State Mussel Watch Program

Data Column Information

The following column variables are used to list supplementary information about each sample. Variables numbered 1 through 9 are found in all database tables containing analytical results (Table 1-5). Variables labeled 10 through 14 are found in the special supplementary information tables SAMPINFO or STATION (Table 6).

1. ID (Identification Number) - Each individual sample that is analyzed is given a unique I.D. number to identify it. Samples taken from the same station, but at different times, are given different I.D. numbers. Organic and element samples from the same location and time receive the same ID, unless the type of animal used differs, in which case separate ID numbers are assigned.

ID provides the exclusive means to conclusively identify an individual sample for a particular site on a particular date for a particular sample species. For this reason, ID is used in all tables where analytical results are located.

- 2. **STANUM** (Sample Station Number) Each station location where samples are collected is given a unique station number. Station numbers may be repeated within and among years, if more than one sample has been taken at a particular site. Station numbers generally run sequentially from north to south, but do not necessarily correspond to Region number.
- 3. **STANAME** (Sample Station Name) Each station site is given a unique station name, usually based on a local landmark. Some station names are abbreviated to fit a 34 space field. Each Station Name is exclusively assigned to only one Station Number.
- 4. **CDATE** (Date Sample Collected) The date that each sample was collected in the field is listed, as month, day year (MM/DD/YY).
- 5. YEAR (Year of Sample Collection) A two digit code for the year (i.e., State Fiscal Year: July 1 to June 30) of collection is included. Fiscal Year 1977-78, for example, is YEAR 78. For archive samples, YEAR indicates the fiscal year analysis was performed.
- 6. **SPECTYPE** (Sample or Species Type) Table 7 lists the types of sample species or sample types and the abbreviations used in the data base tables. SPECTYPE followed by "-a" indicate an archive sample.

A small number of 1982-83 transplanted California mussel samples were experimentally depurated prior to analysis; SPECTYPE for these samples is identified by "TCM-d". Likewise, a small number of 1983-84 resident

- mussel samples were identified by "RCM-1", "RCM-s", or "RBM-s" when large or small shell sizes were experimentally used in those particular samples. In addition, small size RBM-s were collected in 1996.
- 7. **DURATION** (Duration of Sample Transplantation) For transplanted animals, the time in months between the date when the sample was deployed at the sampling site and the date when the sample was collected is listed.
- 8. PWATER_E, PWATER_O (Percent Moisture in Samples) The percent of moisture in samples analyzed for trace elements or synthetic organic substances is listed. These values are useful for converting dry weight results to wet weight-based concentrations, using the formulae in Table 8.
- 9. LENGTH_E, LENGTH_O (Average Shell Length) The average length, in millimeters, is listed for the shells in each (trace element or synthetic organic) bivalve sample. LENGTH_O is calculated by measuring the lengths of 15 randomly selected animals in each sample. LENGTH_E is calculated by measuring the length of 15 randomly selected animals that are pooled from the first replicate value of each set of three values of each element sample.
- 10. PLIPID (Percent of Lipid [Fat] Materials in Sample Tissues) For samples analyzed for synthetic organic pollutants the percent of lipid in the sample is listed. This value is used to calculate synthetic organic substance tissue concentrations on a lipid weight basis, using formulae contained in Table 8. Lipid weight values are calculated using wet weight data.
- 11. **REGION** (Regional Water Resources Control Board Code) The number of the Regional Board in whose region a sample resides. Only regions whose boundaries include marine or estuarine areas are included. Table 9 lists the codes used.
- 12. **COUNTY** The California coastal county where the station is located is listed.
- 13. LAT, LONG, LATGIS, LONGGIS (Sample Latitude and Longitude) The latitude and longitude of each station is listed. LATGIS and LONGGIS are decimal versions of the latitude and longitude for GIS use.
- 14. YEAR78 YEAR00 (Analytical Type by Year of Collection) An indication of whether a trace element ("E") or synthetic organic substance ("O") or both (["EO"]) analysis was performed in a particular sampling year is given in these columns. "ns" = Not Sampled.

Additional Information on Analytical Variables

Analytical variables are listed in Tables 2 to 5. Negative numbers are used as entries for analytical results under the following special circumstances:

- 8.0 = **Not Detected** (The pollutant concentration was below the detection limit of the analytical test and instrumentation used).
- 9.0 = Not Analyzed (An analysis for a particular substance was not performed for a particular sample.)

Detection limits for each chemical may vary from year to year, and are listed in Mussel Watch reports.

Four of the analytical variables are totals, and are defined here:

Total of DDT Substances:

TDDT = DDDOP + DDDPP + DDEOP + DDEPP + DDMSPP + DDMUPP + DDTOP + DDTPP

Total of Chlordane Substances:

TOTCL = ACDEN + GCDEN + CCDAN + TCDAN + CNONA + OCDAN + TNONA

Total of PCB Arochlor Compounds:

TPCB = PCB48 + PCB54 + PCB60 (sum of PCB aroclor concentrations)

Total of Endosulfan Substances:

TENDO = ENDO1 + ENDO2 + ENDOS

Totals are calculated as follows:

- 1. When all compounds in a total listed above are present at levels above the detection limit, they are summed to calculate the total.
- 2. When some compounds in a total listed above are reported as less than the detection limit, the total is composed of only those compound values above the detection limit.
- 3. If all compounds in a total listed above are reported as less than the detection limit, the total is reported as not detected (-8.0).
- 4. If any of the compounds in a total listed above are reported as not analyzed, the total is reported as not analyzed (-9.0).

Variable names for wet weight, dry weight, and lipid weight organic chemicals are distinguished by the suffices "_W", "_D", or "_L".

Three trace element replicate samples are analyzed at each. The mean value for each replicate triplet, which is the value actually reported in Mussel Watch reports, is calculated, as follows:

- 1. When all three replicate values exist, the arithmetic mean is calculated and reported.
- 2. When one or two replicate values are missing or not analyzed, the arithmetic mean of the two or one remaining values is calculated and reported.
- 3. When all three values are missing or not analyzed, the value is reported as not analyzed (-9.0).
- 4. When one or two replicate values are less than the detection limit, these values are set to zero, and the arithmetic mean of the three values, including the zero values, is calculated and reported.
- 5. When all three replicate values are less than the detection limit of the analytical test, the value is reported as not detected (-8.0).

TABLE 1. Data Tables

Primary Data Tables

<u>Table</u>	Contents
METWET	<pre>average trace element (ppm, wet wgt)</pre>
METDRY	<pre>average trace element (ppm, dry wgt)</pre>
ORGWET	synthetic organic (ppb, wet wgt)
ORGDRY	synthetic organic (ppb, dry wgt)
ORGLIP	synthetic organic (ppb, lipid wgt)
PAHWET	PAH (ppb, wet wgt)
PAHDRY	PAH (ppb, dry wgt)
PAHLIP	PAH (ppb, lipid wgt)
PCBWET2	PCB congeners (ppb, wet wgt)*
PCBDRY2	PCB congeners (ppb, dry wgt)*
PCBLIP2	PCB congeners (ppb, lipid wgt)*

^{*} PCB congeners only analyzed in Years 88, 89, and 90.

Supplementary Information Tables

<u>Table</u>	Contents
SAMPINFO	sample information
STATION	station sampling history and latitude and longitude.

TABLE 2. CONTENTS OF TRACE ELEMENT TABLES.

Tables: METWET, METDRY

<u>#</u>	METWET Column Name	METDRY Column Name	<u>Contents</u>
1. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11. 12. 13. 14. 15. 16. 17. 18. 19. 20. 21. 22. 23.	ID STANUM STANAME CDATE YEAR SPECTYPE DURATION PWATER—E LENGTH—E AG—W AL—W AS—W CD—W CR—W CU—W HG—W MMHG—W MMHG—W MN—W NI—W PB—W SE—W TI—W ZN—W	ID STANUM STANAME CDATE YEAR SPECTYPE DURATION PWATER_E LENGTH_E AG_D AL_D AS_D CD_D CD_D CR_D CU_D HG_D MMHg_D MN_D NI_D PB_D SE_D TI_D ZN_D	sample ID number sample station number sample station name date of collection sample year type of sample transplant duration percent moisture average shell length (mm) silver (ppm) aluminum (ppm) arsenic (ppm) cadmium (ppm) chromium (ppm) chromium (ppm) mercury (ppm) mercury (ppm) methylmercury (ppm) manganese (ppm) nickel (ppm) lead (ppm) selenium (ppm) titanium (ppm) zinc (ppm)

TABLE 3. CONTENTS OF SYNTHETIC ORGANIC TABLES.

Tables: ORGWET, ORGDRY, ORGLIP

<u>#</u>	ORGWET Column Name	ORGDRY Column Name	ORGLIP Column <u>Name</u>	<u>Contents</u>
42.	CDATE YEAR SPECTYPE DURATION PWATER—O LENGTH—O PLIPID ALDRN—W CLBNS—W ACDEN—W CCDAN—W CCDAN—W TODAN—W TOTOL—W CLPYR—W DACTH—W DDDPP—W DDDPP—W DDDPP—W DDEPP—W DDMSPP—W DDMSPP—W DDTOPP—W DDTOPP—W DDTOPP—W DDTOPP—W DDTOPP—W TDDT—W DIAZN—W DICLB—W ENDO1—W ENDO1—W ENDO1—W ENDO1—W ENDO1—W ENDO1—W ENDO2—W ENDOS—W TENDO—W ENDON—W HCHA—W HCHB—W HCHB—W HCHB—W	ID STANUM STANAME CDATE YEAR SPECTYPE DURATION PWATER—O LENGTH—O PLIPID ALDRN—D CLBNS—D ACDEN—D CCDAN—D CCDAN—D TCDAN—D TCDAN—D TCDAN—D TOTCL—D DDDPP—D DDDPP—D DDDPP—D DDDPP—D DDMSPP—D DDMSPP—D DDMSPP—D DDMSPP—D DDTOP—D DTOP—D DTOP—D DICLB—D DICLB—D DICLB—D DICLB—D ENDOS—D TENDO—D ENDOS—D TENDO—D ENDOS—D TENDO—D HCHA—D HCHB—D HCHB—D HCHB—D HCHB—D HCHB—D HCHB—D HCHB—D TCP—D TCP—	ID STANUM STANAME CDATE YEAR SPECTYPE DURATION PWATER—O LENGTH—O PLIPID ALDRN—L CLBNS—L ACDEN—L CCDAN—L CCDAN—L TCDAN—L TCDAN—L TOTOL—L TOTOL—L DDDOP—L DDDPP—L DDDPP—L DDDPP—L DDMSPP—L DDMSPP—L DDMSPP—L DDTOP—L DDTPP—L DDTOP—L TDDT—L DICLB—L DCLB—L DCLB	sample ID number sample station number sample station name collection date sampling year sample type transplant duration percent moisture average shell length (mm) percent lipid aldrin chlorbenside alpha-chlordene cis-chlordane gamma-chlordane trans-chlordane trans-nonachlor trans-nonachlor oxychlordane total chlordane chlorpyrifos dacthal o,p'-DDD p,p'-DDD p,p'-DDE p,p'-DDM p,p'-DDT total DDT diazinon dichlorobenzide dicofol dieldrin endosulfan II endosulfan II endosulfan sulfate total endosulfan endrin ethion alpha HCH beta HCH delta HCH gamma HCH heptachlor heptachlor epoxide hexachlorobenzene methoxychlor ethylparathion methylparathion methylparathion pentachlorophenol tetradifon toxaphene chlordene oxadiazon PCB arochlor 1248 PCB arochlor 1250 Total of PCB arochlors Polychlorinated Terphenyl tributyltin

TABLE 4. CONTENTS OF PAH TABLES.

Tables: PAHWET, PAHDRY, PAHLIP (polynuclear aromatic hydrocarbon)

<u>#</u>	PAHWET Column Name	PAHDRY Column Name	PAHLIP Column Name	Contents
1. 2. 3. 4. 5. 6. 7. 8. 90. 11. 12. 13. 14. 15. 16. 17. 18. 19. 20. 21. 223. 24. 25.	Name ID STANUM STANAME CDATE YEAR SPECTYPE DURATION PWATER—O LENGTH—O PLIPID TPAH—W ANTHA—W ANTHAH—W BIPHEN—W CHRYSN—W FLRABB—W FLRABB—W FLRABK—W FLRABK—W FLRABK—W NAP1—W NAP2—W NAP26—W NAP235—W	Name ID STANUN STANAME CDATE YEAR SPECTYPE DURATION PWATER—O LENGTH—O PLIPID TPAH—D ANTHA—D ANTHA—D BIPHEN—D CHRYSN—D FLRABB—D FLRABB—D FLRABK—D FLRABB—D FLRABB—D NAP—D NAP—D NAP—D NAP—D NAP—D NAP—D NAP—2—D NAP—2—D NAP—26—D	Name ID STANUM STANAME CDATE YEAR SPECTYPE DURATION PWATER—O LENGTH—O PLIPID TPAH—L ANTH—L ANTHA—L ANTHAH—L BIPHEN—L CHRYSN—L FLRABB—L FLRABK—L FLRABK—L FLRABK—L FLUORE—L NAP—L	sample ID number sample station number sample station name collection date sampling year sample type transplant duration percent moisture average shell length (mm) percent lipid total PAHs anathracene benzo [a] anathracene dibenz [a,h] anthracene biphenyl chrysene fluoranthene benzo [b] fluoranthene benzo [k] fluoranthane fluorene naphthalene 1-methylnaphthalene 2,6-dimethylnaphthalene 2,3,5-trimethylnaphthalene
26. 27.	NAPHEN_W NAPHYL_W	NAPHEN_D NAPHYL_D	NAPHEN_L NAPHYL_L	acenaphthene acenaphthylene
28. 29 30. 31.	PERY—W PERYGH—W PHENA—W PHENA1—W	PERY_D PERYGH_D PHENA_D PHENA1_D	PERY_L PERYGH_L PHENA_L PHENA1_L	perylene benzo [g,h,i] perylene phenanthrene 1-methylphenanthrene
32. 33. 34. 35.	PYRE-W PYREBA-W PYREBE-W PYREIN-W	PYRE—D PYREBA—D PYREBE—D PYREIN—D	PYRE—L PYREBA—L PYREBE—L PYREIN—L	<pre>pyrene benzo [a] pyrene benzo [e] pyrene indeno [1,2,3-c,d] pyrene</pre>

TABLE 5. CONTENTS OF PCB CONGENER TABLES.

<u>#</u>	PCBWET2 Column Name	PCBDRY2 Column Name	PCBLIP2 Column Name	Contents
123456789011234567890112345678901123456789000000000000000000000000000000000000	CDATE YEAR SPECTYPE DURATION PWATER—O	ID STANUM STANAME CDATE YEAR SPECTYPE DURATION PWATER—O LENGTH—O PLIPID PCB5—D PCB6—D PCB8—D PCB18—D PCB18—D PCB18—D PCB18—D PCB22—D PCB22—D PCB28—D PCB31—D PCB44—D PCB44—D PCB44—D PCB44—D PCB45—D PCB46—D PCB46—D PCB47—D PCB46—D PCB667—D PCB667—D PCB668—D PCB668—D PCB668—D PCB687—D PCB688—D	ID STANUM STANAME CDATE YEAR SPECTYPE DURATION PWATER—O LENGTH—O PLIPID PCB5—L PCB5—L PCB6—L PCB18—L PCB18—L PCB18—L PCB18—L PCB19—L PCB29—L PCB29—L PCB29—L PCB28—L PCB29—L PCB31—L PCB44—L PCB44—L PCB44—L PCB45—L PCB46—L PCB46—L PCB47—L PCB46—L PCB47—L PCB46—L PCB47—L PCB48—L PCB47—L PCB48—L PCB48—L PCB48—L PCB49—L PCB49—L PCB56—L PCB67—L PCB68—L P	sample ID number sample station number sample station name collection date sample type transplant duration percent moisture (organic) average shell length (mm) percent lipid PCB congener # 5 PCB congener # 6 PCB congener # 7 PCB congener # 16 PCB congener # 16 PCB congener # 18 PCB congener # 19 PCB congener # 19 PCB congener # 22 PCB congener # 27 PCB congener # 27 PCB congener # 27 PCB congener # 27 PCB congener # 28 PCB congener # 31 PCB congener # 33 PCB congener # 33 PCB congener # 40 PCB congener # 41 PCB congener # 44 PCB congener # 45 PCB congener # 47 PCB congener # 47 PCB congener # 46 PCB congener # 59 PCB congener # 66 PCB congener # 67 PCB congener # 67 PCB congener # 67 PCB congener # 67 PCB congener # 70 PCB congener # 83 PCB congener # 67 PCB congener # 70 PCB congener # 70 PCB congener # 87 PCB congener # 89 PCB congener # 99 PCB congener # 99 PCB congener # 90 PCB congener # 90 PCB congener # 97 PCB congener # 101 PCB congener # 107 PCB congener # 107 PCB congener # 107 PCB congener # 110 PCB congener # 120 PCB congener # 120 PCB congener # 120 PCB congener # 122 PCB congener # 128 PCB congener # 129 PCB congener # 135 PCB congener # 135 PCB congener # 136

TABLE 5 (cont'd).

<u>#</u>	PCBWET2 Column Name	PCBDRY2 Column Name	PCBLIP2 Column Name	Contents
65.	PCB137_W	PCB137_D	PCB137_L	PCB congener # 137
66.	PCB138_W	PCB138_D	PCB138_L	PCB congener # 138
67.	PCB141_W	PCB141_D	PCB141_L	PCB congener # 141
68.	PCB146_W	PCB146_D	PCB146_L	PCB congener # 146
69.	PCB149_W	PCB149_D	PCB149_L	PCB congener # 149
70.	PCB151_W	PCB151_D	PCB151_L	PCB congener # 151
71.	PCB153-W	PCB153—D	PCB153-L	PCB congener # 153
72.	PCB156-W	PCB156—D	PCB156-L	PCB congener # 156
73.	PCB158-W	PCB158—D	PCB158-L	PCB congener # 158
74.	PCB170-W	PCB170-D	PCB170-L	PCB congener # 170
75.	PCB172-W	PCB172-D	PCB172-L	PCB congener # 172
76.	PCB173-W	PCB173-D	PCB173-L	PCB congener # 173
77.	PCB174-W	PCB174-D	PCB174-L	PCB congener # 174
78.	PCB176-W	PCB176-D	PCB176-L	PCB congener # 176
79.	PCB177-W	PCB177_D	PCB177—L	PCB congener # 177
80.	PCB179-W	PCB179_D	PCB179—L	PCB congener # 179
81.	PCB180_W	PCB180_D	PCB180_L	PCB congener # 180
82.	PCB183_W	PCB183_D	PCB183_L	PCB congener # 183
83.	PCB185_W	PCB185_D	PCB185_L	PCB congener # 185
84.	PCB187_W	PCB187_D	PCB187_L	PCB congener # 187
85.	PCB189_W	PCB189_D	PCB189_L	PCB congener # 189
86.	PCB191_W	PCB191_D	PCB191_L	PCB congener # 191
87.	PCB193_W	PCB193_D	PCB193_L	PCB congener # 193
88.	PCB194_W	PCB194_D	PCB194_L	PCB congener # 194
89.	PCB195_W	PCB195_D	PCB195_L	PCB congener # 195
90.	PCB196_W	PCB196_D	PCB196_L	PCB congener # 196
91.	PCB197_W	PCB197_D	PCB197_L	PCB congener # 197
92.	PCB198_W	PCB198_D	PCB198_L	PCB congener # 198
93.	PCB199_W	PCB199_D	PCB199_L	PCB congener # 199
94. 95.	PCB199-W PCB201-W PCB205-W	PCB199—D PCB201—D PCB205—D	PCB199—L PCB201—L PCB205—L	PCB congener # 199 PCB congener # 201 PCB congener # 205
96.	PCB206-W	PCB206-D	PCB206-L	PCB congener # 206
97.	PCB207-W	PCB207-D	PCB207-L	PCB congener # 207

TABLE 6. CONTENTS OF SUPPLEMENTARY INFORMATION

Table: STATION (sample station information and analyses types by year)

<u>#</u>	Column <u>Name</u>	Contents
1. 23. 4.5. 67. 89. 111. 112. 113. 115. 115. 117. 118. 119. 119. 119. 119. 119. 119. 119	STANUM STANAME REGION COUNTY LAT LATGIS LONGGIS Year78 Year80 Year81 Year82 Year84 Year85 Year86 Year87 Year889 Year890 Year91 Year92 Year91 Year91 Year92 Year991 Year999 Year996 Year999 Year999 Year999 Year999	sample station number sample station name sample region sample county sample latitude sample latitude in decimal format sample longitude sample longitude sample longitude in decimal format 1977-78 analysis type(s) 1978-79 analysis type(s) 1979-80 analysis type(s) 1980-81 analysis type(s) 1981-82 analysis type(s) 1981-82 analysis type(s) 1983-84 analysis type(s) 1983-85 analysis type(s) 1984-85 analysis type(s) 1986-87 analysis type(s) 1987-88 analysis type(s) 1988-89 analysis type(s) 1988-89 analysis type(s) 1990-91 analysis type(s) 1991-92 analysis type(s) 1991-92 analysis type(s) 1992-93 analysis type(s) 1993-94 analysis type(s) 1994-95 analysis type(s) 1994-95 analysis type(s) 1995-96 analysis type(s) 1997-98 analysis type(s) 1998-99 analysis type(s) 1998-99 analysis type(s)

Table: SAMPINFO (individual sample information)

<u>#</u>	Column Name	Contents	
7. 8. 9. 10. 11. 12. 13. 14.	ID STANUM STANAME REGION COUNTY ANALYSES CDATE YEAR SPECTYPE DURATION PWATER—E PWATER—O LENGTH—E LENGTH—O PLIPID	sample identification number sample station number sample station name sample region sample county analysis type(s) sample date sample year sample type sample duration percent moisture (element) percent moisture (organic) average shell length (organic) percent lipid	

TABLE 7. SAMPLE TYPES (spectypes)

<u>Type</u> <u>Description</u>

Commonly Collected:

RCM	Resident California mussel (Mytilus californianus)
TCM	Transplanted California mussel
RBM	Resident Bay mussel (Mytilus edulis)
RFC	Resident freshwater clam (Corbicula fluminea)
TFC	Transplanted freshwater clam
SED	sediment sample

Rarely Collected:

BNC	Bentnose clam (Macoma nasuta) (1983-84 only)
CER	Hornmouth Snail (Ceratostoma sp.)
GLY	Sand worm (Glycera sp.)
GSH	Grass Shrimp (Cragon sp.)
HAM	Bubble Snail (Haminoea sp.)
HEM	Purple Shore Crab (Hemigrapsus sp.)
HME	Snail Eggs (Haminoea sp.)
HNC	Horseneck Clam (Tresus sp.)
LNC	Littleneck clam (<i>Protothaca</i> sp.) (1983-84 only)
NAS	Nassa Snail (Nassarius sp.)
OPI	Opisthobranch Snail (not available)
OYS	Oyster (Crassostrea gigas)
PAC	Shore crab (Pachygrapsus crassipes)
POD	Jingle shell (Pododesmus sp.)
SCP	Sculpin (Cottus sp.)
ULV	Sea Lettuce (Ulva sp.)

TABLE 8. CONVERSION FORMULAE FOR WET, DRY, AND LIPID WEIGHT-BASED POLLUTANT CONCENTRATIONS.

<pre>Conversion:</pre>	Form	ula:		
wet to dry	W *	100 100 - PWATER	=	D
wet to lipid#	W *	100 PLIPID	=	L
dry to wet	D *	100 - PWATER 100	=	W
dry to lipid	D *	100 - PWATER PLIPID	=	L

Key:

D = tissue concentration on a dry-weight basis
W = tissue concentration on a wet-weight basis
L = tissue concentration on a lipid-weight basis
PWATER = percent of moisture in sample
PLIPID = percent of lipid in sample
This formula is used to calculate lipid weight data

TABLE 9. CODES FOR REGIONAL BOARDS

- 1 = North Coast Regional Board
- 2 = San Francisco Bay Regional Board
- 3 = Central Coast Regional Board
- 4 = Los Angeles Regional Board
- 5 = Central Valley Regional Board
- 8 = Santa Ana Regional Board
- 9 = San Diego Regional Board