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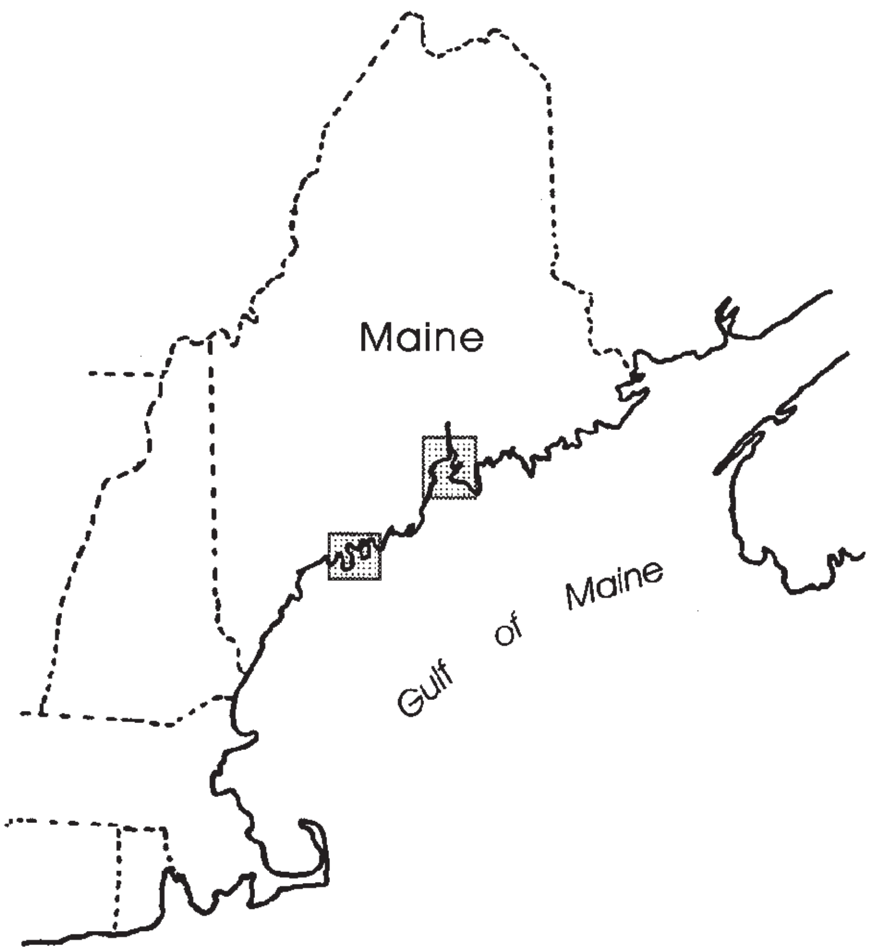
Volume and Quality of Sand and Gravel Aggregate in the Submerged Paleodeltas of the Kennebec and Penobscot River Mouth Areas, Maine



by

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INTRODUCTION

Sand and gravel aggregate is an increasingly valuable commodity for use as beach replenishment along eroding shorelines. This is the final project of a series developed to assess sand-reservoir volumes near Maine's eroding beaches as part of the Continental Margins Program sponsored by the American Association of State Geologist and the Minerals Management Service.

Preliminary work by the Maine Geological Survey indicated that three major repositories for sand and gravel along the south-central Maine inner continental shelf lie: (1) directly offshore of major sand beach systems, (2) along the surface of paleodeltas between the modern beach and the lowstand-shoreline position, and (3) near the late Quaternary lowstand-shoreline position of 40-60 m depth. This report presents results of a geophysical and coring investigation of sand volumes in those environments at the mouths of the Kennebec and Penobscot Rivers, Maine (Figure 1).

STUDY AREAS AND PREVIOUS WORK

Kennebec River Mouth

The Kennebec River mouth is located in the Indented Embayments coastal compartment of south-central Maine (Figure 1; Kelley, 1987). This region is characterized by elongate bedrock peninsulas separated by narrow estuaries. The Kennebec River enters the sea through a bedrock-controlled inlet east of Cape Small (Figure 2). To either side of the river mouth are extensive sand beaches protecting back-barrier salt marshes.

The area seaward of the Kennebec River mouth has been called a Nearshore Ramp because of the generally coast-parallel bathymetric contours and sandy seafloor (Figure 2; Kelley and others, 1989). The regular seaward slope of the bottom is interrupted by many small islands and rocky shoals, which trend shore-normal from Reid Beach, the Kennebec River mouth, and Cape Small. The regular spacing of the bathymetric contours terminates abruptly to the east in the deep, muddy Shelf Valley of the Sheepscot River. To the south and west the seafloor becomes rocky and muddy at the 70 and 30 m isobaths, respectively.

Schnitker (1974) conducted the first geological investigation of this region. He recognized, in seismic reflection profiles, that the regular seaward slope off the river mouth ended around 65 m depth in a "berm," or shoreline formed at the late Quaternary lowstand position of sea level. Subsequent geophysical observations generally confirmed this observation and defined the overall morphology of the area as a "paleodelta" (Belknap and others, 1986; Shipp and others, 1991). Bottom samples and side scan sonar observations allowed initial mapping of the full extent of the sandy paleodelta (Kelley and others, 1987), which was later made the target of a side-scan sonar mosaic (Figure 3;

Barnhardt and others, 1996; in press). Sand covers the entire surface of the paleodelta near the shoreline and is replaced by sandy gravel and gravel in an offshore direction. Sand generally crops out along the outermost area of the paleodelta except where bedrock occurs (Figure 3).

More recent, detailed seismic reflection studies organized the local stratigraphy into sequences defined by deposition before, during, and after sea-level changes (Belknap and others 1989). Glacial till is not common in the area, but a thick section of glacial-marine sediment is interpreted to rest on bedrock across the region. This material apparently changes from glacial-marine to marine, deltaic, and estuarine material toward the top of the section (Barnhardt, 1994; Kelley and others, 1992). Previously collected cores revealed material dated at 11,550 yr B.P. from glacial-marine sediment and between 7,270 to 9,700 yr B.P. from marine/estuarine material (Kelley and others, 1992). At the 55 m isobath on the east side of the paleodelta and the 30 m isobath on the west side, steeply dipping clinoform reflectors define the seaward edge of the former delta (Figure 4; Kelley and others, 1992). A prominent unconformity at the surface of the glacial-marine material is overlain by palimpsest sand and gravel above the modern ravinement surface. The primary coring goals off the Kennebec River mouth were to evaluate the thickness of sand above the ravinement surface and in the lowstand-shoreline region.

Penobscot River Mouth

The Penobscot River enters the sea in the Island-Bay coastal compartment (Figure 1; Kelley, 1987). The bays of this area are protected by many rocky islands with numerous tidal flats and gravel beaches. It is notable that this region possesses relatively few sand beaches despite the presence of the Penobscot River.

The seafloor is relatively complex in this region, with extensive, shallow Rocky Zones separated by deep Shelf Valleys (Figure 5; Kelley and Belknap, 1989). At the upper reaches of Penobscot Bay there is a Nearshore Basin covered with mud. Natural gas has erupted from this basin and created one of the largest pockmark fields in the region (Kelley and others, 1994).

Ostericher (1965) completed the first bottom sampling, seismic reflection and coring project in Penobscot Bay. He recognized glacial-marine sediment as the largest component of the stratigraphic column. He correctly identified the transgressive unconformity and obtained a radiocarbon date from wood near its surface. Knebel and Scanlon (1985), Knebel (1986) and Scanlon and Knebel (1988) documented the late Quaternary history of the bay from additional seismic reflection records. They recognized regressive and transgressive “fluvial” deposits from the Penobscot River in the upper bay. Scanlon and Knebel (1988) were also the first to describe the Penobscot Bay pockmark field and consider its origin. Kelley and Belknap (1989) synthesized geophysical records from the area, gathered bottom samples from the bay and produced a surficial sediment map. This map had little control in the upper bay area, and a goal of this project was to collect more seismic reflection data and cores to locate Penobscot River lowstand deltaic deposits.

SEISMIC STRATIGRAPHIC AND CORING METHODS

Seismic records were collected with an ORE Geopulse Boomer seismic system. Vibracores were gathered with Rossfelder P-5 and P-6 Underwater Vibracorers (Figures 6, 7). Navigation was with LORAN-C, with coordinate transformation to latitude/longitude through LORCON (J. Stewart, NOAA, personal communication). All spatial data were entered into the Arc/Info Geographic Information System (GIS), where calculations of sand volume were made.

Following collection, the vibracores were sealed in their liners until reaching the University of Maine’s sedimentology laboratory. There, the cores were described and photographed. Subsamples were removed for textural and radiocarbon analyses.

Previous work in the Gulf of Maine relating geophysical records to submersible and coring observations has led to confidence in our interpretation of seismic data (Belknap and others, 1989; Shipp, 1989). In most regions, acoustic basement is crystalline bedrock, which often exhibits tens of meters of relief over short horizontal distances. It is often overlain by till, which is sometimes indistinguishable from bedrock on seismic records. Glacial-marine sediment (locally called the Presumpscot Formation (Bloom, 1963)) may overlie till or bedrock, and in most regions forms the largest portion of the Quaternary section. The glacial-marine sediment is generally muddy and appears as an acoustically transparent seismic unit with parallel acoustic reflectors either draped or ponded over the underlying material (Belknap and others, 1989; Kelley and others, 1989). This unit was recognized in many cores and seismic lines from earlier studies off the Kennebec River and in Penobscot Bay (Kelley and others, 1987, 1990, 1992, 1994; Kelley and Belknap, 1989). Unconformably overlying the glacial-marine material, relatively thin units of estuarine and deltaic sand or mud are common (Barnhardt, 1994; Barnhardt and others, 1997). In Penobscot Bay, Holocene mud dominates the nearshore region and is often charged with natural gas (Kelley and others, 1994), while sand dominates the seafloor off the Kennebec River (Kelley and others, 1987).

RESULTS

Kennebec River Mouth

Seismic lines across the east delta were oriented normal to the isobaths which dip steeply from the coastline into the shelf valley of the Sheepscot River (Figure 6). Pronounced clinoform reflectors, interpreted as foreset beds (Figures 8, 9), overlie

draped reflectors of glacial-marine material. The clinoform reflectors were not cored because of their inferred coarse grain size. Core VC93-06, collected landward of the clinoform reflectors, yielded less than 2 m of relatively uniform medium sand with shell beds (Appendix A). Cores from seaward of the steeply dipping reflectors failed to reach sand and returned up to 6 m of Holocene mud (Appendix A).

To the south, the dip of the clinoform reflectors becomes more gentle and the sediment thickness is greater (Figures 10, 11). Two cores (VC93-08, 09) penetrated less than 0.5 m of well sorted medium sand overlying finer sand with up to 14% mud (Appendix A). The basal unconformity was interpreted to separate the upper clean sand and lower muddy sand (interpreted as glacial-marine, Figure 10). The lowstand-shoreline complex was penetrated by core 92-13 in 53 m depth (Figure 11). Although predominantly sandy, this core contained from 3% to 95% mud. A shell of *Nucula tenuis* was dated at 10,850 yr B.P. marking the time of the lowstand of the sea (Barnhardt and others, 1995, 1997). Core VC93-17 was collected from a similar location and possessed a similar record of muddy sand accumulation (Figure 12).

In the mid-delta region many cores allowed definition of the extent of sand bodies. In deeper water near the lowstand shoreline, cores VC93-02 and 03 confirmed the sand and gravel texture inferred for the clinoform reflectors observed on seismic profiles (Figure 13; Appendix A). Over much of the central area of the delta, however, only a thin deposit of sand rests over glacial-marine sediment (Figures 14, 15; Appendices A, B). Cores VC92-13 and 14 penetrated less than 50 cm of relatively well sorted sand over muddy glacial-marine sediment (Figures 15, 16).

Nearshore Holocene sediment forms a wedge-shaped deposit over glacial-marine sediment (Figures 17, 18, 19). Although sand dominates the upper part of cores, material becomes muddier with depth (Appendix A). Dates from many fossils suggest that the lower, muddier part of the Holocene record is estuarine sediment, and estuarine seismic facies were interpreted on the basis of this (Figures 17, 18, 19).

In the west delta, clinoform reflectors are in much shallower water (30 m; Figures 20, 21) than elsewhere in the region. In addition, to the northwest, clinoform reflectors dipped in opposite directions around a bedrock pinnacle (Figure 20). All cores contained 100% sand, as had other cores previously gathered from this area (Appendix A; Kelley and others, 1992).

Penobscot River Mouth

Cores and seismic lines were collected in areas of Penobscot Bay that held some promise of possessing sandy deposits. Because of the scarcity of sandy beaches in the region, it was assumed that less sand would be available than off the Kennebec River mouth, even though the Penobscot River is comparable in size to the Kennebec River.

All of the area in Belfast Bay (Figure 7) is overlain by muddy sediment charged with natural gas. Seismic lines through the area (Figure 22) show little of the deeper subbottom geology because of attenuation by gas. Gas-escape pockmarks are common features in the fine-grained sediment of the area (Figure 22; Kelley and others, 1994). Even in the southern portion of the bay, where gas escape has excavated deep holes into the Holocene sediment, no sand was observed.

In the main channel of Penobscot Bay, mud covers the bottom to a depth of several meters, but Holocene sediment rests unconformably in a channel cut into glacial-marine sediment (Figure 23). This material also contains appreciable mud with muddy gravel at the surface of the basal unconformity (Figure 23, Appendix B).

Sand Volume and Quality

Despite its size the Penobscot River does not possess a sandy deltaic deposit as do other large streams in the region like the Kennebec and Saco Rivers. There is an estuarine sediment facies overlying glacial-marine sediment, but it is an unattractive sand resource because (1) it is covered by Holocene mud everywhere, and (2) it possesses an average sand content of only 65%, with a significant component of both mud and gravel (Appendix B). The lack of a sandy, submerged delta seaward of the Penobscot River explains the absence of sand beaches in the bay, but leaves open the question of where the Penobscot River's lowstand delta does exist, or why no such deposit was formed.

A very large volume of sediment exists off the Kennebec River mouth (Figure 24). The thickest deposits occur in deep bedrock channels which trend generally in a shore-normal direction. More than 40 m of sediment exists in several locations where deeply eroded bedrock provided accommodation space for large volumes of Quaternary sediment. Seismic reflection profiles suggest that most of the sediment comprising the paleodelta, however, is probably muddy glacial-marine material (Figure 25).

Resting unconformably above the glacial-marine sediment is the sandier, estuarine sediment. An isopach map of this seismic facies (E) shows that nearshore regions contain deposits up to 15 m thick (Figure 26). Although in places this seismic unit is covered by Holocene sand (unit SG), it appears to crop out over wide areas in the 15m - 25m depth range. Like its counterpart in Penobscot Bay, however, the estuarine sediment is not an important sand resource because it averages only 66 % sand with substantial mud (Appendices A, B).

The best sorted sand within the paleodelta is found in the shoreface, out to a depth somewhat greater than 30 m (Figure 27). Seaward of this depth a rippled gravel lag deposit covers the seafloor (Figure 4) and is underlain by the muddy estuarine facies (Figure 25). Similarly, in the 50-60 m depth range, sandy material is underlain by muddy sediment in many places.

To evaluate the volume of nearshore sand, the shoreface was divided into 6 compartments (Figure 27). There were too

few seismic lines within these complex, bedrock-framed compartments to isopach the sand thickness. Instead, each compartment was further subdivided into 10 m depth intervals, a total of 15 regions (Figure 27; Table 1). The area of each of these regions was measured, with the area of rock in each region separately measured and subtracted. Finally, the average thickness of sand on representative seismic lines was used to estimate the thickness of each region (Table 1).

The total volume of sand is greater than 300 million cubic meters (Table 1). Compartment D, to the west of the present river mouth, contains the greatest thickness of sand in filled fluvial channels and as part of the shoreface wedge (Figure 19), and represents almost half of the "clean" sand in the paleodelta. Relatively large quantities of sand also exist in area C, as part of the present (and past?) tidal delta of the Kennebec River.

The complex evolution of the deltaic deposits of the Kennebec and Penobscot Rivers in terms of regressive and transgressive stratigraphy is described in Barnhardt and others (1997).

ACKNOWLEDGMENTS

We wish to acknowledge the Maine Geological Survey and the Minerals Management Service-American Association of State Geologists Continental Margins Program. Funding for this project came from the U.S. Department of Interior Minerals Management Service's Continental Margins Program through cooperative agreement 14-35-0001-30731. The Maine-New Hampshire Sea Grant Program provided support for Belknap, the National Science Foundation Experimental Program to Stimulate Competitive Research provided support for Barnhardt.

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Table 1. Sand volumes offshore of the Kennebec River mouth.

REGION	AREA (km^2)	MEAN THICKNESS (m)	VOLUME (10^6*m^3)
A, <10 m	0.28	13	3.6
A, >10 m	4.06	6	24.4
B, <10 m	0.30	1	0.3
B, 10 m-20 m	2.17	1	2.2
B, 20m-30m	6.12	4	24.5
B, >30 m	0.69	1	0.7
C, <10 m	4.61	10	46.1
C, >10 m	4.30	5	21.5
D, <10	3.92	20	78.4
D, 10 m-20 m	5.22	15	78.3
D, >20 m	3.94	5	19.7
E, <10 m	0.32	2	0.6
E, >10 m	1.16	1	1.2
F, <10 m	4.65	5	23.3
F, >10 m	1.16	9	10.4
TOTAL	42.9		335.1

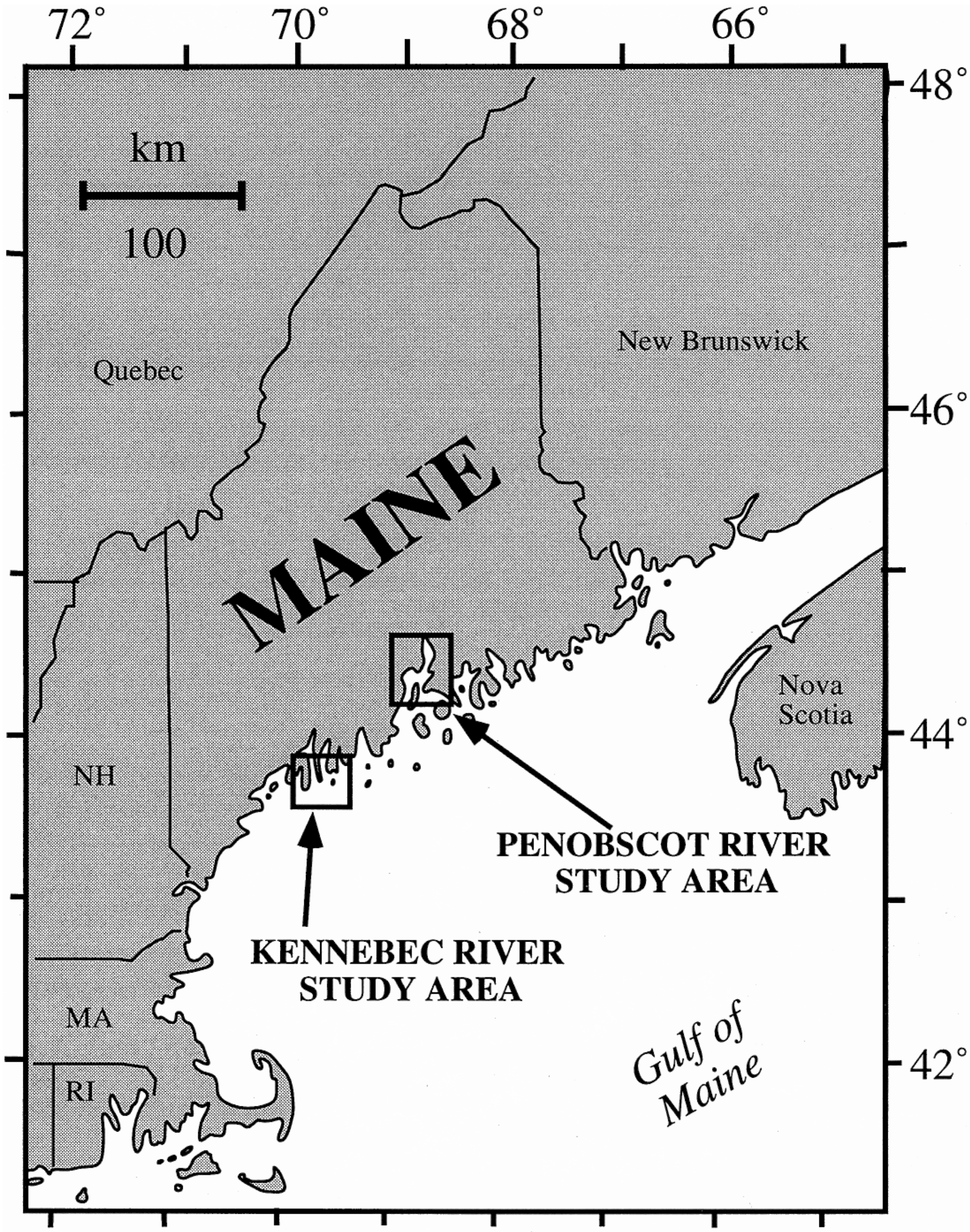


Figure 1. Location of the Kennebec and Penobscot River mouths within the Gulf of Maine.

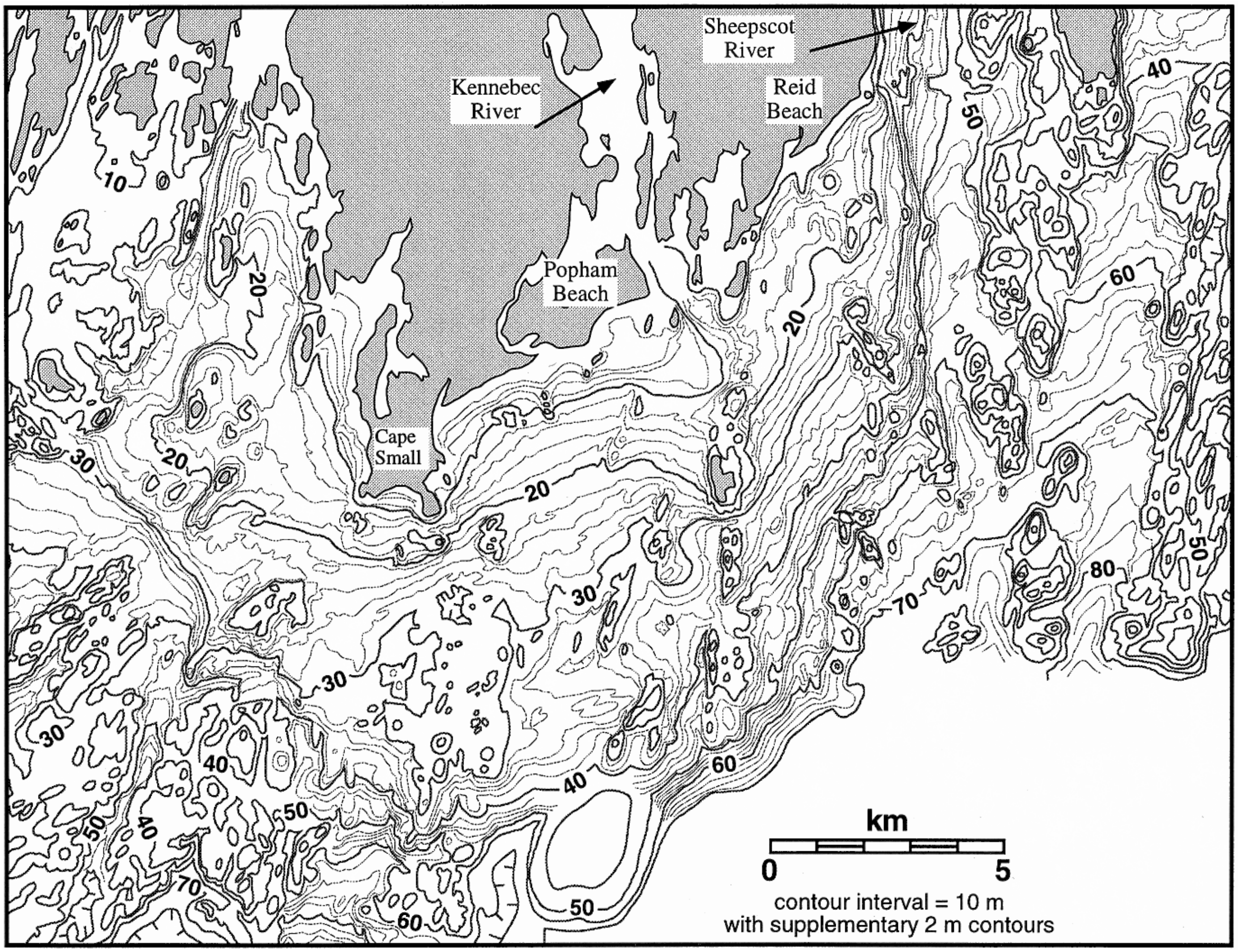


Figure 2. Bathymetry near the mouth of the Kennebec River, Maine (after Barnhardt, 1994).

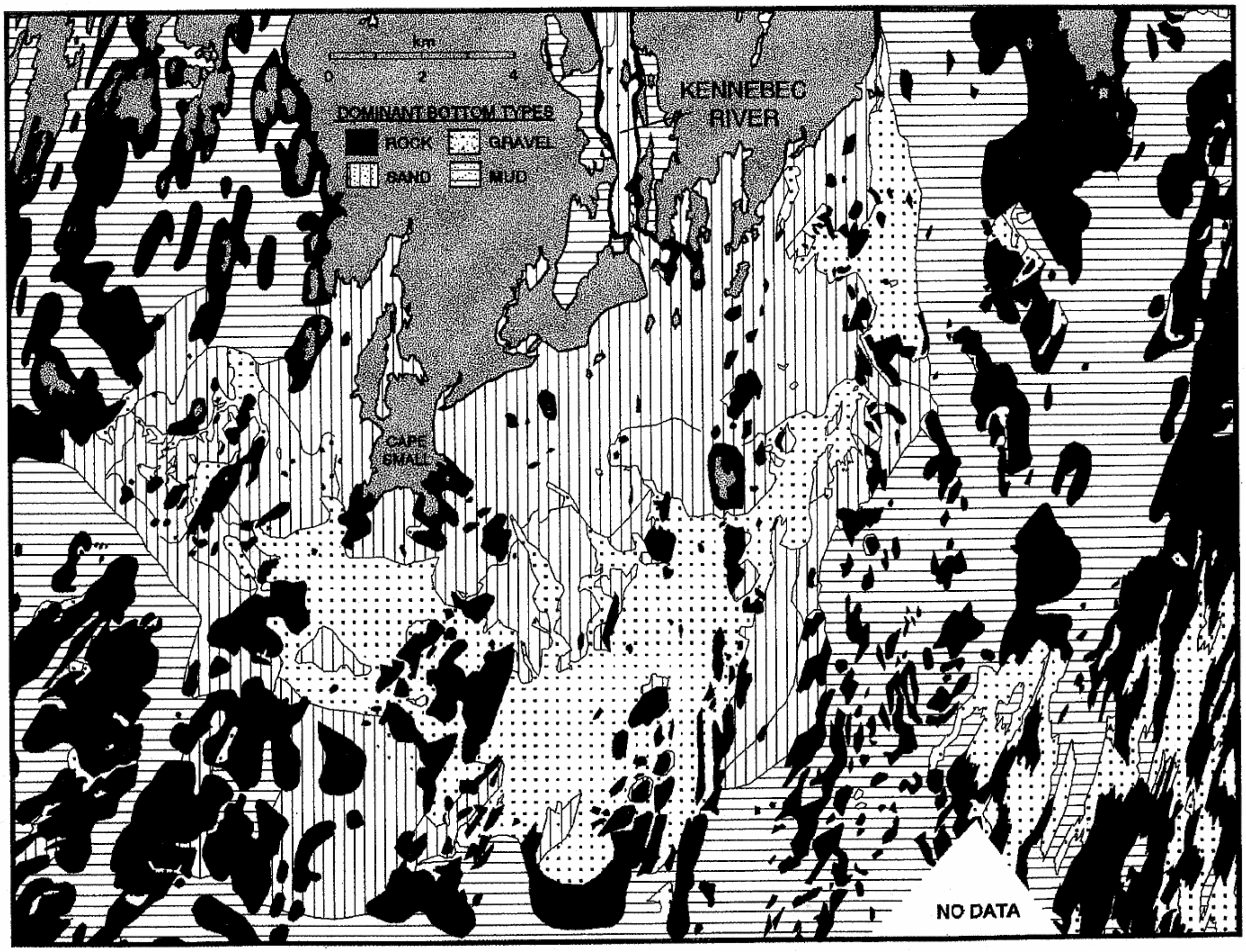


Figure 3. Surficial sediment off the Kennebec River mouth.

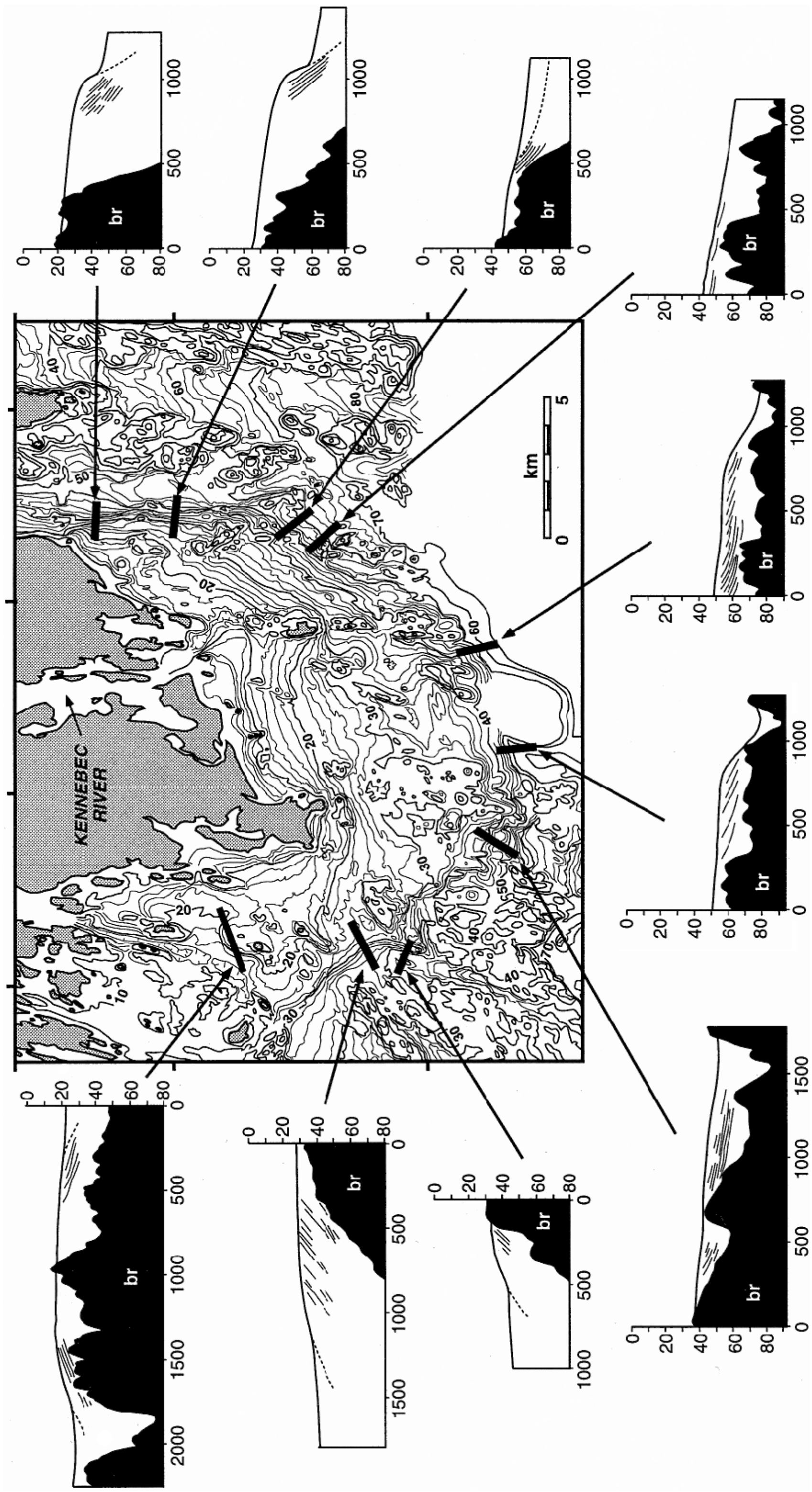


Figure 4. Interpreted seismic profiles across lowstand shorelines of paleodelta (from Barnhardt, 1994).

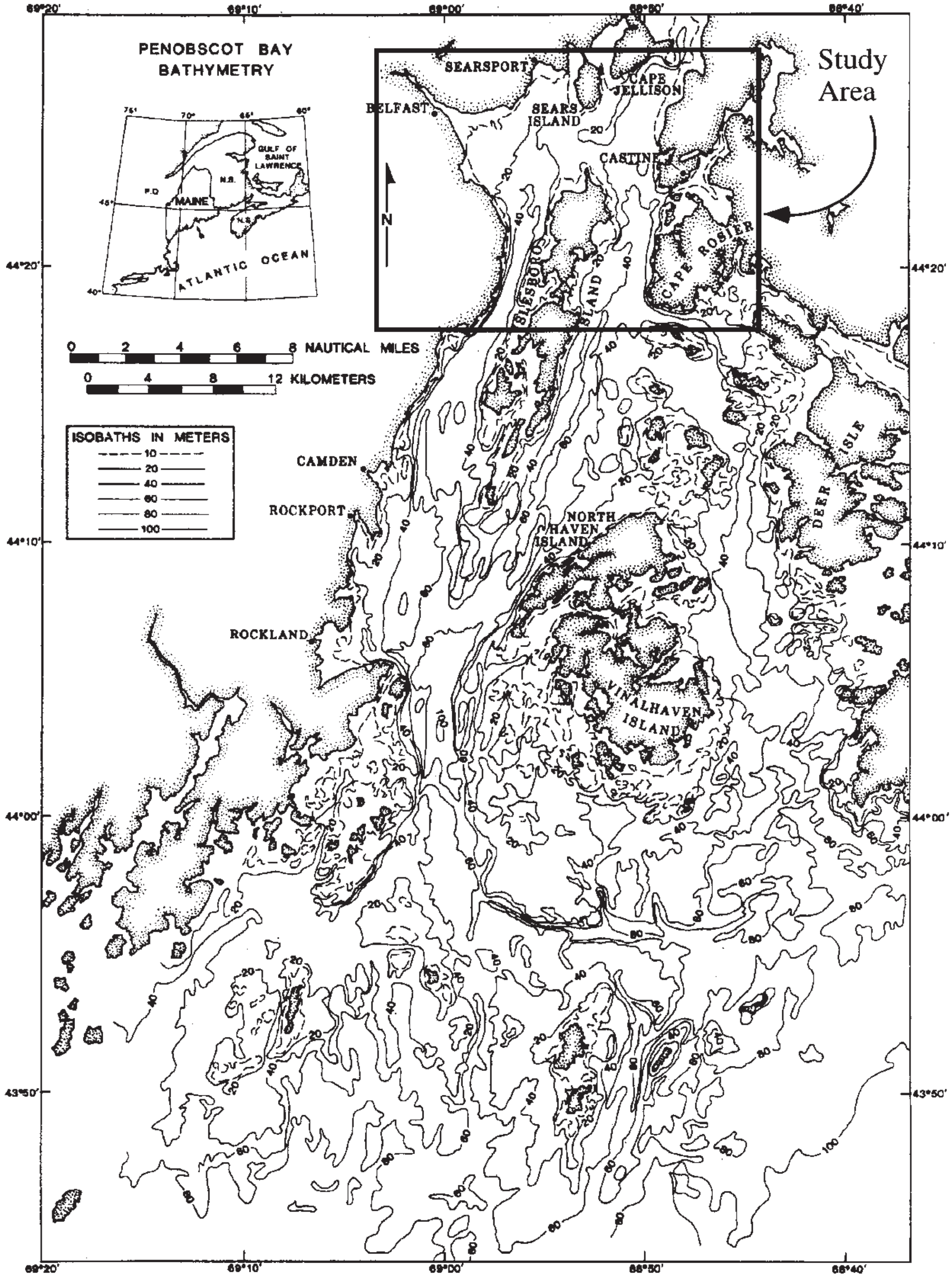


Figure 5. Bathymetry of Penobscot Bay (from Kelley and Belknap, 1989).

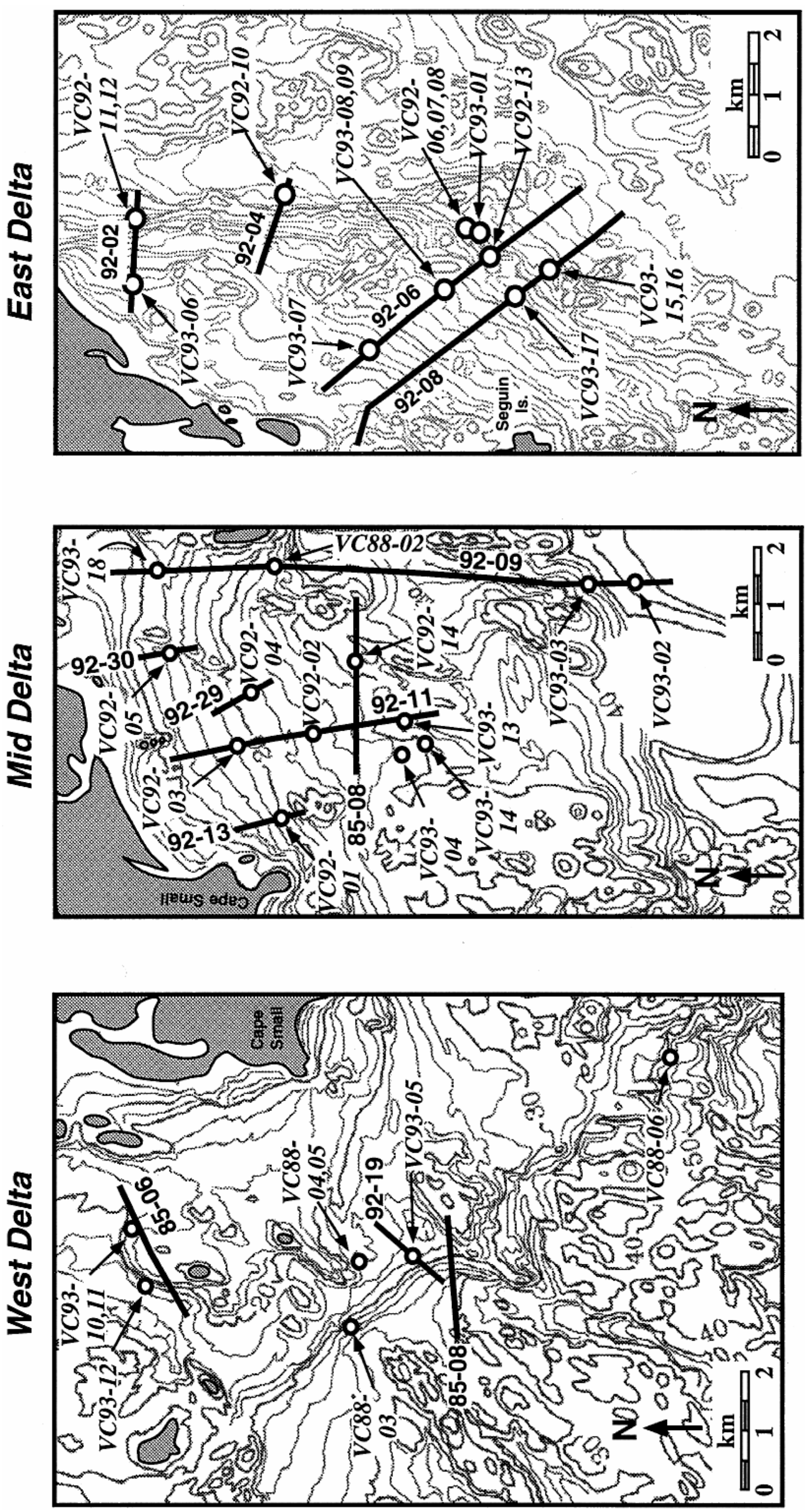


Figure 6. Map of the Kennebec River mouth showing the location of seismic lines and vibracores (from Barnhardt, 1994).

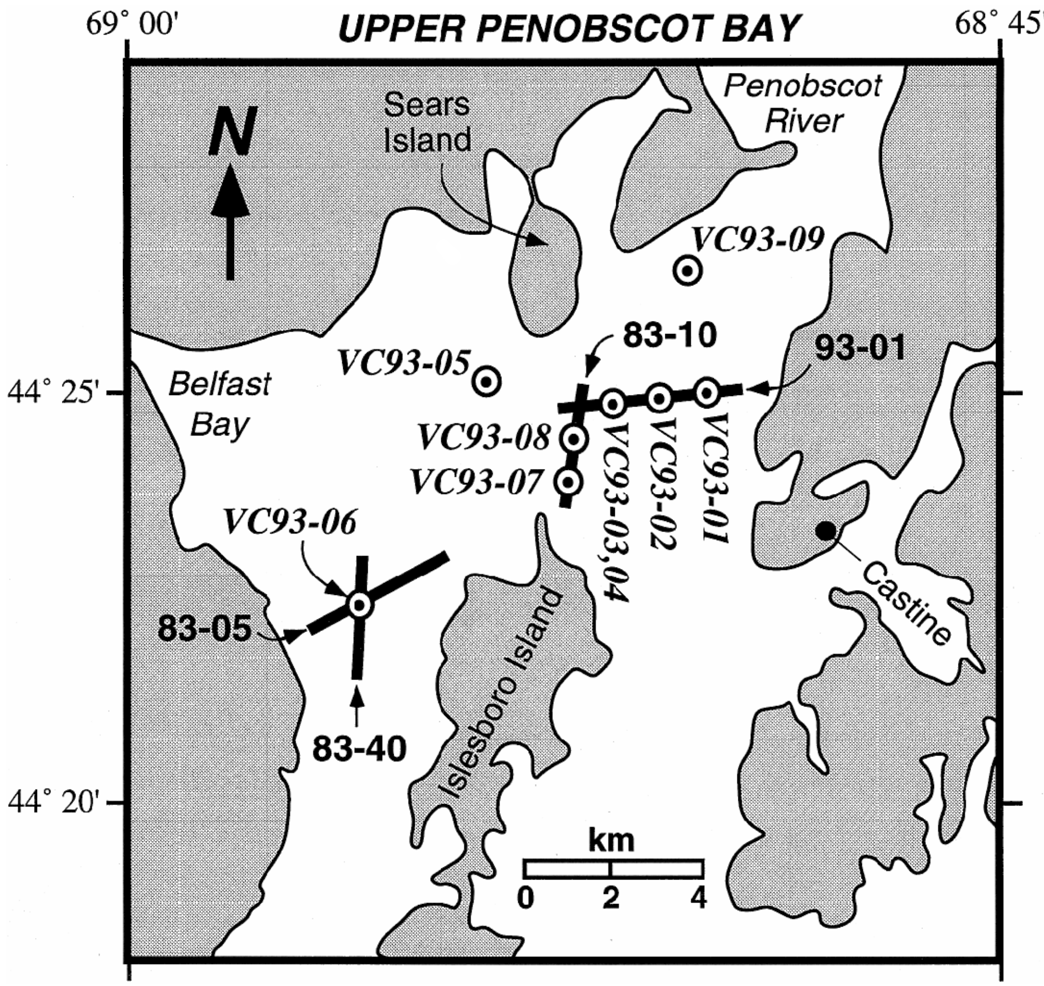


Figure 7. Map of Penobscot Bay showing the location of seismic lines and vibracores.

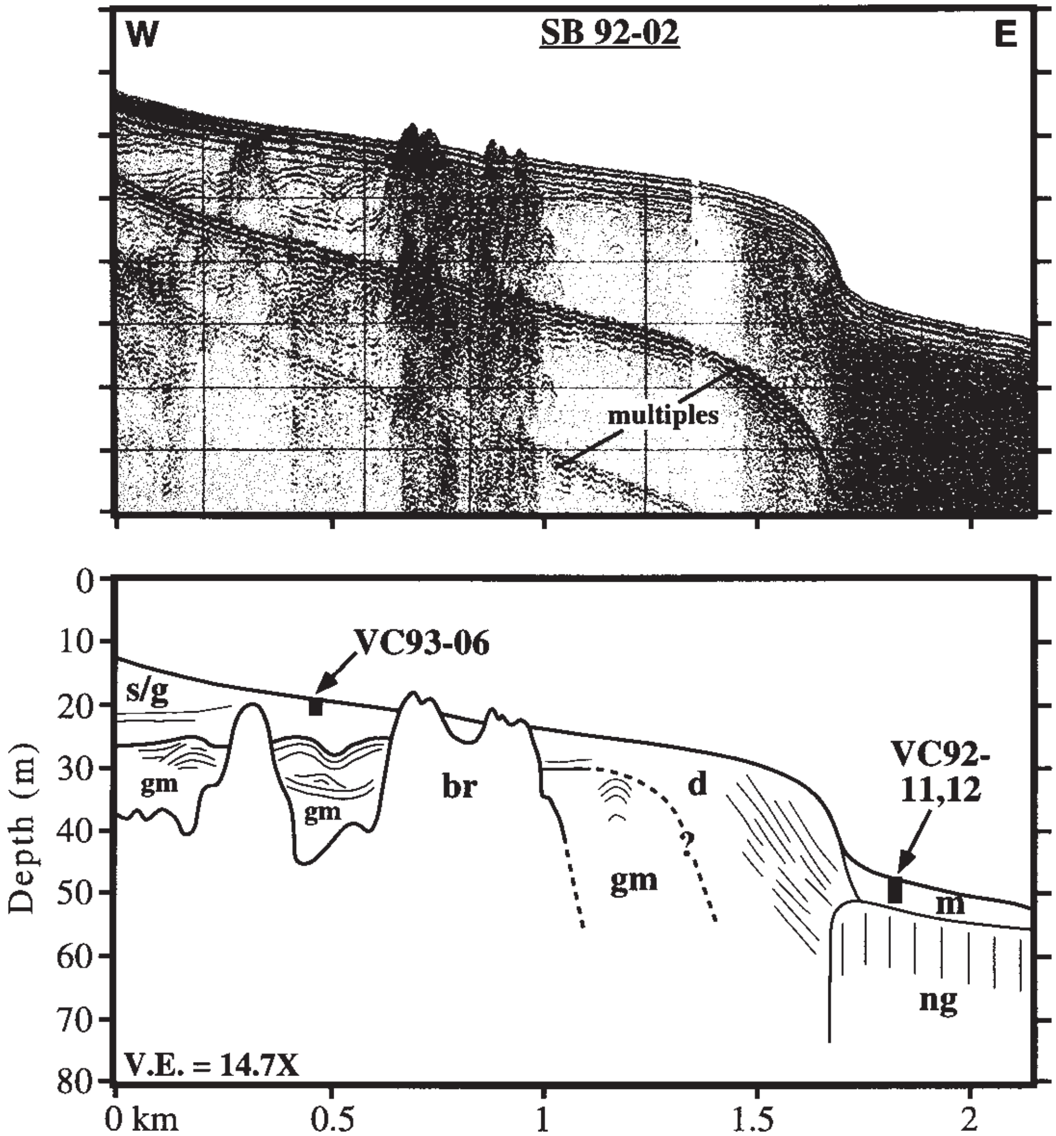


Figure 8. East delta shoreline at approximately -30 m. Note the steeply dipping clinoform reflectors (from Barnhardt, 1994).

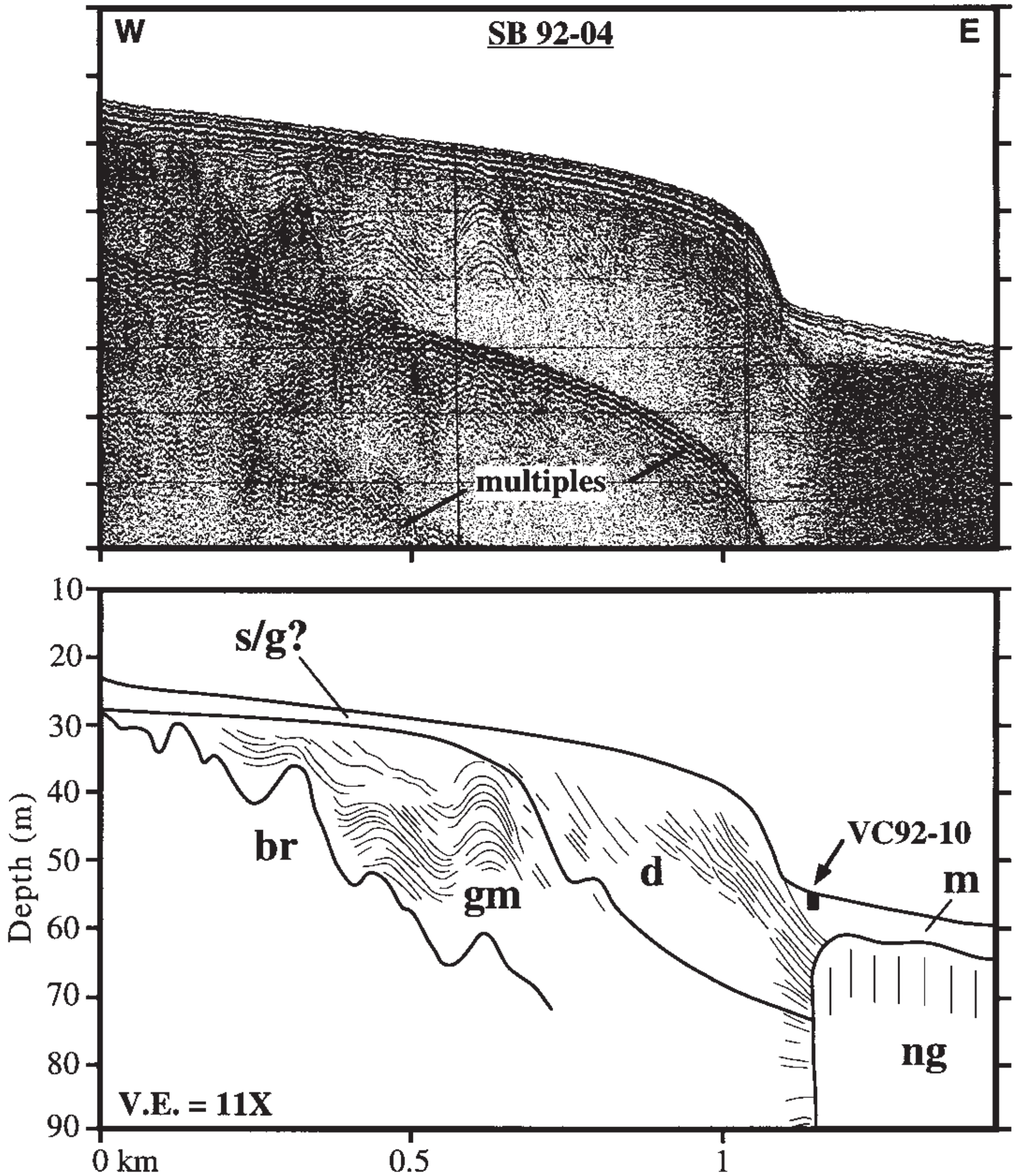


Figure 9. East delta shoreline at approximately -35 m. It is difficult to resolve s/g on the surface of the paleodelta (from Barnhardt, 1994).

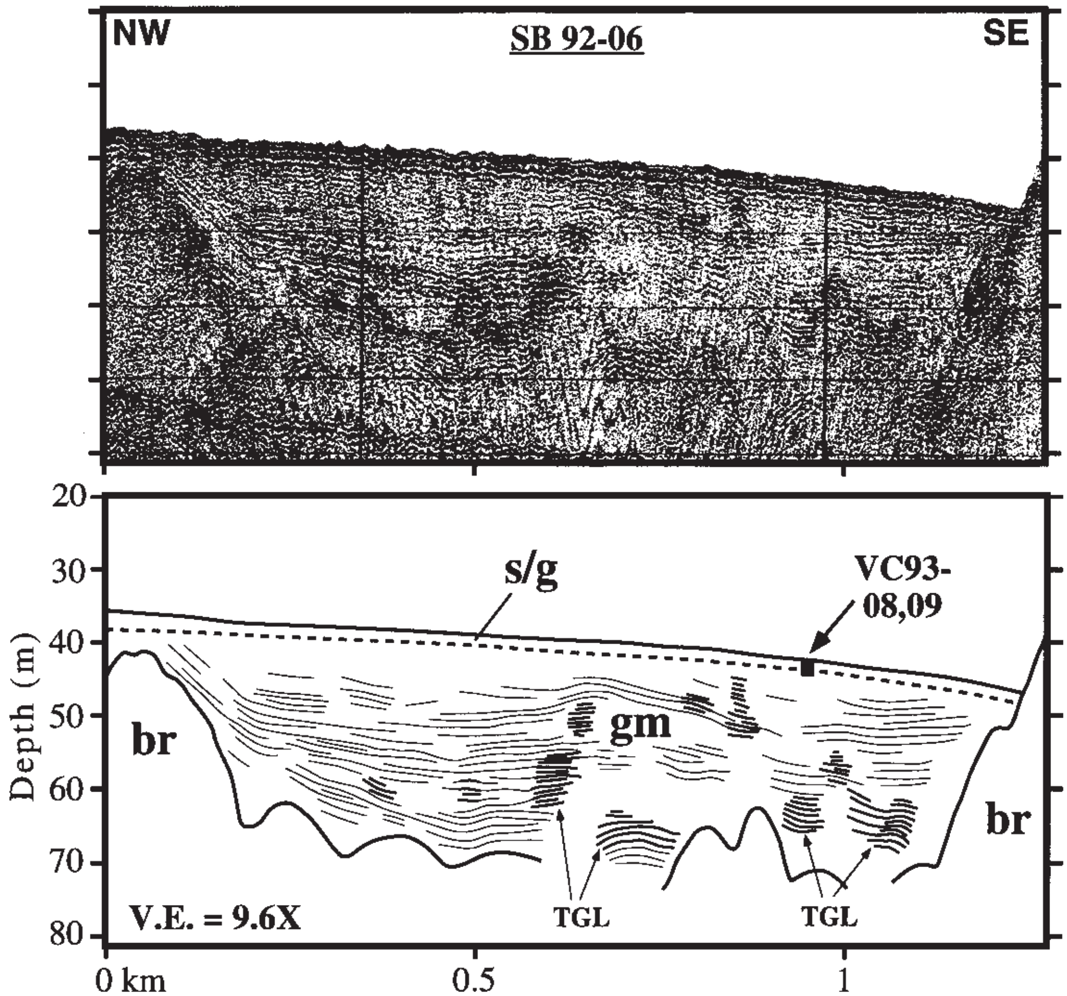


Figure 10. East delta seismic profile showing thick sediment deposit with little surficial sand (from Barnhardt, 1994).

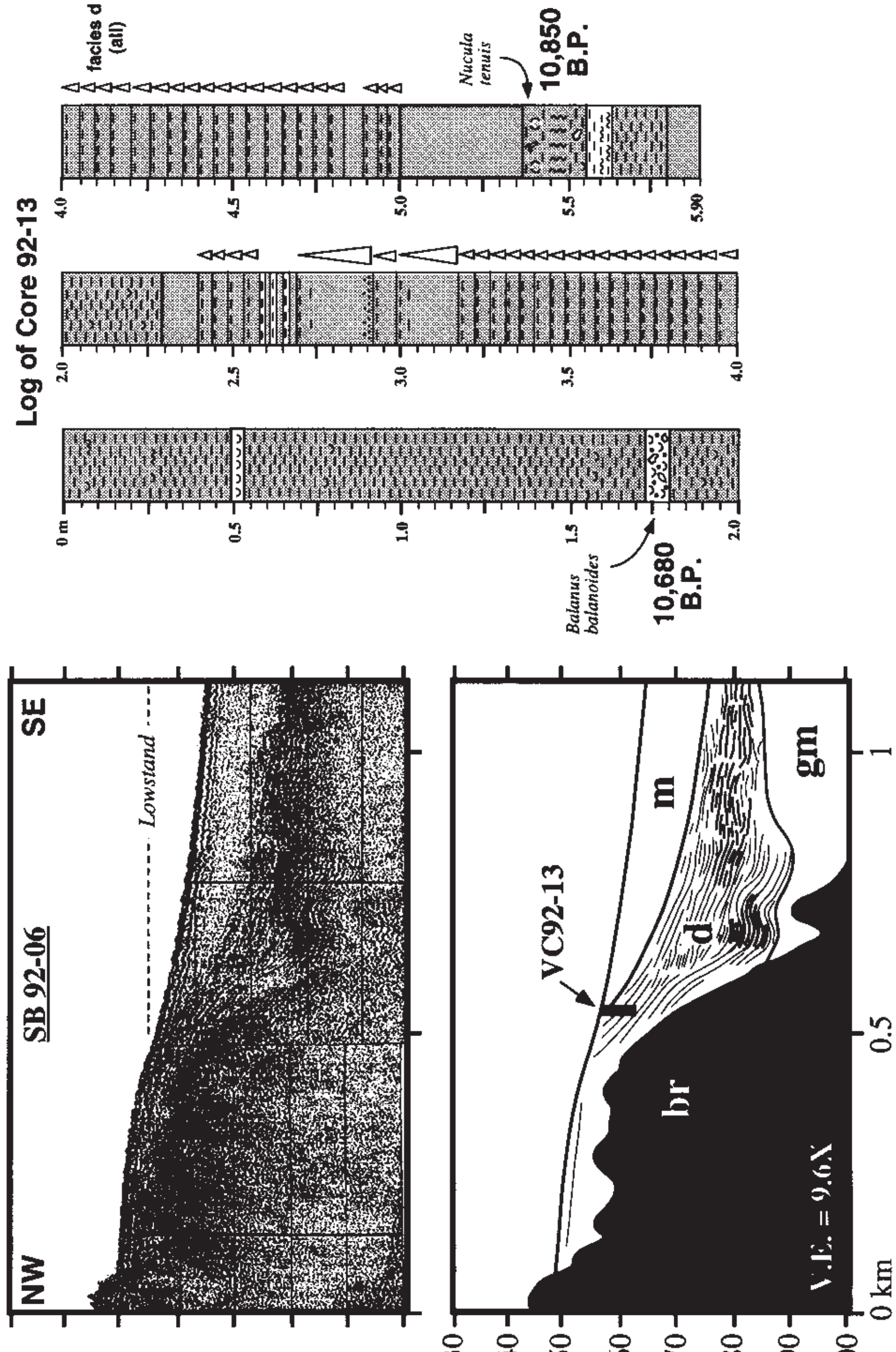


Figure 11. Lowstand shoreline on the East Delta. Deltaic clinoforms from seismic line were penetrated by the core (from Barnhardt, 1994).

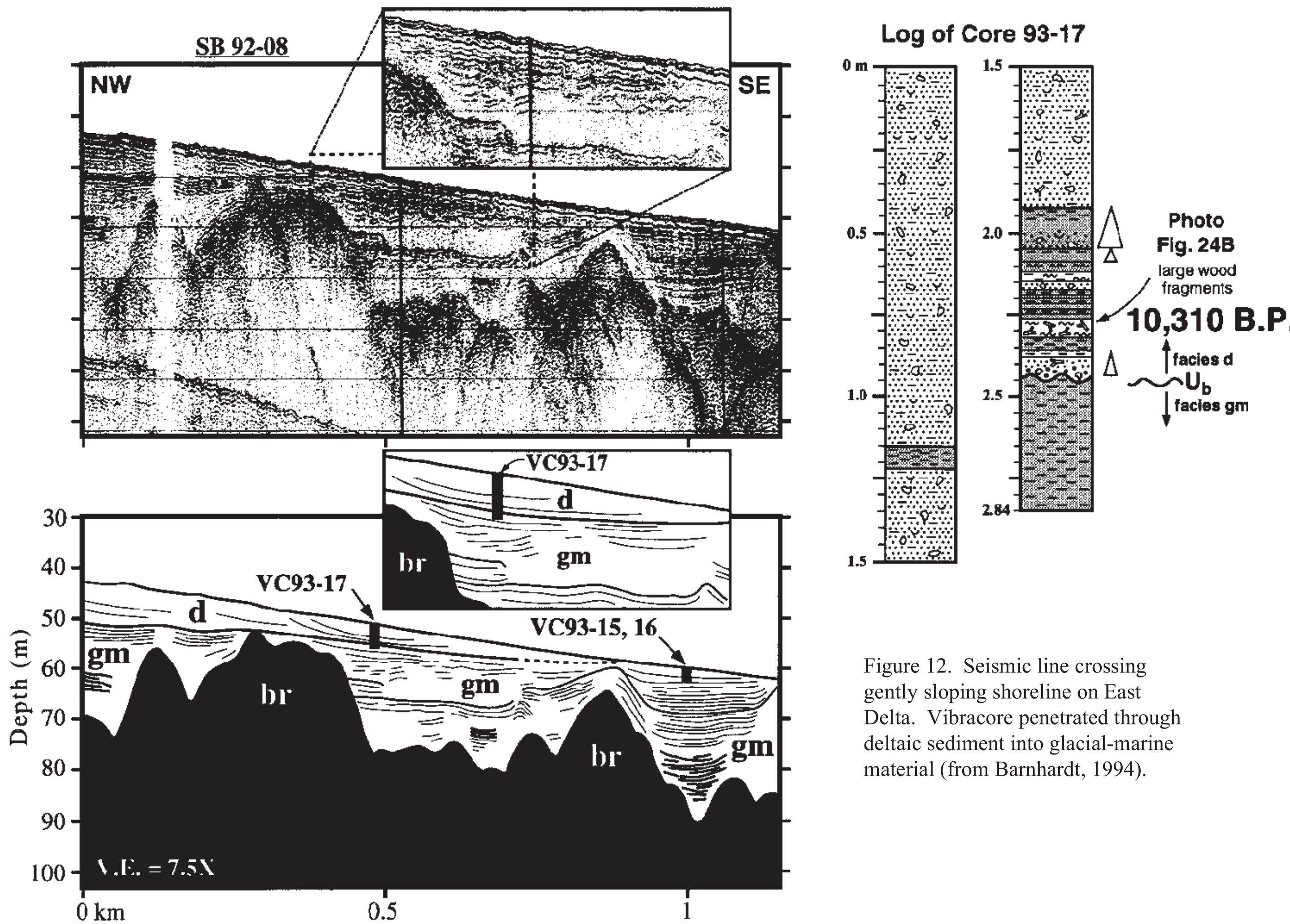


Figure 12. Seismic line crossing gently sloping shoreline on East Delta. Vibracore penetrated through deltaic sediment into glacial-marine material (from Barnhardt, 1994).

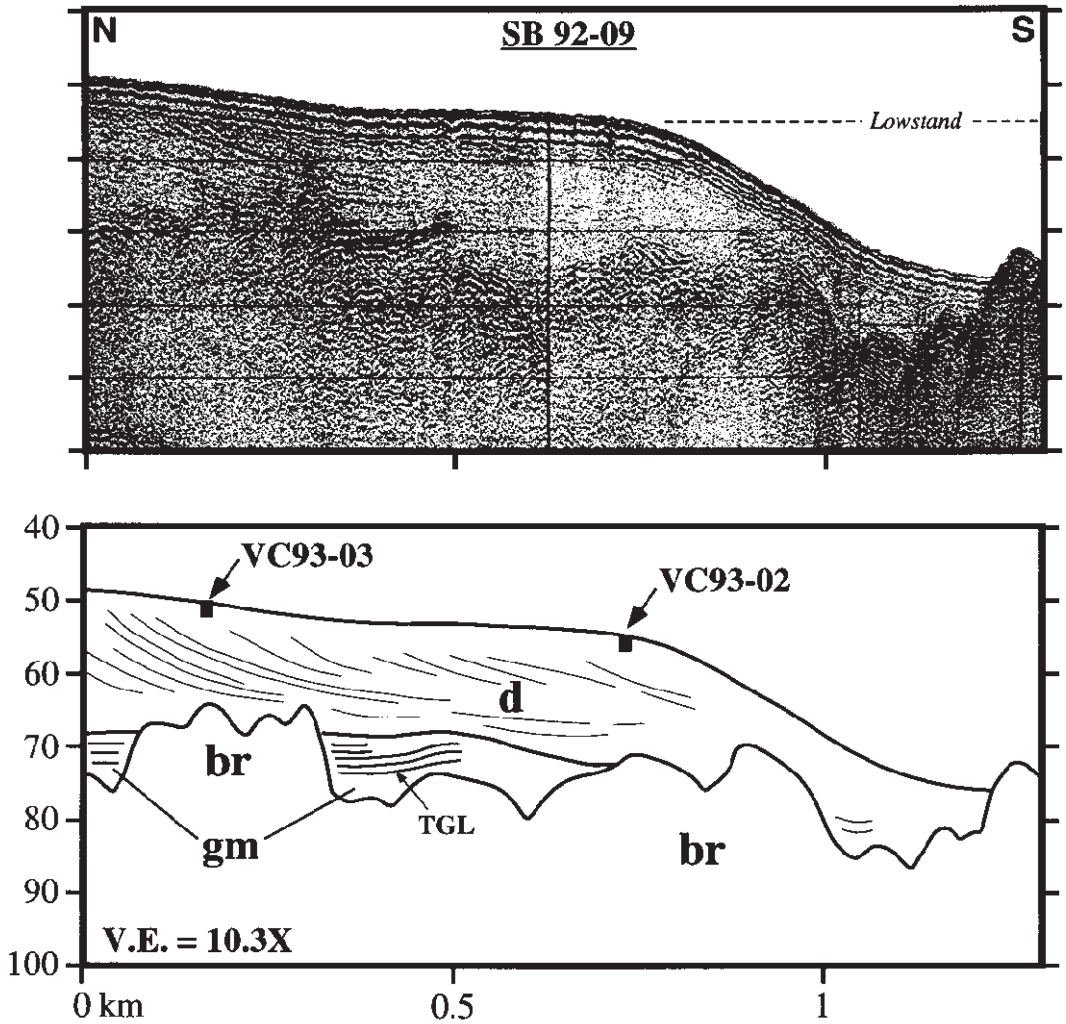


Figure 13. Lowstand shoreline in the mid-delta area. The two vibracores penetrated sand and gravel from deltaic sediment (from Barnhardt, 1994).

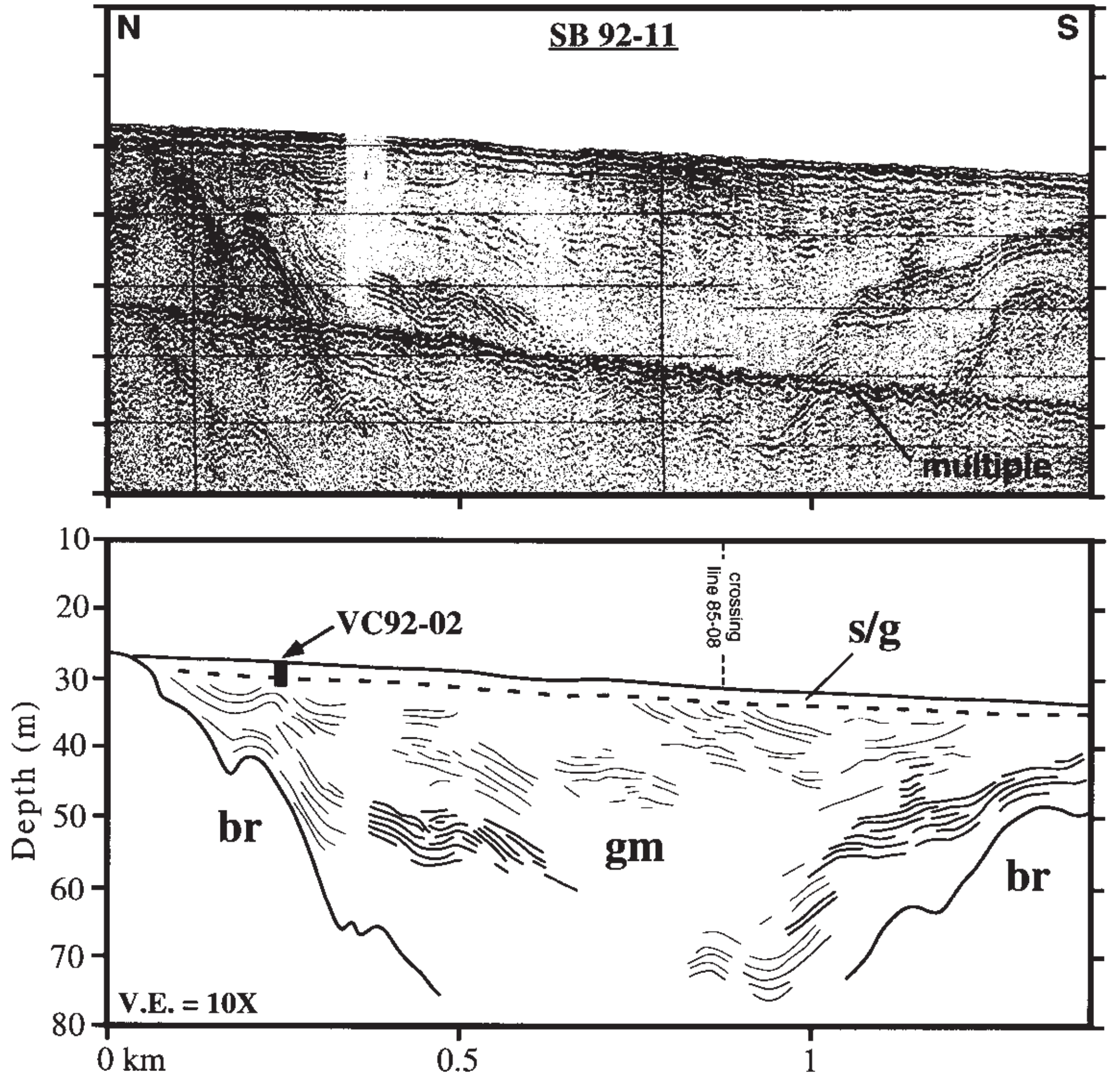


Figure 14. Seismic profile showing thick section of glacial-marine sediment. Vibracore VC92-02 penetrated muddy glacial-marine sediment just more than 1 m beneath the surface (from Barnhardt, 1994).

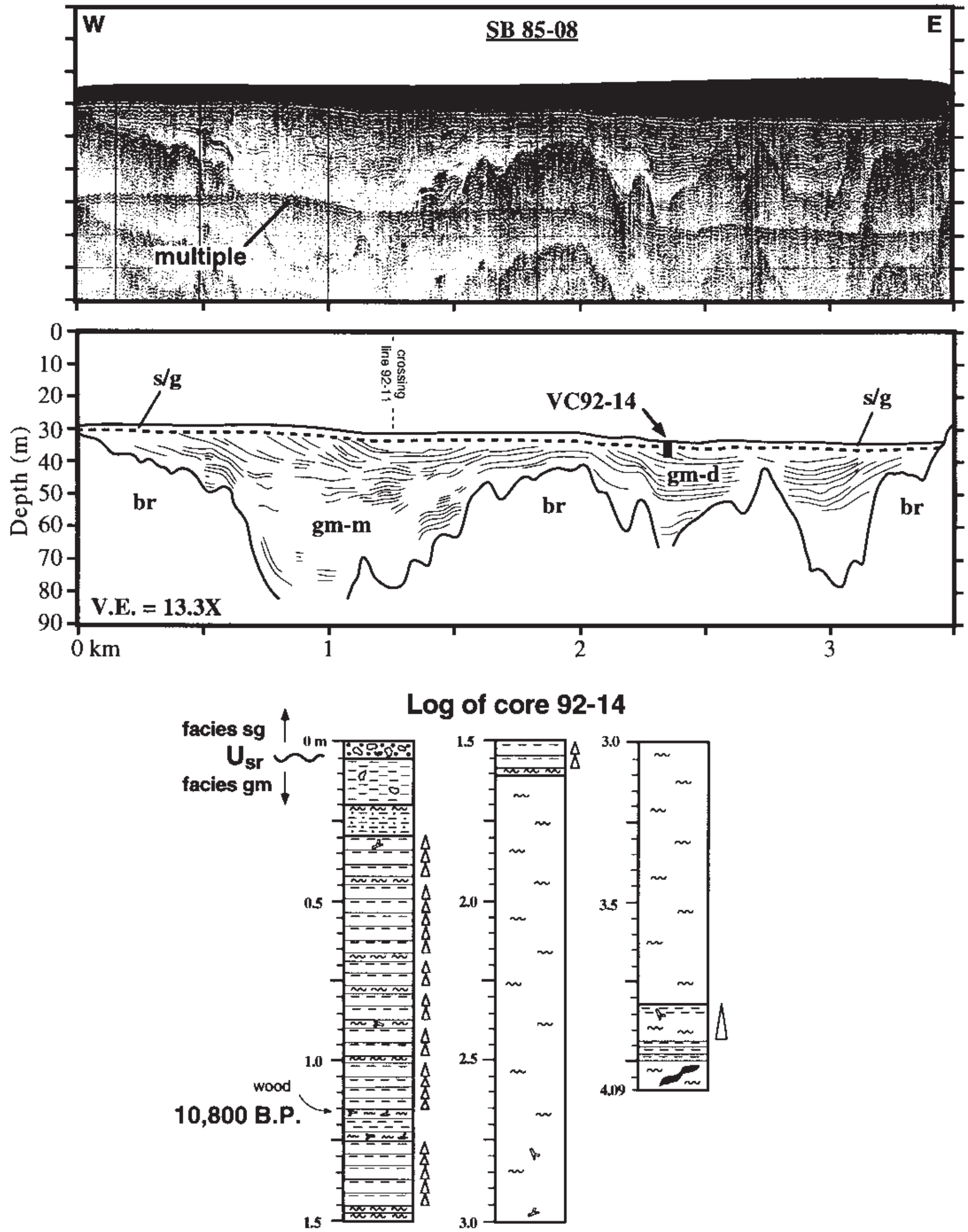


Figure 15. Seismic profile over the mid-delta region showing the thin nature of the s/g seismic unit where it overlies a thick section of glacial-marine sediment (from Barnhardt, 1994).

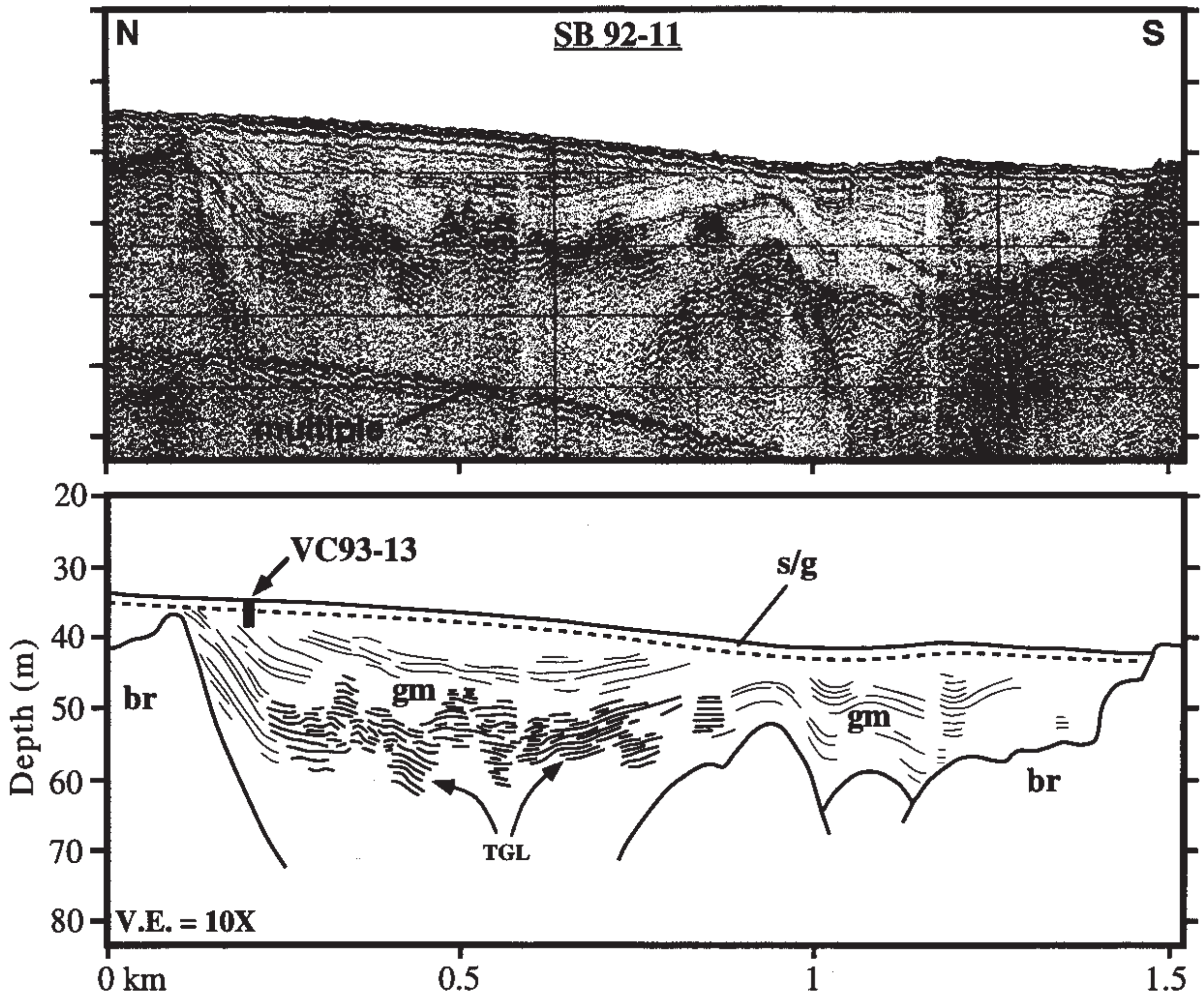


Figure 16. Seismic profile showing relatively thick deposit of glacial-marine sediment overlain by thinner deposit of Holocene sand (from Barnhardt, 1994).

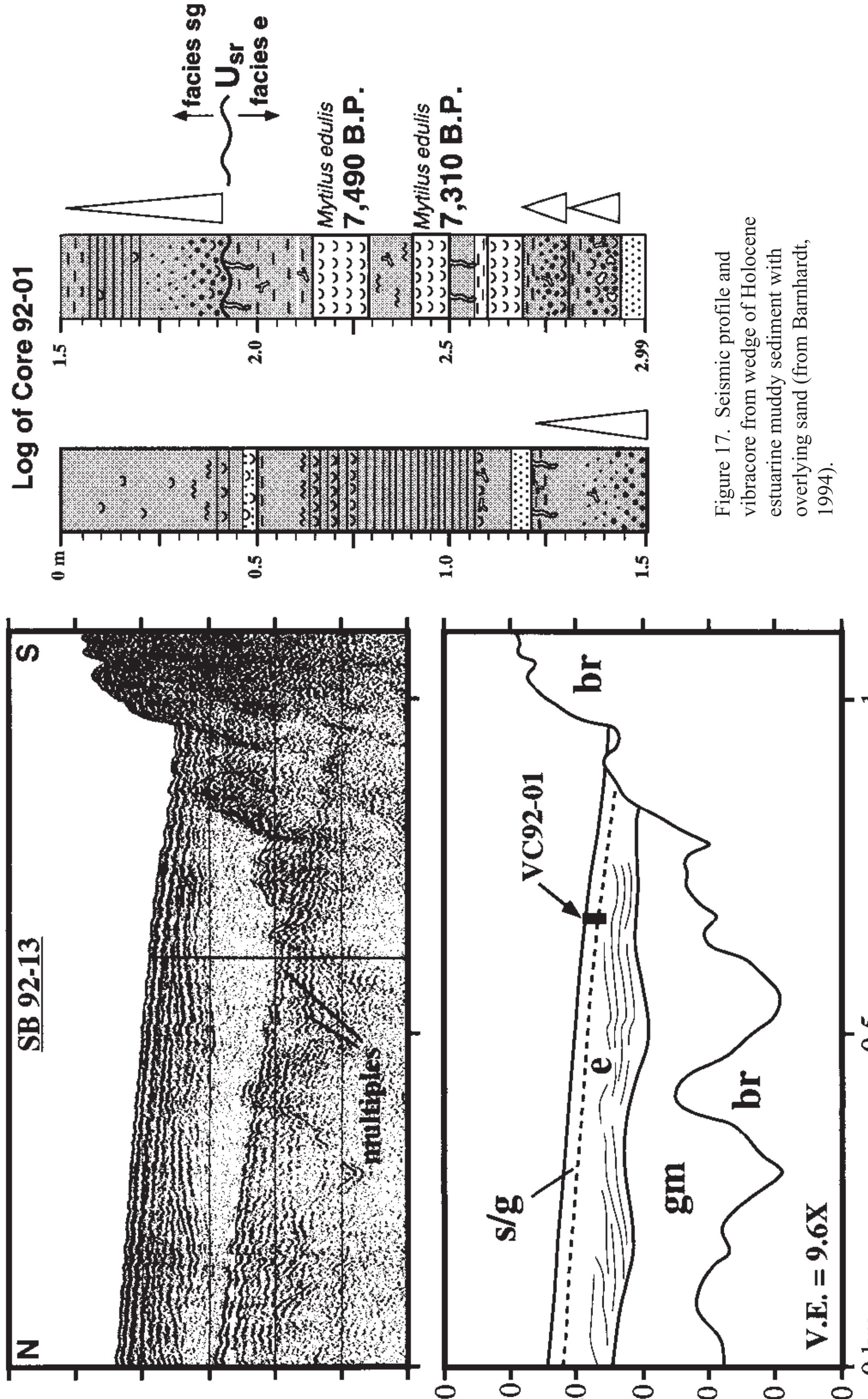


Figure 17. Seismic profile and vibracore from wedge of Holocene estuarine muddy sediment with overlying sand (from Barnhardt, 1994).

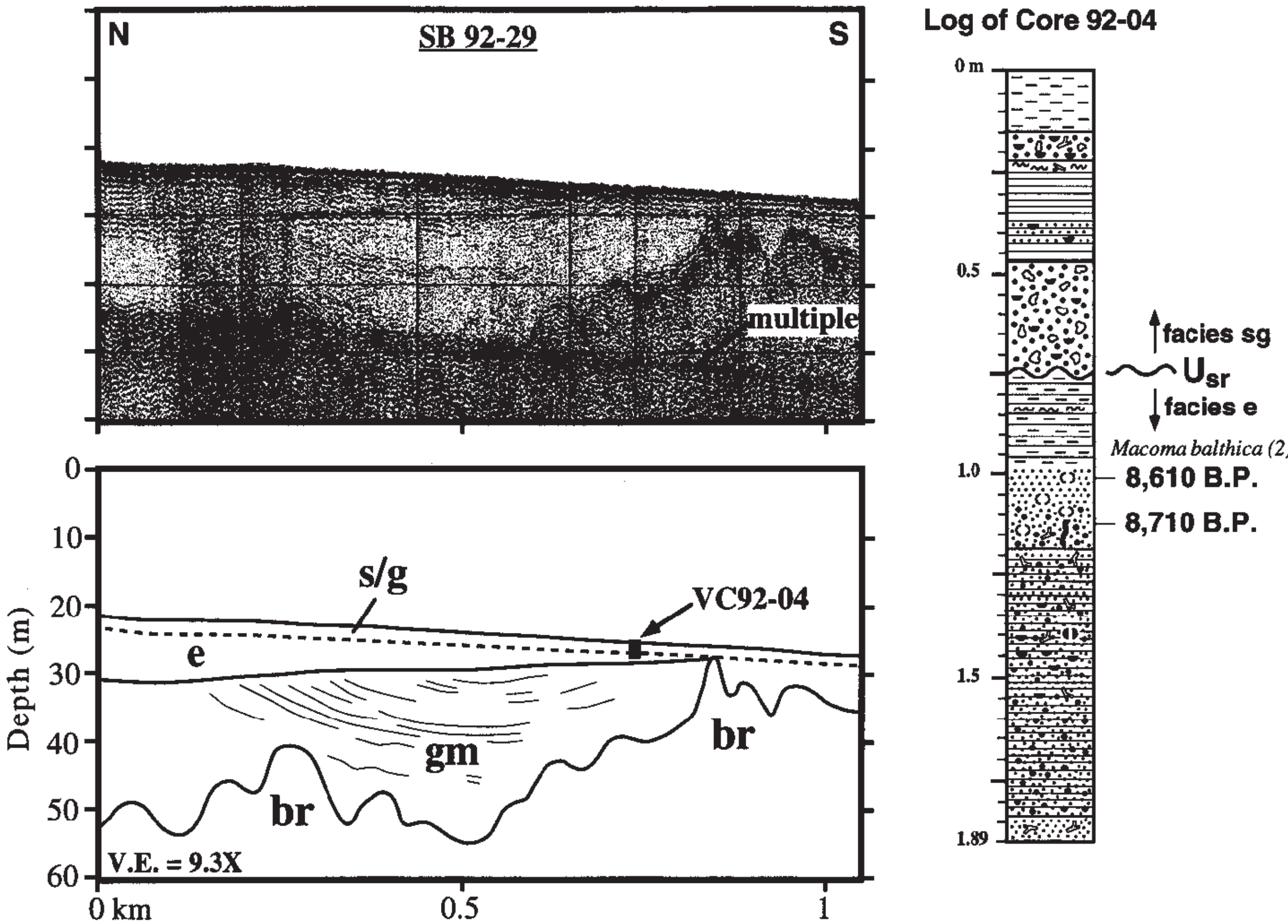


Figure 18. Seismic profile with vibracore in Holocene shoreface wedge (from Barnhardt, 1994).

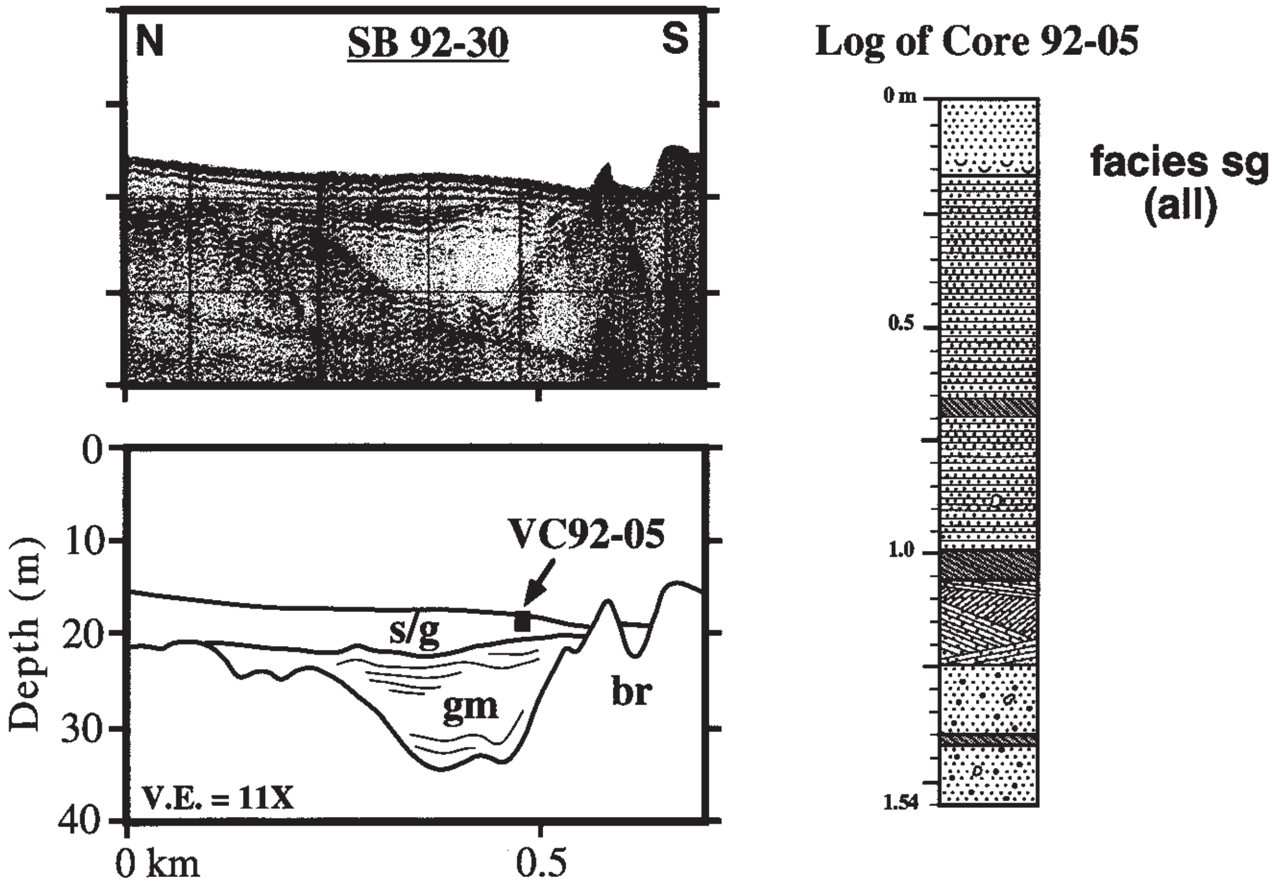


Figure 19. Seismic profile across nearshore wedge of Holocene sediment. Vibracore failed to penetrate to glacial-marine sediment (from Barnhardt, 1994).

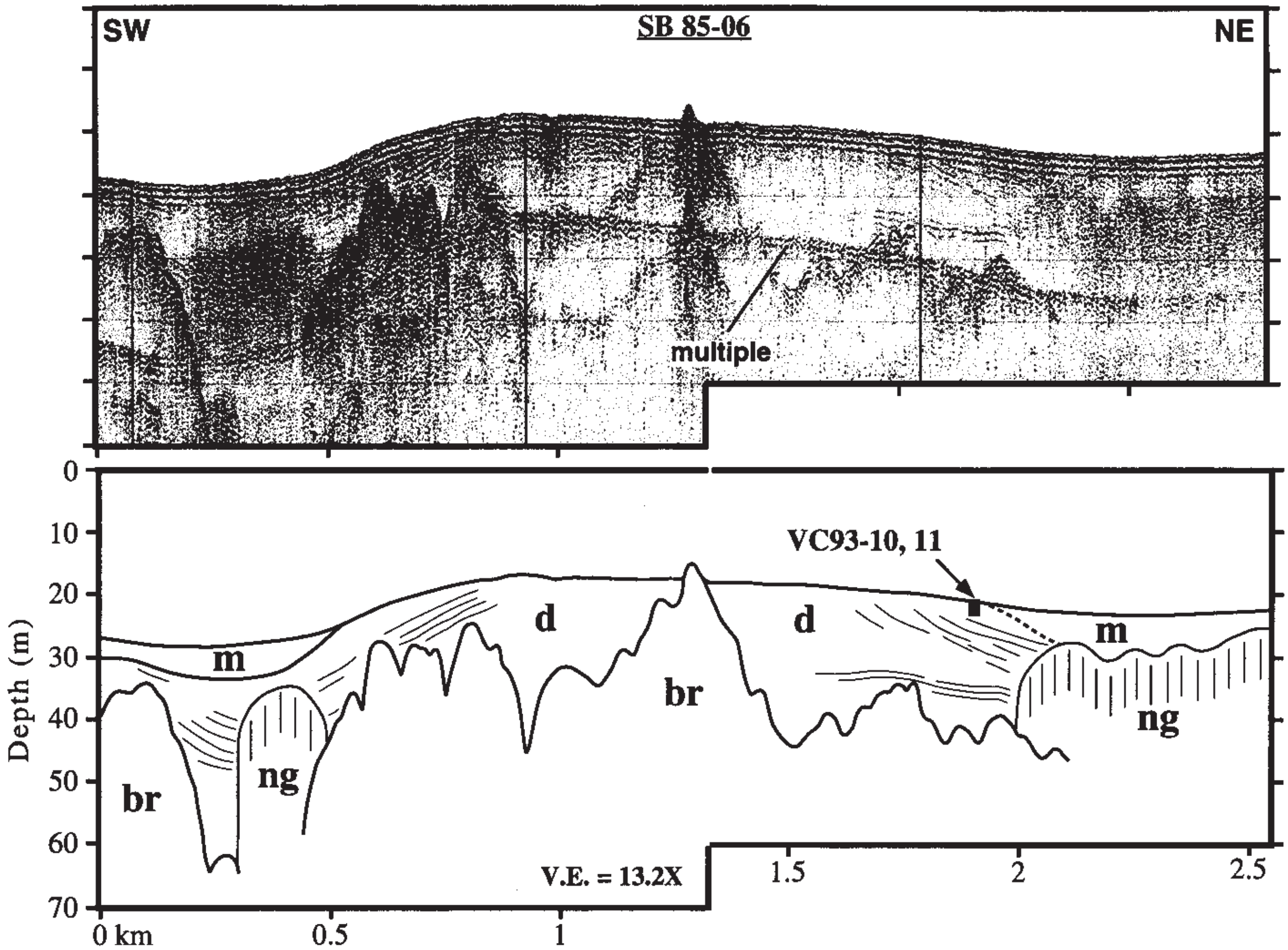


Figure 20. Seismic profile showing clinoform reflectors dipping in opposite directions around a bedrock outcrop. A shoreline at about 20 m depth is also visible as well as the only natural gas (ng) observed on the paleodelta (from Barnhardt, 1994).

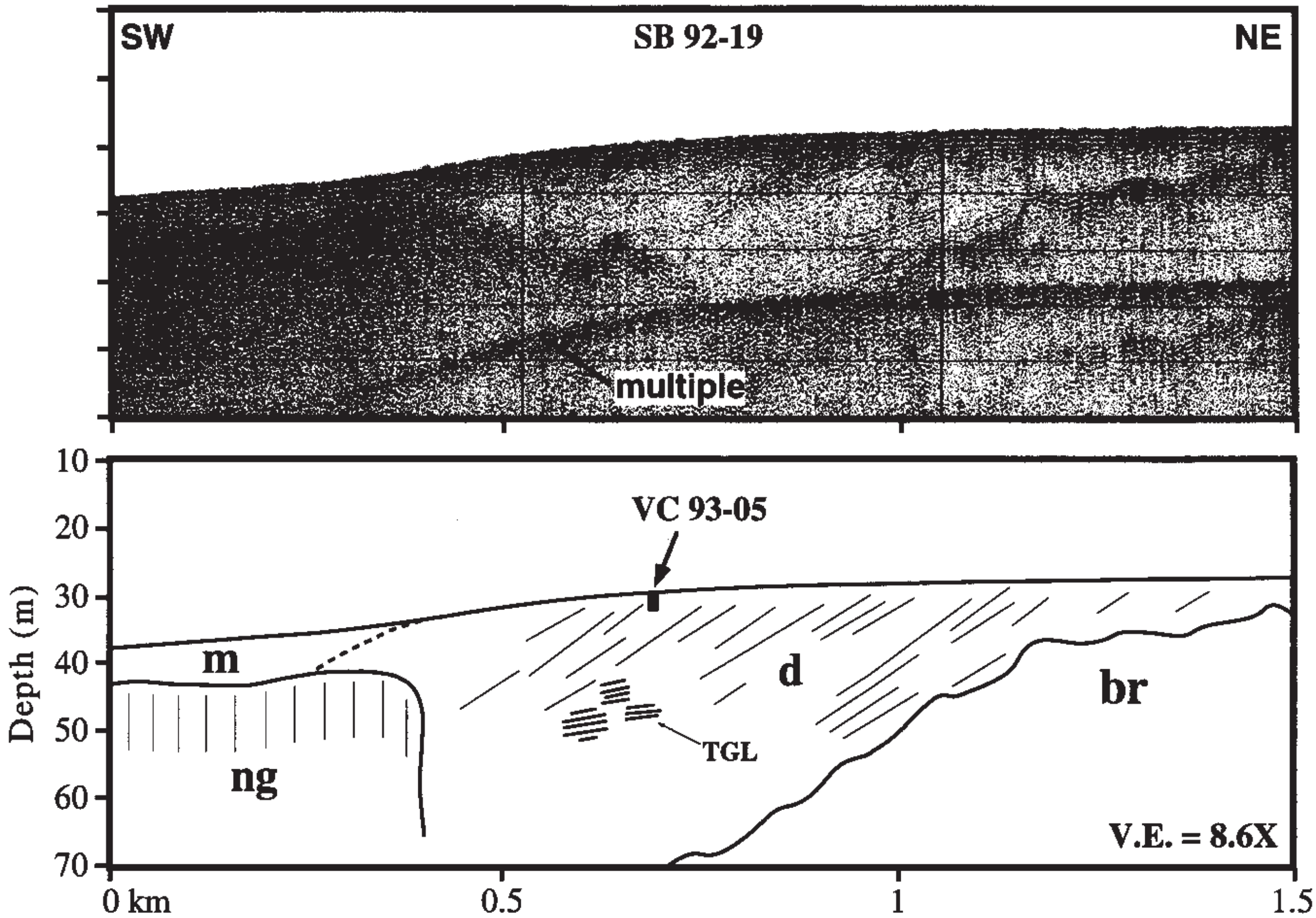


Figure 21. Seismic line across clinoform reflectors on west delta (from Barnhardt, 1994).

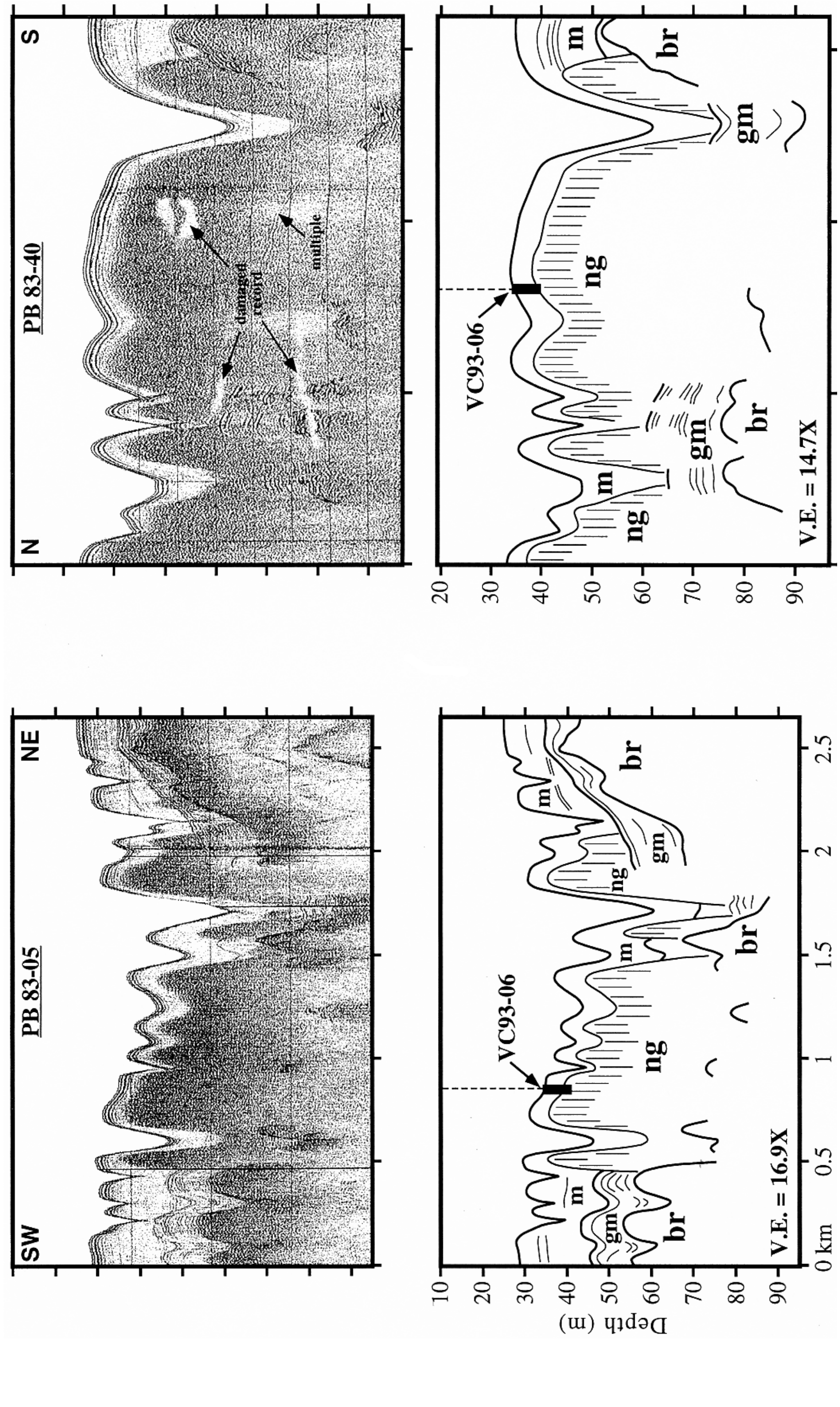
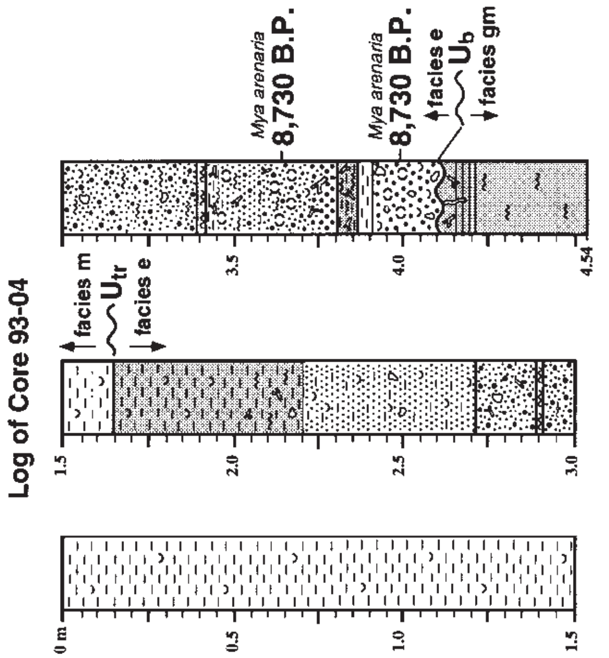


Figure 22. Two seismic reflection profiles in Belfast Bay show areas underlain by mud charges with natural gas. The cores gathered contained 100% mud (from Barnhardt, 1994).



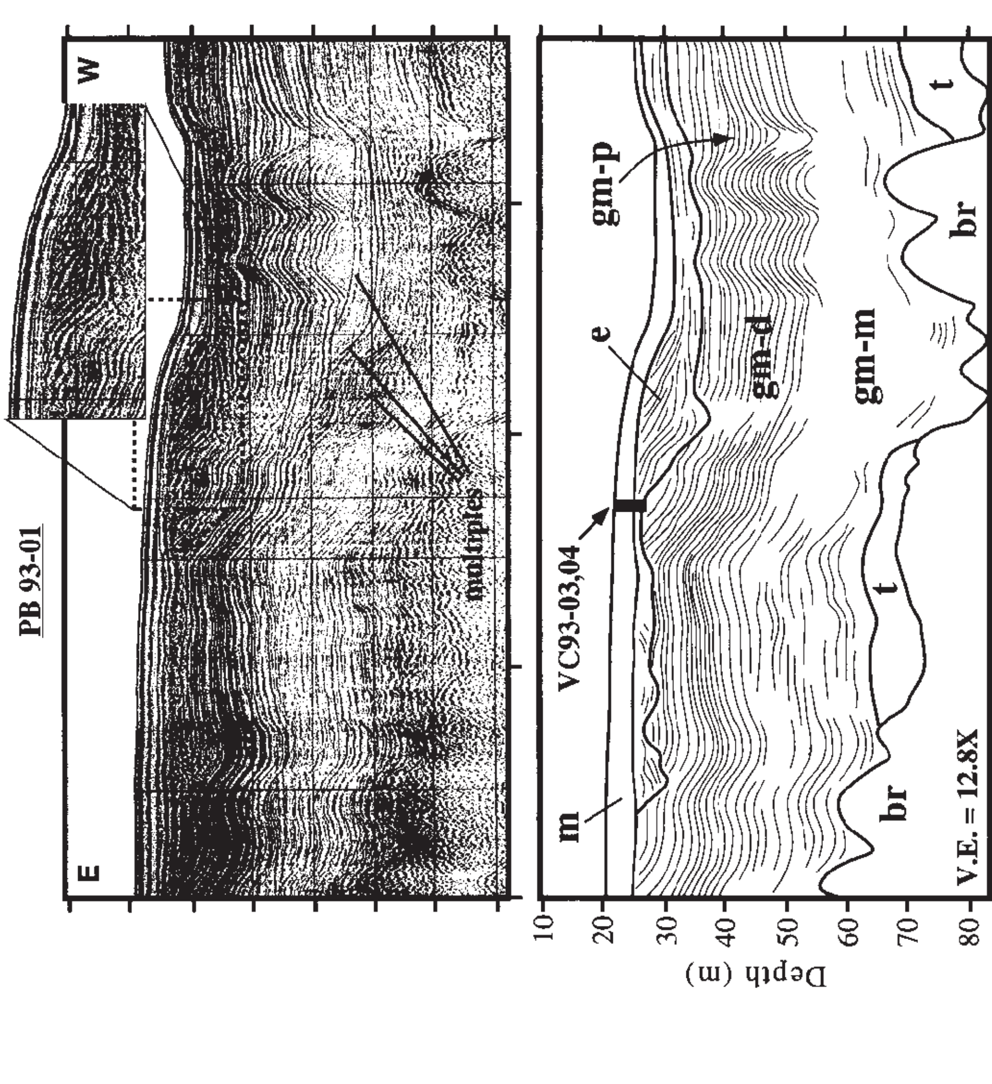


Figure 23. Seismic profile and core of thick glacial-marine sediment with overlying Holocene estuarine sediment and mud in upper Penobscot Bay (from Barnhardt, 1994).

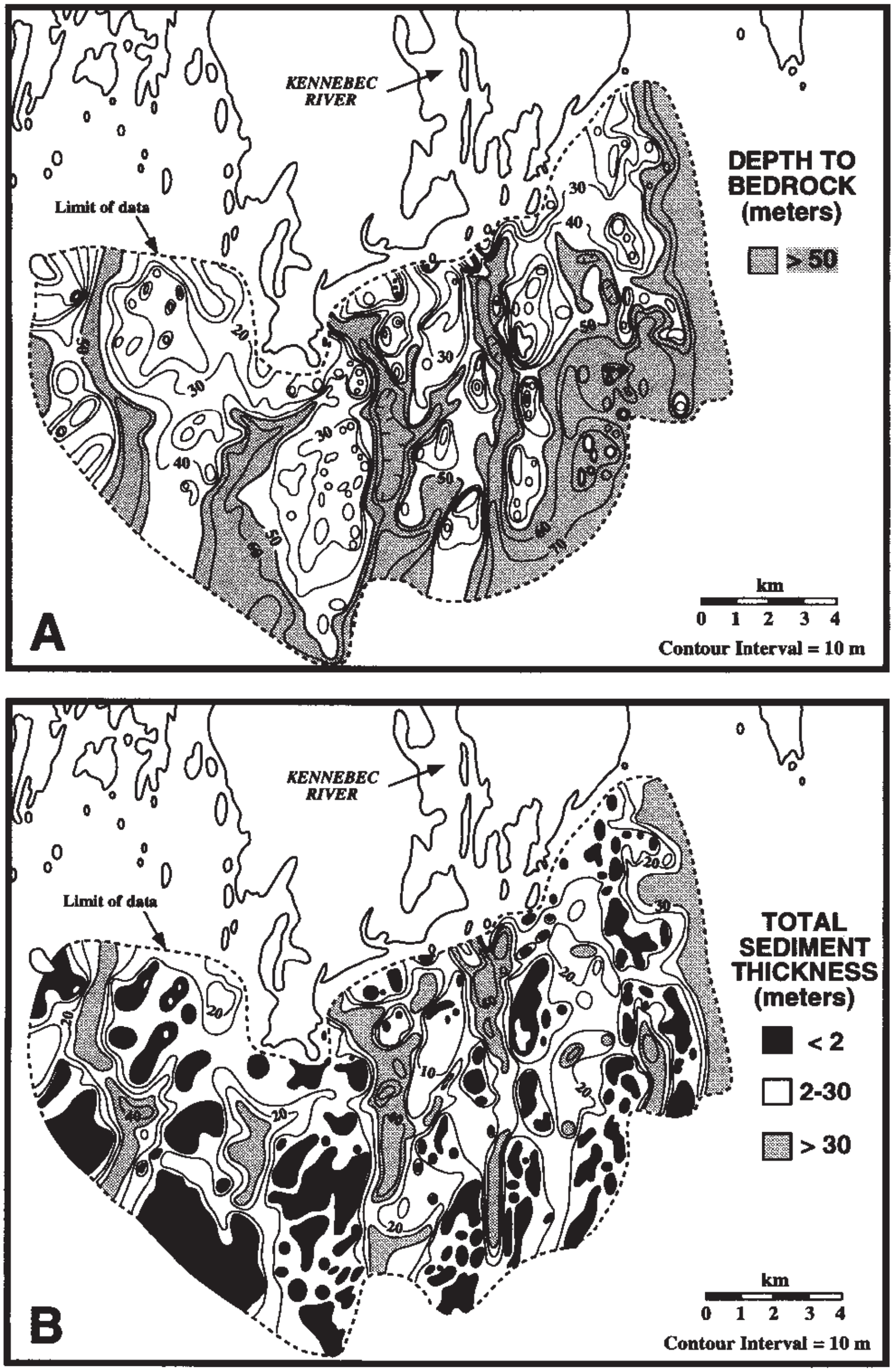


Figure 24. A) Structure contour map of bedrock surface off Kennebec River mouth; B) Isopach map of total sediment thickness (from Barnhardt, 1994).

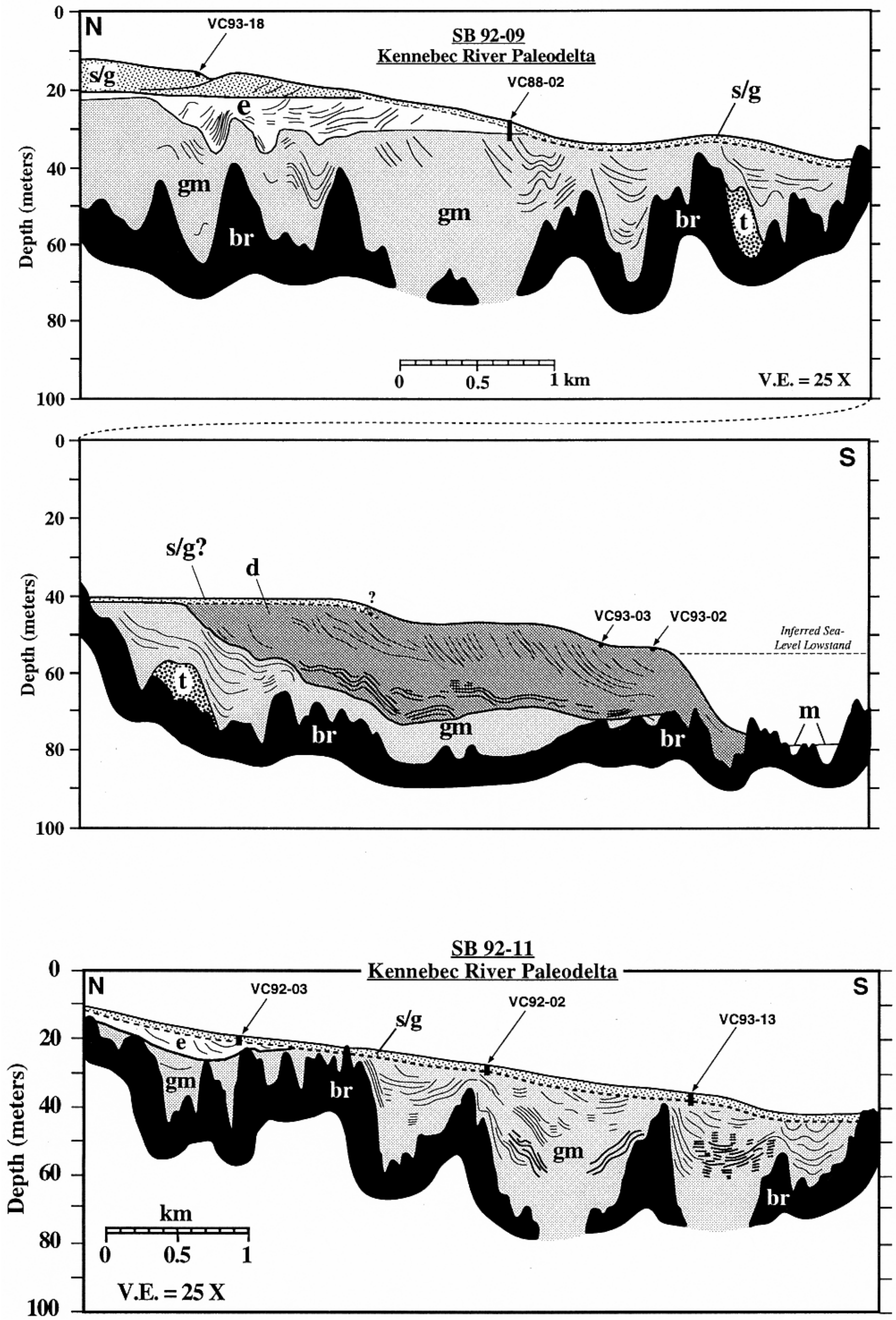


Figure 25. Interpretations of seismic reflection profiles, all digitized to a common vertical exaggeration of 25x (from Barnhardt, 1994).

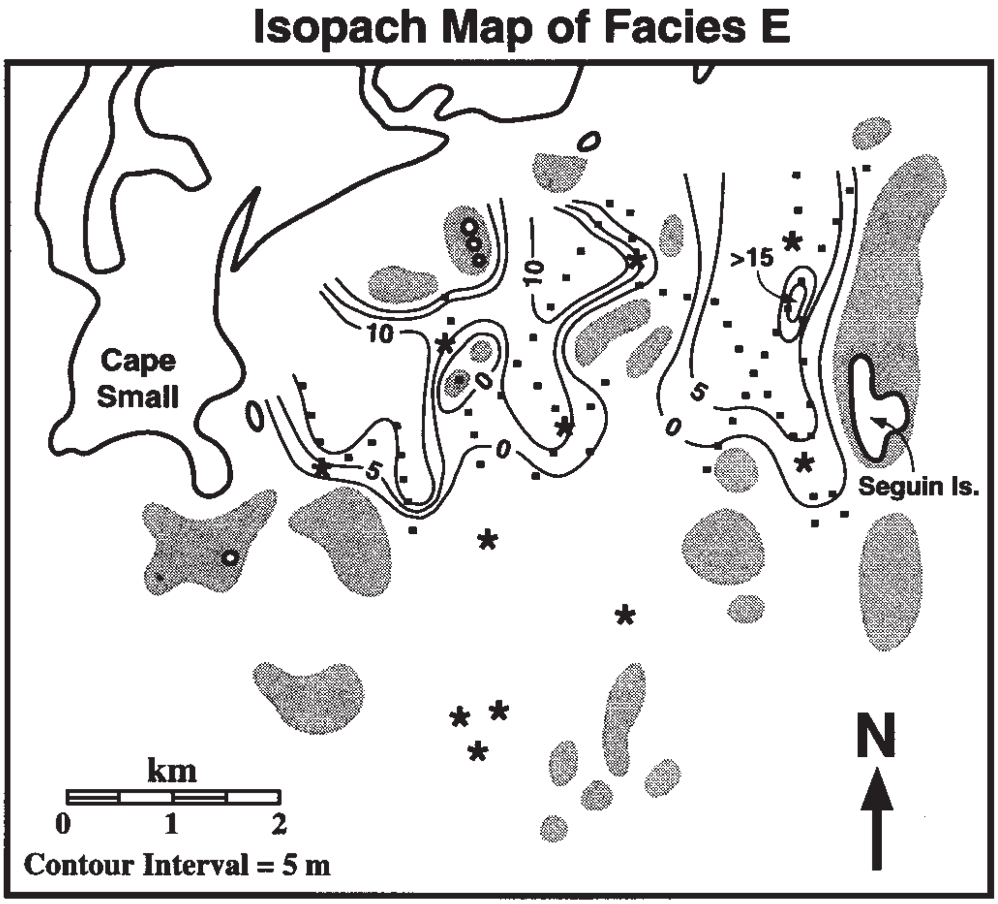


Figure 26. Isopach map of the estuarine facies of the Kennebec River paleodelta (from Barnhardt, 1994). Asterisks = cores; shaded areas = surface or near-surface (<2 m) bedrock; black squares = control points (from seismic).

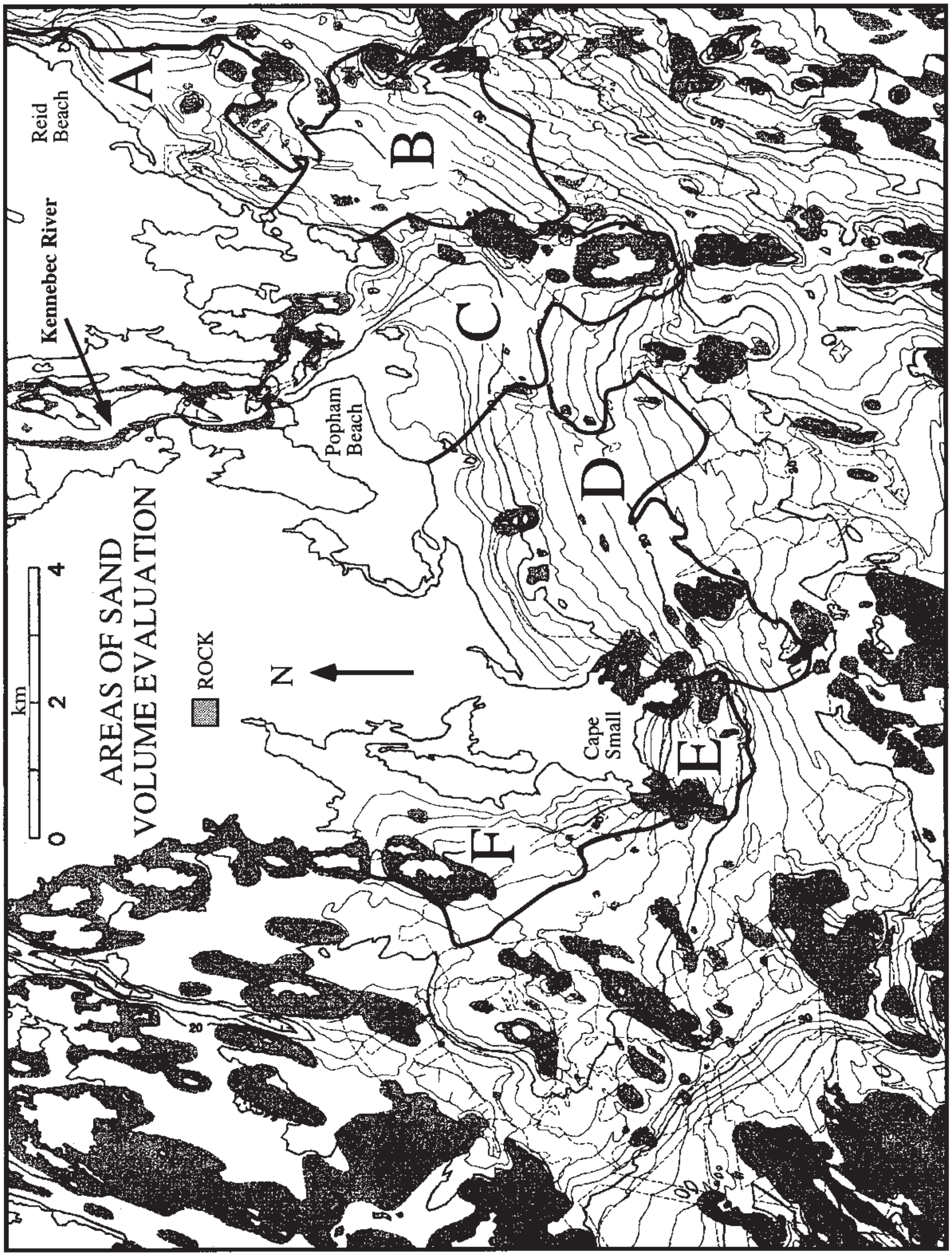
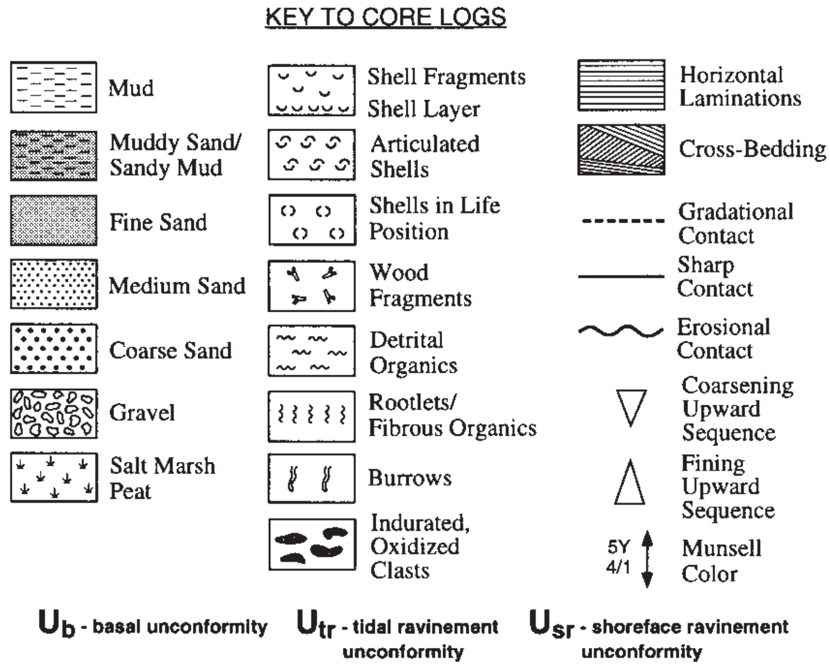
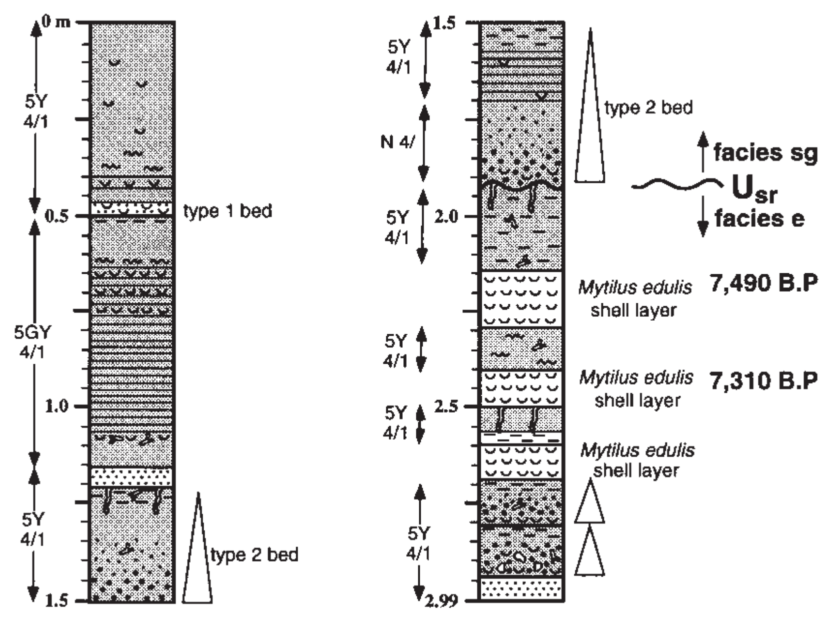


Figure 27. Areas discussed in text where sand volumes were evaluated.

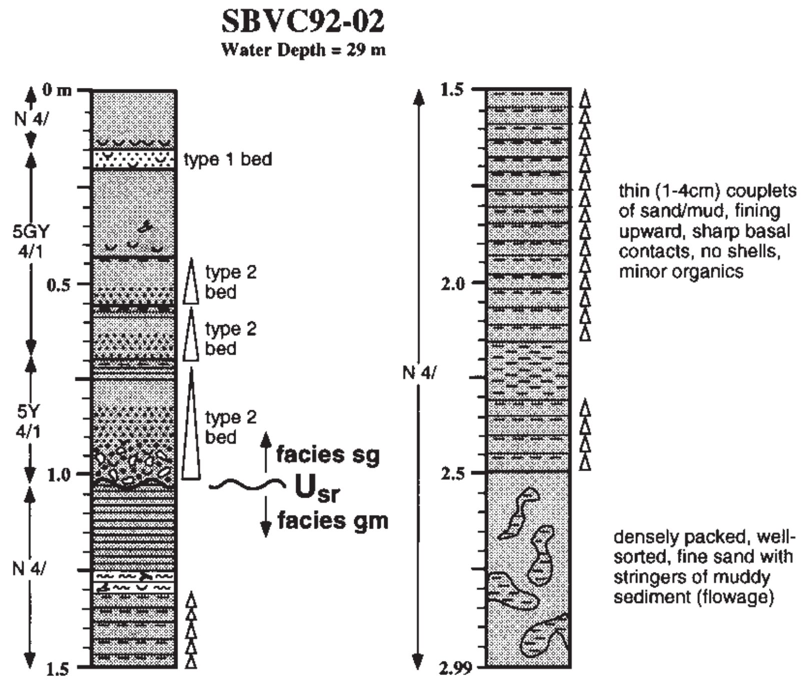
Appendix A. Description of Vibracores. Kennebec River Paleodelta

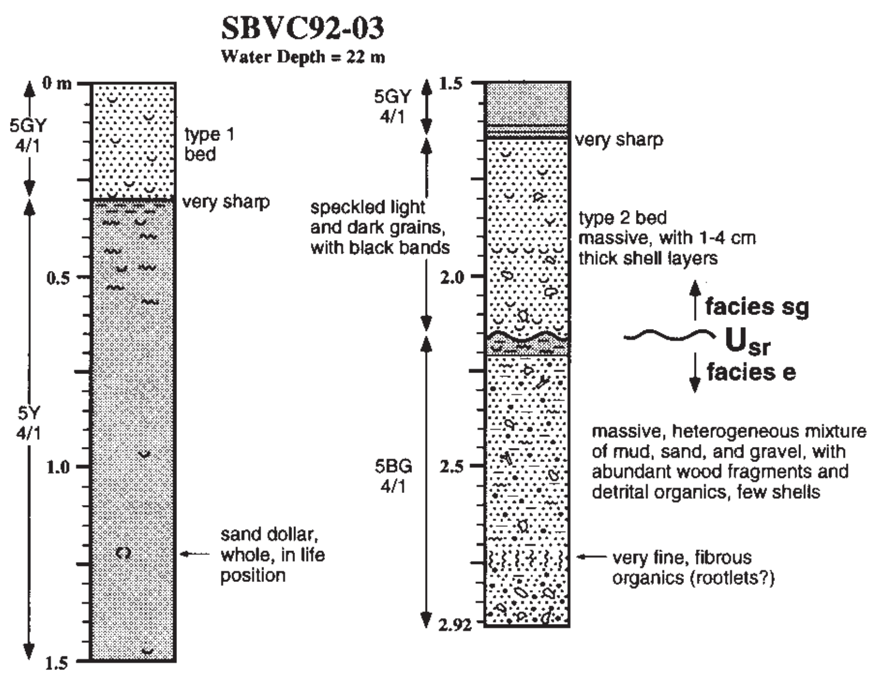


SBVC92-01
Water Depth = 22 m

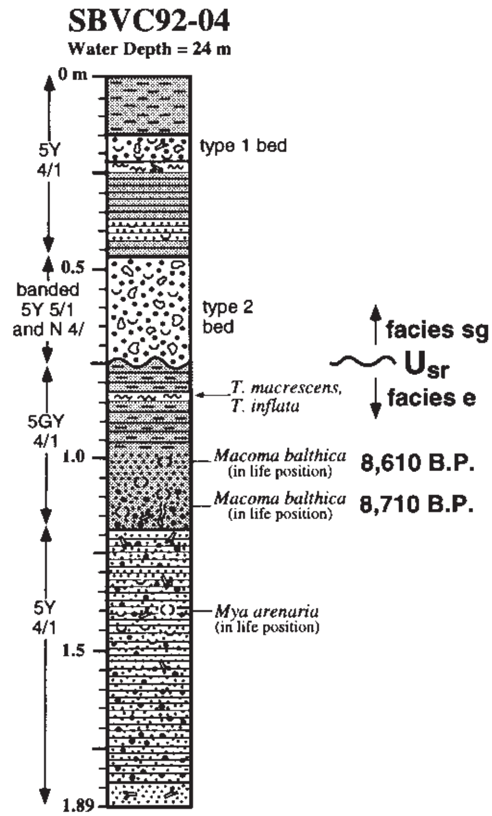


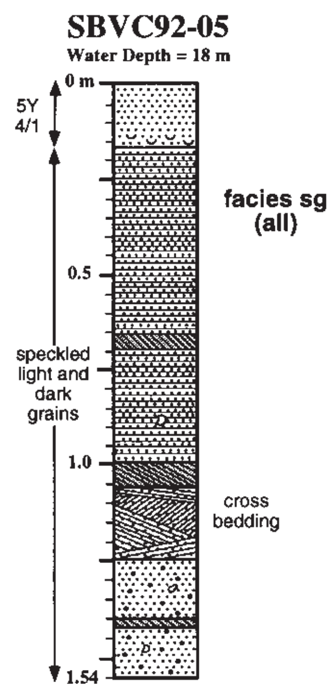
Appendix A. Description of vibracores (continued).





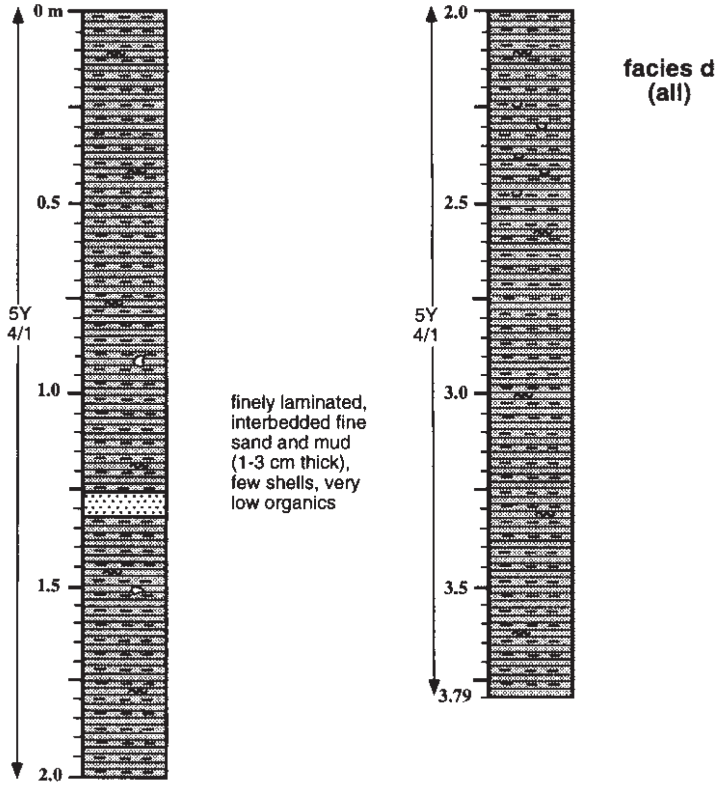
Appendix A. Description of vibracores (continued).



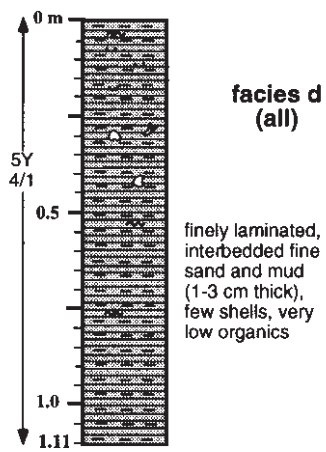


Appendix A. Description of vibracores (continued).

SBVC92-06
Water Depth = 58 m

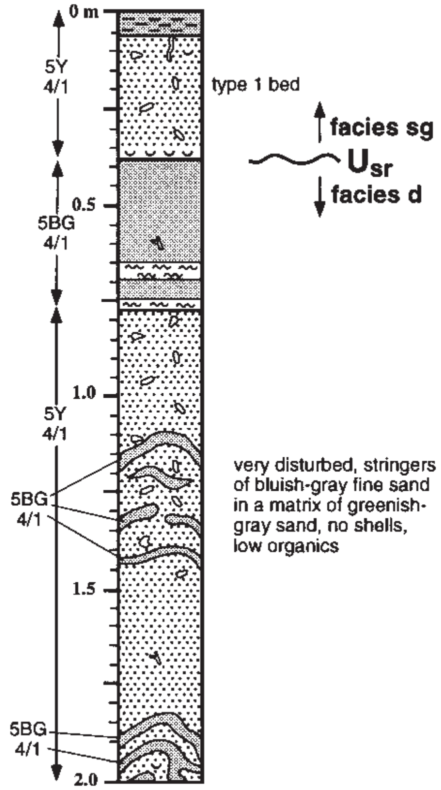


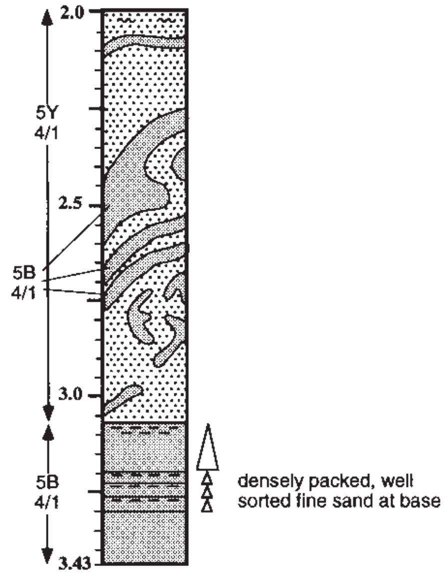
SBVC92-07
Water Depth = 58 m



Appendix A. Description of vibracores (continued).

SBVC92-08
Water Depth = 49 m

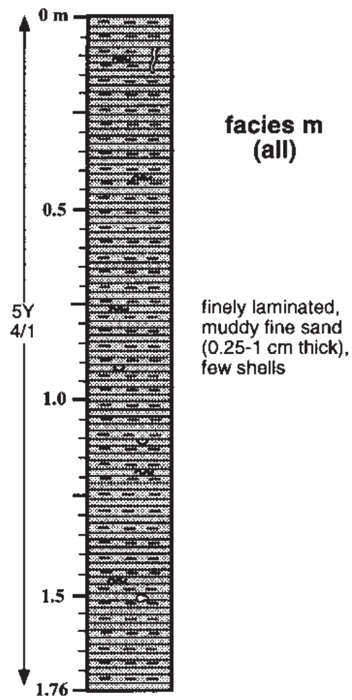




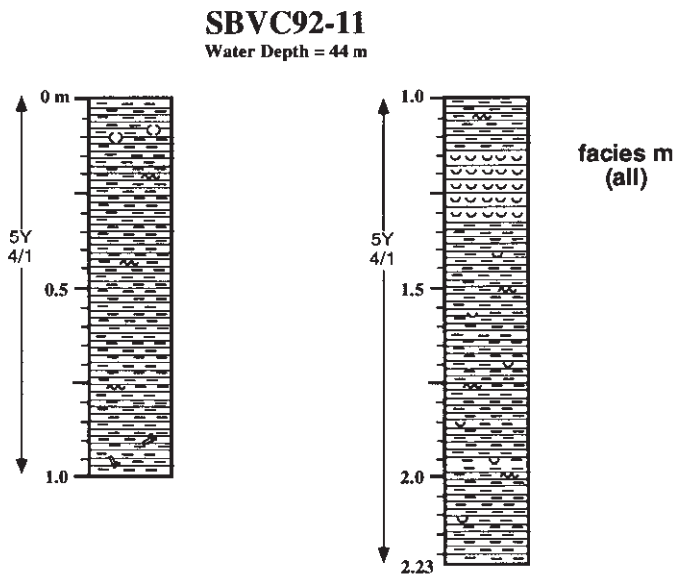
SBVC92-09
Water Depth = 33 m

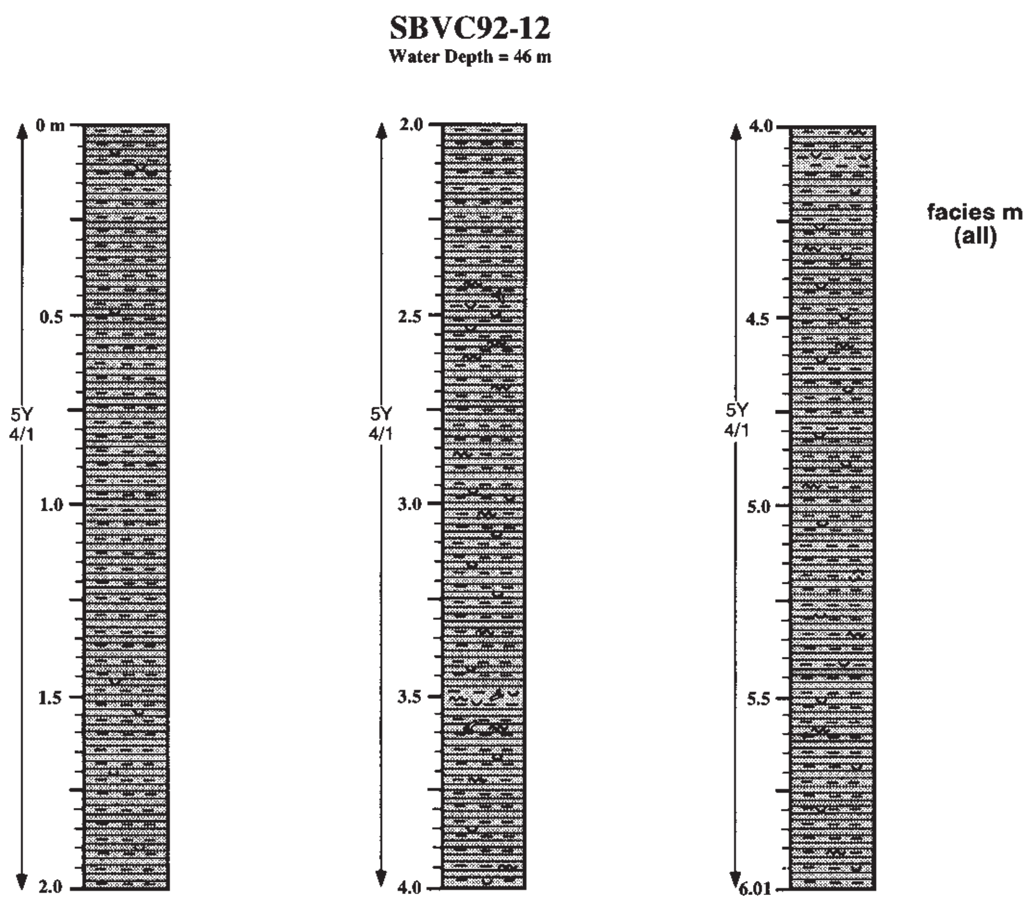
core not recovered

SBVC92-10
Water Depth = 53 m

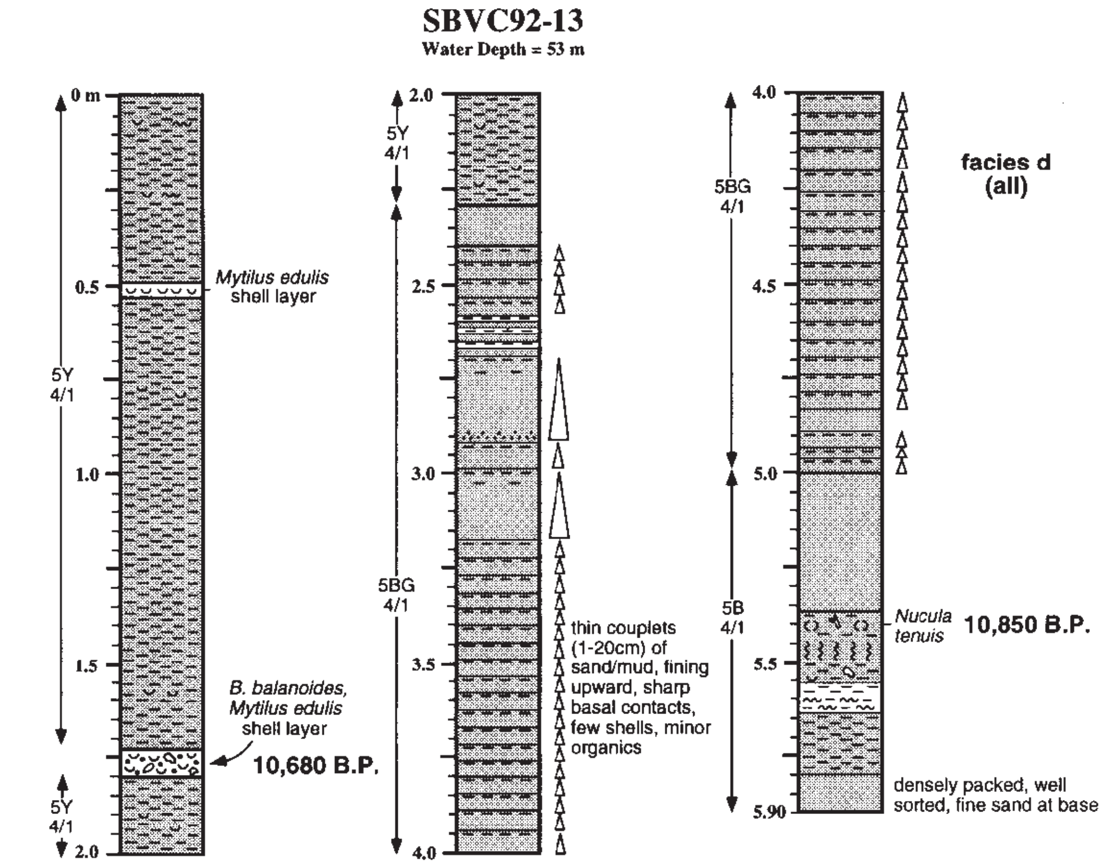


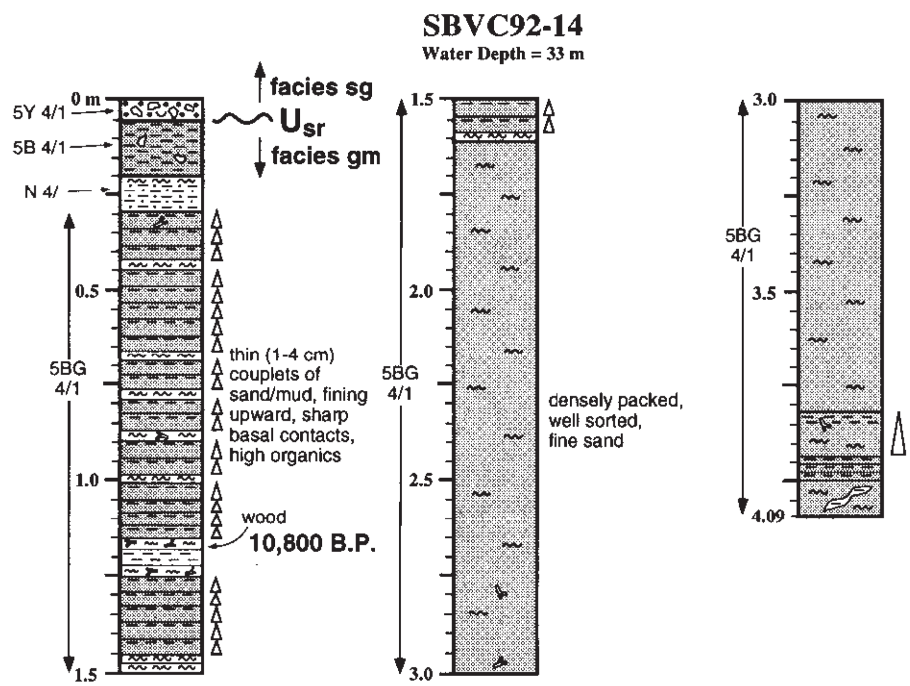
Appendix A. Description of vibracores (continued).



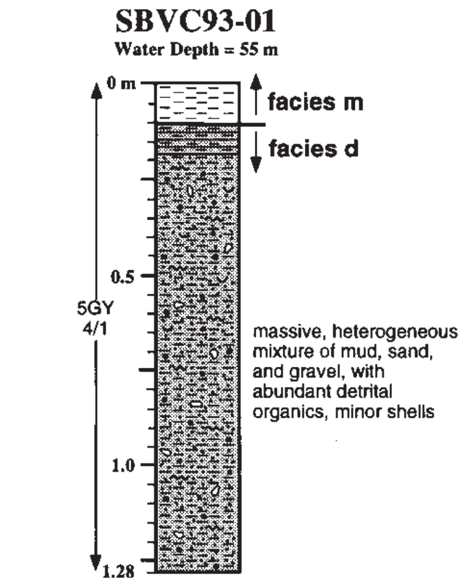


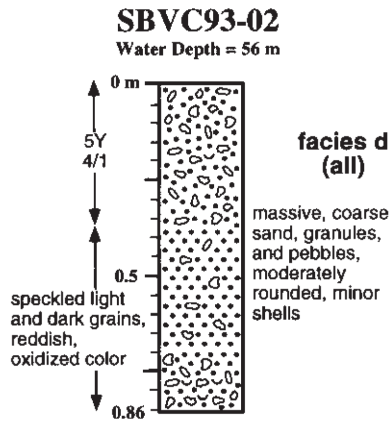
Appendix A. Description of vibracores (continued).

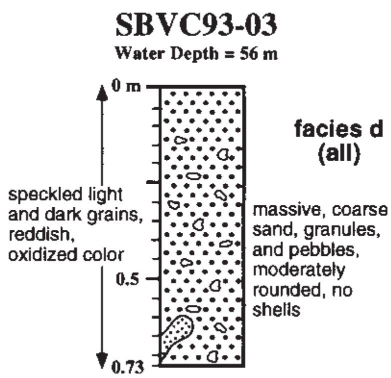


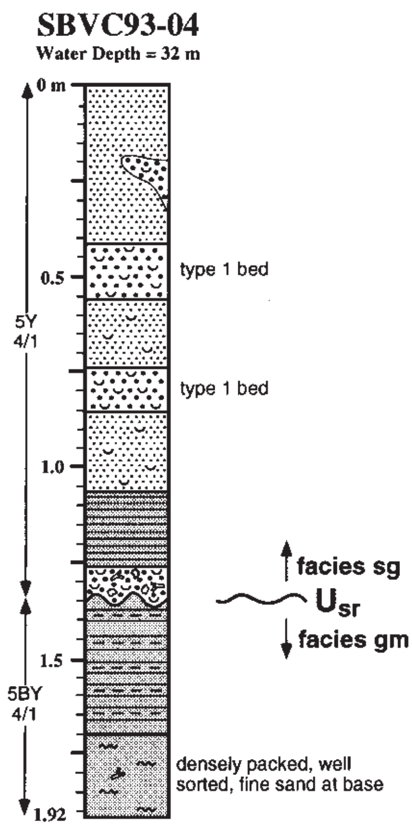


Appendix A. Description of vibracores (continued).

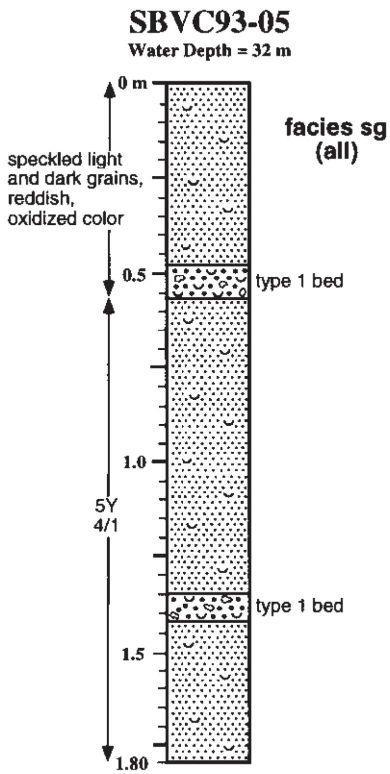


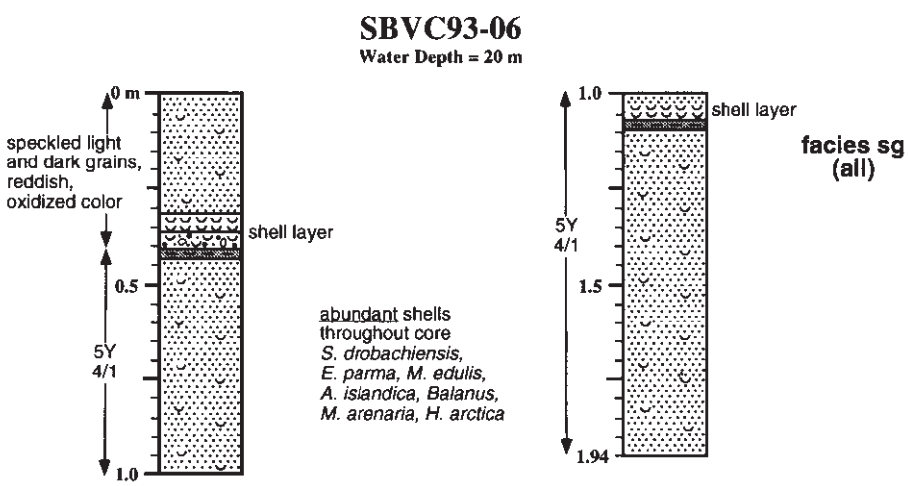




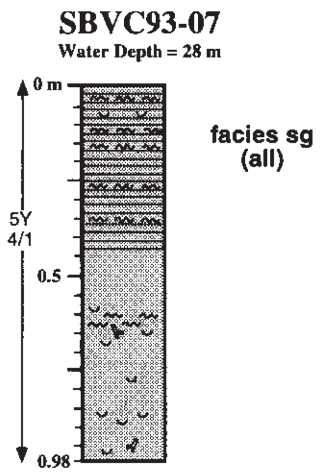


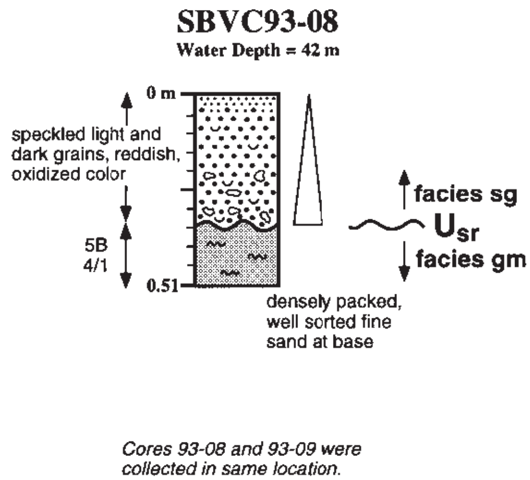
Appendix A. Description of vibracores (continued).

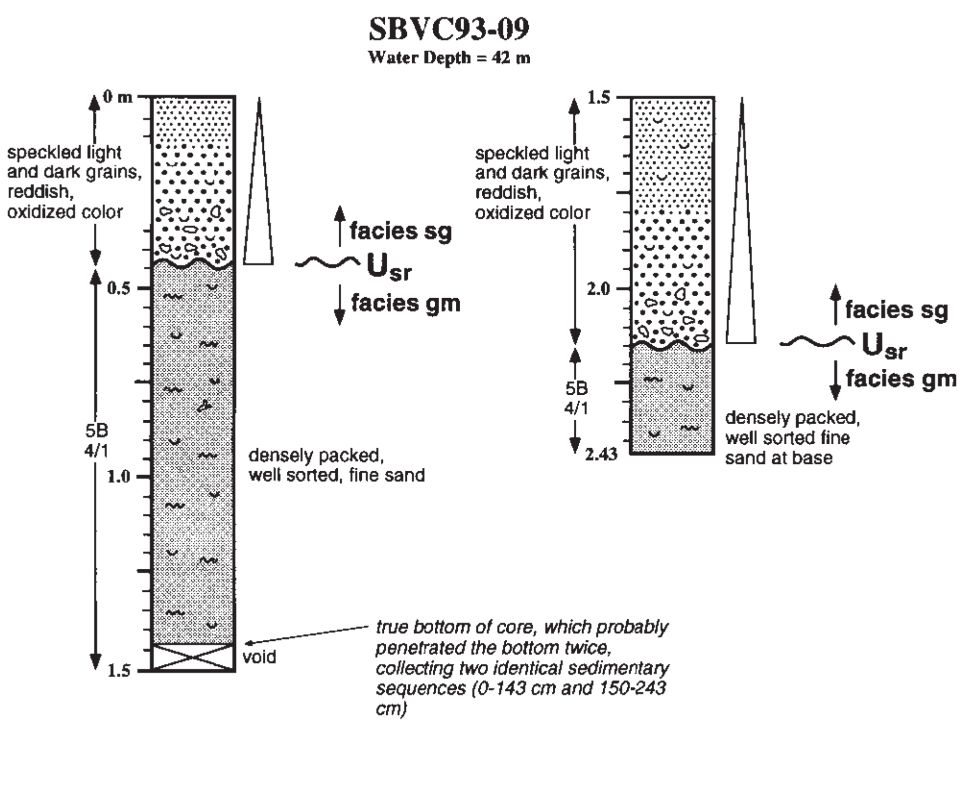




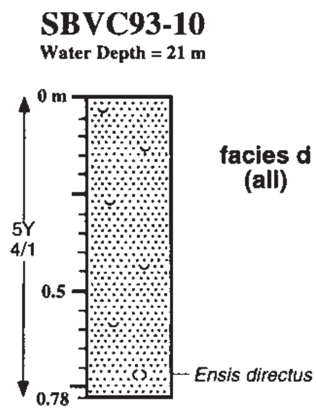
Appendix A. Description of vibracores (continued).

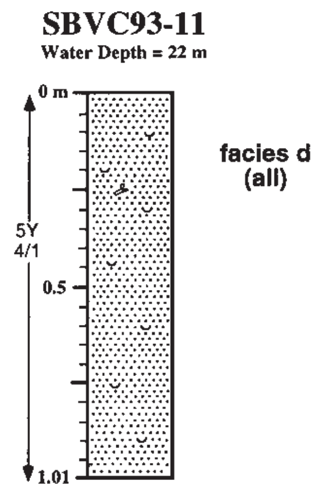


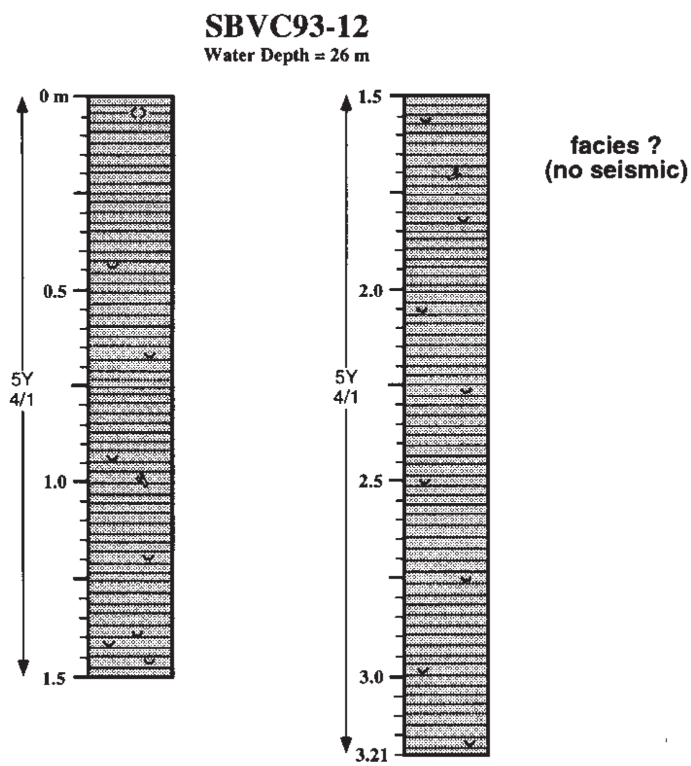




Appendix A. Description of vibracores (continued).

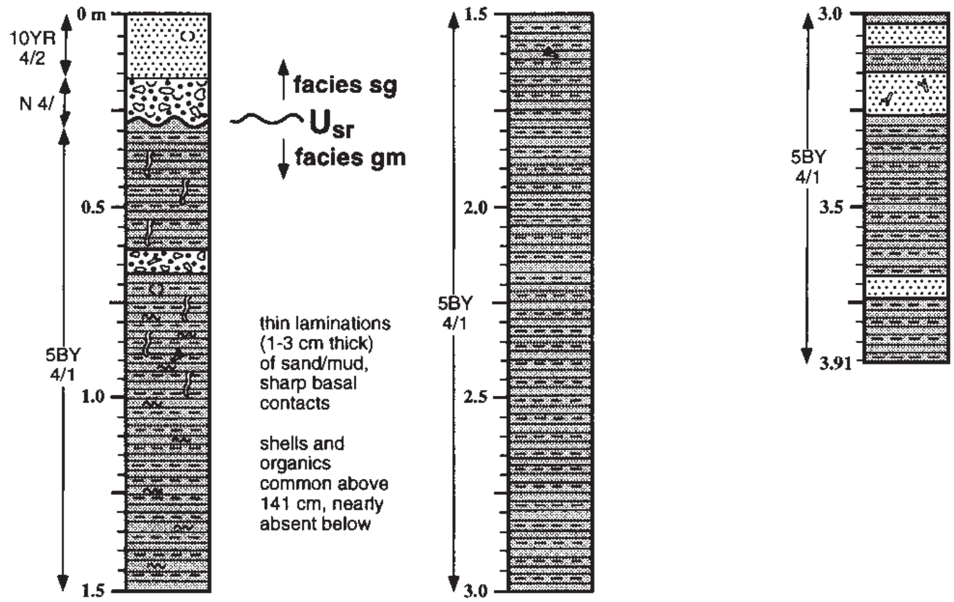




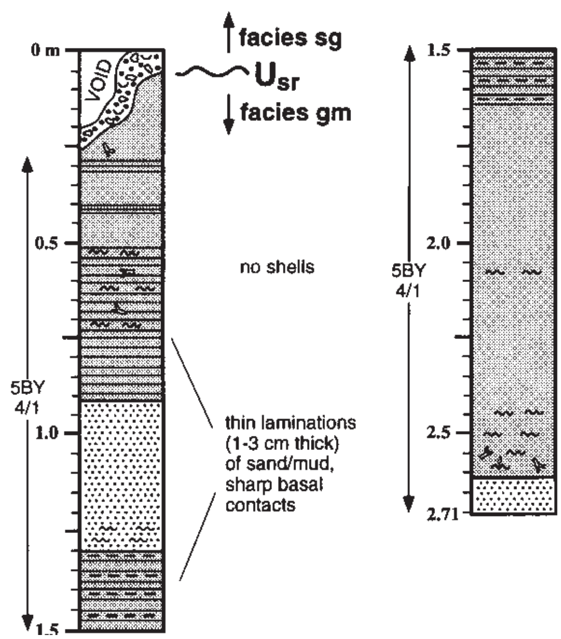


Appendix A. Description of vibracores (continued).

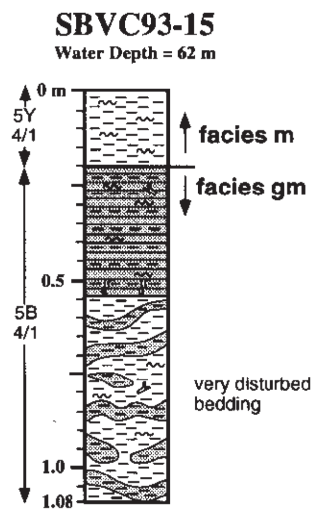
SBVC93-13
Water Depth = 33 m



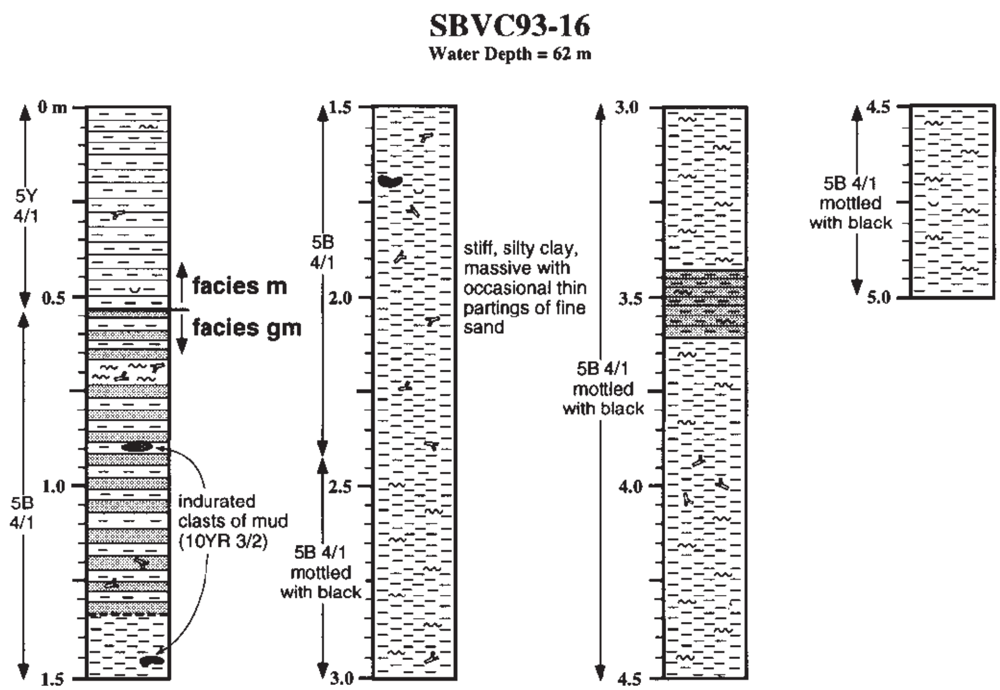
SBVC93-14
Water Depth = 35 m



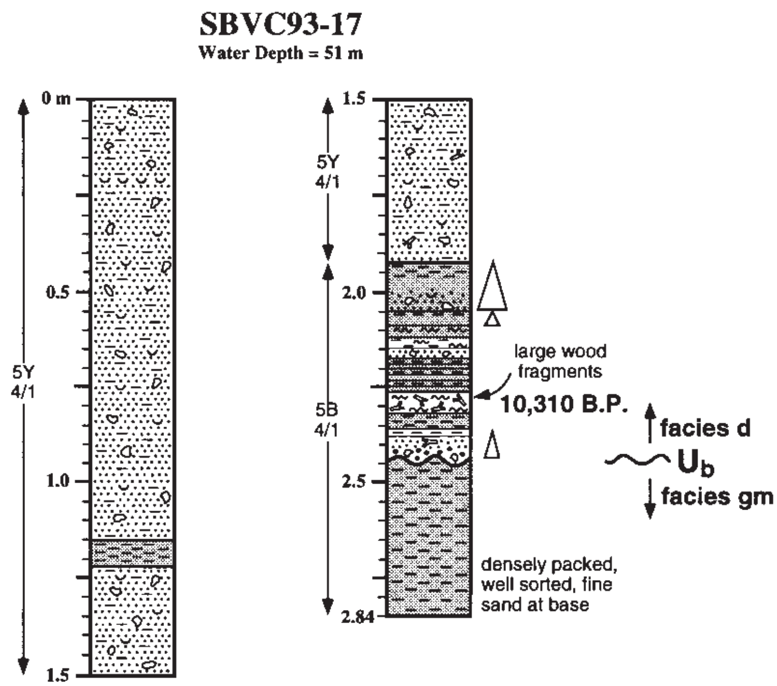
Appendix A. Description of vibracores (continued).

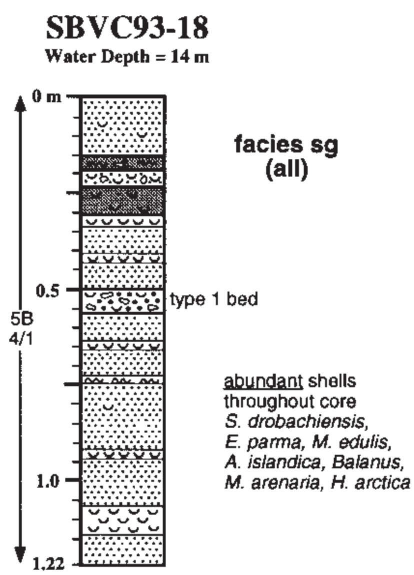


Cores 93-15 and 93-16 were collected in same location.



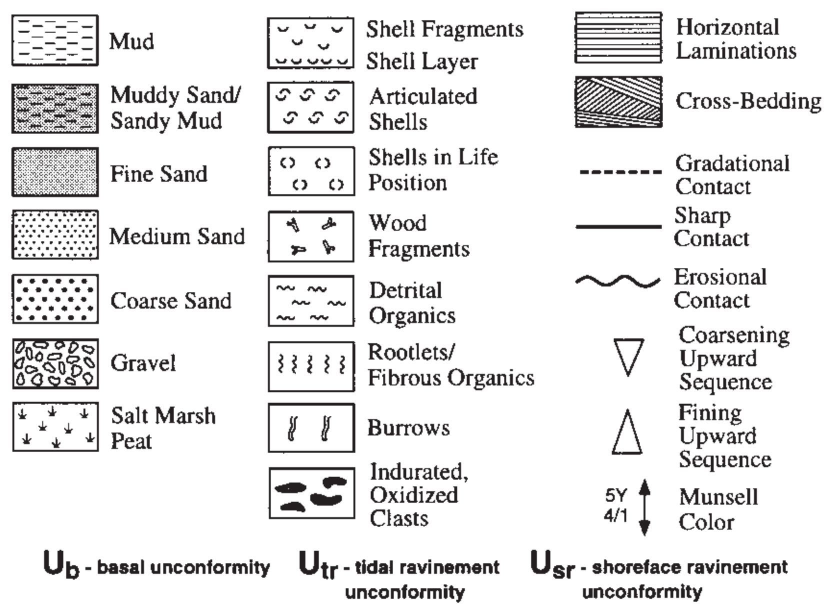
Appendix A. Description of vibracores (continued).





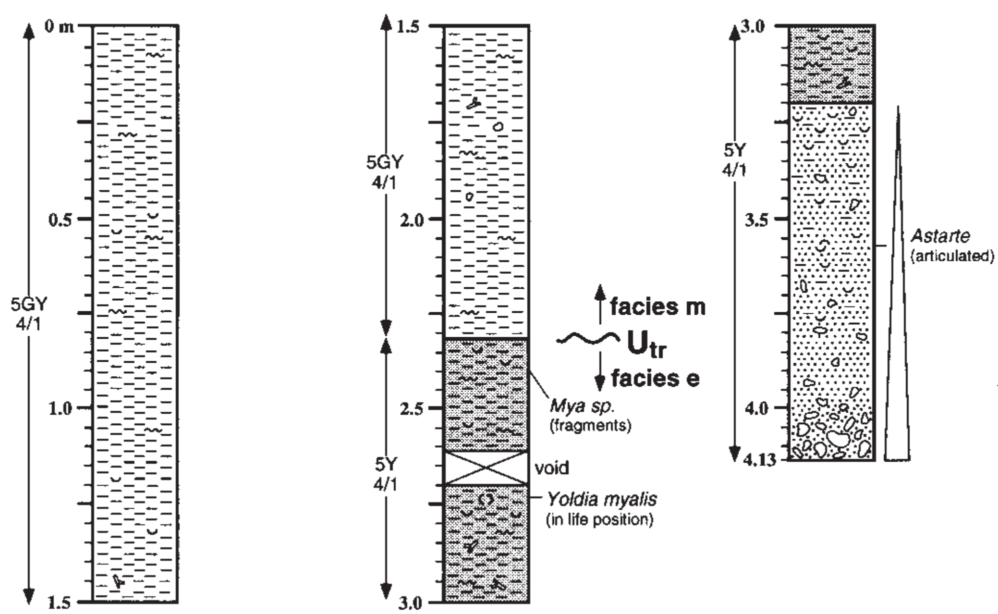
Appendix B. Description of Vibracores. Penobscot Bay

KEY TO CORE LOGS



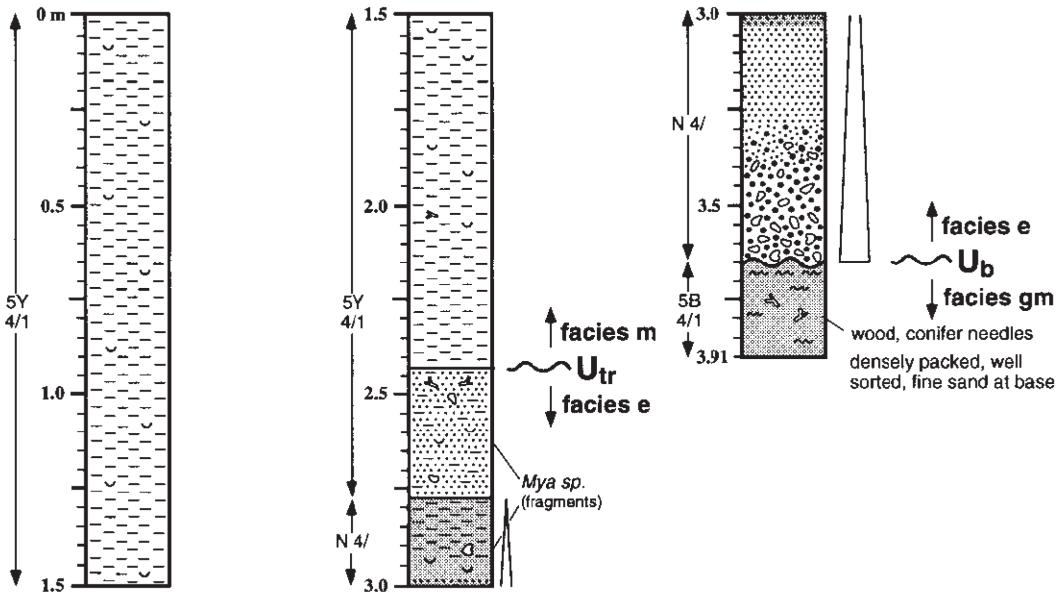
PBVC93-01

Water Depth = 19 m

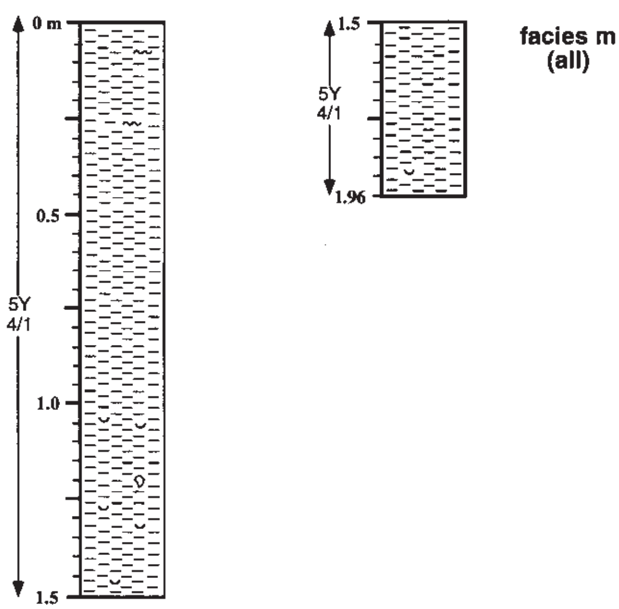


Appendix B. Description of vibracores (continued).

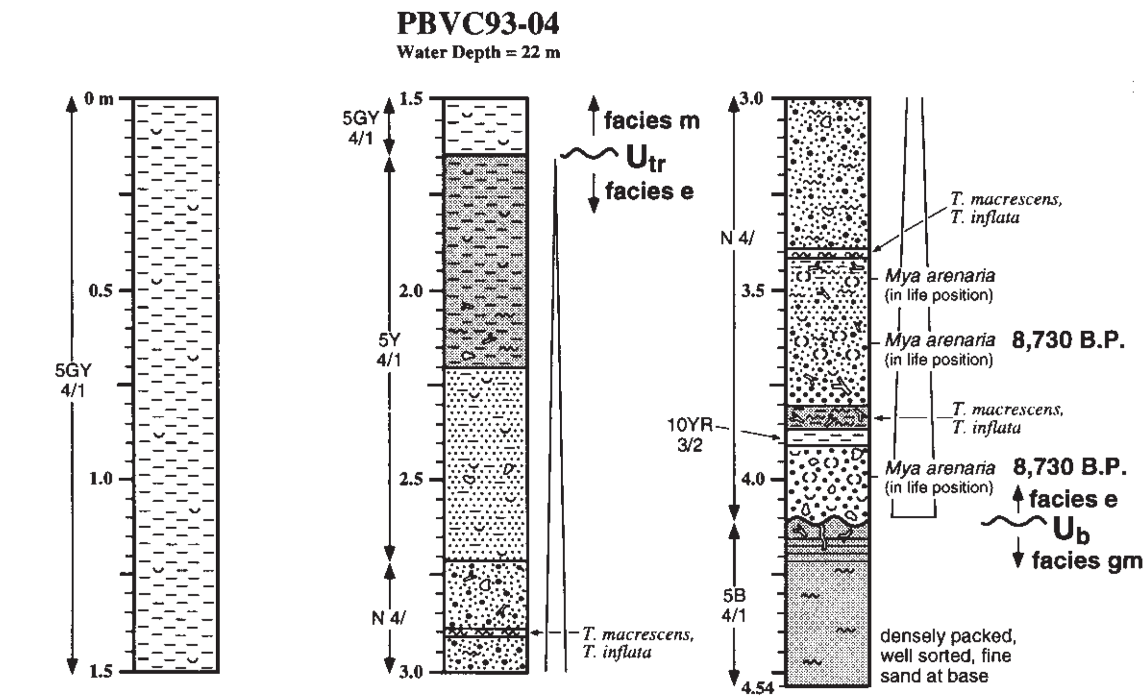
PBVC93-02
Water Depth = 20 m

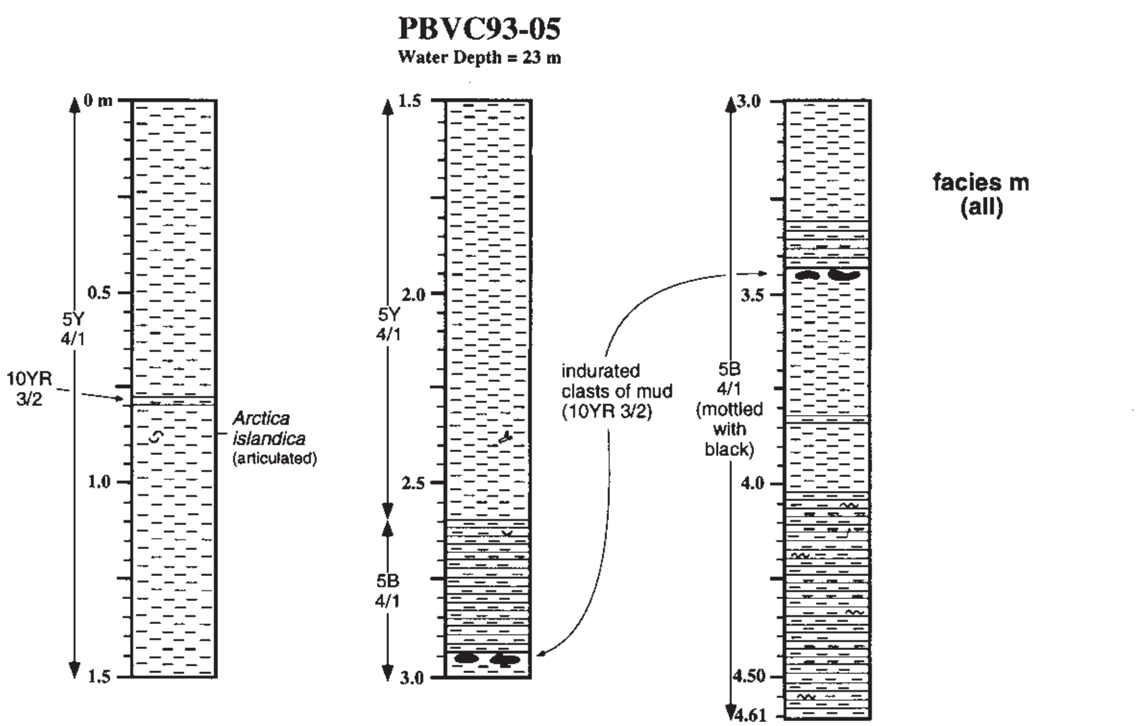


PBVC93-03
Water Depth = 22 m



Appendix B. Description of vibracores (continued).

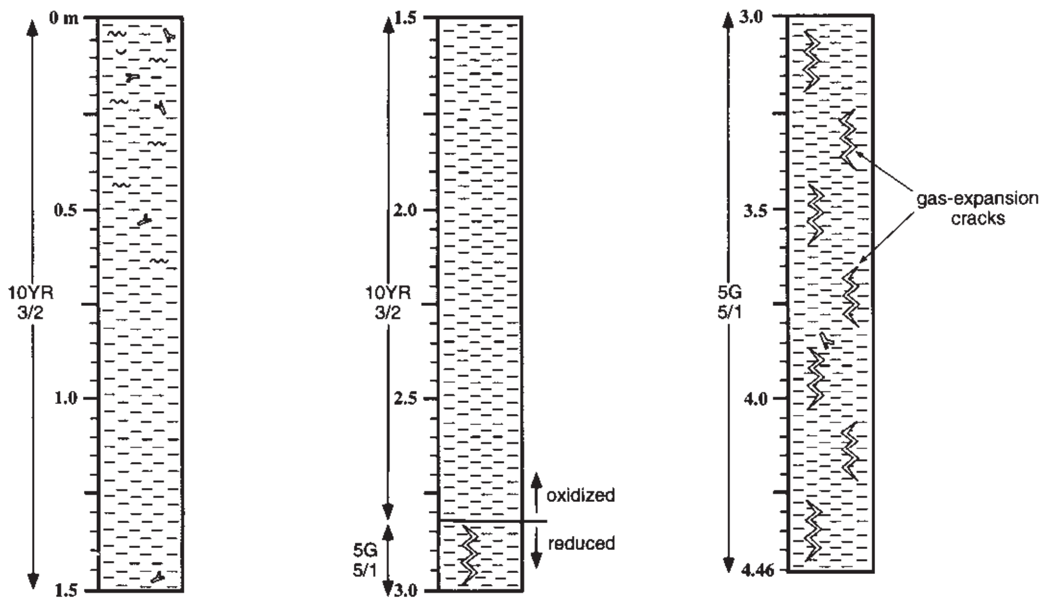




Appendix B. Description of vibracores (continued).

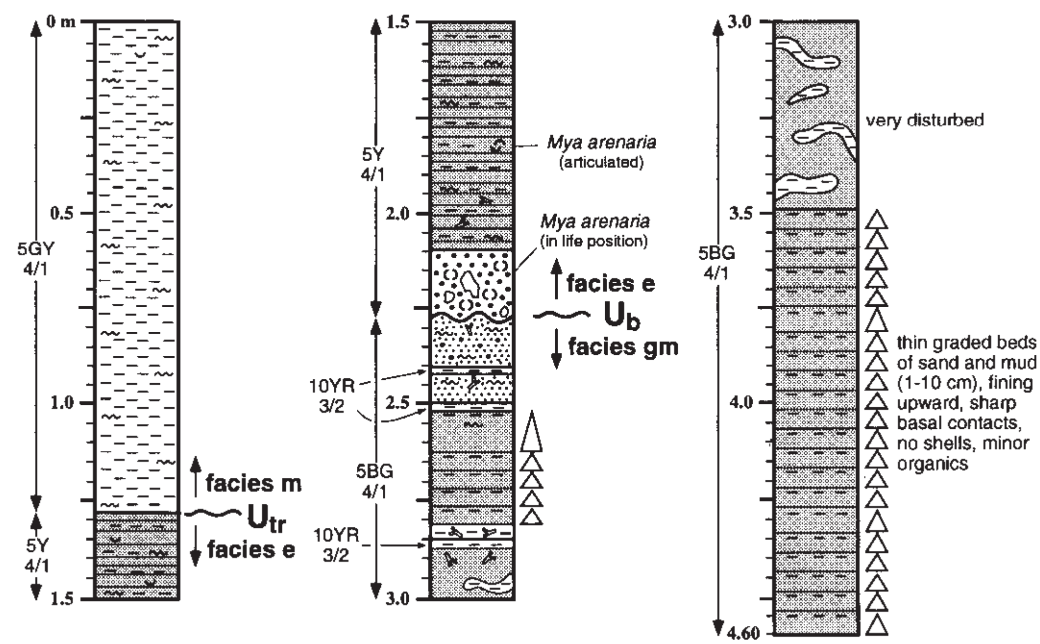
PBVC93-06

Water Depth = 38 m



PBVC93-07

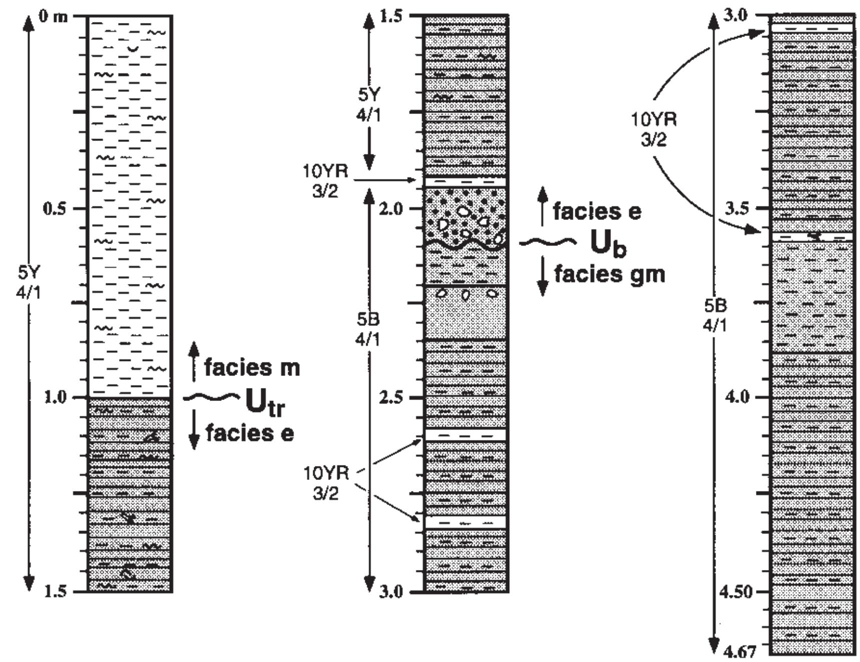
Water Depth = 22 m



Appendix B. Description of vibracores (continued).

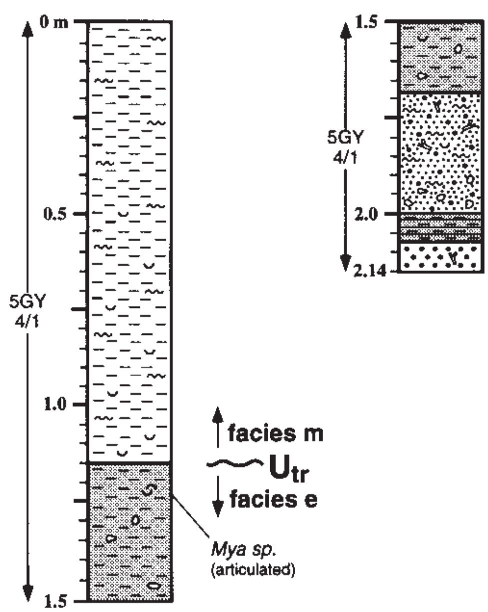
PBVC93-08

Water Depth = 23 m



PBVC93-09

Water Depth = 25 m



Appendix C. Vibracore locations and textural properties.

Kennebec River Paleodelta (1992)

SBVC92-01	Length (m)				Water Depth (m)			Location (Lat, Lon) (LORAN)	
	2.99				22			(43 42 04.6N, 69 49 27.4W) (13117.0, 25941.4)	
Sample (cm)	% H2O	% LOI	% G	% S	% M	Mean	Mode	Std. Dev.	Comments (Seismic Facies)
49	0.3	0.6	tr	93	7	1.6	1.0	1.0	poorly sorted, med. sand (SG)
58	3.6	1.0	1	83	16	2.8	3.0	0.7	mod. well sorted, fine sand (SG)
83	1.3	0.4	0	83	17	3.2	3.0	0.3	v. well sorted, v. fine sand (SG)
120	0.2	0.4	tr	95	5	1.8	1.5	0.8	mod. sorted, med. sand (SG)
125	5.0	0.9	tr	73	27	2.5	3.0	0.9	mod. sorted, fine sand (SG)
146	0.3	1.0	tr	84	16	2.3	1.25,3.25	1.0	mod. sorted, fine sand, bimodal (SG)
152	10.3	1.4	tr	64	37	2.7	1.25,3.25	0.9	mod. sorted, fine sand, bimodal (SG)
168	1.5	0.5	tr	82	18	3.2	3.5	0.6	mod. well sorted, v. fine sand (SG)
192	0.0	0.5	tr	96	4	0.8	0.8	0.6	mod. well sorted, coarse sand (SG)
200	2.7	2.5	tr	74	26	2.7	2.5	0.5	well sorted, fine sand (E)
208	1.5	2.1	tr	77	23	2.2	2.3	0.7	mod. well sorted, fine sand (E)
237	1.4	2.1	0	89	11	2.4	2.3	0.5	well sorted, fine sand (E)
253	6.6	1.5	1	78	21	2.5	2.5	0.6	mod. well sorted, fine sand (E)
260	23.0	4.8	0	10	90	2.7	2.5	0.6	mod. well sorted, fine sand (E)
275	23.3	4.6	tr	42	58	2.6	2.5	0.7	mod. well sorted, fine sand (E)
288	14.7	2.3	3	71	27	1.7	1.8	1.0	mod. sorted, med. sand (E)

SBVC92-02	Length (m)				Water Depth (m)			Location (Lat, Lon) (LORAN)	
	2.99				29			(43 41 47.3N, 69 48 15.7W) (13111.5, 25934.8)	
Sample (cm)	% H2O	% LOI	% G	% S	% M	Mean	Mode	Std. Dev.	Comments (Seismic Facies)
32	10.4	1.0	tr	91	9	1.96	2.00	0.67	mod. well sorted, med sand (SG)
59	23.1	2.9	tr	47	53	2.28	1.75,3.00	0.97	mod. sorted, fine sand, bimodal (SG)
70	5.2	0.7	1	91	8	0.9	0.3	1.1	poorly sorted, coarse sand (SG)
77	2.2	0.3	4	93	3	0.5	0.3	0.7	mod. well sorted, coarse sand (SG)
97	1.0	0.2	29	69	2	0.4	0.25,1.25	0.9	mod. sorted, coarse sand, bimodal (SG)
112	11.3	0.8	tr	88	12	2.4	2.3	0.5	well sorted, fine sand (GM)
145	11.7	0.7	0	80	20	2.8	2.8	0.4	well sorted, fine sand (GM)
190	9.4	0.4	0	83	17	2.8	2.8	0.4	well sorted, fine sand (GM)
209	13.3	0.8	0	30	71	3.3	3.5	0.3	v. well sorted, v. fine sand (GM)

SBVC92-03	**Length (m)**			**Water Depth (m)**				**Location (Lat, Lon) (LORAN)**
	2.92			22				(43 42 31.1N, 69 48 23.7W) (13107.5, 25939.2)

Sample (cm)	% H2O	% LOI	% G	% S	% M	Mean	Mode	Std. Dev.	Comments (Seismic Facies)
36	18.9	1.0	tr	76	25	3.0	3.0	0.4	well sorted, fine sand (SG)
66	14.8	0.0	tr	77	23	3.0	3.0	0.4	well sorted, v. fine sand (SG)
92	5.5	0.0	0	91	9	2.5	2.8	0.8	mod. sorted, fine sand (SG)
117	13.8	0.2	tr	84	16	3.0	3.0	0.6	mod. well sorted, fine sand (SG)
117 (#2)						2.9	3.0	0.5	mod. well sorted, fine sand (SG)
142	16.0	0.4	tr	85	15	3.0	3.0	0.7	mod. well sorted, fine sand (SG)
162	12.0	0.4	tr	83	17	2.1	3.0	1.2	poorly sorted, fine sand (SG)
172	1.6	0.2	1	92	7	-0.3	-1.0	1.1	poorly sorted, v. coarse sand (SG)
192	0.0	0.0	3	95	2	-0.2	-0.5	0.6	mod. well sorted, v. coarse sand (SG)
212	0.0	0.0	3	95	2	0.0	0.0	0.7	mod. well sorted, v. coarse sand (SG)
218	13.6	1.5	tr	54	46	2.3	2.8	1.1	poorly sorted, fine sand (E)
247	18.1	2.1	tr	46	55	1.9	2.0	1.2	poorly sorted, medium sand (E)
277	21.6	2.6	tr	31	69	1.2	1.0	1.1	poorly sorted, medium sand (E)
287	8.0	1.2	6	65	29	0.7	0.3	1.1	poorly sorted, coarse sand (E)

SBVC92-04	**Length (m)**			**Water Depth (m)**				**Location (Lat, Lon) (LORAN)**
	1.89			24				(43 42 24.7N, 69 47 38.8W) (13103.6, 25935.5)

Sample (cm)	% H2O	% LOI	% G	% S	% M	Mean	Mode	Std. Dev.	Comments (Seismic Facies)
32	16.1	0.8	0	77	23	3.0	3.0	0.5	well sorted, v. fine sand (SG)
52	2.4	0.2	45	51	4	0.5	2.75,-0.5	1.5	poorly sorted, coarse sand, bimodal (SG
72	2.0	0.2	22	76	2	0.0	-0.5	0.9	mod. sorted, v. coarse sand (SG)
84	16.9	2.0	0	59	41	2.5	0.25,2.75	1.1	poorly sorted, fine sand, bimodal (E)
98	15.1	1.8	0	60	40	2.7	3.3	0.9	mod. sorted, fine sand (E)
115	4.5	0.8	3	90	6	0.8	1.0	1.0	mod. sorted, coarse sand (E)
122	0.1	0.0	10	88	2	0.4	0.0	0.8	mod. sorted, coarse sand (E)
152	2.2	0.8	7	91	2	0.6	0.8	0.7	mod. well sorted, coarse sand (E)
177	0.1	0.0	5	91	4	0.4	0.3	0.7	mod. sorted, coarse sand (E)

SBVC92-05	**Length (m)**			**Water Depth (m)**				**Location (Lat, Lon) (LORAN)**
	1.54			18				(43 43 14.6N, 69 47 04.9W) (13094.6, 25937.5)

Sample (cm)	% H2O	% LOI	% G	% S	% M	Mean	Mode	Std. Dev.	Comments (Seismic Facies)
25	9.2	0.3	tr	95	5	1.1	1.3	0.7	mod. well sorted, medium sand (SG)
50	6.2	0.2	0	99	1	1.1	1.0	0.4	well sorted, medium sand (SG)
75	7.8	0.0	tr	98	2	1.0	1.0	0.4	well sorted, medium sand (SG)
100	14.4	0.3	tr	94	5	1.6	1.3	0.8	mod. sorted, medium sand (SG)
120	11.7	0.2	tr	98	2	1.3	1.5	0.5	well sorted, medium sand (SG)
128	14.4	0.7	tr	70	30	2.1	2.0	0.8	mod. sorted, fine sand (SG)
150	8.7	0.2	tr	99	0	1.1	1.3	0.6	mod. well sorted, medium sand (SG)

SBVC92-06

	Length (m)	Water Depth (m)	Location (Lat, Lon) (LORAN)
	3.79	58	(43 42 54.1N, 69 42 34.1W) (13069.3, 25917.1)

Sample (cm)	% H2O	% LOI	% G	% S	% M	Mean	Mode	Std. Dev.	Comments (Seismic Facies)
50	15.8	1.8	0	74	26	2.9	2.8	0.4	well sorted, fine sand (D)
150	17.3	-0.2	0	65	35	3.0	3.0	0.4	well sorted, fine sand (D)
250	12.7	1.7	1	53	46	3.1	3.0	0.4	well sorted, v. fine sand (D)
375	11.3	2.0	0	45	56	3.1	3.0	0.4	well sorted, v. fine sand (D)

SBVC92-07

	Length (m)	Water Depth (m)	Location (Lat, Lon) (LORAN)
	1.11	58	(43 42 51.0N, 69 42 39.6W) (13069.3, 25917.1)

SBVC92-08

	Length (m)	Water Depth (m)	Location (Lat, Lon) (LORAN)
	3.43	49	(43 42 59.0N, 69 42 51.4W) (13070.5, 25918.7)

Sample (cm)	% H2O	% LOI	% G	% S	% M	Mean	Mode	Std. Dev.	Comments (Seismic Facies)
30	8.3	0.7	0	84	16	1.6	1.75,0.25	1.1	poorly sorted, med. sand, bimodal (D)
46	13.1	0.9	tr	83	16	2.5	2.5	0.7	mod. well sorted, fine sand (D)
106	6.4	0.9	7	75	18	1.7	2.25,0.25	1.2	poorly sorted, med. sand, bimodal (D)
155	8.0	0.9	1	67	32	2.9	2.8	0.5	well sorted, fine sand (D)
215	10.0	1.0	0	63	37	2.9	2.8	0.4	well sorted, fine sand (D)
308	6.2	2.9	0	27	74	3.1	3.0	0.5	well sorted, v. fine sand (D)
318	0.3	0.5	tr	96	4	2.1	2.0	0.4	well sorted, fine sand (D)
338	9.3	0.8	tr	83	17	2.3	2.0	0.6	mod. well sorted, fine sand (D)

SBVC92-09 core not recovered

SBVC92-10

	Length (m)	Water Depth (m)	Location (Lat, Lon) (LORAN)
	1.76	53	(43 44 49.3N, 69 42 23.0W) (13055.4, 25926.4)

SBVC92-11

	Length (m)	Water Depth (m)	Location (Lat, Lon) (LORAN)
	2.23	46	(43 46 16.2N, 69 42 29.8W) (13046.4, 25934.4)

SBVC92-12

	Length (m)	Water Depth (m)	Location (Lat, Lon) (LORAN)
	6.01	46	(43 46 16.2N, 69 42 29.8W) (13046.4, 25934.4)

SBVC92-13	**Length (m)**				**Water Depth (m)**			**Location (Lat, Lon) (LORAN)**	
	5.90				53			(43 42 45.6N, 69 42 52.5W) (13072.0, 25917.6)	
Sample (cm)	% H2O	% LOI	% G	% S	% M	Mean	Mode	Std. Dev.	Comments (Seismic Facies)
25	10.8	1.2	1	84	15	2.3	2.5	0.7	mod. well sorted, fine sand (D)
75	9.5	0.9	tr	79	21	2.4	2.5	0.6	mod. well sorted, fine sand (D)
125	10.6	0.9	tr	82	18	2.3	2.3	0.7	mod. well sorted, fine sand (D)
175	8.2	0.7	1	85	14	2.2	2.3	0.7	mod. well sorted, fine sand (D)
222	8.6	0.9	tr	80	20	2.3	2.3	0.7	mod. well sorted, fine sand (D)
234	0.3	1.6	0	83	17	2.3	2.0	0.5	mod. well sorted, fine sand (D)
269	12.2	1.7	tr	20	80	2.9	3.5	0.9	mod. sorted, fine sand (D)
281	12.0	0.7	0	92	8	2.5	2.5	0.4	well sorted, fine sand (D)
291	4.9	0.5	0	97	3	2.0	2.0	0.4	well sorted, fine sand (D)
326	12.5	1.7	0	5	95				no RSA, muddy layer (D)
388	10.1	1.1	0	72	29	2.8	2.5	0.4	well sorted, fine sand (D)
522	0.2	0.9	0	94	6	2.6	2.5	0.4	well sorted, fine sand (D)
555	14.5	1.8	0	11	89	2.9	2.8	0.5	well sorted, fine sand (D)
565	11.8	1.8	0	17	83	2.9	2.8	0.4	well sorted, fine sand (D)

SBVC92-14	**Length (m)**				**Water Depth (m)**			**Location (Lat, Lon) (LORAN)**	
	4.09				33			(43 41 31.4N, 69 47 10.0W) (13106.5, 25928.8)	
Sample (cm)	% H2O	% LOI	% G	% S	% M	Mean	Mode	Std. Dev.	Comments (Seismic Facies)
52	2.6	0.8	0	71	29	3.1	3.0	0.4	well sorted, v. fine sand (GM)
80	12.6	1.6	0	5	95				no RSA (GM)
119	3.4	0.7	0	52	48	3.2	3.0	0.4	well sorted, v. fine sand (GM)
123	13.8	4.3	0	0	100				no RSA (GM)
138	6.4	0.8	0	50	50	3.3	3.5	0.3	v. well sorted, v. fine sand (GM)
167	7.2	1.0	0	58	42	3.0	2.8	0.5	well sorted, fine sand (GM)
267	5.6	0.9	0	65	36	3.0	2.8	0.4	well sorted, v. fine sand (GM)
367	8.6	1.0	0	67	33	3.0	2.8	0.5	well sorted, fine sand (GM)
383	8.4	1.6	0	48	53	3.0	3.0	0.4	well sorted, v. fine sand (GM)
391	0.3	0.6	0	90	10	2.1	2.0	0.6	mod. well sorted, fine sand (GM)

Kennebec River Paleodelta (1993)

SBVC93-01	**Length (m)**				**Water Depth (m)**			**Location (Lat, Lon) (LORAN)**	
	1.28				55			(43 42 48.9N, 69 42 48.2W) (13071.3, 25917.6)	
Sample (cm)	% H2O	% LOI	% G	% S	% M	Mean	Mode	Std. Dev.	Comments (Seismic Facies)
35	7.0	1.4	2	86	13	2.3	2.5	0.8	moderately sorted, fine sand (D)
105	8.1	1.2	1	80	19	2.4	2.8	0.8	moderately sorted, fine sand (D)

SBVC93-02 **Length (m)** 0.86 **Water Depth (m)** 56 **Location (Lat, Lon) (LORAN)** (43 38 45.3N, 69 46 11.6W) (13118.8, 25910.0)

Sample (cm)	% H2O	% LOI	% G	% S	% M	Mean	Mode	Std. Dev.	Comments (Seismic Facies)
10	5.8	1.2	61	36	3	-0.1	-0.5	0.6	mod. well sorted, v. coarse sand (D)
58	6.1	0.9	35	65	0	0.0	0.0	0.4	well sorted, v. coarse sand (D)

SBVC93-03 **Length (m)** 0.73 **Water Depth (m)** 56 **Location (Lat, Lon) (LORAN)** (43 39 10.3N. 69 46 10.0W) (13115.9, 25912.2)

Sample (cm)	% H2O	% LOI	% G	% S	% M	Mean	Mode	Std. Dev.	Comments (Seismic Facies)
SBVC93-03									
10	7.8	1.1	12	88	0	0.4	0.5	0.6	mod. well sorted, coarse sand (D)
70	6.3	0.9	19	77	4	0.7	1.0	0.8	mod. sorted, coarse sand (D)

SBVC93-04 **Length (m)** 1.92 **Water Depth (m)** 32 **Location (Lat, Lon) (LORAN)** (43 41 03.3N, 69 48 21.1W) (13116.9, 25931.3)

Sample (cm)	% H2O	% LOI	% G	% S	% M	Mean	Mode	Std. Dev.	Comments (Seismic Facies)
10	0.1	1.1	0	99	1	2.0	2.3	0.5	well sorted, medium sand (SG)
50	0.1	2.1	1	99	0	1.1	0.8	0.7	moderately sorted, medium sand (SG)
65	0.1	1.0	0	98	2	2.2	2.3	0.4	well sorted, fine sand (SG)
80	0.0	3.8	14	86	0	1.7	2.0	0.6	mod. well sorted, medium sand (SG)
95	0.0	1.0	3	95	3	2.1	2.3	0.6	mod. well sorted, fine sand (SG)
131	0.2	3.4	14	85	1	0.6	0..00	1.1	poorly sorted, coarse sand (SG)
146	0.2	1.1	0	91	9	2.7	2.8	0.4	well sorted, fine sand (GM)
175	0.1	0.9	0	98	2	2.2	2.3	0.4	well sorted, fine sand (GM)

SBVC93-05 **Length (m)** 1.80 **Water Depth (m)** 32 **Location (Lat, Lon) (LORAN)** (43 41 10.1N, 69 53 45.2W) (13149.6, 25955.0)

Sample (cm)	% H2O	% LOI	% G	% S	% M	Mean	Mode	Std. Dev.	Comments (Seismic Facies)
20	4.5	2.0	1	99	0	2.0	2.0	0.5	well sorted, medium sand (SG)
50	0.1	2.1	32	68	0	0.9	1.0	1.0	moderately sorted, coarse sand (SG)
95	3.9	2.6	2	99	0	2.0	2.3	0.5	mod. well sorted, medium sand (SG)
138	0.1	1.9	26	75	0	1.9	2.0	0.5	mod. well sorted, medium sand (SG)
150	0.1	1.6	0	100	0	2.1	2.3	0.4	well sorted, fine sand (SG)

SBVC93-06 **Length (m)** 1.94 **Water Depth (m)** 20 **Location (Lat, Lon) (LORAN)** (43 46 23.9N, 69 43 14.6W) (13050.1, 25938.1)

Sample (cm)	% H2O	% LOI	% G	% S	% M	Mean	Mode	Std. Dev.	Comments (Seismic Facies)
SBVC93-06									
10	5.4	1.4	6	94	0	1.7	1.8	0.4	well sorted, medium sand (SG)
75	7.7	1.4	1	97	2	2.0	1.8	0.5	well sorted, medium sand (SG)
153	9.7	2.0	4	95	1	2.1	2.3	0.6	moderately well sorted, fine sand (SG)

SBVC93-07	**Length (m)**	**Water Depth (m)**	**Location (Lat, Lon) (LORAN)**
	0.98	28	(43 43 58.2N, 69 44 06.7W) (13071.6, 25929.0)

Sample (cm)	% H2O	% LOI	% G	% S	% M	Mean	Mode	Std. Dev.	Comments (Seismic Facies)
15	12.7	1.9	0	99	1	2.6	2.5	0.3	v. well sorted, fine sand (SG)
50	9.6	1.1	0	97	3	2.6	2.5	0.3	v. well sorted, fine sand (SG)
90	8.3	1.0	1	97	2	2.6	2.8	0.3	v. well sorted, fine sand (SG)

SBVC93-08	**Length (m)**	**Water Depth (m)**	**Location (Lat, Lon) (LORAN)**
	0.51	42	(43 43 10.5N, 69 43 20.7W) (3072.2, 25921.7)

SBVC93-09	**Length (m)**	**Water Depth (m)**	**Location (Lat, Lon) (LORAN)**
	2.43	42	(43 43 09.3N, 69 43 22.3W) (13072.5, 25921.7)

Sample (cm)	% H2O	% LOI	% G	% S	% M	Mean	Mode	Std. Dev.	Comments (Seismic Facies)
5	0.1	1.0	1	99	0	1.4	1.5	0.5	well sorted, medium sand (SG)
41	0.1	0.9	9	91	0	0.5	1.0	0.8	moderately sorted, coarse sand (SG)
47	7.0	1.1	0	86	14	2.4	2.5	0.7	mod. well sorted, fine sand (GM)
110	7.7	1.2	0	86	14	2.3	2.5	0.6	mod. well sorted, fine sand (GM)

SBVC93-10	**Length (m)**	**Water Depth (m)**	**Location (Lat, Lon) (LORAN)**
	0.78	21	(43 43 55.2N, 69 53 25.4W) (13129.4, 25968.0)

Sample (cm)	% H2O	% LOI	% G	% S	% M	Mean	Mode	Std. Dev.	Comments (Seismic Facies)
10	6.8	0.9	0	97	3	1.6	1.8	0.6	mod. well sorted, medium sand (D)
70	11.1	1.2	0	99	2	1.6	1.8	0.5	well sorted, medium sand (D)

SBVC93-11	**Length (m)**	**Water Depth (m)**	**Location (Lat, Lon) (LORAN)**
	1.01	22	(43 43 57.9N, 69 53 26.3W) (13129.2, 25968.3)

Sample (cm)	% H2O	% LOI	% G	% S	% M	Mean	Mode	Std. Dev.	Comments (Seismic Facies)
10	8.5	1.2	0	97	3	1.9	2.0	0.5	mod. well sorted, medium sand (D)
40	10.1	0.9	0	98	2	1.7	1.8	0.5	mod. well sorted, medium sand (D)
95	10.2	0.8	0	98	2	1.7	1.8	0.6	mod. well sorted, medium sand (D)

SBVC93-12	**Length (m)**	**Water Depth (m)**	**Location (Lat, Lon) (LORAN)**
	3.21	26	(43 43 47.0N, 69 54 08.6W) (13134.8, 25970.4)

Sample (cm)	% H2O	% LOI	% G	% S	% M	Mean	Mode	Std. Dev.	Comments (Seismic Facies - unknown)
10	22.0	2.2	0	83	18	3.0	2.8	0.4	well sorted, fine sand
100	18.2	1.8	0	84	16	3.1	3.0	0.4	v. well sorted, v. fine sand
200	16.1	1.8	0	79	21	3.0	3.3	0.4	well sorted, v. fine sand
300	15.1	1.6	0	81	19	3.0	3.0	0.4	well sorted, fine sand

SBVC93-13 **Length (m)** 3.91 **Water Depth (m)** 33 **Location (Lat, Lon) (LORAN)** (43 41 03.6N, 69 48 07.8W) (13115.5, 25930.4)

Sample (cm)	% H2O	% LOI	% G	% S	% M	Mean	Mode	Std. Dev.	Comments (Seismic Facies)
8	0.1	1.2	2	96	2	1.9	2.0	0.5	well sorted, medium sand (SG)
20	0.1	4.4	62	39	0	0.4	-0.3	1.2	poorly sorted, coarse sand (SG)
40	3.6	2.5	0	28	72	2.4	2.5	0.9	mod. sorted, fine sand (GM)
64	0.5	1.6	4	62	34	1.8	1.8	0.8	mod. sorted, medium sand (GM)
76	0.1	1.4	0	79	21	3.0	2.8	0.4	well sorted, fine sand (GM)
160	5.5	2.2	0	9	91	3.1	3.5	0.6	mod. well sorted, v. fine sand (GM)
320	0.2	1.1	0	95	5	2.3	2.3	0.4	well sorted, fine sand (GM)

SBVC93-14 **Length (m)** 2.71 **Water Depth (m)** 35 **Location (Lat, Lon) (LORAN)** (43 40 54.4N, 69 48 16.5W) (13117.4, 25930.2)

Sample (cm)	% H2O	% LOI	% G	% S	% M	Mean	Mode	Std. Dev.	Comments (Seismic Facies)
5	0.2	1.2	5	90	5	0.5	0.3	0.8	mod. sorted, coarse sand (SG)
35	3.7	1.8	0	31	69	3.2	3.0	0.4	well sorted, v. fine sand (GM)
100	0.2	1.1	0	85	16	2.9	2.8	0.4	well sorted, fine sand (GM)
150	0.6	1.8	0	35	66	3.1	3.3	0.5	well sorted, v. fine sand (GM)
250	0.8	1.6	0	66	34	2.9	2.8	0.4	well sorted, fine sand (GM)

SBVC93-15 **Length (m)** 1.08 **Water Depth (m)** 62 **Location (Lat, Lon) (LORAN)** (43 42 11.2N, 69 43 07.4W) (13077.4, 25915.6)

SBVC93-16 **Length (m)** 5.00 **Water Depth (m)** 62 **Location (Lat, Lon) (LORAN)** (43 42 12.1N, 69 43 09.3W) (13077.4, 25915.6)

SBVC93-17 **Length (m)** 2.84 **Water Depth (m)** 51 **Location (Lat, Lon) (LORAN)** (43 42 30.9N, 69 43 24.7W) (13177.0, 25918.5)

Sample (cm)	% H2O	% LOI	% G	% S	% M	Mean	Mode	Std. Dev.	Comments (Seismic Facies)
10	10.9	2.4	22	59	19	1.9	0.25, 2.0	1.2	poorly sorted, med. sand, bimodal (D)
70	6.0	1.3	5	75	20	2.5	2.3	0.8	mod. sorted, fine sand (D)
130	4.6	1.5	8	65	27	1.9	0, 2.50	1.2	poorly sorted, med. sand, bimodal (D)
188	6.6	1.6	7	58	35	1.8	2.8	1.3	poorly sorted, med. sand (D)
203	2.1	1.8	8	58	33	2.2	2.5	1.0	mod. sorted, fine sand (D)
242	2.0	0.2	22	76	2	0.0	-0.5	0.9	mod. sorted, v. coarse sand (D)
250	4.7	1.2	0	50	50	2.7	2.8	0.7	mod. well sorted, fine sand (GM)
280	2.9	1.2	0	59	41	2.6	2.5	0.8	mod. sorted, fine sand (GM)

SBVC93-18	**Length (m)**	**Water Depth (m)**	**Location (Lat, Lon) (LORAN)**
	1.22	14	(43 43 17.7N, 69 46 00.5W) (13087.7, 25933.3)

Sample (cm)	% H2O	% LOI	% G	% S	% M	Mean	Mode	Std. Dev.	Comments (Seismic Facies)
10	7.7	0.9	0	97	3	2.6	2.5	0.4	well sorted, fine sand
44	6.9	0.8	0	100	0	2.5	2.5	0.2	v. well sorted, fine sand
54	0.1	1.3	12	89	0	0.9	0.8	0.6	moderately well sorted, coarse sand
67	11.8	1.1	0	99	1	2.7	2.8	0.3	v. well sorted, fine sand
100	7.4	1.2	0	97	3	2.6	2.8	0.4	well sorted, fine sand

Penobscot Bay (1993)

PBVC93-01	**Length (m)**	**Water Depth (m)**	**Location (Lat, Lon) (LORAN)**
	4.13	19	(44 24 56.6N, 69 50 12.3W) (12469.3, 25935.2)

Sample (cm)	% H2O	% LOI	% G	% S	% M	Mean	Mode	Std. Dev.	Comments (Seismic Facies)
250	26.6	5.9	5	30	65	0.9	1.0	0.8	mod. sorted, coarse sand (E)
300	27.4	6.5	0	8	92				no RSA (E)
325	14.1	4.3	10	50	41	0.9	1.0	0.9	mod. sorted, coarse sand (E)
395	0.8	1.5	34	57	9	0.7	0.8	0.7	mod. sorted, coarse sand (E)

PBVC93-02	**Length (m)**	**Water Depth (m)**	**Location (Lat, Lon) (LORAN)**
	3.91	20	(44 24 55.6N, 68 50 44.2W) (12472.3, 25936.8)

Sample (cm)	% H2O	% LOI	% G	% S	% M	Mean	Mode	Std. Dev.	Comments (Seismic Facies)
250	32.2	5.2	5	51	43	1.5	1.3	1.0	mod. sorted, coarse sand (E)
280	18.8	2.6	5	65	30	1.4	1.3	1.0	mod. sorted, medium sand (E)
335	9.4	1.4	5	90	6	1.1	1.3	0.8	mod. sorted, medium sand (E)
362	3.9	1.1	38	60	2	0.5	0.3	0.7	mod. well sorted, coarse sand (E)
368	13.8	1.7	0	92	8	2.7	2.8	0.3	v. well sorted, fine sand (GM)
378	16.8	3.0	0	76	24	3.0	3.0	0.4	well sorted, fine sand (GM)

PBVC93-03	**Length (m)**	**Water Depth (m)**	**Location (Lat, Lon) (LORAN)**
	1.96	22	(44 24 52.8N, 68 51 24.4W) (12476.3, 25938.7)

PBVC93-04		**Length (m)**			**Water Depth (m)**			**Location (Lat, Lon) (LORAN)**	
		4.54			22			(44 24 51.7N, 68 51 24.0W) (12476.4, 25938.6)	
Sample (cm)	% H2O	% LOI	% G	% S	% M	Mean	Mode	Std. Dev.	Comments (Seismic Facies)
227	19.3	2.6	4	72	24	1.2	1.0	1.0	mod. sorted, medium sand (E)
265	16.7	2.4	6	78	16	1.4	1.3	0.9	mod. sorted, medium sand (E)
275	12.4	2.1	3	82	16	1.4	1.3	0.9	mod. sorted, medium sand (E)
335	12.3	1.8	4	90	6	1.0	1.0	0.9	mod. sorted, medium sand (E)
345	17.0	2.5	0	78	22	2.0	2.8	1.1	poorly sorted, fine sand (E)
368	14.0	2.4	7	82	11	1.3	1.0	1.0	poorly sorted, medium sand (E)
382	5.7	1.6	9	87	3	0.8	0.5	0.8	mod. sorted, coarse sand (E)
388	17.4	4.0	0	73	27	2.1	3.0	1.1	poorly sorted, fine sand (E)
402	5.1	1.4	36	57	7	1.3	1.0	0.9	mod. sorted, medium sand (E)
425	13.2	1.2	0	97	3	2.1	2.3	0.4	well sorted, fine sand (GM)
450	12.5	1.2	0	95	6	2.1	2.0	0.5	well sorted, fine sand (GM)

PBVC93-05	**Length (m)**	**Water Depth (m)**	**Location (Lat, Lon) (LORAN)**
	4.61	23	(44 24 57.1N, 68 53 34.2W) (12487.6, 25945.9)

PBVC93-06		**Length (m)**			**Water Depth (m)**			**Location (Lat, Lon) (LORAN)**	
		4.46			38			(44 22 34.3N, 68 55 41.6W) (12516.9, 25941.9)	
Sample (cm)	% H2O	% LOI	% G	% S	% M	Mean	Mode	Std. Dev.	Comments (Seismic Facies)
10	21.6	3.0	0	1	99	9.2	9.6	2.1	poorly sorted, silty clay (M)
50	20.6	2.0	0	1	99	10.1	8.8	2.8	poorly sorted, silty clay (M)
100	26.2	2.6	0	1	99	9.9	9.6	3.2	poorly sorted, silty clay (M)
150	20.1	1.8	0	1	99	10.3	9.8	2.6	poorly sorted, silty clay (M)
200	24.3	2.4	0	1	99	9.4	9.8	1.8	poorly sorted, silty clay (M)
250	23.4	2.4	0	0	100	10.1	10.5	1.9	poorly sorted, silty clay (M)
300	26.0	2.1	0	0	100	10.5	8.9	2.5	poorly sorted, silty clay (M) (NG)
350	23.9	1.9	0	0	100	10.9	10.1	1.7	poorly sorted, silty clay (M) (NG)
350 (#2)	24.1	2.3							
400	23.9	2.2	0	0	100	10.2	9.9	3.3	poorly sorted, silty clay (M) (NG)
400 (#2)	23.9	1.8							
440	17.4	2.4	0	1	100	10.5	10.6	2.0	poorly sorted, silty clay (M) (NG)
	17.6	2.6							

PBVC93-07	**Length (m)**	**Water Depth (m)**	**Location (Lat, Lon) (LORAN)**
	4.60	22	(44 24 33.6N, 68 52 37.2W) (12485.3, 25941.1)

PBVC93-08	**Length (m)**				**Water Depth (m)**				**Location (Lat, Lon) (LORAN)**
	4.67				23				(44 24 42.0N, 68 52 23.4W) (12483.0, 25941.0)
Sample (cm)	% H2O	% LOI	% G	% S	% M	Mean	Mode	Std. Dev.	Comments (Seismic Facies)
212	10.5	1.8	0	24	76	2.6	2.5	0.9	moderately sorted, fine sand
245	12.3	1.8	0	8	92				
375	12.6	1.3	0	49	51	3.3	3.3	0.3	v. well sorted, v. fine sand
392	13.2	1.7	0	11	89				
419	11.8	1.4	0	48	52	3.3	3.3	0.3	v. well sorted, v. fine sand

PBVC93-09	**Length (m)**	**Water Depth (m)**	**Location (Lat, Lon) (LORAN)**
	2.14	25	(44 26 34.8N, 68 50 29.9W) (12458.8, 25943.5)