Moss Landing Marine Laboratories

Technical Publication 72-3

HYDROGRAPHIC OBSERVATIONS IN ELKHORN SLOUGH AND MOSS LANDING HARBOR, CALIFORNIA, OCTOBER 1970 TO NOVEMBER 1971

Annual Report, Part 3, July 1972

by

William W. Broenkow
Richard E. Smith

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Robert E. Arnal, Sea Grant Project Coordinator

Moss Landing Marine Laboratories
of the
California State University
at
Fresno, Hayward, Sacramento, San Francisco, and San Jose

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INTRODUCTION

In October 1970, Moss Landing Marine Laboratories began an observational program to determine the seasonal changes in the water chemistry of Elkhorn Slough and Moss Landing Harbor. This data report contains the first year of data (October 1970 - November 1971). These data are of immediate interest in determing the flushing and mixing mechanisms of the slough and in establishing the effect that local domestic and industrial effluents have on the distribution of these chemical parameters.

In recent years, various plans have been suggested for the further development of Elkhorn Slough ranging from the construction of a deep water port to the development of commercial shellfish production. It is hoped that these data will be of aid to those agencies ultimately responsible for the development of the area. As the slough is developed under these controls, these data will serve as a base line from which future natural and man-induced changes can be evaluated.

ACKNOWLEDGEMENTS

This research was supported by Grant 2-35137 from the office of Sea Grant Programs National Oceanic and Atmospheric Administration Department of Commerce. We appreciate the help of students who were enrolled in research participation classes and assisted in the field and laboratory work.

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ELKHORN SLOUGH SEASONAL HYDROGRAPHIC STUDY

CRUISE NUMBER	DATE	TIDE ht.	TIDE time	SAMPLING PERIOD
1	18 OCT 1970	5.4	12:50	12:45 - 14:15
2	16 NOV 1970	5.4	11:26	11:25 - 13:18
3	19 DEC 1970	4.0	14:40	14:20 - 16:33
4	28 JAN 1971	6.3	10:50	10:05 - 12:10
5	27 FEB 1971	4.9	11:50	11:38 - 14:10
6	27 MAR 1971	4.8	10:56	10:17 - 11:20
7	24 APR 1971	4.4	10:02	09:55 - 12:18
8	22 MAY 1971	3.9	09:14	09:55 - 12:10
9	24 JUN 1971	4.3	13:32	13:00 - 15:10
10	22 JULY 1971	4.4	12:20	10:50 - 12:40
11	17 AUG 1971	4.2	09:56	08:40 - 10:16
12	6 OCT 1971	6.0	11:50	10:36 - 12:50
13	23 NOV 1971	4.6	12:44	12:15 - 14:10

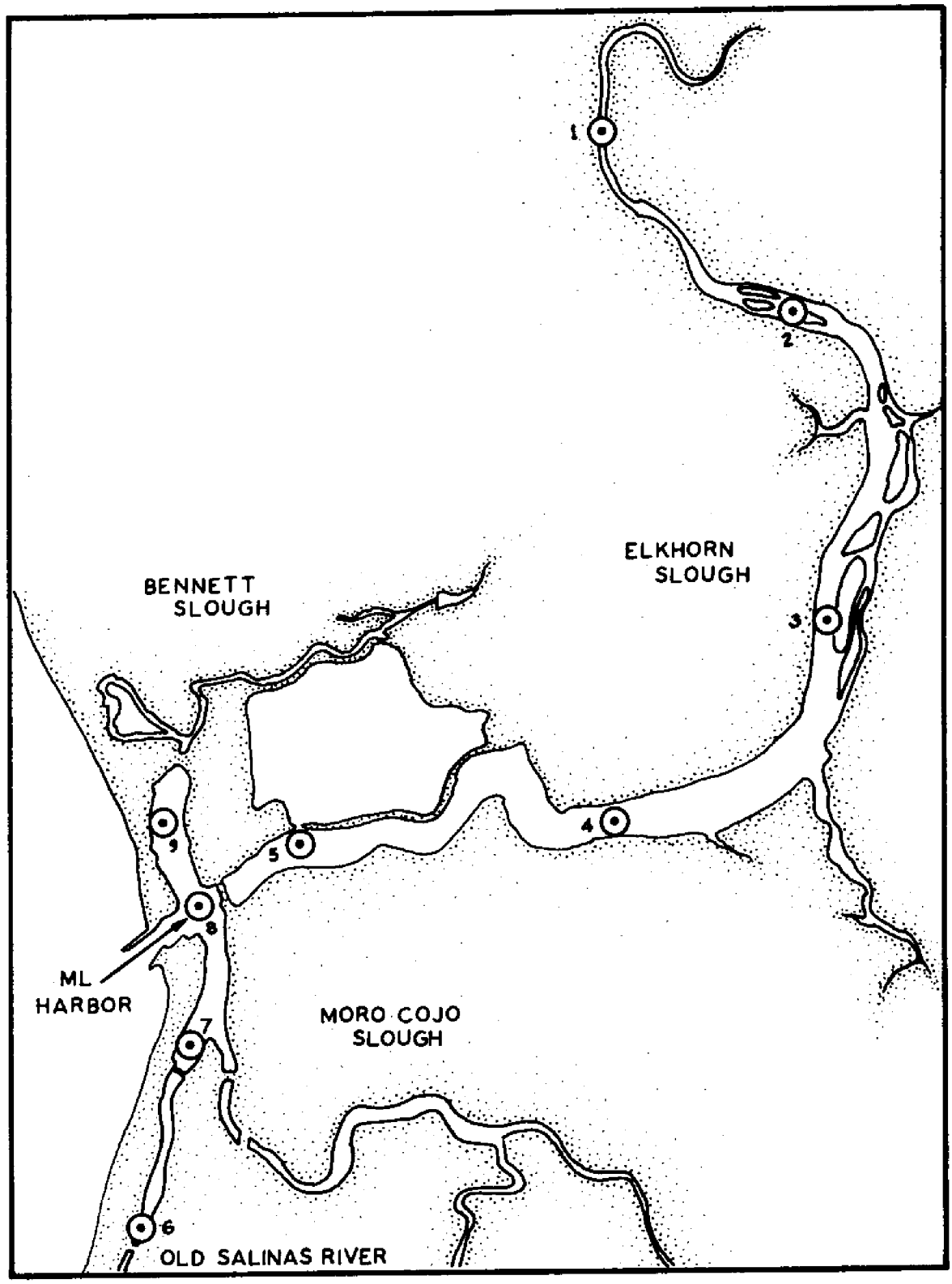

Fig. 1. Station locations in Elkhorn Slough and Moss Landing Harbor.

PERMANENT HYDROGRAPHIC STATIONS

IN ELKHORN SLOUGH AND MOSS LANDING HARBOR

STATION NUMBER	STATION NAME	APPROX. DEPTH AT MLLW (m)	N. LAT.	W. LONG.
1	Upper Slough	0.8	36°51.2'	121°45.7'
2	Kirby Park	1.5	36°50.4'	121°44.7'
3	Elkhorn Dairies	2.2	36°49.5'	121°44.7'
4	Horseshoe Bend Dairies	2.8	36°48.8'	121°45.6'
5	PG&E Outfall	3.6	36°48.8'	121°46.6'
6	Prescott Road Tide Gate	0.2	36°47.5'	121°47.6'
7	Moss Landing Harbor	4.3	36°48.1'	121°47.9'
8	Range Marker	4.0	36°48.6'	121°48.0'
9	Yacht Club	2.4	36°48.9'	121°47.7'

METHODS

Station Position Station positions were determined by visual observation of prominent shore features, and samples were taken while anchored in the deepest area of the channel. Considering wind and current conditions, samples were taken within 20 meters of the nominal station position.

Hydrographic Sampling Samples were taken simultaneously from two outboard motor boats, one for Elkhorn Slough stations 1 to 5 and one for the Harbor stations, 6 to 9. Samples were collected with 5-liter Niskin bottles and hand lines at 0, 1 m and 0.5 m above the bottom except at stations where the depth was less than 2 meters. Tidal influence on samples was minimized by sampling at approximately the same tidal stage on each cruise. With few exceptions samples were collected within 1 hr. of the predicted high tide at Monterey.

Temperature Water temperature on cruises 1 to 4 was determined using a -20° to 110° C laboratory thermometer placed in one end of the Niskin bottle immediately after an oxygen sample was drawn and read to the nearest 0.1° C. For cruises 5 to 13 temperatures were determined using a bucket thermometer lowered to depth and allowed to soak for 1 minute, then pulled to the surface rapidly and read. This procedure was repeated until a constant reading was obtained to $\pm 0.1^{\circ}$ C.

Salinity Salinity was determined using a Kahlisco precision induction salinometer. Analyses were made in the laboratory and salinity was computed from conductivity ratio using the equations of Cox, et al (1967). Substandard seawater was used to calibrate the salinometer before and after each set of 27 or fewer samples. Copenhagen water was used each month to standardize the substandard water.

Dissolved Oxygen Water samples were treated in the field to fix the oxygen in the basic form. The samples were acidified and titrated in the laboratory within 8 hours of the sampling time using Carpenter's (1965) modification of the Winkler method. The total sample is titrated with approximately 0.02 N sodium thiosulfate to the starch endpoint. Precision of the analyses is about $\pm$ 0.06 ml/liter (2 SD).

Nutrient Ions 500 ml samples were collected and stored in ice chests at 5^{o} C for up to 6 hrs. until they could be filtered in the laboratory (3 μm pore size) and frozen. Within 6 weeks of freezing the samples were quick thawed in groups of 18 or 36 and analyzed for phosphate, nitrate, nitrite, ammonia and silica. Standards and reagent blanks were prepared fresh daily and were determined with each set of samples. Some of the samples had concentrations beyond the normal range of the methods listed below. The absorbance of these samples was determined in 1 cm cells and their concentrations calculated from extended range curves.

Dissolved reactive phosphate was determined by the method of Murphy and Riley (1962) described in Strickland and Parsons (1968) using ascorbic acid to reduce the phosphomolybdate complex. The sample absorbance was

determined in 10 cm cells on a Beckman DU II Spectrophotometer at 85 nm. Precision of the analyses is about ± 0.03 µg-atoms/liter (2 SD) at the 2 µg-at/l level and ± 0.6 µg-at/l at the 10 µg-at/l level.

Nitrate was determined by the cadmium-reduction method of Wood et al (1967) followed by the nitrite color development. The sample absorbance was determined in 1 cm cells using a Spectronic 20 Colorimeter at 543 nm. Precision of the analyses is about ± 0.5 µg-atoms/liter (2 SD) at the 20 µg-at/liter level.

Nitrite was determined by the method of Bendschneider and Robinson (1952) described by Strickland and Parsons (1967). The absorbance of the diazo color was determined on the Beckman DU using 10 cm cells at 543 nm. Precision of the method is about ± 0.03 µg-atoms/liter (2 SD) at the 1.5 µg-at/l level and ± 0.1 µg-at/l at the 10 µg-at/l level.

Ammonia was determined by the indophenol method of Solorzano (1969) with the color absorbance determined with the Beckman DU at 640 nm using 10 cm. cells. Precision of the method is about ± 0.1 µg-atoms/liter (2 SD) at the 3 µg-at/l level and ± 0.4 µg-at/l at the 20 µg-at/l level.

Reactive silica was determined by the method of Mullin and Riley (1955) as modified by Strickland and Parsons (1968). The silicomolybdate complex was reduced by a metol-sulfite, oxalic acid solution, and the color absorbance was determined in 1 cm cells on a Spectronic 20 at 810 nm. Precision of the method is about ± 1 µg-atoms/liter (2 SD) at the 40 µg-at/l level.

EXPLANATION OF DATA TABLES

CRUISE	Elkhorn Slough consecutive cruise number.
STATION	Elkhorn Slough permanent station number.
DATE	Local date of sampling.
TIME	Local time on station.
N LATITUDE W LONGITUDE	Longitude and latitude of permanent station.
TIDE ht time	 Predicted high tide at Monterey closest to sampling time in ft. Local time of predicted high tide at Monterey.
TRANS	Secchi disk depth in m.
WATER DEPTH	Depth to bottom in m.
DEPTH	Depth at which sample was collected in m.
TEMP	In situ water temperature in degrees centigrade.
SALINITY	Salinity in grams/kilogram (^{o}/oo or ppt).
SIGMA T	Potential density anomaly, computed from the equations in Knudsen's Hydrographical Tables (Knudsen, 1901).
OXYGEN	Dissolved oxygen concentration in ml(STP)/liter.
AOU	Apparent oxygen utilization in µg-atoms O_2-O/liter: the difference between the observed oxygen concentration and the oxygen solubility computed from the in situ temperature and salinity using the equations of Truesdale, et al (1955).
SAT	Percent of oxygen saturation computed from the in situ temperature and salinity using the equations of Truesdale, et al, (1955).
PHOSPHATE	Concentration of reactive phosphate in µg-atoms PO_4-P/liter.
NITRATE	Concentration of dissolved nitrate in µg-atoms NO_3-N/liter.
NITRITE	Concentration of dissolved nitrite in µg-atoms NO_2-N/liter.
AMMONIA	Concentration of dissolved ammonia in µg-atoms NH_3-N/liter.
SILICA	Concentration of reactive silica in µg-atoms SiO_2-Si/liter.

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ELKHORN SLOUGH – MOSS LANDING HARBOR

CRUISE	STATION	DATE	TIME	N LATITUDE	W LONGITUDE	TIDE ht	TIDE time	TRANS m	WATER DEPTH m
ES 1	1	18 OCT 1970	12:45	36° 51.2'	121° 45.7'	5.4'	12:50		

DEPTH m	TEMP °C	SALINITY ppt	SIGMA T	OXYGEN ml/l	AOU ug-at/l	SAT %	PHOSPHATE ug-atoms/liter	NITRATE ug-atoms/liter	NITRITE ug-atoms/liter	AMMONIA ug-atoms/liter	SILICA ug-atoms/liter
.0	16.1	34.299	25.2	2.96	219	55	3.07	3.7	.42	5.0	15
1.0	16.0	34.301	25.2	3.12	206	57	2.53	3.9	.33	4.2	12
2.0	16.0	34.324	25.3	3.21	198	59	2.29	3.0	.32	4.7	42

CRUISE	STATION	DATE	TIME	N LATITUDE	W LONGITUDE	TIDE ht	TIDE time	TRANS m	WATER DEPTH m
ES 1	2	18 OCT 1970	13:30	36° 50.4'	121° 44.7'	5.4'	12:50		

DEPTH m	TEMP °C	SALINITY ppt	SIGMA T	OXYGEN ml/l	AOU ug-at/l	SAT %	PHOSPHATE ug-atoms/liter	NITRATE ug-atoms/liter	NITRITE ug-atoms/liter	AMMONIA ug-atoms/liter	SILICA ug-atoms/liter
.0	15.0	33.507	24.8	3.39	194	61					

ELKHORN SLOUGH - MOSS LANDING HARBOR

CRUISE	STATION	DATE	TIME	N LATITUDE	W LONGITUDE	TIDE ht	TIDE time	TRANS m	WATER DEPTH m
ES 1	3	18 OCT 1970	13:45	36° 49.5'	121° 44.7'	5.4'	12:50		

DEPTH m	TEMP °C	SALINITY ppt	SIGMA T	OXYGEN ml/l	AOU ug-at/1	SAT %	PHOSPHATE	NITRATE	NITRITE	AMMONIA	SILICA
							ug-atoms/liter				
.0	14.9	33.405	24.8	2.98	232	53	1.96	7.2	.44	4.0	14

CRUISE	STATION	DATE	TIME	N LATITUDE	W LONGITUDE	TIDE ht	TIDE time	TRANS m	WATER DEPTH m
ES 1	4	18 OCT 1970	14:00	36° 48.8'	121° 45.6'	5.4'	12:50		

DEPTH m	TEMP °C	SALINITY ppt	SIGMA T	OXYGEN ml/l	AOU ug-at/1	SAT %	PHOSPHATE	NITRATE	NITRITE	AMMONIA	SILICA
							ug-atoms/liter				
.0	15.9	33.526	24.7	3.00	220	55	1.08	2.8	.22	3.4	16

ELKHORN SLOUGH - MOSS LANDING HARBOR

CRUISE	STATION	DATE	TIME	N LATITUDE	W LONGITUDE	TIDE ht	TIDE time	TRANS m	WATER DEPTH m
ES 1	5	18 OCT 1970	14:15	36° 48.8'	121° 46.6'	5.4'	12:50		

DEPTH m	TEMP °C	SALINITY ppt	SIGMA T	OXYGEN ml/l	AOU ug-at/l	SAT %	PHOSPHATE	NITRATE	NITRITE	AMMONIA	SILICA
							ug-atoms/liter				
.0	14.3	33.535	25.0	4.26	124	75					

CRUISE	STATION	DATE	TIME	N LATITUDE	W LONGITUDE	TIDE ht	TIDE time	TRANS m	WATER DEPTH m
ES 1	6	18 OCT 1970	12:15	36° 47.5'	121° 47.6'	5.4'	12:50		

DEPTH m	TEMP °C	SALINITY ppt	SIGMA T	OXYGEN ml/l	AOU ug-at/l	SAT %	PHOSPHATE	NITRATE	NITRITE	AMMONIA	SILICA
							ug-atoms/liter				
.0	15.7	30.679	22.5	4.46	101	80	8.50	27.2	.95	51.2 *	112
1.0	15.7	31.754	23.3	4.27	115	77	7.31	26.9	.76	38.2 *	112

* questionable data

ELKHORN SLOUGH - MOSS LANDING HARBOR

CRUISE	STATION	DATE	TIME	N LATITUDE	W LONGITUDE	TIDE ht	TIDE time	TRANS m	WATER DEPTH m
ES 1	7	18 OCT 1970	13:00	36° 48.1'	121° 47.9'	5.4'	12:50		6.0

DEPTH m	TEMP °C	SALINITY ppt	SIGMA T	OXYGEN ml/l	AOU ug-at/l	SAT %	PHOSPHATE	NITRATE	NITRITE	AMMONIA	SILICA
							ug-atoms/liter				
.0	15.2	30.826	22.7	5.27	33	93	4.25	13.6	3.53	22	47
1.0	14.7	33.117	24.6	5.32	26	95	3.68	7.5	1.96	3.0	20
3.0	13.9	33.409	25.0	5.51	17	97	2.01	6.3	.43	6.4	12

ELKHORN SLOUGH – MOSS LANDING HARBOR

CRUISE	STATION	DATE	TIME	N LATITUDE	W LONGITUDE	TIDE ht	TIDE time	TRANS m	WATER DEPTH m
ES 2	1	16 NOV 1970	11:25	36° 51.2'	121° 45.7'	5.4'	11:36	.8	2.2

DEPTH m	TEMP °C	SALINITY ppt	SIGMA T	OXYGEN ml/l	AOU ug-at/l	SAT %	PHOSPHATE	NITRATE	NITRITE	AMMONIA	SILICA
							ug-atoms/liter				
.0	14.7	32.064	23.8	6.48	-73	115	2.80	3.5	.28	3.1	20
1.0	14.1	32.107	23.9	6.42	-62	112	2.94	.7	.38	.6	29
2.0	14.0	32.156	24.0								

CRUISE	STATION	DATE	TIME	N LATITUDE	W LONGITUDE	TIDE ht	TIDE time	TRANS m	WATER DEPTH m
ES 2	2	16 NOV 1970	12:05	36° 50.4'	121° 44.7'	5.4'	11:36	1.2	3.5

DEPTH m	TEMP °C	SALINITY ppt	SIGMA T	OXYGEN ml/l	AOU ug-at/l	SAT %	PHOSPHATE	NITRATE	NITRITE	AMMONIA	SILICA
							ug-atoms/liter				
.0	14.4	32.848	24.5	5.54	11	98	2.51	6.5	.34		22
1.0	14.3	32.865	24.5	5.55	11	98	2.30	6.6	.41	1.0	20
3.0	14.3	32.900	24.5	5.48	17	97	2.50	6.2	.49	.8	22

ELKHORN SLOUGH - MOSS LANDING HARBOR

CRUISE	STATION	DATE	TIME	N LATITUDE	W LONGITUDE	TIDE ht	TIDE time	TRANS m	WATER DEPTH m
ES 2	3	16 NOV 1970	12:31	36° 49.5'	121° 44.7'	5.4'	11:36	1.2	3.5

DEPTH m	TEMP °C	SALINITY ppt	SIGMA T	OXYGEN ml/l	AOU ug-at/l	SAT %	PHOSPHATE	NITRATE	NITRITE	AMMONIA	SILICA
							ug-atoms/liter				
.0	14.8	33.113	24.6	5.75	-13	103	1.74	5.8	.36		16
1.0	14.7	33.149	24.6	5.69	-6	101	1.64	6.1	.35	.5	14
3.0	14.4	33.176	24.7	5.59	13	97	1.75	7.0	.34	2.5	23

CRUISE	STATION	DATE	TIME	N LATITUDE	W LONGITUDE	TIDE ht	TIDE time	TRANS m	WATER DEPTH m
ES 2	4	16 NOV 1970	12:54	36° 48.8'	121° 45.6'	5.4'	11:36	1.2	4.5

DEPTH m	TEMP °C	SALINITY ppt	SIGMA T	OXYGEN ml/l	AOU ug-at/l	SAT %	PHOSPHATE	NITRATE	NITRITE	AMMONIA	SILICA
							ug-atoms/liter				
.0	14.3	33.267	24.8	6.05	-35	107	1.12	5.2	.13		12
1.0	14.3	33.269	24.8	5.94	-25	105	1.04		.20	.4	10
3.5	14.0	33.274	24.9	5.76	-6	101	1.44	7.0*	.29	1.5	11

* questionable data

ELKHORN SLOUGH - MOSS LANDING HARBOR

CRUISE	STATION	DATE	TIME	N LATITUDE	W LONGITUDE	TIDE ht	TIDE time	TRANS m	WATER DEPTH m
ES 2	5	16 NOV 1970	13:18	36° 48.8'	121° 46.6'	5.4'	11:36	2.3	5.0

DEPTH m	TEMP °C	SALINITY ppt	SIGMA T	OXYGEN ml/l	AOU ug-at/l	SAT %	PHOSPHATE	NITRATE	NITRITE	AMMONIA	SILICA ug-atoms/liter
.0	14.0	33.266	24.9	6.09	-35	107	1.16	5.0*	.20	1.4	9
2.0	13.9	33.266	24.9	6.06	-32	106	1.37	6.0*	.27	1.7	10
4.0	13.8	33.266	24.9	6.07	-31	106	1.40	6.0*	.27	1.5	7

CRUISE	STATION	DATE	TIME	N LATITUDE	W LONGITUDE	TIDE ht	TIDE time	TRANS m	WATER DEPTH m
ES 2	6	16 NOV 1970	11:20	36° 47.5'	121° 47.6'	5.4'	11:36		

DEPTH m	TEMP °C	SALINITY ppt	SIGMA T	OXYGEN ml/l	AOU ug-at/l	SAT %	PHOSPHATE	NITRATE	NITRITE	AMMONIA	SILICA ug-atoms/liter
.0	13.9	32.832	24.6	5.04	60	88	4.03	8.7	.58		22
1.0	13.8	32.824	24.6	5.32	37	93	4.65	8.6	.69	6.1	21

* questionable data

ELKHORN SLOUGH - MOSS LANDING HARBOR

CRUISE	STATION	DATE	TIME	N LATITUDE	W LONGITUDE	TIDE ht	TIDE time	TRANS m	WATER DEPTH m
ES 2	7	16 NOV 1970	11:54	36° 48.1'	121° 47.9'	5.4'	11:36		

DEPTH m	TEMP °C	SALINITY ppt	SIGMA T	OXYGEN ml/l	AOU ug-at/l	SAT %	PHOSPHATE	NITRATE	NITRITE	AMMONIA	SILICA
							ug-atoms/liter				
.0	13.8	33.008	24.7	5.61	10	98	2.08	6.6	.45	.8	16
1.0	13.6	33.034	24.7	5.66	8	99	2.36	7.0	.49	2.9	15
3.0	13.4	33.123	24.9	5.77	0	100	1.59	7.3	.38	.4	14

CRUISE	STATION	DATE	TIME	N LATITUDE	W LONGITUDE	TIDE ht	TIDE time	TRANS m	WATER DEPTH m
ES 2	8	16 NOV 1970	12:18	36° 48.6'	121° 48.9'	5.4'	11:36		

DEPTH m	TEMP °C	SALINITY ppt	SIGMA T	OXYGEN ml/l	AOU ug-at/l	SAT %	PHOSPHATE	NITRATE	NITRITE	AMMONIA	SILICA
							ug-atoms/liter				
.0	14.0	33.272	24.9	6.20	-45	109	1.04		.28	.6	9
1.0	13.9	33.270	24.9	6.21	-45	109	1.28	6.0*	.28	1.2	7
3.0	13.7	33.276	24.9	6.21	-43	108	1.32	6.0*	.27	1.5	7

* questionable data

ELKHORN SLOUGH – MOSS LANDING HARBOR

CRUISE	STATION	DATE	TIME	N LATITUDE	W LONGITUDE	TIDE ht	TIDE time	TRANS m	WATER DEPTH m
ES 2	9	16 NOV 1970	12:47	36° 48.9'	121° 47.7'	5.4'	11:36		

DEPTH m	TEMP °C	SALINITY ppt	SIGMA T	OXYGEN ml/l	AOU ug-at/l	SAT %	PHOSPHATE	NITRATE	NITRITE	AMMONIA	SILICA
							ug-atoms/liter				
.0	14.2	33.083	24.7	5.73	-5	101	2.24	6.6	.72		13
1.0	14.1	33.088	24.7	5.47	19	96	2.22		.78	.7	19

ELKHORN SLOUGH - MOSS LANDING HARBOR

CRUISE	STATION	DATE	TIME	N LATITUDE	W LONGITUDE	TIDE ht	TIDE time	TRANS m	WATER DEPTH m
ES 3	1	19 DEC 1970	14:20	36° 51.2'	121° 45.7'	3.5'	14:36	.4	2.0

DEPTH m	TEMP °C	SALINITY ppt	SIGMA T	OXYGEN ml/l	AOU ug-at/l	SAT %	PHOSPHATE	NITRATE	NITRITE	AMMONIA	SILICA
							ug-atoms/liter				
.0	10.8	22.920	17.5	6.04	44	93	3.39	43.0*	2.75	30	67
1.5	10.0	24.283	18.6	5.69	80	86					

CRUISE	STATION	DATE	TIME	N LATITUDE	W LONGITUDE	TIDE ht	TIDE time	TRANS m	WATER DEPTH m
ES 3	2	19 DEC 1970	15:00	36° 50.4'	121° 44.7'	3.5'	14:36	.9	3.0

DEPTH m	TEMP °C	SALINITY ppt	SIGMA T	OXYGEN ml/l	AOU ug-at/l	SAT %	PHOSPHATE	NITRATE	NITRITE	AMMONIA	SILICA
							ug-atoms/liter				
.0	10.3	28.933	22.2	6.75	-36	106	3.13	20.5	1.53	18	35
1.0	10.2	28.807	22.1	6.33	3	99					
2.0	10.2	29.139	22.4	6.19	14	97	3.24	20.4	1.51	16	35

* questionable data

ELKHORN SLOUGH - MOSS LANDING HARBOR

CRUISE	STATION	DATE	TIME	N LATITUDE	W LONGITUDE	TIDE ht	TIDE time	TRANS m	WATER DEPTH m
ES 3	3	19 DEC 1970	15:40	36° 49.5'	121° 44.7'	3.5'	14:36	.8	3.8

DEPTH m	TEMP °C	SALINITY ppt	SIGMA T	OXYGEN ml/l	AOU ug-at/l	SAT %	PHOSPHATE	NITRATE	NITRITE	AMMONIA	SILICA
							ug-atoms/liter				
.0	10.3	27.939	21.4	6.62	-20	104	3.52	23.6	1.53	18.0	38
1.0	11.0	28.163	21.5	6.38	-9	102					
3.0	10.7	30.374	23.2	5.80	38	93					

CRUISE	STATION	DATE	TIME	N LATITUDE	W LONGITUDE	TIDE ht	TIDE time	TRANS m	WATER DEPTH m
ES 3	4	19 DEC 1970	16:10	36° 48.8'	121° 45.6'	3.5'	14:36	.8	4.5

DEPTH m	TEMP °C	SALINITY ppt	SIGMA T	OXYGEN ml/l	AOU ug-at/l	SAT %	PHOSPHATE	NITRATE	NITRITE	AMMONIA	SILICA
							ug-atoms/liter				
.0	11.0	29.817	22.8	6.65	-39	107	2.91	20.4	1.36	17	31
1.0	11.1	30.013	22.9	6.53	-30	106	3.15	20.7	1.31	17	29
4.0	11.2	31.505	24.0	5.64	42	92	2.79	20.1	.89	10	22

4.0	12.3	31.497	23.9	5.82	16	9

CRUISE	STATION	DATE	TIME	N LATITUDE
ES 3	6	19 DEC 1970	13:45	36° 47.5'

LANDING HARBOR

DEPTH m	TEMP °C	SALINITY ppt	SIGMA T	OXYGEN ml/l	AOU ug-at/l	SAT %
.0	9.7	2.410	1.7	5.20	214	
1.0	11.0	26.993	20.6	3.17	282	

W LONGITUDE	TIDE ht	TIDE time	TRANS m	WATER DEPTH m
121° 46.6'	3.5'	14:36	1.1	4.5

	PHOSPHATE	NITRATE	NITRITE	AMMONIA	SILICA
	ug-atoms/liter				
9	2.86	19.3	1.02	8.3	23
9	2.86	21.6	.89	9.7	22
7	2.58	19.6	.71	6.6	18

W LONGITUDE	TIDE ht	TIDE time	TRANS m	WATER DEPTH m
121° 47.6'	3.5'	14:36	.2	1.5

	PHOSPHATE	NITRATE	NITRITE	AMMONIA	SILICA
	ug-atoms/liter				
58					
50	8.70	77.9	3.74	14.3	59

ELKHORN SLOUGH - MOSS

CRUISE	STATION	DATE	TIME	N LATITUDE
ES 3	5	19 DEC 1970	16:33	36° 48.8'

DEPTH m	TEMP °C	SALINITY ppt	SIGMA T	OXYGEN ml/l	AOU ug-at/l	SAT %
.0	12.0	30.706	23.2	5.96	4	9
1.0	12.2	31.432	23.8	5.92	5	9

ELKHORN SLOUGH - MOSS LANDING HARBOR

CRUISE	STATION	DATE	TIME	N LATITUDE	W LONGITUDE	TIDE ht	TIDE time	TRANS m	WATER DEPTH m
ES 3	7	19 DEC 1970	14:30	36° 48.1'	121° 47.9'	3.5'	14:36	.2	5.5

DEPTH m	TEMP °C	SALINITY ppt	SIGMA T	OXYGEN ml/l	AOU ug-at/l	SAT %	PHOSPHATE	NITRATE	NITRITE	AMMONIA	SILICA
							ug-atoms/liter				
.0	11.4	6.286	4.5	3.51	324	49	30.00	83.6	8.54	31	77
1.0	11.6	28.340	21.5	3.24	263	52	6.49	61.7	1.89	17	40
5.0	11.8	32.588	24.8	3.29	241	55	.70	81.0	2.55	10	49

CRUISE	STATION	DATE	TIME	N LATITUDE	W LONGITUDE	TIDE ht	TIDE time	TRANS m	WATER DEPTH m
ES 3	8	19 DEC 1970	14:55	36° 48.6'	121° 48.0'	3.5'	14:36	1.0	5.2

DEPTH m	TEMP °C	SALINITY ppt	SIGMA T	OXYGEN ml/l	AOU ug-at/l	SAT %	PHOSPHATE	NITRATE	NITRITE	AMMONIA	SILICA
							ug-atoms/liter				
.0	12.6	25.883	19.4	2.99	283	49	6.07	95.0	3.39	14	59
1.0	12.3	31.780	24.1	3.04	260	51	3.30	38.9	1.20	6.2	25
4.7	11.6	33.003	25.1	2.37	324	40	1.44	13.5	.48	1.1	13

ELKHORN SLOUGH - MOSS LANDING HARBOR

CRUISE	STATION	DATE	TIME	N LATITUDE	W LONGITUDE	TIDE ht	TIDE time	TRANS m	WATER DEPTH m
ES 3	9	19 DEC 1970	15:25	36° 48.9'	121° 47.7'	3.5'	14:36	.8	3.1

DEPTH m	TEMP °C	SALINITY ppt	SIGMA T	OXYGEN ml/l	AOU ug-at/l	SAT %	PHOSPHATE	NITRATE	NITRITE	AMMONIA	SILICA
							ug-atoms/liter				
.0	11.6	26.627	20.2	3.27	267	52	6.60	71.0	5.37	16	61
1.0	12.1	31.182	23.6	2.48	315	41	4.22	39.6	1.74	9.6	30
2.5	12.4	32.209	24.4	2.56	300	43	2.88	21.1	.93	6.8	21

ELKHORN SLOUGH - MOSS LANDING HARBOR

CRUISE	STATION	DATE	TIME	N LATITUDE	W LONGITUDE	TIDE ht	TIDE time	TRANS m	WATER DEPTH m
ES 4	1	28 JAN 1971	10:05	36° 51.2'	121° 45.7'	5.8'	10:50	.6	2.5

DEPTH m	TEMP °C	SALINITY ppt	SIGMA T	OXYGEN ml/l	AOU ug-at/l	SAT %	PHOSPHATE	NITRATE	NITRITE	AMMONIA	SILICA
							ug-atoms/liter				
.0	12.5	29.694	22.4	6.61	-53	110	2.01	4.9	.28		39
1.0	12.4	29.970	22.6	6.53	-45	109	2.62	5.6	.37	1.7	35
2.0	12.8	30.133	22.7	6.45	-43	108	1.99	5.6	.29		36

CRUISE	STATION	DATE	TIME	N LATITUDE	W LONGITUDE	TIDE ht	TIDE time	TRANS m	WATER DEPTH m
ES 4	2	28 JAN 1971	10:41	36° 50.4'	121° 44.7'	5.8'	10:50	1.3	3.4

DEPTH m	TEMP °C	SALINITY ppt	SIGMA T	OXYGEN ml/l	AOU ug-at/l	SAT %	PHOSPHATE	NITRATE	NITRITE	AMMONIA	SILICA
							ug-atoms/liter				
.0	12.0	32.544	24.7	5.63	30	94	2.48	11.0*	.45	4.3	18
1.0	11.9	32.697	24.8	5.54	38	93	1.99	11.8	.42		23
3.0	11.9	32.854	25.0	5.41	49	91	1.91	11.8	.44		24

* questionable data

ELKHORN SLOUGH - MOSS LANDING HARBOR

CRUISE	STATION	DATE	TIME	N LATITUDE	W LONGITUDE	TIDE ht	TIDE time	TRANS m	WATER DEPTH m
ES 4	3	28 JAN 1971	11:10	36° 49.5'	121° 44.7'	5.8'	10:50	1.7	4.2

DEPTH m	TEMP °C	SALINITY ppt	SIGMA T	OXYGEN ml/l	AOU ug-at/l	SAT %	PHOSPHATE	NITRATE	NITRITE	AMMONIA	SILICA
							ug-atoms/liter				
.0	12.0	33.477	25.4	4.84	97	82	1.68	17.6	.34		22
1.0	11.9	33.478	25.4	4.82	100	81	2.04	17.0*	.46	1.7	24
3.7	11.8	33.491	25.5	4.88	95	82	1.66	15.3	.32		21

CRUISE	STATION	DATE	TIME	N LATITUDE	W LONGITUDE	TIDE ht	TIDE time	TRANS m	WATER DEPTH m
ES 4	4	28 JAN 1971	11:41	36° 48.8'	121° 45.6'	5.8'	10:50	3.0	5.1

DEPTH m	TEMP °C	SALINITY ppt	SIGMA T	OXYGEN ml/l	AOU ug-at/l	SAT %	PHOSPHATE	NITRATE	NITRITE	AMMONIA	SILICA
							ug-atoms/liter				
.0	11.3	33.490	25.6	5.31	61	88	1.44	12.9	.36		16
1.0	11.2	33.487	25.6	5.31	64	88	1.41	12.8	.27		17
4.6	11.2	33.488	25.6	5.35	60	89	1.37	12.4	.26		17

* questionable data

ELKHORN SLOUGH - MOSS LANDING HARBOR

CRUISE	STATION	DATE	TIME	N LATITUDE	W LONGITUDE	TIDE ht	TIDE time	TRANS m	WATER DEPTH m
ES 4	5	28 JAN 1971	12:10	36° 48.8'	121° 46.6'	5.8'	10:50	4.1	5.6

DEPTH m	TEMP °C	SALINITY ppt	SIGMA T	OXYGEN ml/l	AOU ug-at/l	SAT %	PHOSPHATE	NITRATE	NITRITE	AMMONIA	SILICA
							ug-atoms/liter				
.0	11.4	33.490	25.5	5.47	47	91	1.55	12.0*	.32	.0	11
1.0	11.4	33.487	25.6	5.39	54	90	1.35	13.0	.32	.0	15
5.1	11.3	33.490	25.6	5.34	60	89	1.27	12.7	.26	.0	17

CRUISE	STATION	DATE	TIME	N LATITUDE	W LONGITUDE	TIDE ht	TIDE time	TRANS m	WATER DEPTH m
ES 4	6	28 JAN 1971	9:52	36° 47.5'	121° 47.6'	5.8'	10:50	1.0	2.0

DEPTH m	TEMP °C	SALINITY ppt	SIGMA T	OXYGEN ml/l	AOU ug-at/l	SAT %	PHOSPHATE	NITRATE	NITRITE	AMMONIA	SILICA
							ug-atoms/liter				
.0	12.3	30.582	23.1	4.86	102	81	6.22	38.0*	2.75	14.0	38
1.0	12.0	32.099	24.4	4.79	106	30	4.41	25.0*	1.46	7.5	25
1.5	12.0	32.282	24.5	4.88	98	82	3.17	17.8	.97		27

* questionable data

ELKHORN SLOUGH - MOSS LANDING HARBOR

CRUISE	STATION	DATE	TIME	N LATITUDE	W LONGITUDE	TIDE ht	TIDE time	TRANS m	WATER DEPTH m
ES 4	7	28 JAN 1971	10:38	36° 48.1'	121° 47.9'	5.8'	10:50	1.0	6.0

DEPTH m	TEMP °C	SALINITY ppt	SIGMA T	OXYGEN ml/l	AOU ug-at/l	SAT %	PHOSPHATE	NITRATE	NITRITE	AMMONIA	SILICA
							ug-atoms/liter				
.0	11.7	30.773	23.4	5.52	49	91	2.32	37.0*	1.42	12.8	39
1.0	11.7	32.826	25.0	4.95	93	83	2.18	18.9	.82	4.1	23
3.0	11.3	33.174	25.3	4.87	103	81	2.20	19.0	.60	2.7	17
5.5	11.2	33.509	25.6	4.27	157	71	2.98	17.0	.46	3.1	17

CRUISE	STATION	DATE	TIME	N LATITUDE	W LONGITUDE	TIDE ht	TIDE time	TRANS m	WATER DEPTH m
ES 4	8	28 JAN 1971	12:00	36° 48.6'	121° 48.0'	5.8'	10:50	5.5	5.5

DEPTH m	TEMP °C	SALINITY ppt	SIGMA T	OXYGEN ml/l	AOU ug-at/l	SAT %	PHOSPHATE	NITRATE	NITRITE	AMMONIA	SILICA
							ug-atoms/liter				
.0	11.4	33.482	25.5	5.42	52	90	1.74	11.2	.34	.8	14
1.0	11.3	33.478	25.6	5.52	44	92	1.28	11.9	.24	.0	17

* questionable data

ELKHORN SLOUGH - MOSS LANDING HARBOR

CRUISE	STATION	DATE	TIME	N LATITUDE	W LONGITUDE	TIDE ht	TIDE time	TRANS m	WATER DEPTH m
ES 4	9	28 JAN 1971	11:31	36° 48.9'	121° 47.7'	5.8'	10:50	2.0	4.9

DEPTH m	TEMP °C	SALINITY ppt	SIGMA T	OXYGEN ml/l	AOU ug-at/l	SAT %	PHOSPHATE ug-atoms/liter	NITRATE ug-atoms/liter	NITRITE ug-atoms/liter	AMMONIA ug-atoms/liter	SILICA ug-atoms/liter
.0	11.8	32.526	24.7	5.09	80	85	3.00	23.0*	.92	4.6	42
1.0	11.8	32.959	25.1	5.01	86	84	2.60	19.7	.74	3.8	25

* questionable data

ELKHORN SLOUGH - MOSS LANDING HARBOR

CRUISE	STATION	DATE	TIME	N LATITUDE	W LONGITUDE	TIDE ht	TIDE time	TRANS m	WATER DEPTH m
ES 5	1	27 FEB 1971	11:38	36° 51.2'	121° 45.7'	4.9'	11:50	.7	2.3

DEPTH m	TEMP °C	SALINITY ppt	SIGMA T	OXYGEN ml/l	AOU ug-at/l	SAT %	PHOSPHATE	NITRATE	NITRITE	AMMONIA	SILICA
							ug-atoms/liter				
.0	10.3	31.048	23.8	6.20	5	99	2.27	7.9	.41	3.1	44
1.0	10.1	31.132	23.9	6.13	13	98	2.31	6.8	.43	3.3	33
1.8	10.1	31.182	24.0	6.03	22	96	2.44	6.8	.43	3.8	34

CRUISE	STATION	DATE	TIME	N LATITUDE	W LONGITUDE	TIDE ht	TIDE time	TRANS m	WATER DEPTH m
ES 5	2	27 FEB 1971	12:25	36° 50.4'	121° 44.7'	4.9'	11:50	.9	3.0

DEPTH m	TEMP °C	SALINITY ppt	SIGMA T	OXYGEN ml/l	AOU ug-at/l	SAT %	PHOSPHATE	NITRATE	NITRITE	AMMONIA	SILICA
							ug-atoms/liter				
.0	10.6	32.748	25.1	5.60	48	91	2.24	8.8	.44	6.2	28
1.0	10.5	32.717	25.1	5.71	40	93	2.27	9.3	.46	6.0	31
2.5	10.3	32.766	25.2				2.23	10.0	.44	6.7	28

ELKHORN SLOUGH - MOSS LANDING HARBOR

CRUISE	STATION	DATE	TIME	N LATITUDE	W LONGITUDE	TIDE ht	TIDE time	TRANS m	WATER DEPTH m
ES 5	3	27 FEB 1971	13:10	36° 49.5'	121° 44.7'	4.9'	11:50	1.2	4.3

DEPTH m	TEMP °C	SALINITY ppt	SIGMA T	OXYGEN ml/l	AOU ug-at/l	SAT %	PHOSPHATE ug-atoms/liter	NITRATE ug-atoms/liter	NITRITE ug-atoms/liter	AMMONIA ug-atoms/liter	SILICA ug-atoms/liter
.0	10.6	33.286	25.5	5.36	67	88	2.12	16.2	.43	5.5	28
1.0	10.6	33.217	25.5	5.52	53	90	2.09	12.6	.39	6.0	26
3.5	10.5	33.278	25.5	5.35	70	87	2.02	12.4	.37	5.5	26

CRUISE	STATION	DATE	TIME	N LATITUDE	W LONGITUDE	TIDE ht	TIDE time	TRANS m	WATER DEPTH m
ES 5	4	27 FEB 1971	13:38	36° 48.8'	121° 45.6'	4.9'	11:50	1.4	4.5

DEPTH m	TEMP °C	SALINITY ppt	SIGMA T	OXYGEN ml/l	AOU ug-at/l	SAT %	PHOSPHATE ug-atoms/liter	NITRATE ug-atoms/liter	NITRITE ug-atoms/liter	AMMONIA ug-atoms/liter	SILICA ug-atoms/liter
.0	10.6	33.638	25.8	4.95	103	81	1.92	17.2	.27	2.9	44
1.0	10.2	33.648	25.9	4.57	141	74	2.37	24.5	.39	3.6	42
4.0	10.2	33.635	25.9	4.54	144	74	2.08	19.3	.30	3.2	36

ELKHORN SLOUGH - MOSS LANDING HARBOR

CRUISE	STATION	DATE	TIME	N LATITUDE	W LONGITUDE	TIDE ht	TIDE time	TRANS m	WATER DEPTH m
ES 5	5	27 FEB 1971	14:10	36° 48.8'	121° 46.6'	4.9'	11:50	1.6	4.8

DEPTH m	TEMP °C	SALINITY ppt	SIGMA T	OXYGEN ml/l	AOU ug-at/l	SAT %	PHOSPHATE	NITRATE	NITRITE	AMMONIA	SILICA
							ug-atoms/liter				
.0	9.5	33.852	26.2	3.64	232	58	2.50	27.7	.23	1.8	44
1.0	9.4	33.849	26.2	3.43	252	55	2.31	25.2	.22	1.9	51
4.3	9.5	33.847	26.2	3.57	239	57	2.63	39.7	.39	2.0	45

CRUISE	STATION	DATE	TIME	N LATITUDE	W LONGITUDE	TIDE ht	TIDE time	TRANS m	WATER DEPTH m
ES 5	6	27 FEB 1971	11:17	36° 47.5'	121° 47.6'	4.9'	11:50	1.0	1.5

DEPTH m	TEMP °C	SALINITY ppt	SIGMA T	OXYGEN ml/l	AOU ug-at/l	SAT %	PHOSPHATE	NITRATE	NITRITE	AMMONIA	SILICA
							ug-atoms/liter				
.0	10.2	32.339	24.9	4.99	109	80	4.71	31.4	1.97	12	51
1.0	10.1	32.197	24.8	4.91	118	79	5.38	29.0	2.36	14	52

ELKHORN SLOUGH - MOSS LANDING HARBOR

CRUISE	STATION	DATE	TIME	N LATITUDE	W LONGITUDE	TIDE ht	TIDE time	TRANS m	WATER DEPTH m
ES 5	7	27 FEB 1971	12:10	36° 48.1'	121° 47.9'	4.9'	11:50	1.0	5.0

DEPTH m	TEMP °C	SALINITY ppt	SIGMA T	OXYGEN ml/l	AOU ug-at/l	SAT %	PHOSPHATE ug-atoms/liter	NITRATE ug-atoms/liter	NITRITE ug-atoms/liter	AMMONIA ug-atoms/liter	SILICA ug-atoms/liter
.0	9.6	32.497	25.1	3.76	226	60	5.63	33.4	1.88	12	58
1.0	9.2	33.133	25.6	3.45	256	55	4.26	31.2	1.16	8.0	54
4.5	8.7	33.817	26.3	2.76	321	43	3.25	28.0	.46	2.8	46

CRUISE	STATION	DATE	TIME	N LATITUDE	W LONGITUDE	TIDE ht	TIDE time	TRANS m	WATER DEPTH m
ES 5	8	27 FEB 1971	13:10	36° 48.6'	121° 48.0'	4.9'	11:50	2.0	5.0

DEPTH m	TEMP °C	SALINITY ppt	SIGMA T	OXYGEN ml/l	AOU ug-at/l	SAT %	PHOSPHATE ug-atoms/liter	NITRATE ug-atoms/liter	NITRITE ug-atoms/liter	AMMONIA ug-atoms/liter	SILICA ug-atoms/liter
.0	9.6	33.817	26.1	4.84	124	78	2.27	24.9	.27	2.1	41
1.0	9.8	33.823	26.1	4.96	111	80	2.32	25.8	.27	.0	43
4.5	9.3	33.767	26.1	5.40	78	86	2.04	23.5	.26	.0	36

ELKHORN SLOUGH - MOSS LANDING HARBOR

CRUISE	STATION	DATE	TIME	N LATITUDE	W LONGITUDE	TIDE ht	TIDE time	TRANS m	WATER DEPTH m
ES 5	9	27 FEB 1971	13:21	36° 48.9'	121° 47.7'	4.9'	11:50	1.0	3.0

DEPTH m	TEMP °C	SALINITY ppt	SIGMA T	OXYGEN ml/l	AOU ug-at/l	SAT %	PHOSPHATE	NITRATE	NITRITE	AMMONIA	SILICA
							ug-atoms/liter				
.0	10.6	33.623	25.8	5.07	92	83	2.50	32.3	.48	4.1	42
1.0	10.1	33.623	25.9	4.83	120	78	2.54	32.4	.53	3.8	40
2.5	9.8	33.663	26.0	4.42	460	71	2.56	27.9	.43	4.2	41

ELKHORN SLOUGH - MOSS LANDING HARBOR

CRUISE	STATION	DATE	TIME	N LATITUDE	W LONGITUDE	TIDE ht	TIDE time	TRANS m	WATER DEPTH m
ES 6	1	27 MAR 1971	10:17	36° 51.2'	121° 45.7'	4.8'	10:56	.4	1.5

DEPTH m	TEMP °C	SALINITY ppt	SIGMA T	OXYGEN ml/l	AOU ug-at/l	SAT %	PHOSPHATE	NITRATE	NITRITE	AMMONIA	SILICA
							ug-atoms/liter				
.0	14.0	28.87	21.4	4.38	132	75	2.85	8.8	.65	5.8	46
1.0	14.0	29.83	22.2	3.83	178	66	2.77	9.1	.59	5.4	45

CRUISE	STATION	DATE	TIME	N LATITUDE	W LONGITUDE	TIDE ht	TIDE time	TRANS m	WATER DEPTH m
ES 6	2	27 MAR 1971	11:10	36° 50.4'	121° 44.7'	4.8'	10:56	1.0	3.0

DEPTH m	TEMP °C	SALINITY ppt	SIGMA T	OXYGEN ml/l	AOU ug-at/l	SAT %	PHOSPHATE	NITRATE	NITRITE	AMMONIA	SILICA
							ug-atoms/liter				
.0	14.0	31.95	23.9	4.43	117	77	2.59	7.4	.49	6.6	30
1.0		31.95		4.33			2.59	7.1	.49	7.3	30
2.5		32.12		4.25			2.23	2.6	.42	6.2	33

ELKHORN SLOUGH – MOSS LANDING HARBOR

CRUISE	STATION	DATE	TIME	N LATITUDE	W LONGITUDE	TIDE ht	TIDE time	TRANS m	WATER DEPTH m
ES 6	3	27 MAR 1971	11:35	36° 49.5'	121° 44.7'	4.8'	10:56	1.1	3.7

DEPTH m	TEMP °C	SALINITY ppt	SIGMA T	OXYGEN ml/l	AOU ug-at/l	SAT %	PHOSPHATE	NITRATE	NITRITE	AMMONIA ug-atoms/liter	SILICA
.0	13.8	32.89	24.6	4.97	68	87	2.00	4.5	.04	5.4	13
1.0		32.91		4.91			1.53	9.3	.09	4.3	83
3.2		33.07		4.90			1.75	10.2	.33	5.5	44

CRUISE	STATION	DATE	TIME	N LATITUDE	W LONGITUDE	TIDE ht	TIDE time	TRANS m	WATER DEPTH m
ES 6	4	27 MAR 1971	11:50	36° 48.8'	121° 45.6'	4.8'	10:56	2.2	5.2

DEPTH m	TEMP °C	SALINITY ppt	SIGMA T	OXYGEN ml/l	AOU ug-at/l	SAT %	PHOSPHATE	NITRATE	NITRITE	AMMONIA ug-atoms/liter	SILICA
.0	11.6	33.55	25.6	6.45	-42	108	1.41	6.3	.32	2.5	10

ELKHORN SLOUGH - MOSS LANDING HARBOR

CRUISE	STATION	DATE
ES 6	5	27 MAR 1971

TIME	N LATITUDE	W LONGITUDE	TIDE ht	TIDE time	TRANS m	WATER DEPTH m
11:20	36° 48.8'	121° 46.6'	4.8'	10:56	4.2	5.0

DEPTH m	TEMP °C	SALINITY ppt	STGM	A T	OXYGEN ml/l	AOU ug-at/l	SAT %	PHOSPHATE	NITRATE	NITRITE	AMMONIA	SILICA
								ug-atoms/liter				
.0	11.1	33.66	25.									
1.0	11.1	33.66	25	A								
			7	T	7.23	-106	120	.54	1.0	.10	.9	7
			7		7.17	-101	119	.48	.9	.13	1.0	3

CRUISE	STATION	DATE
ES 6	6	27 MAR 1971

TIME	N LATITUDE	W LONGITUDE	TIDE ht	TIDE time	TRANS m	WATER DEPTH m
10:10	36° 47.5'	121° 47.6'	4.8'	10:56	.4	.9

DEPTH m	TEMP °C	SALINITY ppt	STGM	A T	OXYGEN ml/l	AOU ug-at/l	SAT %	PHOSPHATE	NITRATE	NITRITE	AMMONIA	SILICA
								ug-atoms/liter				
.0	13.4	18.99	14									
.6	12.8	30.71	23	A								
			0	T	4.17	192	66	26	82.0	7.89	50	94
			1		5.18	67	87	5.16	25.4	2.60	32	34

ELKHORN SLOUGH - MOSS LANDING HARBOR

CRUISE	STATION	DATE	TIME	N LATITUDE	W LONGITUDE	TIDE ht	TIDE time	TRANS m	WATER DEPTH m
ES 6	7	27 MAR 1971	11:10	36° 48.1'	121° 47.9'	4.8'	10:56	1.0	5.0

DEPTH m	TEMP °C	SALINITY ppt	SIGMA T	OXYGEN ml/l	AOU ug-at/l	SAT %	PHOSPHATE	NITRATE	NITRITE	AMMONIA	SILICA
							ug-atoms/liter				
.0	12.2	30.86	23.4	5.39	55	90	4.80	38.8	2.73	2.0	34
1.0	12.2	31.41	23.7	5.38	54	90	3.98	26.2	1.93	1.1	29
4.5	11.7	33.40	25.4	5.48	43	92	1.83	10.6	.50	.0	29

CRUISE	STATION	DATE	TIME	N LATITUDE	W LONGITUDE	TIDE ht	TIDE time	TRANS m	WATER DEPTH m
ES 6	8	27 MAR 1971	10:10	36° 48.6'	121° 48.0'	4.8'	10:56	4.4	5.0

DEPTH m	TEMP °C	SALINITY ppt	SIGMA T	OXYGEN ml/l	AOU ug-at/l	SAT %	PHOSPHATE	NITRATE	NITRITE	AMMONIA	SILICA
							ug-atoms/liter				
1.0	11.4	33.61	25.6	7.13	-101	119	.76	2.6	.20	1.8	11

ELKHORN SLOUGH - MOSS LANDING HARBOR

CRUISE	STATION	DATE	TIME	N LATITUDE	W LONGITUDE	TIDE ht	TIDE time	TRANS m	WATER DEPTH m
ES 6	9	27 MAR 1971	12:10	36° 48.9'	121° 47.7'	4.8'	10:56	1.6	3.0

DEPTH m	TEMP °C	SALINITY ppt	SIGMA T	OXYGEN ml/l	AOU ug-at/l	SAT %	PHOSPHATE ug-atoms/liter	NITRATE ug-atoms/liter	NITRITE ug-atoms/liter	AMMONIA ug-atoms/liter	SILICA ug-atoms/liter
.0	14.1	32.54	24.3	5.90	-17	103	2.88	30.1	1.18	7.7	22
1.0	12.9	33.13	25.0	6.28	-40	108	1.83	17.1	.67	6.1	15

ELKHORN SLOUGH - MOSS LANDING HARBOR

CRUISE	STATION	DATE	TIME	N LATITUDE	W LONGITUDE	TIDE ht	TIDE time	TRANS m	WATER DEPTH m
ES 7	1	24 APR 1971	9:55	36° 51.2'	121° 45.7'	4.4'	10:02	.6	2.0

DEPTH m	TEMP °C	SALINITY ppt	SIGMA T	OXYGEN ml/l	AOU ug-at/l	SAT %	PHOSPHATE	NITRATE	NITRITE	AMMONIA	SILICA
							ug-atoms/liter				
.0	13.4	32.069	24.1	4.78	92	82	2.89	.8	.08	1.0	34
1.0	13.3	32.337	24.3	4.18	145	72	2.79	.0	.06	1.3	34

CRUISE	STATION	DATE	TIME	N LATITUDE	W LONGITUDE	TIDE ht	TIDE time	TRANS m	WATER DEPTH m
ES 7	2	24 APR 1971	10:37	36° 50.4'	121° 44.7'	4.4'	10:02	.8	2.9

DEPTH m	TEMP °C	SALINITY ppt	SIGMA T	OXYGEN ml/l	AOU ug-at/l	SAT %	PHOSPHATE	NITRATE	NITRITE	AMMONIA	SILICA
							ug-atoms/liter				
.0	13.4	33.247	25.0	5.10	59	89	1.45	.9	.02	.0	16
1.0	13.4	33.276	25.0	5.99	-20	104	2.84	1.2	.01	1.5	30
2.4	13.3	33.240	25.0	4.98	71	86	2.61	1.0	.07	1.9	25

ELKHORN SLOUGH - MOSS LANDING HARBOR

CRUISE	STATION	DATE	TIME	N LATITUDE	W LONGITUDE	TIDE ht	TIDE time	TRANS m	WATER DEPTH m
ES 7	3	24 APR 1971	11:10	36° 49.5'	121° 44.7'	4.4'	10:02	.9	3.8

DEPTH m	TEMP °C	SALINITY ppt	SIGMA T	OXYGEN ml/l	AOU ug-at/l	SAT %	PHOSPHATE ug-atoms/liter	NITRATE ug-atoms/liter	NITRITE ug-atoms/liter	AMMONIA ug-atoms/liter	SILICA ug-atoms/liter
.0	12.8	33.609	25.4	4.84	87	83	2.68	6.8	.12	4.8	32
1.0	12.8	33.602	25.4	4.90	82	84	2.44	6.7	.13	4.0	31
3.3	12.7	33.595	25.4	4.67	104	80	2.50	6.4	.39	3.7	30

CRUISE	STATION	DATE	TIME	N LATITUDE	W LONGITUDE	TIDE ht	TIDE time	TRANS m	WATER DEPTH m
ES 7	4	24 APR 1971	11:44	36° 48.8'	121° 45.6'	4.4'	10:02	1.8	4.0

DEPTH m	TEMP °C	SALINITY ppt	SIGMA T	OXYGEN ml/l	AOU ug-at/l	SAT %	PHOSPHATE ug-atoms/liter	NITRATE ug-atoms/liter	NITRITE ug-atoms/liter	AMMONIA ug-atoms/liter	SILICA ug-atoms/liter
.0	12.1	33.719	25.6	5.37	47	91	1.00	12.8	.06	4.2	18
1.0	12.4	33.723	25.5	5.50	34	94	1.91	11.2	.44	4.1	31
3.5	12.6	33.707	25.5	5.54	27	95	1.98	11.2	.15	5.5	29

ELKHORN SLOUGH - MOSS LANDING HARBOR

CRUISE	STATION	DATE	TIME	N LATITUDE	W LONGITUDE	TIDE ht	TIDE time	TRANS m	WATER DEPTH m
ES 7	5	24 APR 1971	12:18	36° 48.8'	121° 46.6'	4.4'	10:02	2.0	4.1

DEPTH m	TEMP °C	SALINITY ppt	SIGMA T	OXYGEN ml/l	AOU ug-at/l	SAT %	PHOSPHATE	NITRATE	NITRITE	AMMONIA	SILICA
							ug-atoms/liter				
.0	10.6	33.840	26.0	4.59	134	75	2.08	18.9	.27	6.2	35
3.6	10.6	33.843	26.0	4.51	141	74	2.01	18.9	.22	5.2	34

CRUISE	STATION	DATE	TIME	N LATITUDE	W LONGITUDE	TIDE ht	TIDE time	TRANS m	WATER DEPTH m
ES 7	6	24 APR 1971	9:30	36° 47.5'	121° 47.6'	4.4'	10:02	.5	1.4

DEPTH m	TEMP °C	SALINITY ppt	SIGMA T	OXYGEN ml/l	AOU ug-at/l	SAT %	PHOSPHATE	NITRATE	NITRITE	AMMONIA	SILICA
							ug-atoms/liter				
.0	12.3	25.202	19.0	4.40	163	71	26	33.6	19	3.4	111
1.0	12.3	29.348	22.2	4.52	137	75	1.36	39.6	9.40	1.2	72

ELKHORN SLOUGH - MOSS LANDING HARBOR

CRUISE	STATION	DATE	TIME	N LATITUDE	W LONGITUDE	TIDE ht	TIDE time	TRANS m	ER DEPTH m	SILICA
ES 7	7	24 APR 1971	9:55	36° 48.1'	121° 47.9'	4.4'	10:02	.9	5.1	

DEPTH m	TEMP °C	SALINITY ppt	SIGMA T	OXYGEN ml/l	AOU ug-at/l	SAT %	PHOSPHATE	NITRATE	NITRITE	AMMONIA ug-atoms/liter		
.0	11.0	30.941	23.6	5.49	60	89	5.62	26.6	4.10	.0		10
1.0	10.9	32.682	25.0	4.76	120	78	3.53	23.1	2.49	10.1		34
4.6	10.8	33.633	25.8	3.95	190	65	2.80	20.6	.81	8.2		37

CRUISE	STATION	DATE	TIME	N LATITUDE	W LONGITUDE	TIDE ht	TIDE time	TRANS m	ER DEPTH m	SILICA
ES 7	8	24 APR 1971	10:17	36° 48.6'	121° 48.0'	4.4'	10:02	3.5	5.2	

DEPTH m	TEMP °C	SALINITY ppt	SIGMA T	OXYGEN ml/l	AOU ug-at/l	SAT %	PHOSPHATE	NITRATE	NITRITE	AMMONIA ug-atoms/liter		
.0	9.6	33.903	26.2	4.09	191	66	1.55	22.6	.05	3.7		22
1.0	9.5	33.909	26.2	3.72	225	60	2.19	27.4	.15	4.0		39
4.7	9.4	33.922	26.2	3.90	210	62	.95	21.4	.06	3.1		21

ELKHORN SLOUGH - MOSS LANDING HARBOR

CRUISE	STATION	DATE	TIME	N LATITUDE	W LONGITUDE	TIDE ht	TIDE time	TRANS m	WATER DEPTH m
ES 7	9	24 APR 1971	10:40	36° 48.9'	121° 47.7'	4.4'	10:02	2.2	3.1

DEPTH m	TEMP °C	SALINITY ppt	SIGMA T	OXYGEN ml/l	AOU ug-at/l	SAT %	PHOSPHATE ug-atoms/liter	NITRATE ug-atoms/liter	NITRITE ug-atoms/liter	AMMONIA ug-atoms/liter	SILICA ug-atoms/liter
.0	10.8	33.808	25.9	4.71	121	78	1.36	18.1	.09	6.2	24
1.0	10.8	33.808	25.9	4.69	123	77	2.05	18.5	.07	6.1	34
2.6	10.7	33.869	26.0	4.21	167	69	1.75	15.5	.15	4.4	28

ELKHORN SLOUGH - MOSS LANDING HARBOR

CRUISE	STATION	D
ES 8	1	22 M

DEPTH m	TEMP °C	SALINITY ppt
.0	16.1	34.046
1.6	16.0	34.047

DATE	TIME	N LATITUDE	W LONGITUDE	TIDE ht	TIDE time	TRANS m	WATER DEPTH m
MAY 1971	9:55	36° 51.2'	121° 45.7'	3.9'	10:14	.6	2.1

CRUISE	STATION	D	SIGMA T	OXYGEN ml/l	AOU ug-at/l	SAT %	PHOSPHATE	NITRATE	NITRITE	AMMONIA	SILICA
							ug-atoms/liter				
ES 8	2	22 M	25.0	2.59	253	48	5.56	6.5	.58	4.1	43
		1	25.0	.97	399	18	2.18	1.5	.09	3.0	36

DEPTH m	TEMP °C	SALINITY ppt
.0	15.0	33.177
1.0	14.9	33.182
2.3	14.9	33.192

DATE	TIME	N LATITUDE	W LONGITUDE	TIDE ht	TIDE time	TRANS m	WATER DEPTH m
MAY 1971	10:28	36° 50.4'	121° 44.7'	3.9'	10:14	.8	2.8

D	SIGMA T	OXYGEN ml/l	AOU ug-at/l	SAT %	PHOSPHATE	NITRATE	NITRITE	AMMONIA	SILICA
					ug-atoms/liter				
	24.6	3.47	188	62	3.00	3.6	.23	5.4	29
	24.6	3.51	186	63	5.93	3.6	.62	8.0	37
	24.6	3.39	196	61	6.08	6.0	.54	3.1	38

ELKHORN SLOUGH - MOSS LANDING HARBOR

CRUISE	STATION	DATE	TIME	N LATITUDE	W LONGITUDE	TIDE ht	TIDE time	TRANS m	WATER DEPTH m
ES 8	3	22 MAY 1971	11:10	36° 49.5'	121° 44.7'	3.9'	10:14	1.0	4.0

DEPTH m	TEMP °C	SALINITY ppt	SIGMA T	OXYGEN ml/l	AOU ug-at/l	SAT %	PHOSPHATE	NITRATE	NITRITE	AMMONIA	SILICA
							ug-atoms/liter				
.0	15.0	32.017	23.7	4.41	108	78	7.23	17.4	1.60	10.8	41
1.0	14.6	32.200	23.9	4.61	94	81	7.13	17.5	1.50	9.4	43
3.5	14.4	32.575	24.2	3.73	173	66	3.42	11.1	.49	7.0	35

CRUISE	STATION	DATE	TIME	N LATITUDE	W LONGITUDE	TIDE ht	TIDE time	TRANS m	WATER DEPTH m
ES 8	4	22 MAY 1971	11:35	36° 48.8'	121° 45.6'	3.9'	10:14	1.2	4.1

DEPTH m	TEMP °C	SALINITY ppt	SIGMA T	OXYGEN ml/l	AOU ug-at/l	SAT %	PHOSPHATE	NITRATE	NITRITE	AMMONIA	SILICA
							ug-atoms/liter				
.0	14.8	32.283	23.9	4.98	58	88	3.29	14.0	.74	7.6	32
1.0	14.4	32.369	24.1	5.00	60	88	5.67	17.7	1.38	8.6	35
3.6	13.8	32.942	24.7	4.97	67	87	1.60	7.4	.38	4.4	15

ELKHORN SLOUGH - MOSS LANDING HARBOR

CRUISE	STATION	DATE	TIME	N LATITUDE	W LONGITUDE	TIDE ht	TIDE time	TRANS m	WATER DEPTH m
ES 8	5	22 MAY 1971	12:10	36° 48.8'	121° 46.6'	3.9'	10:14	2.3	3.7

DEPTH m	TEMP °C	SALINITY ppt	SIGMA T	OXYGEN ml/l	AOU ug-at/l	SAT %	PHOSPHATE	NITRATE	NITRITE	AMMONIA	SILICA
							ug-atoms/liter				
.0	13.9	33.386	25.0	5.82	-11	102	.90	4.5	.18	2.3	10
1.0	13.7	33.402	25.0	5.84	-10	102	1.09	3.6	.16	1.9	8
3.2	13.6	33.446	25.1	5.77	-3	101	.84	4.0	.15	2.7	7

CRUISE	STATION	DATE	TIME	N LATITUDE	W LONGITUDE	TIDE ht	TIDE time	TRANS m	WATER DEPTH m
ES 8	6	22 MAY 1971	9:15	36° 47.5'	121° 47.6'	3.9'	10:14	.4	1.2

DEPTH m	TEMP °C	SALINITY ppt	SIGMA T	OXYGEN ml/l	AOU ug-at/l	SAT %	PHOSPHATE	NITRATE	NITRITE	AMMONIA	SILICA
							ug-atoms/liter				
.0	13.6	22.457	16.6	4.52	147	73	10	61.9	5.95	17	120
.7	13.6	27.488	20.5	4.41	139	74	5.41	26.2	2.53	16	57

DEPTH m	TEMP °C	SALINITY ppt	SIGMA T	OXYGEN ml/l	AOU ug-at/l	SAT %	PHOSPHATE	NITRATE	NITRITE	AMMON ug-atoms/liter	WATER DE m
.0	13.1	29.009	21.2	5.04	83	84	9.11	37.1	3.39	13.0	5.0
1.0	13.2	29.554	22.2	5.29	57	89	5.02	32.2	1.86	9.0	
4.1	12.8	33.369	25.2	5.36	42	92	.97	5.7	.16	2.1	

CRUISE	STATION	DATE	TIME	N LATITUDE	W LONGITUDE	TIDE ht	TIDE time	TRANS m	DEPTH m
ES 8	8	22 MAY 1971	10:02	36° 48.6'	121° 48.0'	3.9'	10:14	2.1	0

DEPTH m	TEMP °C	SALINITY ppt	SIGMA T	OXYGEN ml/l	AOU ug-at/l	SAT %	PHOSPHATE	NITRATE	NITRITE	AMMON ug-atoms/liter
.0	13.1	32.253	24.3	6.08	-21	104	1.96	11.9	.51	2.8
1.0	13.1	32.596	24.5	6.53	-63	112	2.06	11.0	.54	2.4
4.5	13.0	33.745	25.4	6.68	-79	115	.30	1.1	.05	.7

WATER DE
m
4.6

ELKHORN SLOUGH - MOSS LANDING HARBOR

CRUISE	STATION	DATE	TIME	N LATITUDE	W LONGITUDE	TIDE ht	TIDE time	TRANS m	DEPTH m
ES 8	7	22 MAY 1971	9:43	36° 48.1'	121° 47.9'	3.9'	10:14	.8	8

ELKHORN SLOUGH - MOSS LANDING HARBOR

CRUISE	STATION	DATE	TIME	N LATITUDE	W LONGITUDE	TIDE ht	TIDE time	TRANS m	WATER DEPTH m
ES 8	9	22 MAY 1971	10:20	36° 48.9'	121° 47.7'	3.9'	10:14	.9	2.3

DEPTH m	TEMP °C	SALINITY ppt	SIGMA T	OXYGEN ml/l	AOU ug-at/l	SAT %	PHOSPHATE	NITRATE	NITRITE	AMMONIA	SILICA
							ug-atoms/liter				
.0	13.1	29.698	22.3	5.16	69	87	4.79	23.9	1.32	.0	32
1.0	13.0	31.473	23.7	5.37	45	91	4.48	17.3	1.41	9.2	26
2.3	13.0	32.208	24.2	5.13	64	88	2.90	13.3	.68	53.0	27

ELKHORN SLOUGH - MOSS LANDING HARBOR

CRUISE	STATION	DATE	TIME	N LATITUDE	W LONGITUDE	TIDE ht	TIDE time	TRANS m	WATER DEPTH m
ES 9	1	24 JUN 1971	13:00	36° 51.2'	121° 45.7'	4.3'	13:32	.8	2.0

DEPTH m	TEMP °C	SALINITY ppt	SIGMA T	OXYGEN ml/l	AOU ug-at/l	SAT %	PHOSPHATE	NITRATE	NITRITE	AMMONIA	SILICA
							ug-atoms/liter				
.0	20.7	35.71	25.1	3.67	113	74	3.30	3.1	.12	.4	26
1.0	20.1	35.55	25.2	3.15	164	63	3.33	24.3	.09	.5	26

CRUISE	STATION	DATE	TIME	N LATITUDE	W LONGITUDE	TIDE ht	TIDE time	TRANS m	WATER DEPTH m
ES 9	2	24 JUN 1971	13:50	36° 50.4'	121° 44.7'	4.3'	13:32	.9	2.5

DEPTH m	TEMP °C	SALINITY ppt	SIGMA T	OXYGEN ml/l	AOU ug-at/l	SAT %	PHOSPHATE	NITRATE	NITRITE	AMMONIA	SILICA
							ug-atoms/liter				
.0	19.4	34.58	24.6	3.67	126	72	3.07	2.5	.36	.9	24
1.0	19.0	34.53	24.7	3.48	147	68	3.10	24.4	.38	1.3	25
2.0	18.4	34.52	24.8	3.45	155	67	3.15	5.5	.36	1.1	23

ELKHORN SLOUGH - MOSS LANDING HARBOR

CRUISE	STATION	DATE	TIME	N LATITUDE	W LONGITUDE	TIDE ht	TIDE time	TRANS m	WATER DEPTH m
ES 9	3	24 JUN 1971	14:20	36° 49.5'	121° 44.7'	4.3'	13:32	1.1	3.1

DEPTH m	TEMP °C	SALINITY ppt	SIGMA T	OXYGEN ml/l	AOU ug-at/l	SAT %	PHOSPHATE	NITRATE	NITRITE	AMMONIA	SILICA
							ug-atoms/liter				
.0	16.9	33.61	24.5	3.90	130	73	3.21	9.0	.91	3.9	28
1.0	16.9	33.61	24.5	3.82	138	71	3.43	7.7	.90	4.0	28
2.6	16.8	33.76	24.6	3.47	169	65	3.46	21.1	.81	3.7	19

CRUISE	STATION	DATE	TIME	N LATITUDE	W LONGITUDE	TIDE ht	TIDE time	TRANS m	WATER DEPTH m
ES 9	4	24 JUN 1971	14:45	36° 48.8'	121° 45.6'	4.3'	13:32	2.5	4.0

DEPTH m	TEMP °C	SALINITY ppt	SIGMA T	OXYGEN ml/l	AOU ug-at/l	SAT %	PHOSPHATE	NITRATE	NITRITE	AMMONIA	SILICA
							ug-atoms/liter				
.0	13.5	33.63	25.2	5.04	62	88	3.36	6.8	.81	5.9	35
1.0	13.3	33.68	25.3	4.59	104	80	2.71	19.1	.72	3.5	34
3.5	13.0	33.65	25.4	4.18	144	72	3.04	21.2	.83	4.1	37

ELKHORN SLOUGH - MOSS LANDING HARBOR

CRUISE	STATION	DATE	TIME	N LATITUDE	W LONGITUDE	TIDE ht	TIDE time	TRANS m	WATER DEPTH m
ES 9	5	24 JUN 1971	15:10	36° 48.8'	121° 46.6'	4.3'	13:32	3.6	4.0

DEPTH m	TEMP °C	SALINITY ppt	SIGMA T	OXYGEN ml/l	AOU ug-at/l	SAT %	PHOSPHATE ug-atoms/liter	NITRATE ug-atoms/liter	NITRITE ug-atoms/liter	AMMONIA ug-atoms/liter	SILICA ug-atoms/liter
.0	14.8	33.68	25.0	7.21	-145	129	1.36	4.1	.50	3.2	12
1.0	14.6	33.69	25.1	7.10	-133	127	1.18	9.1	.46	2.3	14
3.5	14.6	33.70	25.1	6.74	-101	120	1.47	.0	.50	3.2	25

CRUISE	STATION	DATE	TIME	N LATITUDE	W LONGITUDE	TIDE ht	TIDE time	TRANS m	WATER DEPTH m
ES 9	6	24 JUN 1971	12:32	36° 47.5'	121° 47.6'	4.3'	13:32	.5	1.0

DEPTH m	TEMP °C	SALINITY ppt	SIGMA T	OXYGEN ml/l	AOU ug-at/l	SAT %	PHOSPHATE ug-atoms/liter	NITRATE ug-atoms/liter	NITRITE ug-atoms/liter	AMMONIA ug-atoms/liter	SILICA ug-atoms/liter
.0	17.8	19.58	13.6	3.55	198	62	18	25.3	2.55	45	86
.6	16.2	29.25	21.3	3.79	161	68	7.01	20.6	4.69	14	63

ELKHORN SLOUGH - MOSS LANDING HARBOR

CRUISE	STATION	DATE	TIME	N LATITUDE	W LONGITUDE	TIDE ht	TIDE time	TRANS m	WATER DEPTH m
ES 9	7	24 JUN 1971	13:13	36° 46.3'	121° 47.9'	4.3'	13:32	1.0	5.0

DEPTH m	TEMP °C	SALINITY ppt	SIGMA T	OXYGEN ml/l	AOU ug-at/l	SAT %	PHOSPHATE ug-atoms/liter	NITRATE ug-atoms/liter	NITRITE ug-atoms/liter	AMMONIA ug-atoms/liter	SILICA ug-atoms/liter
.0	16.8	23.56	16.8	4.86	78	85	9.80	2.1	1.52	33.0	83
1.0	11.4	31.18	23.8	4.34	157	71	4.80	7.5	3.24	8.7	38
4.5	10.0	33.57	25.9	2.89	294	47	3.41	11.6	.97	4.5	56

CRUISE	STATION	DATE	TIME	N LATITUDE	W LONGITUDE	TIDE ht	TIDE time	TRANS m	WATER DEPTH m
ES 9	8	24 JUN 1971	13:51	36° 48.6'	121° 48.0'	4.3'	13:32	5.0	5.5

DEPTH m	TEMP °C	SALINITY ppt	SIGMA T	OXYGEN ml/l	AOU ug-at/l	SAT %	PHOSPHATE ug-atoms/liter	NITRATE ug-atoms/liter	NITRITE ug-atoms/liter	AMMONIA ug-atoms/liter	SILICA ug-atoms/liter
.0	14.9	33.57	24.9	7.33	-156	131	1.17	4.6	.56	3.0	12
1.0	14.9	33.72	25.0	7.30	-154	131	2.17	4.0	.34	2.4	9
5.0	14.4	33.88	25.3	7.49	-167	133	.54	3.7	.19	1.7	13

ELKHORN SLOUGH - MOSS LANDING HARBOR

CRUISE	STATION	DATE	TIME	N LATITUDE	W LONGITUDE	TIDE ht	TIDE time	TRANS m	WATER DEPTH m
ES 9	9	24 JUN 1971	13:25	36° 48.9'	121° 47.7'	4.3'	13:32	2.0	4.0

DEPTH m	TEMP °C	SALINITY ppt	SIGMA T	OXYGEN ml/l	AOU ug-at/l	SAT %	PHOSPHATE	NITRATE	NITRITE	AMMONIA	SILICA
							ug-atoms/liter				
.0	16.6	32.07	23.4	5.10	31	94	3.56	62.0	2.15	6.4	15
1.0	15.6	34.00	25.1	5.94	-40	108	3.24	20.5	1.27	5.8	26
3.5	15.2	33.63	24.9	6.17	-56	111	1.88	>90.0	.58	2.7	28

.0	18.6	34.85
1.0	18.5	34.80
2.4	18.5	34.76

ELKHORN SLOUGH - MOSS LANDING HARBOR

CRUISE	STATION
ES 10	1

DEPTH	TEMP	SALINITY
m	°C	ppt
.0	19.7	35.89
1.0	19.6	35.86

DATE TIME N LATITUDE W LONGITUDE

JUL 1971 10:50 36° 51.2' 121° 45.7' 4.4

TIDE	TRANS	WATER DEPTH
time	m	m
12:20	.7	2.0

SALINITY	SIGMA T	OXYGEN	AOU	SAT	PHOSPHATE
ppt		ml/l	ug-at/l	%	
25.5	1.97	272	39	3.46	1.3
25.5	1.94	275	39	3.79	1.3

NITRATE	NITRITE	AMMONIA	SILICA
ug-atoms/liter			
.0	.00	.5	33
.4	.13	.9	32

DATE TIME N LATITUDE W LONGITUDE

JUL 1971 11:20 36° 50.4' 121° 44.7' 4.6

TIDE	TRANS	WATER DEPTH
time	m	m
12:20	.9	2.9

SALINITY	SIGMA T	OXYGEN	AOU	SAT	PHOSPHATE
ppt		ml/l	ug-at/l	%	
25.0	2.52	235	49	3.02	1.2
25.0	2.92	200	57	3.01	1.3
25.0	2.97	196	58	2.93	1.2

NITRATE	NITRITE	AMMONIA	SILICA
ug-atoms/liter			
2	.16	1.2	21
3	.16	1.9	21
3	.15	2.0	20

CRUISE	STATION
ES 10	2

DEPTH	TEMP	SALINITY
m	°C	ppt

ELKHORN SLOUGH - MOSS LANDING HARBOR

CRUISE	STATION	DATE	TIME	N LATITUDE	W LONGITUDE	TIDE ht	TIDE time	TRANS m	WATER DEPTH m
ES 10	3	22 JUL 1971	11:48	36° 49.5'	121° 44.7'	4.4'	12:20	.9	3.5

DEPTH m	TEMP °C	SALINITY ppt	SIGMA T	OXYGEN ml/l	AOU ug-at/l	SAT %	PHOSPHATE	NITRATE	NITRITE	AMMONIA	SILICA
							ug-atoms/liter				
.0	17.9	33.597	24.2	3.88	123	74	3.65	5.5	.52	5.0	21
1.0	17.9	33.575	24.2	3.85	126	73	3.57	5.2	.53	5.8	19
3.0	17.7	33.735	24.4	3.71	140	70	3.39	4.3	.44	4.9	20

CRUISE	STATION	DATE	TIME	N LATITUDE	W LONGITUDE	TIDE ht	TIDE time	TRANS m	WATER DEPTH m
ES 10	4	22 JUL 1971	12:10	36° 48.8'	121° 45.6'	4.4'	12:20	1.8	4.2

DEPTH m	TEMP °C	SALINITY ppt	SIGMA T	OXYGEN ml/l	AOU ug-at/l	SAT %	PHOSPHATE	NITRATE	NITRITE	AMMONIA	SILICA
							ug-atoms/liter				
.0	16.2	33.521	24.6	6.42	-87	118	1.93	5.5	.29	4.1	9
1.0	16.1	33.509	24.6	6.33	-78	116	2.82	5.3	.18	3.0	21
3.7	16.0	33.518	24.6	6.65	-106	122	2.12	4.0	.24	4.0	27

ELKHORN SLOUGH - MOSS LANDING HARBOR

CRUISE	STATION	DATE	TIME	N LATITUDE	W LONGITUDE	TIDE ht	TIDE time	TRANS m	WATER DEPTH m
ES 10	5	22 JUL 1971	12:40	36° 48.8'	121° 46.6'	4.4'	12:20	3.2	4.9

DEPTH m	TEMP °C	SALINITY ppt	SIGMA T	OXYGEN ml/l	AOU ug-at/1	SAT %	PHOSPHATE ug-atoms/liter	NITRATE ug-atoms/liter	NITRITE ug-atoms/liter	AMMONIA ug-atoms/liter	SILICA ug-atoms/liter
.0	15.1	33.600	24.9	7.26	-152	131	1.15	2.7	.05	3.1	24
1.0	15.1	33.562	24.9	7.23	-149	130	1.26	3.0	.14	2.8	5
4.4	15.0	33.571	24.9	7.34	-158	132	1.27	3.0	.11	2.7	5

CRUISE	STATION	DATE	TIME	N LATITUDE	W LONGITUDE	TIDE ht	TIDE time	TRANS m	WATER DEPTH m
ES 10	6	22 JUL 1971	11:15	36° 47.5'	121° 47.6'	4.4'	12:20	.3	1.5

DEPTH m	TEMP °C	SALINITY ppt	SIGMA T	OXYGEN ml/l	AOU ug-at/1	SAT %	PHOSPHATE ug-atoms/liter	NITRATE ug-atoms/liter	NITRITE ug-atoms/liter	AMMONIA ug-atoms/liter	SILICA ug-atoms/liter
.0	17.5	20.407	14.3	4.55	109	79	32	64.5	18.7	37	102
1.0	16.7	28.921	21.0	4.05	134	73	4.93	35.3	4.17	12.0	40

ELKHORN SLOUGH - MOSS LANDING HARBOR

CRUISE STATION

ES 10 8

DEPTH m	TEMP °C
.0	15.1
1.0	14.9
6.0	14.7

STATION	DATE	TIME	N LATITUDE	W LONGITUDE	TIDE ht	TIDE time	TRANS m	WATER DEPTH m
	22 JUL 1971	11:40	36° 48.1'	121° 47.9'	4.4'	12:20	.5	6.5

SALINITY ppt	SIGMA T	OXYGEN ml/l	AOU ug-at/l	SAT %	PHOSPHATE	NITRATE	NITRITE	AMMONIA	SILICA
					ug-atoms/liter				
28.984	21.0	5.30	23	95	9.80	24.5	3.48	12	37
33.705	24.9	5.20	26	95	4.84	17.6	2.12	7.5	24
33.500	24.9	6.14	-48	110	4.37	7.7	.78	8.0	16

STATION	DATE	TIME	N LATITUDE	W LONGITUDE	TIDE ht	TIDE time	TRANS m	WATER DEPTH m
	22 JUL 1971	12:46	36° 48.6'	121° 48.0'	4.4'	12:20	4.0	6.5

SALINITY ppt	SIGMA T	OXYGEN ml/l	AOU ug-at/l	SAT %	PHOSPHATE	NITRATE	NITRITE	AMMONIA	SILICA
					ug-atoms/liter				
32.939	24.4	8.43	-254	151	2.93	6.9	.66	6.3	12
33.295	24.7	6.68	-97	120	1.98	5.0	.40	4.1	11
33.705	25.1	7.46	-166	133	.82	2.6	.11	2.2	4

CRUISE STATION

ES 10 7

DEPTH m	TEMP °C
.0	16.6
1.0	15.6
6.0	14.7

ELKHORN SLOUGH - MOSS LANDING HARBOR

CRUISE	STATION	DATE	TIME	N LATITUDE	W LONGITUDE	TIDE ht	TIDE time	TRANS m	WATER DEPTH m
ES 10	9	22 JUL 1971	12:15	36° 48.9'	121° 47.7'	4.4'	12:20	1.5	4.5

DEPTH m	TEMP °C	SALINITY ppt	SIGMA T	OXYGEN ml/l	AOU ug-at/l	SAT %	PHOSPHATE	NITRATE	NITRITE	AMMONIA	SILICA
							ug-atoms/liter				
.0	15.8	33.227	24.4	6.54	-93	119	3.01	4.5	.20	3.8	13
1.0	15.7	33.429	24.6	6.30	-72	115	2.36	5.6	.21	5.3	11
4.0	15.4	33.624	24.8	6.96	-128	126	1.44	3.3	.17	3.4	7

ELKHORN SLOUGH - MOSS LANDING HARBOR

CRUISE	STATION	DATE	TIME	N LATITUDE	W LONGITUDE	TIDE ht	TIDE time	TRANS m	WATER DEPTH m
ES 11	1	17 AUG 1971	8:40	36° 51.2'	121° 45.7'	4.2'	9:56	.5	2.0

DEPTH m	TEMP °C	SALINITY ppt	SIGMA T	OXYGEN ml/l	AOU ug-at/l	SAT %	PHOSPHATE	NITRATE	NITRITE	AMMONIA	SILICA
							ug-atoms/liter				
.0	19.7	36.307	25.9	2.76	200	55	3.44	.1	.17	.2	23
1.5	19.6	36.293	25.9	2.76	201	55	8.8	10.2	4.16	5.3	38

CRUISE	STATION	DATE	TIME	N LATITUDE	W LONGITUDE	TIDE ht	TIDE time	TRANS m	WATER DEPTH m
ES 11	2	17 AUG 1971	9:10	36° 50.4'	121° 44.7'	4.2'	9:56	.7	3.0

DEPTH m	TEMP °C	SALINITY ppt	SIGMA T	OXYGEN ml/l	AOU ug-at/l	SAT %	PHOSPHATE	NITRATE	NITRITE	AMMONIA	SILICA
							ug-atoms/liter				
.0	19.5	35.340	25.2	1.89*	282	37	2.99	.4	.23	1.0	20
1.0	19.0	35.236	25.2	3.26	164	64	3.03	1.1	.24	1.1	21
2.5	19.2	35.177	25.1	3.37	153	66	2.96	1.0	.25	1.3	20

* questionable data

ELKHORN SLOUGH - MOSS LANDING HARBOR

CRUISE	STATION	DATE	TIME	N LATITUDE	W LONGITUDE	TIDE ht	TIDE time	TRANS m	WATER DEPTH m
ES 11	3	17 AUG 1971	9:34	36° 49.5'	121° 44.7'	4.2'	9:56	.7	4.0

DEPTH m	TEMP °C	SALINITY ppt	SIGMA T	OXYGEN ml/l	AOU ug-at/l	SAT %	PHOSPHATE ug-atoms/liter	NITRATE ug-atoms/liter	NITRITE ug-atoms/liter	AMMONIA ug-atoms/liter	SILICA ug-atoms/liter
.0	19.1	33.917	24.2	4.00	101	78	3.10	2.7	.25	3.5	21
1.0	18.4	33.901	24.4	4.00	107	77	3.10	1.9	.51	3.9	21
3.5	18.1	34.091	24.6	3.88	120	74	2.84	1.2	.33	3.1	20

CRUISE	STATION	DATE	TIME	N LATITUDE	W LONGITUDE	TIDE ht	TIDE time	TRANS m	WATER DEPTH m
ES 11	4	17 AUG 1971	9:56	36° 48.8'	121° 45.6'	4.2'	9:56	1.4	4.5

DEPTH m	TEMP °C	SALINITY ppt	SIGMA T	OXYGEN ml/l	AOU ug-at/l	SAT %	PHOSPHATE ug-atoms/liter	NITRATE ug-atoms/liter	NITRITE ug-atoms/liter	AMMONIA ug-atoms/liter	SILICA ug-atoms/liter
.0	16.2	33.544	24.6	6.05	-54	111	1.56	1.2	.18	1.9	10
1.0	16.8	33.544	24.1	6.01	-56	112	1.46	.7	.24	1.8	9
4.0	16.0	33.539	24.6	6.47	-90	119	1.19	.8	.20	1.8	5

ELKHORN SLOUGH - MOSS LANDING HARBOR

CRUISE	STATION	DATE	TIME	N LATITUDE	W LONGITUDE	TIDE ht	TIDE time	TRANS m	WATER DEPTH m
ES 11	5	17 AUG 1971	10:16	36° 48.8'	121° 46.6'	4.2'	9:56	1.9	5.0

DEPTH m	TEMP °C	SALINITY ppt	SIGMA T	OXYGEN ml/l	AOU ug-at/l	SAT %	PHOSPHATE	NITRATE	NITRITE	AMMONIA	SILICA
							ug-atoms/liter				
.0	14.5	33.360	24.8	5.83	-18	104	1.64	5.8	.41	1.9	10
1.0	14.3	33.389	24.9	5.90	-22	104	1.63	5.3	.45	2.2	11
4.5	14.3	33.413	24.9	5.86	-18	104	1.48	6.4	.34	1.8	9

CRUISE	STATION	DATE	TIME	N LATITUDE	W LONGITUDE	TIDE ht	TIDE time	TRANS m	WATER DEPTH m
ES 11	6	17 AUG 1971	8:23	36° 47.5'	121° 47.6'	4.2'	9:56	.3	1.3

DEPTH m	TEMP °C	SALINITY ppt	SIGMA T	OXYGEN ml/l	AOU ug-at/l	SAT %	PHOSPHATE	NITRATE	NITRITE	AMMONIA	SILICA
							ug-atoms/liter				
.0	17.3	22.849	16.2	2.22	311	39	27	19.9	11.5	48	103
.9	16.8	28.154	20.4	4.15	127	75	8.7	16.3	5.6	20	48

ELKHORN SLOUGH - MOSS LANDING HARBOR

CRUISE	STATION	DATE	TIME	N LATITUDE	W LONGITUDE	TIDE ht	TIDE time	TRANS m	WATER DEPTH m
ES 11	7	17 AUG 1971	8:52	36° 48.1'	121° 47.9'	4.2'	9:56	.5	5.5

DEPTH m	TEMP °C	SALINITY ppt	SIGMA T	OXYGEN ml/l	AOU ug-at/l	SAT %	PHOSPHATE ug-atoms/liter	NITRATE ug-atoms/liter	NITRITE ug-atoms/liter	AMMONIA ug-atoms/liter	SILICA ug-atoms/liter
.0	16.2	28.944	21.1				9.6	14.0	5.42	10.0	33
1.0	15.9	31.998	23.5	4.98	49	90	5.52	4.8	1.58	6.2	15
5.0	15.1	33.420	24.8	3.50	184	63	2.52	2.3	.30	6.2	10

CRUISE	STATION	DATE	TIME	N LATITUDE	W LONGITUDE	TIDE ht	TIDE time	TRANS m	WATER DEPTH m
ES 11	8	17 AUG 1971	10:10	36° 48.6'	121° 48.0'	4.2'	9:56	3.0	5.0

DEPTH m	TEMP °C	SALINITY ppt	SIGMA T	OXYGEN ml/l	AOU ug-at/l	SAT %	PHOSPHATE ug-atoms/liter	NITRATE ug-atoms/liter	NITRITE ug-atoms/liter	AMMONIA ug-atoms/liter	SILICA ug-atoms/liter
.0	13.7	33.531	25.1	3.25	220	57	1.18	5.6	.28	.8	9
1.0	13.6	33.557	25.2	4.29	128	75	1.01	4.3	.11	.8	4
4.5	13.3	33.592	25.3	3.26	223	57	.99	3.8	.16	.8	7

ELKHORN SLOUGH - MOSS LANDING HARBOR

CRUISE	STATION	DATE	TIME	N LATITUDE	W LONGITUDE	TIDE ht	TIDE time	TRANS m	WATER DEPTH m
ES 11	9	17 AUG 1971	9:32	36° 48.9'	121° 47.7'	4.2'	9:56	2.0	2.5

DEPTH m	TEMP °C	SALINITY ppt	SIGMA T	OXYGEN ml/l	AOU ug-at/l	SAT %	PHOSPHATE ug-atoms/liter	NITRATE ug-atoms/liter	NITRITE ug-atoms/liter	AMMONIA ug-atoms/liter	SILICA ug-atoms/liter
.0	15.6	33.503	24.7	3.39	188	62	1.94	1.0	.10	2.6	7
1.0	15.6	33.530	24.7	4.12	123	75	1.75	.6	.17	1.8	9
2.0	15.3	33.572	24.8	4.43	98	80	1.22	.6	.17	1.0	7

ELKHORN SLOUGH - MOSS LANDING HARBOR

CRUISE	STATION	DATE	TIME	N LATITUDE	W LONGITUDE	TIDE ht	TIDE time	TRANS m	WATER DEPTH m
ES 12	1	6 OCT 1971	10:36	36° 51.2'	121° 45.7'	6.0'	11:50	.6	2.3

DEPTH m	TEMP °C	SALINITY ppt	SIGMA T	OXYGEN ml/l	AOU ug-at/l	SAT %	PHOSPHATE ug-atoms/liter	NITRATE ug-atoms/liter	NITRITE ug-atoms/liter	AMMONIA ug-atoms/liter	SILICA ug-atoms/liter
.0	19.1	35.315	25.2	5.41	-28	106	1.90	.1	.19	.2	20
1.0	19.0	35.228	25.2	5.53	-38	108	1.80	.0	.16	.0	20
1.8	18.9	35.155	25.2	5.46	-31	107	1.85	.0	.18	.0	21

CRUISE	STATION	DATE	TIME	N LATITUDE	W LONGITUDE	TIDE ht	TIDE time	TRANS m	WATER DEPTH m
ES 12	2	6 OCT 1971	11:10	36° 50.4'	121° 44.7'	6.0'	11:50	.9	3.1

DEPTH m	TEMP °C	SALINITY ppt	SIGMA T	OXYGEN ml/l	AOU ug-at/l	SAT %	PHOSPHATE ug-atoms/liter	NITRATE ug-atoms/liter	NITRITE ug-atoms/liter	AMMONIA ug-atoms/liter	SILICA ug-atoms/liter
.0	17.5	34.044	24.7	5.48	-17	104	1.65	2.1	.24	1.3	23
1.0	17.3	34.166	24.8	5.54	-21	105	1.63	1.8	.23	1.2	24
2.6	17.3	33.983	24.7	5.72	-36	108	1.57	1.7	.25	1.2	23

ELKHORN SLOUGH - MOSS LANDING HARBOR

CRUISE	STATION	DATE	TIME	N LATITUDE	W LONGITUDE	TIDE ht	TIDE time	TRANS m	WATER DEPTH m
ES 12	3	6 OCT 1971	11:42	36° 49.5'	121° 44.7'	6.0'	11:50	1.4	4.0

DEPTH m	TEMP °C	SALINITY ppt	SIGMA T	OXYGEN ml/l	AOU ug-at/l	SAT %	PHOSPHATE	NITRATE	NITRITE	AMMONIA	SILICA
							ug-atoms/liter				
.0	14.6	33.561	25.0	7.77	-192	139	.76	.5	.10	.0	14
1.0	14.6	33.545	25.0	7.85	-200	140	.76	.8	.09	.0	14
3.5	14.5	33.548	25.0	7.81	-195	139	.72	.4	.11	.1	14

CRUISE	STATION	DATE	TIME	N LATITUDE	W LONGITUDE	TIDE ht	TIDE time	TRANS m	WATER DEPTH m
ES 12	4	6 OCT 1971	12:25	36° 48.8'	121° 45.6'	6.0'	11:50	1.9	5.0

DEPTH m	TEMP °C	SALINITY ppt	SIGMA T	OXYGEN ml/l	AOU ug-at/l	SAT %	PHOSPHATE	NITRATE	NITRITE	AMMONIA	SILICA
							ug-atoms/liter				
.0	14.4	33.561	25.0	7.52	-168	134	.79	2.7	.13	.2	15
1.0	14.3	33.560	25.0	7.56	-171	134	.79	2.7	.13	.2	15
4.5	14.2	33.561	25.0	7.43	-158	131	.80	2.2	.13	.0	14

ELKHORN SLOUGH - MOSS LANDING HARBOR

CRUISE	STATION	DATE	TIME	N LATITUDE	W LONGITUDE	TIDE ht	TIDE time	TRANS m	WATER DEPTH m
ES 12	5	6 OCT 1971	12:50	36° 48.8'	121° 46.6'	6.0'	11:50	3.5	4.7

DEPTH m	TEMP °C	SALINITY ppt	SIGMA T	OXYGEN ml/l	AOU ug-at/l	SAT %	PHOSPHATE ug-atoms/liter	NITRATE ug-atoms/liter	NITRITE ug-atoms/liter	AMMONIA ug-atoms/liter	SILICA ug-atoms/liter
.0	14.5	33.571	25.0	7.32	-151	130	.84	3.6	.13	.0	15
1.0	14.3	33.572	25.0	7.38	-155	131	.87	3.5	.16	.1	15
4.2	13.9	33.580	25.1	6.76	-95	119	.95	4.8	.17	.3	16

CRUISE	STATION	DATE	TIME	N LATITUDE	W LONGITUDE	TIDE ht	TIDE time	TRANS m	WATER DEPTH m
ES 12	6	6 OCT 1971	11:30	36° 47.5'	121° 47.6'	6.0'	11:50	1.0	2.0

DEPTH m	TEMP °C	SALINITY ppt	SIGMA T	OXYGEN ml/l	AOU ug-at/l	SAT %	PHOSPHATE ug-atoms/liter	NITRATE ug-atoms/liter	NITRITE ug-atoms/liter	AMMONIA ug-atoms/liter	SILICA ug-atoms/liter
.0	17.0	29.432	21.3	4.28	109	78	9.9	15.5	4.36	6.9	70
1.0	16.3	30.904	22.6	5.34	16	97	7.0	11.3	2.43	4.9	53
1.5	16.0	32.750	24.0	6.28	-70	114	4.02	4.5	1.01	2.5	32

ELKHORN SLOUGH - MOSS LANDING HARBOR

SE	STATION	DATE	TIME	N LATITUDE	W LONGITUDE	TIDE ht	TIDE time	TRANS m	WATER DEPTH m
2	7	6 OCT 1971	12:10	36° 48.1'	121° 47.9'	6.0'	11:50	1.0	6.5

	TEMP °C	SALINITY ppt	SIGMA T	OXYGEN ml/l	AOU ug-at/l	SAT %	PHOSPHATE ug-atoms/liter	NITRATE ug-atoms/liter	NITRITE ug-atoms/liter	AMMONIA ug-atoms/liter	SILICA ug-atoms/liter
)	15.2	33.207	24.6	6.89	-119	124	1.79	3.2	.49	1.4	22
)	14.7	33.331	24.8	6.91	-116	123	1.99	3.7	.48	1.8	20
)	14.6	33.524	24.9	7.17	-139	128	1.10	2.1	.17	.9	16

SE	STATION	DATE	TIME	N LATITUDE	W LONGITUDE	TIDE ht	TIDE time	TRANS m	WATER DEPTH m
CRUI 2	8	6 OCT 1971	13:13	36° 48.6'	121° 48.0'	6.0'	11:50	3.0	5.5

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DEPTH m	TEMP °C	SALINITY ppt	SIGMA T	OXYGEN ml/l	AOU ug-at/l	SAT %	PHOSPHATE ug-atoms/liter	NITRATE ug-atoms/liter	NITRITE ug-atoms/liter	AMMONIA ug-atoms/liter	SILICA ug-atoms/liter
)	15.7	33.602	24.8	6.44	-85	117	.95	4.5	.17	.5	16
)	15.4	33.577	24.8	8.19	-238	148	1.14	3.8	.17	.6	15
5)	14.6	33.544	25.0	7.02	-125	125	.91	3.6	.17	.4	17
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ELKHORN SLOUGH - MOSS LANDING HARBOR

CRUISE	STATION	DATE	TIME	N LATITUDE	W LONGITUDE	TIDE ht	TIDE time	TRANS m	WATER DEPTH m
ES 12	9	6 OCT 1971	12:43	36° 48.9'	121° 47.7'	6.0'	11:50	1.5	4.0

DEPTH m	TEMP °C	SALINITY ppt	SIGMA T	OXYGEN ml/l	AOU ug-at/l	SAT %	PHOSPHATE	NITRATE	NITRITE	AMMONIA	SILICA
							ug-atoms/liter				
.0	13.8	33.574	25.2	6.60	-80	116	1.51	.5	.12	.1	21
1.0	13.8	33.570	25.1	6.63	-83	116	1.38	.9	.05	.6	20
3.5	13.8	33.574	25.2	7.78	-185	136	.86	.8	.12	.1	15

ELKHORN SLOUGH - MOSS LANDING HARBOR

CRUISE	STATION	DATE	TIME	N LATITUDE	W LONGITUDE	TIDE ht	TIDE time	TRANS m	WATER DEPTH m
ES 13	1	23 NOV 1971	12:15	36° 51.2'	121° 45.7'	4.6'	12:44	.9	2.3

DEPTH m	TEMP °C	SALINITY ppt	SIGMA T	OXYGEN ml/l	AOU ug-at/l	SAT %	PHOSPHATE	NITRATE	NITRITE	AMMONIA	SILICA
							ug-atoms/liter				
.0	12.3	32.425	24.6	6.18	-22	104	1.90	2.3	.23	1.6	12
1.0	12.3	32.441	24.6	7.05	-100	119	2.53	2.5	.38	2.4	21
1.8	12.3	32.448	24.6	6.95	-91	117	2.53	3.2	.38	2.5	21

CRUISE	STATION	DATE	TIME	N LATITUDE	W LONGITUDE	TIDE ht	TIDE time	TRANS m	WATER DEPTH m
ES 13	2	23 NOV 1971	12:50	36° 50.4'	121° 44.7'	4.6'	12:44	1.0	2.9

DEPTH m	TEMP °C	SALINITY ppt	SIGMA T	OXYGEN ml/l	AOU ug-at/l	SAT %	PHOSPHATE	NITRATE	NITRITE	AMMONIA	SILICA
							ug-atoms/liter				
.0	14.8	32.624	24.2	5.76	-12	102	3.83	5.0	.71	8.0	25
1.0	14.6	32.624	24.2	5.74	-8	102	3.86	4.7	.75	8.4	27
2.4	14.5	32.642	24.3	5.82	-14	103	3.67	4.4	.66	7.9	25

LOUGH - MOSS LANDING HARBOR

N LATITUDE	W LONGITUDE	TIDE ht	TIDE time	TRANS m	WATER DEPTH m
36° 49.5'	121° 44.7'	4.6'	12:44	1.0	3.1

EN 1 ug-at/l	AOU ug-at/1	SAT %	PHOSPHATE ug-atoms/liter	NITRATE ug-atoms/liter	NITRITE ug-atoms/liter	AMMONIA ug-atoms/liter	SILICA ug-atoms/liter
3	26	95	3.76	6.9	.73	7.3	24
5	43	92	3.19	4.3	.47	5.2	15
9	68	87	3.72	8.2	.76	7.1	24

N LATITUDE	W LONGITUDE	TIDE ht	TIDE time	TRANS m	WATER DEPTH m
36° 48.8'	121° 45.6'	4.6'	12:44	1.2	4.8

GEN '1 ug-at/1	AOU ug-at/1	SAT %	PHOSPHATE ug-atoms/liter	NITRATE ug-atoms/liter	NITRITE ug-atoms/liter	AMMONIA ug-atoms/liter	SILICA ug-atoms/liter
15	28	94	2.44	6.6	.49	4.4	16
16	28	94	3.12	8.5*		5.5	21
74	71	86	2.39	5.4	.44	4.7	14

CRUISE	STATION	DATE	TIME	N LATITUDE	W LONGITU
ES 13	5	23 NOV 1971	14:10	36° 48.8'	121° 46.9

DEPTH m	TEMP °C	SALINITY ppt	SIGMA T	OXYGEN ml/l	AOU ug-at/l	SAT %	PHOSPHA
.0	15.2	33.314	24.6	5.58	-2	101	1.96
1.0	14.9	33.292	24.7	5.65	-5	101	1.99
3.8	14.6	33.378	24.8	5.50	10	98	1.73

ARBOR

DE	TIDE ht	TIDE time	TRANS m	WATER DEPTH m
6'	4.6'	12:44	1.3	4.3

CRUISE	STATION	DATE	TIME	N LATITUDE	W LONGITU
ES 13	6	23 NOV 1971	12:00	36° 47.5'	121° 47.9

DEPTH m	TEMP °C	SALINITY ppt	SIGMA T	OXYGEN ml/l	AOU ug-at/l	SAT %	PHOSPH
.0	12.4	24.830	18.7	3.84	213	62	37
1.0	12.6	30.302	22.9	3.35	235	56	4.08

DE	TIDE ht	TIDE time	TRANS m	WATER DEPTH m
6'	4.6'	12:44	.7	1.5

ATE	NITRATE	NITRITE	AMMONIA	SILICA
	ug-atoms/liter			
	8.2	.56	3.2	17
	8.3	.50	3.3	17
	8.0	.49	3.3	17

ATE	NITRATE	NITRITE	AMMONIA	SILICA
	ug-atoms/liter			
	32.8	5.96	28	120
	8.6	.76	7.4	23

ELKHORN SLOUGH - MOSS LANDING HARBOR

CRUISE	STATION	DATE	TIME	N LATITUDE	W LONGITUDE	TIDE ht	TIDE time	TRANS m	WATER DEPTH m
ES 13	7	23 NOV 1971	12:30	36° 48.1'	121° 47.9'	4.6'	12:44	1.3	7.0

DEPTH m	TEMP °C	SALINITY ppt	SIGMA T	OXYGEN ml/l	AOU ug-at/l	SAT %	PHOSPHATE ug-atoms/liter	NITRATE ug-atoms/liter	NITRITE ug-atoms/liter	AMMONIA ug-atoms/liter	SILICA ug-atoms/liter
.0	12.6	31.009	23.4	4.96	88	83	7.9	12.0	1.19	3.5	32
1.0	12.8	31.284	23.6	4.99	82	84	8.0	13.1	1.62	10	43
6.5	12.3	33.383	25.3	4.45	129	76	4.4	7.0	.48	10	28

CRUISE	STATION	DATE	TIME	N LATITUDE	W LONGITUDE	TIDE ht	TIDE time	TRANS m	WATER DEPTH m
ES 13	8	23 NOV 1971	13:29	36° 48.6'	121° 48.0'	4.6'	12:44	1.7	6.0

DEPTH m	TEMP °C	SALINITY ppt	SIGMA T	OXYGEN ml/l	AOU ug-at/l	SAT %	PHOSPHATE ug-atoms/liter	NITRATE ug-atoms/liter	NITRITE ug-atoms/liter	AMMONIA ug-atoms/liter	SILICA ug-atoms/liter
.0	12.4	33.410	25.3	4.97	81	85	1.37	7.6	.39	2.5	14
1.0	12.6	33.438	25.3	5.04	72	86	1.53	7.5	.46	2.6	16
5.5	11.9	33.478	25.4	4.92	91	83	1.06	5.9	.31	1.7	12

ELKHORN SLOUGH - MOSS LANDING HARBOR

CRUISE	STATION	DATE	TIME	N LATITUDE	W LONGITUDE	TIDE ht	TIDE time	TRANS m	WATER DEPTH m
ES 13	9	23 NOV 1971	13:00	36° 48.9'	121° 47.7'	4.6'	12:44	1.5	3.0

DEPTH m	TEMP °C	SALINITY ppt	SIGMA T	OXYGEN ml/l	AOU ug-at/l	SAT %	PHOSPHATE	NITRATE	NITRITE	AMMONIA	SILICA
							ug-atoms/liter				
.0	12.4	31.845	24.1	5.75	17	97	5.7	9.5	1.42	13	37
1.0	12.3	32.783	24.8	6.03	-10	102	15	22.9	2.23	13	57
2.5	12.2	33.206	25.2	6.01	-8	102	2.61	9.6	.58	5.6	22