

Cruise Plan

2002 RMP Sediment Cruise

July 30 – August 8, 2002

A P P L I E D
*ocean*marine
S C I E N C E S

1.0 INTRODUCTION

This report details plans associated with the annual Regional Monitoring Program for Trace Substances in the San Francisco Estuary (RMP) sediment cruise. The cruise has been redesigned for 2002 to adopt a randomized sampling strategy in place of the twenty-six base program stations sampled in previous years.

2.0 CRUISE PLAN

2.1 Objectives

All sampling will be conducted from the R/V *David Johnston*. The objectives of the sampling effort are to:

1. Collect sediment samples from 48 sites for analysis of trace organics
2. Collect sediment samples from 49 sites for analysis of trace elements (Al, Cd, Cu, Fe, Pb, Mn, Ni, Ag, and Zn) by the City and County of San Francisco (CCSF).
3. Collect sediment samples from 49 sites for analysis of mercury and monomethyl mercury by the University of California at Santa Cruz Department of Environmental Toxicology (UCSC).
4. Collect sediment samples from 49 sites for analysis of ancillary parameters by UCSC.
5. Collect sediment samples from 49 sites for analysis of arsenic and selenium by Brooks Rand Ltd. (BRL).
6. Collect sediment samples from 28 sites for analysis of toxicity by Marine Pollution Studies Laboratory (MPSL).
7. Collect sediment samples from 49 sites for trace metals archive.
8. Collect sediment samples from 49 sites for trace organics archive.
9. Collect sediment samples from 2 site for use in studies of unregulated organic contaminants.
10. Collect a water column profile at each site for analysis of temperature, conductivity, optical back scatterance, and dissolved oxygen by AMS.

2.2 Personnel

The scheduled personnel and work assignments for this cruise are as follows:

Name	Affiliation	Duties
Sarah Lowe	SFEI	Sample Collection
David Bell	AMS	Cruise Manager, CTD
Paul Salop	AMS	Sample Collection
Gordon Smith	UCSC	<i>RV David Johnston</i> , Skipper

Representatives of program sponsors may be aboard the *RV David Johnston* during portions of the cruise to observe sampling operations.

Mr. Bell will be responsible for oversight of sampling operations, compliance with cruise plan and quality assurance guidelines, maintenance of the sample field log, chain-of-custody procedures, CTD profiling, and toxicity sampling. Mr. Salop and Ms. Lowe will be responsible for sample collection and sample processing. Captain Gordon Smith will be responsible for *RV David Johnston* operation and safety.

2.3 Cruise Schedule

The following cruise schedule assumes that an average of twenty minutes will be required for sampling at each station. Sampling times will vary depending upon substrate type and number of samples to be collected. Schedule is for planning purposes only, and may be revised during sampling operations to reflect weather conditions, equipment performance, or other factors. Any sites unable to be sampled at scheduled time will be rescheduled later in the cruise if possible, or will be replaced with the first available site from the current 2003 sampling schedule. Any sites displaying a lack of suitable substrate within the immediate vicinity (*i.e.*, a lack of fine materials within a 100 m radius of the target coordinates) will be automatically replaced with the first available site from the 2003 schedule. AMS will notify BACWA and MPSL lab personnel when the vessel will arrive at dock for sample pick-up.

Date	Time	Activity
July 30, 2002	1300-1500	Mobilize all sampling gear on vessel <i>R/V David Johnston</i> at Benicia Marina.
July 31, 2002	0700-1700	Mobilize remaining sampling gear aboard vessel at Benicia Marina. Conduct safety briefing. Sample SU004, SU008, SU006, BF21, BG20, BG30, and SU002. Return

Date	Time	Activity
		to Benicia Marina.
August 1, 2002	0700-1600	Mobilize remaining sampling gear aboard vessel at Benicia Marina. Sample SU003, SU007, SU001, SU005, SPB006, SPB002, and BD31. Return to Benicia Marina.
August 2, 2002	0700-1600	Mobilize remaining sampling gear aboard vessel at Benicia Marina. Sample SPB007, SPB003, SPB005, SPB004, SPB001, and SPB008. Return to Benicia Marina and demobilize vessel. AMS personnel remove all samples from vessel for cold storage over the weekend.
August 3, 2002	0700-1600	Capt. Smith transits vessel <i>R/V David Johnston</i> from Benicia Marina to MARFAC (USGS facility in Redwood City).
August 5, 2002	0700-1600	Mobilize remaining sampling gear aboard vessel at MARFAC. Sample LSB008, LSB006, BA10, C-3-0, C-1-3, LSB004, and LSB005. Return to Redwood City.
August 6, 2002	0700-1600	Mobilize remaining sampling gear aboard vessel at MARFAC. Sample LSB001, LSB002, LSB003, LSB007, SB006, BA41, and SB002. Return to Redwood City.
August 7, 2002	0700-1600	Mobilize remaining sampling gear aboard vessel at MARFAC. Sample CB002, SB003, SB001, SB004, SB008, SB005, SB007, and CB006. Return to EmeryCove Marina.
August 8, 2002	0700-0730	Mobilize remaining sampling gear aboard vessel at EmeryCove Marina. Sample CB005, CB001, CB007, CB003, CB004, CB008, and BC11. Return to EmeryCove Marina and demobilize vessel. AMS to take possession of all remaining sediment samples.
August 12, 2002	0900-1500	Mr. Salop ships all samples to appropriate analytical laboratories.

2.4 Lodging

Due to potential changes to cruise schedule caused by delays in sampling, AMS will be responsible for making and revising lodging arrangements for all sampling personnel for the cruise. AMS has made the following reservations for sampling crews (Captain Smith will be responsible for his own arrangements as his travel dates do not always coincide):

Location	Dates	Confirmation No.	Hotel
Benicia	July 30- Aug. 1	020409R317 AMS 020409R318 AMS	Best Western Heritage Inn 1955 East 2 nd St. Benicia, CA 94510 (707) 746-0401
Redwood City	Aug. 4-6	135170 SFEI 135171 AMS 135172 AMS	Comfort Inn 1818 El Camino Real Redwood City, CA (650) 599-9636

2.5 Sampling Procedures

Sediment sampling equipment is prepared in the laboratory by AMS four days prior to sampling. Equipment that is pre-cleaned includes:

- Van Veen Grab
- Sample scoops
- Compositing bucket
- Wash bottles

Prior to sampling, all equipment will be thoroughly cleaned. Equipment is soaked (fully immersed) for three days in a 0.5 % solution of Alconox™ detergent (or equivalent) and deionized water. Equipment is rinsed three times with deionized water and let dry in a clean place. Equipment is rinsed with 1.0 % solution of hydrochloric acid, followed by a rinse with petroleum ether, followed by another set of three rinses with deionized water. All equipment is then allowed to dry in a clean place.

The cleaned grab is wrapped in aluminum foil until used in the field. All other equipment is stored in clean Ziploc™ bags until used in the field. The CTD is checked for proper operation at least 48 hours before use.

Sampling procedures will ensure that samples are collected from a localized area at each site to reduce uncontrolled temporal and spatial variation. The goal of the sampling program design is to collect fine sediments at the coordinates listed in Table 1. If fine

sediments are not present at the target coordinates, the cruise vessel skipper will attempt to locate fine substrate within a 100 m radius of the given coordinates. If no appropriate sediments are located within this radius, the sampling operations will proceed to the next scheduled site and the site in question will be replaced with the first available sampling site from the 2003 sampling schedule. The coordinates will be checked throughout sampling to ensure that the anchor has not dragged. Coordinates will be recorded for each site.

When the Van Veen grab is brought on deck, sediment will be carefully removed for compositing. After any overlying water has been drained off, the top 5 cm of sediment will be scooped from a minimum of two replicate grabs and mixed in the bucket to provide a single composite sample for each site for analysis of chemistry, TOC, grain size, and toxicity (where applicable). Portions of the composited sample will be placed into containers provided by each laboratory. Duplicate chemistry samples will be collected from this composite for archival.

The quality of grab samples will be ensured by requiring each sample to satisfy a set of criteria concerning the depth of penetration and disturbance of the sediment within the grab. In this way, each sample will normally contain the top 10-cm of sediment within the area of the grab jaws. Samples will be rejected for the following conditions:

- There is a rock or shell fragment wedged between the jaws of the grab allowing the sample to wash out.
- The sample surface is significantly disturbed.
- The sample is uneven from side to side, indicating that the grab was tilted when it penetrated the sediment.
- The surface of the sample is in contact with the top doors of the grab, indicating over-penetration of the grab and possible loss of material around the doors.

Samples will be collected from each site and placed into the containers indicated in Table 1.

2.6 Sampling Sites

2002 target sampling sites are listed in Table 1. Relevant tide charts for each day of sampling are shown in Figures 1 through 7. A list of all potential sediment sampling sites (2002 target sites and oversample, or contingency, sites) is given in Appendix A.

CRUISE PLAN: 2002 Regional Monitoring Program
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SITECODE	As, Se - BRL (250 ml)	TE - CCSF (250 ml)	Hg, mmHg- UCSC (250 ml)	TO - EBMUD (250 ml)	ANCIL - UCSCDET (250 ml)	TOX - MPSL (1 l)	ARCHIVE - TO (250 ml)	ARCHIVE - TE (250 ml)	Unreg. Org - Sedlak (20 l)	CTD	TARGET_LONG	TARGET_LAT	DEPTH (ft.)
BC11	1	1	1	1	1	3	1	1	1	1	122° 20.959'	37° 49.359'	12+
CB001S	1	1	1	1	1	3	1	1		1	122° 21.625'	37° 52.583'	6 to 12
CB002S	1	1	1	1	1		1	1		1	122° 20.767'	37° 37.509'	12+
CB003S	1	1	1	1	1	3	1	1		1	122° 29.042'	37° 52.083'	3 to 6
CB004S	1	1	1	1	1		1	1		1	122° 19.721'	37° 45.298'	12+
CB005S	1	1	1	1	1	3	1	1		1	122° 19.508'	37° 51.156'	6 to 12
CB006S	1	1	1	1	1		1	1		1	122° 14.848'	37° 42.788'	6 to 12
CB007S	1	1	1	1	1	3	1	1		1	122° 23.935'	37° 55.123'	6 to 12
CB008S	1	1	1	1	1		1	1		1	122° 19.682'	37° 43.085'	12+
BA10	1	1	1	1	1	3	1	1		1	122° 3.799'	37° 28.199'	12+
LSB001S	1	1	1	1	1	3	1	1		1	122° 5.846'	37° 29.513'	12+
LSB002S	1	1	1	1	1		1	1		1	122° 4.614'	37° 28.751'	12+
LSB003S	1	1	1	1	1	3	1	1		1	122° 6.921'	37° 29.482'	3 to 6
LSB004S	1	1	1	1	1		1	1		1	122° 5.047'	37° 29.669'	1 to 3
LSB005S	1	1	1	1	1	3	1	1		1	122° 5.406'	37° 29.722'	1 to 3
LSB006S	1	1	1	1	1		1	1		1	122° 3.872'	37° 28.243'	12+
LSB007S	1	1	1	1	1	3	1	1		1	122° 6.552'	37° 29.416'	1 to 3
LSB008S	1	1	1	1	1		1	1		1	122° 4.832'	37° 29.109'	12+
BG20	1	1	1	1	1	3	1	1		1	121° 48.589'	38° 3.56'	12+
BG30	1	1	1	1	1	3	1	1		1	121° 48.45'	38° 1.4'	12+
BD31	1	1	1	1	1	3	1	1		1	122° 21.649'	38° 1.48'	12+
SPB001S	1	1	1	1	1	3	1	1		1	122° 23.13'	38° 4.322'	6 to 12
SPB002S	1	1	1	1	1		1	1		1	122° 20.411'	38° 0.989'	3 to 6
SPB003S	1	1	1	1	1	3	1	1		1	122° 28.53'	38° 1.695'	1 to 3
SPB004S	1	1	1	1	1		1	1		1	122° 25.41'	37° 58.628'	12+
SPB005S	1	1	1	1	1	3	1	1		1	122° 26.064'	38° 0.74'	6 to 12
SPB006S	1	1	1	1	1		1	1		1	122° 18.731'	38° 1.48'	6 to 12
SPB007S	1	1	1	1	1	3	1	1		1	122° 24.518'	38° 6.986'	1 to 3
SPB008S	1	1	1	1	1		1	1		1	122° 20.757'	38° 4.313'	6 to 12
C-1-3	1	1	1		1		1	1		1	122° 0.64'	37° 26.799'	6 to 12
C-3-0	1	1	1	1	1	3	1	1	1	1	122° 1.6'	37° 27.849'	6 to 12
BA41	1	1	1	1	1	3	1	1		1	122° 12.57'	37° 33.669'	12+
SB001S	1	1	1	1	1	3	1	1		1	122° 15.796'	37° 36.745'	3 to 6
SB002S	1	1	1	1	1		1	1		1	122° 9.978'	37° 36.615'	1 to 3
SB003S	1	1	1	1	1	3	1	1		1	122° 18.148'	37° 37.031'	12+
SB004S	1	1	1	1	1		1	1		1	122° 13.045'	37° 36.043'	3 to 6
SB005S	1	1	1	1	1	3	1	1		1	122° 12.428'	37° 39.316'	3 to 6

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SITECODE	As, Se - BRL (250 ml)	TE - CCSF (250 ml)	Hg, mmHg- UCSC (250 ml)	TO - EBMUD (250 ml)	ANCIL - UCSCDET (250 ml)	TOX - MPSL (1 l)	ARCHIVE - TO (250 ml)	ARCHIVE - TE (250 ml)	Unreg. Org - Sedlak (20 l)	CTD	TARGET_LONG	TARGET_LAT	DEPTH (ft.)
SB006S	1	1	1	1	1		1	1		1	122° 9.048'	37° 30.887'	1 to 3
SB007S	1	1	1	1	1	3	1	1		1	122° 13.796'	37° 40.925'	3 to 6
SB008S	1	1	1	1	1		1	1		1	122° 11.035'	37° 36.778'	3 to 6
BF21	1	1	1	1	1	3	1	1		1	122° 2.309'	38° 6.959'	12+
SU001S	1	1	1	1	1	3	1	1		1	122° 2.73'	38° 5.971'	12+
SU002S	1	1	1	1	1		1	1		1	121° 58.711'	38° 3.538'	12+
SU003S	1	1	1	1	1	3	1	1		1	122° 5.757'	38° 3.935'	12+
SU004S	1	1	1	1	1		1	1		1	122° 1.512'	38° 5.001'	1 to 3
SU005S	1	1	1	1	1	3	1	1		1	122° 4.553'	38° 3.102'	12+
SU006S	1	1	1	1	1		1	1		1	121° 56.17'	38° 4.174'	3 to 6
SU007S	1	1	1	1	1	3	1	1		1	122° 3.863'	38° 5.616'	12+
SU008S	1	1	1	1	1		1	1		1	122° 0.878'	38° 4.397'	12+
TOTALS	49	49	49	48	49	28	49	49	2	49			

Table 1. Coordinates for 2002 RMP Sediment Cruise Target Sampling Sites.

CRUISE PLAN: 2002 Regional Monitoring Program
Sediment Cruise – July 30 – August 8, 2002

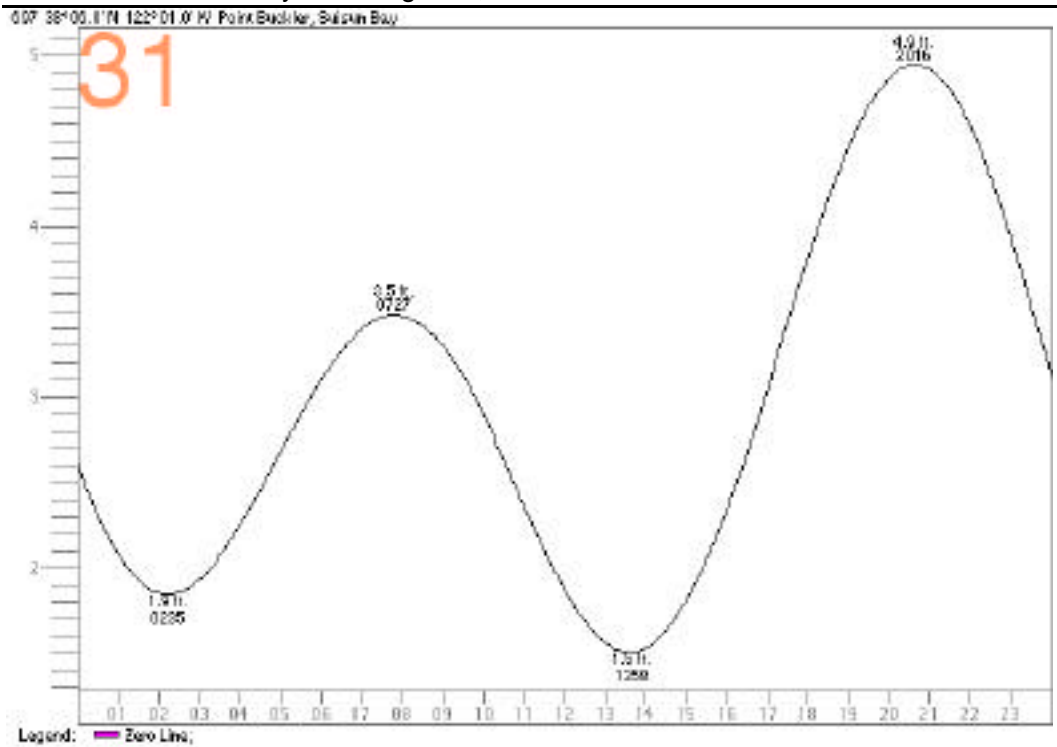


Figure 1. Tides at Pt. Buckler, Suisun Bay, July 31, 2002.

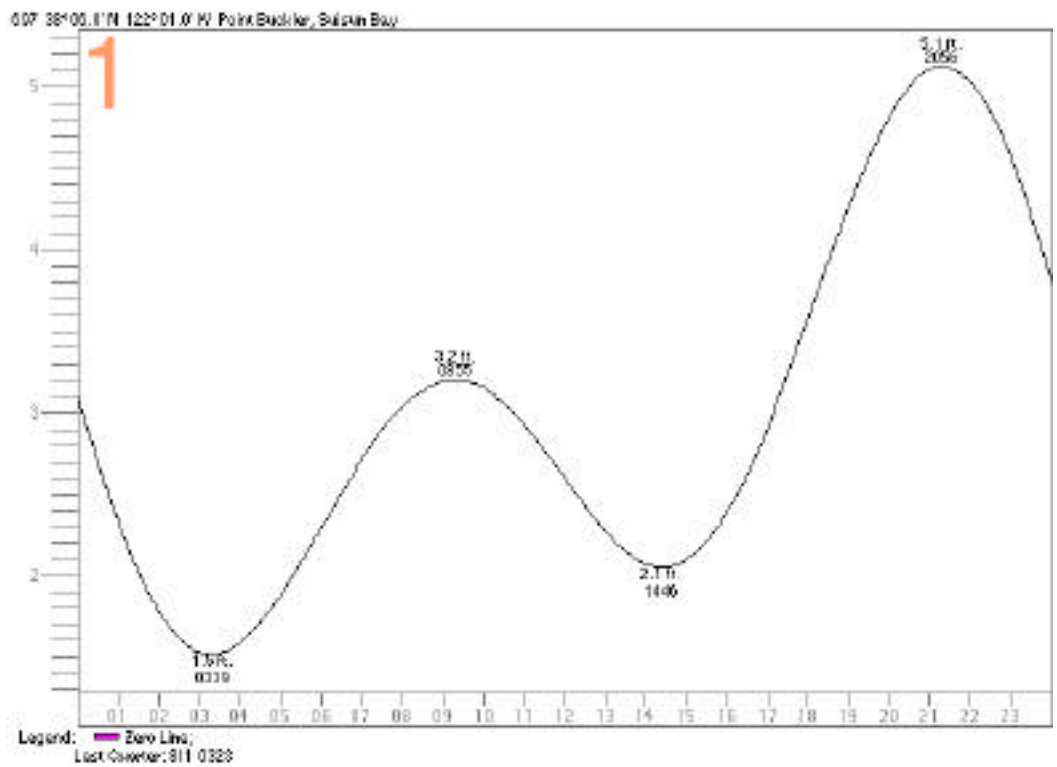


Figure 2. Tides at Point Buckler, Suisun Bay, August 1, 2002.

CRUISE PLAN: 2002 Regional Monitoring Program
Sediment Cruise – July 30 – August 8, 2002

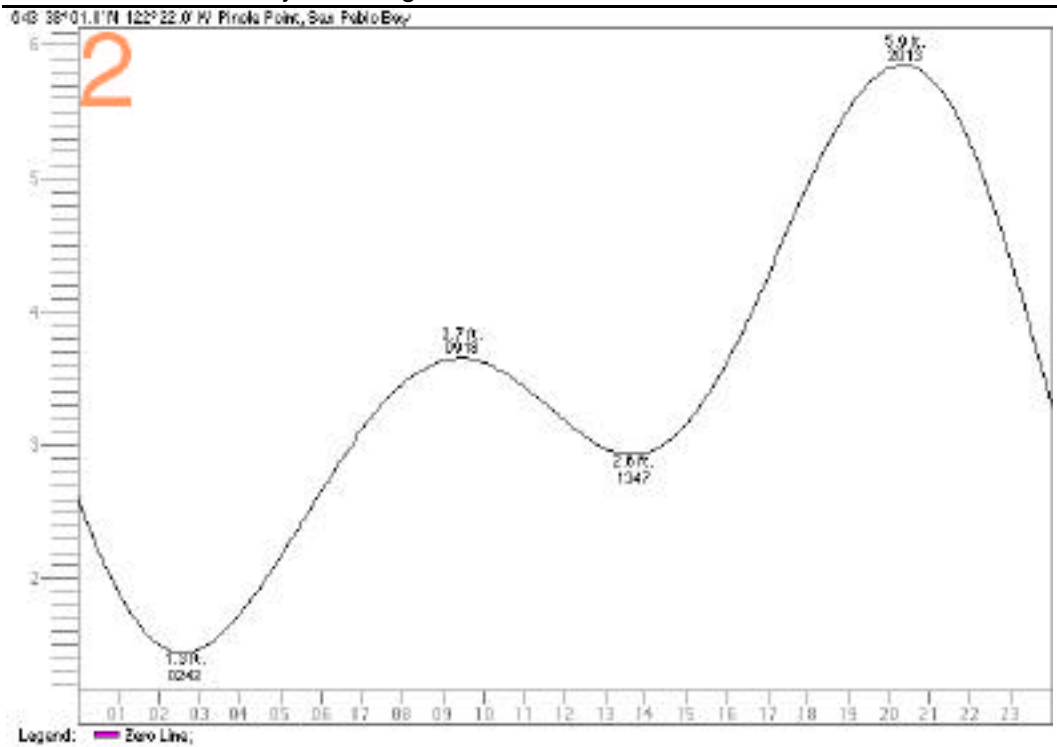


Figure 3. Tides at Pinole Point, San Pablo Bay, August 2, 2002.

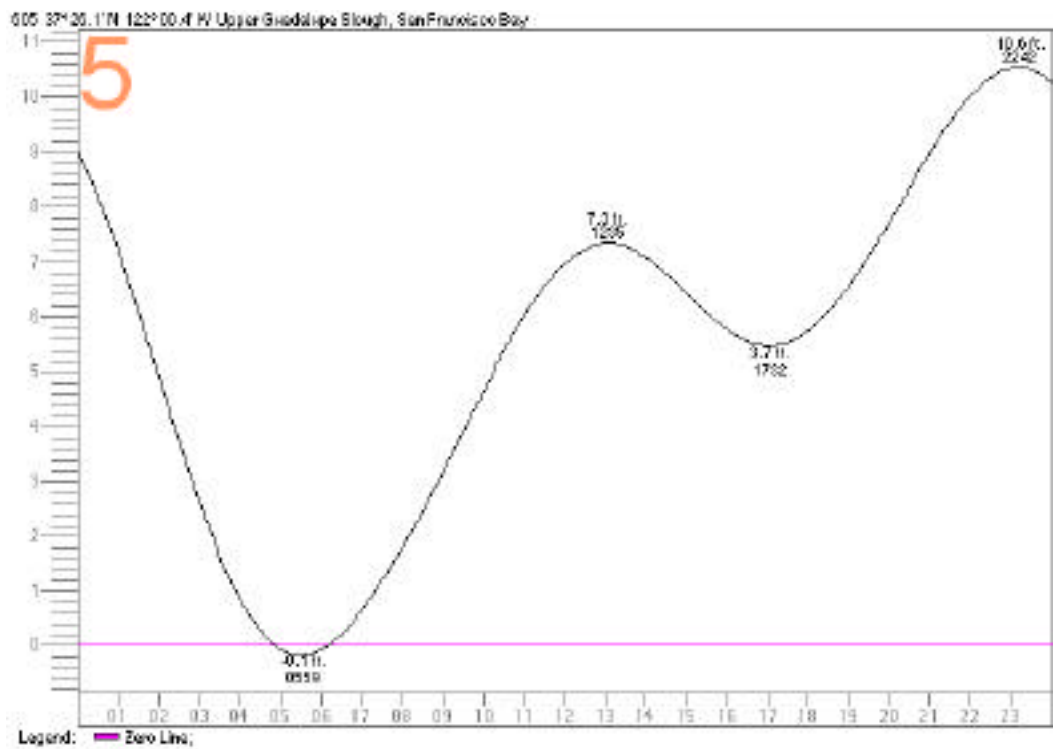


Figure 4. Tides at Guadalupe Slough, August 5, 2002.

CRUISE PLAN: 2002 Regional Monitoring Program
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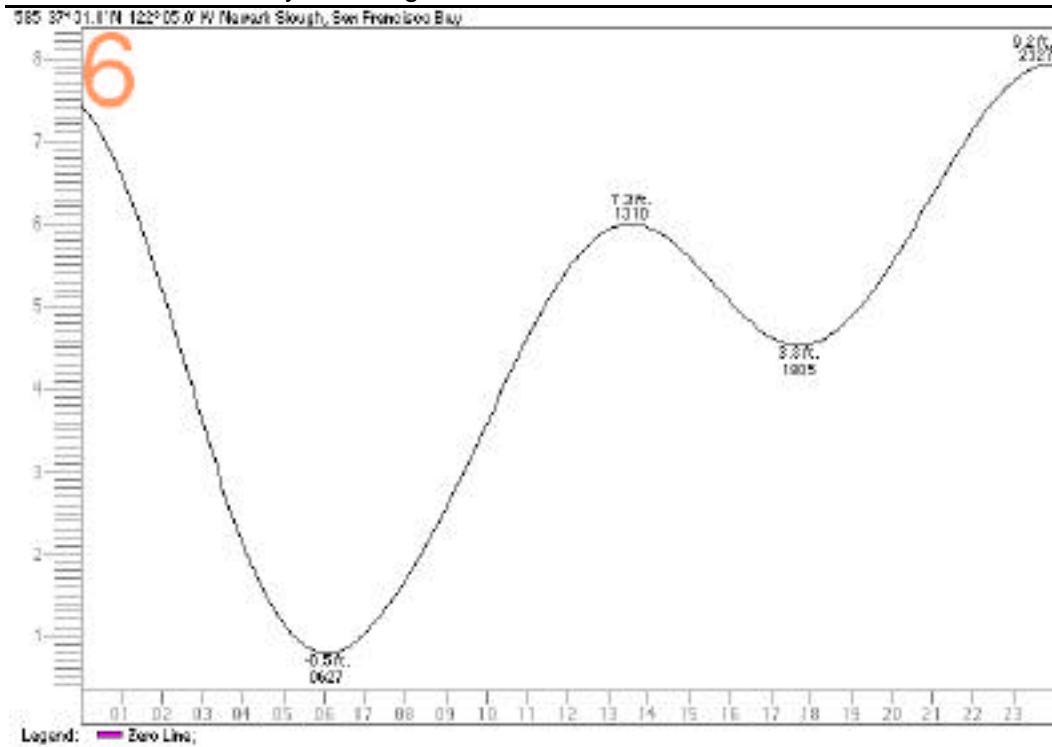


Figure 5. Tides at Newark Slough, August 6, 2002.

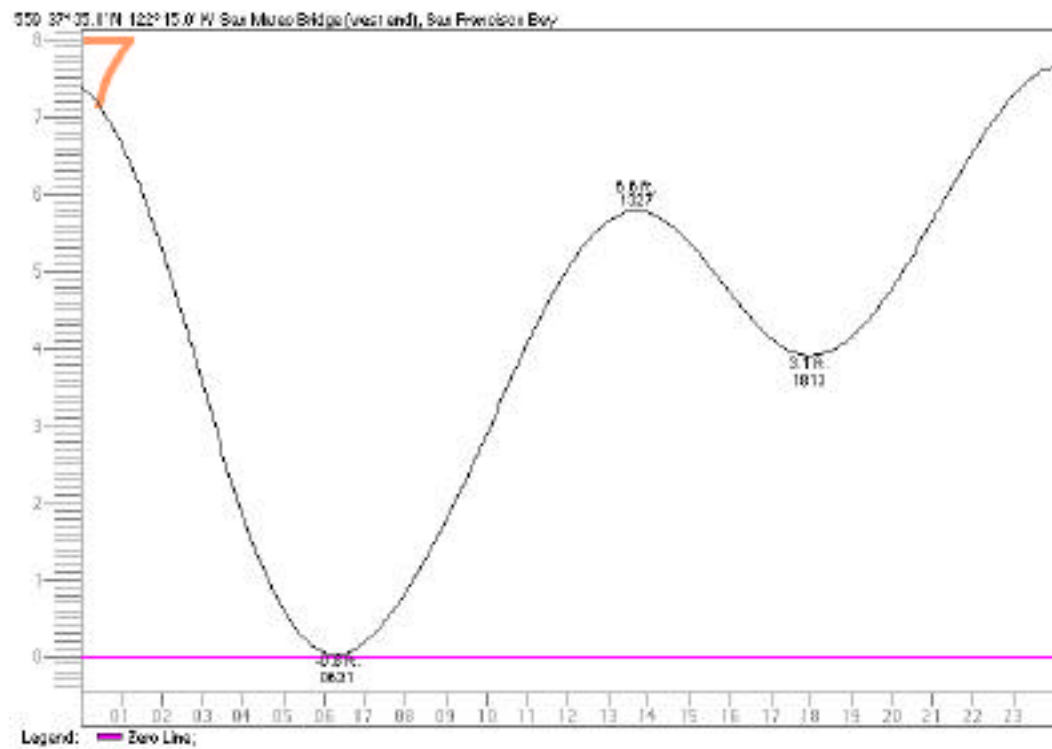


Figure 6. Tides at San Mateo Bridge, West End, August 7, 2002.

CRUISE PLAN: 2002 Regional Monitoring Program
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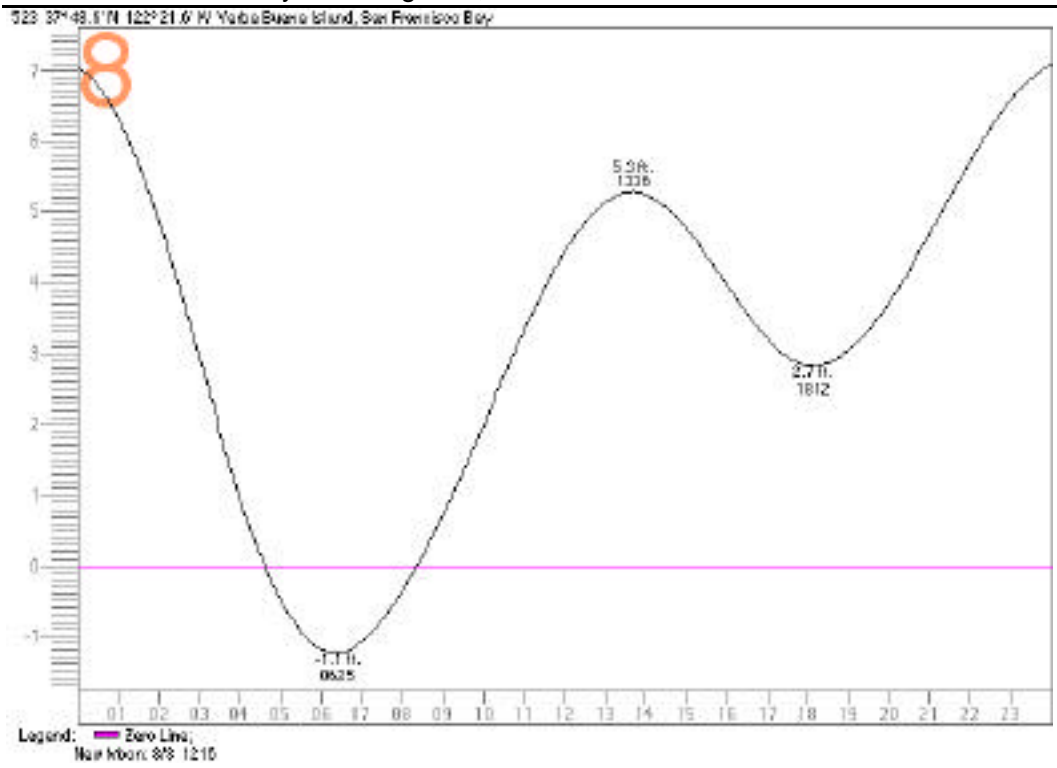


Figure 7. Tides at Yerba Buena Island, August 8, 2002.

APPENDIX A

RMP 2002 SEDIMENT SAMPLING PROGRAM
 TARGET AND OVERSAMPLE SITE COORDINATES

SITECODE	TARGET_LONG	TARGET_LAT	DEPTH (ft.)	PANEL_NUM	OVERSAMPLE	TARGET_YEAR
BC11	-122.3493333	37.82266667	12+	Historical		1
CB001S	-122.3604200	37.8763850	6 to 12	1	0	1
CB002S	-122.3461300	37.6251520	12+	1	0	1
CB003S	-122.4840400	37.8680510	3 to 6	2	0	1
CB004S	-122.3286900	37.7549760	12+	2	0	1
CB005S	-122.3251500	37.8526010	6 to 12	3	0	1
CB006S	-122.2474700	37.7131400	6 to 12	3	0	1
CB007S	-122.3989300	37.9187200	6 to 12	4	0	1
CB008S	-122.3280400	37.7180950	12+	4	0	1
CB073S	-122.3965300	37.8430060	12+	0	1	
CB074S	-122.3256200	37.6659930	12+	0	1	
CB075S	-122.4742500	37.9434050	6 to 12	0	1	
CB076S	-122.3529600	37.7685090	12+	0	1	
CB077S	-122.3875500	37.7917950	12+	0	1	
CB078S	-122.2684800	37.6637490	12+	0	1	
CB079S	-122.4401200	37.8353240	12+	0	1	
CB080S	-122.3486200	37.7168450	12+	0	1	
CB081S	-122.3837200	37.8232430	12+	0	1	
CB082S	-122.3262500	37.6255340	12+	0	1	
CB083S	-122.4383400	37.8728420	12+	0	1	
CB084S	-122.2809700	37.7628280	6 to 12	0	1	
CB085S	-122.3338000	37.8010910	12+	0	1	
CB086S	-122.2489700	37.6671820	6 to 12	0	1	
CB087S	-122.3896800	37.8807910	12+	0	1	
CB088S	-122.3033200	37.7200280	12+	0	1	
CB089S	-122.3903800	37.8442470	12+	0	1	
CB090S	-122.2735900	37.7089100	12+	0	1	
CB091S	-122.4692100	37.9141970	12+	0	1	
CB092S	-122.3404600	37.7900630	12+	0	1	
CB093S	-122.3386400	37.8625010	6 to 12	0	1	
CB094S	-122.2718100	37.7344390	12+	0	1	
CB095S	-122.4365600	37.9128710	12+	0	1	
CB096S	-122.3611900	37.6428600	6 to 12	0	1	

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SITECODE	TARGET_LONG	TARGET_LAT	DEPTH (ft.)	PANEL_NUM	OVERSAMPLE	TARGET_YEAR
CB097S	-122.3533800	37.9029060	3 to 6	0	1	
CB098S	-122.3501500	37.6302460	6 to 12	0	1	
CB099S	-122.4830900	37.8823570	3 to 6	0	1	
CB100S	-122.3285200	37.7760180	12+	0	1	
CB101S	-122.3405300	37.8450020	6 to 12	0	1	
CB102S	-122.2594100	37.7153620	6 to 12	0	1	
CB103S	-122.4169700	37.9008040	12+	0	1	
CB104S	-122.3453600	37.6532740	12+	0	1	
CB105S	-122.4193100	37.8415390	12+	0	1	
CB106S	-122.3364300	37.6729920	12+	0	1	
CB107S	-122.4637000	37.9571970	6 to 12	0	1	
CB108S	-122.3651600	37.7766130	12+	0	1	
CB109S	-122.3903100	37.8150820	12+	0	1	
CB110S	-122.2730800	37.6735440	12+	0	1	
CB111S	-122.4480500	37.8471790	12+	0	1	
CB112S	-122.3622900	37.7009070	12+	0	1	
CB113S	-122.4087300	37.8157200	12+	0	1	
CB114S	-122.3183900	37.6552640	12+	0	1	
CB115S	-122.4681900	37.8512200	12+	0	1	
CB116S	-122.3193600	37.7382740	12+	0	1	
CB117S	-122.3368700	37.8206890	6 to 12	0	1	
CB118S	-122.2665400	37.6724030	12+	0	1	
CB119S	-122.4003400	37.8732870	12+	0	1	
CB120S	-122.3115500	37.7178740	12+	0	1	
CB121S	-122.3914100	37.8554350	12+	0	1	
CB122S	-122.2967700	37.6985300	12+	0	1	
CB123S	-122.4653900	37.9222940	12+	0	1	
CB124S	-122.3631600	37.7082990	6 to 12	0	1	
CB125S	-122.3743800	37.7743270	12+	0	1	
CB126S	-122.2706500	37.6451210	12+	0	1	
CB127S	-122.4309000	37.9466460	12+	0	1	
CB128S	-122.3663400	37.6537800	6 to 12	0	1	
CB129S	-122.3388900	37.7594720	12+	0	1	
CB130S	-122.3967600	37.8535460	12+	0	1	
CB131S	-122.2961600	37.7329610	12+	0	1	
CB132S	-122.3623100	37.7908690	12+	0	1	
CB133S	-122.3147900	37.8394590	6 to 12	0	1	
CB134S	-122.3598500	37.8711220	6 to 12	0	1	
CB135S	-122.3628600	37.6832560	12+	0	1	
CB136S	-122.2600500	37.6982630	6 to 12	0	1	

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SITECODE	TARGET_LONG	TARGET_LAT	DEPTH (ft.)	PANEL_NUM	OVERSAMPLE	TARGET_YEAR
CB137S	-122.4630900	37.8583700	12+	0	1	
CB138S	-122.2989500	37.6934240	12+	0	1	
CB139S	-122.4320900	37.8931740	12+	0	1	
CB140S	-122.2958700	37.6682530	12+	0	1	
CB141S	-122.4826500	37.9238540	1 to 3	0	1	
BA10	-122.0633333	37.47	12+	Historical		1
LSB001S	-122.0974400	37.4918980	12+	1	0	1
LSB002S	-122.0769100	37.4791880	12+	1	0	1
LSB003S	-122.1153600	37.4913710	3 to 6	2	0	1
LSB004S	-122.0841300	37.4944910	1 to 3	2	0	1
LSB005S	-122.0901000	37.4953820	1 to 3	3	0	1
LSB006S	-122.0645500	37.4707330	12+	3	0	1
LSB007S	-122.1092000	37.4902820	1 to 3	4	0	1
LSB008S	-122.0805400	37.4851570	12+	4	0	1
LSB073S	-122.1030100	37.4927270	12+	0	1	
LSB074S	-122.0909700	37.4661510	1 to 3	0	1	
LSB075S	-122.1171400	37.5005900	12+	0	1	
LSB076S	-122.0922300	37.4841350	1 to 3	0	1	
LSB077S	-122.0986300	37.4879780	3 to 6	0	1	
LSB078S	-122.0722900	37.4713900	1 to 3	0	1	
LSB079S	-122.1097300	37.4972980	12+	0	1	
LSB080S	-122.0809500	37.4889400	6 to 12	0	1	
LSB081S	-122.0860500	37.5021590	1 to 3	0	1	
LSB082S	-122.0750100	37.4767320	12+	0	1	
LSB083S	-122.1104200	37.4987570	12+	0	1	
LSB084S	-122.0854400	37.4893670	12+	0	1	
LSB085S	-122.0888700	37.4921450	6 to 12	0	1	
LSB086S	-122.0606800	37.4664130	6 to 12	0	1	
LSB087S	-122.1044600	37.4739330	1 to 3	0	1	
LSB088S	-122.0997100	37.4703820	1 to 3	0	1	
LSB089S	-122.1044200	37.4879170	1 to 3	0	1	
LSB090S	-122.0822500	37.4741220	1 to 3	0	1	
LSB091S	-122.1120600	37.5027210	12+	0	1	
LSB092S	-122.0905900	37.4782610	3 to 6	0	1	
LSB093S	-122.0959000	37.4880150	3 to 6	0	1	
LSB094S	-122.0673400	37.4717570	6 to 12	0	1	
LSB095S	-122.1162800	37.4852690	3 to 6	0	1	
LSB096S	-122.0832400	37.4840480	6 to 12	0	1	
LSB097S	-122.1011900	37.4900500	6 to 12	0	1	
LSB098S	-122.0758600	37.4826740	3 to 6	0	1	

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Sediment Cruise – July 30 – August 8, 2002

SITECODE	TARGET_LONG	TARGET_LAT	DEPTH (ft.)	PANEL_NUM	OVERSAMPLE	TARGET_YEAR
LSB099S	-122.1155000	37.4951600	1 to 3	0	1	
LSB100S	-122.0859200	37.4929630	12+	0	1	
LSB101S	-122.0907900	37.4933980	6 to 12	0	1	
LSB102S	-122.0658100	37.4723080	12+	0	1	
LSB103S	-122.1064400	37.4937690	12+	0	1	
LSB104S	-122.0809100	37.4852020	12+	0	1	
LSB105S	-122.1024400	37.4957920	12+	0	1	
LSB106S	-122.0927900	37.4691190	6 to 12	0	1	
LSB107S	-122.1186000	37.5014010	12+	0	1	
LSB108S	-122.1001300	37.4775580	1 to 3	0	1	
LSB109S	-122.1037400	37.4850220	1 to 3	0	1	
LSB110S	-122.0721100	37.4761190	12+	0	1	
LSB111S	-122.1123400	37.4946070	1 to 3	0	1	
LSB112S	-122.0828200	37.4900790	6 to 12	0	1	
LSB113S	-122.0931700	37.4959160	1 to 3	0	1	
LSB114S	-122.0729100	37.4801960	1 to 3	0	1	
LSB115S	-122.1138900	37.4949680	6 to 12	0	1	
LSB116S	-122.0816000	37.4930650	3 to 6	0	1	
LSB117S	-122.0925800	37.4865500	3 to 6	0	1	
LSB118S	-122.0630800	37.4666480	6 to 12	0	1	
LSB119S	-122.1159700	37.4782610	1 to 3	0	1	
LSB120S	-122.0781200	37.4875780	1 to 3	0	1	
LSB121S	-122.0989000	37.4950790	12+	0	1	
LSB122S	-122.0784600	37.4827670	12+	0	1	
LSB123S	-122.1142200	37.5038130	12+	0	1	
LSB124S	-122.0892700	37.4839170	1 to 3	0	1	
LSB125S	-122.0958700	37.4922420	12+	0	1	
LSB126S	-122.0686900	37.4724480	6 to 12	0	1	
LSB127S	-122.1104000	37.4932830	3 to 6	0	1	
LSB128S	-122.0865400	37.4834430	1 to 3	0	1	
LSB129S	-122.1005100	37.4872990	1 to 3	0	1	
LSB130S	-122.0728800	37.4740410	1 to 3	0	1	
LSB131S	-122.1129700	37.4969160	12+	0	1	
LSB132S	-122.0810800	37.4930180	3 to 6	0	1	
LSB133S	-122.1034200	37.4972600	12+	0	1	
LSB134S	-122.0941700	37.4736370	6 to 12	0	1	
LSB135S	-122.0910300	37.4916700	12+	0	1	
LSB136S	-122.0630200	37.4697520	12+	0	1	
LSB137S	-122.1167600	37.4840090	6 to 12	0	1	
LSB138S	-122.0847100	37.4816870	1 to 3	0	1	

CRUISE PLAN: 2002 Regional Monitoring Program
Sediment Cruise – July 30 – August 8, 2002

SITECODE	TARGET_LONG	TARGET_LAT	DEPTH (ft.)	PANEL_NUM	OVERSAMPLE	TARGET_YEAR
LSB139S	-122.0975100	37.4951350	12+	0	1	
LSB140S	-122.0776800	37.4841470	6 to 12	0	1	
LSB141S	-122.1155500	37.5063270	12+	0	1	
LSB142S	-122.0894800	37.4868770	3 to 6	0	1	
BG20	-121.8098333	38.05933333	12+	Historical		1
BG30	-121.8075	38.02333333	12+	Historical		1
BD31	-122.3608333	38.02466667	12+	Historical		1
SPB001S	-122.3855100	38.0720400	6 to 12	1	0	1
SPB002S	-122.3402000	38.0164850	3 to 6	1	0	1
SPB003S	-122.4755100	38.0282590	1 to 3	2	0	1
SPB004S	-122.4235000	37.9771430	12+	2	0	1
SPB005S	-122.4344100	38.0123350	6 to 12	3	0	1
SPB006S	-122.3121900	38.0246770	6 to 12	3	0	1
SPB007S	-122.4086400	38.1164470	1 to 3	4	0	1
SPB008S	-122.3459600	38.0718840	6 to 12	4	0	1
SPB073S	-122.4355100	38.0314510	6 to 12	0	1	
SPB074S	-122.3464300	38.0354680	12+	0	1	
SPB075S	-122.4420900	38.0983070	1 to 3	0	1	
SPB076S	-122.4049000	38.0121890	12+	0	1	
SPB077S	-122.3628600	38.0870940	6 to 12	0	1	
SPB078S	-122.4101900	37.9694060	3 to 6	0	1	
SPB079S	-122.4451300	38.0855030	3 to 6	0	1	
SPB080S	-122.3664100	38.0561520	6 to 12	0	1	
SPB081S	-122.3810800	38.0939500	3 to 6	0	1	
SPB082S	-122.2971600	38.0639800	6 to 12	0	1	
SPB083S	-122.4613800	38.0042370	6 to 12	0	1	
SPB084S	-122.4001600	37.9795740	1 to 3	0	1	
SPB085S	-122.4112100	38.0316960	12+	0	1	
SPB086S	-122.2697900	38.0430810	6 to 12	0	1	
SPB087S	-122.3921600	38.0943760	3 to 6	0	1	
SPB088S	-122.3230100	38.0818560	3 to 6	0	1	
SPB089S	-122.4035600	38.0700990	6 to 12	0	1	
SPB090S	-122.3372200	38.0422570	12+	0	1	
SPB091S	-122.4779200	38.0404050	1 to 3	0	1	
SPB092S	-122.4235900	37.9946850	12+	0	1	
SPB093S	-122.3414700	38.0958600	3 to 6	0	1	
SPB094S	-122.3249300	38.0257500	6 to 12	0	1	
SPB095S	-122.4233500	38.0884220	3 to 6	0	1	
SPB096S	-122.3600600	38.0568420	6 to 12	0	1	
SPB097S	-122.4073600	38.0499250	6 to 12	0	1	

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Sediment Cruise – July 30 – August 8, 2002

SITECODE	TARGET_LONG	TARGET_LAT	DEPTH (ft.)	PANEL_NUM	OVERSAMPLE	TARGET_YEAR
SPB098S	-122.3253000	38.0367640	12+	0	1	
SPB099S	-122.4625200	38.0535070	3 to 6	0	1	
SPB100S	-122.4302800	37.9672870	12+	0	1	
SPB101S	-122.4480700	38.0064540	6 to 12	0	1	
SPB102S	-122.3125700	38.0297270	6 to 12	0	1	
SPB103S	-122.4189900	38.1052800	1 to 3	0	1	
SPB104S	-122.3348800	38.0842630	3 to 6	0	1	
SPB105S	-122.4240900	38.0649190	6 to 12	0	1	
SPB106S	-122.3671200	38.0201760	12+	0	1	
SPB107S	-122.4747600	38.0797360	1 to 3	0	1	
SPB108S	-122.3970700	38.0467320	6 to 12	0	1	
SPB109S	-122.3642600	38.1028280	3 to 6	0	1	
SPB110S	-122.2972600	38.0472310	12+	0	1	
SPB111S	-122.4520200	37.9808240	3 to 6	0	1	
SPB112S	-122.3814900	38.0029450	3 to 6	0	1	
SPB113S	-122.3797200	38.1190000	1 to 3	0	1	
SPB114S	-122.3070100	38.0868280	1 to 3	0	1	
SPB115S	-122.4738500	38.0146450	1 to 3	0	1	
SPB116S	-122.3989000	37.9983510	12+	0	1	
SPB117S	-122.4277400	38.0125550	12+	0	1	
SPB118S	-122.3024200	38.0196090	3 to 6	0	1	
SPB119S	-122.4108600	38.0870930	3 to 6	0	1	
SPB120S	-122.3309400	38.0696250	6 to 12	0	1	
SPB121S	-122.4246800	38.0387150	6 to 12	0	1	
SPB122S	-122.3460300	38.0299280	12+	0	1	
SPB123S	-122.4606200	38.0812650	1 to 3	0	1	
SPB124S	-122.4363900	37.9876470	12+	0	1	
SPB125S	-122.3497300	38.1051740	3 to 6	0	1	
SPB126S	-122.3810700	37.9876020	1 to 3	0	1	
SPB127S	-122.4274600	38.0924380	1 to 3	0	1	
SPB128S	-122.3560700	38.0657320	6 to 12	0	1	
SPB129S	-122.3666700	38.0965570	3 to 6	0	1	
SPB130S	-122.2808900	38.0583100	12+	0	1	
SPB131S	-122.4625100	38.0206880	3 to 6	0	1	
SPB132S	-122.3861100	38.0146310	12+	0	1	
SPB133S	-122.4491200	38.0542800	3 to 6	0	1	
SPB134S	-122.3222100	38.0670270	3 to 6	0	1	
SPB135S	-122.4284300	38.0203910	12+	0	1	
SPB136S	-122.3028200	38.0374140	6 to 12	0	1	
SPB137S	-122.4409600	38.0661500	3 to 6	0	1	

CRUISE PLAN: 2002 Regional Monitoring Program
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SITECODE	TARGET_LONG	TARGET_LAT	DEPTH (ft.)	PANEL_NUM	OVERSAMPLE	TARGET_YEAR
SPB138S	-122.3641700	38.0423810	12+	0	1	
SPB139S	-122.4043700	38.0613880	6 to 12	0	1	
SPB140S	-122.3180900	38.0529460	12+	0	1	
SPB141S	-122.4744300	38.0647630	1 to 3	0	1	
SPB142S	-122.3852300	38.0344740	12+	0	1	
C-1-3	-122.0106667	37.44666667	6 to 12	Historical		1
C-3-0	-122.0266667	37.46416667	6 to 12	Historical		1
BA41	-122.2095	37.56116667	12+	Historical		1
SB001S	-122.2632700	37.6124320	3 to 6	1	0	1
SB002S	-122.1663000	37.6102600	1 to 3	1	0	1
SB003S	-122.3024700	37.6171850	12+	2	0	1
SB004S	-122.2174300	37.6007310	3 to 6	2	0	1
SB005S	-122.2071400	37.6552820	3 to 6	3	0	1
SB006S	-122.1508000	37.5147970	1 to 3	3	0	1
SB007S	-122.2299400	37.6820910	3 to 6	4	0	1
SB008S	-122.1839200	37.6129680	3 to 6	4	0	1
SB073S	-122.1804100	37.6781760	1 to 3	0	1	
SB074S	-122.2059100	37.5517260	1 to 3	0	1	
SB075S	-122.3351100	37.6060320	6 to 12	0	1	
SB076S	-122.2350300	37.6007010	6 to 12	0	1	
SB077S	-122.2422600	37.6254560	6 to 12	0	1	
SB078S	-122.1547400	37.5586610	1 to 3	0	1	
SB079S	-122.2572500	37.6493680	6 to 12	0	1	
SB080S	-122.1761600	37.6754610	1 to 3	0	1	
SB081S	-122.2666100	37.5845730	1 to 3	0	1	
SB082S	-122.1687400	37.5579250	3 to 6	0	1	
SB083S	-122.2766100	37.6181240	12+	0	1	
SB084S	-122.2006200	37.5940520	6 to 12	0	1	
SB085S	-122.2003800	37.6428840	3 to 6	0	1	
SB086S	-122.1238200	37.5102960	12+	0	1	
SB087S	-122.2250500	37.6529590	3 to 6	0	1	
SB088S	-122.2066200	37.5826010	6 to 12	0	1	
SB089S	-122.2851600	37.5970120	6 to 12	0	1	
SB090S	-122.1914000	37.5497040	12+	0	1	
SB091S	-122.3208100	37.6000630	6 to 12	0	1	
SB092S	-122.2341800	37.5702430	12+	0	1	
SB093S	-122.2282100	37.6248630	6 to 12	0	1	
SB094S	-122.1494800	37.5493390	1 to 3	0	1	
SB095S	-122.2479800	37.6400570	6 to 12	0	1	
SB096S	-122.1785400	37.6356710	1 to 3	0	1	

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Sediment Cruise – July 30 – August 8, 2002

SITECODE	TARGET_LONG	TARGET_LAT	DEPTH (ft.)	PANEL_NUM	OVERSAMPLE	TARGET_YEAR
SB097S	-122.2664100	37.6143750	3 to 6	0	1	
SB098S	-122.1785500	37.5941120	1 to 3	0	1	
SB099S	-122.3117800	37.6035200	6 to 12	0	1	
SB100S	-122.2232700	37.6104390	6 to 12	0	1	
SB101S	-122.2118000	37.6430800	3 to 6	0	1	
SB102S	-122.1473000	37.5277410	12+	0	1	
SB103S	-122.2449300	37.6386040	6 to 12	0	1	
SB104S	-122.1708900	37.6316240	1 to 3	0	1	
SB105S	-122.1993100	37.6832870	1 to 3	0	1	
SB106S	-122.1897200	37.5861720	3 to 6	0	1	
SB107S	-122.3516000	37.5956500	1 to 3	0	1	
SB108S	-122.2436300	37.5954160	6 to 12	0	1	
SB109S	-122.2529900	37.6267910	12+	0	1	
SB110S	-122.1720900	37.5475150	6 to 12	0	1	
SB111S	-122.2269400	37.6948520	3 to 6	0	1	
SB112S	-122.1935900	37.6604410	3 to 6	0	1	
SB113S	-122.2684200	37.5963950	12+	0	1	
SB114S	-122.1668900	37.5798800	1 to 3	0	1	
SB115S	-122.2809600	37.6264410	12+	0	1	
SB116S	-122.2153700	37.5874950	6 to 12	0	1	
SB117S	-122.2233300	37.6248260	6 to 12	0	1	
SB118S	-122.1352200	37.5312730	1 to 3	0	1	
SB119S	-122.2032800	37.6928560	1 to 3	0	1	
SB120S	-122.2225500	37.5715910	12+	0	1	
SB121S	-122.2953800	37.5876760	1 to 3	0	1	
SB122S	-122.1870800	37.5641060	6 to 12	0	1	
SB123S	-122.3164700	37.6125080	6 to 12	0	1	
SB124S	-122.2459200	37.5687620	1 to 3	0	1	
SB125S	-122.2489500	37.5979400	6 to 12	0	1	
SB126S	-122.1671200	37.5241140	1 to 3	0	1	
SB127S	-122.2416100	37.6607200	6 to 12	0	1	
SB128S	-122.1787000	37.6459680	1 to 3	0	1	
SB129S	-122.2188700	37.6571700	3 to 6	0	1	
SB130S	-122.2130200	37.5655660	12+	0	1	
SB131S	-122.3045800	37.6063300	6 to 12	0	1	
SB132S	-122.2060000	37.6130760	3 to 6	0	1	
SB133S	-122.2520200	37.6042340	6 to 12	0	1	
SB134S	-122.1455800	37.5540150	1 to 3	0	1	
BF21	-122.0385	38.116	12+	Historical		1
SU001S	-122.0455000	38.0995300	12+	1	0	1

CRUISE PLAN: 2002 Regional Monitoring Program
Sediment Cruise – July 30 – August 8, 2002

SITECODE	TARGET_LONG	TARGET_LAT	DEPTH (ft.)	PANEL_NUM	OVERSAMPLE	TARGET_YEAR
SU002S	-121.9785200	38.0589800	12+	1	0	1
SU003S	-122.0959600	38.0655980	12+	2	0	1
SU004S	-122.0252100	38.0833570	1 to 3	2	0	1
SU005S	-122.0758900	38.0517150	12+	3	0	1
SU006S	-121.9361800	38.0695730	3 to 6	3	0	1
SU007S	-122.0643900	38.0936120	12+	4	0	1
SU008S	-122.0146400	38.0732960	12+	4	0	1
SU073S	-122.0476500	38.1108280	6 to 12	0	1	
SU074S	-121.9914500	38.0658940	6 to 12	0	1	
SU075S	-122.1138200	38.0614800	6 to 12	0	1	
SU076S	-122.0288100	38.1031490	6 to 12	0	1	
SU077S	-122.0820500	38.0549420	12+	0	1	
SU078S	-121.9673300	38.0486130	12+	0	1	
SU079S	-122.0639100	38.1088770	1 to 3	0	1	
SU080S	-122.0081400	38.1058740	1 to 3	0	1	
SU081S	-122.0314400	38.1032090	6 to 12	0	1	
SU082S	-121.9482500	38.0728720	6 to 12	0	1	
SU083S	-122.1066700	38.0428230	12+	0	1	
SU084S	-122.0152200	38.1204380	1 to 3	0	1	
SU085S	-122.0493300	38.0858890	6 to 12	0	1	
SU086S	-121.9280600	38.0656320	3 to 6	0	1	
SU087S	-122.0478700	38.1281460	3 to 6	0	1	
SU088S	-121.9950000	38.0710650	6 to 12	0	1	
SU089S	-122.0508600	38.1000760	12+	0	1	
SU090S	-121.9721500	38.0668890	12+	0	1	
SU091S	-122.1079900	38.0643190	12+	0	1	
SU092S	-122.0467400	38.0593460	12+	0	1	
SU093S	-122.0603200	38.0837240	6 to 12	0	1	
SU094S	-121.9464400	38.0734660	6 to 12	0	1	
SU095S	-122.0870500	38.0734680	12+	0	1	
SU096S	-122.0339400	38.0595660	12+	0	1	
SU097S	-122.0564800	38.0905930	6 to 12	0	1	
SU098S	-121.9846100	38.0546150	12+	0	1	
SU099S	-122.1087700	38.0593650	12+	0	1	
SU100S	-122.0356600	38.0763180	1 to 3	0	1	
SU101S	-122.0569100	38.0746090	6 to 12	0	1	
SU102S	-121.9450400	38.0571800	12+	0	1	
SU103S	-122.0741900	38.0883670	12+	0	1	
SU104S	-122.0237500	38.0619750	12+	0	1	
SU105S	-122.0559600	38.1076080	6 to 12	0	1	

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Sediment Cruise – July 30 – August 8, 2002

SITECODE	TARGET_LONG	TARGET_LAT	DEPTH (ft.)	PANEL_NUM	OVERSAMPLE	TARGET_YEAR
SU106S	-121.9963800	38.0654540	6 to 12	0	1	
SU107S	-122.0581100	38.1261750	6 to 12	0	1	
SU108S	-122.0420100	38.0847570	6 to 12	0	1	
SU109S	-122.0893800	38.0564880	6 to 12	0	1	
SU110S	-121.9520200	38.0631950	6 to 12	0	1	
SU111S	-122.0802000	38.0941350	3 to 6	0	1	
SU112S	-122.0080200	38.1091950	1 to 3	0	1	
SU113S	-122.0345200	38.1091410	6 to 12	0	1	
SU114S	-121.9705800	38.0530070	3 to 6	0	1	
SU115S	-122.1006900	38.0581290	12+	0	1	
SU116S	-122.0168000	38.1226720	1 to 3	0	1	
SU117S	-122.0627800	38.0532390	3 to 6	0	1	
SU118S	-121.9362500	38.0568820	6 to 12	0	1	
SU119S	-122.0590400	38.0928050	12+	0	1	
SU120S	-121.9998100	38.0854110	12+	0	1	
SU121S	-122.0293700	38.1291700	1 to 3	0	1	
SU122S	-121.9831400	38.0687530	12+	0	1	
SU123S	-122.1099700	38.0603760	12+	0	1	
SU124S	-122.0552100	38.0634850	12+	0	1	
SU125S	-122.0707500	38.0732370	6 to 12	0	1	
SU126S	-121.9539200	38.0528950	12+	0	1	
SU127S	-122.0788800	38.0884210	12+	0	1	
SU128S	-121.9993600	38.0877950	12+	0	1	
SU129S	-122.0794100	38.0684340	6 to 12	0	1	
SU130S	-122.0152000	38.1258930	1 to 3	0	1	
SU131S	-122.0419600	38.0883010	6 to 12	0	1	
SU132S	-122.0039700	38.0690870	6 to 12	0	1	
SU133S	-122.0406800	38.1285250	1 to 3	0	1	
SU134S	-121.9652700	38.0683880	12+	0	1	
SU135S	-122.1098500	38.0686240	3 to 6	0	1	
SU136S	-121.9304400	38.0793700	3 to 6	0	1	
SU137S	-122.0890200	38.0773250	12+	0	1	