
685.0	Catalina Island/Church Rock	--	--	--	TE	--	--	--	--	--	--	--	--	--	--	--	--	--	--
701.0	Colorado Lagoon/West	--	--	--	--	TESO	--	--	TESO	TESO	--	--	--	--	--	--	--	--	--
701.2	Colorado Lagoon/East	--	--	--	--	--	--	--	--	--	TESO	--	--	--	--	--	--	--	--
703.0	Alamitos Bay/Pier 22	--	--	--	--	SO	--	--	--	--	--	--	--	--	--	--	--	--	--
707.0	Anaheim Bay/Navy Harbor	--	--	--	--	--	--	TESO	--	TESO	TESO	TESO	TESO	TESO	TESO	TESO	--	--	--
708.0	Anaheim Bay/Navy Marsh	--	--	--	--	--	--	TESO	--	--	TESO	TESO	--	TESO	TESO	TESO	--	--	--
708.5	Anaheim Bay/Navy Marsh 2	--	--	--	--	--	--	--	--	--	--	--	--	--	TESO	TESO	--	--	--
709.0	Anaheim Bay/Entrance	--	--	--	TE	SO	--	--	--	--	--	--	--	--	--	--	--	--	--
710.0	Anaheim Bay/Fuel Docks/North	--	--	TESO	SO	--	--	--	--	--	--	--	--	--	--	--	--	--	--
710.2	Anaheim Bay/Fuel Docks/South	--	--	--	--	--	--	--	TESO	TESO	TESO	TESO	TESO	TESO	--	--	--	--	--
711.0	Huntington Harbour/Launch Ramp Dks	--	--	--	--	SO	--	--	--	--	--	--	--	--	--	--	--	--	--
712.0	Huntington Harbour/Peter's Landing	--	--	--	--	TESO	--	--	--	--	--	--	--	--	--	--	--	--	--

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-- = Not Sampled. SO = Synthetic Organics Only. TE = Trace Elements Only. TESO = Trace Elements and Synthetic Organics.

APPENDIX D (continued)

State Mussel Watch Program

Station Sampling history

Station Number	Station Name	Sample Year*																	
		1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
713.0	Huntington Harbour/Edinger Street	--	--	--	--	--	--	TESO	--	TESO	TESO	TESO	--	TESO	TESO	TESO	--	TESO	TESO
715.0	Huntington Harbour/Warner Ave Brdg	--	--	--	--	--	--	TESO	TESO	TESO	TESO	TESO	TESO	TESO	TESO	TESO	TESO	TESO	TESO
717.0	Huntington Harbour/Harbor Lane	--	--	--	--	--	--	--	--	TESO	TESO	TESO	TESO	--	--	TESO	--	--	--
719.1	Santa Ana River/Prado Dam	--	--	--	--	--	--	--	--	--	--	--	--	--	--	TESO	TESO	--	--
719.8	Temescal Creek/Nichols Road	--	--	--	--	--	--	--	--	--	--	--	--	--	--	TE	--	--	--
720.0	Newport Pier	--	--	--	--	--	--	--	--	--	SO	--	--	--	--	--	--	--	--
720.5	Newport Bay/Offshore Ref	--	--	--	--	--	--	--	--	--	--	--	--	--	TESO	--	--	--	--
721.0	Newport Bay/Entrance	--	--	--	--	TE	TESO	TESO	TESO	TESO	TESO	TESO	TESO	TESO	TESO	--	--	--	--
722.0	Newport Bay/Police Docks	--	--	TESO	TESO	TE	TESO	--	--	SO	--	--	--	--	--	--	--	--	--
722.4	Newport Bay/El Paseo Drive	--	--	--	--	--	--	--	--	--	TESO	--	--	--	--	--	--	--	--
723.0	Newport Bay/Bay Island	--	--	--	--	TESO	TESO	SO	TESO	TESO	TESO	TESO	--	TESO	TESO	TESO	--	--	--
723.4	Newport Bay/Turning Basin	--	--	--	--	--	--	--	--	--	TESO	TESO	TESO	TESO	TESO	TESO	--	--	TESO
724.0	Newport Bay/Highway 1 Bridge	--	--	--	--	--	TESO	TESO	TESO	TESO	TESO	TESO	TESO	TESO	TESO	TESO	TESO	TESO	TESO
724.4	Newport Bay/Dunes Dock	--	--	--	--	--	--	--	--	--	TESO	--	--	--	--	--	--	--	--
725.0	Newport Bay/Crows Nest	--	--	--	--	TESO	TESO	TESO	TESO	TESO	TESO	TESO	TESO	TESO	TESO	TESO	TESO	TESO	TESO
726.0	Newport Bay/Rhine Channel/Upper	--	--	--	--	--	TESO	TESO	TESO	TESO	TESO	TESO	TESO	--	--	--	--	--	--
726.2	Newport Bay/Rhine Channel/26th Ave	--	--	--	--	--	--	--	--	--	TESO	--	TESO	--	--	--	--	--	--
726.4	Newport Bay/Rhine Channel/End	--	--	--	--	--	--	--	--	--	TESO	TESO	TESO	TESO	TESO	TESO	TESO	TESO	TESO
727.0	Garden Grove/Wintersburg Channel	--	--	--	--	--	--	--	--	--	--	--	--	--	TESO	--	TESO	--	--
728.4	Upper Newport Bay/MacArthur	--	--	--	--	--	--	--	TESO	TESO	TESO	TESO	TESO	TESO	TESO	--	TESO	--	--
728.5	Upper Newport Bay/Drain 2	--	--	--	--	--	--	--	--	--	--	--	--	TESO	--	--	--	--	--
728.6	Upper Newport Bay/San Diego Cr 1	--	--	--	--	--	--	--	--	--	--	TESO	--	--	--	--	--	--	--
728.7	Upper Newport Bay/Drain 4	--	--	--	--	--	--	--	--	--	--	--	--	TE	TESO	--	TESO	--	--
728.8	Upper Newport Bay/San Diego Cr 2	--	--	--	--	--	--	--	--	--	--	TESO	--	--	--	--	--	--	--
728.9	Upper Newport Bay/Drain 5	--	--	--	--	--	--	--	--	--	--	--	--	TESO	TESO	--	--	--	--
730.0	Huntington Beach Pier	--	--	TE	--	--	--	--	--	--	--	--	--	--	TE	--	--	--	--
731.0	Newport Beach Pier	--	--	--	TE	--	--	--	--	--	--	--	--	--	--	--	--	--	--
732.0	Newport Bay/Entrance/West Jetty	--	--	TE	TE	--	--	--	--	--	--	--	--	--	--	--	--	--	--
733.0	Newport Bay/Entrance/W Jetty/End	--	--	--	TE	--	--	--	--	--	--	--	--	--	--	--	--	--	--
734.0	Newport Bay/Entrance/East Jetty	--	--	--	TE	--	--	--	--	--	--	--	--	--	--	--	--	--	--
735.0	Corona Del Mar	TESO	TESO	TESO	SO	--	--	--	--	--	--	--	--	--	TESO	TESO	--	--	--
736.0	Little Corona City Beach	--	--	TE	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
737.0	Crescent Bay Beach	--	--	TE	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
740.0	Dana Point Harbor/Boat Yard	--	--	--	--	--	--	--	--	TE	--	--	--	--	TESO	TESO	TESO	--	--
744.0	San Onofre Nuclear Plant Outfall	--	--	--	--	--	--	--	--	TE	--	--	--	--	--	--	--	--	--

* Sample Year = State Fiscal Year (July 1 - June 30). For example, Sample Year 1978 = 1977-78 Fiscal Year.

-- = Not Sampled. SO = Synthetic Organics Only. TE = Trace Elements Only. TESO = Trace Elements and Synthetic Organics.

APPENDIX D (continued)

State Mussel Watch Program

Station Sampling history

Station Number	Station Name	Sample Year* 1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
744.1	San Onofre 1	--	--	--	--	--	--	--	--	--	--	--	TESO	--	TESO	TESO	--	--	--
744.2	San Onofre 2	--	--	--	--	--	--	--	--	--	--	--	TESO	TESO	TESO	TESO	--	--	--
744.3	San Onofre 3	--	--	--	--	--	--	--	--	--	--	--	--	TESO	TESO	TESO	--	--	--
744.4	San Onofre 4	--	--	--	--	--	--	--	--	--	--	--	TESO	TESO	TESO	TESO	--	--	--
744.5	San Onofre 5	--	--	--	--	--	--	--	--	--	--	--	TESO	TESO	TESO	TESO	--	--	--
744.6	San Onofre 6	--	--	--	--	--	--	--	--	--	--	--	TESO	TESO	TESO	TESO	--	--	--
748.0	Oceanside/Harbor	--	--	--	--	--	--	--	TE	TE	TE	TE	--	--	--	--	TESO	--	--
750.0	Oceanside	TESO	TESO	TESO	TESO	TESO	TESO	TESO	TESO	TESO	TESO	TESO	TESO	TESO	TESO	TESO	TESO	--	TESO
751.0	Oceanside/Transplant	--	--	--	TE	--	--	--	--	--	--	--	--	--	TESO	--	--	--	--
753.0	Inner Agua Hedionda	--	--	--	--	--	--	--	--	--	TESO	SO	--	--	--	--	--	--	--
800.0	Ingraham Street/North	--	--	TE	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
830.0	Torrey Pines	--	--	TE	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
831.0	Scripps Oceanographic Inst Pier	--	--	TE	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
832.0	La Jolla	TESO	TESO	TESO	--	--	--	--	--	--	--	--	--	--	TESO	TESO	TESO	--	--
833.0	Boomers Point	--	--	TE	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
834.0	Bird Rock	--	--	TE	TE	--	--	--	--	--	--	--	--	--	--	--	--	--	--
835.0	Pacific Beach	--	--	--	TE	--	--	--	--	--	--	--	--	--	--	--	--	--	--
836.0	Mission Bay/North Jetty	--	--	--	TE	--	--	--	--	--	--	--	--	--	--	--	--	--	--
837.0	Mission Bay/South Jetty	--	--	--	TE	TE	--	--	--	--	--	--	--	--	--	--	--	--	--
838.0	Crystal Pier	--	--	--	--	TE	--	--	--	--	--	--	--	--	--	--	--	--	--
838.2	Point Loma/Sunset Cliffs	--	--	--	--	--	--	--	--	TE	TE	TE	TE	TE	TESO	TE	TE	--	--
839.0	Point Loma/Pink House	--	--	--	TE	TESO	--	--	--	--	--	--	--	--	--	--	--	--	--
839.2	Point Loma/STP Outfall	--	--	--	--	--	--	--	--	TE	TE	--	--	--	--	--	--	--	--
840.0	Naval Ocean Sys Cntr/Dolphin Tanks	--	--	--	TE	TE	TESO	--	TESO	TE	--	--	TE	--	--	--	TE	--	--
840.2	Point Loma/Coast Guard Station	--	--	--	--	--	--	--	--	TE	--	--	--	--	--	--	--	--	--
841.0	Coronado Hotel	--	--	--	TE	--	--	--	--	--	--	--	--	--	--	--	--	--	--
842.0	Imperial Beach	--	--	--	TE	--	--	--	--	--	--	--	--	--	--	--	--	--	--
849.0	Point Loma/A9d	--	--	--	--	--	TE	--	--	--	--	--	--	--	--	--	--	--	--
849.5	Point Loma/A9s	--	--	--	--	--	TE	--	--	--	--	--	--	--	--	--	--	--	--
850.0	Point Loma/STP/A8s	--	--	--	--	TE	--	--	--	--	--	--	--	--	--	--	--	--	--
850.5	Point Loma	--	--	--	--	--	TE	--	--	--	--	--	--	--	--	--	--	--	--
852.0	Point Loma/A10s	--	--	--	--	--	TE	--	--	--	--	--	--	--	--	--	--	--	--
864.0	Mission Bay/Yacht Club	--	--	--	--	--	--	TE	--	--	--	--	--	--	--	--	--	--	--
865.0	Mission Bay/Hilton Docks	--	--	--	--	TE	--	TESO	--	--	--	--	--	TESO	--	--	--	--	--
866.0	Fisherman Channel	--	--	--	--	TE	--	TE	--	TE	--	--	--	--	TESO	--	--	--	--

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APPENDIX D (continued)

State Mussel Watch Program

Station Sampling history

Station Number	Station Name	Sample Year* 1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
867.0	Ingraham Street	--	--	SO	--	TESO	--	--	--	--	--	--	--	--	--	--	--	--	--
868.0	West Mission Bay Drive	--	--	--	--	TE	--	--	--	--	--	--	--	--	--	--	--	--	--
868.5	Mission Bay/Landfill 1	--	--	--	--	--	--	--	--	--	--	--	--	TESO	TESO	TESO	--	--	TESO
868.6	Mission Bay/Landfill 2	--	--	--	--	--	--	--	--	--	--	--	--	--	TESO	TESO	--	--	TESO
869.0	Mission Bay/Seaworld Tower	--	--	--	--	--	--	TESO	--	--	--	--	--	--	--	--	--	--	--
870.0	Mission Bay/South Shore/Rock 1	--	--	--	--	--	--	SO	--	--	--	--	--	--	--	--	--	--	--
872.0	Mission Bay/South Shore/Rock 3	--	--	--	--	--	--	SO	--	--	--	--	--	--	--	--	--	--	--
872.2	Rose Creek	--	--	--	--	--	--	--	--	TESO	--	--	--	--	--	--	--	--	--
872.4	Mission Bay/Kendall-Frost Reserve	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	TE	--	--
873.0	Mission Bay/Entrance	--	--	--	TESO	--	--	--	--	--	--	--	--	--	--	--	--	--	--
873.5	Mission Bay/Harbor Police	--	--	--	--	--	--	TE	--	--	--	--	--	--	--	--	TE	--	--
874.0	San Diego River/Channel	--	--	--	--	--	--	TESO	--	--	--	--	--	--	--	--	--	--	--
874.2	Tecolote Creek	--	--	--	--	--	--	--	--	SO	--	--	--	--	--	--	--	--	--
874.5	San Diego River	--	--	--	--	--	--	--	TESO	--	--	--	--	--	--	--	--	--	--
880.0	National City	--	--	--	SO	--	--	--	--	--	--	--	--	--	--	--	--	--	--
881.0	San Diego Bay/Sweetwater Marsh	--	--	--	--	--	TESO	--	--	--	--	--	TE	--	--	--	--	--	--
881.1	San Diego Bay/California Crane	--	--	--	--	--	TE	--	--	--	--	--	--	--	--	--	--	--	--
881.3	Sweetwater River/Mouth 1	--	--	--	--	--	--	--	--	--	--	--	--	--	TESO	TESO	--	--	--
881.4	Sweetwater River/Mouth 2	--	--	--	--	--	--	--	--	--	--	--	--	--	--	TESO	--	--	--
881.5	San Diego Bay/Rohr Channel Mouth	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	TE	--	--
882.0	24th St Maritime Terminal/South	--	--	--	--	TESO	TE	TE	TE	TE	TE	TE	--	--	--	TE	--	TE	TESO
882.2	24Th St Maritime Terminal/North	--	--	--	--	--	TE	--	--	--	--	--	TE	TE	--	--	TE	--	--
882.4	San Diego Bay/Navy Pier 13	--	--	--	--	--	TE	TE	TE	--	--	--	--	--	--	--	--	--	--
882.5	San Diego Bay/NASSCO Pier 12	--	--	--	--	--	--	--	--	--	--	TESO	--	--	--	--	--	--	--
882.6	San Diego Bay/Sampson St Extension	--	--	--	--	--	--	--	--	TESO	--	--	--	--	--	--	--	--	--
882.7	San Diego Bay/Sampson Street Pier	--	--	--	--	--	--	--	--	--	SO	TESO	TESO	--	--	--	TESO	--	--
882.8	San Diego Bay/KELCO Pier	--	--	--	--	--	--	--	--	--	SO	--	TESO	--	--	TESO	--	--	--
882.9	San Diego Bay/Coronado Brdg/East	--	--	--	--	--	--	--	--	--	SO	--	TESO	--	--	--	--	--	--
883.0	San Diego Bay/Navy Amphibious Base	--	--	--	SO	SO	TE	--	--	--	--	--	--	--	--	--	--	--	--
883.1	San Diego Bay/Chollas Creek	--	--	--	--	--	--	--	--	--	--	--	TESO	--	--	--	--	TESO	--
883.4	San Diego Bay/Continental Maritime	--	--	--	--	--	--	--	--	--	--	--	TE	--	--	--	TESO	TESO	--
883.5	San Diego Bay/Tuna Docks	--	--	--	--	--	--	--	--	--	SO	--	TE	--	--	--	--	TESO	--
883.6	San Diego Bay/7th Street Channel	--	--	--	--	--	--	--	--	--	--	TESO	TESO	--	TESO	TESO	--	--	--
883.7	San Diego Bay/Terminal S-10th St	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	TESO	--	--
883.8	San Diego Bay/Switzer Creek	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	TESO	--

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APPENDIX D (continued)

State Mussel Watch Program

Station Sampling history

Station Number	Station Name	Sample Year* 1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
884.0	San Diego Bay/Glorietta Bay	--	--	--	--	TESO	--	--	--	--	--	--	--	--	--	--	--	--	--
885.0	San Diego Bay/Buoy 30	--	--	--	--	SO	--	--	--	--	--	--	--	--	--	--	--	--	--
885.2	San Diego Bay/32nd Street	--	--	--	--	--	--	--	--	--	--	--	TESO	--	--	--	--	--	--
885.4	San Diego Bay/NASSCO 28th St Pier	--	--	--	--	--	--	--	--	--	--	--	SO	--	--	--	--	--	--
886.0	San Diego Bay/NASSCO	--	--	--	--	--	TE	--	--	--	--	--	--	--	--	--	--	--	--
886.2	San Diego Gas&Electric Silvergate	--	--	--	--	--	--	--	--	--	--	--	TESO	--	--	--	--	--	--
887.0	San Diego Bay/Evans Street	--	--	--	--	TESO	TESO	--	--	--	--	--	--	--	TESO	TESO	TESO	--	--
888.0	San Diego Bay/Coronado Bridge	--	--	TESO	TESO	--	--	--	--	--	--	--	--	--	--	TESO	TESO	--	--
889.0	San Diego Bay/Coronado Island	--	--	--	--	SO	--	--	--	--	--	--	--	--	--	--	--	--	--
890.0	San Diego Bay/8th Avenue	--	--	--	--	SO	TESO	--	--	--	--	--	--	--	--	--	--	--	--
891.0	San Diego Bay/G Street Pier	--	--	TE	TESO	TESO	SO	--	--	--	--	TE	--	--	--	--	--	--	--
892.0	San Diego Bay/N Island/Boathouse	--	--	--	--	--	--	--	TESO	--	--	--	--	--	--	--	--	--	--
893.0	San Diego Bay/Laurel Street	--	--	--	--	--	--	--	SO	--	--	--	--	--	--	--	TESO	--	--
894.0	SD Bay/Harbor Is/E Basin/Storm Dr	--	--	--	--	SO	TESO	--	SO	TESO	--	TESO	TESO	TESO	TESO	TESO	TESO	TESO	TESO
894.1	SD Bay/Harbor Is/E Basin/Storm Dr2	--	--	--	--	--	--	TESO	--	--	--	--	TESO	--	--	--	--	--	--
894.2	SD Bay/Harbor Is/E Basin/E End Doc	--	--	--	--	--	--	--	--	--	--	--	TESO	--	--	--	--	--	--
894.3	SD Bay/Harbor Is/E Basin/Mid Chan	--	--	--	--	--	--	--	--	--	--	--	TESO	--	--	--	--	--	--
894.5	SD Bay/Harbor Is/E Basin/W End Doc	--	--	--	--	--	SO	TESO	--	--	--	--	--	--	--	--	--	--	--
894.6	SD Bay/Harbor Is/E Basin/W End	--	--	--	--	--	--	--	--	--	TESO	--	--	--	--	--	--	--	--
894.8	Laurel Street Storm Drain	--	--	--	--	--	--	--	--	--	--	--	TESO	--	--	--	--	--	--
895.0	Harbor Island Drive/East	--	--	--	--	TE	SO	--	--	--	--	--	--	--	--	--	--	--	--
895.2	Harbor Island/West Bay/East	--	--	--	--	--	--	--	TE	--	--	--	--	--	--	--	--	--	--
895.4	Harbor Island/West Bay/West	--	--	--	--	--	--	--	TE	--	--	--	--	--	--	--	--	--	--
895.6	San Diego Bay/Grape St Storm Drain	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	TESO	--	--
896.0	San Diego Bay/N Island/Runway 36	--	--	--	--	--	--	--	TESO	--	--	--	--	--	--	--	--	--	--
896.2	San Diego Bay/N Is/DPDO Dumpsite	--	--	--	--	--	--	--	TESO	TESO	--	--	--	--	--	--	--	--	--
897.0	San Diego Bay/Shelter Is/East	--	--	--	--	TE	TESO	--	--	--	--	--	--	--	--	--	--	--	--
897.5	Commercial Basin/North Harbor Dr	--	--	--	--	--	SO	--	--	TESO	TESO	TESO	--	--	--	--	--	--	--
898.0	Commercial Basin/Carlton Street	--	--	--	--	SO	TESO	--	--	--	--	--	TESO	TESO	--	--	TESO	--	--
898.2	San Diego Bay/N Is/Launch Docks	--	--	--	--	--	--	TESO	--	--	--	--	--	--	--	--	--	--	--
898.4	San Diego Bay/North Island Plat	--	--	--	--	--	--	TE	--	--	--	--	--	--	--	--	--	--	--
899.0	San Diego Bay/Shelter Is/Fshg Pier	--	SO	TESO	TESO	--	--	--	--	--	--	--	TE	TE	--	TESO	TESO	--	TESO
899.1	San Diego Bay/Shelter Is/Duffy's	--	--	--	--	--	--	--	--	--	TE	--	--	--	--	--	--	--	--
899.2	San Diego Bay/Shelter Island	--	--	--	--	--	--	--	TE	--	--	--	--	--	--	--	TESO	--	--
899.4	San Diego Bay/Shelter Is/Fuel Dock	--	--	--	--	--	--	--	--	--	TESO	TESO	--	--	--	--	--	--	--

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-- = Not Sampled. SO = Synthetic Organics Only. TE = Trace Elements Only. TESO = Trace Elements and Synthetic Organics.

APPENDIX D (continued)

State Mussel Watch Program
Station Sampling history

Station Number	Station Name	Sample Year*																	
		1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
900.0	San Diego Bay/Range Marker	--	--	--	--	--	--	--	TE	--	--	--	--	--	--	--	--	--	--
900.5	San Diego Bay/Bait Tanks	--	--	--	--	--	--	--	TE	--	--	--	--	--	--	--	--	--	--
901.0	San Diego Bay/Degausing Station	--	--	--	--	TESO	TESO	--	--	--	--	--	--	--	TESO	TESO	--	--	--
901.2	San Diego Bay/N Island/Ammo Pier	--	--	--	--	--	--	--	TESO	--	--	--	--	--	--	--	--	--	--
902.0	Zuniga Jetty/Buoy	--	--	--	SO	--	--	--	--	--	--	--	--	--	--	--	--	--	--
903.0	Zuniga Jetty	--	--	--	--	--	--	TESO	TE	TESO	--	--	--	--	--	--	--	--	--
904.0	Imperial Beach/Pier	--	--	--	--	--	--	TE	--	--	--	--	--	--	TESO	--	--	--	--
904.8	Tijuana River/Imperial Beach	--	--	--	--	--	--	--	TESO	TESO	--	--	--	--	--	--	--	--	--
905.0	Tijuana River	--	--	--	--	--	--	TESO	--	--	--	--	--	--	--	--	--	--	--
906.0	Mexican Border	--	--	--	--	--	--	--	--	TESO	--	--	--	--	--	--	--	--	--

* Sample Year = State Fiscal Year (July 1 - June 30). For example, Sample Year 1978 = 1977-78 Fiscal Year.
-- = Not Sampled. SO = Synthetic Organics Only. TE = Trace Elements Only. TESO = Trace Elements and Synthetic Organics.

APPENDIX E

Summary of 1993-95 Data

Organic Chemicals Exceeding Selected Criteria

(ppb, wet weight)

Appendix E

State Mussel Watch Program

Summary of 1993-95 Data: Organic Chemicals Exceeding Selected Criteria

(ppb, wet weight)

Station Number	Station Name	Sample Type+	Sample Date++	Total Chlor-dane	Chlor-pyrifos	Dacthal	Total DDT	Dieldrin
302.0	Point Pinole	TCM	02/02/82					
308.0	San Francisco Bay/Hunter's Point	TCM	01/15/88					10.4*
309.0	San Mateo Bridge/8B	TCM	02/12/85					22.2**
313.0	San Francisco Bay/near Redwood Cr	TCM	02/12/85					16.1*
313.0	San Francisco Bay/near Redwood Cr	TCM	01/15/88					7.2*
321.0	Dumbarton Bridge/Channel Marker 14	TCM	01/18/82					9.5*
321.0	Dumbarton Bridge/Channel Marker 14	TCM	02/12/85					16.9*
321.0	Dumbarton Bridge/Channel Marker 14	TCM	01/15/88					8.9*
404.0	Sandholdt Bridge	TCM	03/07/94		5.0**	39.8**	647.9**	36.3**
404.0	Sandholdt Bridge	TCM	02/22/95		2.5**	19.3**	442.7**	41.9**
414.0	Pacific Grove	RCM	04/19/95					1.8*
420.0	Monterey Harbor/Coast Guard Jetty	TCM	05/26/94					
507.3	Mugu Lagoon/Calleguas Creek	TCM	02/08/94	28.5*	10.4**	62.4**	556.9**	
601.0	LA Harbor/National Steel	TCM	01/31/95					
605.0	LA Harbor/Cabrillo Pier	TCM	02/08/94				227.3*	

Station Number	Total Endo-sulfan	Endrin	alpha-HCH	beta-HCH	Gamma-HCH	Hepta-chlor	Hepta-chlor-epoxide	Oxa-diazon	Total PCB	Toxaphene
302.0							0.2*			
308.0							0.2*		552.4**	
309.0			0.6*		1.0**		0.4*			
313.0					0.9**		0.5*			
313.0					3.0**		0.4*	2.3*		
321.0			1.0*		1.7**		0.6**			
321.0					1.0**		0.4*			
321.0					0.8**		0.3*			
404.0	23.0*	4.5**					0.4*			147.1**
404.0	15.7*	3.1**					0.5**			122.4**
414.0										
420.0			0.9*	1.0**						
507.3		1.1*					0.9**			468.0**
601.0										10.5*
605.0										

+ RCM = Resident California Mussel
TCM = Transplanted California Mussel
RBM = Resident Bay Mussel

* = Equals or exceeds EDL 85.
** = Equals or exceeds EDL 95.
++ = Samples with a collection date prior to 1993 are archive samples.

Appendix E (continued)

State Mussel Watch Program

Summary of 1993-95 Data: Organic Chemicals Exceeding Selected Criteria

(ppb, wet weight)

Station Number	Station Name	Sample Type+	Sample Date	Total Chlor-dane	Chlor-pyrifos	Dacthal	Total DDT	Dieldrin
605.0	LA Harbor/Cabrillo Pier	TCM	01/31/95					
616.0	LA Harbor/Consolidated Slip	TCM	02/08/94		1.4*			
616.0	LA Harbor/Consolidated Slip	TCM	01/31/95		0.6*			
618.0	LA Harbor/Angels Gate	RCM	02/08/94				238.0**	
618.0	LA Harbor/Angels Gate	RCM	01/31/95	16.5**	0.6**		146.5**	
648.0	Malibu	RBM	02/07/94		1.5**			
648.0	Malibu	RBM	01/31/95					
650.0	Santa Monica	RCM	02/07/94	5.1*			53.1*	
650.0	Santa Monica	RCM	01/31/95	19.9**		0.7**	50.3*	3.0**
662.0	Royal Palms	RCM	02/08/94				106.4*	
662.0	Royal Palms	RCM	01/31/95	4.8*			122.1*	
664.0	Cabrillo Beach	RCM	11/11/94	5.9*			120.2*	
713.0	Huntington Harbour/Edinger Street	TCM	02/07/94		1.3*	2.2*		
713.0	Huntington Harbour/Edinger Street	TCM	01/30/95		0.9*			
715.0	Huntington Harbour/Warner Ave Brdg	TCM	02/07/94		1.3*			

Station Number	Total Endo-sulfan	Endrin	alpha-HCH	beta-HCH	Gamma-HCH	Hepta-chlor	Hepta-chlor-epoxide	Oxa-diazon	Total PCB	Toxaphene
605.0							0.2*			16.7*
616.0										
616.0										30.7*
618.0									67.6**	
618.0							0.2**	1.3**	77.8**	41.4**
648.0										
648.0							0.2*	2.8**		
650.0								0.5**		
650.0							0.2**		20.3*	
662.0										
662.0									15.3*	
664.0									16.5*	
713.0										
713.0							0.2*			15.1*
715.0								1.5*		

\+ RCM = Resident California Mussel
TCM = Transplanted California Mussel
RBM = Resident Bay Mussel

* = Equals or exceeds EDL 85.
** = Equals or exceeds EDL 95.

Appendix E (continued)

State Mussel Watch Program

Summary of 1993-95 Data: Organic Chemicals Exceeding Selected Criteria

(ppb, wet weight)

Station Number	Station Name	Sample Type+	Sample Date	Total Chlor-dane	Chlor-pyrifos	Dacthal	Total DDT	Dieldrin
715.0	Huntington Harbour/Warner Ave Brdg	TCM	01/30/95		1.1*			
723.4	Newport Bay/Turning Basin	TCM	01/30/95		0.7*			
724.0	Newport Bay/Highway 1 Bridge	TCM	02/07/94		1.4*			
724.0	Newport Bay/Highway 1 Bridge	TCM	01/30/95		2.9**	1.2*		
725.0	Newport Bay/Crows Nest	TCM	02/07/94		0.6*			
725.0	Newport Bay/Crows Nest	TCM	01/30/95					
726.4	Newport Bay/Rhine Channel/End	TCM	02/07/94		1.6**			
726.4	Newport Bay/Rhine Channel/End	TCM	01/30/95		0.7*			
750.0	Oceanside	RCM	01/30/95	6.2*		0.6**		
868.5	Mission Bay/Landfill 1	TCM	01/30/95					
868.6	Mission Bay/Landfill 2	TCM	01/30/95					
894.0	SD Bay/Harbor Is/E Basin/Storm Dr	TCM	02/08/94					
894.0	SD Bay/Harbor Is/E Basin/Storm Dr	TCM	01/31/95					

Station Number	Total Endo-sulfan	Endrin	alpha-HCH	beta-HCH	Gamma-HCH	Hepta-chlor	Hepta-chlor-epoxide	Oxa-diazon	Total PCB	Toxaphene
715.0							0.2*			20.7*
723.4								1.6*		15.6*
724.0										
724.0							0.2*	4.0**		43.4*
725.0										
725.0										10.8*
726.4										
726.4								1.9*		22.1*
750.0								0.7**		26.4**
868.5							0.3*	1.3*		
868.6							0.3*	1.3*		
894.0						0.1**			651.2**	
894.0						0.2**	0.2*		2305.8##	

\+ RCM = Resident California Mussel
TCM = Transplanted California Mussel
RBM = Resident Bay Mussel

* = Equals or exceeds EDL 85.
** = Equals or exceeds EDL 95.
= Equals or exceeds FDA Action Level.

APPENDIX F

Summary of 1993-95 Data

Organic Chemicals Exceeding

Maximum Tissue Residue Levels (MTRLs) in

Ocean Waters

(ppb, wet weight)

APPENDIX F

State Mussel Watch Program

Summary of 1993-95 Data: Organic Chemicals Exceeding Maximum Tissue Residue Levels (MTRLs) in Ocean Waters
(ppb, wet weight)

Station Number	Station Name	Sample Type*	Sample Date	Total Chlor-dane	Total DDT	Dieldrin	Total PCB	Toxaphene
10.0	Trinidad Head	RCM	10/14/93			0.8		
10.0	Trinidad Head	RCM	11/28/94			0.6	2.2	
202.0	Bodega Head	RCM	09/16/93	0.5		1.1		
202.0	Bodega Head	RCM	09/19/94			1.0	4.3	
414.0	Pacific Grove	RCM	04/19/95	1.0		1.8	1.5	
414.0	Pacific Grove	RCM	04/14/94	0.8		0.9		
618.0	LA Harbor/Angels Gate	RCM	02/08/94	2.0	238.0		67.6	
618.0	LA Harbor/Angels Gate	RCM	01/31/95	16.5	146.5	1.5	77.8	41.4
648.0	Malibu	RBM	02/07/94	14.5	79.7		26.6	
648.0	Malibu	RBM	01/31/95	10.8	47.0	1.2	12.3	
650.0	Santa Monica	RCM	02/07/94	5.1	53.1		9.2	
650.0	Santa Monica	RCM	01/31/95	19.9	50.3	3.0	20.3	
662.0	Royal Palms	RCM	02/08/94	1.3	106.4		8.6	
662.0	Royal Palms	RCM	01/31/95	4.8	122.1	1.4	15.3	
664.0	Cabrillo Beach	RCM	11/11/94	5.9	120.2	1.0	16.5	
750.0	Oceanside	RCM	01/30/95	6.2	41.8	1.2	4.3	26.4

* RCM = Resident California Mussel RBM = Resident Bay Mussel

APPENDIX H

Summary of 1993-95 Data
Trace Elements Exceeding the
Median International Standards (MIS)
(ppm, wet weight)

APPENDIX H

State Mussel Watch Program

Summary of 1993-95 Data: Trace Elements Excdeeding the Median International Standards (MIS)

(ppm, wet weight)

Station Number	Station Name	Sample Type*	Sample Date**	Arsenic (1.4)	Cadmium (1.0)	Chromium (1.0)	Copper (20.0)	Lead (2.0)	Selenium (0.3)	Zinc (70.0)
10.0	Trinidad Head	RCM	10/14/93	1.6	1.6	1.0				
10.0	Trinidad Head	RCM	11/28/94			9.7				
101.0	Samoa Bridge/West	TCM	02/24/94	1.6	1.1				0.35	
103.0	Eureka Channel	TCM	02/24/94	1.4	1.1					
202.0	Bodega Head	RCM	09/16/93		1.9					
202.0	Bodega Head	RCM	09/19/94	1.6	2.9	1.4				
308.0	San Francisco Bay/Hunter's Point	TCM	01/15/88		1.3	2.6			0.49	
309.0	San Mateo Bridge/8B	TCM	02/12/85		1.3	1.8			0.43	
313.0	San Francisco Bay/near Redwood Cr	TCM	02/12/85		1.5	4.2			0.42	
313.0	San Francisco Bay/near Redwood Cr	TCM	01/15/88		1.4	3.2			0.60	
321.0	Dumbarton Bridge/Channel Marker 14	TCM	02/12/85		1.3	3.5			0.30	
404.0	Sandholdt Bridge	TCM	03/07/94		1.0					
404.0	Sandholdt Bridge	TCM	02/22/95		1.2					
414.0	Pacific Grove	RCM	04/14/94		1.4					
414.0	Pacific Grove	RCM	04/19/95		1.2	1.5				
420.0	Monterey Harbor/Coast Guard Jetty	TCM	05/26/94		2.4					
420.3	Monterey Harbor/C G Jetty/Inner	TCM	05/26/94		2.3					
421.0	Monterey Harbor/Slag Pile	TCM	05/26/94		1.7		3.3			
507.3	Mugu Lagoon/Calleguas Creek	TCM	02/08/94	1.5	1.7				0.51	
601.0	LA Harbor/National Steel	TCM	02/08/94		1.4					
601.0	LA Harbor/National Steel	TCM	01/31/95		1.7					
602.0	LA Harbor/West Basin	TCM	02/08/94		1.6					
605.0	LA Harbor/Cabrillo Pier	TCM	02/08/94						0.74	
605.0	LA Harbor/Cabrillo Pier	TCM	01/31/95						0.46	
616.0	LA Harbor/Consolidated Slip	TCM	02/08/94		1.8			2.3	0.43	
616.0	LA Harbor/Consolidated Slip	TCM	01/31/95		1.6	2.1				
618.0	LA Harbor/Angels Gate	RCM	02/08/94						0.80	
618.0	LA Harbor/Angels Gate	RCM	01/31/95						0.50	
648.0	Malibu	RBM	02/07/94	1.5					0.85	
648.0	Malibu	RBM	01/31/95			8.3			0.58	
650.0	Santa Monica	RCM	02/07/94						0.73	
650.0	Santa Monica	RCM	01/31/95			4.5			0.99	
662.0	Royal Palms	RCM	02/08/94						0.53	
662.0	Royal Palms	RCM	01/31/95			5.1			0.47	
664.0	Cabrillo Beach	RCM	11/11/94			1.6			0.54	
681.0	Catalina Island/West	RCM	03/30/94		1.2			3.5	0.36	
713.0	Huntington Harbour/Edinger Street	TCM	02/07/94	1.6	1.3				0.40	
713.0	Huntington Harbour/Edinger Street	TCM	01/30/95		1.5	18.0				
715.0	Huntington Harbour/Warner Ave Brdg	TCM	02/07/94	1.5	1.4				0.37	
715.0	Huntington Harbour/Warner Ave Brdg	TCM	01/30/95		1.2	15.0				

* RCM = Resident California Mussel
TCM = Transplanted California Mussel
RBM = Resident Bay Mussel

( ) Median International Standard in Parentheses.

** Samples with a collection date prior to 1993 are archive samps.

APPENDIX H (continued)

State Mussel Watch Program

Summary of 1993-95 Data: Trace Elements Excdeeding the Median International Standards (MIS)

(ppm, wet weight)

Station Number	Station Name	Sample Type*	Sample Date	Arsenic (1.4)	Cadmium (1.0)	Chromium (1.0)	Copper (20.0)	Lead (2.0)	Selenium (0.3)	Zinc (70.0)
723.4	Newport Bay/Turning Basin	TCM	01/30/95		1.7	1.9				
724.0	Newport Bay/Highway 1 Bridge	TCM	02/07/94	1.5	1.4					
724.0	Newport Bay/Highway 1 Bridge	TCM	01/30/95		1.4					75.0
725.0	Newport Bay/Crows Nest	TCM	02/07/94	1.5	1.7		21.0		0.31	81.0
725.0	Newport Bay/Crows Nest	TCM	01/30/95		1.2	2.5				
726.4	Newport Bay/Rhine Channel/End	TCM	02/07/94	1.4	1.5		26.0			88.0
726.4	Newport Bay/Rhine Channel/End	TCM	01/30/95		1.6					72.0
750.0	Oceanside	RCM	01/30/95			2.3				
868.5	Mission Bay/Landfill 1	TCM	01/30/95		1.1	1.1			0.30	
868.6	Mission Bay/Landfill 2	TCM	01/30/95	1.6	1.6				0.43	
882.0	24th St Maritime Terminal/South	TCM	02/08/94	1.4	1.2					81.0
882.0	24th St Maritime Terminal/South	TCM	01/31/95		2.0	1.7				71.0
883.1	San Diego Bay/Chollas Creek	TCM	02/08/94		1.7					75.0
883.4	San Diego Bay/Continental Maritime	TCM	02/08/94		1.2					71.0
883.5	San Diego Bay/Tuna Docks	TCM	02/08/94		1.2					
883.8	San Diego Bay/Switzer Creek	TCM	02/08/94		1.2					
894.0	SD Bay/Harbor Is/E Basin/Storm Dr	TCM	02/08/94	1.4	1.7			2.0		86.0
894.0	SD Bay/Harbor Is/E Basin/Storm Dr	TCM	01/31/95		1.4	3.4		3.4		97.0
899.0	San Diego Bay/Shelter Is/Fshg Pier	TCM	01/31/95			4.4				

* RCM = Resident California Mussel
TCM = Transplanted California Mussel
RBM = Resident Bay Mussel

( ) Median International Standard in Parentheses.

APPENDIX I

Summary of 1993-95 Data

Trace Elements Exceeding Elevated Data Levels (EDL)

(ppm, wet weight)

APPENDIX I

State Mussel Watch Program

Summary of 1993-95 Data: Trace Elements Exceeding Elevated Data Levels (EDL)

(ppm, wet weight)

Station Number	Station Name	Sample Type+	Sample Date++	Aluminum	Arsenic	Cadmium	Chromium	Copper	Lead	Manganese	Mercury	Nickel	Selenium	Silver	Zinc
10.0	Trinidad Head	RCM	10/14/93	200.0**		1.60*	1.00**			3.50**		0.83**			
10.0	Trinidad Head	RCM	11/28/94	160.0**			9.70**	1.70*		3.70**					
100.0	Mad River Slough	TCM	02/24/94	140.0*								1.10**			
101.0	Samoa Bridge/West	TCM	02/24/94	380.0**			0.95*			4.90*		1.50**			
103.0	Eureka Channel	TCM	02/24/94	340.0**			0.85*					1.20**			
202.0	Bodega Head	RCM	09/16/93			1.90*									
202.0	Bodega Head	RCM	09/19/94			2.90**	1.40**					1.20**			
308.0	San Francisco Bay/Hunter's Point	TCM	01/15/88	400.0**			2.60**			4.70*	0.07*				
309.0	San Mateo Bridge/8B	TCM	02/12/85	350.0**			1.80**			12.00**	0.09**				
313.0	San Francisco Bay/near Redwood Cr	TCM	02/12/85	400.0**			4.20**			11.00**	0.10**			0.18*	
313.0	San Francisco Bay/near Redwood Cr	TCM	01/15/88	130.0*			3.20**				0.07*			0.47**	
321.0	Dumbarton Bridge/Channel Marker 14	TCM	02/12/85	370.0**			3.50**			8.30**	0.08*			0.13*	
404.0	Sandholdt Bridge	TCM	03/07/94	250.0**											
404.0	Sandholdt Bridge	TCM	02/22/95	190.0*			0.69*								
414.0	Pacific Grove	RCM	04/14/94												41.0**
414.0	Pacific Grove	RCM	04/19/95				1.50**								
420.0	Monterey Harbor/Coast Guard Jetty	TCM	05/26/94			2.40**									
420.3	Monterey Harbor/C G Jetty/Inner	TCM	05/26/94			2.30**									
421.0	Monterey Harbor/Slag Pile	TCM	05/26/94			1.70*			3.30**						
507.3	Mugu Lagoon/Calleguas Creek	TCM	02/08/94	140.0*		1.70*									
601.0	LA Harbor/National Steel	TCM	02/08/94	140.0*				5.50*		5.70*					60.0*
601.0	LA Harbor/National Steel	TCM	01/31/95			1.70*	0.75*								
602.0	LA Harbor/West Basin	TCM	02/08/94			1.60*									
605.0	LA Harbor/Cabrillo Pier	TCM	02/08/94	160.0*									0.74*		
616.0	LA Harbor/Consolidated Slip	TCM	02/08/94	130.0*		1.80*			2.30*						59.0*
616.0	LA Harbor/Consolidated Slip	TCM	01/31/95			1.60*	2.10**								60.0*
618.0	LA Harbor/Angels Gate	RCM	02/08/94	170.0**				2.10**		2.80**			0.80*		
618.0	LA Harbor/Angels Gate	RCM	01/31/95	130.0**				1.70*		2.90**					
648.0	Malibu	RBM	02/07/94	220.0**				2.50*						0.29**	
648.0	Malibu	RBM	01/31/95	280.0**			8.30**			5.30*					
650.0	Santa Monica	RCM	02/07/94	410.0**						8.80**			0.73*		
650.0	Santa Monica	RCM	01/31/95	120.0*			4.50**	2.60**		2.60*			0.99**	0.67*	34.0*
662.0	Royal Palms	RCM	02/08/94	190.0**						6.10**					
662.0	Royal Palms	RCM	01/31/95	110.0*			5.10**	1.60*		2.90**					
664.0	Cabrillo Beach	RCM	11/11/94	120.0*			1.60**	2.00*		2.60*			0.54*	0.72*	34.0*
681.0	Catalina Island/West	RCM	03/30/94						3.50**						37.0*
713.0	Huntington Harbour/Edinger Street	TCM	02/07/94	190.0*											
713.0	Huntington Harbour/Edinger Street	TCM	01/30/95	250.0**			18.00**			6.20**					
715.0	Huntington Harbour/Warner Ave Brdg	TCM	02/07/94	190.0*					1.70*	5.90*					63.0*
715.0	Huntington Harbour/Warner Ave Brdg	TCM	01/30/95	200.0*			15.00**			5.90*					55.0*

+ RCM = Resident California Mussel
TCM = Transplanted California Mussel
RBM = Resident Bay Mussel

* = Equals or exceeds EDL 85.
** = Equals or exceeds EDL 95.
++ = Samples with a collection date prior to 1993 are archive samples.

APPENDIX I (continued)

State Mussel Watch Program

Summary of 1993-95 Data: Trace Elements Exceeding Elevated Data Levels (EDL)

(ppm, wet weight)

Station Number	Station Name	Sample Type+	Sample Date	Aluminum	Arsenic	Cadmium	Chromium	Copper	Lead	Manganese	Mercury	Nickel	Selenium	Silver	Zinc
723.4	Newport Bay/Turning Basin	TCM	01/30/95			1.70*	1.90**								55.0*
724.0	Newport Bay/Highway 1 Bridge	TCM	02/07/94	150.0*						7.50**					
724.0	Newport Bay/Highway 1 Bridge	TCM	01/30/95					7.00*		6.90**	0.06*				75.0*
725.0	Newport Bay/Crows Nest	TCM	02/07/94			1.70*		21.00**		4.80*	0.09**				81.0**
725.0	Newport Bay/Crows Nest	TCM	01/30/95	280.0**			2.50**								
726.4	Newport Bay/Rhine Channel/End	TCM	02/07/94					26.00**		12.00**	0.07*				88.0**
726.4	Newport Bay/Rhine Channel/End	TCM	01/30/95			1.60*		11.00*		6.10**	0.06*				72.0*
750.0	Oceanside	RCM	01/30/95	230.0**			2.30**	1.70*		3.60**					
868.5	Mission Bay/Landfill 1	TCM	01/30/95	250.0**			1.10*					1.10**			
868.6	Mission Bay/Landfill 2	TCM	01/30/95	240.0**		1.60*						0.72*			
882.0	24th St Maritime Terminal/South	TCM	02/08/94	170.0*				11.00*		5.60*					81.0**
882.0	24th St Maritime Terminal/South	TCM	01/31/95	150.0*		2.00**	1.70**	6.90*							71.0*
883.1	San Diego Bay/Chollas Creek	TCM	02/08/94	170.0*		1.70*		5.30*		5.40*					75.0*
883.4	San Diego Bay/Continental Maritime	TCM	02/08/94	160.0*				9.20*		10.00**					71.0*
883.5	San Diego Bay/Tuna Docks	TCM	02/08/94												62.0*
883.8	San Diego Bay/Switzer Creek	TCM	02/08/94					5.80*		4.70*					
894.0	SD Bay/Harbor Is/E Basin/Storm Dr	TCM	02/08/94			1.70*		8.00*	2.00*					0.14*	86.0**
894.0	SD Bay/Harbor Is/E Basin/Storm Dr	TCM	01/31/95	130.0*			3.40**	5.30*	3.40**					0.11*	97.0**
899.0	San Diego Bay/Shelter Is/Fshg Pier	TCM	01/31/95	180.0*			4.40**								62.0*

\+ RCM = Resident California Mussel
TCM = Transplanted California Mussel
RBM = Resident Bay Mussel

* = Equals or exceeds EDL 85.
** = Equals or exceeds EDL 95.

APPENDIX J

Summary of 1993-95 Data

Trace Elements in Mussels and Sediment

(ppm, wet weight)

APPENDIX J

State Mussel Watch Program

Summary of 1993-95 Data: Trace Elements in Mussels and Sediment

(ppm, wet weight)

Station Number	Station Name	Sample Type*	Sample Date**	Aluminum	Arsenic	Cadmium	Chromium	Copper	Lead	Manganese	Mercury	Nickel	Selenium	Silver	Zinc
10.0	Trinidad Head	RCM	10/14/93	200.0	1.6	1.6	1.00	1.40	0.30	3.50	0.036	0.83	0.27	0.006	28.0
10.0	Trinidad Head	RCM	11/28/94	160.0	NA	1.0	9.70	1.70	0.21	3.70	0.024	NA	NA	0.006	26.0
100.0	Mad River Slough	TCM	02/24/94	140.0	1.3	1.0	0.43	1.30	0.28	2.60	0.032	1.10	0.24	0.004	32.0
101.0	Samoa Bridge/West	TCM	02/24/94	380.0	1.6	1.1	0.95	1.70	0.28	4.90	0.042	1.50	0.35	0.008	36.0
103.0	Eureka Channel	TCM	02/24/94	340.0	1.4	1.1	0.85	1.60	0.38	4.20	0.033	1.20	0.26	0.006	33.0
202.0	Bodega Head	RCM	09/16/93	64.0	NA	1.9	0.27	1.10	0.25	1.50	0.037	NA	NA	0.019	24.0
202.0	Bodega Head	RCM	09/19/94	29.0	1.6	2.9	1.40	1.10	0.19	1.00	0.036	1.20	0.20	0.013	29.0
308.0	San Francisco Bay/Hunter's Point	TCM	01/15/88	400.0	NA	1.3	2.60	3.30	0.53	4.70	0.067	NA	0.49	0.097	38.0
309.0	San Mateo Bridge/8B	TCM	02/12/85	350.0	NA	1.3	1.80	3.50	0.28	12.00	0.089	NA	0.43	0.092	34.0
313.0	San Francisco Bay/near Redwood Cr	TCM	02/12/85	400.0	NA	1.5	4.20	2.90	0.26	11.00	0.100	NA	0.42	0.180	31.0
313.0	San Francisco Bay/near Redwood Cr	TCM	01/15/88	130.0	NA	1.4	3.20	4.00	0.18	4.20	0.067	NA	0.60	0.470	30.0
321.0	Dumbarton Bridge/Channel Marker 14	TCM	02/12/85	370.0	NA	1.3	3.50	2.10	0.29	8.30	0.075	NA	0.30	0.130	32.0
404.0	Sandholdt Bridge	TCM	03/07/94	250.0	NA	1.0	0.36	1.70	0.26	3.10	0.041	NA	NA	0.007	42.0
404.0	Sandholdt Bridge	TCM	02/22/95	190.0	NA	1.2	0.69	1.50	0.30	2.70	0.037	NA	NA	0.003	41.0
414.0	Pacific Grove	RCM	04/14/94	19.0	NA	1.4	0.11	0.91	0.52	0.67	0.025	NA	NA	0.040	41.0
414.0	Pacific Grove	RCM	04/19/95	42.0	NA	1.2	1.50	1.30	0.42	1.10	0.024	NA	NA	0.016	31.0
420.0	Monterey Harbor/Coast Guard Jetty	TCM	05/26/94	11.0	NA	2.4	0.08	1.50	0.56	0.93	0.021	NA	NA	0.026	29.0
420.3	Monterey Harbor/C G Jetty/Inner	TCM	05/26/94	13.0	NA	2.3	0.06	2.10	1.10	0.86	0.026	NA	NA	0.017	34.0
421.0	Monterey Harbor/Slag Pile	TCM	05/26/94	52.0	NA	1.7	0.26	3.60	3.30	0.86	0.043	NA	NA	0.032	52.0
507.3	Mugu Lagoon/Calleguas Creek	TCM	02/08/94	140.0	1.5	1.7	0.26	1.70	0.34	3.50	0.029	0.37	0.51	0.028	31.0
508.1	Mugu Drainage 1	SED	01/31/95	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.55	NA	NA
601.0	LA Harbor/National Steel	SED	11/09/93	17000.0	NA	1.0	47.00	58.00	40.00	370.00	0.220	23.00	0.20	0.230	140.0
601.0	LA Harbor/National Steel	TCM	02/08/94	140.0	NA	1.4	0.38	5.50	1.50	5.70	0.039	0.27	0.27	0.020	60.0
601.0	LA Harbor/National Steel	TCM	01/31/95	57.0	NA	1.7	0.75	1.50	1.00	2.30	0.034	NA	0.20	0.007	53.0
602.0	LA Harbor/West Basin	TCM	02/08/94	80.0	1.3	1.6	0.28	3.90	0.86	3.00	0.034	0.24	0.28	0.014	44.0
605.0	LA Harbor/Cabrillo Pier	SED	11/09/93	13000.0	NA	1.0	43.00	74.00	18.00	220.00	0.110	23.00	0.41	0.240	78.0
605.0	LA Harbor/Cabrillo Pier	TCM	02/08/94	160.0	NA	0.9	0.35	3.20	0.96	4.40	0.032	0.26	0.74	0.022	39.0
605.0	LA Harbor/Cabrillo Pier	TCM	01/31/95	120.0	NA	0.9	NA	2.20	NA	4.50	0.026	NA	0.46	0.033	41.0
616.0	LA Harbor/Consolidated Slip	SED	11/09/93	11000.0	NA	5.7	47.00	65.00	56.00	220.00	0.130	21.00	0.20	0.380	240.0
616.0	LA Harbor/Consolidated Slip	TCM	02/08/94	130.0	NA	1.8	0.39	3.40	2.30	3.70	0.033	0.28	0.43	0.014	59.0
616.0	LA Harbor/Consolidated Slip	TCM	01/31/95	96.0	NA	1.6	2.10	1.70	1.50	3.40	0.028	NA	ND	0.010	60.0
618.0	LA Harbor/Angels Gate	RCM	02/08/94	170.0	1.3	0.2	0.26	2.10	0.31	2.80	0.015	0.16	0.80	0.012	20.0
618.0	LA Harbor/Angels Gate	RCM	01/31/95	130.0	NA	0.4	NA	1.70	NA	2.90	0.014	NA	0.50	0.009	17.0
648.0	Malibu	RBM	02/07/94	220.0	1.5	0.2	0.33	2.50	0.79	4.00	0.023	0.37	0.85	0.290	18.0
648.0	Malibu	RBM	01/31/95	280.0	NA	0.4	8.30	1.50	0.15	5.30	0.014	NA	0.58	0.048	16.0
650.0	Santa Monica	RCM	02/07/94	410.0	1.3	0.3	0.44	1.30	0.31	8.80	0.017	0.61	0.73	0.057	12.0
650.0	Santa Monica	RCM	01/31/95	120.0	NA	0.3	4.50	2.60	0.75	2.60	0.026	NA	0.99	0.670	34.0
662.0	Royal Palms	RCM	02/08/94	190.0	NA	0.3	0.42	1.50	0.32	6.10	0.017	0.53	0.53	0.400	20.0
662.0	Royal Palms	RCM	01/31/95	110.0	NA	0.4	5.10	1.60	0.32	2.90	0.024	NA	0.47	0.290	27.0
664.0	Cabrillo Beach	RCM	11/11/94	120.0	NA	0.4	1.60	2.00	0.43	2.60	0.036	NA	0.54	0.720	34.0

* RCM = Resident California Mussel
TCM = Transplanted California Mussel
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SED = Sediment
NA = Not Analyzed
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** Samples with a collection date prior to 1993 are archive samples.

APPENDIX J (continued)

State Mussel Watch Program

Summary of 1993-95 Data: Trace Elements in Mussels and Sediment

(ppm, wet weight)

Station Number	Station Name	Sample Type*	Sample Date	Aluminum	Arsenic	Cadmium	Chromium	Copper	Lead	Manganese	Mercury	Nickel	Selenium	Silver	Zinc
681.0	Catalina Island/West	RCM	03/30/94	27.0	NA	1.2	0.30	0.68	3.50	1.30	0.031	0.35	0.36	0.150	37.0
713.0	Huntington Harbour/Edinger Street	TCM	02/07/94	190.0	1.6	1.3	0.28	2.50	0.89	4.20	0.055	0.26	0.40	0.007	53.0
713.0	Huntington Harbour/Edinger Street	TCM	01/30/95	250.0	NA	1.5	18.00	2.10	0.90	6.20	0.036	NA	NA	0.012	46.0
715.0	Huntington Harbour/Warner Ave Brdg	TCM	02/07/94	190.0	1.5	1.4	0.33	2.50	1.70	5.90	0.036	0.34	0.37	0.009	63.0
715.0	Huntington Harbour/Warner Ave Brdg	TCM	01/30/95	200.0	NA	1.2	15.00	2.60	1.50	5.90	0.032	NA	NA	0.014	55.0
723.4	Newport Bay/Turning Basin	TCM	01/30/95	95.0	NA	1.7	1.90	2.40	0.54	4.50	0.044	NA	NA	0.009	55.0
724.0	Newport Bay/Highway 1 Bridge	TCM	02/07/94	150.0	1.5	1.4	0.32	2.70	0.54	7.50	0.037	0.58	0.27	0.008	46.0
724.0	Newport Bay/Highway 1 Bridge	TCM	01/30/95	110.0	NA	1.4	0.52	7.00	0.70	6.90	0.065	NA	NA	0.010	75.0
725.0	Newport Bay/Crows Nest	TCM	02/07/94	110.0	1.5	1.7	0.29	21.00	1.00	4.80	0.085	0.58	0.31	0.011	81.0
725.0	Newport Bay/Crows Nest	TCM	01/30/95	280.0	NA	1.2	2.50	2.10	0.49	4.50	0.034	NA	NA	0.006	42.0
726.4	Newport Bay/Rhine Channel/End	TCM	02/07/94	120.0	1.4	1.5	0.45	26.00	0.92	12.00	0.069	0.62	0.27	0.014	88.0
726.4	Newport Bay/Rhine Channel/End	TCM	01/30/95	100.0	NA	1.6	0.57	11.00	0.58	6.10	0.063	NA	NA	0.009	72.0
750.0	Oceanside	RCM	01/30/95	230.0	NA	0.3	2.30	1.70	0.11	3.60	0.012	NA	NA	0.015	23.0
868.5	Mission Bay/Landfill 1	TCM	01/30/95	250.0	1.2	1.1	1.10	1.70	0.27	4.00	0.030	1.10	0.30	0.015	34.0
868.6	Mission Bay/Landfill 2	TCM	01/30/95	240.0	1.6	1.6	0.54	2.10	0.24	3.30	0.037	0.72	0.43	0.015	37.0
882.0	24th St Maritime Terminal/South	TCM	02/08/94	170.0	1.4	1.2	0.31	11.00	0.67	5.60	0.047	0.47	0.28	0.094	81.0
882.0	24th St Maritime Terminal/South	TCM	01/31/95	150.0	NA	2.0	1.70	6.90	0.60	4.50	0.045	NA	NA	0.042	71.0
883.1	San Diego Bay/Chollas Creek	TCM	02/08/94	170.0	1.3	1.7	0.31	5.30	1.30	5.40	0.044	0.21	0.26	0.040	75.0
883.4	San Diego Bay/Continental Maritime	TCM	02/08/94	160.0	1.3	1.2	0.32	9.20	0.70	10.00	0.039	0.21	0.27	0.060	71.0
883.5	San Diego Bay/Tuna Docks	TCM	02/08/94	110.0	1.3	1.2	0.23	4.80	0.94	2.80	0.030	0.16	0.22	0.039	62.0
883.8	San Diego Bay/Switzer Creek	TCM	02/08/94	120.0	1.3	1.2	0.28	5.80	0.67	4.70	0.037	0.25	0.24	0.043	53.0
894.0	SD Bay/Harbor Is/E Basin/Storm Dr	TCM	02/08/94	87.0	1.4	1.7	0.43	8.00	2.00	2.30	0.030	0.21	0.23	0.140	86.0
894.0	SD Bay/Harbor Is/E Basin/Storm Dr	TCM	01/31/95	130.0	NA	1.4	3.40	5.30	3.40	3.00	0.036	NA	NA	0.110	97.0
899.0	San Diego Bay/Shelter Is/Fshg Pier	TCM	01/31/95	180.0	NA	1.0	4.40	2.60	0.79	3.00	0.035	NA	NA	0.012	62.0

* RCM = Resident California Mussel
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SED = Sediment
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APPENDIX K

Summary of 1993-95 Data

Trace Elements in Mussels and Sediment

(ppm, dry weight)

APPENDIX K

State Mussel Watch Program

Summary of 1993-95 Data: Trace Elements in Mussels and Sediment

(ppm, dry weight)

Station Number	Station Name	Sample Type*	Sample Date	Aluminum	Arsenic	Cadmium	Chromium	Copper	Lead	Manganese	Mercury	Nickel	Selenium	Silver	Zinc
10.0	Trinidad Head	RCM	10/14/93	1100.0	8.4	8.5	5.2	7.1	1.6	18.0	0.190	4.3	1.4	0.029	150.0
10.0	Trinidad Head	RCM	11/28/94	870.0	NA	5.2	52.0	9.1	1.1	20.0	0.130	NA	NA	0.032	140.0
100.0	Mad River Slough	TCM	02/24/94	1000.0	9.5	6.9	3.2	9.4	2.1	19.0	0.230	8.1	1.8	0.031	230.0
101.0	Samoa Bridge/West	TCM	02/24/94	2500.0	11.0	7.1	6.2	11.0	1.8	32.0	0.270	9.9	2.3	0.052	230.0
103.0	Eureka Channel	TCM	02/24/94	2200.0	9.1	6.6	5.3	10.0	2.4	26.0	0.210	7.2	1.6	0.036	210.0
202.0	Bodega Head	RCM	09/16/93	360.0	NA	11.0	1.5	6.4	1.4	8.7	0.210	NA	NA	0.110	130.0
202.0	Bodega Head	RCM	09/19/94	200.0	11.0	20.0	9.6	7.9	1.3	7.1	0.250	8.7	1.4	0.090	200.0
308.0	San Francisco Bay/Hunter's Point	TCM	01/15/88	2200.0	NA	7.2	14.0	18.0	2.9	26.0	0.370	NA	2.7	0.530	210.0
309.0	San Mateo Bridge/8B	TCM	02/12/85	2000.0	NA	7.6	10.0	20.0	1.6	66.0	0.500	NA	2.4	0.520	190.0
313.0	San Francisco Bay/near Redwood Cr	TCM	02/12/85	2600.0	NA	9.5	27.0	19.0	1.7	70.0	0.650	NA	2.7	1.200	200.0
313.0	San Francisco Bay/near Redwood Cr	TCM	01/15/88	750.0	NA	7.9	18.0	23.0	1.0	24.0	0.380	NA	3.4	2.700	170.0
321.0	Dumbarton Bridge/Channel Marker 14	TCM	02/12/85	2700.0	NA	9.6	25.0	15.0	2.1	60.0	0.540	NA	2.2	0.920	230.0
404.0	Sandholdt Bridge	TCM	03/07/94	1600.0	NA	6.4	2.3	11.0	1.6	20.0	0.260	NA	NA	0.041	270.0
404.0	Sandholdt Bridge	TCM	02/22/95	1400.0	NA	8.5	5.1	11.0	2.2	20.0	0.270	NA	NA	0.021	300.0
414.0	Pacific Grove	RCM	04/14/94	140.0	NA	11.0	0.8	6.7	3.8	5.0	0.190	NA	NA	0.300	300.0
414.0	Pacific Grove	RCM	04/19/95	260.0	NA	7.7	9.6	8.0	2.6	6.6	0.150	NA	NA	0.097	190.0
420.0	Monterey Harbor/Coast Guard Jetty	TCM	05/26/94	50.0	NA	11.0	0.4	7.3	2.7	4.4	0.098	NA	NA	0.130	140.0
420.3	Monterey Harbor/C G Jetty/Inner	TCM	05/26/94	63.0	NA	11.0	0.3	9.8	5.2	4.0	0.120	NA	NA	0.078	160.0
421.0	Monterey Harbor/Slag Pile	TCM	05/26/94	330.0	NA	11.0	1.6	23.0	21.0	5.4	0.270	NA	NA	0.200	330.0
507.3	Mugu Lagoon/Calleguas Creek	TCM	02/08/94	920.0	9.9	12.0	1.8	12.0	2.3	24.0	0.200	2.5	3.4	0.190	210.0
508.1	Mugu Drainage 1	SED	01/31/95	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.9	NA	NA
601.0	LA Harbor/National Steel	SED	11/09/93	30000.0	NA	1.8	87.0	110.0	73.0	670.0	0.400	43.0	0.4	0.420	250.0
601.0	LA Harbor/National Steel	TCM	02/08/94	1200.0	NA	12.0	3.3	47.0	13.0	48.0	0.330	2.3	2.3	0.170	510.0
601.0	LA Harbor/National Steel	TCM	01/31/95	540.0	NA	16.0	7.2	14.0	10.0	22.0	0.320	NA	1.9	0.067	510.0
602.0	LA Harbor/West Basin	TCM	02/08/94	630.0	10.0	13.0	2.2	31.0	6.7	24.0	0.270	1.9	2.2	0.110	340.0
605.0	LA Harbor/Cabrillo Pier	SED	11/09/93	26000.0	NA	2.0	82.0	140.0	35.0	420.0	0.200	45.0	0.8	0.470	150.0
605.0	LA Harbor/Cabrillo Pier	TCM	02/08/94	750.0	NA	4.4	1.7	15.0	4.6	21.0	0.150	1.2	3.5	0.100	190.0
605.0	LA Harbor/Cabrillo Pier	TCM	01/31/95	710.0	NA	5.0	NA	13.0	NA	26.0	0.150	NA	2.7	0.190	240.0
616.0	LA Harbor/Consolidated Slip	SED	11/09/93	24000.0	NA	12.0	100.0	140.0	120.0	450.0	0.270	44.0	0.4	0.810	510.0
616.0	LA Harbor/Consolidated Slip	TCM	02/08/94	1000.0	NA	14.0	3.0	26.0	18.0	29.0	0.260	2.2	3.3	0.110	460.0
616.0	LA Harbor/Consolidated Slip	TCM	01/31/95	910.0	NA	15.0	20.0	16.0	14.0	32.0	0.260	NA	ND	0.093	570.0
618.0	LA Harbor/Angels Gate	RCM	02/08/94	900.0	7.3	1.1	1.4	12.0	1.7	15.0	0.082	0.9	4.3	0.064	110.0
618.0	LA Harbor/Angels Gate	RCM	01/31/95	860.0	NA	2.4	NA	11.0	NA	19.0	0.092	NA	3.3	0.062	110.0
648.0	Malibu	RBM	02/07/94	1200.0	8.3	1.2	1.9	14.0	4.4	23.0	0.130	2.1	4.8	1.600	100.0
648.0	Malibu	RBM	01/31/95	1700.0	NA	2.4	50.0	9.0	0.9	32.0	0.086	NA	3.5	0.290	98.0
650.0	Santa Monica	RCM	02/07/94	2400.0	7.3	1.8	2.6	7.4	1.8	52.0	0.097	3.5	4.3	0.330	70.0
650.0	Santa Monica	RCM	01/31/95	550.0	NA	1.5	21.0	12.0	3.5	12.0	0.120	NA	4.6	3.100	160.0
662.0	Royal Palms	RCM	02/08/94	1300.0	NA	1.8	2.9	11.0	2.2	43.0	0.120	3.7	3.7	2.800	140.0
662.0	Royal Palms	RCM	01/31/95	650.0	NA	2.4	30.0	9.7	1.9	17.0	0.140	NA	2.8	1.700	160.0
664.0	Cabrillo Beach	RCM	11/11/94	710.0	NA	2.4	9.5	12.0	2.6	16.0	0.220	NA	3.3	4.400	210.0

* RCM = Resident California Mussel
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** Samples with a collection date prior to 1993 are archive samples.

APPENDIX K (continued)

State Mussel Watch Program

Summary of 1993-95 Data: Trace Elements in Mussels and Sediment

(ppm, dry weight)

Station Number	Station Name	Sample Type*	Sample Date	Aluminum	Arsenic	Cadmium	Chromium	Copper	Lead	Manganese	Mercury	Nickel	Selenium	Silver	Zinc
681.0	Catalina Island/West	RCM	03/30/94	210.0	NA	9.4	2.3	5.2	27.0	9.6	0.240	2.7	2.8	1.200	290.0
713.0	Huntington Harbour/Edinger Street	TCM	02/07/94	1300.0	11.0	8.6	1.9	17.0	6.0	29.0	0.370	1.7	2.7	0.046	360.0
713.0	Huntington Harbour/Edinger Street	TCM	01/30/95	2000.0	NA	12.0	150.0	17.0	7.3	50.0	0.290	NA	NA	0.100	370.0
715.0	Huntington Harbour/Warner Ave Brdg	TCM	02/07/94	1400.0	12.0	10.0	2.5	19.0	13.0	45.0	0.270	2.6	2.8	0.067	480.0
715.0	Huntington Harbour/Warner Ave Brdg	TCM	01/30/95	1600.0	NA	9.4	120.0	21.0	12.0	47.0	0.250	NA	NA	0.110	440.0
723.4	Newport Bay/Turning Basin	TCM	01/30/95	920.0	NA	16.0	18.0	23.0	5.2	44.0	0.430	NA	NA	0.084	530.0
724.0	Newport Bay/Highway 1 Bridge	TCM	02/07/94	1100.0	11.0	11.0	2.4	20.0	4.0	56.0	0.280	4.3	2.0	0.057	340.0
724.0	Newport Bay/Highway 1 Bridge	TCM	01/30/95	1000.0	NA	13.0	4.9	66.0	6.6	65.0	0.610	NA	NA	0.094	710.0
725.0	Newport Bay/Crows Nest	TCM	02/07/94	940.0	13.0	14.0	2.5	180.0	8.7	41.0	0.730	4.9	2.7	0.097	690.0
725.0	Newport Bay/Crows Nest	TCM	01/30/95	2000.0	NA	8.6	18.0	15.0	3.5	32.0	0.240	NA	NA	0.041	300.0
726.4	Newport Bay/Rhine Channel/End	TCM	02/07/94	1100.0	13.0	14.0	4.1	240.0	8.3	110.0	0.620	5.6	2.4	0.130	800.0
726.4	Newport Bay/Rhine Channel/End	TCM	01/30/95	930.0	NA	14.0	5.1	100.0	5.2	55.0	0.570	NA	NA	0.078	650.0
750.0	Oceanside	RCM	01/30/95	1100.0	NA	1.5	11.0	7.9	0.5	17.0	0.055	NA	NA	0.073	110.0
868.5	Mission Bay/Landfill 1	TCM	01/30/95	1300.0	6.1	5.7	5.8	9.1	1.4	21.0	0.160	5.8	1.6	0.080	180.0
868.6	Mission Bay/Landfill 2	TCM	01/30/95	1100.0	7.4	7.3	2.5	9.8	1.1	15.0	0.170	3.3	2.0	0.067	170.0
882.0	24th St Maritime Terminal/South	TCM	02/08/94	1000.0	8.0	6.7	1.8	63.0	3.9	33.0	0.270	2.7	1.6	0.550	470.0
882.0	24th St Maritime Terminal/South	TCM	01/31/95	1000.0	NA	13.0	11.0	45.0	3.9	29.0	0.290	NA	NA	0.270	460.0
883.1	San Diego Bay/Chollas Creek	TCM	02/08/94	1400.0	10.0	13.0	2.5	43.0	10.0	43.0	0.350	1.7	2.1	0.320	600.0
883.4	San Diego Bay/Continental Maritime	TCM	02/08/94	1300.0	10.0	9.3	2.5	73.0	5.5	79.0	0.310	1.7	2.1	0.480	560.0
883.5	San Diego Bay/Tuna Docks	TCM	02/08/94	850.0	11.0	9.4	1.9	38.0	7.5	22.0	0.240	1.3	1.7	0.310	490.0
883.8	San Diego Bay/Switzer Creek	TCM	02/08/94	950.0	10.0	10.0	2.3	46.0	5.4	38.0	0.290	2.0	2.0	0.350	420.0
894.0	SD Bay/Harbor Is/E Basin/Storm Dr	TCM	02/08/94	760.0	12.0	15.0	3.8	70.0	17.0	20.0	0.260	1.8	2.0	1.300	750.0
894.0	SD Bay/Harbor Is/E Basin/Storm Dr	TCM	01/31/95	990.0	NA	11.0	26.0	41.0	26.0	23.0	0.280	NA	NA	0.840	750.0
899.0	San Diego Bay/Shelter Is/Fshg Pier	TCM	01/31/95	1000.0	NA	5.5	25.0	15.0	4.5	17.0	0.200	NA	NA	0.066	350.0

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APPENDIX L

Summary of 1993-95 Data

Organic Chemicals in Mussels and Sediment

(ppb, wet weight)

APPENDIX L

State Mussel Watch Program

Summary of 1993-95 Data: Organic Chemicals in Mussels and Sediment (ppb, wet weight)

Station Number	Station Name	Sample Type*	Sample Date**	Aldrin	Chlor-ben-side	alpha-Chlor-dene	cis-Chlor-dane	gamma-Chlor-dene	trans-Chlor-dane	cis-Nona-chlor	trans-Nona-chlor	Oxy-chlor-dane	Total Chlor-dane	Chlor-pyrifos	Dacthal	Diaz-inon
10.0	Trinidad Head	RCM	10/14/93	ND	ND	ND	0.2	ND	ND	ND	ND	ND	0.2	ND	ND	ND
10.0	Trinidad Head	RCM	11/28/94	ND	NA	ND	0.2	ND	ND	ND	ND	ND	0.2	ND	ND	ND
100.0	Mad River Slough	TCM	02/24/94	ND	ND	ND	0.2	ND	0.1	ND	ND	0.6	0.9	ND	ND	ND
103.0	Eureka Channel	TCM	02/24/94	ND	ND	ND	0.3	ND	0.2	ND	ND	0.7	1.2	ND	ND	ND
202.0	Bodega Head	RCM	09/16/93	ND	ND	ND	0.3	ND	0.2	ND	ND	ND	0.5	ND	ND	ND
202.0	Bodega Head	RCM	09/19/94	ND	NA	ND	0.3	ND	ND	ND	ND	ND	0.3	ND	ND	ND
302.0	Point Pinole	TCM	02/02/82	ND	NA	ND	3.2	0.2	1.3	2.4	2.4	0.2	9.7	ND	ND	ND
308.0	San Francisco Bay/Hunter's Point	TCM	01/15/88	ND	NA	0.2	5.8	0.3	1.4	3.4	3.4	0.3	14.9	ND	ND	ND
309.0	San Mateo Bridge/8B	TCM	02/12/85	ND	NA	ND	4.0	0.2	1.3	1.8	1.8	0.3	9.3	ND	0.4	ND
313.0	San Francisco Bay/near Redwood Cr	TCM	02/12/85	ND	NA	0.2	4.5	0.3	1.6	3.2	3.2	0.2	13.1	ND	0.3	ND

Station Number	o,p' DDD	p,p' DDD	o,p' DDE	p,p' DDE	o,p' DDT	p,p' DDT	p,p' DDMS	p,p' DDMU	Total DDT	Di-Chloro-Benzophenone	Dicofol	Diel-drin I	Endo-sulfan II	Endo-sulfan sulfate	Endo-sulfan sulfan	Total Endo-	Endrin	Ethion	alpha-HCH
10.0	ND	ND	ND	0.6	ND	ND	NA	ND	0.6	ND	ND	0.8	ND	ND	ND	ND	ND	ND	0.8
10.0	ND	ND	ND	0.6	ND	ND	NA	ND	0.6	ND	ND	0.6	ND	ND	ND	ND	ND	ND	0.8
100.0	ND	ND	ND	0.4	ND	ND	NA	ND	0.4	ND	ND	0.8	ND	ND	ND	ND	ND	ND	0.2
103.0	ND	ND	ND	1.0	ND	ND	NA	ND	1.0	ND	ND	0.6	ND	ND	ND	ND	ND	ND	0.3
202.0	ND	ND	ND	1.0	ND	ND	NA	ND	1.0	ND	ND	1.1	ND	ND	ND	ND	ND	ND	0.5
202.0	ND	ND	ND	0.8	ND	ND	NA	ND	0.8	ND	ND	1.0	ND	ND	ND	ND	ND	ND	0.2
302.0	1.8	8.0	ND	8.2	ND	1.5	NA	0.9	20.4	ND	ND	4.0	0.3	ND	ND	0.3	ND	ND	0.5
308.0	4.0	11.7	1.1	21.4	1.0	7.3	NA	2.2	48.5	ND	ND	10.4	0.4	ND	ND	0.4	ND	ND	0.4
309.0	3.2	11.2	ND	7.8	ND	1.0	NA	ND	23.2	ND	ND	22.2	0.3	ND	ND	0.3	ND	ND	0.6
313.0	2.5	8.8	ND	9.7	ND	1.3	NA	0.8	23.1	ND	ND	16.1	0.3	ND	ND	0.3	ND	ND	0.4

Station Number	beta-HCH	delta-HCH	gamma-HCH (Lindane)	Hepta-chlor	Hepta-chlor-epoxide	Hexa-chloro-benzene	Methoxy-chlor	Ethyl-para-thion	Methyl-para-thion	Oxa-diazon	Phenol	PCB 1248	PCB 1254	PCB 1260	Total PCB	PCT 5460	Tetra-difon	Toxa-phene	Tri-butyl-tin
10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	ND	ND	ND	ND	ND	ND	ND	ND
10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	ND	2.2	ND	2.2	ND	ND	ND	ND
100.0	ND	ND	0.2	ND	ND	ND	ND	ND	ND	ND	NA	ND	ND	ND	ND	ND	ND	ND	NA
103.0	ND	ND	0.1	ND	ND	ND	ND	ND	ND	ND	NA	ND	ND	ND	ND	ND	ND	ND	NA
202.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	ND	ND	ND	ND	ND	ND	ND	ND
202.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	ND	4.3	ND	4.3	ND	ND	ND	ND
302.0	ND	ND	0.3	ND	0.2	ND	ND	ND	ND	ND	NA	8.6	28.7	4.2	41.5	NA	ND	ND	NA
308.0	ND	ND	0.4	ND	0.2	ND	ND	ND	ND	0.7	NA	9.8	424.3	119.0	552.4	NA	ND	ND	NA
309.0	ND	ND	1.0	ND	0.4	ND	ND	ND	ND	0.4	NA	ND	34.6	9.9	44.6	NA	ND	ND	NA
313.0	ND	ND	0.9	ND	0.5	ND	ND	ND	ND	0.6	NA	9.3	42.8	8.9	61.1	NA	ND	ND	NA

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APPENDIX L (continued)

State Mussel Watch Program

Summary of 1993-95 Data: Organic Chemicals in Mussels and Sediment (ppb, wet weight)

Station Number	Station Name	Sample Type*	Sample Date**	Aldrin	Chlor-ben-side	alpha-Chlor-dene	cis-Chlor-dane	gamma-Chlor-dene	trans-Chlor-dane	cis-Nona-chlor	trans-Nona-chlor	Oxy-chlor-dane	Total Chlor-dane	Chlor-pyrifos	Dacthal	Diaz-inon
313.0	San Francisco Bay/near Redwood Cr	TCM	01/15/88	ND	NA	0.3	5.3	0.4	1.4	3.9	3.9	0.3	15.5	ND	0.6	ND
321.0	Dumbarton Bridge/Channel Marker 14	TCM	01/18/82	ND	NA	0.2	5.4	0.3	2.2	3.5	3.5	0.4	15.5	ND	0.5	ND
321.0	Dumbarton Bridge/Channel Marker 14	TCM	02/12/85	ND	NA	0.2	4.3	0.2	1.4	2.9	2.9	0.3	12.2	ND	0.4	ND
321.0	Dumbarton Bridge/Channel Marker 14	TCM	01/15/88	ND	NA	ND	3.5	ND	1.0	1.8	1.8	0.2	8.4	ND	0.4	ND
404.0	Sandholdt Bridge	TCM	03/07/94	ND	ND	ND	5.4	ND	4.8	2.8	4.2	0.3	17.4	5.0	39.8	ND
404.0	Sandholdt Bridge	TCM	02/22/95	ND	NA	0.2	4.3	0.2	2.2	5.1	5.1	0.2	17.2	2.5	19.3	ND
414.0	Pacific Grove	RCM	04/14/94	ND	ND	ND	0.4	ND	0.3	ND	0.2	ND	0.8	ND	ND	ND
414.0	Pacific Grove	RCM	04/19/95	ND	NA	ND	0.4	ND	ND	0.3	0.3	ND	1.0	ND	ND	ND
420.0	Monterey Harbor/Coast Guard Jetty	TCM	05/26/94	ND	ND	ND	0.6	ND	0.4	ND	ND	ND	1.0	ND	ND	ND
507.3	Mugu Lagoon/Calleguas Creek	TCM	02/08/94	ND	ND	0.4	9.4	0.2	7.3	4.2	6.6	0.4	28.5	10.4	62.4	ND

Station Number	o,p' DDD	p,p' DDD	o,p' DDE	p,p' DDE	o,p' DDT	p,p' DDT	p,p' DDMS	p,p' DDMU	Total DDT	Di-Chloro-Benzophenone	Dicofol	Diel-drin I	Endo-sulfan II	Endo-sulfan sulfate	Endo-sulfan sulfan	Total Endo-	Endrin	Ethion	alpha-HCH
313.0	1.4	4.0	0.3	10.0	ND	0.7	NA	ND	16.3	ND	ND	7.2	0.5	ND	ND	0.5	ND	ND	0.2
321.0	1.5	5.5	ND	8.8	ND	1.1	NA	0.9	17.8	ND	ND	9.5	0.6	ND	ND	0.6	ND	ND	1.0
321.0	2.2	8.0	ND	9.0	ND	0.9	NA	1.0	21.2	ND	ND	16.9	0.4	ND	ND	0.4	ND	ND	0.5
321.0	0.8	3.0	ND	7.1	ND	0.7	NA	ND	11.6	ND	ND	8.9	0.4	ND	ND	0.4	ND	ND	0.3
404.0	22.5	90.0	7.4	328.7	34.6	154.0	NA	10.7	647.9	ND	ND	36.3	1.6	4.3	17.1	23.0	4.5	ND	0.2
404.0	14.1	56.1	5.9	234.2	28.6	96.4	NA	7.7	442.7	ND	ND	41.9	0.9	3.1	11.6	15.7	3.1	ND	ND
414.0	ND	ND	ND	3.6	ND	0.8	NA	ND	4.4	ND	ND	0.9	ND	ND	ND	ND	ND	ND	0.2
414.0	ND	ND	ND	4.1	ND	1.4	NA	ND	5.5	ND	ND	1.8	ND	ND	ND	ND	ND	ND	0.2
420.0	ND	ND	ND	4.3	ND	ND	NA	ND	4.3	ND	ND	1.0	ND	ND	ND	ND	ND	ND	0.9
507.3	12.4	54.6	6.5	325.0	31.2	120.9	NA	6.4	556.9	ND	ND	4.7	ND	ND	ND	ND	1.1	ND	0.2

Station Number	beta-HCH	delta-HCH	gamma-HCH (Lindane)	Hepta-chlor	Hepta-chlor-epoxide	Hexa-chloro-benzene	Methoxy-chlor	Ethyl-para-thion	Methyl-para-thion	Oxa-diazon	Phenol	PCB 1248	PCB 1254	PCB 1260	Total PCB	PCT 5460	Tetra-difon	Toxa-phene	Tri-butyl-tin
313.0	ND	ND	3.0	ND	0.4	ND	ND	ND	ND	2.3	NA	ND	40.7	4.7	45.4	NA	ND	ND	NA
321.0	ND	ND	1.7	ND	0.6	ND	ND	ND	ND	0.7	NA	7.0	49.7	6.2	62.8	NA	ND	ND	NA
321.0	ND	ND	1.0	ND	0.4	ND	ND	ND	ND	0.4	NA	ND	35.1	8.7	43.8	NA	ND	ND	NA
321.0	ND	ND	0.8	ND	0.3	ND	ND	ND	ND	1.1	NA	ND	32.0	7.8	39.9	NA	ND	ND	NA
404.0	ND	ND	0.3	ND	0.4	ND	ND	ND	ND	ND	NA	ND	31.1	ND	31.1	ND	ND	147.1	NA
404.0	ND	ND	0.1	ND	0.5	ND	ND	ND	ND	1.0	NA	ND	36.8	2.6	39.3	ND	ND	122.4	NA
414.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	ND	ND	ND	ND	ND	ND	ND	ND
414.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	ND	1.5	ND	1.5	ND	ND	ND	NA
420.0	1.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	ND	ND	ND	ND	ND	ND	ND	NA
507.3	ND	ND	0.2	ND	0.9	ND	ND	ND	ND	ND	NA	ND	11.6	5.2	16.8	ND	ND	468.0	NA

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APPENDIX L (continued)

State Mussel Watch Program

Summary of 1993-95 Data: Organic Chemicals in Mussels and Sediment (ppb, wet weight)

Station Number	Station Name	Sample Type*	Sample Date**	Aldrin	Chlor-ben-side	alpha-Chlor-dene	cis-Chlor-dane	gamma-Chlor-dene	trans-Chlor-dane	cis-Nona-chlor	trans-Nona-chlor	Oxy-chlor-dane	Total Chlor-dane	Chlor-pyrifos	Dacthal	Diaz-inon
601.0	LA Harbor/National Steel	SED	11/09/93	ND	ND	ND	1.7	ND	2.6	1.1	2.2	ND	13.9	ND	ND	ND
601.0	LA Harbor/National Steel	TCM	02/08/94	ND	ND	ND	2.3	ND	2.2	1.0	1.8	ND	7.4	ND	ND	ND
601.0	LA Harbor/National Steel	TCM	01/31/95	ND	NA	0.1	1.6	ND	0.9	1.1	1.1	0.1	5.0	ND	ND	ND
602.0	LA Harbor/West Basin	TCM	02/08/94	ND	ND	ND	2.5	ND	1.9	1.0	1.7	ND	7.2	ND	ND	ND
605.0	LA Harbor/Cabrillo Pier	SED	11/09/93	ND	ND	ND	ND	ND	ND	ND	1.2	ND	2.6	ND	ND	ND
605.0	LA Harbor/Cabrillo Pier	TCM	02/08/94	ND	ND	ND	2.0	ND	1.7	0.8	1.5	ND	6.0	ND	ND	ND
605.0	LA Harbor/Cabrillo Pier	TCM	01/31/95	ND	NA	0.2	3.0	0.2	1.1	2.2	2.2	0.2	8.9	ND	ND	ND
616.0	LA Harbor/Consolidated Slip	SED	11/09/93	0.6	ND	1.6	11.0	1.0	13.3	4.6	9.6	0.8	92.9	8.2	1.0	ND
616.0	LA Harbor/Consolidated Slip	TCM	02/08/94	ND	ND	0.3	3.3	0.2	3.0	1.6	3.1	ND	11.3	1.4	ND	ND
616.0	LA Harbor/Consolidated Slip	TCM	01/31/95	ND	NA	0.2	2.5	0.2	1.4	1.8	1.8	0.1	8.1	0.6	ND	ND

Station Number	o,p' DDD	p,p' DDD	o,p' DDE	p,p' DDE	o,p' DDT	p,p' DDT	p,p' DDMS	p,p' DDMU	Total DDT	Di-Chloro-Benzophenone	Dicofol	Diel-drin I	Endo-sulfan II	Endo-sulfan sulfate	Endo-sulfan sulfan	Total Endo-	Endrin	Ethion	alpha-HCH
601.0	4.6	14.0	3.3	38.2	ND	33.9	NA	ND	94.2	ND	ND	1.0	ND	ND	ND	ND	ND	ND	ND
601.0	2.4	8.4	4.2	39.4	ND	2.0	NA	2.7	59.2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
601.0	1.4	5.9	2.4	24.1	0.5	2.6	NA	1.4	38.3	ND	ND	0.9	ND	ND	ND	ND	ND	ND	ND
602.0	2.3	9.2	6.5	51.8	0.5	2.7	NA	2.7	75.7	ND	ND	0.4	ND	ND	ND	ND	ND	ND	ND
605.0	3.6	8.1	16.3	100.6	ND	2.2	NA	11.0	141.8	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
605.0	2.7	8.8	20.1	179.3	ND	2.2	NA	14.1	227.3	ND	ND	0.6	ND	ND	ND	ND	ND	ND	0.2
605.0	2.1	7.4	11.5	91.9	1.3	4.9	NA	7.7	126.7	ND	ND	2.1	ND	ND	ND	ND	ND	ND	ND
616.0	13.7	59.5	5.0	100.8	5.5	36.2	NA	5.5	226.3	ND	ND	6.0	ND	ND	ND	ND	4.3	ND	ND
616.0	3.0	12.9	3.7	40.6	0.6	3.6	NA	2.9	67.1	ND	ND	0.3	ND	ND	ND	ND	ND	ND	ND
616.0	2.0	6.9	1.7	22.0	1.7	6.0	NA	1.1	41.3	ND	ND	1.3	ND	ND	ND	ND	ND	ND	ND

Station Number	beta-HCH	delta-HCH	gamma-HCH (Lindane)	Hepta-chlor	Hepta-chlor-epoxide	Hexa-chloro-benzene	Methoxy-chlor	Ethyl-para-thion	Methyl-para-thion	Oxa-diazon	Phenol	PCB 1248	PCB 1254	PCB 1260	Total PCB	PCT 5460	Tetra-difon	Toxa-phene	Tri-butyl-tin
601.0	ND	ND	ND	ND	0.6	ND	ND	ND	ND	ND	NA	39.3	51.6	96.8	187.7	ND	ND	91.5	190.0
601.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	7.3	52.5	ND	59.8	ND	ND	ND	830.0
601.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.3	NA	4.3	40.9	3.0	48.3	ND	ND	10.5	NA
602.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	ND	90.7	ND	90.7	ND	ND	ND	NA
605.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	ND	26.8	ND	26.8	ND	ND	ND	NA
605.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	ND	45.8	ND	45.8	ND	ND	ND	NA
605.0	ND	ND	ND	ND	0.2	ND	ND	ND	ND	0.8	NA	8.8	44.1	ND	52.8	ND	ND	16.7	NA
616.0	ND	ND	ND	ND	3.3	0.5	ND	ND	ND	5.5	NA	59.5	79.7	178.6	317.8	ND	ND	265.6	130.0
616.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.3	NA	9.6	49.5	ND	59.1	ND	ND	ND	390.0
616.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.8	NA	7.2	32.3	2.9	42.5	ND	ND	30.7	0.3

* RCM = Resident California Mussel
RBM = Resident Bay Mussel
TCM = Transplanted California Mussel

SED = Sediment

NA = Not Analyzed
ND = Not Detected

APPENDIX L (continued)

State Mussel Watch Program

Summary of 1993-95 Data: Organic Chemicals in Mussels and Sediment (ppb, wet weight)

Station Number	Station Name	Sample Type*	Sample Date**	Aldrin	Chlor-ben-side	alpha-Chlor-dene	cis-Chlor-dane	gamma-Chlor-dene	trans-Chlor-dane	cis-Nona-chlor	trans-Nona-chlor	Oxy-chlor-dane	Total Chlor-dane	Chlor-pyrifos	Dacthal	Diaz-inon
618.0	LA Harbor/Angels Gate	RCM	02/08/94	ND	ND	ND	ND	0.2	ND	ND	1.7	0.2	2.0	ND	ND	ND
618.0	LA Harbor/Angels Gate	RCM	01/31/95	ND	NA	0.2	4.6	0.4	1.6	4.7	4.7	0.3	16.5	0.6	ND	ND
648.0	Malibu	RBM	02/07/94	ND	ND	0.2	4.2	0.5	3.7	1.5	4.5	ND	14.5	1.5	ND	ND
648.0	Malibu	RBM	01/31/95	ND	NA	ND	3.1	ND	1.1	3.2	3.2	0.2	10.8	ND	0.4	ND
650.0	Santa Monica	RCM	02/07/94	ND	ND	ND	1.5	ND	1.4	0.6	1.4	0.2	5.1	ND	ND	ND
650.0	Santa Monica	RCM	01/31/95	ND	NA	0.3	6.4	ND	1.9	5.5	5.5	0.3	19.9	ND	0.7	ND
662.0	Royal Palms	RCM	02/08/94	ND	ND	ND	0.4	ND	0.4	0.1	0.4	ND	1.3	ND	ND	ND
662.0	Royal Palms	RCM	01/31/95	ND	NA	ND	1.4	ND	0.4	1.5	1.5	ND	4.8	ND	ND	ND
664.0	Cabrillo Beach	RCM	11/11/94	ND	NA	ND	1.4	ND	0.6	1.9	1.9	0.2	5.9	ND	ND	ND
681.0	Catalina Island/West	RCM	03/30/94	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

Station Number	o,p' DDD	p,p' DDD	o,p' DDE	p,p' DDE	o,p' DDT	p,p' DDT	p,p' DDMS	p,p' DDMU	Total DDT	Di-Chloro-Benzophenone	Dicofol	Diel-drin I	Endo-sulfan II	Endo-sulfan sulfate	Endo-sulfan sulfan	Total Endo-	Endrin	Ethion	alpha-HCH
618.0	ND	ND	24.3	197.6	ND	0.9	NA	15.2	238.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
618.0	3.3	10.2	12.6	96.8	2.8	12.3	NA	8.5	146.5	ND	ND	1.5	ND	ND	ND	ND	ND	ND	ND
648.0	2.2	5.8	6.6	51.5	3.7	3.0	NA	7.0	79.7	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.3
648.0	1.2	3.2	3.6	30.8	0.8	3.7	NA	3.6	47.0	ND	ND	1.2	ND	ND	ND	ND	ND	ND	ND
650.0	1.1	3.4	4.3	37.8	ND	1.5	NA	4.9	53.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.2
650.0	1.6	4.3	3.9	32.0	ND	4.2	NA	4.3	50.3	ND	ND	3.0	ND	ND	ND	ND	ND	ND	0.3
662.0	1.5	5.1	8.1	81.4	ND	1.8	NA	8.4	106.4	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
662.0	1.9	6.6	9.8	92.4	ND	2.1	NA	9.4	122.1	ND	ND	1.4	ND	ND	ND	ND	ND	ND	ND
664.0	1.8	6.2	10.1	90.8	ND	2.3	NA	9.0	120.2	ND	ND	1.0	ND	ND	ND	ND	ND	ND	ND
681.0	ND	ND	ND	2.0	ND	ND	NA	ND	2.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

Station Number	beta-HCH	delta-HCH	gamma-HCH (Lindane)	Hepta-chlor	Hepta-chlor-epoxide	Hexa-chloro-benzene	Methoxy-chlor	Ethyl-para-thion	Methyl-para-thion	Oxa-diazon	Phenol	PCB 1248	PCB 1254	PCB 1260	Total PCB	PCT 5460	Tetra-difon	Toxa-phene	Tri-butyl-tin
618.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	11.4	56.2	ND	67.6	ND	ND	ND	NA
618.0	ND	ND	ND	ND	0.2	ND	ND	ND	ND	1.3	NA	12.7	63.0	2.1	77.8	ND	ND	41.4	NA
648.0	ND	ND	0.1	ND	ND	ND	ND	ND	ND	ND	NA	ND	26.6	ND	26.6	ND	ND	ND	NA
648.0	ND	ND	ND	ND	0.2	ND	ND	ND	ND	2.8	NA	ND	12.3	ND	12.3	ND	ND	ND	NA
650.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.5	NA	ND	9.2	ND	9.2	ND	ND	ND	NA
650.0	ND	ND	ND	ND	0.2	ND	ND	ND	ND	ND	NA	ND	20.3	ND	20.3	ND	ND	ND	NA
662.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	ND	8.6	ND	8.6	ND	ND	ND	NA
662.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	ND	15.3	ND	15.3	ND	ND	ND	NA
664.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	ND	16.5	ND	16.5	ND	ND	ND	NA
681.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	ND	ND	ND	ND	ND	ND	ND	NA

* RCM = Resident California Mussel
RBM = Resident Bay Mussel
TCM = Transplanted California Mussel

SED = Sediment

NA = Not Analyzed
ND = Not Detected

APPENDIX L (continued)

State Mussel Watch Program

Summary of 1993-95 Data: Organic Chemicals in Mussels and Sediment (ppb, wet weight)

Station Number	Station Name	Sample Type*	Sample Date**	Aldrin	Chlor-ben-side	alpha-Chlor-dene	cis-Chlor-dane	gamma-Chlor-dene	trans-Chlor-dane	cis-Nona-chlor	trans-Nona-chlor	Oxy-chlor-dane	Total Chlor-dane	Chlor-pyrifos	Dacthal	Diaz-inon
713.0	Huntington Harbour/Edinger Street	TCM	02/07/94	ND	ND	0.2	2.6	ND	2.4	1.3	2.4	0.1	8.9	1.3	2.2	ND
713.0	Huntington Harbour/Edinger Street	TCM	01/30/95	ND	NA	0.2	3.5	0.1	1.6	3.7	3.7	0.3	13.1	0.9	ND	ND
715.0	Huntington Harbour/Warner Ave Brdg	TCM	02/07/94	ND	ND	0.3	4.8	ND	4.3	2.8	4.4	0.2	16.7	1.3	0.4	ND
715.0	Huntington Harbour/Warner Ave Brdg	TCM	01/30/95	ND	NA	0.4	4.6	0.2	2.4	4.9	4.9	0.4	17.9	1.1	ND	ND
723.4	Newport Bay/Turning Basin	TCM	01/30/95	ND	NA	ND	1.9	ND	1.0	1.5	1.5	0.3	6.3	0.7	0.3	ND
724.0	Newport Bay/Highway 1 Bridge	TCM	02/07/94	ND	ND	0.2	3.0	ND	2.5	1.5	2.9	0.3	10.4	1.4	ND	ND
724.0	Newport Bay/Highway 1 Bridge	TCM	01/30/95	ND	NA	0.2	4.8	0.1	2.5	4.5	4.5	0.4	17.0	2.9	1.2	ND
725.0	Newport Bay/Crows Nest	TCM	02/07/94	ND	ND	ND	2.2	ND	1.7	1.6	1.9	0.5	8.1	0.6	ND	ND
725.0	Newport Bay/Crows Nest	TCM	01/30/95	ND	NA	0.1	2.0	ND	1.3	1.4	1.4	0.1	6.3	0.3	0.3	ND
726.4	Newport Bay/Rhine Channel/End	TCM	02/07/94	ND	ND	ND	2.1	ND	1.4	1.4	1.6	0.2	6.6	1.6	ND	ND

Station Number	o,p' DDD	p,p' DDD	o,p' DDE	p,p' DDE	o,p' DDT	p,p' DDT	p,p' DDMS	p,p' DDMU	Total DDT	Di-Chloro-Benzophenone	Dicofol	Diel-drin I	Endo-sulfan II	Endo-sulfan sulfate	Endo-sulfan sulfan	Total Endo-	Endrin	Ethion	alpha-HCH
713.0	1.3	4.0	1.4	26.0	ND	1.8	NA	1.8	36.2	ND	ND	1.5	ND	ND	ND	ND	ND	ND	ND
713.0	1.7	4.5	1.6	41.1	3.0	10.2	NA	1.4	63.5	ND	ND	2.7	ND	ND	ND	ND	ND	ND	ND
715.0	1.7	5.7	1.5	40.3	ND	1.7	NA	2.0	52.8	ND	ND	1.7	ND	ND	ND	ND	ND	ND	ND
715.0	1.8	5.5	1.6	50.8	2.1	7.2	NA	1.6	70.6	ND	ND	2.8	ND	ND	ND	ND	ND	ND	ND
723.4	0.5	2.0	0.4	17.3	1.0	4.1	NA	ND	25.2	ND	ND	1.7	ND	ND	ND	ND	ND	ND	ND
724.0	1.8	8.8	1.2	57.6	ND	1.6	NA	1.8	72.9	ND	ND	1.6	ND	ND	ND	ND	ND	ND	ND
724.0	1.9	9.4	1.6	75.1	5.4	24.1	NA	1.7	119.2	ND	ND	1.9	0.1	ND	ND	0.1	ND	ND	ND
725.0	1.2	5.2	0.9	41.7	1.6	1.1	NA	1.6	53.2	ND	ND	1.5	ND	ND	ND	ND	ND	ND	ND
725.0	0.9	3.4	0.6	27.4	0.7	2.9	NA	0.7	36.6	ND	ND	2.1	ND	ND	ND	ND	ND	ND	ND
726.4	0.8	4.0	0.6	27.9	1.1	0.9	NA	1.0	36.3	ND	ND	2.1	ND	ND	ND	ND	ND	ND	ND

Station Number	beta-HCH	delta-HCH	gamma-HCH (Lindane)	Hepta-chlor	Hepta-chlor-epoxide	Hexa-chloro-benzene	Methoxy-chlor	Ethyl-para-thion	Methyl-para-thion	Oxa-diazon	Phenol	PCB 1248	PCB 1254	PCB 1260	Total PCB	PCT 5460	Tetra-difon	Toxa-phene	Tri-butyl-tin
713.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	ND	11.8	ND	11.8	ND	ND	ND	110.0
713.0	ND	ND	ND	ND	0.2	ND	ND	ND	ND	0.9	NA	ND	15.5	ND	15.5	ND	ND	15.1	NA
715.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.5	NA	ND	17.1	ND	17.1	ND	ND	ND	130.0
715.0	ND	ND	ND	ND	0.2	ND	ND	ND	ND	0.7	NA	6.4	23.5	2.5	32.4	ND	ND	20.7	NA
723.4	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.6	NA	ND	8.6	ND	8.6	ND	ND	15.6	NA
724.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	ND	11.5	ND	11.5	ND	ND	ND	330.0
724.0	ND	ND	ND	ND	0.2	ND	ND	ND	ND	4.0	NA	ND	16.9	ND	16.9	ND	ND	43.4	NA
725.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	14.6	61.1	ND	75.7	ND	ND	ND	690.0
725.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.8	NA	6.8	35.8	1.5	44.1	ND	ND	10.8	NA
726.4	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.5	NA	10.7	51.7	ND	62.3	ND	ND	ND	630.0

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SED = Sediment

NA = Not Analyzed
ND = Not Detected

APPENDIX L (continued)

State Mussel Watch Program

Summary of 1993-95 Data: Organic Chemicals in Mussels and Sediment (ppb, wet weight)

Station Number	Station Name	Sample Type*	Sample Date**	Aldrin	Chlor-ben-side	alpha-Chlor-dene	cis-Chlor-dane	gamma-Chlor-dene	trans-Chlor-dane	cis-Nona-chlor	trans-Nona-chlor	Oxy-chlor-dane	Total Chlor-dane	Chlor-pyrifos	Dacthal	Diaz-inon
726.4	Newport Bay/Rhine Channel/End	TCM	01/30/95	ND	NA	0.1	2.8	0.2	1.7	2.3	2.3	0.3	9.6	0.7	0.6	ND
750.0	Oceanside	RCM	01/30/95	ND	NA	ND	1.6	ND	0.9	1.7	1.7	0.2	6.2	ND	0.6	ND
868.5	Mission Bay/Landfill 1	TCM	01/30/95	ND	NA	ND	2.8	ND	1.2	2.7	2.7	ND	9.5	ND	ND	ND
868.6	Mission Bay/Landfill 2	TCM	01/30/95	ND	NA	ND	3.6	ND	1.4	3.3	3.3	ND	11.6	ND	ND	ND
882.0	24th St Maritime Terminal/South	TCM	01/31/95	ND	NA	ND	1.8	ND	0.9	1.1	1.1	0.2	5.2	ND	ND	ND
883.4	San Diego Bay/Continental Maritime	TCM	02/08/94	ND	ND	ND	1.0	ND	0.8	0.7	0.9	ND	3.5	ND	ND	ND
883.5	San Diego Bay/Tuna Docks	TCM	02/08/94	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
894.0	SD Bay/Harbor Is/E Basin/Storm Dr	TCM	02/08/94	ND	ND	0.1	1.7	ND	1.7	0.7	1.6	ND	5.7	ND	ND	ND
894.0	SD Bay/Harbor Is/E Basin/Storm Dr	TCM	01/31/95	ND	NA	0.3	3.1	0.3	1.1	1.8	1.8	0.7	9.0	ND	ND	ND
899.0	San Diego Bay/Shelter Is/Fshg Pier	TCM	01/31/95	ND	NA	ND	1.1	ND	0.4	0.8	0.8	0.5	3.7	ND	ND	ND

Station Number	o,p' DDD	p,p' DDD	o,p' DDE	p,p' DDE	o,p' DDT	p,p' DDT	p,p' DDMS	p,p' DDMU	Total DDT	Di-Chloro-Benzophenone	Dicofol	Diel-drin I	Endo-sulfan II	Endo-sulfan sulfate	Endo-sulfan sulfan	Total Endo-	Endrin	Ethion	alpha-HCH
726.4	1.0	3.7	0.7	28.2	1.2	5.5	NA	0.6	40.9	ND	ND	1.9	ND	ND	ND	ND	ND	ND	ND
750.0	1.7	3.6	1.2	26.4	1.9	5.9	NA	1.1	41.8	ND	ND	1.2	ND	ND	ND	ND	ND	ND	0.3
868.5	ND	0.8	ND	6.7	ND	ND	NA	ND	7.4	ND	ND	2.7	ND	ND	ND	ND	ND	ND	ND
868.6	ND	ND	ND	8.2	ND	1.8	NA	ND	9.9	ND	ND	3.4	ND	ND	ND	ND	ND	ND	ND
882.0	ND	1.2	ND	6.8	ND	1.5	NA	ND	9.5	ND	ND	1.0	ND	ND	ND	ND	ND	ND	ND
883.4	ND	0.9	ND	4.5	ND	1.0	NA	ND	6.4	ND	ND	0.3	ND	ND	ND	ND	ND	ND	ND
883.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
894.0	2.8	8.8	ND	3.1	0.5	2.4	NA	1.3	18.8	ND	ND	0.2	ND	ND	ND	ND	ND	ND	ND
894.0	5.9	17.0	ND	3.8	1.1	4.0	NA	2.8	34.7	ND	ND	0.8	ND	ND	ND	ND	ND	ND	ND
899.0	ND	1.1	ND	8.6	ND	ND	NA	0.9	10.7	ND	ND	0.8	ND	ND	ND	ND	ND	ND	ND

Station Number	beta-HCH	delta-HCH	gamma-HCH (Lindane)	Hepta-chlor	Hepta-chlor-epoxide	Hexa-chloro-benzene	Methoxy-chlor	Ethyl-para-thion	Methyl-para-thion	Oxa-diazon	Phenol	PCB 1248	PCB 1254	PCB 1260	Total PCB	PCT 5460	Tetra-difon	Toxa-phene	Tri-butyl-tin
726.4	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.9	NA	6.5	37.4	1.3	45.2	ND	ND	22.1	0.6
750.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.7	NA	ND	4.3	ND	4.3	ND	ND	26.4	NA
868.5	ND	ND	ND	ND	0.3	ND	ND	ND	ND	1.3	NA	ND	20.0	ND	20.0	ND	ND	ND	NA
868.6	ND	ND	ND	ND	0.3	ND	ND	ND	ND	1.3	NA	ND	22.7	ND	22.7	ND	ND	ND	NA
882.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.0	NA	ND	38.6	4.6	43.2	ND	ND	ND	NA
883.4	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	ND	30.2	ND	30.2	ND	ND	ND	310.0
883.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	660.0
894.0	ND	ND	0.1	0.1	ND	ND	ND	ND	ND	ND	NA	404.8	246.4	ND	651.2	ND	ND	ND	88.0
894.0	ND	ND	ND	0.2	0.2	ND	ND	ND	ND	0.3	NA	1407.8	869.9	26.1	2305.8	ND	ND	ND	0.2
899.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	ND	26.7	2.1	28.8	ND	ND	ND	0.1

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APPENDIX M

Summary of 1993-95 Data

Organic Chemicals in Mussels and Sediment

(ppb, dry weight)

APPENDIX M

State Mussel Watch Program

Summary of 1993-95 Data: Organic Chemicals in Mussels and Sediment (ppb, dry weight)

Station Number	Station Name	Sample Type*	Sample Date**	Aldrin	Chlor-ben-side	alpha-Chlor-dene	cis-Chlor-dane	gamma-Chlor-dene	trans-Chlor-dane	cis-Nona-chlor	trans-Nona-chlor	Oxy-chlor-dane	Total Chlor-dane	Chlor-pyrifos	Dacthal	Diaz-inon
10.0	Trinidad Head	RCM	10/14/93	ND	ND	ND	1.3	ND	ND	ND	ND	ND	1.3	ND	ND	ND
10.0	Trinidad Head	RCM	11/28/94	ND	NA	ND	1.1	ND	ND	ND	ND	ND	1.1	ND	ND	ND
100.0	Mad River Slough	TCM	02/24/94	ND	ND	ND	2.2	ND	1.3	ND	ND	5.3	8.8	ND	ND	ND
103.0	Eureka Channel	TCM	02/24/94	ND	ND	ND	2.1	ND	1.2	ND	ND	4.2	7.5	ND	ND	ND
202.0	Bodega Head	RCM	09/16/93	ND	ND	ND	2.0	ND	1.0	ND	ND	ND	3.0	ND	ND	ND
202.0	Bodega Head	RCM	09/19/94	ND	NA	ND	1.9	ND	ND	ND	ND	ND	1.9	ND	ND	ND
302.0	Point Pinole	TCM	02/02/82	ND	NA	ND	21.9	1.2	8.8	16.6	16.6	1.1	66.2	ND	ND	ND
308.0	San Francisco Bay/Hunter's Point	TCM	01/15/88	ND	NA	1.2	31.3	1.6	7.6	18.5	18.5	1.4	80.0	ND	ND	ND
309.0	San Mateo Bridge/8B	TCM	02/12/85	ND	NA	ND	23.7	1.3	8.1	10.6	10.6	1.6	55.9	ND	2.6	ND
313.0	San Francisco Bay/near Redwood Cr	TCM	02/12/85	ND	NA	1.2	29.9	2.2	10.5	21.4	21.4	1.2	87.7	ND	2.0	ND

Station Number	o,p' DDD	p,p' DDD	o,p' DDE	p,p' DDE	o,p' DDT	p,p' DDT	p,p' DDMS	p,p' DDMU	Total DDT	Di-Chloro-Benzophenone	Dicofol drin	Diel-sulfan I	Endo-sulfan II	Endo-sulfan sulfate	Endo-	Total Endo-sulfan	Endrin	Ethion	alpha-HCH
10.0	ND	ND	ND	3.8	ND	ND	NA	ND	3.8	ND	ND	4.9	ND	ND	ND	ND	ND	ND	4.8
10.0	ND	ND	ND	3.2	ND	ND	NA	ND	3.2	ND	ND	3.0	ND	ND	ND	ND	ND	ND	3.9
100.0	ND	ND	ND	4.2	ND	ND	NA	ND	4.2	ND	ND	7.4	ND	ND	ND	ND	ND	ND	1.5
103.0	ND	ND	ND	6.5	ND	ND	NA	ND	6.5	ND	ND	3.7	ND	ND	ND	ND	ND	ND	1.6
202.0	ND	ND	ND	6.4	ND	ND	NA	ND	6.4	ND	ND	7.1	ND	ND	ND	ND	ND	ND	2.9
202.0	ND	ND	ND	5.0	ND	ND	NA	ND	5.0	ND	ND	6.7	ND	ND	ND	ND	ND	ND	1.4
302.0	12.4	54.5	ND	55.5	ND	10.0	NA	6.2	139.0	ND	ND	27.2	2.0	ND	ND	2.0	ND	ND	3.6
308.0	21.4	62.9	5.8	115.0	5.2	39.0	NA	11.6	261.0	ND	ND	55.7	2.0	ND	ND	2.0	ND	ND	1.9
309.0	18.9	66.9	ND	46.5	ND	6.3	NA	ND	139.0	ND	ND	133.0	1.6	ND	ND	1.6	ND	ND	3.6
313.0	17.0	58.8	ND	65.3	ND	8.7	NA	5.4	155.0	ND	ND	108.0	1.9	ND	ND	1.9	ND	ND	3.0

Station Number	beta-HCH	delta-HCH	gamma-HCH (Lindane)	Hepta-chlor	Hepta-chlor-epoxide	Hexa-chloro-benzene	Meth-oxy-chlor	Ethyl-para-thion	Methyl-para-thion	Oxa-diazon	Phenol	PCB 1248	PCB 1254	PCB 1260	Total PCB	PCT 5460	Tetra-difon	Toxa-phene	Tri-butyl-tin
10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	ND	ND	ND	ND	ND	ND	ND	ND
10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	ND	11.0	ND	11.0	ND	ND	ND	ND
100.0	ND	ND	1.7	ND	ND	ND	ND	ND	ND	ND	NA	ND	ND	ND	ND	ND	ND	ND	NA
103.0	ND	ND	0.8	ND	ND	ND	ND	ND	ND	ND	NA	ND	ND	ND	ND	ND	ND	ND	NA
202.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	ND	ND	ND	ND	ND	ND	ND	ND
202.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	ND	28.8	ND	28.8	ND	ND	ND	ND
302.0	ND	ND	2.0	ND	1.5	ND	ND	ND	ND	ND	NA	58.5	195.0	28.3	282.0	NA	ND	ND	NA
308.0	ND	ND	2.0	ND	1.3	ND	ND	ND	ND	3.9	NA	52.4	2281.0	640.0	2970.0	NA	ND	ND	NA
309.0	ND	ND	6.0	ND	2.7	ND	ND	ND	ND	2.5	NA	ND	207.0	59.6	267.0	NA	ND	ND	NA
313.0	ND	ND	6.0	ND	3.1	ND	ND	ND	ND	4.0	NA	62.7	287.0	60.0	410.0	NA	ND	ND	NA

* RCM = Resident California Mussel
RBM = Resident Bay Mussel
TCM = Transplanted California Mussel

SED = Sediment

NA = Not Analyzed
ND = Not Detected

** Samples with a collection date prior to 1993 are archive samples.

APPENDIX M (continued)

State Mussel Watch Program

Summary of 1993-95 Data: Organic Chemicals in Mussels and Sediment (ppb, dry weight)

Station Number	Station Name	Sample Type*	Sample Date**	Aldrin	Chlor-benside	alpha-Chlor-dene	cis-Chlor-dane	gamma-Chlor-dene	trans-Chlor-dane	cis-Nona-chlor	trans-Nona-chlor	Oxy-chlor-dane	Total Chlor-dane	Chlor-pyrifos	Dacthal	Diaz-inon
313.0	San Francisco Bay/near Redwood Cr	TCM	01/15/88	ND	NA	1.5	31.6	2.3	8.6	23.2	23.2	1.6	92.0	ND	3.7	ND
321.0	Dumbarton Bridge/Channel Marker 14	TCM	01/18/82	ND	NA	1.8	44.6	2.3	18.3	29.1	29.1	3.3	129.0	ND	4.6	ND
321.0	Dumbarton Bridge/Channel Marker 14	TCM	02/12/85	ND	NA	1.0	29.5	1.5	9.3	19.7	19.7	1.9	82.7	ND	2.7	ND
321.0	Dumbarton Bridge/Channel Marker 14	TCM	01/15/88	ND	NA	ND	23.7	ND	6.9	12.3	12.3	1.4	56.6	ND	2.6	ND
404.0	Sandholdt Bridge	TCM	03/07/94	ND	ND	ND	31.0	ND	28.0	16.0	24.0	1.7	100.7	29.0	230.0	ND
404.0	Sandholdt Bridge	TCM	02/22/95	ND	NA	1.4	30.8	1.2	15.4	35.9	35.9	1.3	122.0	17.4	137.0	ND
414.0	Pacific Grove	RCM	04/14/94	ND	ND	ND	2.4	ND	1.9	ND	1.2	ND	5.5	ND	ND	ND
414.0	Pacific Grove	RCM	04/19/95	ND	NA	ND	2.8	ND	ND	2.2	2.2	ND	7.3	ND	ND	ND
420.0	Monterey Harbor/Coast Guard Jetty	TCM	05/26/94	ND	ND	ND	3.3	ND	2.0	ND	ND	ND	5.3	ND	ND	ND
507.3	Mugu Lagoon/Calleguas Creek	TCM	02/08/94	ND	ND	3.2	72.0	1.9	56.0	32.0	51.0	3.2	219.3	80.0	480.0	ND

Station Number	o,p' DDD	p,p' DDD	o,p' DDE	p,p' DDE	o,p' DDT	p,p' DDT	p,p' DDMS	p,p' DDMU	Total DDT	Di-Chloro-Benzophenone	Dicofol drin	Diel-sulfan I	Endo-sulfan II	Endo-sulfan sulfate	Endo-	Total Endo-sulfan	Endrin	Ethion	alpha-HCH
313.0	8.1	23.9	1.6	59.6	ND	4.3	NA	ND	97.0	ND	ND	42.9	3.1	ND	ND	3.1	ND	ND	1.3
321.0	12.9	45.6	ND	73.7	ND	8.9	NA	7.2	148.0	ND	ND	78.9	4.9	ND	ND	4.9	ND	ND	8.0
321.0	14.8	54.7	ND	61.3	ND	6.3	NA	6.9	144.0	ND	ND	115.0	2.4	ND	ND	2.4	ND	ND	3.3
321.0	5.3	20.3	ND	47.6	ND	4.8	NA	ND	78.0	ND	ND	59.8	2.6	ND	ND	2.6	ND	ND	1.8
404.0	130.0	520.0	43.0	1900.0	200.0	890.0	NA	62.0	3745.0	ND	ND	210.0	9.0	25.0	99.0	133.0	26.0	ND	1.4
404.0	99.7	398.0	42.2	1661.0	203.0	684.0	NA	54.7	3140.0	ND	ND	297.0	6.7	22.3	82.1	111.0	22.1	ND	ND
414.0	ND	ND	ND	24.0	ND	5.0	NA	ND	29.0	ND	ND	5.9	ND	ND	ND	ND	ND	ND	1.3
414.0	ND	ND	ND	28.5	ND	10.0	NA	ND	38.0	ND	ND	12.2	ND	ND	ND	ND	ND	ND	1.2
420.0	ND	ND	ND	22.0	ND	ND	NA	ND	22.0	ND	ND	5.1	ND	ND	ND	ND	ND	ND	4.8
507.3	95.0	420.0	50.0	2500.0	240.0	930.0	NA	49.0	4284.0	ND	ND	36.0	ND	ND	ND	ND	8.3	ND	1.3

Station Number	beta-HCH	delta-HCH	gamma-HCH (Lindane)	Hepta-chlor	Hepta-chlor-epoxide	Hexa-chloro-benzene	Meth-oxy-chlor	Ethyl-para-thion	Methyl-para-thion	Oxa-diazon	Phenol	PCB 1248	PCB 1254	PCB 1260	Total PCB	PCT 5460	Tetra-difon	Toxa-phene	Tri-butyl-tin
313.0	ND	ND	18.0	ND	2.5	ND	ND	ND	ND	13.5	NA	ND	242.0	27.8	270.0	NA	ND	ND	NA
321.0	ND	ND	14.0	ND	5.1	ND	ND	ND	ND	5.7	NA	58.1	414.0	51.3	523.0	NA	ND	ND	NA
321.0	ND	ND	7.0	ND	3.0	ND	ND	ND	ND	2.5	NA	ND	239.0	59.2	298.0	NA	ND	ND	NA
321.0	ND	ND	5.0	ND	2.0	ND	ND	ND	ND	7.3	NA	ND	215.0	52.6	268.0	NA	ND	ND	NA
404.0	ND	ND	1.7	ND	2.3	ND	ND	ND	ND	ND	NA	ND	180.0	ND	180.0	ND	ND	850.0	NA
404.0	ND	ND	1.0	ND	3.8	ND	ND	ND	ND	7.3	NA	ND	261.0	18.2	279.0	ND	ND	868.0	NA
414.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	ND	ND	ND	ND	ND	ND	ND	ND
414.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	ND	10.2	ND	10.2	ND	ND	ND	NA
420.0	5.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	ND	ND	ND	ND	ND	ND	ND	NA
507.3	ND	ND	1.5	ND	7.2	ND	ND	ND	ND	ND	NA	ND	89.0	40.0	129.0	ND	ND	3600.0	NA

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TCM = Transplanted California Mussel

SED = Sediment

NA = Not Analyzed
ND = Not Detected

** Samples with a collection date prior to 1993 are archive samples.

APPENDIX M (continued)

State Mussel Watch Program

Summary of 1993-95 Data: Organic Chemicals in Mussels and Sediment (ppb, dry weight)

Station Number	Station Name	Sample Type*	Sample Date	Aldrin	Chlor-ben-side	alpha-Chlor-dene	cis-Chlor-dane	gamma-Chlor-dene	trans-Chlor-dane	cis-Nona-chlor	trans-Nona-chlor	Oxy-chlor-dane	Total Chlor-dane	Chlor-pyrifos	Dacthal	Diaz-inon
601.0	LA Harbor/National Steel	SED	11/09/93	ND	ND	ND	3.1	ND	4.8	2.0	4.0	ND	13.9	ND	ND	ND
601.0	LA Harbor/National Steel	TCM	02/08/94	ND	ND	ND	23.0	ND	22.0	10.0	18.0	ND	73.0	ND	ND	ND
601.0	LA Harbor/National Steel	TCM	01/31/95	ND	NA	1.3	18.5	ND	10.3	13.3	13.3	1.7	58.4	ND	ND	ND
602.0	LA Harbor/West Basin	TCM	02/08/94	ND	ND	ND	23.0	ND	18.0	9.6	16.0	ND	66.6	ND	ND	ND
605.0	LA Harbor/Cabrillo Pier	SED	11/09/93	ND	ND	ND	ND	ND	ND	ND	2.6	ND	2.6	ND	ND	ND
605.0	LA Harbor/Cabrillo Pier	TCM	02/08/94	ND	ND	ND	11.0	ND	9.4	4.2	8.2	ND	32.8	ND	ND	ND
605.0	LA Harbor/Cabrillo Pier	TCM	01/31/95	ND	NA	1.1	18.0	1.0	6.9	13.1	13.1	1.0	54.2	ND	ND	ND
616.0	LA Harbor/Consolidated Slip	SED	11/09/93	1.4	ND	3.6	24.0	2.2	29.0	10.0	21.0	1.7	92.9	18.0	2.1	ND
616.0	LA Harbor/Consolidated Slip	TCM	02/08/94	ND	ND	2.9	33.0	1.7	30.0	16.0	31.0	ND	114.6	14.0	ND	ND
616.0	LA Harbor/Consolidated Slip	TCM	01/31/95	ND	NA	2.2	26.2	1.8	14.6	18.9	18.9	1.4	84.1	6.2	ND	ND

Station Number	o,p' DDD	p,p' DDD	o,p' DDE	p,p' DDE	o,p' DDT	p,p' DDT	p,p' DDMS	p,p' DDMU	Total DDT	Di-Chloro-Benzophenone	Dicofol drin	Diel-sulfan I	Endo-sulfan II	Endo-sulfan sulfate	Endo-	Total Endo-sulfan	Endrin	Ethion	alpha-HCH
601.0	8.5	26.0	6.2	71.0	ND	63.0	NA	ND	175.0	ND	ND	1.0	ND	ND	ND	ND	ND	ND	ND
601.0	24.0	83.0	42.0	390.0	ND	20.0	NA	27.0	586.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
601.0	16.8	69.9	28.6	283.0	5.3	31.0	NA	16.2	451.0	ND	ND	10.4	ND	ND	ND	ND	ND	ND	ND
602.0	21.0	85.0	60.0	480.0	4.6	25.0	NA	25.0	700.6	ND	ND	3.4	ND	ND	ND	ND	ND	ND	ND
605.0	7.6	17.0	34.0	210.0	ND	4.5	NA	23.0	296.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
605.0	15.0	48.0	110.0	980.0	ND	12.0	NA	77.0	1242.0	ND	ND	3.1	ND	ND	ND	ND	ND	ND	1.1
605.0	12.8	44.8	69.6	557.0	7.7	29.4	NA	46.8	768.0	ND	ND	12.7	ND	ND	ND	ND	ND	ND	ND
616.0	30.0	130.0	11.0	220.0	12.0	79.0	NA	12.0	494.0	ND	ND	13.0	ND	ND	ND	ND	9.4	ND	ND
616.0	30.0	130.0	37.0	410.0	6.0	36.0	NA	29.0	678.0	ND	ND	2.9	ND	ND	ND	ND	ND	ND	ND
616.0	20.7	71.4	18.1	229.0	17.5	62.4	NA	11.0	430.0	ND	ND	13.1	ND	ND	ND	ND	ND	ND	ND

Station Number	beta-HCH	delta-HCH	gamma-HCH (Lindane)	Hepta-chlor	Hepta-chlor-epoxide	Hexa-chloro-benzene	Meth-oxy-chlor	Ethyl-para-thion	Methyl-para-thion	Oxa-diazon	Phenol	PCB 1248	PCB 1254	PCB 1260	Total PCB	PCT 5460	Tetra-difon	Toxa-phene	Tri-butyl-tin
601.0	ND	ND	ND	ND	1.2	ND	ND	ND	ND	ND	NA	73.0	96.0	180.0	349.0	ND	ND	170.0	350.0
601.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	72.0	520.0	ND	592.0	ND	ND	ND	8200.0
601.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	3.0	NA	50.8	481.0	35.7	568.0	ND	ND	124.0	NA
602.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	ND	840.0	ND	840.0	ND	ND	ND	NA
605.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	ND	56.0	ND	56.0	ND	ND	ND	NA
605.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	ND	250.0	ND	250.0	ND	ND	ND	NA
605.0	ND	ND	ND	ND	1.1	ND	ND	ND	ND	5.1	NA	53.2	267.0	ND	320.0	ND	ND	101.0	NA
616.0	ND	ND	ND	ND	7.3	1.0	ND	ND	ND	12.0	NA	130.0	174.0	390.0	694.0	ND	ND	580.0	290.0
616.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	3.4	NA	97.0	500.0	ND	597.0	ND	ND	ND	3900.0
616.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	7.9	NA	75.4	337.0	30.2	443.0	ND	ND	320.0	2.6

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SED = Sediment
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TCM = Transplanted California Mussel

APPENDIX M (continued)

State Mussel Watch Program

Summary of 1993-95 Data: Organic Chemicals in Mussels and Sediment (ppb, dry weight)

Station Number	Station Name	Sample Type*	Sample Date	Aldrin	Chlor-benside	alpha-Chlor-dene	cis-Chlor-dane	gamma-Chlor-dene	trans-Chlor-dane	cis-Nona-chlor	trans-Nona-chlor	Oxy-chlor-dane	Total Chlor-dane	Chlor-pyrifos	Dacthal	Diaz-inon
618.0	LA Harbor/Angels Gate	RCM	02/08/94	ND	ND	ND	ND	1.0	ND	ND	11.0	1.4	13.4	ND	ND	ND
618.0	LA Harbor/Angels Gate	RCM	01/31/95	ND	NA	1.6	30.3	2.4	10.5	31.2	31.2	1.7	109.0	4.2	ND	ND
648.0	Malibu	RBM	02/07/94	ND	ND	1.3	25.0	2.8	22.0	9.1	27.0	ND	87.2	9.1	ND	ND
648.0	Malibu	RBM	01/31/95	ND	NA	ND	18.3	ND	6.1	18.6	18.6	1.0	62.6	ND	2.2	ND
650.0	Santa Monica	RCM	02/07/94	ND	ND	ND	11.0	ND	9.7	4.5	10.0	1.2	36.4	ND	ND	ND
650.0	Santa Monica	RCM	01/31/95	ND	NA	1.2	30.6	ND	9.3	26.6	26.6	1.4	95.7	ND	3.5	ND
662.0	Royal Palms	RCM	02/08/94	ND	ND	ND	2.8	ND	2.8	1.0	2.8	ND	9.4	ND	ND	ND
662.0	Royal Palms	RCM	01/31/95	ND	NA	ND	9.1	ND	2.3	9.2	9.2	ND	29.9	ND	ND	ND
664.0	Cabrillo Beach	RCM	11/11/94	ND	NA	ND	8.0	ND	3.2	10.7	10.7	1.2	33.8	ND	ND	ND
681.0	Catalina Island/West	RCM	03/30/94	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

Station Number	o,p' DDD	p,p' DDD	o,p' DDE	p,p' DDE	o,p' DDT	p,p' DDT	p,p' DDMS	p,p' DDMU	Total DDT	Di-Chloro-Benzophenone	Dicofol drin	Diel-sulfan I	Endo-sulfan II	Endo-sulfan sulfate	Endo-	Total Endo-sulfan	Endrin	Ethion	alpha-HCH
618.0	ND	ND	160.0	1300.0	ND	5.6	NA	100.0	1565.6	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
618.0	21.7	67.6	83.6	641.0	18.7	81.4	NA	56.1	970.0	ND	ND	10.2	ND	ND	ND	ND	ND	ND	ND
648.0	13.0	35.0	40.0	310.0	22.0	18.0	NA	42.0	480.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.7
648.0	6.9	18.6	21.2	179.0	4.9	21.5	NA	20.8	273.0	ND	ND	6.8	ND	ND	ND	ND	ND	ND	ND
650.0	8.0	24.0	31.0	270.0	ND	11.0	NA	35.0	379.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.2
650.0	7.8	20.6	18.9	154.0	ND	20.4	NA	20.6	242.0	ND	ND	14.3	ND	ND	ND	ND	ND	ND	1.4
662.0	11.0	37.0	59.0	590.0	ND	13.0	NA	61.0	771.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
662.0	11.8	41.3	61.5	581.0	ND	13.5	NA	58.9	768.0	ND	ND	8.5	ND	ND	ND	ND	ND	ND	ND
664.0	10.0	35.4	57.4	516.0	ND	13.1	NA	51.2	683.0	ND	ND	5.8	ND	ND	ND	ND	ND	ND	ND
681.0	ND	ND	ND	16.0	ND	ND	NA	ND	16.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

Station Number	beta-HCH	delta-HCH	gamma-HCH (Lindane)	Hepta-chlor	Hepta-chlor-epoxide	Hexa-chloro-benzene	Meth-oxy-chlor	Ethyl-para-thion	Methyl-para-thion	Oxa-diazon	Phenol	PCB 1248	PCB 1254	PCB 1260	Total PCB	PCT 5460	Tetra-difon	Toxa-phene	Tri-butyl-tin
618.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	75.0	370.0	ND	445.0	ND	ND	ND	NA
618.0	ND	ND	ND	ND	1.6	ND	ND	ND	ND	8.6	NA	84.3	417.0	14.0	515.0	ND	ND	274.0	NA
648.0	ND	ND	0.9	ND	ND	ND	ND	ND	ND	ND	NA	ND	160.0	ND	160.0	ND	ND	ND	NA
648.0	ND	ND	ND	ND	1.3	ND	ND	ND	ND	16.1	NA	ND	71.4	ND	71.4	ND	ND	ND	NA
650.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	3.3	NA	ND	66.0	ND	66.0	ND	ND	ND	NA
650.0	ND	ND	ND	ND	1.1	ND	ND	ND	ND	ND	NA	ND	97.4	ND	97.4	ND	ND	ND	NA
662.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	ND	62.0	ND	62.0	ND	ND	ND	NA
662.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	ND	96.0	ND	96.0	ND	ND	ND	NA
664.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	ND	93.9	ND	93.9	ND	ND	ND	NA
681.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	ND	ND	ND	ND	ND	ND	ND	NA

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ND = Not Detected

APPENDIX M (continued)

State Mussel Watch Program

Summary of 1993-95 Data: Organic Chemicals in Mussels and Sediment (ppb, dry weight)

Station Number	Station Name	Sample Type*	Sample Date	Aldrin	Chlor-ben-side	alpha-Chlor-dene	cis-Chlor-dane	gamma-Chlor-dene	trans-Chlor-dane	cis-Nona-chlor	trans-Nona-chlor	Oxy-chlor-dane	Total Chlor-dane	Chlor-pyrifos	Dacthal	Diaz-inon
713.0	Huntington Harbour/Edinger Street	TCM	02/07/94	ND	ND	1.8	22.0	ND	20.0	11.0	20.0	1.0	75.8	11.0	19.0	ND
713.0	Huntington Harbour/Edinger Street	TCM	01/30/95	ND	NA	1.6	27.0	1.0	12.8	28.6	28.6	2.6	102.0	6.8	ND	ND
715.0	Huntington Harbour/Warner Ave Brdg	TCM	02/07/94	ND	ND	2.4	39.0	ND	35.0	23.0	36.0	1.8	137.2	11.0	3.0	ND
715.0	Huntington Harbour/Warner Ave Brdg	TCM	01/30/95	ND	NA	3.0	36.0	1.9	19.0	38.9	38.9	3.5	141.0	8.8	ND	ND
723.4	Newport Bay/Turning Basin	TCM	01/30/95	ND	NA	ND	19.6	ND	10.2	16.0	16.0	3.3	65.1	7.2	3.4	ND
724.0	Newport Bay/Highway 1 Bridge	TCM	02/07/94	ND	ND	1.6	31.0	ND	26.0	16.0	30.0	3.4	108.0	15.0	ND	ND
724.0	Newport Bay/Highway 1 Bridge	TCM	01/30/95	ND	NA	1.6	36.7	1.1	18.7	34.4	34.4	2.9	130.0	22.0	9.3	ND
725.0	Newport Bay/Crows Nest	TCM	02/07/94	ND	ND	ND	23.0	ND	18.0	17.0	20.0	5.2	83.2	5.8	ND	ND
725.0	Newport Bay/Crows Nest	TCM	01/30/95	ND	NA	1.3	30.0	ND	19.5	20.9	20.9	1.4	94.0	4.4	4.0	ND
726.4	Newport Bay/Rhine Channel/End	TCM	02/07/94	ND	ND	ND	25.0	ND	17.0	17.0	20.0	1.9	80.9	20.0	ND	ND

Station Number	o,p' DDD	p,p' DDD	o,p' DDE	p,p' DDE	o,p' DDT	p,p' DDT	p,p' DDMS	p,p' DDMU	Total DDT	Di-Chloro-Benzophenone	Dicofol drin	Diel-sulfan I	Endo-sulfan II	Endo-sulfan sulfate	Endo-	Total Endo-sulfan	Endrin	Ethion	alpha-HCH
713.0	11.0	34.0	12.0	220.0	ND	15.0	NA	15.0	307.0	ND	ND	13.0	ND	ND	ND	ND	ND	ND	ND
713.0	13.1	34.9	12.6	321.0	23.1	79.9	NA	10.9	496.0	ND	ND	20.7	ND	ND	ND	ND	ND	ND	ND
715.0	14.0	47.0	12.0	330.0	ND	14.0	NA	16.0	433.0	ND	ND	14.0	ND	ND	ND	ND	ND	ND	ND
715.0	14.1	43.0	12.8	400.0	16.9	56.5	NA	12.5	556.0	ND	ND	22.2	ND	ND	ND	ND	ND	ND	ND
723.4	5.2	21.2	4.1	180.0	9.9	42.8	NA	ND	263.0	ND	ND	18.1	ND	ND	ND	ND	ND	ND	ND
724.0	19.0	92.0	12.0	600.0	ND	17.0	NA	19.0	759.0	ND	ND	17.0	ND	ND	ND	ND	ND	ND	ND
724.0	14.3	72.1	12.2	573.0	41.4	184.0	NA	12.9	910.0	ND	ND	14.7	1.1	ND	ND	1.1	ND	ND	ND
725.0	12.0	54.0	9.4	430.0	16.0	11.0	NA	16.0	548.4	ND	ND	15.0	ND	ND	ND	ND	ND	ND	ND
725.0	14.1	51.0	8.6	409.0	10.0	43.3	NA	9.9	546.0	ND	ND	30.7	ND	ND	ND	ND	ND	ND	ND
726.4	10.0	49.0	7.5	340.0	13.0	11.0	NA	12.0	442.5	ND	ND	25.0	ND	ND	ND	ND	ND	ND	ND

Station Number	beta-HCH	delta-HCH	gamma-HCH (Lindane)	Hepta-chlor	Hepta-chlor-epoxide	Hexa-chloro-benzene	Meth-oxy-chlor	Ethyl-para-thion	Methyl-para-thion	Oxa-diazon	Phenol	PCB 1248	PCB 1254	PCB 1260	Total PCB	PCT 5460	Tetra-difon	Toxa-phene	Tri-butyl-tin
713.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	ND	100.0	ND	100.0	ND	ND	ND	960.0
713.0	ND	ND	ND	ND	1.3	ND	ND	ND	ND	6.9	NA	ND	121.0	ND	121.0	ND	ND	118.0	NA
715.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	12.0	NA	ND	140.0	ND	140.0	ND	ND	ND	1100.0
715.0	ND	ND	ND	ND	1.6	ND	ND	ND	ND	5.6	NA	50.6	185.0	19.3	255.0	ND	ND	163.0	NA
723.4	ND	ND	ND	ND	ND	ND	ND	ND	ND	16.7	NA	ND	90.1	ND	90.1	ND	ND	163.0	NA
724.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	ND	120.0	ND	120.0	ND	ND	ND	3400.0
724.0	ND	ND	ND	ND	1.4	ND	ND	ND	ND	30.8	NA	ND	129.0	ND	129.0	ND	ND	331.0	NA
725.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	150.0	630.0	ND	780.0	ND	ND	ND	7100.0
725.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	11.3	NA	101.0	534.0	23.0	658.0	ND	ND	161.0	NA
726.4	ND	ND	ND	ND	ND	ND	ND	ND	ND	5.8	NA	130.0	630.0	ND	760.0	ND	ND	ND	7700.0

* RCM = Resident California Mussel
RBM = Resident Bay Mussel
TCM = Transplanted California Mussel

SED = Sediment

NA = Not Analyzed
ND = Not Detected

APPENDIX M (continued)

State Mussel Watch Program

Summary of 1993-95 Data: Organic Chemicals in Mussels and Sediment (ppb, dry weight)

Station Number	Station Name	Sample Type*	Sample Date	Aldrin	Chlor-ben-side	alpha-Chlor-dene	cis-Chlor-dane	gamma-Chlor-dene	trans-Chlor-dane	cis-Nona-chlor	trans-Nona-chlor	Oxy-chlor-dane	Total Chlor-dane	Chlor-pyrifos	Dacthal	Diaz-inon
726.4	Newport Bay/Rhine Channel/End	TCM	01/30/95	ND	NA	1.1	26.5	1.5	16.5	22.2	22.2	2.5	92.5	6.8	6.1	ND
750.0	Oceanside	RCM	01/30/95	ND	NA	ND	8.3	ND	4.8	8.7	8.7	1.1	31.6	ND	3.3	ND
868.5	Mission Bay/Landfill 1	TCM	01/30/95	ND	NA	ND	14.5	ND	5.9	14.0	14.0	ND	48.4	ND	ND	ND
868.6	Mission Bay/Landfill 2	TCM	01/30/95	ND	NA	ND	17.6	ND	6.9	16.3	16.3	ND	57.2	ND	ND	ND
882.0	24th St Maritime Terminal/South	TCM	01/31/95	ND	NA	ND	12.8	ND	6.5	8.2	8.2	1.7	37.3	ND	ND	ND
883.4	San Diego Bay/Continental Maritime	TCM	02/08/94	ND	ND	ND	10.0	ND	7.7	6.6	9.0	ND	33.3	ND	ND	ND
883.5	San Diego Bay/Tuna Docks	TCM	02/08/94	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
894.0	SD Bay/Harbor Is/E Basin/Storm Dr	TCM	02/08/94	ND	ND	1.6	19.0	ND	19.0	7.4	18.0	ND	65.0	ND	ND	ND
894.0	SD Bay/Harbor Is/E Basin/Storm Dr	TCM	01/31/95	ND	NA	2.1	24.7	2.2	8.4	14.4	14.4	5.3	71.5	ND	ND	ND
899.0	San Diego Bay/Shelter Is/Fshg Pier	TCM	01/31/95	ND	NA	ND	7.0	ND	2.7	5.2	5.2	3.1	23.3	ND	ND	ND

Station Number	o,p' DDD	p,p' DDD	o,p' DDE	p,p' DDE	o,p' DDT	p,p' DDT	p,p' DDMS	p,p' DDMU	Total DDT	Di-Chloro-Benzophenone	Dicofol drin	Diel-sulfan I	Endo-sulfan II	Endo-sulfan sulfate	Endo-	Total Endo-sulfan	Endrin	Ethion	alpha-HCH
726.4	10.0	35.8	6.4	271.0	11.2	53.0	NA	5.5	393.0	ND	ND	18.3	ND	ND	ND	ND	ND	ND	ND
750.0	8.6	18.3	6.1	134.0	9.7	29.9	NA	5.4	212.0	ND	ND	6.2	ND	ND	ND	ND	ND	ND	1.7
868.5	ND	4.1	ND	34.0	ND	ND	NA	ND	38.0	ND	ND	14.0	ND	ND	ND	ND	ND	ND	ND
868.6	ND	ND	ND	40.4	ND	8.8	NA	ND	49.0	ND	ND	16.6	ND	ND	ND	ND	ND	ND	ND
882.0	ND	8.5	ND	49.2	ND	10.7	NA	ND	68.0	ND	ND	7.4	ND	ND	ND	ND	ND	ND	ND
883.4	ND	9.1	ND	43.0	ND	9.2	NA	ND	61.3	ND	ND	2.8	ND	ND	ND	ND	ND	ND	ND
883.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
894.0	32.0	100.0	ND	35.0	5.2	27.0	NA	15.0	214.2	ND	ND	2.8	ND	ND	ND	ND	ND	ND	ND
894.0	47.1	135.0	ND	29.8	8.6	32.0	NA	22.6	275.0	ND	ND	6.0	ND	ND	ND	ND	ND	ND	ND
899.0	ND	7.2	ND	54.4	ND	ND	NA	5.6	67.0	ND	ND	4.7	ND	ND	ND	ND	ND	ND	ND

Station Number	beta-HCH	delta-HCH	gamma-HCH (Lindane)	Hepta-chlor	Hepta-chlor-epoxide	Hexa-chloro-benzene	Meth-oxy-chlor	Ethyl-para-thion	Methyl-para-thion	Oxa-diazon	Phenol	PCB 1248	PCB 1254	PCB 1260	Total PCB	PCT 5460	Tetra-difon	Toxa-phene	Tri-butyl-tin
726.4	ND	ND	ND	ND	ND	ND	ND	ND	ND	18.1	NA	62.8	360.0	12.1	435.0	ND	ND	213.0	6.0
750.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	3.5	NA	ND	22.0	ND	22.0	ND	ND	134.0	NA
868.5	ND	ND	ND	ND	1.4	ND	ND	ND	ND	6.9	NA	ND	102.0	ND	102.0	ND	ND	ND	NA
868.6	ND	ND	ND	ND	1.7	ND	ND	ND	ND	6.2	NA	ND	112.0	ND	112.0	ND	ND	ND	NA
882.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	7.0	NA	ND	278.0	33.1	311.0	ND	ND	ND	NA
883.4	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	ND	290.0	ND	290.0	ND	ND	ND	3000.0
883.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	5300.0
894.0	ND	ND	1.3	1.4	ND	ND	ND	ND	ND	ND	NA	4600.0	2800.0	ND	7400.0	ND	ND	ND	1000.0
894.0	ND	ND	ND	1.9	1.3	ND	ND	ND	ND	2.0	NA	11173.0	6904.0	207.0	18300.0	ND	ND	ND	1.4
899.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	ND	168.0	13.2	181.0	ND	ND	ND	0.8

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APPENDIX N

Summary of 1993-95 Data

Organic Chemicals in Mussels

(ppb, lipid weight)

APPENDIX N

State Mussel Watch Program

Summary of 1993-95 Data: Organic Chemicals in Mussels (ppb, lipid weight)

Station Number	Station Name	Sample Type*	Sample Date**	Aldrin	Chlor-ben-side	alpha-Chlor-dene	cis-Chlor-dane	gamma-Chlor-dene	trans-Chlor-dane	cis-Nona-chlor	trans-Nona-chlor	Oxy-chlor-dane	Total Chlor-dane	Chlor-pyrifos	Dacthal	Diaz-inon
10.0	Trinidad Head	RCM	10/14/93	ND	ND	ND	25.5	ND	ND	ND	ND	ND	25.5	ND	ND	ND
10.0	Trinidad Head	RCM	11/28/94	ND	NA	ND	25.9	ND	ND	ND	ND	ND	25.9	ND	ND	ND
100.0	Mad River Slough	TCM	02/24/94	ND	ND	ND	44.8	ND	22.4	ND	ND	134.5	201.8	ND	ND	ND
103.0	Eureka Channel	TCM	02/24/94	ND	ND	ND	34.6	ND	23.1	ND	ND	80.7	138.4	ND	ND	ND
202.0	Bodega Head	RCM	09/16/93	ND	ND	ND	38.0	ND	25.3	ND	ND	ND	63.3	ND	ND	ND
202.0	Bodega Head	RCM	09/19/94	ND	NA	ND	53.6	ND	ND	ND	ND	ND	53.6	ND	ND	ND
302.0	Point Pinole	TCM	02/02/82	ND	NA	ND	335.7	18.7	135.1	254.5	254.5	16.3	1014.9	ND	ND	ND
308.0	San Francisco Bay/Hunter's Point	TCM	01/15/88	ND	NA	15.8	409.9	21.3	99.3	242.3	242.3	17.7	1047.6	ND	ND	ND
309.0	San Mateo Bridge/8B	TCM	02/12/85	ND	NA	ND	324.6	18.2	110.2	145.1	145.1	21.6	765.5	ND	35.9	ND
313.0	San Francisco Bay/near Redwood Cr	TCM	02/12/85	ND	NA	14.4	365.3	26.6	128.3	261.5	261.5	14.4	1071.5	ND	24.8	ND

Station Number	o,p' DDD	p,p' DDD	o,p' DDE	p,p' DDE	o,p' DDT	p,p' DDT	p,p' DDMS	p,p' DDMU	Total DDT	Di-Chloro-Benzophenone	Dicofol drin	Diel-sulfan I	Endo-sulfan II	Endo-sulfan sulfate	Endo-	Total Endo-sulfan	Endrin	Ethion	alpha-HCH
10.0	ND	ND	ND	76.5	ND	ND	NA	ND	76.5	ND	ND	102.0	ND	ND	ND	ND	ND	ND	102.0
10.0	ND	ND	ND	73.0	ND	ND	NA	ND	73.0	ND	ND	68.8	ND	ND	ND	ND	ND	ND	89.9
100.0	ND	ND	ND	89.7	ND	ND	NA	ND	89.7	ND	ND	179.4	ND	ND	ND	ND	ND	ND	44.8
103.0	ND	ND	ND	115.3	ND	ND	NA	ND	115.3	ND	ND	69.2	ND	ND	ND	ND	ND	ND	34.6
202.0	ND	ND	ND	126.6	ND	ND	NA	ND	126.6	ND	ND	139.2	ND	ND	ND	ND	ND	ND	63.3
202.0	ND	ND	ND	141.4	ND	ND	NA	ND	141.4	ND	ND	188.2	ND	ND	ND	ND	ND	ND	39.5
302.0	190.1	835.7	ND	851.0	ND	153.3	NA	95.0	2131.2	ND	ND	417.0	31.3	ND	ND	31.3	ND	ND	55.7
308.0	280.2	823.6	76.0	1505.9	67.4	510.7	NA	151.9	3417.6	ND	ND	729.3	26.0	ND	ND	26.0	ND	ND	24.8
309.0	258.8	916.1	ND	636.8	ND	86.1	NA	ND	1903.5	ND	ND	1821.3	22.6	ND	ND	22.6	ND	ND	49.2
313.0	207.7	718.4	ND	797.9	ND	106.8	NA	66.3	1893.8	ND	ND	1319.5	23.7	ND	ND	23.7	ND	ND	36.6

Station Number	beta-HCH	delta-HCH	gamma-HCH (Lindane)	Hepta-chlor	Hepta-chlor-epoxide	Hexa-chloro-benzene	Meth-oxy-chlor	Ethyl-para-thion	Methyl-para-thion	Oxa-diazon	Phenol	PCB 1248	PCB 1254	PCB 1260	Total PCB	PCT 5460	Tetra-difon	Toxa-phene	Tri-butyl-tin
10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	ND	ND	ND	ND	ND	ND	ND	ND
10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	ND	254.8	ND	254.9	ND	ND	ND	ND
100.0	ND	ND	44.8	ND	ND	ND	ND	ND	ND	ND	NA	ND	ND	ND	ND	ND	ND	ND	NA
103.0	ND	ND	11.5	ND	ND	ND	ND	ND	ND	ND	NA	ND	ND	ND	ND	ND	ND	ND	NA
202.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	ND	ND	ND	ND	ND	ND	ND	ND
202.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	ND	812.2	ND	812.2	ND	ND	ND	ND
302.0	ND	ND	30.2	ND	22.2	ND	ND	ND	ND	ND	NA	897.0	2990.3	433.9	4323.6	NA	ND	ND	NA
308.0	ND	ND	26.0	ND	17.5	ND	ND	ND	ND	51.0	NA	686.4	29868.6	8380.4	38890.4	NA	ND	ND	NA
309.0	ND	ND	82.0	ND	36.3	ND	ND	ND	ND	33.5	NA	ND	2834.7	815.9	3656.3	NA	ND	ND	NA
313.0	ND	ND	73.0	ND	38.0	ND	ND	ND	ND	49.2	NA	765.9	3506.3	733.1	5009.4	NA	ND	ND	NA

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** Samples with a collection date prior to 1993 are archive samples.

APPENDIX N (continued)

State Mussel Watch Program

Summary of 1993-95 Data: Organic Chemicals in Mussels (ppb, lipid weight)

Station Number	Station Name	Sample Type*	Sample Date**	Aldrin	Chlor-benside	alpha-Chlor-dene	cis-Chlor-dane	gamma-Chlor-dene	trans-Chlor-dane	cis-Nona-chlor	trans-Nona-chlor	Oxy-chlor-dane	Total Chlor-dane	Chlor-pyrifos	Dacthal	Diaz-inon
313.0	San Francisco Bay/near Redwood Cr	TCM	01/15/88	ND	NA	22.7	474.1	34.4	128.7	348.1	348.1	24.6	1380.2	ND	54.7	ND
321.0	Dumbarton Bridge/Channel Marker 14	TCM	01/18/82	ND	NA	22.0	548.6	28.5	225.1	357.9	357.9	41.2	1586.7	ND	56.2	ND
321.0	Dumbarton Bridge/Channel Marker 14	TCM	02/12/85	ND	NA	15.1	425.0	22.1	134.6	283.8	283.8	26.8	1191.4	ND	38.2	ND
321.0	Dumbarton Bridge/Channel Marker 14	TCM	01/15/88	ND	NA	ND	449.1	ND	130.0	233.2	233.2	27.4	1072.7	ND	48.8	ND
404.0	Sandholdt Bridge	TCM	03/07/94	ND	ND	ND	586.3	ND	521.2	304.0	456.0	32.6	1889.3	542.9	4321.4	ND
404.0	Sandholdt Bridge	TCM	02/22/95	ND	NA	23.1	514.7	19.7	257.3	599.8	599.8	22.3	2038.4	290.7	2289.1	ND
414.0	Pacific Grove	RCM	04/14/94	ND	ND	ND	76.2	ND	57.1	ND	38.1	ND	152.4	ND	ND	ND
414.0	Pacific Grove	RCM	04/19/95	ND	NA	ND	74.7	ND	ND	59.6	59.6	ND	193.7	ND	ND	ND
420.0	Monterey Harbor/Coast Guard Jetty	TCM	05/26/94	ND	ND	ND	109.8	ND	66.6	ND	ND	ND	176.4	ND	ND	ND
507.3	Mugu Lagoon/Calleguas Creek	TCM	02/08/94	ND	ND	62.4	1466.5	31.2	1138.8	655.2	1029.6	62.4	4446.2	1622.5	9734.8	ND

Station Number	o,p' DDD	p,p' DDD	o,p' DDE	p,p' DDE	o,p' DDT	p,p' DDT	p,p' DDMS	p,p' DDMU	Total DDT	Di-Chloro-Benzophenone	Dicofol	Diel-drin	Endo-sulfan I	Endo-sulfan II	Endo-sulfan sulfate	Total Endo-sulfan	Endrin	Ethion	alpha-HCH
313.0	121.6	358.5	23.4	894.2	ND	64.7	NA	ND	1455.2	ND	ND	643.6	47.2	ND	ND	47.2	ND	ND	20.1
321.0	158.7	560.9	ND	906.5	ND	110.0	NA	89.0	1820.4	ND	ND	970.5	60.9	ND	ND	60.9	ND	ND	98.8
321.0	213.3	788.0	ND	883.1	ND	91.2	NA	99.9	2074.5	ND	ND	1656.7	34.6	ND	ND	34.6	ND	ND	46.9
321.0	101.3	384.8	ND	902.1	ND	92.0	NA	ND	1478.3	ND	ND	1133.3	48.5	ND	ND	48.5	ND	ND	34.7
404.0	2443.0	9772.0	803.5	35689.5	3756.8	16721.0	NA	1161.8	70347.4	ND	ND	3941.4	173.7	466.9	1856.7	2497.3	488.6	ND	21.7
404.0	1665.9	6650.0	705.1	27752.8	3391.8	11428.6	NA	914.0	52464.7	ND	ND	4962.4	111.6	372.1	1372.2	1854.6	369.7	ND	ND
414.0	ND	ND	ND	685.7	ND	152.4	NA	ND	838.1	ND	ND	171.4	ND	ND	ND	ND	ND	ND	38.1
414.0	ND	ND	ND	757.2	ND	264.6	NA	ND	1009.6	ND	ND	324.2	ND	ND	ND	ND	ND	ND	31.9
420.0	ND	ND	ND	732.1	ND	ND	NA	ND	732.1	ND	ND	169.7	ND	ND	ND	ND	ND	ND	159.7
507.3	1934.5	8517.9	1014.0	50702.0	4867.4	18861.2	NA	998.4	86879.9	ND	ND	733.2	ND	ND	ND	ND	171.6	ND	31.2

Station Number	beta-HCH	delta-HCH	gamma-HCH (Lindane)	Hepta-chlor	Hepta-chlor-epoxide	Hexa-chloro-benzene	Meth-oxy-chlor	Ethyl-para-thion	Methyl-para-thion	Oxa-diazon	Phenol	PCB 1248	PCB 1254	PCB 1260	Total PCB	PCT 5460	Tetra-difon	Toxa-phene	Tri-butyl-tin
313.0	ND	ND	269.7	ND	36.8	ND	ND	ND	ND	202.5	NA	ND	3630.9	417.0	4050.6	NA	ND	ND	NA
321.0	ND	ND	172.2	ND	62.5	ND	ND	ND	ND	70.0	NA	714.4	5092.2	631.4	6432.9	NA	ND	ND	NA
321.0	ND	ND	100.9	ND	43.6	ND	ND	ND	ND	35.5	NA	ND	3442.7	852.6	4293.0	NA	ND	ND	NA
321.0	ND	ND	95.4	ND	37.8	ND	ND	ND	ND	138.4	NA	ND	4075.5	997.2	5079.4	NA	ND	ND	NA
404.0	ND	ND	32.6	ND	43.4	ND	ND	ND	ND	ND	NA	ND	3376.8	ND	3376.8	ND	ND	15971.8	NA
404.0	ND	ND	16.6	ND	63.0	ND	ND	ND	ND	121.6	NA	ND	4360.8	304.5	4661.7	ND	ND	14503.2	NA
414.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	ND	ND	ND	ND	ND	ND	ND	ND
414.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	ND	271.2	ND	271.0	ND	ND	ND	NA
420.0	169.7	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	ND	ND	ND	ND	ND	ND	ND	NA
507.3	ND	ND	31.2	ND	140.4	ND	ND	ND	ND	ND	NA	ND	1809.7	811.2	2620.9	ND	ND	73010.9	NA

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APPENDIX N (continued)

State Mussel Watch Program

Summary of 1993-95 Data: Organic Chemicals in Mussels (ppb, lipid weight)

Station Number	Station Name	Sample Type*	Sample Date	Aldrin	Chlor-ben-side	alpha-Chlor-dene	cis-Chlor-dane	gamma-Chlor-dene	trans-Chlor-dane	cis-Nona-chlor	trans-Nona-chlor	Oxy-chlor-dane	Total Chlor-dane	Chlor-pyrifos	Dacthal	Diaz-inon
601.0	LA Harbor/National Steel	TCM	02/08/94	ND	ND	ND	458.2	ND	438.2	199.2	358.6	ND	1474.1	ND	ND	ND
601.0	LA Harbor/National Steel	TCM	01/31/95	ND	NA	65.1	914.5	ND	509.3	657.6	657.6	82.0	2886.1	ND	ND	ND
602.0	LA Harbor/West Basin	TCM	02/08/94	ND	ND	ND	538.8	ND	409.5	215.5	366.4	ND	1551.7	ND	ND	ND
605.0	LA Harbor/Cabrillo Pier	TCM	02/08/94	ND	ND	ND	192.3	ND	163.5	76.9	144.2	ND	576.9	ND	ND	ND
605.0	LA Harbor/Cabrillo Pier	TCM	01/31/95	ND	NA	28.1	463.3	26.0	177.4	337.3	337.3	25.7	1395.1	ND	ND	ND
616.0	LA Harbor/Consolidated Slip	TCM	02/08/94	ND	ND	71.8	789.5	47.8	717.7	382.8	741.6	ND	2703.3	334.9	ND	ND
616.0	LA Harbor/Consolidated Slip	TCM	01/31/95	ND	NA	75.2	879.5	60.5	490.3	634.4	634.4	47.9	2823.5	208.1	ND	ND
618.0	LA Harbor/Angels Gate	RCM	02/08/94	ND	ND	ND	ND	24.5	ND	ND	208.1	24.5	244.8	ND	ND	ND
618.0	LA Harbor/Angels Gate	RCM	01/31/95	ND	NA	28.1	535.3	41.7	185.6	551.2	551.2	29.7	1925.7	74.1	ND	ND
648.0	Malibu	RBM	02/07/94	ND	ND	11.4	238.6	28.4	210.2	85.2	255.7	ND	823.9	85.2	ND	ND

Station Number	o,p' DDD	p,p' DDD	o,p' DDE	p,p' DDE	o,p' DDT	p,p' DDT	p,p' DDMS	p,p' DDMU	Total DDT	Di-Chloro-Benzophenone	Dicofol	Diel-drin	Endo-sulfan I	Endo-sulfan II	Endo-sulfan sulfate	Total Endo-sulfan	Endrin	Ethion	alpha-HCH
601.0	478.1	1673.3	836.7	7848.6	ND	398.4	NA	537.8	11792.8	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
601.0	830.2	3454.7	1413.4	13985.6	264.0	1532.0	NA	800.6	22288.0	ND	ND	514.0	ND	ND	ND	ND	ND	ND	ND
602.0	495.7	1982.8	1400.9	11163.8	107.8	581.9	NA	581.9	16314.7	ND	ND	86.2	ND	ND	ND	ND	ND	ND	ND
605.0	259.6	846.2	1932.7	17240.4	ND	211.5	NA	1355.8	21855.8	ND	ND	57.7	ND	ND	ND	ND	ND	ND	19.2
605.0	329.5	1153.2	1791.5	14337.2	198.7	756.8	NA	1204.6	19768.3	ND	ND	327.0	ND	ND	ND	ND	ND	ND	ND
616.0	717.7	3086.1	885.2	9712.9	143.5	861.2	NA	693.8	16052.6	ND	ND	71.8	ND	ND	ND	ND	ND	ND	ND
616.0	694.8	2396.8	607.8	7687.8	587.5	2094.7	NA	369.3	14435.6	ND	ND	439.9	ND	ND	ND	ND	ND	ND	ND
618.0	ND	ND	2974.3	24186.0	ND	110.2	NA	1860.5	29131.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
618.0	383.4	1194.3	1477.0	11324.5	330.4	1438.1	NA	991.1	17137.0	ND	ND	180.2	ND	ND	ND	ND	ND	ND	ND
648.0	125.0	329.5	375.0	2926.1	210.2	170.5	NA	397.7	4528.4	ND	ND	ND	ND	ND	ND	ND	ND	ND	17.0

Station Number	beta-HCH	delta-HCH	gamma-HCH (Lindane)	Hepta-chlor	Hepta-chlor-epoxide	Hexa-chloro-benzene	Meth-oxy-chlor	Ethyl-para-thion	Methyl-para-thion	Oxa-diazon	Phe-nol	PCB 1248	PCB 1254	PCB 1260	Total PCB	PCT 5460	Tetra-difon	Toxa-phene	Tributyl-tin
601.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	1454.2	10458.2	ND	11912.4	ND	ND	ND	170000.0
601.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	148.8	NA	2511.6	23773.4	1761.6	28070.0	ND	ND	6128.0	NA
602.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	ND	19547.4	ND	19547.4	ND	ND	ND	NA
605.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	ND	4403.8	ND	4403.8	ND	ND	ND	NA
605.0	ND	ND	ND	ND	29.0	ND	ND	ND	ND	131.4	NA	1369.7	6873.4	ND	8236.8	ND	ND	2600.5	NA
616.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	71.8	NA	2296.7	11842.1	ND	14138.8	ND	ND	ND	93000.0
616.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	265.1	NA	2531.8	11312.8	1014.1	14872.0	ND	ND	10742.8	87.4
618.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	1395.3	6878.8	ND	8274.2	ND	ND	ND	NA
618.0	ND	ND	ND	ND	27.7	ND	ND	ND	ND	151.6	NA	1489.4	7367.5	246.9	9098.5	ND	ND	4840.3	NA
648.0	ND	ND	5.7	ND	ND	ND	ND	ND	ND	ND	NA	ND	1511.4	ND	1511.4	ND	ND	ND	NA

* RCM = Resident California Mussel
RBM = Resident Bay Mussel
TCM = Transplanted California Mussel

SED = Sediment

NA = Not Analyzed
ND = Not Detected

APPENDIX N (continued)

State Mussel Watch Program

Summary of 1993-95 Data: Organic Chemicals in Mussels (ppb, lipid weight)

Station Number	Station Name	Sample Type*	Sample Date	Aldrin	Chlor-ben-side	alpha-Chlor-dene	cis-Chlor-dane	gamma-Chlor-dene	trans-Chlor-dane	cis-Nona-chlor	trans-Nona-chlor	Oxy-chlor-dane	Total Chlor-dane	Chlor-pyrifos	Dacthal	Diaz-inon
648.0	Malibu	RBM	01/31/95	ND	NA	ND	208.4	ND	69.8	211.8	211.8	11.4	712.8	ND	24.8	ND
650.0	Santa Monica	RCM	02/07/94	ND	ND	ND	150.0	ND	140.0	60.0	140.0	20.0	510.0	ND	ND	ND
650.0	Santa Monica	RCM	01/31/95	ND	NA	25.0	637.1	ND	194.1	553.8	553.8	29.5	1992.6	ND	73.9	ND
662.0	Royal Palms	RCM	02/08/94	ND	ND	ND	85.8	ND	85.8	21.5	85.8	ND	279.0	ND	ND	ND
662.0	Royal Palms	RCM	01/31/95	ND	NA	ND	300.4	ND	77.1	305.8	305.8	ND	990.3	ND	ND	ND
664.0	Cabrillo Beach	RCM	11/11/94	ND	NA	ND	250.8	ND	100.2	335.0	335.0	36.3	1058.3	ND	ND	ND
681.0	Catalina Island/West	RCM	03/30/94	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
713.0	Huntington Harbour/Edinger Street	TCM	02/07/94	ND	ND	45.1	586.9	ND	541.8	293.5	541.8	22.6	2009.0	293.5	496.6	ND
713.0	Huntington Harbour/Edinger Street	TCM	01/30/95	ND	NA	48.7	798.0	30.3	378.2	845.3	845.3	75.7	3014.6	201.6	ND	ND
715.0	Huntington Harbour/Warner Ave Brdg	TCM	02/07/94	ND	ND	54.2	866.4	ND	776.2	505.4	794.2	36.1	3014.4	234.7	72.2	ND

Station Number	o,p' DDD	p,p' DDD	o,p' DDE	p,p' DDE	o,p' DDT	p,p' DDT	p,p' DDMS	p,p' DDMU	Total DDT	Di-Chloro-Benzophenone	Dicofol	Diel-drin	Endo-sulfan I	Endo-sulfan II	Endo-sulfan sulfate	Total Endo-sulfan	Endrin	Ethion	alpha-HCH
648.0	78.8	211.8	241.4	2038.2	55.5	244.8	NA	236.9	3108.5	ND	ND	77.0	ND	ND	ND	ND	ND	ND	ND
650.0	110.0	340.0	430.0	3780.0	ND	150.0	NA	490.0	5310.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	20.0
650.0	162.4	428.9	393.5	3206.4	ND	424.7	NA	428.9	5038.6	ND	ND	297.7	ND	ND	ND	ND	ND	ND	28.7
662.0	321.9	1094.4	1738.2	17467.8	ND	386.3	NA	1802.6	22832.6	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
662.0	390.8	1367.9	2037.0	19242.5	ND	447.2	NA	1950.7	25435.9	ND	ND	281.6	ND	ND	ND	ND	ND	ND	ND
664.0	312.2	1108.3	1797.2	16156.2	ND	410.2	NA	1603.1	21385.0	ND	ND	181.3	ND	ND	ND	ND	ND	ND	ND
681.0	ND	ND	ND	501.3	ND	ND	NA	ND	501.3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
713.0	293.5	902.9	316.0	5869.1	ND	406.3	NA	406.3	8171.6	ND	ND	338.6	ND	ND	ND	ND	ND	ND	ND
713.0	387.2	1031.4	372.4	9487.2	682.8	2361.4	NA	322.1	14659.4	ND	ND	611.9	ND	ND	ND	ND	ND	ND	ND
715.0	306.9	1028.9	270.8	7274.4	ND	306.9	NA	361.0	9530.7	ND	ND	306.9	ND	ND	ND	ND	ND	ND	ND

Station Number	beta-HCH	delta-HCH	gamma-HCH (Lindane)	Hepta-chlor	Hepta-chlor-epoxide	Hexa-chloro-benzene	Meth-oxy-chlor	Ethyl-para-thion	Methyl-para-thion	Oxa-diazon	Phe-nol	PCB 1248	PCB 1254	PCB 1260	Total PCB	PCT 5460	Tetra-difon	Toxa-phene	Tributyl-tin
648.0	ND	ND	ND	ND	14.2	ND	ND	ND	ND	183.3	NA	ND	812.9	ND	813.0	ND	ND	ND	NA
650.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	50.0	NA	ND	920.0	ND	920.0	ND	ND	ND	NA
650.0	ND	ND	ND	ND	23.1	ND	ND	ND	ND	ND	NA	ND	2028.0	ND	2027.9	ND	ND	ND	NA
662.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	ND	1845.5	ND	1845.5	ND	ND	ND	NA
662.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	ND	3178.7	ND	3179.5	ND	ND	ND	NA
664.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	ND	2940.7	ND	2940.0	ND	ND	ND	NA
681.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	ND	ND	ND	ND	ND	ND	ND	NA
713.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	ND	2663.7	ND	2663.7	ND	ND	ND	25000.0
713.0	ND	ND	ND	ND	38.3	ND	ND	ND	ND	203.4	NA	ND	3576.6	ND	3576.2	ND	ND	3486.6	NA
715.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	270.8	NA	ND	3086.6	ND	3086.6	ND	ND	ND	23000.0

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APPENDIX N (continued)

State Mussel Watch Program

Summary of 1993-95 Data: Organic Chemicals in Mussels (ppb, lipid weight)

Station Number	Station Name	Sample Type*	Sample Date	Aldrin	Chlor-ben-side	alpha-Chlor-dene	cis-Chlor-dane	gamma-Chlor-dene	trans-Chlor-dane	cis-Nona-chlor	trans-Nona-chlor	Oxy-chlor-dane	Total Chlor-dane	Chlor-pyrifos	Dacthal	Diaz-inon
715.0	Huntington Harbour/Warner Ave Brdg	TCM	01/30/95	ND	NA	78.5	927.2	48.7	489.4	1001.8	1001.8	90.7	3631.5	225.7	ND	ND
723.4	Newport Bay/Turning Basin	TCM	01/30/95	ND	NA	ND	710.3	ND	369.5	579.7	579.7	118.5	2358.8	259.3	124.2	ND
724.0	Newport Bay/Highway 1 Bridge	TCM	02/07/94	ND	ND	54.1	810.8	ND	675.7	405.4	783.8	81.1	2810.8	378.4	ND	ND
724.0	Newport Bay/Highway 1 Bridge	TCM	01/30/95	ND	NA	36.2	852.5	26.2	434.4	798.9	798.9	67.4	3019.4	511.0	215.2	ND
725.0	Newport Bay/Crows Nest	TCM	02/07/94	ND	ND	ND	482.5	ND	372.8	350.9	416.7	109.6	1776.3	131.6	ND	ND
725.0	Newport Bay/Crows Nest	TCM	01/30/95	ND	NA	54.0	1248.4	ND	811.8	869.5	869.5	56.5	3911.7	181.4	167.1	ND
726.4	Newport Bay/Rhine Channel/End	TCM	02/07/94	ND	ND	ND	1147.5	ND	765.0	765.0	874.3	109.3	3606.6	874.3	ND	ND
726.4	Newport Bay/Rhine Channel/End	TCM	01/30/95	ND	NA	42.1	984.2	53.9	612.8	824.5	824.5	94.6	3435.3	252.5	225.7	ND
750.0	Oceanside	RCM	01/30/95	ND	NA	ND	195.3	ND	113.7	205.8	205.8	26.5	746.4	ND	77.2	ND
868.5	Mission Bay/Landfill 1	TCM	01/30/95	ND	NA	ND	285.9	ND	116.5	276.0	276.0	ND	954.3	ND	ND	ND

Station Number	o,p' DDD	p,p' DDD	o,p' DDE	p,p' DDE	o,p' DDT	p,p' DDT	p,p' DDMS	p,p' DDMU	Total DDT	Di-Chloro-Benzophenone	Dicofol	Diel-drin	Endo-sulfan I	Endo-sulfan II	Endo-sulfan sulfate	Total Endo-sulfan	Endrin	Ethion	alpha-HCH
715.0	363.2	1107.5	329.8	10302.2	435.2	1455.3	NA	322.0	14320.1	ND	ND	571.7	ND	ND	ND	ND	ND	ND	ND
723.4	188.3	768.0	148.3	6521.5	359.3	1550.7	NA	ND	9528.6	ND	ND	655.9	ND	ND	ND	ND	ND	ND	ND
724.0	486.5	2378.4	324.3	15567.6	ND	432.4	NA	486.5	19702.7	ND	ND	432.4	ND	ND	ND	ND	ND	ND	ND
724.0	332.1	1674.6	283.3	13308.7	961.5	4273.6	NA	299.6	21135.9	ND	ND	341.5	24.8	ND	ND	24.8	ND	ND	ND
725.0	263.2	1140.4	197.4	9144.7	350.9	241.2	NA	350.9	11666.7	ND	ND	328.9	ND	ND	ND	ND	ND	ND	ND
725.0	586.9	2122.3	359.6	17020.0	416.1	1801.8	NA	411.2	22721.1	ND	ND	1277.6	ND	ND	ND	ND	ND	ND	ND
726.4	437.2	2185.8	327.9	15245.9	601.1	491.8	NA	546.4	19836.1	ND	ND	1147.5	ND	ND	ND	ND	ND	ND	ND
726.4	371.4	1329.5	236.0	10064.5	416.0	1968.3	NA	203.6	14595.4	ND	ND	679.6	ND	ND	ND	ND	ND	ND	ND
750.0	202.6	432.2	143.4	3165.1	228.4	706.2	NA	128.3	5007.5	ND	ND	145.3	ND	ND	ND	ND	ND	ND	39.5
868.5	ND	80.7	ND	670.4	ND	ND	NA	ND	749.3	ND	ND	276.0	ND	ND	ND	ND	ND	ND	ND

Station Number	beta-HCH	delta-HCH	gamma-HCH (Lindane)	Hepta-chlor	Hepta-chlor-epoxide	Hexa-chloro-benzene	Meth-oxy-chlor	Ethyl-para-thion	Methyl-para-thion	Oxa-diazon	Phe-nol	PCB 1248	PCB 1254	PCB 1260	Total PCB	PCT 5460	Tetra-difon	Toxa-phene	Tri-butyl-tin
715.0	ND	ND	ND	ND	41.0	ND	ND	ND	ND	145.2	NA	1304.0	4765.8	496.9	6567.7	ND	ND	4198.0	NA
723.4	ND	ND	ND	ND	ND	ND	ND	ND	ND	605.0	NA	ND	3264.5	ND	3264.5	ND	ND	5906.3	NA
724.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	ND	3108.1	ND	3108.1	ND	ND	ND	89000.0
724.0	ND	ND	ND	ND	33.5	ND	ND	ND	ND	715.4	NA	ND	2996.4	ND	2996.2	ND	ND	7687.7	NA
725.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	3201.8	13399.1	ND	16600.9	ND	ND	ND	150000.0
725.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	470.2	NA	4204.8	22223.0	956.5	27381.8	ND	ND	6701.7	NA
726.4	ND	ND	ND	ND	ND	ND	ND	ND	ND	273.2	NA	5847.0	28251.4	ND	34043.7	ND	ND	ND	340000.0
726.4	ND	ND	ND	ND	ND	ND	ND	ND	ND	672.1	NA	2331.9	13369.8	449.9	16155.2	ND	ND	7909.8	222.8
750.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	83.3	NA	ND	519.2	ND	519.7	ND	ND	3165.4	NA
868.5	ND	ND	ND	ND	26.7	ND	ND	ND	ND	135.6	NA	ND	2011.0	ND	2011.2	ND	ND	ND	NA

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APPENDIX N (continued)

State Mussel Watch Program

Summary of 1993-95 Data: Organic Chemicals in Mussels (ppb, lipid weight)

Station Number	Station Name	Sample Type*	Sample Date	Aldrin	Chlor-ben-side	alpha-Chlor-dene	cis-Chlor-dane	gamma-Chlor-dene	trans-Chlor-dane	cis-Nona-chlor	trans-Nona-chlor	Oxy-chlor-dane	Total Chlor-dane	Chlor-pyrifos	Dacthal	Diaz-inon
868.6	Mission Bay/Landfill 2	TCM	01/30/95	ND	NA	ND	293.0	ND	115.7	271.3	271.3	ND	952.2	ND	ND	ND
882.0	24th St Maritime Terminal/South	TCM	01/31/95	ND	NA	ND	289.3	ND	147.0	184.7	184.7	37.7	843.1	ND	ND	ND
883.4	San Diego Bay/Continental Maritime	TCM	02/08/94	ND	ND	ND	239.8	ND	191.8	167.9	215.8	ND	839.3	ND	ND	ND
894.0	SD Bay/Harbor Is/E Basin/Storm Dr	TCM	02/08/94	ND	ND	23.9	406.7	ND	406.7	167.5	382.8	ND	1363.6	ND	ND	ND
894.0	SD Bay/Harbor Is/E Basin/Storm Dr	TCM	01/31/95	ND	NA	61.2	705.8	63.7	238.8	411.4	411.4	150.1	2043.2	ND	ND	ND
899.0	San Diego Bay/Shelter Is/Fshg Pier	TCM	01/31/95	ND	NA	ND	166.3	ND	64.2	122.9	122.9	73.3	550.6	ND	ND	ND

Station Number	o,p' DDD	p,p' DDD	o,p' DDE	p,p' DDE	o,p' DDT	p,p' DDT	p,p' DDMS	p,p' DDMU	Total DDT	Di-Chloro-Benzophenone	Dicofol	Diel-drin	Endo-sulfan I	Endo-sulfan II	Endo-sulfan sulfate	Total Endo-sulfan	Endrin	Ethion	alpha-HCH
868.6	ND	ND	ND	672.5	ND	145.8	NA	ND	815.7	ND	ND	276.3	ND	ND	ND	ND	ND	ND	ND
882.0	ND	192.2	ND	1112.0	ND	241.8	NA	ND	1536.9	ND	ND	166.8	ND	ND	ND	ND	ND	ND	ND
883.4	ND	215.8	ND	1079.1	ND	239.8	NA	ND	1534.8	ND	ND	71.9	ND	ND	ND	ND	ND	ND	ND
894.0	669.9	2105.3	ND	741.6	119.6	574.2	NA	311.0	4497.6	ND	ND	47.8	ND	ND	ND	ND	ND	ND	ND
894.0	1346.1	3857.9	ND	851.6	245.4	914.5	NA	645.9	7858.6	ND	ND	172.4	ND	ND	ND	ND	ND	ND	ND
899.0	ND	170.6	ND	1285.4	ND	ND	NA	133.0	1583.0	ND	ND	111.4	ND	ND	ND	ND	ND	ND	ND

Station Number	beta-HCH	delta-HCH	gamma-HCH (Lindane)	Hepta-chlor	Hepta-chlor-epoxide	Hexa-chloro-benzene	Meth-oxy-chlor	Ethyl-para-thion	Methyl-para-thion	Oxa-diazon tin	Phe-nol	PCB 1248	PCB 1254	PCB 1260	Total PCB	PCT 5460	Tetra-difon	Toxa-phene	Tri-butyl-
868.6	ND	ND	ND	ND	28.6	ND	ND	ND	ND	103.9	NA	ND	1864.7	ND	1864.3	ND	ND	ND	NA
882.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	157.2	NA	ND	6282.9	748.0	7029.0	ND	ND	ND	NA
883.4	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	ND	7242.2	ND	7242.2	ND	ND	ND	74000.0
894.0	ND	ND	23.9	23.9	ND	ND	ND	ND	ND	ND	NA	96842.1	58947.4	ND	155789.5	ND	ND	ND	21000.0
894.0	ND	ND	ND	54.0	37.0	ND	ND	ND	ND	58.3	NA	319289.0	197293.0	5914.9	522955.4	ND	ND	ND	39.9
899.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	ND	3969.1	312.1	4276.6	ND	ND	ND	19.6

* RCM = Resident California Mussel
RBM = Resident Bay Mussel
TCM = Transplanted California Mussel

SED = Sediment

NA = Not Analyzed
ND = Not Detected

APPENDIX O

Summary of 1993-95 Data

PAHs in Mussels and Sediment

(ppb, wet weight)

APPENDIX O

State Mussel Watch Program

Summary of 1993-95 Data: PAHs in Mussels and Sediment (ppb, wet weight)

Station Number	Station Name	Sample Type*	Sample Date	Total PAH	Anthracene	Anthracene, benz(a)	Anthracene, dibenz(a,h)	Biphenyl	Chrysene	Fluoranthene
10.0	Trinidad Head	RCM	10/14/93	2.4	ND	ND	ND	ND	ND	ND
10.0	Trinidad Head	RCM	11/28/94	6.3	ND	ND	ND	ND	ND	ND
100.0	Mad River Slough	TCM	02/24/94	6.3	ND	ND	ND	ND	ND	1.2
103.0	Eureka Channel	TCM	02/24/94	71.9	ND	2.1	ND	ND	3.2	6.2
202.0	Bodega Head	RCM	09/16/93	4.6	ND	ND	ND	ND	ND	ND
202.0	Bodega Head	RCM	09/19/94	ND	ND	ND	ND	ND	ND	ND
404.0	Sandholdt Bridge	TCM	03/07/94	186.7	4.2	2.9	ND	ND	4.2	20.0
414.0	Pacific Grove	RCM	04/14/94	10.4	ND	ND	ND	ND	ND	ND
601.0	LA Harbor/National Steel	SED	11/09/93	2182.7	53.8	123.7	40.3	10.8	231.3	209.8
601.0	LA Harbor/National Steel	TCM	02/08/94	785.7	3.2	12.0	ND	ND	21.0	100.0

Station Number	Fluoranthene, benzo(b)	Fluoranthene, benzo(k)	Fluorene	Naphthalene	Naphthalene, 1-methyl	Naphthalene, 2-methyl	Naphthalene, 2,6-dimethyl	Naphthalene, 2,3,5-trimethyl	Naphthene, ace
10.0	ND	ND	ND	2.4	ND	ND	ND	ND	ND
10.0	ND	ND	ND	1.9	ND	2.2	ND	ND	ND
100.0	ND	ND	ND	2.9	ND	ND	ND	ND	ND
103.0	ND	ND	2.2	3.8	ND	3.7	ND	ND	2.1
202.0	ND	ND	ND	2.7	ND	ND	ND	ND	ND
202.0	ND	ND	ND	ND	ND	ND	ND	ND	ND
404.0	ND	ND	4.7	4.3	ND	ND	2.2	ND	6.2
414.0	ND	ND	2.1	2.7	ND	ND	ND	ND	2.6
601.0	398.1	80.7	12.9	18.3	8.6	27.4	14.5	5.9	9.7
601.0	20.0	4.7	1.9	3.2	ND	ND	1.0	ND	3.1

Station Number	Naphthylene, ace	Perylene	Perylene, benzo(ghi)	Phenanthrene	Phenanthrene, 1-methyl	Pyrene	Pyrene, benzo(a)	Pyrene, benzo(e)	Pyrene, indeno(1,2,3-cd)
10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND
10.0	ND	ND	ND	2.2	ND	ND	ND	ND	ND
100.0	ND	ND	ND	2.2	ND	ND	ND	ND	ND
103.0	ND	ND	ND	9.6	ND	39.0	ND	ND	ND
202.0	ND	ND	ND	1.9	ND	ND	ND	ND	ND
202.0	ND	ND	ND	ND	ND	ND	ND	ND	ND
404.0	ND	ND	ND	28.0	ND	110.0	ND	ND	ND
414.0	ND	ND	ND	3.0	ND	ND	ND	ND	ND
601.0	ND	64.6	59.2	96.8	11.3	204.4	236.7	188.3	75.3
601.0	ND	3.3	7.5	5.9	ND	570.0	6.7	19.0	3.2

* RCM = Resident California Mussel
TCM = Transplanted California Mussel
SED = Sediment
ND = Not Detected

APPENDIX O (continued)

State Mussel Watch Program

Summary of 1993-95 Data: PAHs in Mussels and Sediment (ppb, wet weight)

Station Number	Station Name	Sample Type*	Sample Date	Total PAH	Anthracene	Anthracene, benz(a)	Anthracene, dibenz(a,h)	Biphenyl	Chrysene	Fluoranthene
605.0	LA Harbor/Cabrillo Pier	SED	11/09/93	1017.9	22.5	43.6	16.3	5.7	71.8	100.6
605.0	LA Harbor/Cabrillo Pier	TCM	02/08/94	185.3	2.9	3.5	ND	ND	7.9	34.0
616.0	LA Harbor/Consolidated Slip	SED	11/09/93	4809.0	206.1	320.6	45.8	26.1	503.8	595.4
616.0	LA Harbor/Consolidated Slip	TCM	02/08/94	1443.5	3.2	22.0	ND	ND	41.0	120.0
713.0	Huntington Harbour/Edinger Street	TCM	02/07/94	26.6	ND	ND	ND	ND	6.5	8.1
715.0	Huntington Harbour/Warner Ave Brdg	TCM	02/07/94	92.8	ND	5.0	ND	ND	4.9	7.1
724.0	Newport Bay/Highway 1 Bridge	TCM	02/07/94	118.1	1.1	2.7	ND	ND	5.1	8.2
725.0	Newport Bay/Crows Nest	TCM	02/07/94	77.5	ND	1.6	ND	ND	3.6	6.0
726.4	Newport Bay/Rhine Channel/End	TCM	02/07/94	125.5	ND	1.6	ND	ND	4.3	8.3
868.5	Mission Bay/Landfill 1	TCM	01/30/95	66.9	ND	2.0	ND	ND	4.5	6.7

Station Number	Fluoranthene, benzo(b)	Fluoranthene, benzo(k)	Fluorene	Naphthalene	Naphthalene, 1-methyl	Naphthalene, 2-methyl	Naphthalene, 2,6-dimethyl	Naphthalene, 2,3,5-trimethyl	Naphthene, ace
605.0	110.2	35.9	5.3	10.1	11.0	23.5	20.6	24.4	ND
605.0	3.3	ND	3.1	3.5	ND	ND	ND	ND	4.2
616.0	503.8	123.7	50.4	64.1	33.9	109.9	50.4	36.2	28.9
616.0	32.0	7.4	4.9	3.9	ND	6.2	4.5	8.4	4.2
713.0	ND	ND	ND	3.9	ND	3.9	ND	ND	ND
715.0	ND	ND	ND	3.8	ND	2.3	ND	ND	ND
724.0	ND	ND	ND	3.0	ND	2.7	1.1	1.4	ND
725.0	ND	ND	ND	2.5	ND	ND	ND	ND	ND
726.4	3.4	0.9	0.8	2.7	ND	1.6	ND	1.0	ND
868.5	ND	ND	ND	6.7	5.9	25.5	3.1	ND	ND

Station Number	Naphthylene, ace	Perylene	Perylene, benzo(ghi)	Phenanthrene	Phenanthrene, 1-methyl	Pyrene	Pyrene, benzo(a)	Pyrene, benzo(e)	Pyrene, indeno(1,2,3-cd)
605.0	ND	167.6	29.7	36.4	8.1	110.2	71.8	67.1	25.4
605.0	ND	2.4	2.4	8.1	ND	110.0	ND	ND	ND
616.0	ND	91.6	123.7	329.8	39.8	778.6	325.2	338.9	82.4
616.0	ND	5.8	9.3	13.0	6.5	1100.0	12.0	34.0	5.2
713.0	ND	ND	ND	4.2	ND	ND	ND	ND	ND
715.0	ND	ND	ND	2.7	ND	67.0	ND	ND	ND
724.0	ND	ND	ND	4.3	ND	81.0	2.6	2.5	2.4
725.0	ND	ND	ND	3.2	ND	59.0	ND	ND	1.6
726.4	ND	ND	2.3	3.5	ND	94.0	1.1	ND	ND
868.5	1.1	ND	ND	5.9	ND	5.7	ND	ND	ND

* RCM = Resident California Mussel
TCM = Transplanted California Mussel
SED = Sediment
ND = Not Detected

APPENDIX O (continued)

State Mussel Watch Program

Summary of 1993-95 Data: PAHs in Mussels and Sediment (ppb, wet weight)

Station Number	Station Name	Sample Type*	Sample Date	Total PAH	Anthracene	Anthracene, benz(a)	Anthracene, dibenz(a,h)	Biphenyl	Chrysene	Fluoranthene
868.6	Mission Bay/Landfill 2	TCM	01/30/95	54.2	ND	ND	ND	ND	3.0	5.7
883.1	San Diego Bay/Chollas Creek	TCM	02/08/94	4273.4	64.0	86.0	ND	2.7	81.0	560.0
883.8	San Diego Bay/Switzer Creek	TCM	02/08/94	477.4	6.2	8.9	ND	ND	15.0	83.0

Station Number	Fluoranthene, benzo(b)	Fluoranthene, benzo(k)	Fluorene	Naphthalene	Naphthalene, 1-methyl	Naphthalene, 2-methyl	Naphthalene, 2,6-dimethyl	Naphthalene, 2,3,5-trimethyl	Naphthene, ace
868.6	ND	ND	ND	8.3	4.9	20.3	2.6	ND	ND
883.1	56.0	13.0	35.0	3.9	ND	8.6	4.8	ND	25.0
883.8	8.2	2.3	3.1	3.0	ND	2.0	ND	ND	3.5

Station Number	Naphthylene, ace	Perylene	Perylene, benzo(ghi)	Phenanthrene	Phenanthrene, 1-methyl	Pyrene	Pyrene, benzo(a)	Pyrene, benzo(e)	Pyrene, indeno(1,2,3-cd)
868.6	1.1	ND	ND	3.7	ND	4.7	ND	ND	ND
883.1	1.3	8.2	9.7	250.0	ND	3000.0	18.0	38.0	8.2
883.8	ND	ND	3.1	19.0	ND	310.0	2.4	5.6	2.1

* RCM = Resident California Mussel
TCM = Transplanted California Mussel
SED = Sediment
ND = Not Detected

APPENDIX P

Summary of 1993-95 Data
PAHs in Mussels and Sediment
(ppb, dry weight)

APPENDIX P

State Mussel Watch Program

Summary of 1993-95 Data: PAHs in Mussels and Sediment (ppb, wet weight)

Station Number	Station Name	Sample Type*	Sample Date	Total PAH	Anthracene	Anthracene, benz(a)	Anthracene, dibenz(a,h)	Biphenyl	Chrysene	Fluoranthene
10.0	Trinidad Head	RCM	10/14/93	15.0	ND	ND	ND	ND	ND	ND
10.0	Trinidad Head	RCM	11/28/94	31.3	ND	ND	ND	ND	ND	ND
100.0	Mad River Slough	TCM	02/24/94	60.0	ND	ND	ND	ND	ND	11.0
103.0	Eureka Channel	TCM	02/24/94	245.0	ND	13.0	ND	ND	20.0	39.0
202.0	Bodega Head	RCM	09/16/93	29.0	ND	ND	ND	ND	ND	ND
202.0	Bodega Head	RCM	09/19/94	ND	ND	ND	ND	ND	ND	ND
404.0	Sandholdt Bridge	TCM	03/07/94	556.0	24.0	17.0	ND	ND	24.0	110.0
414.0	Pacific Grove	RCM	04/14/94	69.0	ND	ND	ND	ND	ND	ND
601.0	LA Harbor/National Steel	SED	11/09/93	4057.0	100.0	230.0	75.0	20.0	430.0	390.0
601.0	LA Harbor/National Steel	TCM	02/08/94	2714.0	32.0	120.0	ND	ND	210.0	990.0

Station Number	Fluoranthene, benzo(b)	Fluoranthene, benzo(k)	Fluorene	Naphthalene	Naphthalene, 1-methyl	Naphthalene, 2-methyl	Naphthalene, 2,6-dimethyl	Naphthalene, 2,3,5-trimethyl	Naphthene, ace
10.0	ND	ND	ND	15.0	ND	ND	ND	ND	ND
10.0	ND	ND	ND	9.3	ND	11.0	ND	ND	ND
100.0	ND	ND	ND	28.0	ND	ND	ND	ND	ND
103.0	ND	ND	14.0	24.0	ND	23.0	ND	ND	13.0
202.0	ND	ND	ND	17.0	ND	ND	ND	ND	ND
202.0	ND	ND	ND	ND	ND	ND	ND	ND	ND
404.0	ND	ND	27.0	25.0	ND	ND	13.0	ND	36.0
414.0	ND	ND	14.0	18.0	ND	ND	ND	ND	17.0
601.0	740.0	150.0	24.0	34.0	16.0	51.0	27.0	11.0	18.0
601.0	200.0	47.0	19.0	32.0	ND	ND	10.0	ND	31.0

Station Number	Naphthylene, ace	Perylene	Perylene, benzo(ghi)	Phenanthrene	Phenanthrene, 1-methyl	Pyrene	Pyrene, benzo(a)	Pyrene, benzo(e)	Pyrene, indeno(1,2,3-cd)
10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND
10.0	ND	ND	ND	11.0	ND	ND	ND	ND	ND
100.0	ND	ND	ND	21.0	ND	ND	ND	ND	ND
103.0	ND	ND	ND	60.0	ND	39.0	ND	ND	ND
202.0	ND	ND	ND	12.0	ND	ND	ND	ND	ND
202.0	ND	ND	ND	ND	ND	ND	ND	ND	ND
404.0	ND	ND	ND	170.0	ND	110.0	ND	ND	ND
414.0	ND	ND	ND	20.0	ND	ND	ND	ND	ND
601.0	ND	120.0	110.0	180.0	21.0	380.0	440.0	350.0	140.0
601.0	ND	33.0	74.0	58.0	ND	570.0	66.0	190.0	32.0

* RCM = Resident California Mussel
TCM = Transplanted California Mussel
SED = Sediment
ND = Not Detected

APPENDIX P (continued)

State Mussel Watch Program

Summary of 1993-95 Data: PAHs in Mussels and Sediment (ppb, wet weight)

Station Number	Station Name	Sample Type*	Sample Date	Total PAH	Anthracene	Anthracene, benz(a)	Anthracene, dibenz(a,h)	Biphenyl	Chrysene	Fluoranthene
605.0	LA Harbor/Cabrillo Pier	SED	11/09/93	2125.0	47.0	91.0	34.0	12.0	150.0	210.0
605.0	LA Harbor/Cabrillo Pier	TCM	02/08/94	525.0	16.0	19.0	ND	ND	43.0	190.0
616.0	LA Harbor/Consolidated Slip	SED	11/09/93	10500.0	450.0	700.0	100.0	57.0	1100.0	1300.0
616.0	LA Harbor/Consolidated Slip	TCM	02/08/94	4552.0	32.0	220.0	ND	ND	410.0	1200.0
713.0	Huntington Harbour/Edinger Street	TCM	02/07/94	226.0	ND	ND	ND	ND	55.0	69.0
715.0	Huntington Harbour/Warner Ave Brdg	TCM	02/07/94	278.0	ND	41.0	ND	ND	40.0	58.0
724.0	Newport Bay/Highway 1 Bridge	TCM	02/07/94	466.0	11.0	28.0	ND	ND	53.0	85.0
725.0	Newport Bay/Crows Nest	TCM	02/07/94	249.0	ND	16.0	ND	ND	37.0	62.0
726.4	Newport Bay/Rhine Channel/End	TCM	02/07/94	478.0	ND	20.0	ND	ND	53.0	100.0
868.5	Mission Bay/Landfill 1	TCM	01/30/95	341.5	ND	10.0	ND	ND	23.0	34.0

Station Number	Fluoranthene, benzo(b)	Fluoranthene, benzo(k)	Fluorene	Naphthalene	Naphthalene, 1-methyl	Naphthalene, 2-methyl	Naphthalene, 2,6-dimethyl	Naphthalene, 2,3,5-trimethyl	Naphthene, ace
605.0	230.0	75.0	11.0	21.0	23.0	49.0	43.0	51.0	ND
605.0	18.0	ND	17.0	19.0	ND	ND	ND	ND	23.0
616.0	1100.0	270.0	110.0	140.0	74.0	240.0	110.0	79.0	63.0
616.0	320.0	75.0	49.0	39.0	ND	63.0	45.0	85.0	42.0
713.0	ND	ND	ND	33.0	ND	33.0	ND	ND	ND
715.0	ND	ND	ND	31.0	ND	19.0	ND	ND	ND
724.0	ND	ND	ND	31.0	ND	28.0	11.0	15.0	ND
725.0	ND	ND	ND	26.0	ND	ND	ND	ND	ND
726.4	41.0	11.0	10.0	33.0	ND	19.0	ND	12.0	ND
868.5	ND	ND	ND	34.0	30.0	130.0	16.0	ND	ND

Station Number	Naphthylene, ace	Perylene	Perylene, benzo(ghi)	Phenanthrene	Phenanthrene, 1-methyl	Pyrene	Pyrene, benzo(a)	Pyrene, benzo(e)	Pyrene, indeno(1,2,3-cd)
605.0	ND	350.0	62.0	76.0	17.0	230.0	150.0	140.0	53.0
605.0	ND	13.0	13.0	44.0	ND	110.0	ND	ND	ND
616.0	ND	200.0	270.0	720.0	87.0	1700.0	710.0	740.0	180.0
616.0	ND	59.0	94.0	130.0	66.0	1100.0	120.0	350.0	53.0
713.0	ND	ND	ND	36.0	ND	ND	ND	ND	ND
715.0	ND	ND	ND	22.0	ND	67.0	ND	ND	ND
724.0	ND	ND	ND	45.0	ND	81.0	27.0	26.0	25.0
725.0	ND	ND	ND	33.0	ND	59.0	ND	ND	16.0
726.4	ND	ND	28.0	43.0	ND	94.0	14.0	ND	ND
868.5	5.5	ND	ND	30.0	ND	29.0	ND	ND	ND

* RCM = Resident California Mussel
TCM = Transplanted California Mussel
SED = Sediment
ND = Not Detected

APPENDIX P (continued)

State Mussel Watch Program

Summary of 1993-95 Data: PAHs in Mussels and Sediment (ppb, wet weight)

Station Number	Station Name	Sample Type*	Sample Date	Total PAH	Anthracene	Anthracene, benz(a)	Anthracene, dibenz(a,h)	Biphenyl	Chrysene	Fluoranthene
868.6	Mission Bay/Landfill 2	TCM	01/30/95	267.2	ND	ND	ND	ND	15.0	28.0
883.1	San Diego Bay/Chollas Creek	TCM	02/08/94	16115.0	650.0	870.0	ND	28.0	830.0	5800.0
883.8	San Diego Bay/Switzer Creek	TCM	02/08/94	1767.0	54.0	77.0	ND	ND	130.0	720.0

Station Number	Fluoranthene, benzo(b)	Fluoranthene, benzo(k)	Fluorene	Naphthalene	Naphthalene, 1-methyl	Naphthalene, 2-methyl	Naphthalene, 2,6-dimethyl	Naphthalene, 2,3,5-trimethyl	Naphthene, ace
868.6	ND	ND	ND	41.0	24.0	100.0	13.0	ND	ND
883.1	570.0	130.0	350.0	40.0	ND	88.0	49.0	ND	260.0
883.8	71.0	20.0	27.0	26.0	ND	17.0	ND	ND	30.0

Station Number	Naphthylene, ace	Perylene	Perylene, benzo(ghi)	Phenanthrene	Phenanthrene, 1-methyl	Pyrene	Pyrene, benzo(a)	Pyrene, benzo(e)	Pyrene, indeno(1,2,3-cd)
868.6	5.2	ND	ND	18.0	ND	23.0	ND	ND	ND
883.1	13.0	84.0	99.0	2600.0	ND	3000.0	180.0	390.0	84.0
883.8	ND	ND	27.0	170.0	ND	310.0	21.0	49.0	18.0

* RCM = Resident California Mussel
TCM = Transplanted California Mussel
SED = Sediment
ND = Not Detected

APPENDIX Q

Summary of 1993-95 Data
PAHs in Mussels
(ppb, lipid weight)

APPENDIX Q

State Mussel Watch Program

Summary of 1993-95 Data: PAHs in Mussels and Sediment (ppb, wet weight)

Station Number	Station Name	Sample Type*	Sample Date	Total PAH	Anthracene	Anthracene, benz(a)	Anthracene, dibenz(a,h)	Biphenyl	Chrysene	Fluoranthene
10.0	Trinidad Head	RCM	10/14/93	310.0	ND	ND	ND	ND	ND	ND
10.0	Trinidad Head	RCM	11/28/94	726.0	ND	ND	ND	ND	ND	ND
100.0	Mad River Slough	TCM	02/24/94	1410.0	ND	ND	ND	ND	ND	270.0
103.0	Eureka Channel	TCM	02/24/94	8290.0	ND	240.0	ND	ND	370.0	720.0
202.0	Bodega Head	RCM	09/16/93	580.0	ND	ND	ND	ND	ND	ND
202.0	Bodega Head	RCM	09/19/94	ND	ND	ND	ND	ND	ND	ND
404.0	Sandholdt Bridge	TCM	03/07/94	20320.0	460.0	310.0	ND	ND	460.0	2100.0
414.0	Pacific Grove	RCM	04/14/94	1980.0	ND	ND	ND	ND	ND	ND
601.0	LA Harbor/National Steel	TCM	02/08/94	149139.0	640.0	2400.0	ND	ND	4100.0	20000.0
605.0	LA Harbor/Cabrillo Pier	TCM	02/08/94	18280.0	280.0	340.0	ND	ND	760.0	3300.0

Station Number	Fluoranthene, benzo(b)	Fluoranthene, benzo(k)	Fluorene	Naphthalene	Naphthalene, 1-methyl	Naphthalene, 2-methyl	Naphthalene, 2,6-dimethyl	Naphthalene, 2,3,5-trimethyl	Naphthene, ace
10.0	ND	ND	ND	310.0	ND	ND	ND	ND	ND
10.0	ND	ND	ND	216.0	ND	255.0	ND	ND	ND
100.0	ND	ND	ND	650.0	ND	ND	ND	ND	ND
103.0	ND	ND	250.0	440.0	ND	430.0	ND	ND	240.0
202.0	ND	ND	ND	340.0	ND	ND	ND	ND	ND
202.0	ND	ND	ND	ND	ND	ND	ND	ND	ND
404.0	ND	ND	510.0	470.0	ND	ND	240.0	ND	670.0
414.0	ND	ND	400.0	510.0	ND	ND	ND	ND	500.0
601.0	3900.0	940.0	380.0	640.0	ND	ND	200.0	ND	620.0
605.0	320.0	ND	300.0	340.0	ND	ND	ND	ND	400.0

Station Number	Fluoranthene, benzo(b)	Fluoranthene, benzo(k)	Fluorene	Naphthalene	Naphthalene, 1-methyl	Naphthalene, 2-methyl	Naphthalene, 2,6-dimethyl	Naphthalene, 2,3,5-trimethyl	Naphthene, ace
10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND
10.0	ND	ND	ND	255.0	ND	ND	ND	ND	ND
100.0	ND	ND	ND	490.0	ND	ND	ND	ND	ND
103.0	ND	ND	ND	1100.0	ND	4500.0	ND	ND	ND
202.0	ND	ND	ND	240.0	ND	ND	ND	ND	ND
202.0	ND	ND	ND	ND	ND	ND	ND	ND	ND
404.0	ND	ND	ND	3100.0	ND	12000.0	ND	ND	ND
414.0	ND	ND	ND	570.0	ND	ND	ND	ND	ND
601.0	ND	660.0	1500.0	1200.0	ND	110000.0	1300.0	19.0	640.0
605.0	ND	230.0	230.0	780.0	ND	11000.0	ND	ND	ND

* RCM = Resident California Mussel
TCM = Transplanted California Mussel

ND = Not Detected

APPENDIX Q (continued)

State Mussel Watch Program

Summary of 1993-95 Data: PAHs in Mussels and Sediment (ppb, wet weight)

Station Number	Station Name	Sample Type*	Sample Date	Total PAH	Anthracene	Anthracene, benz(a)	Anthracene, dibenz(a,h)	Biphenyl	Chrysene	Fluoranthene
616.0	LA Harbor/Consolidated Slip	TCM	02/08/94	324234.0	770.0	5200.0	ND	ND	9700.0	29000.0
713.0	Huntington Harbour/Edinger Street	TCM	02/07/94	6010.0	ND	ND	ND	ND	1500.0	1800.0
715.0	Huntington Harbour/Warner Ave Brdg	TCM	02/07/94	16680.0	ND	900.0	ND	ND	880.0	1300.0
724.0	Newport Bay/Highway 1 Bridge	TCM	02/07/94	31402.5	300.0	730.0	ND	ND	1400.0	2200.0
725.0	Newport Bay/Crows Nest	TCM	02/07/94	17040.0	ND	350.0	ND	ND	790.0	1300.0
726.4	Newport Bay/Rhine Channel/End	TCM	02/07/94	68220.0	ND	870.0	ND	ND	2300.0	4500.0
868.5	Mission Bay/Landfill 1	TCM	01/30/95	6733.0	ND	197.0	ND	ND	454.0	670.0
868.6	Mission Bay/Landfill 2	TCM	01/30/95	4445.0	ND	ND	ND	ND	249.0	466.0
883.1	San Diego Bay/Chollas Creek	TCM	02/08/94	324234.0	53000.0	71000.0	ND	2200.0	67000.0	470000.0
883.8	San Diego Bay/Switzer Creek	TCM	02/08/94	560105.6	7300.0	10000.0	ND	ND	18000.0	97000.0

Station Number	Fluoranthene, benzo(b)	Fluoranthene, benzo(k)	Fluorene	Naphthalene	Naphthalene, 1-methyl	Naphthalene, 2-methyl	Naphthalene, 2,6-dimethyl	Naphthalene, 2,3,5-trimethyl	Naphthene, ace
616.0	7700.0	1800.0	1200.0	930.0	ND	1500.0	1100.0	2000.0	1000.0
713.0	ND	ND	ND	880.0	ND	880.0	ND	ND	ND
715.0	ND	ND	ND	690.0	ND	420.0	ND	ND	ND
724.0	ND	ND	ND	810.0	ND	730.0	300.0	380.0	ND
725.0	ND	ND	ND	550.0	ND	ND	ND	ND	ND
726.4	1900.0	490.0	440.0	1500.0	ND	870.0	ND	550.0	ND
868.5	ND	ND	ND	670.0	592.0	2563.0	316.0	ND	ND
868.6	ND	ND	ND	682.0	399.0	1664.0	216.0	ND	ND
883.1	46000.0	11000.0	29000.0	3200.0	ND	7100.0	4000.0	ND	21000.0
883.8	9600.0	2700.0	3600.0	3500.0	ND	2400.0	ND	ND	4100.0

Station Number	Fluoranthene, benzo(b)	Fluoranthene, benzo(k)	Fluorene	Naphthalene	Naphthalene, 1-methyl	Naphthalene, 2-methyl	Naphthalene, 2,6-dimethyl	Naphthalene, 2,3,5-trimethyl	Naphthene, ace
616.0	ND	1400.0	2200.0	3000.0	1600.0	250000.0	2900.0	34.0	1200.0
713.0	ND	ND	ND	950.0	ND	ND	ND	ND	ND
715.0	ND	ND	ND	490.0	ND	12000.0	ND	ND	ND
724.0	ND	ND	ND	1200.0	ND	22000.0	700.0	2.5	650.0
725.0	ND	ND	ND	700.0	ND	13000.0	ND	ND	350.0
726.4	ND	ND	1300.0	1900.0	ND	51000.0	600.0	ND	ND
868.5	108.0	ND	ND	592.0	ND	571.0	ND	ND	ND
868.6	87.0	ND	ND	299.0	ND	383.0	ND	ND	ND
883.1	1100.0	6800.0	8000.0	210000.0	ND	2500000.0	15000.0	38.0	6800.0
883.8	ND	ND	3600.0	23000.0	ND	370000.0	2800.0	5.6	2500.0

* RCM = Resident California Mussel
TCM = Transplanted California Mussel

ND = Not Detected

APPENDIX R

Field and Laboratory Operations

FIELD AND LABORATORY OPERATIONS

Sample Collection

The State Mussel Watch Program (SMWP) collects about 100 mussels at each station, which are randomly divided into two groups for trace element and synthetic organic chemical analysis. Based on recommendations by Goldberg (1980) and Risebrough *et al.* (1980), the SMWP samples 45 mussels, three replicates of 15 individuals each, for trace elements at each site. Trace element results in the SMWP represent a mean value for the three replicates. A single replicate of 45 composited individuals is analyzed for synthetic organic compounds.

Mussels of 55 to 65 mm in length are collected wherever possible in order to reduce size related effects. Mussels are collected from the highest tidal height where they occur in adequate numbers to reduce variability induced by habitat height. Stainless steel pry bars are used to collect mussels off rocks. The pry bars are cleaned and rinsed in the laboratory and rinsed again with seawater prior to use.

At locations where mussels are unavailable and sampling can be accomplished using scuba equipment, transplanted samples are used. The mussel transplant system used is one of the following three systems; 1) In an area of deep water and no structures, a bottom anchored submerged buoy system is used; 2) In areas with structures (ie. pilings, floating docks, etc.), a polypropylene line may be tied between two pilings or a line hung beneath a dock; 3) In areas of shallow water, samples may be placed on PVC or wooden stakes that are pounded into the substrate. Transplanted mussels are placed in polypropylene mesh bags and kept cool in ice chests for no more than 48 hours prior to deployment. To minimize the risk of contamination of the mussel from boat exhaust or surface film during deployment or retrieval, mussel samples are placed in polyethylene bags, where they remain until submerged and deployed. Upon retrieval from the subsurface buoy system, samples are again placed in polyethylene bags before being brought through the air-water interface. Once collected, the transplants are triple bagged. To minimize contamination caused by handling the mussel samples, polyethylene gloves are worn during collection, as well as processing, of mussel samples. A two month transplant period is adequate in most cases where pollutant uptake rates are expected to be high, but for trace elements in less contaminated environments, a six month interval may be necessary for an adequate sample (Stephenson *et al.* 1980). A four to six month transplant interval is used for organic chemicals to be consistent with transplant periods for trace elements.

Mussels to be analyzed for trace elements are placed in a ZIPLOCK^{R} polyethylene bag of 4 mm thickness. The samples are placed inside two additional polyethylene ZIPLOCK^{R} bags. Mussels to be analyzed for synthetic organic compounds are placed in a bag constructed of two layers of "heavy duty" aluminum foil. Prior to use, the foil is cleaned by heating to 500^{o} C or by rinsing in hexane. Samples in the foil bags are placed in two polyethylene ZIPLOCK^{R} bags. After bagging, all samples are placed in non-metallic ice chests and frozen using dry ice and stored at or below -20^{o} C until processed.

Laboratory Analysis

A detailed description of procedures and techniques discussed below can be found in the Department of Fish and Game's (DFG) *Laboratory Quality Assurance Program Plan* (DFG 1990). The following is a summary of the 1993-94 and 1994-95 Quality Assurance/Quality Control (QA\QC) results provided by the DFG's Water Pollution Control and Moss Landing Laboratories. Copies of the Laboratory Quality Assurance Program Plan and QA\QC results are available upon request.

Trace Elements Analytical Techniques in Tissue and Sediment

The following procedures were employed for mussel dissection and homogenization for trace element analysis: Frozen mussels were removed individually from the bags, cleaned of epiphytic organisms and debris under running deionized water by personnel wearing polyethylene gloves, and allowed to thaw in clean polyethylene trays. Adductor muscles were severed and gonads removed with a MICRO®-cleaned stainless steel scalpel. Gonads were removed from mussels to reduce variability in trace element concentrations due to the sex of the organism (Stephenson *et al.* 1987). The remainder of the soft part was placed in a pre-weighted, acid-cleaned polypropylene 4 oz. jar and re-weighed. The shell lengths were also taken at this time. Samples were then homogenized to a paste-like consistency in the jars using a Brinkmann Polytron (Model PT10-35) equipped with a titanium generator (Model PTA 20). The homogenized samples were then refrozen at -20° C until analyzed.

A Perkin-Elmer Model 2280 spectrophotometer with deuterium arc background corrector and digital display was used for techniques employing conventional (flame) atomic absorption spectrophotometry (Al, Cd, Cu, Mn, Zn) and cold vapor technique for mercury. A Perkin-Elmer Model 3030 Zeeman atomic absorption spectrophotometer equipped with an HGA-600 graphite furnace and an AS-60 autosampler was used for techniques requiring a graphite furnace (Ag, As, Cr, Ni, Pb, Se). All analytical values were corrected using procedural blanks. Trace element detection limits are presented in Table R-1 The technique used for digesting samples was known as "teflon vessel digestion". Separate techniques were performed on sediments and tissues in the "teflon vessel digestion" technique.

The "teflon vessel digestion" technique for tissue and sediment were performed as follows: Samples were weighed into pre-cleaned 125 ml teflon digestion vessels. Three grams of tissue and one gram of sediment were used. Digestion of each tissue sample was accomplished by adding a 4:1 concentrated HNO_3: 3 ml concentrated $HClO_4$ mixture and heating the sample on a warm (≈75°) hotplate 2-3 hours. After the initial reaction, the teflon vessel was capped and heated in a 130° C oven for four hours. Once the digestate had cooled it was transferred to a clean polyethylene bottle and diluted up to 20 ml with Type ll water. Sediment samples were digested using the same mixture as tissue samples except, instead of warming on a hotplate, sediment samples were heated in a 130° C oven for four hours. After the initial reaction, 3 ml of hydrofluoric acid was added to the sediment sample and the teflon vessel returned to a 130° C oven for 12 hours. Twenty ml of boric acid (2.5%) was added to each sediment sample before again returning to a 130° C oven for another 8 hours. Once the digestate was cool it was transferred to a clean polyethylene bottle and brought up to 20 ml with Type ll water.

To protect sample integrity, all materials contacting samples during laboratory operations were analyzed for trace element content. To ensure accuracy, reference materials from the National Bureau of Standards (NBS) were analyzed (Table R-2).

Synthetic Organic Compounds Analytical Techniques in Tissues

A 50 gram sample of tissue was spiked with a surrogate mixture of 4,4'-dibromo-octafluorobiphenyl, decachlorobiphenyl, and dibutylchlorendate (DBOB, DCB, DBCE) and extracted twice with acetonitrile by shaking for two hours. The sample extracts were combined, filtered, and partitioned with petroleum ether. An aliquot of the petroleum ether extract was eluted through a Florisil® column. The Florisil® columns were eluted

with petroleum ether (Fraction 1), six percent ethyl ether/petroleum ether (Fraction 2), and 15 percent ethyl ether/petroleum ether (Fraction 3). Fractions 2 and 3 were spiked with decachlorobiphenyl and all of the fractions were concentrated to an appropriate volume in a Zymark[R] Turbovap concentrator prior to analysis by gas chromatography. The DCB was used as a surrogate to determine analyte recovery of the F1 compounds and to determine relative retention times for all fractions. DBOB was used to check the analyte recovery of the F2 compounds but was found to elute with the F1 compounds. DBCE was used to check the analyte recovery of the F3 compounds. The percent recoveries for the surrogate compounds are listed in Table R-3 for 1994 and Table R-4 for 1995. A mixture of synthetic standards was eluted through the Florisil[R] column to determine the recovery and separation characteristics of the column. The distribution of synthetic organic compounds in the three fractions is listed in Table R-5. The detection limits for synthetic organics in mussels are presented in Table R-6.

At stations where the SMWP had previously detected endosulfan, samples were analyzed for endosulfan I, endosulfan II, and endosulfan sulfate. This required an additional elution through Florisil[R] with 50 percent ethyl ether/petroleum ether (Fraction 4, Table R-5). All other stations were analyzed for endosulfan I only. This fraction was also spiked with decachlorobiphenyl prior to the concentration step. Due to the high lipid content of the fraction all of the 50 percent extracts were diluted with iso-octane by a factor of ten prior to analysis by gas chromatography.

Two mussel samples were spiked with a solution containing known concentrations of target analytes to asses accuracy and matrix effects. Percent recoveries of the target analytes from the matrix spike are listed in Table R-7.

Ten percent of the samples were analyzed in duplicate. Table R- 8 lists duplicate sample results. A method blank representative of all materials and solutions contacting the sample was analyzed for contamination. To preclude errors due to contamination, a vertical solvent was blank analyzed for each set of glassware before introducing a new sample.

Synthetic Organic Compounds Analytical Techniques in Sediment

In 1994, approximately 30 grams of each sediment sample was spiked with a surrogate mixture of DBOB, DCB and DBCE. After adding approximately 200 ml of a 1:1 solution of acetone:dichloromethane, the sample was extracted with an orbital shaker for two hours at 300 rpm. These steps were repeated after the sample was filtered. After evaporating and exchanging solvents, the sample extract was eluted through a Florisil[R] column using the four solvent mixtures (F1, F2, F3 and F4).

In 1995, the method for analyzing synthetic organics in sediments was modified. Twenty grams of sediment was dried by mixing with sodium sulfate. After adding 200 ml of 1:1 solution of hexane/acetone, each sample was spiked with 1 ml of the DBOB, DCB and DBCE solution. The samples were then placed on an orbital shaker for two hours at 300 rpm. The sample was filtered, re-extracted with fresh solvent, and the extracts were combined. After evaporating and exchanging solvents, the sample extract was eluted through a Florisil[R] column with petroleum ether (Fraction 1) and a solution of 50% ethyl ether/petroleum ether (Fraction 2). Sediment detection limits are listed in Table R-6. Duplicate sample analysis results are listed in Table R-9.

Instrument and Analytical Conditions for Chlorinated Hydrocarbons

Chlorinated hydrocarbons were determined with a Varian Model 3500 gas chromatograph equipped with a Model 8035 autosampler, temperature programmable on-column injector, and dual Ni^{63} electron capture detectors. A 5 meter J&W DB5 fused silica capillary pre-column is connected to the temperature programmable injector, the column effluent is split using a press-fit "Y" connector to a 60 meter J&W DB5 and a 60 meter J&W DB17 column. The DB5 and DB17 columns are connected to the electron capture detectors. All three columns have a 0.25 mm ID and a 25 µm liquid phase thickness. Helium was used as the carrier gas at a linear velocity of 35 cm/sec and nitrogen was used as the detector makeup gas at a flow of 25 ml/min. Chromatographic data was acquired and processed with a Hewlett-Packard Chem-Station, version A.03.02.

All samples were analyzed using a single injection for each extract under the following conditions:

Injector temperature program:
- Initial temperature - 70 °C
- Program rate - 300 °C/min
- Final temperature - 280°C
- Final temperature hold time - 70 min

Column temperature program:
- Initial temperature - 70°C
- Program rate 1 - 15°C/min to 210°C
- Program 1 hold time - 10 min
- Program rate 2 - 2°C/min to 280°C

Final temperature hold time - 11 min

Detector temperature: 330°C

Analytical Techniques for Polynuclear Aromatic Hydrocarbon Compounds (PAHs) in Flesh

A 20 gram tissue sample was dried with sodium sulfate, spiked with a surrogate mixture of deuterated PAH compounds and extracted with dichloromethane. Sample extracts were cleaned up using gel permeation chromatography followed by alumina and silica gel chromatography.

Sample extracts were analyzed using a Varian Saturn II Ion Trap GC-MS. One microliter of sample extract was injected into a J&W Scientific DB-5MS, 30 meter x 0.25 mm I.D. fused silica capillary column with a 0.25 µm film thickness. The GC oven temperature was initially held at 70°C for two minutes. The temperature ramp was 15°C per minute until the oven reached 150°C. The second temperature ramp was 2°C per minute to a final temperature of 280°C and held for 5 minutes. Initial injector temperature was 70° and was programmed to 280° at 300°/min immediately after injection. The GC carrier gas was helium at a linear velocity of 37 cm/sec. Detection limits of the PAHs are reported in Table R-10. Results of duplicate analyses for PAHs in mussel and sediment are listed in Tables R-11, R-12, and R-13. Matrix spike recoveries for mussel tissue and sediment are listed in Table R-14.

Analytical Techniques for Tributyltin (TBT)

Tributyltin was extracted from tissues by mixing 10 g of tissue, 10 ml of 50% HCL, and 25 ml of methylene chloride for 15 hours. The mix was then centrifuged for five minutes. The methylene chloride was removed and evaporated under a stream of air and the residue was dissolved in hexane. The hexane was washed in a 3% NaOH solution to remove all monobutyl- and dibutyl-tins, mixed for 10 seconds, centrifuged for 5 minutes, and re-evaporated to dryness. The residue was digested with 1 ml of concentrated nitric acid and diluted to 5 ml with Type ll water. The solution was analyzed on a Perkin Elmer Model 3030 Zeeman Atomic Absorption Spectrophotometer equipped with a Model 500 Graphite Furnace and an AS60 Autosampler. Ten µl sample was co-injected with 10 µl of matrix modifier consisting of 100 µg phosphate and 10 µg magnesium nitrate per injection. Tributyltin detection limit is provided in Table R-6. A PACS sample, marine sediment reference material from the National Research Council of Canada, was used as a reference material for tributyltin. In 1993-94, the laboratory result was 1.09 µg/g dry weight with a certified value of 1.27±0.22. In 1994-95, the laboratory result was 1.57±0.02 µg/g dry weight with the same certified value. Duplicate tributyltin analysis was not performed in either 1993-94 or 1994-95.

Procedure for Lipid Determination

As synthetic organic concentrations in organisms may vary with lipid content, it is customary to provide lipid data when reporting tissue concentrations. A thoroughly homogenized sample weighing approximately 5 g (wet weight) is macerated and dried with anhydrous granular Na_2SO_4. The dried sample is transferred to a blender with 150 ml of petroleum ether and blended for two minutes at high speed. The liquid is vacuum-filtered into a 250 ml filter flask through a 10 cm Buchner funnel containing Whatman #1 filter paper. The sample is blended once more with an additional 150 ml of petroleum ether and filtered. The filtrate is concentrated to approximately 25 ml with heat (steam bath) and nitrogen steam. The remaining filtrate is then quantitatively transferred into a 50 ml pre-weighed planchet. The petroleum ether is evaporated, the planchet containing the residue is reweighed, and the percent lipid is calculated.

TABLE R-1

State Mussel Watch Program
Trace Element Detection Limits

Tissue and Sediment

Element	Detection Limit (µg/g, ppm dry weight)	Detection Limit (µg/g, ppm wet weight)
Aluminum	1.0	0.2
Arsenic	0.25	0.04
Cadmium	0.002	0.0003
Chromium	0.02	0.003
Copper	0.003	0.0005
Mercury	0.03	0.005
Manganese	0.05	0.008
Nickel	0.1	0.02
Lead	0.03	0.005
Selenium	0.1	0.02
Silver	0.002	0.0003
Titanium	0.5	0.08
Zinc	0.02	0.003

TABLE R-2

State Mussel Watch Program
Trace Element Analysis of Reference Materials (µg/g, dry weight)*

Error! Bookmark not defined.	1993-94**		1994-95**	
	NBS Oyster	NBS Dolt2	NBS Oyster	NBS Dolt2
Ag	1.72±0.16 (1.68±0.15)	NA	1.43±0.11 (1.68±0.15)	NA
Al	174±5 (202.5±14.1)	NA	194±14 (202.5±14.1)	NA
As	13.4±1.0 (14.0±1.2)	NA	11.8±0.6 (14.0±1.2)	NA
Cd	4.6±0.4 (4.15±0.38)	21.2±1.5 (20.8±0.5)	4.31±0.37 (4.15±0.38)	NA
Cr	0.94±0.08 (1.43±0.46)	NA	1.15±0.06 (1.43±0.46)	NA
Cu	64.2±2.5 (66.3±4.3)	27.0 (25.8±1.1)	61.9±1.3 (66.3±4.3)	NA
Hg	0.066±0.012 (0.064±0.007)	NA	0.073±0.005 (0.064±0.007)	2.09±0.11 (1.99±0.10)
Mn	12.6±0.5 (12.3±1.5)	6.68±0.36 (6.88±0.56)	11.9±0.4 (12.3±1.5)	NA
Ni	2.09±0.34 (2.25±0.44)	NA	2.70±0.10 (2.25±0.44)	NA
Pb	0.34±0.04 (0.371±0.014)	NA	0.33±0.01 (0.371±0.014)	NA
Se	NA	NA	1.98±0.24 (2.21±0.24)	NA
Zn	821±9.2 (830±57)	96.5±3.5 (85.8±2.5)	897±10 (830±57)	NA

* Sample values are given first, followed by reference values in parentheses, both values include 95% confidence interval where appropriate.
NBS refers to the National Bureau of Standards.
DOLT2 refers to dogfish liver from the National Research Council of Canada.
** Sample Year = State Fiscal Year (July 1 - June 30).
NA = Not Analyzed.

TABLE R-3

State Mussel Watch Program
Percent Recovery of Surrogate Compounds for 1994

Station Number		Station Name	DBOB	DBC	DBCE
10.0		Trinidad Head	51	68	73
100.0		Mad River Slough	58	81	84
103.0		Eureka Channel	51	71	82
202.0		Bodega Head	55	81	66
404.0		Sandholdt Bridge	55	70	82
414.0		Pacific Grove	52	78	90
414.0	Dup	Pacific Grove	57	79	105
420.0		Monterey Harbor/Coast Guard Jetty	53	60	77
507.3		Mugu Lagoon/Calleguas Creek	57	76	78
601.0		LA Harbor/National Steel	53	82	74
602.0		LA Harbor/West Basin	55	78	70
605.0		LA Harbor/Cabrillo Pier	56	72	81
616.0		LA Harbor/Consolidated Slip	55	80	33
618.0		LA Harbor/Angels Gate	57	51	78
648.0		Malibu	52	50	78
650.0		Santa Monica	54	53	70
662.0		Royal Palms	58	85	84
681.0		Catalina Island/West	51	82	96
713.0		Huntington Harbour/Edinger Street	60	84	77
713.0	Dup	Huntington Harbour/Edinger Street	57	83	67
715.0		Huntington Harbour/Warner Ave Brdg	54	77	74
715.0	Dup	Huntington Harbour/Warner Ave Brdg	58	83	81
724.0		Newport Bay/Highway 1 Bridge	54	81	72
725.0		Newport Bay/Crows Nest	55	83	81
726.4		Newport Bay/Rhine Channel/End	56	81	84
883.4		San Diego Bay/Continental Maritime	52	77	64
894.0		SD Bay/Harbor Is/E Basin/Storm Dr	53	80	69

DBOB = 4,4'-dibromo-octafluorobiphenyl
DCB = decachlorobiphenyl
DBCE = dibutylchlorendate

Dup = Duplicate analysis.

TABLE R-4

State Mussel Watch Program
Percent Recovery of Surrogate Compounds for 1995

Station Number		Station Name	DBOB	DBC	DBCE
10.0		Trinidad Head	66	88	81
202.0		Bodega Head	54	93	42
404.0		Sandholdt Bridge	64	110	56
404.0	Dup	Sandholdt Bridge	62	110	61
601.0		LA Harbor/National Steel	80	130	120
605.0		Cabrillo Pier	75	120	77
616.0		LA Harbor/Consolidated Slip	75	140	81
618.0		LA Harbor/Angels Gate	76	120	78
648.0		Malibu	80	95	73
650.0		Santa Monica	92	130	91
662.0		Royal Palms	87	130	86
664.0		Cabrillo Beach	78	110	77
713.0		Huntington Harbour/Edinger Street	73	110	69
715.0		Huntington Harbour/Warner Ave Brdg	70	110	55
723.4		Newport Bay/Turning Bas.	66	120	56
724.0		Newport Bay/Highway 1 Bridge	73	120	57
725.0		Newport Bay/Crows Nest	74	120	61
726.4		Newport Bay/Rhine Channel/End	68	120	66
750.0		Oceanside	77	110	68
882.0		24th St. Maritime Terminal/South	72	120	62
894.0		SD Bay/Harbor Is/E Basin/Storm Dr	46	78	46
894.0	Dup	SD Bay/Harbor Is/E Basin/Storm Dr	69	110	50
899.0		San Diego Bay/Shelter Is/Fshg Pier	66	99	44

DBOB = 4,4'-dibromo-octafluorobiphenyl
DCB = decachlorobiphenyl
DBCE = dibutylchlorendate

Dup = Duplicate analysis.

TABLE R-5

State Mussel Watch Program
Distribution of Synthetic Organic Compounds Among
Four Fractions of a Standard Florisil® Column

(0%) Fraction 1	(6%) Fraction 2	(15%) Fraction 3
HCH, alpha*	HCH, alpha*	dacthal
aldrin	HCH, beta	diazinon
chlordene, alpha	HCH, gamma	dichlorobenzophenone, p,p'
chlordene, gamma	HCH, delta	dieldrin
DDE, o,p'	cis-chlordane	endosulfan I
DDE, p,p'	trans-chlordane	endrin
DDMU, p,p'*	chlorpyrifos	malathion
DDT, o,p'	DDD, o,p'	oxadiazon
DDT, p,p'*	DDD, p,p'	parathion, ethyl
heptachlor	DDMU p,p'*	parathion, methyl
hexachlorobenzene	DDT, p,p'*	tetradifon (tedion)
trans-nonachlor	dicofol (kelthane)	
PCB 1248	ethion	
PCB 1254	heptachlor epoxide	
PCB 1260	methoxychlor	
	cis-nonachlor	(50%) Fraction 4
	oxychlordane	
	toxaphene	endosulfan II
		endosulfan sulfate

* Found in both 0% and 6% fractions.

TABLE R-6

State Mussel Watch Program
Synthetic Organic Compounds Analyzed
and Their Detection Limits in Mussel and Sediment

Compound	Detection Limit (ng/g, ppb dry weight)
aldrin	1
cis-chlordane	1
trans-chlordane	1
chlordene, alpha	1
chlordene, gamma	1
chlorpyrifos	4
dacthal	2
DDD, o,'p	5
DDD, p,p'	3
DDE, o,p'	3
DDE, p,p'	3
DDMU,p,p'	5
DDT, o,p'	4
DDT, p,p'	4
diazinon	50
dichlorobenzophenone-p,p'	3
dicofol (Kelthane)	10
dieldrin	1
endosulfan I	1
endosulfan II	10
endosulfan sulfate	50
endrin	6
ethion	20
HCH, alpha	1
HCH, beta	3
HCH, gamma	0.8
HCH, delta	2
heptachlor	1
heptachlor epoxide	1
HCB	1
methoxychlor	15
cis-nonachlor	1
trans-nonachlor	1
oxadiazon	2
oxychlordane	1
parathion, ethyl	10
parathion, methyl	10
PCB 1248	50
PCB 1254	10
PCB 1260	10
tetradifon (Tedion)	10
toxaphene	100
tributyltin	20

TABLE R-7

State Mussel Watch Program
Results of Matrix Spike Analyses: 1993-95 Synthetic Organic Compounds
Mussel Tissue

	1994	1995
Station Name	Bodega Head	Pacific Grove
Station Number	202.0	414.0
Species	RCM	RCM
	Percent Recovery	Percent Recovery
Compound		
aldrin	59	58
cis-chlordane	92	94
trans-chlordane	95	84
oxychlordane	87	77
cis-nonachlor	100	88
trans-nonachlor	94	65
alpha chlordene	65	61
gamma chlordene	64	64
chlorpyrifos	86	59
dicofol	not spiked	72
dichlorobenzophenone	not spiked	39
dacthal	91	67
diazinon	97	70
dieldrin	110	75
endosulfan I	110	72
endosulfan II	110	83
endosulfan sulfate	89	77
endrin	110	69
ethion	100	71
alpha HCH	91	58
beta HCH	76	65
gamma HCH	77	60
delta HCH	81	47
o,p'-DDD	100	95
p,p'-DDD	120	97
o,p'-DDE	84	74
p,p'-DDE	80	50
p,p'-DDMU	66	70
o,p'-DDT	84	62
p,p'-DDT	110	94
heptachlor	58	46
heptachlor epoxide	96	88
hexachlorobenzene	61	62
methooxychlor	120	82
oxadiazon	71	50
ethyl parathion	95	58
methyl parathion	45	42
PCB 1248	not spiked	not spiked
PCB 1254	not spiked	not spiked
PCB 1260	not spiked	not spiked
tetradifon	110	68
toxaphene	not spiked	not spiked

RCM = Resident California Mussel.

TABLE R-8

State Mussel Watch Program
Results of Duplicate Sample Analysis: 1994 Synthetic Organic Compounds Quality Control - Mussel Tissue
(ng/g dry weight)

Station Name	Hunting Harbor/ Edinger Street		Hunting Harbor/ Warner Ave. Bridge		Pacific Grove	
Station No.	713.0		715.0		414.0	
Species	TCM		TCM		RCM	
REPLICATE	1	2	1	2	1	2
COMPOUNDS						
aldrin			ND	1.1		
cis-chlordane	22	24	39	40	2.4	2.0
cis-nonachlor	11	11	23	24		
alpha-chlordene	1.8	1.6	2.4	2.7		
gamma-chlordene			ND	1.0		
oxychlordane	1.0	1.0	1.8	1.6		
trans-chlordane	20	20	35	35	1.9	1.5
trans-nonachlor	20	21	36	36	1.2	1.5
chlorpyrifos	11	8.8	11	14		
dacthal	19	19	3.0	2.2		
DDD, o,p'	11	11	14	14		
DDD, p,p'	34	34	47	49		
DDE, o,p'	12	13	12	12		
DDE, p,p'	220	230	330	340	24	26
DDT, o,p'						
DDT, p,p'	15	14	14	15	5.0	4.3
DDMU,p,p'	15	14	16	18		
diazinon						
dieldrin	13	13	14	10	5.9	7.5
endosulfan I						
endosulfan II						
endosulfan sulfate						
hexachlorobenzene						
alpha-HCH					1.3	1.3
gamma-HCH						
heptachlor epoxide						
oxadiazon			12	14		
PCB 1248						
PCB 1254	100	100	140	170		
PCB 1260						
toxaphene						
percent moisture	88.2	88.5	87.8	88.2	84.9	85.6
percent lipid	0.443	0.484	0.554	0.555	0.525	0.430

TCM = Transplanted California Mussel. RCM = Resident California Mussel. ND = Not Detected.

TABLE R-8 (continued)

State Mussel Watch Program

Results of Duplicate Sample Analysis: 1994 Synthetic Organic Compounds Quality Control - Sediment

(ng/g dry weight)

Station Name	L.A. Harbor/ Consolidated Slip	
Station No.	616.0	
	SED	
REPLICATE	1	2
COMPOUNDS		
aldrin	1.4	1.1
cis-chlordane	24	20
cis-nonachlor	10	11
alpha-chlordene	3.6	3.4
gamma-chlordene	2.2	2.0
oxychlordane	1.7	1.9
trans-chlordane	29	21
trans-nonachlor	21	18
chlorpyrifos	18	13
dacthal	2.1	2.2
DDD, o,p'	30	33
DDD, p,p'	130	130
DDE, o,p'	11	9.8
DDE, p,p'	220	210
DDT, o,p'	12	13
DDT, p,p'	79	320
DDMU,p,p'	12	12
diazinon		
dieldrin	13	7.9
endrin	9.4	12
endosulfan I		
endosulfan II		
endosulfan sulfate		
heptachlor	ND	1.0
heptachlor epoxide	7.3	3.9
hexachlorobenzene	1.0	1.0
alpha-HCH		
beta-HCH	ND	5.7
gamma-HCH		
heptachlor epoxide		
oxadiazon	12	11
PCB 1248	130	100
PCB 1254	170	190
PCB 1260	390	360
toxaphene	580	600
percent moisture	54.2	NA

SED = Sediment. ND = Not Detected.

TABLE R-9

State Mussel Watch Program

Results of Duplicate Sample Analysis: 1995 Synthetic Organic Compounds Quality Control - Mussel Tissue

(ng/g dry weight)

Station Name	SD Bay/Harbor Is/ E Basin/Storm Dr		Sandholt Bridge	
Station No.	894.0		404.0	
Species	TCM		TCM	
REPLICATE	1	2	1	2
COMPOUNDS				
aldrin				
cis-chlordane	25	27	31	33
cis-nonachlor	8.4	8.3	15	16
gamma-chlordene	2.2	3.2	1.2	1.0
alpha-chlordene	2.1	3.2	1.4	1.1
oxychlordane	5.2	5.7	1.3	4.2
trans-chlordane	25	26	25	27
trans-nonachlor	14	20	36	34
chlorpyrifos	ND	4.1	17	18
dacthal			140	140
DDD, o,p'	47	51	100	100
DDD, p,p'	140	150	400	420
DDE, o,p'			42	41
DDE, p,p'	30	39	1700	1600
DDT, o,p'	8.6	8.9	200	200
DDT, p,p'	32	41	680	730
DDMU,p,p'	23	27	55	54
diazinon				
dieldrin	6.0	6.4	300	300
endrin			22	23
endosulfan I			6.7	6.5
endosulfan II			22	20
endosulfan sulfate			82	95
heptachlor	1.9	ND		
hexachlorobenzene				
alpha-HCH				
gamma-HCH			0.91	0.87
heptachlor epoxide	1.3	ND	3.8	2.9
oxadiazon	2.0	2.0	7.3	7.6
PCB 1248	11,800	15,000		
PCB 1254	6,900	9,400	260	250
PCB 1260	210	250	18	16
toxaphene			870	930
percent moisture	87.4	87.2	85.9	86.3
percent lipid	0.441	0.412	0.844	0.838

TCM = Transplanted California Mussel. ND = Not Detected.

TABLE R-9 (continued)

State Mussel Watch Program

Results of Duplicate Sample Analysis: 1995 Synthetic Organic Compounds Quality Control - Sediment

(ng/g dry weight)

Station Name	Mugu Drainage 1	
Station No.	508.0 SED	
REPLICATE	1	2
COMPOUNDS		
aldrin		
cis-chlordane	6.7	6.7
cis-nonachlor	ND	3.4
gamma-chlordene		
alpha-chlordene	0.75	0.74
oxychlordane		
trans-chlordane	4.7	5.1
trans-nonachlor	5.5	5.8
chlorpyrifos	10	10
dacthal	53	52
DDD, o,p'	10	13
DDD, p,p'	44	44
DDE, o,p'	5.4	5.8
DDE, p,p'	340	300
DDT, o,p'	16	21
DDT, p,p'	71	77
DDMU,p,p'		
diazinon		
dieldrin	4.1	4.1
ethion	26	20
endrin	8.2	7.6
endosulfan I		
endosulfan II	3.1	2.9
endosulfan sulfate		
hexachlorobenzene	ND	0.43
alpha-HCH		
gamma-HCH		
heptachlor epoxide		
oxadiazon	13	13
PCB 1248		
PCB 1254		
PCB 1260		
toxaphene 320	320	
percent moisture	37.9	37.7

SED = Sediment. ND = Not Detected.

TABLE R-10

State Mussel Watch Program
Polynuclear Aromatic Hydrocarbons (PAHs) Analyzed
and Their Detection Limits in Mussel and Sediment

Compound	Detection Limit (ng/g, ppb dry weight)
naphthalene	10
1-methylnaphthalene	10
2-methylnaphthalene	10
biphenyl	10
2,6-dimethylnaphthalene	10
acenaphthylene	10
acenaphthene	10
2,3,5-trimethylnaphthalene	10
fluorene	10
phenanthrene	10
anthracene	10
1-methylphenanthrene	10
fluoranthene	10
pyrene	10
benz[a]anthracene	10
chrysene	10
benzo[b]fluoranthene	10
benzo[k]fluoranthene	10
benzo[e]pyrene	10
benzo[a]pyrene	10
perylene	10
indeno[1,2,3-cd]pyrene	10
dibenz[a,h]anthracene	10
benzo[ghi]perylene	10

TABLE R-11

State Mussel Watch Program
Results of Duplicate Sample Analysis: 1994 Polynuclear Aromatic Hydrocarbons Quality Control
Mussel Tissue
(ng/g dry weight)

Station Name	Huntington Harbor/ Edinger Street		Blind 4	
Station No.	713.0		713.0	
Species	TCM		TCM	
REPLICATE	1	2	1	2
COMPOUNDS				
naphthalene	33	34	31	37
1-methylnaphthalene				
2-methylnaphthalene	33	35	24	19
biphenyl				
2,6-dimethylnaphthalene				
acenaphthylene				
acenaphthene				
2,3,5-trimethylnaphthalene				
fluorene				
phenanthrene	36	33	15	13
anthracene				
1-methylphenanthrene				
fluoranthene	69	67		
pyrene	ND	78	ND	26
benz[a]anthracene				
chrysene	55	44		
benzo[b]fluoranthene				
benzo[k]fluoranthene				
benzo[e]pyrene				
benzo[a]pyrene				
perylene				
indeno[1,2,3-cd]pyrene				
dibenz[a,h]anthracene				
benzo[ghi]perylene				
percent moisture	88.2	88.5	76.1	NA
percent lipid	0.443	0.484	1.59	NA

TCM = Transplanted California Mussel. ND = Not Detected. NA = Not Analyzed.

TABLE R-12

State Mussel Watch Program
Results of Duplicate Sample Analysis: 1994 Polynuclear Aromatic Hydrocarbons Quality Control
Sediment
(ng/g dry weight)

Station Name	LA Harbor/ National Steel	
Station No.	601.0 SED	
REPLICATE	1	2
COMPOUNDS		
naphthalene	34	36
1-methylnaphthalene	16	14
2-methylnaphthalene	51	54
biphenyl	20	14
2,6-dimethylnaphthalene	27	18
acenaphthylene	ND	ND
acenaphthene	18	17
2,3,5-trimethylnaphthalene	11	11
fluorene	24	24
phenanthrene	180	200
anthracene	100	110
1-methylphenanthrene	21	26
fluoranthene	390	420
pyrene	380	490
benz[a]anthracene	230	260
chrysene	430	490
benzo[b]fluoranthene	740	830
benzo[k]fluoranthene	150	190
benzo[e]pyrene	350	400
benzo[a]pyrene	440	510
perylene	120	130
indeno[1,2,3-cd]pyrene	140	120
dibenz[a,h]anthracene	75	46
benzo[ghi]perylene	110	120
percent moisture	46.2	45.8

SED = Sediment. ND = Not Detected.

TABLE R-13

State Mussel Watch Program
Results of Duplicate Sample Analysis: 1995 Polynuclear Aromatic Hydrocarbons Quality Control
Mussel Tissue*
(ng/g dry weight)

Station Name	Mission Bay/ Landfill 2	
Station No.	868.6 TCM	
REPLICATE	1	2
COMPOUNDS		
naphthalene	41	41
1-methylnaphthalene	24	25
2-methylnaphthalene	100	100
biphenyl		
2,6-dimethylnaphthalene	13	12
acenaphthylene	5.2	6.0
acenaphthene		
2,3,5-trimethylnaphthalene		
fluorene		
phenanthrene	18	23
anthracene		
1-methylphenanthrene		
fluoranthene	28	33
pyrene	23	34
benz[a]anthracene		
chrysene	15	ND
benzo[b]fluoranthene		
benzo[k]fluoranthene		
benzo[e]pyrene		
benzo[a]pyrene		
perylene		
indeno[1,2,3-cd]pyrene		
dibenz[a,h]anthracene		
benzo[ghi]perylene		
percent moisture	NA	NA

TCM = Transplanted California Mussel. ND = Not Detected.
NA = Not Analyzed.
* Duplicate sample analysis was not performed on sediment in 1995.

TABLE R-14

State Mussel Watch Program
Results of Matrix Spike Analyses: 1993-95 Polynuclear Aromatic Hydrocarbons (PAHs)

	1994	1995
Station Name	LA Harbor/Cabrillo Pier	Trinidad Head
Station Number	605.0	10.0
Species	SED	RCM
	Percent Recovery*	Percent Recovery
COMPOUNDS		
naphthalene	100	100
1-methylnaphthalene	80	not spiked
biphenyl	63	not spiked
2,6-dimethylnaphthalene	30	not spiked
acenaphthylene	86	110
acenaphthene	121	120
2,3,5-trimethylnaphthalene	63	not spiked
fluorene	100	130
phenanthrene	100	130
anthracene	96	110
1-methylphenanthrene	140	not spiked
fluoranthene	120	120
pyrene	200	100
benz[a]anthracene	180	130
chrysene	230	130
benzo[b]fluoranthene	360	100
benzo[k]fluoranthene	160	100
benzo[e]pyrene	210	not spiked
benzo[a]pyrene	250	100
perylene	410	not spiked
indeno[1,2,3-cd]pyrene	160	110
dibenz[a,h]anthracene	110	120
benzo[ghi]perylene	200	120

SED = Sediment. RCM = Resident California Mussel.

* The percent recovery of several spiked PAHs exceeded 150% in the 1994 sediment sample. The unspiked sample contained concentrations of these PAH compounds at 2.5 to 10 times the amount spiked. For example, the concentration of perylene in the unspiked sample was 3.47 ppm while the amount of perylene spiked was only 0.332 ppm. The recovery of 2,6-dimethylnaphthalene was low, reported concentrations for this compound are qualified as estimates only.

APPENDIX S

Median International Standards

Median International Standards

In 1982, the Food and Agricultural Organization (FAO) of the United Nations conducted a survey of standards and legal limits for metals including mercury, pesticides, and other contaminants in fishery products. This was in response to frequent inquiries from institutions and companies active in international commerce that found it difficult finding such information.

The FAO surveyed nations that were members of the FAO as well as those who were not. Most nations cooperated with the survey and, in certain other cases, the standards were drawn from other sources. The FAO took all of the responses and presented them in a report entitled "Compilation of Legal Limits for Hazardous Substances in Fish and Fishery Products" (Nauen 1983). Most of the limits were presented in a standard format and in standard units of fresh or live weight. Exceptions are clearly noted.

Nearly all of the standards for pesticides were from the United States (FDA standards). However, with the exception of mercury, the United States has no standards for trace metals in fishery products. It is this very lack of standards that makes interpretation of some of the SMWP findings difficult.

Table S-1 summarizes the standards and guidelines for metals from the FAO report. The table notes whether the standards are for freshwater fish, marine fish, shellfish, or a combination of these. When more than one standard was listed by the FAO report, those values closest to a standard for fresh weight, edible portion were chosen. Exceptions are clearly noted in the table. Standards for each element are arranged in ascending order. The country of origin and the approximate date of adoption are also noted.

As can be seen in Table S-1, some of the standards are not truly for edible portion, fresh weight. For example, some standards refer to canned products or protein. In the case of India, the standards are on a dry weight basis. If the Indian standards were stated in fresh weight terms, they would be approximately one fifth or one sixth of the stated standard.

Table S-1 has many striking features. One feature is that most of the standards are surprisingly similar. Another feature is the large number of countries that have standards for metals. Also, although many of these countries are less developed nations, the standards adopted by these nations do not differ from those of the more developed nations.

The standards were not summarized for mercury because there is a USFDA standard of 1.0 ppm for methyl mercury in the edible portions of fish and shellfish. This was, incidentally, the highest limit set by any nation in the FAO study. The great majority of nations have set a mercury standard of 0.5 ppm.

Median International Standards presented in Table 4 were calculated from the standards listed in Table S-1. The median standard was chosen for use for several reasons. The median is less influenced than the mean by outliers in the data. Also, direct comparisons of standards for fresh versus canned versus dry can be misleading. By using median standards, these misleading comparisons can be more easily avoided. In most cases, the Median International Standard is actually a standard set by one or more nations rather than an average value not actually set by any country. The median was calculated as follows. All standards or guidelines (with the exception of the Indian standards which are based on dry weight) were considered to be more-or-less equivalent. For the purposes of calculating the median, the Indian standards were divided by five. The median was calculated as the middle value of all of the standards (e.g., the fourth of seven values

arranged in ascending order). In a few cases, the number of standards was even. In this event, the two mid-values were averaged (most were not different). None of the adjusted dry-weight standards from India ended up as a median or as part of a mid-value pair.

For obvious reasons, the Median International Standards can only be used to provide a general idea of what other nations have chosen to use as a standard. The range of all values is listed in Table 4 as a reminder of this. However, with the lack of American standards, Median International Standards can provide a guidepost for those responsible for interpreting trace metal findings in fish and shellfish tissue.

TABLE S-1

International Standards for Trace Elements in Fish and Molluscs

Element	Standard	Freshwater Fish	Marine Fish	Molluscs/ Shellfish	Country	Approximate Date of Adoption
Antimony	1.0 ppm	x	x	x	Hong Kong	1983
	1.0 ppm	x	x	x	New Zealand	1971
	1.5 ppm	x	x	x	Australia	1982
Arsenic	0.1 ppm	x	x	x	Venezuela	-
	1.0 ppm	x	x	x	Chile	-
	1.0 ppm	d	d	x	India	-
	1.0 ppm	x	x	x	New Zealand	1971
	1.0 ppm	e	e	e	United Kingdom	1959
	1.4 ppm	x			Hong Kong	1983
	1.5 ppm	x	x	x	Australia	1982
	1.5 ppm	c	c	c	Thailand	1982
	3.5 ppm	p	p		Canada	1976
	5.0 ppm	x	x	x	Finland	1980
	5.0 ppm	x	x	x	Zambia	1976
Cadmium	0.05 ppm	x	x		Netherlands	-
	0.1 ppm	c	c	c	Switzerland	1982
	0.1 ppm	r	x		Venezuela	-
	0.2 ppm	x	x		Australia	1982
	0.3 ppm	r	r		Finland	-
	0.5 ppm	x			W. Germany	1979
	1.0 ppm	x			Netherlands	-
	1.0 ppm	x	x		New Zealand	1971
	2.0 ppm	x			Australia	1982
	2.0 ppm	x	x	x	Hong Kong	1983
Chromium	1.0 ppm	x	x	x	Hong Kong	1983
Copper	10.0 ppm	x	x	x	Chile	-
	10.0 ppm	d	d		India	-
	10.0 ppm	x	x		Venezuela	-
	20.0 ppm	c	c	c	Thailand	1982
	20.0 ppm	g	g	g	United Kingdom	1956
	30.0 ppm	x	x	x	Australia	1982
	30.0 ppm	x	x	x	New Zealand	1971
	100.0 ppm	x	x		Zambia	1976
Fluoride	150.0 ppm	p	p		Canada	1979
Fluorine	10.0 ppm	x	x		New Zealand	1971
	25.0 ppm	x	x		Zambia	1976

p - in protein
e - except where natural levels are higher
c - in metal containers
g - recommended guideline
d - dry weight basis
r - revised limit (proposed)

TABLE S-1 (continued)

International Standards for Trace Elements in Fish and Molluscs

Element	Standard	Freshwater Fish	Marine Fish	Molluscs/ Shellfish	Country	Approximate Date of Adoption
Lead	0.5 ppm	p	p		Canada	1979
	0.5 ppm	x			W. Germany	1979
	0.5 ppm	x	x		Netherlands	-
	1.0 ppm	x	x	x	Sweden	1979
	1.0 ppm	c	c	c	Switzerland	1982
	1.0 ppm	c	c	c	Thailand	1982
	2.0 ppm	x	x		Australia	1982
	2.0 ppm	x	x	x	Chile	1982
	2.0 ppm	x			Finland	1980
	2.0 ppm	x			Italy	1978
	2.0 ppm	x			Netherlands	-
	2.0 ppm	x	x		New Zealand	-
	2.0 ppm	l	l		Sweden	1979
	2.0 ppm	x	x		United Kingdom	1980
	2.0 ppm	x	x		Venezuela	-
	2.5 ppm	x			Australia	1982
	5.0 ppm	d	d		India	-
	6.0 ppm	x	x	x	Hong Kong	1983
	10.0 ppm	x	x		Zambia	1976
Mercury	International Standards for Mercury range from 0.1 ppm to 1.0 ppm. Twenty-eight countries have established standards for Mercury. The U. S. Food and Drug Administration has set an action level of 1.0 ppm in the edible portion of fish and molluscs. The median international standard is 0.5 ppm.					
Selenium	0.3 ppm	x	x	x	Chile	1982
	2.0 ppm	x	x		Australia	1982
	2.0 ppm	x	x		New Zealand	1971
Tin	50.0 ppm	x	x		Australia	1982
	100.0 ppm	x	x		Venezuela	-
	150.0 ppm	c	c	c	Finland	1979
	150.0 ppm	x	x		New Zealand	1977
	230.0 ppm	x	x	x	Hong Kong	1983
	250.0 ppm	d	d		India	-
	250.0 ppm	x	x		Thailand	1982
	250.0 ppm	g,c	g,c	g,c	United Kingdom	1973
Zinc	40.0 ppm	x	x	x	Australia	1982
	40.0 ppm	x	x		New Zealand	1971
	50.0 ppm	d	d		India	-
	50.0 ppm	g	g		United Kingdom	1953
	100.0 ppm	x	x	x	Chile	1982
	100.0 ppm	x	x		Zambia	1976

p - in protein
e - except where natural levels are higher
c - in metal containers
l - in liver
g - recommended guideline
d - dry weight basis
r - revised limit (proposed)

APPENDIX T

Elevated Data Levels

Elevated Data Levels (EDL)

An EDL is defined for the purposes of the SMWP as that concentration of a toxic substance in mussels or clams that equals or exceeds a specified percentile (such as 85 percent) of all SMWP measurements of the toxic substance in the same species and exposure condition (resident or transplant) between 1977 and 1995. EDLs were determined as follows:

(1) All SMWP data from 1977 through 1995 were pooled by species and exposure, (2) The concentrations of each toxicant were ranked from highest to lowest concentration down to, and including, instances when a chemical was not detected, (3) The cumulative frequency of occurrence and percentile ranking for all concentrations were calculated, (4) The concentration of the toxic substance representing the 85^{th} percentile was identified and designated the 85 percent EDL or EDL 85, and (5) The concentration of the toxic substance representing the 95^{th} percentile was identified and designated the 95 percent EDL or EDL 95. The EDL 85 is that concentration of a toxic substance that equals or exceeds 85 percent of all SMWP measurements of the toxic substance in the same species and exposure between 1977 and 1995. The EDL 95 is that concentration of a toxic substance that equals or exceeds 95 percent of all SMWP measurements of the toxic substance in the same species and exposure between 1977 and 1995. EDLs for trace elements are summarized in Tables 5 and 6. EDLs for synthetic organic substances are summarized in Tables 7 through 9.

Because EDLs are based on the relative ranking of each measurement, rather than a percentage of the highest concentration obtained, they are not influenced by unusually high (anomalous) toxicant values. This characteristic of EDLs is especially desirable in the evaluation of synthetic organic toxicants where the highest concentration may be as much as ten times the next highest concentration. EDLs do, however, reflect the biases of the data upon which they have been based.

Because they are based on SMWP data rather than an absolute number external to the SMWP, EDLs, when exceeded, can provide a sensitive first indication of elevated toxicant levels in California waters. As such, EDLs fulfill the monitoring function of the SMWP effectively. In addition, EDLs may be expressed in dry weight to eliminate data variability due to moisture content and to conform to scientific literature relevant to mussel or clam monitoring programs worldwide. However, EDLs do not assess adverse impacts, nor do they necessarily represent concentrations that may be damaging to the mussels, clams, or to a human consuming these species. They do not directly relate to Maximum Tissue Residue levels (MTRLs), FDA action levels, NAS guidelines, or Median International Standards (MIS).