5. BASELINE FIELD SURVEY

a. Diver Survey

Refer to Appendix I

b. Hydrography

Refer to Appendix II

c. Water Quality

Water Quality Results
Station 3 Center of Proposed Site

Sample No.	Depth (m)	Sal. (o/oo)	Temp °C.	D.O. mg/l	DO_{SAT}[1] mg/l	%SAT
1	0.0	32.8	12.0	9.1	8.758	104
2	2.0	33.0	11.8	9.1	8.758	104
3	4.0	33.0	11.8	9.0	8.758	103
4	6.0	33.0	11.8	9.3	8.758	106
5	8.0	33.2	11.7	9.0	8.758	103
6	10.0	33.2	11.5	8.9	8.851	101
7	12.0	33.2	11.5	8.9	8.851	101
8	14.0	33.2	11.5	8.9	8.851	101
9	16.0	33.2	11.5	9.0	8.851	102
10	18.0	33.5	11.5	8.8	8.823	100
11	20.0+	33.5	11.5	8.4	8.823	95

[1] Based on saturations as calculated according to Standard Method: Oxygen (Dissolved) (4500-O)/Azide Modification, *Standard Methods for the Examination of Water and Wastewater*, 18th Ed.., 1992

5. BASELINE FIELD SURVEY (Continued)

d. Benthic Analyses

1. Sediments

Single sediment cores for grain size analysis were taken at each station described above under **Sampling Locations** using 4 in. diameter PVC pipe coring devices. The corers were inserted into the bottom to full resistance and the depth of insertion recorded.

TABLE 4
Sediment Data Summary

STATION	1	2	3	4	5
Core Depth (cm)	5.0	4.5	5.0	4.5	7.5
UOML	None	None	None	None	None
RPDL Depth (cm)	>5.0	>4.5	>5.0	>4.5	>7.5
TOC (as % of material <1mm)	1.15	2.51	1.12	1.25	0.92
Grain size:[1] Screen					
Coarse gravel 1.0 "	0.0 %	0.0%	0.0%	0.0%	0.0%
Medium gravel 0.75"	0.0	0.0	0.0	0.0	0.0
Fine gravel 1 0.50"	0.0	0.0	1.5	0.0	0.0
Fine gravel 2 0.38"	0.0	0.5	---	0.0	1.2
Coarse sand # 4	1.1	2.5	1.2	0.0	1.7
Cr/med sand # 10	8.1	4.4	2.5	3.6	2.2
Medium sand # 20	12.5	6.0	3.0	3.7	2.2
Md/fine sand # 40	15.7	17.0	6.6	7.6	7.0
Fine sand 1 # 60	20.4	22.7	16.6	17.8	17.7
Fine sand 2 # 100	16.8	18.7	34.2	34.9	34.6
Very fine sand # 200	12.1	13.6	21.8	18.8	21.2
Silt # 250	1.7	1.1	1.7	1.2	1.6
Clay <# 250	11.6	13.5	10.9	12.4	10.6

[1] Reported here as percent retained on screen. Bishop Testing reports as "percent passing", Appendix III

[2] Unable to sample due to boulder bottom

TABLE 1.

INTERTIDE CORPORATION
DIVE RECORD AND OBSERVATIONS SUMMARY

DIVE PARAMETERS

TIDES

SITE: IAC HARBOR/SCRAG
DATE: 9-22-92
DIVE: 1 OF 1

DURATION:11 min
START: 1139
END: 1150

DEPTH: 57'
DISTANCE: 180m
DIRECTION: 310°

HI: 0703 9.2 FT
LO: 1325 0.3 FT

PERSONNEL: CSH, BPT, TCL, LUC
WEATHER: Thick fog, windy

COMMENTS: Transect begins approximately 90 m east of proposed site center and extends 90 m west of the proposed site center.

SEDIMENT TYPE: Sandy, mud bottom with shell hash and relic shell throughout with abundance of unidentified diatom mat.

OBSERVED ORGANISMS

FLORA:

1. Unidentified diatom (as mat) - abundant
2. Mermaid's hair - rare
   Desmarestia sp.
3. Sea Colander - rare
   Agarum *cribrosum*
4. Kelp - rare
   Laminaria spp.

REFER TO FIGURE 3

FAUNA:

1. Sand dollar - abundant/common
   Echinorachnius parma
2. Deep sea scallop - common, occasional
   Placopecten magellanicus
3. American lobster - occasional
   Homarus americanus
4. Rock crab - occasional
   Cancer irroratus
5. Northern sea cucumber - occasional
   Cucumaria frondosa
6. Silver-spotted anemone - rare
   Bunodactis stella
7. Moon snail - rare
   Lunatia sp.
8. Blue mussel - rare
   Mytilus edulis
9. Purple sunstar - rare
   Solaster endeca
10. Common seastar - rare
    Asterias sp.
11. Sculpin - rare
    Myoxocephalus sp.

Video Narrative:

The following narrative is intended to be used as a guide while viewing the video.

The dive begins at 11:39 A toward the eastern side of the main section of the proposed site and proceeds westerly along the center axis on a bearing of 310° mag. The bottom is composed principally of gravelly mud overspread by a moderate to dense diatom mat. Sand dollars, *Echinorachnius parma*, and sea scallops, *Placopecten magellanicus*, are the predominant fauna. Two small lobsters, *Homarus americanus*, appear in shallow burrows between 11:40 and 11:41 A, approximately 20-30 meters into the dive. Other fauna appearing along the first 60 meter transect line, in order of appearance include: rock crab, *Cancer irroratus*, common seastar, *Asterias* (*vulgaris*), and common sea cucumber, *Cucumaria frondosa*. Other than the diatom mat there is relatively sparse flora, consisting only of sporadic individual Mermaid's hair, *Desmarestia* sp., and drift kelp, *Laminaria* sp. and *Agarum cribrosum.* The second 60 meter section begins at 11:43 A over a sandy mud bottom with a relic shell overlay and overspread by a nearly contiguous diatom mat. A sculpin, *Myoxocephalus* sp., is just in view at the start of the section. The fauna is consistent with that of the first 60 meters, including two small lobsters at 11:44 and 11:45, with the addition of individual blue mussels, *Mytilus edulis*, and burrowing anemones, *Bunodactis stella*, in the middle of the transect. The third 60 meter segment of the transect begins at 11:46 over a sandy gravel bottom overlain with relic shell and a diatom mat. Over the last 60 meters small scallops and sand dollars are relatively common. Two small lobsters appear at the start of the segment and at 11:47 A, at 20 meters into the segment. All other fauna remain consistent with the initial two segments with the sole exception of a purple sunstar, *Solaster endeca*, which appears at the end of the transect. The dive ends at 11:50 A.

In summary, the bottom remains homogeneous from the start to the end of the transect in sediment composition, flora, and fauna. The existence of fine surface sediments suggests that some deposition does occur, which is consistent with the current velocity recordings. However, the distribution of relic shell and stones, along with the sand, gravel sediment underlayment suggests periodic disturbances, probably storm related.

Appendix II
Hydrographic Survey Results

HYDROGRAPHIC SURVEY DATA
Current velocities in cm/sec.

HR/DEPTH	1	2	3	4	5	6	7	8	9	10	MEAN	DIRECTION (°mag)
1 SURF	2	4	2	2	4	4	3	2	3	3	2.9	337.4 ~335
MID	4	5	5	3	4	3	3	4	3	3	3.7	297.5 ~300
BOTTOM	10	3	3	5	3	1	0	3	5	7	4.0	72.6 ~ 70
2 SURF	4	5	2	4	3	4	5	6	5	6	4.4	349.8 ~350
MID	*	3	3	6	2	2	2	3	3	2	2.9	302.4 ~300
BOTTOM	*	6	4	2	3	4	2	2	1	0	2.7	160.8 ~160
3 SURF	2	3	3	3	6	2	3	3	6	4	3.5	307.8 ~310
MID	1	2	2	0	3	1	3	2	2	2	1.8	146.6 ~150
BOTTOM	5	3	2	3	6	5	4	3	7	2	3.8	150.1 ~150
4 SURF	5	6	5	5	3	3	5	5	3	3	4.3	236.1 ~235
MID	1	1	2	4	2	1	6	3	2	2	2.2	181.1 ~180
BOTTOM	4	3	3	8	6	4	1	4	3	2	3.8	207.5 ~210
5 SURF	7	6	5	3	7	3	4	3	4	6	4.8	225.2 ~225
MID	7	3	3	4	1	2	3	2	5	4	3.4	225.7 ~225
BOTTOM	2	3	3	4	5	4	5	4	2	4	3.6	204.9 ~205
6 SURF	3	4	4	3	5	4	4	4	5	5	4.1	181.2 ~180
MID	*	1	2	1	2	1	4	2	1	4	2.0	174.4 ~175
BOTTOM	*	9	5	6	7	7	4	6	3	4	5.7	166.1 ~165

INTERTIDE CORPORATION HYDROGRAPHIC REPORT

COMPANY **ISLAND AQUACULTURE CO.** START TIME 0720
SITE **HARBOR/SCRAG,** FINISH TIME 1600
DATE 09-22-92 HI TIDE 0703 9.2 FT.
SAMPLER C. HEINIG, T. LaJEUNESSE LO TIDE 1325 0.3 FT.

COMMENTS: * ANOMALOUS READINGS

HYDROGRAPHIC SURVEY DATA
Current velocities in cm/sec.

HR/DEPTH	1	2	3	4	5	6	7	8	9	10	MEAN	DIRECTION (°mag)
7 SURF	7	7	8	5	--	--	--	--	--	--	6.8	167.8 ~170
MID	--	--	--	--	--	RESET	ANCHO	--	--	--	3.0[2]	---.- ~175[2]
BOTTOM	5	4	6	5	6	4	5	3	4	4	4.6	210.6 ~210
8 SURF	2	4	6	3	2	6	4	5	5	10	4.7	185.5 ~185
MID	5	3	2	6	4	2	2	5	3	3	3.7	178.5 ~180
BOTTOM	6	8	2	4	4	5	4	3	5	3	4.4	229.2 ~230
9 SURF	3	4	3	3	6	5	6	3	2	4	3.9	196.7 ~195
MID	3	5	2	3	3	2	6	3	3	3	3.3	195.2 ~195
BOTTOM	10	5	6	8	3	6	3	5	4	4	5.4	236.7 ~235
10 SURF[3]											3.6	~205
MID											3.2	~205
BOTTOM											5.6	~230
11 SURF[3]											3.4	~205
MID											3.3	~205
BOTTOM											4.4	~225
12 SURF[3]											3.0	~210
MID											3.5	~210
BOTTOM											4.0	~220

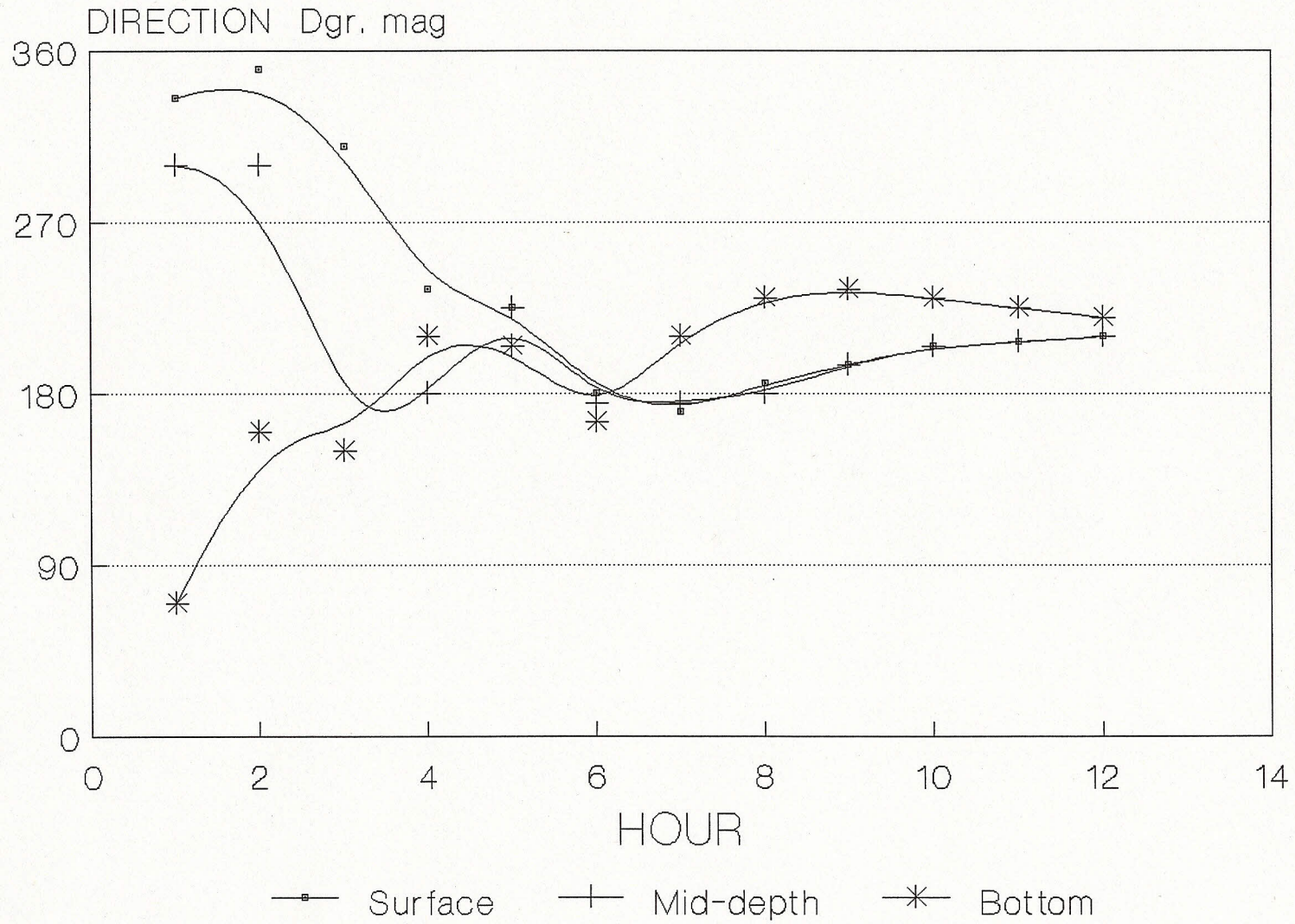
INTERTIDE CORPORATION HYDROGRAPHIC REPORT

COMPANY **ISLAND AQUACULTURE CO.**
SITE **HARBOR/SCRAG, SWANS ISLAND**
DATE 09-22-92
SAMPLER C. HEINIG, T. LaJEUNESSE

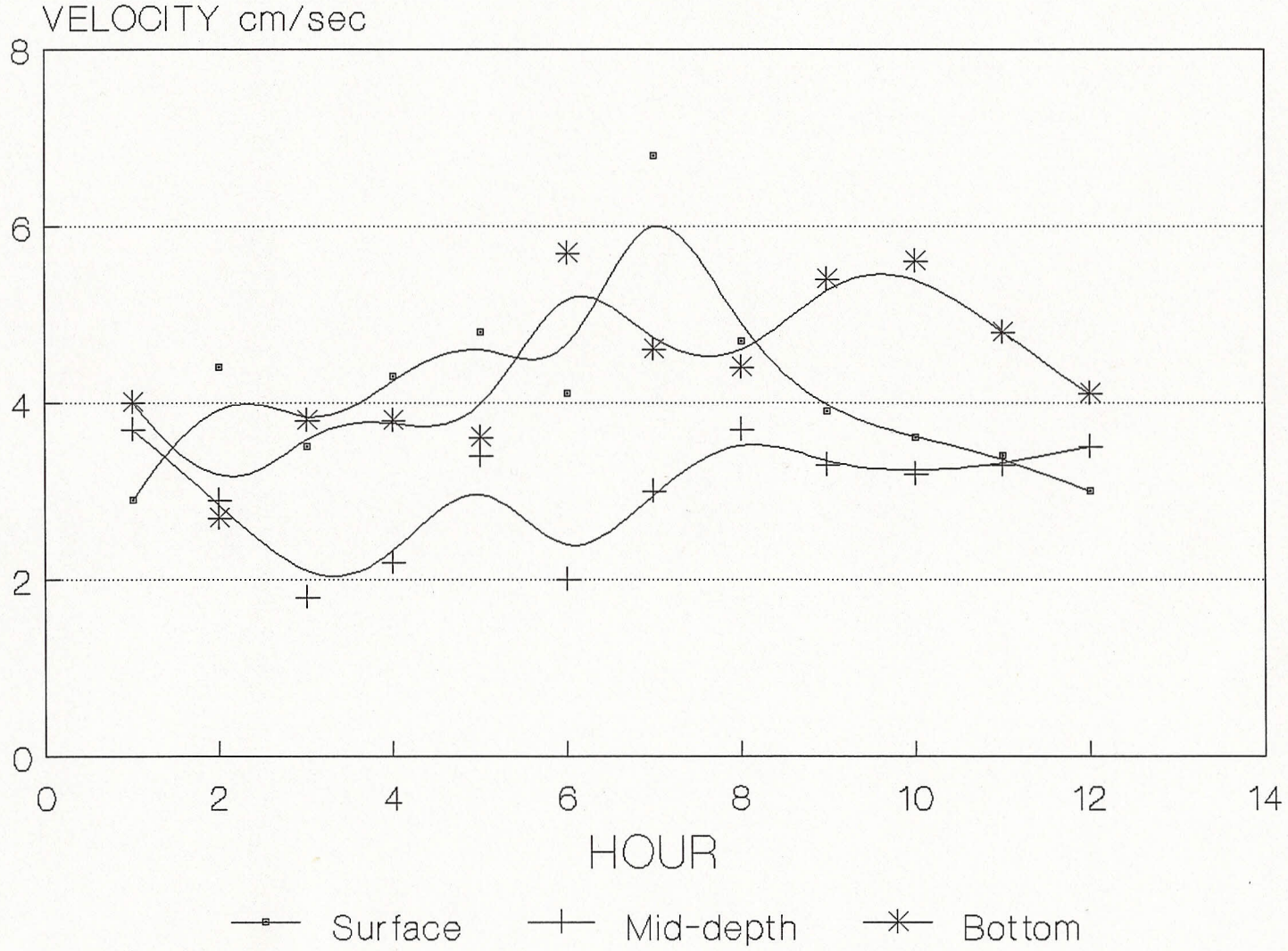
START TIME 0720
FINISH TIME 1600
HI TIDE 0703 9.2 FT.
LO TIDE 1325 0.3 FT.

COMMENTS: [2] UNABLE TO RECORD DUE TO BOAT GOING ADRIFT; ANCHOR HAD TO BE RESET
VALUES ARE EXTRAPOLATED FROM PRECEEDING POINT PLOTS
[3] REQUIRED TO LEAVE SITE DUE TO HEAVY FOG AND DETERIORATING WEATHER
VALUES ARE EXTRAPOLATED FROM PRECEEDING POINT PLOTS

CURRENT DIRECTION OVER 12 HOUR PERIOD
HARBOR/SCRAG, SWANS IS., 22 SEPTEMBER 92



CURRENT VELOCITY OVER 12 HOUR PERIOD
HARBOR/SCRAG, SWANS IS., 22 SEPTEMBER 92



Appendix III
Granulometry Results
Bishop Testing Services

BISHOP TESTING SERVICES, INC.

P.O. BOX 397 TOPSHAM, MAINE 04086 (207) 729-0077

SOIL LAB TEST REPORT

PROJECT: Key Bank **DATE:** 10-20-92

SAMPLE DESCRIPTION: Marine Sediment Sample #1 **SOURCE:** Swans Island

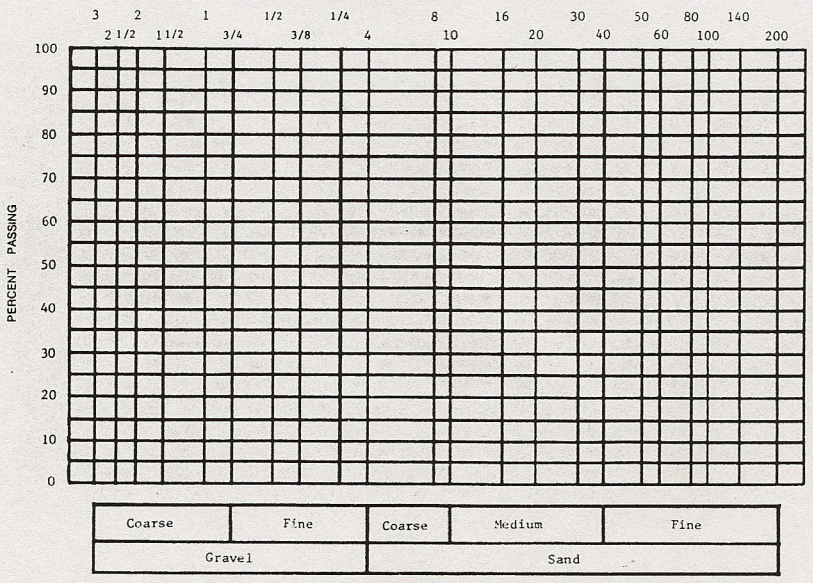
WASHED
SIEVE ANALYSIS

SCREEN SIZE	PERCENT PASSING	SPECS
3/8"	100	
# 4	98.9	1.1
10	90.8	8.1
20	78.3	12.5
40	62.6	15.7
60	42.2	20.4
100	25.4	16.8
200	13.3	12.1
250	11.6	1.7

PROCTOR TEST ASTM D _____ METHOD _____

DRY DENSITY

GRAIN SIZE DISTRIBUTION GRAPH



PERCENT MOISTURE

MAXIMUM DENSITY _____ pcf

OPTIMUM MOISTURE _____ percent

REMARKS: 160 g sample taken by Intertide & delivered to lab on 9-23.

Approved: _____

BISHOP TESTING SERVICES, INC.

P.O. BOX 397 TOPSHAM, MAINE 04086 (207) 729-0077

SOIL LAB TEST REPORT

PROJECT: Key Bank **DATE:** 10-20-92

SAMPLE DESCRIPTION: Marine Sediment Sample #2 **SOURCE:** Swans Island

WASHED
SIEVE ANALYSIS

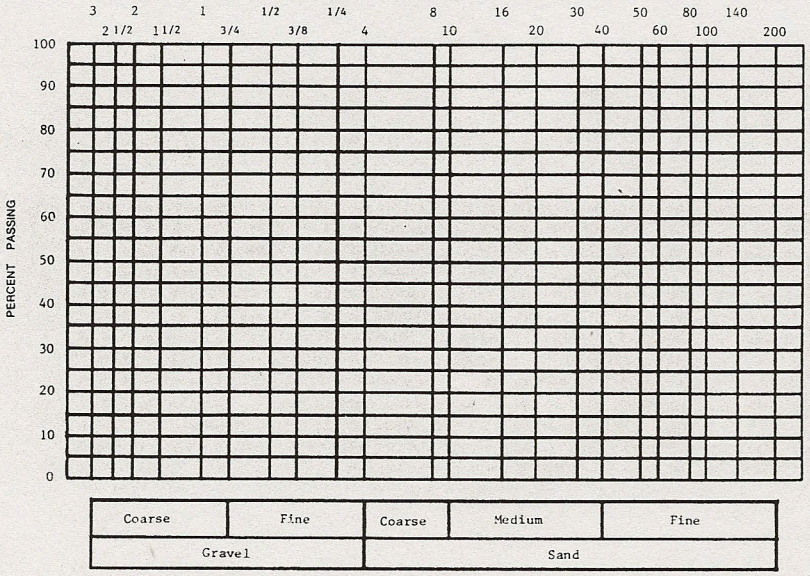
SCREEN SIZE	PERCENT PASSING	SPECS
1/2"	100	
3/8	99.5	0.5
# 4	97.0	2.5
10	92.6	4.4
20	86.6	6.0
40	69.6	17.0
60	46.9	22.7
100	28.2	18.7
200	14.6	13.6
250	13.5	1.1
		13.5

PROCTOR TEST ASTM D _____ METHOD _____

DRY DENSITY

PERCENT MOISTURE

GRAIN SIZE DISTRIBUTION GRAPH



MAXIMUM DENSITY _____ pcf

OPTIMUM MOISTURE _____ percent

REMARKS: 255 g sample taken by Intertide & delivered to lab on 9-23.

Approved: _____

BISHOP TESTING SERVICES, INC.

P.O. BOX 397 TOPSHAM, MAINE 04086 (207) 729-0077

SOIL LAB TEST REPORT

PROJECT: Key Bank **DATE:** 10-24-92

SAMPLE DESCRIPTION: Marine Sediment Sample #3 **SOURCE:** Swans Island

WASHED
SIEVE ANALYSIS

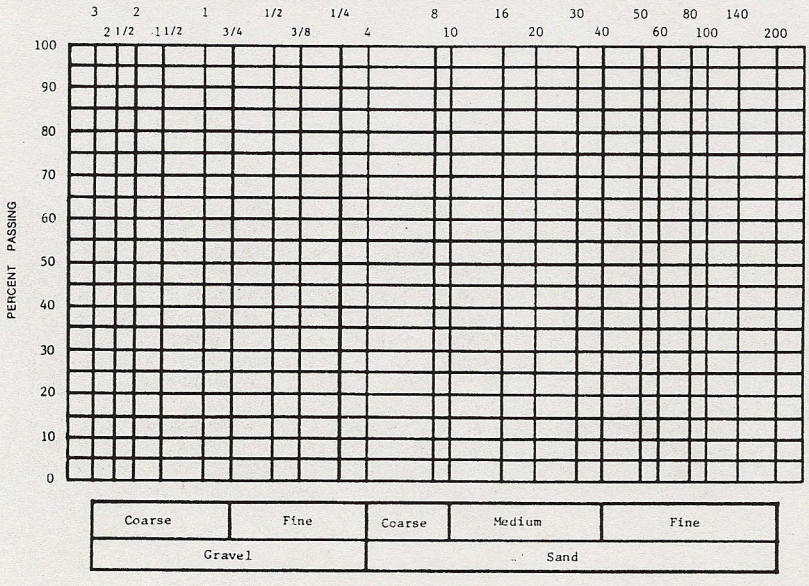
SCREEN SIZE	PERCENT PASSING	SPECS
3/4"	100	
1/2	98.5	1.5
# 4	97.3	1.2
10	94.8	2.5
20	91.8	3.0
40	85.2	6.6
60	68.6	16.6
100	34.4	34.2
200	12.6	21.8
250	10.9	1.7
		10.9

PROCTOR TEST ASTM D _____ METHOD _____

DRY DENSITY

PERCENT MOISTURE

GRAIN SIZE DISTRIBUTION GRAPH



MAXIMUM DENSITY _____ pcf

OPTIMUM MOISTURE _____ percent

REMARKS: 570 g sample taken by Intertide & delivered to lab on 9-23.

Approved: _____

BISHOP TESTING SERVICES, INC.

P.O. BOX 397 TOPSHAM, MAINE 04086 (207) 729-0077

SOIL LAB TEST REPORT

PROJECT: Key Bank **DATE:** 10-24-92

SAMPLE DESCRIPTION: Marine Sediment Sample #4 **SOURCE:** Swans Island

WASHED
SIEVE ANALYSIS

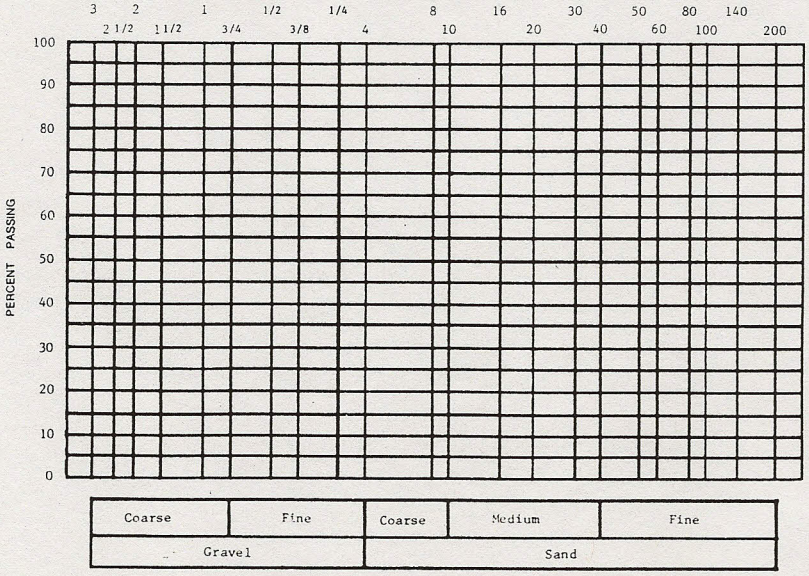
SCREEN SIZE	PERCENT PASSING	SPECS
3/4"	100	
#10	96.4	3.6
20	92.7	3.7
40	85.1	7.6
60	67.3	17.8
100	32.4	34.9
200	13.6	18.8
250	12.4	1.2
		12.4

PROCTOR TEST ASTM D _____ METHOD _____

DRY DENSITY

PERCENT MOISTURE

GRAIN SIZE DISTRIBUTION GRAPH



MAXIMUM DENSITY _____ pcf

OPTIMUM MOISTURE _____ percent

REMARKS: 290 g sample taken by Intertide & delivered to lab on 9-23.

Approved: _____

BISHOP TESTING SERVICES, INC.

P.O. BOX 397 TOPSHAM, MAINE 04086 (207) 729-0077

SOIL LAB TEST REPORT

PROJECT: Key Bank **DATE:** 10-24-92

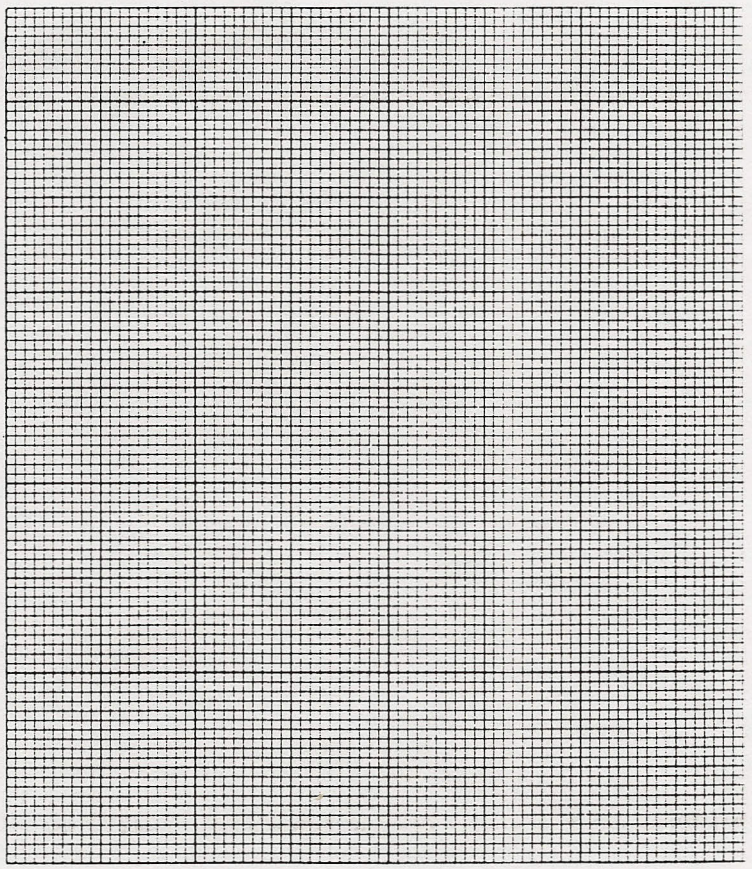
SAMPLE DESCRIPTION: Marine Sediment Sample #5 **SOURCE:** Swans Island

WASHED
SIEVE ANALYSIS

SCREEN SIZE	PERCENT PASSING	SPECS
1/2"	100	
3/8	98.8	1.2
# 4	97.1	1.7
10	94.9	2.2
20	92.7	2.2
40	85.7	7.0
60	68.0	17.7
100	33.4	34.6
200	12.2	21.2
250	10.6	1.6
		10.6

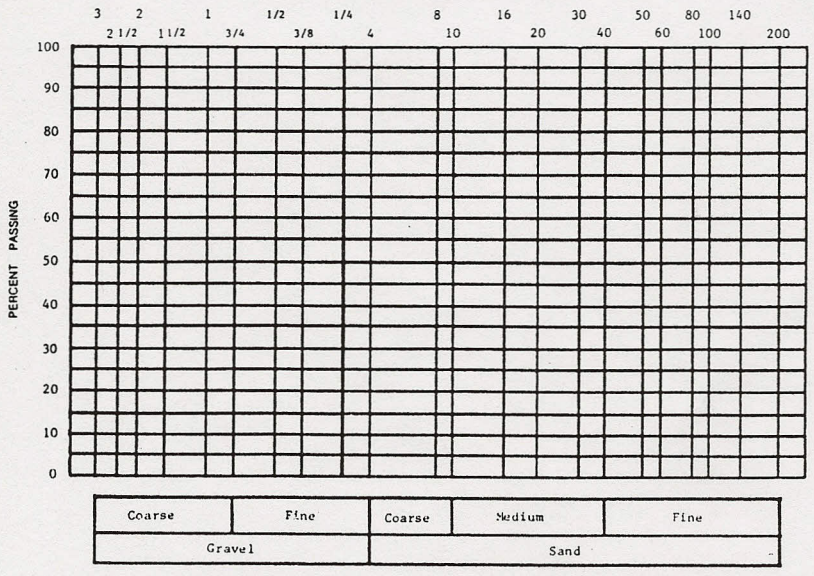
PROCTOR TEST ASTM D _____ METHOD _____

DRY DENSITY



PERCENT MOISTURE

GRAIN SIZE DISTRIBUTION GRAPH



MAXIMUM DENSITY _____ pcf

OPTIMUM MOISTURE _____ percent

REMARKS: 400 g sample taken by Intertide & delivered to lab on 9-23.

Approved: _____

Appendix IV
Benthic Infauna Analyses Results

TABLE 3.
SPECIES IDENTIFICATION AND ABUNDANCE LIST BY STATION

STATION 1.	*Aglaophamus neotenus*	4
	Ampharete acutifrons	3
	Aricidea spp.	136
	Buccinum undatum	2
	Capitella capitata	10
	Crenella glandula	1
	Diastylis sculpta	3
	Diplocirrus hirsutus	3
	Eudorella truncatula	1
	Exogone hebes	1
	Glycera sp.	1
	Harpinia propinqua	4
	Lumbrineris sp.	5
	Mediomastus ambiseta	17
	Nucula proxima	76
	Ophelina acuminata	5
	Pholoe minuta	11
	Prionospio steenstrupi	112
	Scoloplos sp.	1
	Stenopleustes inermis	1
	Terebellides stroemi	1
	Tharyx sp.	5
	Unid. Ampharetidae (juv.)	31
	Unid. Nematoda	2
	Unid. Nemertinea	1
	Unid. Oligochaeta	29
	Unid. Ostracoda	1
	Unid. Terebellidae (juv.)	3

TABLE 3.
SPECIES IDENTIFICATION AND ABUNDANCE LIST BY STATION
(Continued)

STATION 2.

Aglaophamus neotenus	4
Ampelisca sp.	1
Ampharete acutifrons	4
Argissa hamatipes	1
Aricidea sp.	107
Capitella capitata	7
Chone infundibuliformis	2
Cingula sp.	1
Crenella glandula	1
Diplocirrus hirsutus	5
Eteone sp.	4
Exogone hebes	2
Goniada sp.	1
Harpinia propinqua	8
Lora sp.	1
Lumbrineris sp.	4
Mediomastus ambiseta	8
Microphthalmus sp.	1
Ninoe nigripes	2
Nucula proxima	64
Ophelina acuminata	6
Pholoe minuta	7
Phyllodoce sp.	1
Polycirrus sp.	1
Prionospio steenstrupi	78
Protodorvillea kefersteini	1
Tharyx sp.	13
Unid. Ampharetidae	25
Unid. Nematoda	4
Unid. Nemertinea	4
Unid. Oligochaeta	6
Unid. Sipunculida	3
Unid. Terebellidae (juv.)	7

TABLE 3.
SPECIES IDENTIFICATION AND ABUNDANCE LIST BY STATION
(Continued)

STATION 3.	*Aglaophamus neotenus*	3
	Ampelisca sp.	1
	Ampharete acutifrons	3
	Aricidea spp.	80
	Asabellides oculata	1
	Capitella capitata	5
	Diplocirrus hirsutus	2
	Eteone spp.	3
	Eudorella truncatula	2
	Lumbrineris sp.	3
	Mediomastus ambiseta	25
	Ninoe nigripes	3
	Nucula proxima	78
	Ophelina acuminata	2
	Pholoe minuta	8
	Phyllodoce sp.	1
	Polycirrus eximius	7
	Polydora sp.	1
	Prionospio steenstrupi	27
	Tharyx sp.	7
	Unid. Ampharetidae (juv.)	27
	Unid. Nematoda	2
	Unid. Nemertinea	2
	Unid. Oligochaeta	2
	Unid. Sipunculida	1
	Unid. Terebellidae (juv.)	2

TABLE 3.
SPECIES IDENTIFICATION AND ABUNDANCE LIST BY STATION
(Continued)

STATION 4.	*Aglaophamus neotenus*	2
	Amphipholis squamata	1
	Aricidea spp.	317
	Capitella capitata	3
	Cardita borealis	1
	Cerastoderma pinnulatum	1
	Crenella glandula	2
	Cylichna alba	2
	Diastylis sculpta	1
	Diplocirrus hirsutus	5
	Edotea montosa	2
	Eteone sp.	2
	Eudorella truncatula	4
	Exogone dispar	2
	E. hebes	4
	E. verugera	1
	Harpinia propinqua	5
	Hiatella arctica	3
	Lumbrineris sp.	13
	Mediomastus ambiseta	25
	Munna fabricii	1
	Ninoe nigripes	1
	Nucula proxima	89
	Ophelina acuminata	6
	Periploma sp.	2
	Pholoe minuta	15
	Phoxocephalus holbolli	2
	Phyllodoce spp.	7
	Prionospio steenstrupi	137
	Sabellides octocirrata	3
	Scolecolepides viridis	1
	Sphaerodoropsis minuta	1
	Spiophanes bombyx	1
	Syllis gracilis	1
	Tharyx acutus	27
	Unid. Ampharetidae (juv.)	9
	Unid. Nematoda	10
	Unid. Nemertinea	1
	Unid. Oligochaeta	14

TABLE 3.
SPECIES IDENTIFICATION AND ABUNDANCE LIST BY STATION
(Continued)

STATION 5.	*Aglaophamus neotenus*	2
	Aricidea spp.	210
	Capitella capitata	5
	Cardita borealis	1
	Cerastoderma pinnulatum	1
	Crenella glandula	1
	Diplocirrus hirsutus	1
	Exogone hebes	4
	E. verugera	2
	Harpinia propinqua	2
	Ilyanassa sp. (*Nassa* sp.)	1
	Lumbrineris sp.	5
	Mediomastus ambiseta	9
	Nephtys sp.	1
	Nucula proxima	97
	Ophelina acuminata	5
	Pholoe minuta	5
	Phyllodoce sp.	4
	Pitar morrhuana	2
	Potamilla neglecta	1
	Prionospio steenstrupi	39
	Spiophanes bombyx	2
	Tharyx sp.	13
	Unid. Ampharetidae (juv.)	5
	Unid. Oligochaeta	1
	Unid. Ostracoda	1
	Unid. Sipunculida	1
	Unid. Stenothoidae	2
	Unid. Terebellidae (juv.)	2