



State of New Jersey

Christine Todd Whitman
Governor

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Robert C. Shinn, Jr.
Commissioner

October 31, 1995.

Mr. Roger V. Amato
Minerals Management Service
U.S. Dept. of the Interior
381 Elden St.
Herndon, VA 22070-4817

Dear Roger,

Enclosed you will find the materials prepared during Year 3 of the Offshore Beach Replenishment Sands Cooperative Study. A table of contents is included. Below is a brief description of the materials.

The IMCS Technical Reports are stand-alone, finished products, contracted as deliverables from Rutgers IMCS for Year 3 (Phase II, Task 4). They are examples on a small scale of information needed to perform an environmental assessment of a potential borrow area. The Invertebrates and Substrates Study was released last Spring. I believe you already have a copy. The Fishes Study has just been submitted to the IMCS for publication. The final version will be forwarded as soon as it is available.

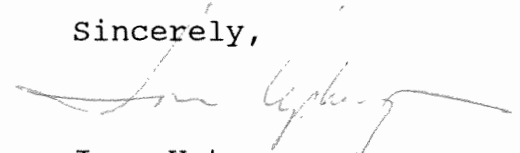
The evaluation of Beach Haven Ridge in the mid-1970s as a potential site for a nuclear generating station and ongoing studies related to the LEO-15 site provided several extensive databases for present-day analysis. As a result, the cost of data collection for the enclosed studies (in both time and dollars) was completely eliminated.

The vibracore analyses, the draft volume analyses of the two major shoal features, and the condensed digital seismic line are components of what will be a more comprehensive volume estimate and integrated seismic/lithologic analysis (Phase II, Tasks 1 and 2). The enclosed materials are the building blocks. The vibracore locations map is included for your reference.

As mentioned in my letter of October 19, Task III is now shared by several of us. Products related to Task III (e.g. 1)cost and grain size comparison of onshore and offshore, State and Federal waters, and 2)map of Federal waters of less than 60 feet water depth) will be prepared as part of our Year 4 work.

I look forward to hearing from you regarding any questions or comments about these materials or the ongoing work.

Sincerely,

A handwritten signature in cursive script, appearing to read "Jane Uptegrove".

Jane Uptegrove
Project Manager

c: Haig Kasabach, State Geologist
Richard Dalton, Chief,
Bureau of Geology and Topography

enc.

Table of Contents

1. "Characterization of non-target invertebrates and substrates from trawl collections during 1991-1992 at Beach Haven Ridge (LEO-15) and adjacent sites in Great Bay and on the inner continental shelf off New Jersey", Technical Report #95-09, Rutgers Institute of Marine and Coastal Sciences.
2. "Fishes in the vicinity of Beach Haven Ridge: Annual and seasonal patterns of abundance during the early 1970s", Technical Report #95-XX, Rutgers Institute of Marine and Coastal Sciences.
3. Executive Summary of the two studies (Kenneth Able, IMCS).
4. Lithologic analyses of vibracores from the study area offshore of Townsends Inlet, Cores AV-01 through AV-20. Lab notes for lithology of AV-12 are submitted in lieu of the computer-generated format. Analyses performed by Peter Smith and Matt Goss, Rutgers University.
5. Draft volume estimates of the Avalon and Inner Shoals, located in the study area (provided by Peter Smith).
6. Condensed digital seismic line from the study area (provided by Jeffrey Waldner and David Hall, NJGS).
7. Vibracore location map, to accompany lithologic descriptions (prepared by Zehdreh Allen-Lafayette, NJGS).

Executive Summary

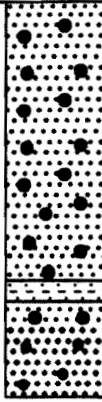
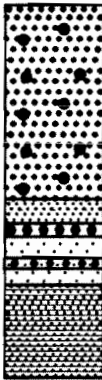
Sand ridges and the adjacent area of the inner continental shelf off New Jersey are sources of sand for beach nourishment and other uses. At the same time, these habitats and nearshore areas appear to be important spawning, nursery and migratory paths for a variety of resident and transitory macroinvertebrates and fishes. In an attempt to improve our understanding of the fauna of this area we have summarized existing data for a sand ridge (Beach Haven Ridge) and the adjacent inner shelf off southern New Jersey from two sources: 1) observations of the hydrography, substrate and benthic macroinvertebrates based on studies conducted during 1991 and 1992, and 2) extensive collections of fish eggs, larvae, juveniles and adults during 1972 - 1975.

Hydrography at the site is seasonally variable with highest temperatures and lowest dissolved oxygen during the summer. The substrate is highly variable especially in the immediate vicinity of the ridge. Mollusk shell debris, primarily surf clam valves, was the most abundant substrate category by weight, especially at the deeper portions of the ridge. The species composition of the macroinvertebrates at the ridge was more similar to deeper portions of the continental shelf than the adjacent estuary.

For the fishes, the species composition was relatively rich, with 93 species in 47 families represented at the ridge and the adjacent inner shelf. Pronounced seasonal variation in numerical abundance was common for all life history stages and most species. Abundance of eggs and larvae peaked in the summer while juveniles were most abundant in the fall. Pronounced annual variation in abundance was evident for most species during the three years of the study.

Depth (m)	Stratigraphic Section	Composite	Sample	Fossils	Color	Facies	Lithological Description
0		AVC-021			2.5Y 7/3		Interbedded coarse to very coarse sand and gravel beds which vary from 5-40 cm in thickness.
1		AVC-022					
2		AVC-023		☛	Black	Upper Sand Ridge	Sediment in the lower portion of the core sections is saturated with a black, oily substance.
2		AVC-024			5Y 4/1		
3		AVC-025			Black		
3		AVC-027			2.5Y 7/3		
3		AVC-028		☛	Black		
4							
5							
6							
7							

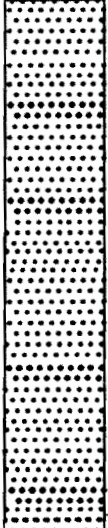






CORE: AV-01 Recovery Date: 9-3-94
 Latitude: 39° 07' 15.56" Longitude: 74° 38' 10.72"
 Describers: Peter C. Smith & Matthew Goss

Depth (m)	Stratigraphic Section	Composite	Sample	Fossils	Color	Facies	Lithological Description		
0		AVC-001	001			Upper Sand Ridge	Coarse to very coarse sand and gravel, with pebbles.		
1		AVC-002	002	☛	2.5Y 5/4 Light Olive Brown				
		AVC-003	003						
2		AVC-004	004		N7/Lt. Gray				Silty, fine sand.
		AVC-004	005	☛	5Y 6/1 Gray				Coarse sandy gravel and pebbles, bioturbated.
		AVC-004	006	☛	5B 5/1 Bluish Gray				Gravelly coarse sand, sulfur smell.
3		AVC-005	007			Upper Sand Ridge	Gravelly, coarse sand.		
4		AVC-005	008	☛	5Y 6/3				
		5	AVC-006	009		5GY 7/1	Nearshore/ Estuarine	Silty medium sand with gravel.	
AVC-006			010		5GY 4/1	Coarse gravel.			
AVC-006			011		5Y 6/1	Fine to medium sand.			
AVC-006			012		5GY 6/1	Sandy gravel with rounded quartz fragments.			
AVC-006			012		5Y 6/1	Fine to medium sand.			
6		AVC-007	013	☛	N4/		Fossil rich, muddy, quartzose sand.		
7									

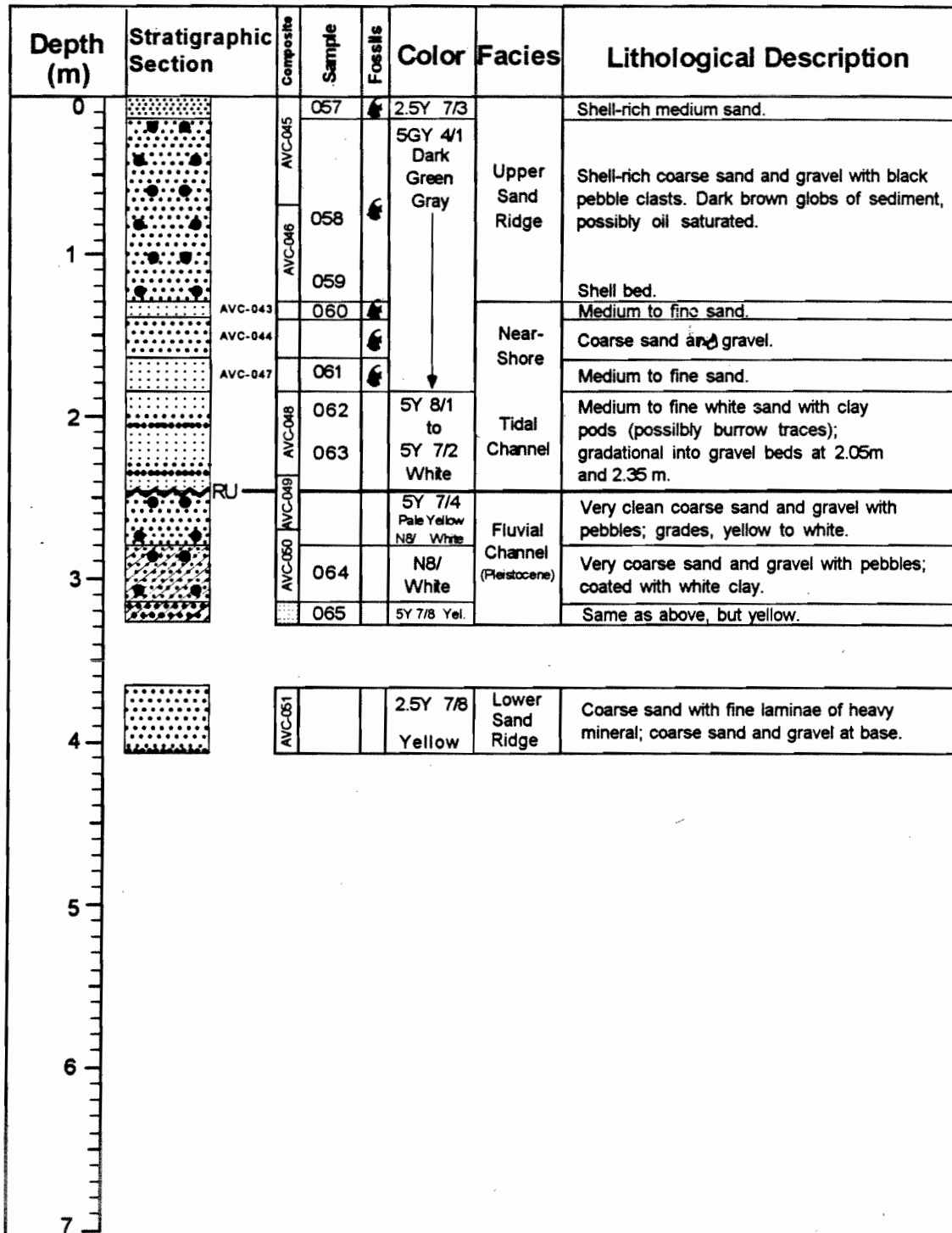
CORE: AV-02 Recovery Date: 9-7-94

Latitude: 39° 07' 49.26" Longitude: 74° 37' 32.33"

Describers: Peter C. Smith & Matthew Goss

Depth (m)	Stratigraphic Section	Composite	Sample	Fossils	Color	Facies	Lithological Description
0		AVC-008	014		2.5Y 7/3 Pale Yellow	Upper Sand Ridge	Medium to coarse bedded sand and gravel, with only a few pebbles. Some heavy mineral laminations are visible.
0.5			015				
1		016					
1.5		017					
2		018					
2.5		019					
3		020					
3.5							
4							
4.5							
5							
5.5							
6							
6.5							
7							

CORE: AV-03 Recovery Date: 9-3-94
Latitude: 39° 07' 43.39" Longitude: 74° 35' 53.35"
Describers: Peter C. Smith & Matthew Goss



CORE: AV-04

Recovery Date: 9-3-94

Latitude: 39° 07' 08.89"

Longitude: 74° 36' 32.88"

Describers: Peter C. Smith & Matthew Goss

RU: Regional Unconformity

Depth (m)	Stratigraphic Section	Composite	Sample	Fossils	Color	Facies	Lithological Description	
0		066	066		5Y 7/1 Light Gray	Shelf Sand	Well sorted medium sand.	
			067		5Y 3/1 V. Dark Gray	Estuarine	Green clay with occasional laminations of sand, no shells or odor, black band at surface, bioturbated.	
1		AVC-062	068		5Y 7/1 Light Gray	Tidal Channel	Medium to coarse sand with gravel.	
			069		5Y 7/1 Light Gray		Well sorted medium sand with some gravel clasts, coarsens downward.	
2		063	070		N 5/ Gray		Color contact only.	
			071		2.5Y 7/3 Pale Yellow		Well sorted medium sand with burrows in the upper portion. Burrows are filled with fine sand and silt.	
			072				1.83-1.87 m. is a clay laminae underlain by coarse gravel. Clay is N3/, V. Dark Gray, and very dense.	
			073		N5/ Gray			Burrow at 2.2 m.
3		AVC-064	074				N5/ Gray	Estuarine
			075					
4		AVC-065	077		N5/ Gray		Estuarine	Shell-rich muddy sand.
			078					Medium to coarse sand and gravel with shell hash, possible lignite (peat).
		AVC-066	079		5BG 4/1 Dark Greenish Gray			
	AVC-067							
5								
6								
7								

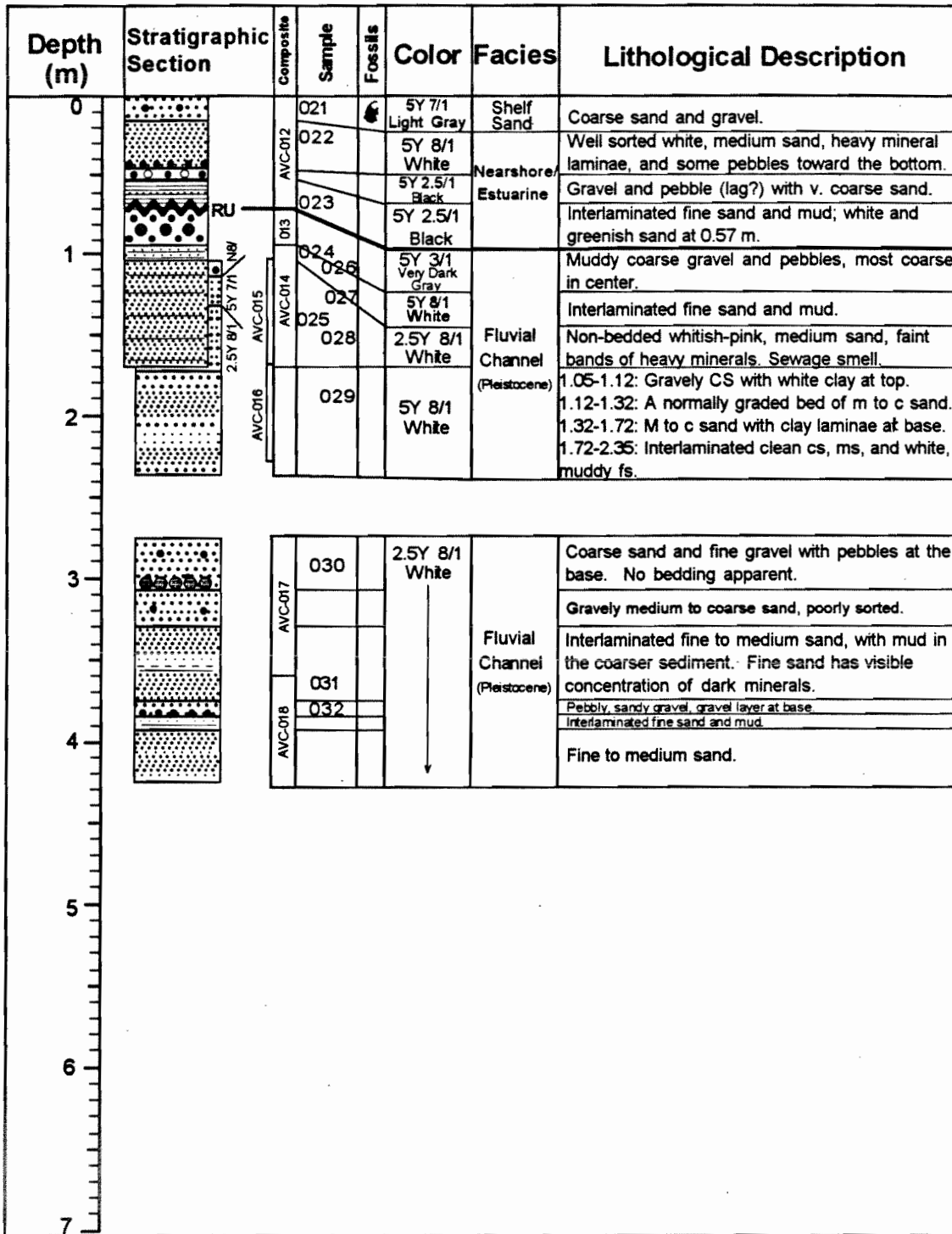
CORE: AV-05

Recovery Date: 8-31-94

Latitude: 39° 10' 18.80"

Longitude: 74° 33' 05.28"

Describers: Peter C. Smith & Matthew Goss



CORE: AV-06

Recovery Date: 9-3-94

Latitude: 39° 07' 39.22"

Longitude: 74° 36' 38.01"

Describers: Peter C. Smith & Matthew Goss

RU: Regional Unconformity

Depth (m)	Stratigraphic Section	Composite	Sample	Fossils	Color	Facies	Lithological Description
0		AVC-068 AVC-069 AVC-061 AVC-060 AVC-062 AVC-063	080		2.5Y 7/3 Pale Yellow	Upper Sand Ridge	Medium to coarse sand, sorted and clean, with shell. Slightly orange at top, with a color change at the bottom. Bedding not apparent.
1			081		N3/ V Dark Gray		
			082				
			086				
			083				
			087				
2			084				
			088				
			085				
			089				
3		AVC-064 AVC-065 AVC-066 AVC-067	090			2.5Y 8/2 Pale Yellow	Upper Sand Ridge
4			091		N8/ Gray	Whitish medium sand, little gravel.	
			092		N3/	Coarsens downward to coarse sand and gravel. Some blackened sediment.	
			093				
			094		N4/		
5			095		Medium to coarse sand, little gravel. Oil globs.		
6							
7							

CORE: AV-07

Recovery Date: 9-6-94

Latitude: 39° 05' 21.69"

Longitude: 74° 34' 04.38"

Describers: Peter C. Smith & Matthew Goss

Depth (m)	Stratigraphic Section	Composite	Sample	Fossils	Color	Facies	Lithological Description	
0		AVC-068	096		2.5Y 7/4	Upper Sand Ridge	Clean coarse sand and gravel.	
			097		2.5Y 8/2 Pale Yellow		Clean medium sand.	
1		AVC-069	098		N4/ Dark Gray		Gravelly coarse sand.	
			099		N4/ Dark Gray		Medium sand at the top, grading to coarse sand at the bottom.	
2		AVC-070	100		N4/ Dark Gray 5Y 6/3 Pale Olive		Upper Sand Ridge	Medium to coarse sand, with shelly gravel beds at 2.2 m and 3.1 m.
			101					
			102		2.5Y 7/4 Pale Yellow			
3		AVC-072	103		5Y 4/1 Dark Gray			Sediment is poorly laminated from 3.2 m to 3.5 m.
					5B 6/1 Bluish Gray 5GY 6/1		Nearshore/ Estuarine	Gray clay at the top; sand-silt-clay laminations beneath.
4								
5								
6								
7								

CORE: AV-08

Recovery Date: 9-6-94

Latitude: 39° 07' 34.37"

Longitude: 74° 31' 37.05"

Describers: Peter C. Smith & Matthew Goss

Depth (m)	Stratigraphic Section	Composite	Sample	Fossils	Color	Facies	Lithological Description	
0			034		5Y 7/1 Light Gray	Shelf Sand	Fine sand.	
					5Y 7/1 Light Gray		Medium to coarse sand, grades into next bed.	
					N4/7 Dark Gray		Bioturbated clay, hard and dense.	
			AVC-028	035		5Y 5/1 Gray	Nearshore/ Estuarine	Medium sand, clean, quartzose, no shells.
1				036		5Y 7/1 Gray		Clean, coarse quartz sand.
						5Y 5/1 Gray		Well sorted medium sand, bioturbated, with clay filled burrows.
			028	037		5Y 5/1 Gray		
			AVC-030			5Y 5/1 Gray		Pebbly, gravely coarse sand.
2				038		5Y 8/1 White		
			AVC-031	039			Tidal Channel	Interlaminated coarse sand and gravel, with well-rounded pebbles and a white clay pod @ 2.45 m.
3						N8/		
			AVC-032	040		2.5Y 8/1		Gravelly, medium to coarse sand.
			AVC-033	041		N7/ Light Gray		Medium sand.
4			AVC-034	042		N8/ White		Very coarse gravel and pebble lag, grading to very coarse sand /fine gravel with a white clay matrix. Bottom 2 cm is stained orange.
			043		2.5Y 5/6 Orange	Coastal Plain (Pleistocene)	Interlaminated yellow silt and clay in sharp contact with overlying sediments. Bottom is black clay.	
			044		2.5Y 7/8 Yellow			
					2.5Y 5/1 Gray			
5								
6								
7								

CORE: AV-09

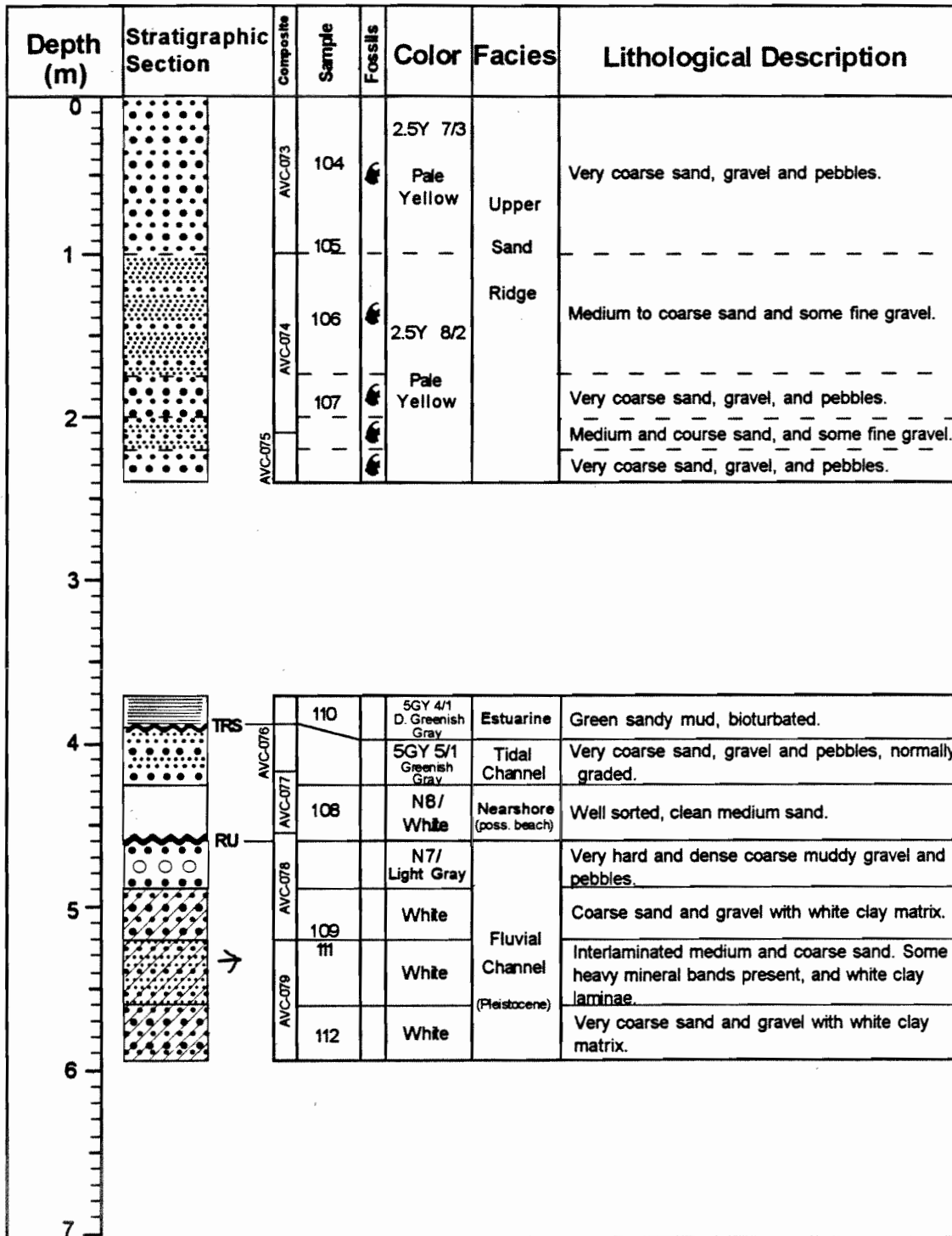
Latitude: 39° 03' 22.40"

Recovery Date: 9-2-94

Longitude: 74° 41' 12.62"

Describers: Peter C. Smith & Matthew Goss

RU: Regional Unconformity



CORE: AV-10

Recovery Date: 9-6-94

Latitude: 39° 07' 26.42"

Longitude: 74° 32' 11.82"

Describers: Peter C. Smith & Matthew Goss

RU: Regional Unconformity

TRS: Tidal Ravinement Surface

Depth (m)	Stratigraphic Section	Composite	Sample	Fossils	Color	Facies	Lithological Description	
0		AVC-080	113		5G 4/1 Dark Greenish Gray	Shelf Sand	Medium to fine, mottled, silty, bioturbated sand.	
			114					Sandy mud, with 3 cm bed of coarse sand and gravel at top.
			AVC-081	115		5Y 8/1 White	Tidal Channel	Clean medium to coarse sand, laminated, with a bed of gravel near the top.
1				116		5G 4/1 D. Gr. Gray		Indistinctly bedded muddy sand. Relatively clean 4 cm bed of sand at 0.93 m.
			AVC-082			N6/ Gray	Fluvial Channel (Pleistocene)	Very coarse sand, gravel and pebbles which fines downward to medium sand.
				117				
			AVC-083	118		5Y 8/1 5Y 7/1 N6/		Clean medium to fine sand; burrow trace at 1.6m.
2				119				
			AVC-084			5G 4/1 D. Gr. Gray	Tidal Channel	Interlaminated fine sand, silt, and clay. Bioturbated. Reverse graded coarse sand and gravel. 1 cm clay laminae at base
				120		5G 4/1 5Y 8/1 White		Coarse sand, gravel and pebbles with dark clay staining sediment grains.
3			AVC-085	121			Fluvial Channel (Pleistocene)	Clean medium to coarse sand, massive, with thin burrow or root traces. and some gravelly laminae.
				122				
			AVC-086			2.5Y 7/2 Light Gray		Clean medium to coarse sand with some gravelly laminae.
4			123		N6/ Gray			
5								
6								
7								

CORE: AV-11

Recovery Date: 8-30-94

Latitude: 39° 11' 01.82"

Longitude: 74° 35' 32.03"

Describers: Peter C. Smith & Matthew Goss

RU: Regional Unconformity

TRS: Tidal Ravinement Surface

Depth (m)	Stratigraphic Section	Composite	Sample	Fossils	Color	Facies	Lithological Description
0		AVC-093	130		2.5Y 8.2	Upper Sand	Medium to coarse sand.
			131		2.5Y 5/2		Slightly silty fine to medium sand.
1		AVC-095	132		2.5Y 7/3 Pale Yellow	Ridge	Coarse sand and gravel with much coarser grained sand and gravel at top and bottom.
			133		N5/ Gray		Whitish gray medium sand.
2		AVC-094	134		N5/1 Gray	Estuarine	Coarse sand and fine gravel in sharp contact with the underlying muds.
					5BG 4/1 Dark Greenish Gray		Interlaminated and bioturbated fine sand, silt and clay with a gravel pod at 1.83 m.
3		AVC-096			N4/ Gray	LAG	Very coarse sand and gravel. Prob. coring lag.
					5BG 4/1 Blueish Gray		Interlaminated, bioturbated, and burrowed sand, silt, and clay. Organic (peat) layers visible.
4							
5							
6							
7							

CORE: AV-13

Recovery Date: 9-7-94

Latitude: 39° 09' 54.00"

Longitude: 74° 35' 14.91"

Describers: Peter C. Smith & Matthew Goss

RU: Regional Unconformity

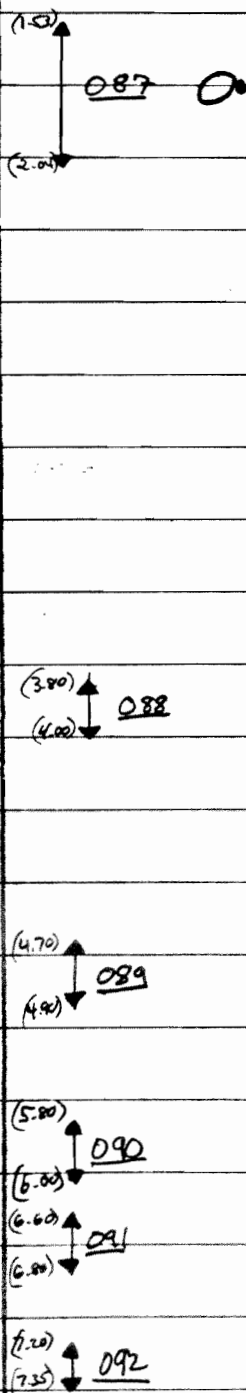
TRS: Tidal Ravinement Surface

AV-12

LINE 120

Depth	Lith	Shells	Desc	AUS	AUB	AUC
0.00		⊙	CS, qz, pebbles			
			S, si, cl beds	124 (0.40)		
		⊙	bioturbated	125 (0.80)		
1.00				126 (1.20)	088 (1.10)	
1.40			CS, w/white mud	127 (1.45)	029 (1.45)	
			clay	128 (1.65)	030 (1.85)	087
2.00			CS, qz, slightly muddy	129 (2.40)		
2.30			Clay, Burrowed, MASSIVE			
3.00						
4.00						
			silt			
7.35						

↓ Black
↓ green



Depth (m)	Stratigraphic Section	Composite	Sample	Fossils	Color	Facies	Lithological Description	
0		AVC-100	136	☛	N4/ Dark Gray		Slightly muddy fine to medium sand.	
					5Y 2.5/1			Slightly sandy mud; high clay content.
1		AVC-099	136		N4/ Dark Gray	Near Shore/ Estuarine	Coarse sand with clay interlamina- tions, fining downward to muddy fine sand.	
		AVC-101	137					
			138					
			139					
2								
3				140		5G 4/1 (b) Dark Greenish Gray	Near Shore/ Estuarine	Medium to fine muddy sand with mud interlamina- tions. Generally fines downward.
4		AVC-102						
5		AVC-103						
6								
7								

CORE: AV-14

Recovery Date: 9-7-94

Latitude: 39° 09' 10.42"

Longitude: 74° 36' 51.86"

Describers: Peter C. Smith & Matthew Goss

RU: Regional Unconformity

TRS: Tidal Ravinement Surface

Depth (m)	Stratigraphic Section	Composite	Sample	Fossils	Color	Facies	Lithological Description
0					N2.5/ Black	Fluvial Channel (Pleistocene)	Coarse sand and gravel lag deposit (black) at the upper surface, grading down to interbedded gravelly coarse sand and slightly muddy (white mud) medium sand.
1		AVC-019	033		N3/ Very Dark Gray		
		AVC-020			5Y 7/1 Light Gray		
3		AVC-021			N7/ N8/	Fluvial Channel (Pleistocene)	Interbedded gravelly coarse sand and medium sand.
4							
5							
6							
7							

CORE: AV-15

Recovery Date: 9-7-94

Latitude: 39° 07' 32.35"

Longitude: 74° 34' 27.15"

Describers: Peter C. Smith & Matthew Goss

RU: Regional Unconformity

TRS: Tidal Ravinement Surface

Depth (m)	Stratigraphic Section	Composite	Sample	Fossils	Color	Facies	Lithological Description	
0		AVC-112	156		2.5Y 8/2 Pale Yellow	Upper Sand Ridge	Medium to coarse sand and gravel; indistinctly bedded, containing abundant shell hash.	
1			157		2.5Y 8/1 White			
		158		N5/ Gray				
2		159		N4/				
		160						
		AVC-115	161					
		AVC-116	163		5Y 8/1 White	Upper Sand Ridge	Medium to coarse sand and gravel; indistinctly bedded, containing abundant shell hash.	
3			164					
		AVC-117	166		5Y 5/1	Nearshore/ Estuarine	Interbedded fine sand and mud; burrowed. Sediment is bedded but exhibits an overall gradational contact with the overlying sediment.	
4			166		N6/			
		AVC-118	167		N4/	Nearshore/ Estuarine	Interbedded fine sand and mud; burrowed.	
5			168		N8/ White			
	AVC-119	168		N6/ Gray				

CORE: AV-16

Recovery Date: 9-2-94

Latitude: 39° 02' 21.14"

Longitude: 74° 41' 47.81"

Describers: Peter C. Smith & Matthew Goss

RU: Regional Unconformity

TRS: Tidal Ravinement Surface

Depth (m)	Stratigraphic Section	Composite	Sample	Fossils	Color	Facies	Lithological Description
0			045		5Y 7/2	Shelf Sand	Shell containing buff medium sand.
		AVC-035	046		2.5Y 7/1 to 5Y 4/1 Grays	Nearshore Tidal Channel	Interbedded medium and fine sand with mud laminae and shells. Coarsest sand and gravel is at the base. Sediment does not form a sharp contact with the underlying sediment.
1		AVC-036	047 048				
		AVC-037	049		2.5YR 2.5/2 V. Dusky Red	Estuarine Marsh	Medium to coarse sand and some gravel at the top but quickly fining downward to fine sand, silt and clay laminae, bioturbated and burrowed, but no shell material. Upper 0.5 m contains reddish brown lignite, with the highest concentration at the contact with the overlying sediment.
2		050		5Y 4/1			
		051		5Y 2.5/1 Black			
		AVC-038	052		5Y 6/1 Gray	Fluvial Channel (Pleistocene)	Coarse sand, gravel and pebble (lag) deposit in the upper 10 cm. Interbedded medium and coarse sand and gravel. No lignite or shell.
3			053-a			Estuarine Marsh	Same description as estuarine marsh above. Lignite bearing clay at 3.55 m.
		AVC-039	054-a		5GY 7/1		
		AVC-040	055		5Y 6/1 Gray	Fluvial Channel (Pleistocene)	Same description as fluvial channel above.
4		AVC-041	056		5GY 7/1 Light Gray		
5		AVC-042	056				

CORE: AV-17

Recovery Date: 9-2-94

Latitude: 39° 01' 56.75"

Longitude: 74° 41' 11.42"

Describers: Peter C. Smith & Matthew Goss

RU: Regional Unconformity

TRS: Tidal Ravinement Surface

Depth (m)	Stratigraphic Section	Composite	Sample	Fossils	Color	Facies	Lithological Description
0		AVC-108	152	☛	2.5Y 6/4	Nearshore Estuarine	Shell-rich medium sand with discrete beds of shell. Upper 15 cm is brown in color with an abrupt underlying color contact. Color intensity decreases downward to 1.06 m. Black coloration is probably organic and may result from decay.
1			153		N2.5/ Black		
		AVC-110		N4/ Dark Gray			Clay laminae begin at 1.08 m., with a predominance of clay by 1.20 m. Contact with the underlying unit is very sharp.
2		AVC-109	154	N5/ Gray			
	AVC-111				N4/ Dark Gray	Fluvial Channel (Pleistocene)	Upper 20 cm are very coarse sand and gravel, grading to medium and coarse sand with some gravel.
					N4/1	Estuarine	Clay and silt laminae; very sharp contact.
					N4/1	Fluvial Channel (Pleistocene)	Very coarse sand and gravel at upper boundary. Medium to very coarse sand and gravel beds with wood fiber and a 10 cm long by 4 cm diameter root or branch.
3							
4							
5							
6							
7							

CORE: AV-18

Recovery Date: 9-1-94

Latitude: 39° 00' 18.16"

Longitude: 74° 41' 16.76"

Describers: Peter C. Smith & Matthew Goss

RU: Regional Unconformity

TRS: Tidal Ravinement Surface

Depth (m)	Stratigraphic Section	Composite	Sample	Fossils	Color	Facies	Lithological Description
0	[Dotted pattern]	AVC-104	141	☛	2.5 Y 7/3 Pale Yellow	Upper Sand Ridge	Medium to coarse sand and gravel, clean, only poor quality remnant bedding remaining. Fines downward.
1			142		2.5Y 5/1 Gray		
			143				
2	[Dotted pattern]	AVC-105	144	☛	2.5Y 5/1 Gray	Upper Sand Ridge	Clean medium sand. Fines downward.
			145	☛	5Y 8/2 Pale Yellow		
3	[Dotted pattern]	AVC-106 (c)	146	☛	5Y 7/2 Light Gray	Upper Sand Ridge	Clean medium sand with a little gravel. Becomes slightly more coarse toward the base.
			149 (c)				
			147 (c)				
			148 (c)				
4	[Dotted pattern]	AVC-107	150	☛	N6/ Gray	Upper Sand Ridge	Clean medium sand with a little gravel. Becomes slightly more coarse toward the base.
					N5/ Gray		
5							
6							
7							

CORE: AV-19

Recovery Date: 9-1-94

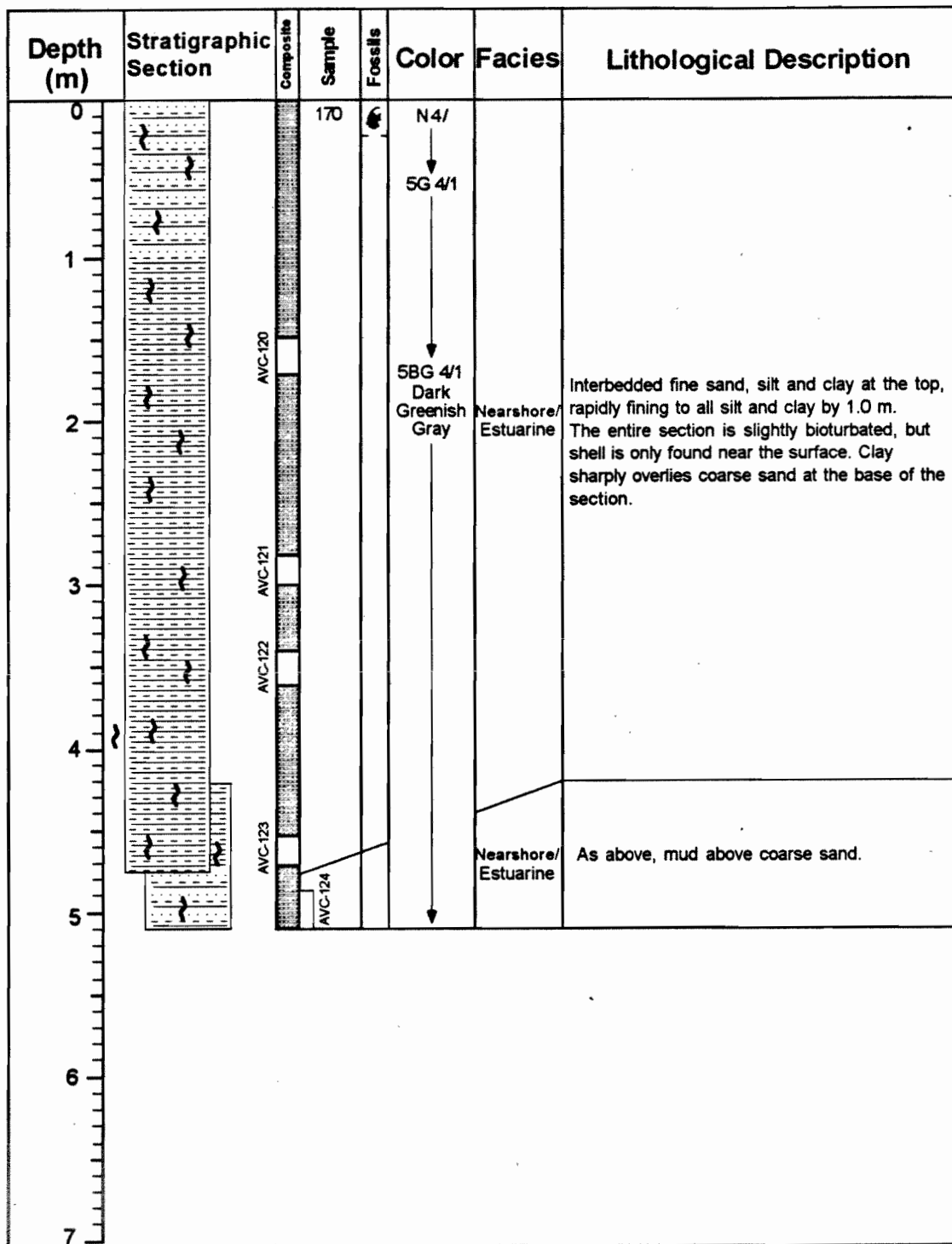
Latitude: 38° 58' 34.53"

Longitude: 74° 38' 39.15"

Describers: Peter C. Smith & Matthew Goss

RU: Regional Unconformity

TRS: Tidal Ravinement Surface



CORE: AV-20

Recovery Date: 9-1-94

Latitude: 39° 00' 50.61"

Longitude: 74° 37' 26.57"

Describers: Peter C. Smith & Matthew Goss

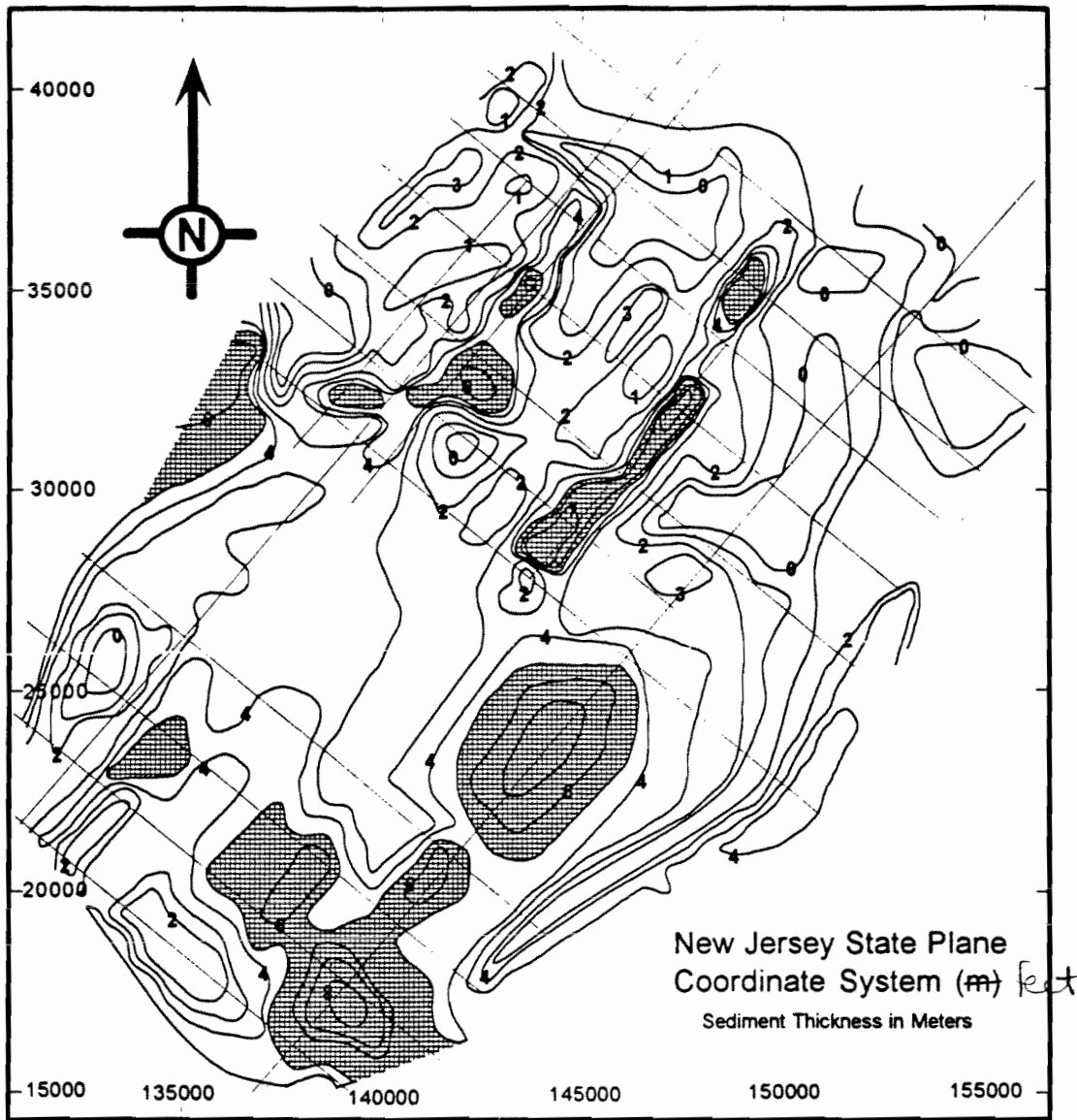
RU: Regional Unconformity

TRS: Tidal Ravinement Surface

AVS	Core #	Depth (m)	% Grav	% VCS	% CS	% MS	% FS	% VFS	% SILT	% Clay	% Grav	% Sand	% Mud	Mean	SD	Skn	Kur	Sorting	Skewness	Kurtosis
1	AV-02	0.10	22.23	6.65	60.53	9.12	1.41	0.04			22.23	77.73	0.04	-0.24	1.45	-0.62	1.87	poor	strongly coarse skewed	v. leptokurtic
2	AV-02	0.70	44.80	3.21	9.71	33.70	6.18	1.91			44.80	54.99	0.21	-0.87	1.65	-0.37	0.64	poor	strongly coarse skewed	v. platykurtic
3	AV-02	1.40	43.41	10.73	10.29	26.71	4.40	1.99	1.33	0.65	43.41	54.61	1.98	-1.02	1.53	0.40	0.76	poor	strongly fine skewed	platykurtic
4	AV-02	1.53																		
5	AV-02	1.70																		
6	AV-02	2.10	31.97	6.40	40.72	10.53	5.79	1.62	2.15	1.02	31.97	64.86	3.17	-0.12	1.86	-0.24	0.83	poor	coarse skewed	platykurtic
7	AV-02	2.70	25.26	9.76	46.24	13.72	4.36	0.59			25.26	74.69	0.05	-0.60	1.55	-0.33	0.89	poor	strongly coarse skewed	platykurtic
8	AV-02	3.50																		
9	AV-02	3.95																		
10	AV-02	4.05																		
11	AV-02	4.40																		
12	AV-02	4.40	2.89	5.36	12.49	21.97	50.32	4.04	1.05	1.85	2.89	94.21	2.90	1.63	1.07	-0.42	1.32	poor	strongly coarse skewed	leptokurtic
13	AV-02	4.71																		
14	AV-03a	0.05	0.29	2.35	22.89	70.93	3.50	0.04			0.29	99.71	Trace	1.28	0.49	-0.17	1.03	well	coarse skewed	mesokurtic
15	AV-03a	0.45	10.91	8.80	40.72	36.45	3.02	0.09			10.91	89.09	Trace	0.57	1.08	-0.42	1.52	poor	strongly coarse skewed	v. leptokurtic
16	AV-03a	0.95	0.25	2.58	15.06	74.82	6.51	0.41			0.25	99.37	0.38	1.46	0.47	-0.24	1.37	well	coarse skewed	leptokurtic
17	AV-03a	1.30																		
18	AV-03b	1.40	0.27	1.99	29.35	64.07	4.21	0.10			0.27	99.72	0.01	1.15	0.55	0.00	0.93	mod well	symmetric	mesokurtic
19	AV-03b	2.00	1.37	6.90	28.91	60.21	2.42	0.14			1.37	98.57	0.06	1.06	0.64	-0.24	0.95	mod well	coarse skewed	mesokurtic
20	AV-03b	2.85	0.04	1.62	21.12	71.72	4.79	0.48			0.04	99.48	0.48	1.30	0.57	-0.44	1.20	mod well	strongly coarse skewed	leptokurtic
21	AV-06	4.71	5.32	15.76	21.19	38.22	15.00	2.17	1.45	0.88	5.32	92.35	2.33	1.01	1.29	-0.32	1.06	poor	strongly coarse skewed	mesokurtic
22	AV-06a	0.25	0.17	3.75	16.22	67.52	11.48	0.75			0.17	99.73	0.10	1.42	0.56	-0.18	1.28	mod well	coarse skewed	leptokurtic
23	AV-06a	0.60	2.96	3.24	7.42	7.05	14.05	36.81	22.17	6.26	2.96	68.59	28.43	3.67	2.66	0.21	1.97	v. poor	fine skewed	v. leptokurtic
24	AV-06a	1.00	1.03	9.03	36.81	24.34	7.93	6.07	5.66	9.11	1.03	84.20	14.77	1.66	2.39	0.60	2.10	v. poor	strongly fine skewed	v. leptokurtic
25	AV-06a	1.38	0.00	0.08	1.10	68.26	24.73	1.55	1.89	2.36	0.00	95.73	4.27	1.88	0.52	0.28	1.99	mod well	fine skewed	v. leptokurtic
26	AV-06b	1.05																		
27	AV-06b	1.20																		
28	AV-06b	1.50																		
29	AV-06b	1.80																		
30	AV-06c	2.90																		
31	AV-06c	3.67	0.00	0.09	6.52	46.46	31.55	4.83	4.24	6.30	0.00	89.46	10.54	2.11	1.71	0.49	3.26	poor	strongly fine skewed	ext leptokurtic
32	AV-06c	3.80																		
33	AV-15a	1.25	12.46	26.24	25.15	23.46	5.89	1.28	3.29	2.22	12.46	82.03	5.51	0.49	1.61	0.19	1.24	poor	fine skewed	leptokurtic
34	AV-09a	0.05	0.62	1.36	8.62	12.39	63.55	8.10	3.10	2.25	0.62	94.03	5.35	2.30	0.98	-0.09	2.45	moderate	symmetric	v. leptokurtic
35	AV-09a	0.75	0.57	1.43	5.85	10.12	67.32	8.17	4.07	2.45	0.57	92.91	6.52	2.47	0.97	0.09	3.09	moderate	symmetric	ext leptokurtic
36	AV-09a	0.80																		
37	AV-09a	1.40	0.13	0.22	0.90	5.76	73.16	12.89	4.75	2.17	0.13	92.95	6.92	2.66	0.79	0.40	2.76	moderate	strongly fine skewed	v. leptokurtic
38	AV-09a	2.20	16.35	45.58	26.91	5.12	1.92	0.71	1.83	1.58	16.35	80.24	3.41	-0.22	0.99	0.28	1.32	moderate	fine skewed	leptokurtic
39	AV-09a	2.75	4.99	10.35	42.04	31.70	4.23	1.60	3.03	2.05	4.99	89.93	5.06	0.87	1.16	0.12	1.82	poor	fine skewed	v. leptokurtic
40	AV-09b	3.60																		
41	AV-09b	3.65	1.33	4.11	56.70	27.30	4.50	1.35	2.79	1.90	1.33	93.98	4.69	0.96	0.86	0.38	2.08	moderate	strongly fine skewed	v. leptokurtic
42	AV-09b	4.15	35.30	37.61	9.61	4.48	3.58	1.27	2.35	5.78	35.30	56.57	8.13	-0.28	2.46	0.57	3.36	v. poor	strongly fine skewed	ext leptokurtic
43	AV-09b	4.30																		
44	AV-09b	4.40																		
45	AV-17a	0.00	0.62	2.71	12.46	53.26	30.03	0.64			0.62	99.25	0.13	1.58	0.74	-0.39	1.69	moderate	strongly coarse skewed	v. leptokurtic
46	AV-17a	0.35																		
47	AV-17a	0.95																		
48	AV-17a	1.10																		
49	AV-17a	1.50																		
50	AV-17a	1.90																		
51	AV-17a	2.20																		
52	AV-17a	2.70																		
53	AV-17a	3.10																		
54	AV-17a	3.45																		
55	AV-17a	4.70																		
56	AV-17a	5.05																		
57	AV-04a	0.05	4.61	4.98	34.92	45.80	9.05	0.48			4.61	95.24	0.15	1.09	0.80	-0.16	1.31	moderate	coarse skewed	leptokurtic
58	AV-04a	0.70	17.70	13.55	31.91	23.01	10.83	1.14	0.78	1.06	17.70	80.46	1.84	0.52	1.43	-0.20	0.96	poor	coarse skewed	mesokurtic
59	AV-04a	1.35																		
60	AV-04a	1.85	3.39	2.91	3.88	11.29	59.80	11.92	3.62	3.20	3.39	89.79	6.82	2.45	1.29	0.08	3.60	poor	symmetric	ext leptokurtic

AVS	Core #	Depth (m)	% Grav	% VCS	% CS	% MS	% FS	% VFS	% Silt	% Clay	% Grav	% Sand	% Mud	Mean	SD	Skw	Kur	Sorting	Skewness	Kurtosis
62	AV-04a	1.90	1.37	1.46	9.99	44.77	39.80	1.05	0.61	0.93	1.37	97.09	1.54	1.83	0.65	-0.22	1.12	mod well	coarse skewed	leptokurtic
63	AV-04a	2.20	1.37	1.46	9.99	44.77	39.80	1.05	0.61	0.93	1.37	97.09	1.54	1.83	0.65	-0.22	1.12	mod well	coarse skewed	leptokurtic
64	AV-04a	3.00	3.55	29.63	14.62	11.69	4.57	1.34	1.71	2.90	33.55	61.84	4.61	-0.33	1.86	0.20	1.21	poor	fine skewed	leptokurtic
65	AV-04a	3.20																		
66	AV-05a	0.10																		
67	AV-05a	0.35																		
68	AV-05a	0.75	6.58	15.37	31.52	39.10	7.15	0.12			6.58	93.26	0.16	0.80	1.02	-0.16	0.91	poor	coarse skewed	mesokurtic
69	AV-05a	1.10	1.06	2.80	12.95	61.75	20.73	0.22			1.06	98.45	0.49	1.59	0.62	-0.36	1.85	mod well	strongly coarse skewed	v. leptokurtic
70	AV-05a	1.45	0.24	1.94	13.01	56.98	25.10	0.49	0.87	1.37	0.24	97.52	2.24	1.66	0.66	-0.19	1.35	mod well	coarse skewed	leptokurtic
71	AV-05a	1.75																		
72	AV-05a	1.95	1.83	3.81	13.74	55.76	22.42	0.55			1.83	96.28	1.89	1.56	0.70	-0.32	1.21	mod well	strongly coarse skewed	leptokurtic
73	AV-05a	2.20																		
74	AV-05a	2.45	0.41	2.27	15.14	73.98	7.04	0.22			0.41	98.65	0.94	1.39	0.52	-0.29	1.45	mod well	coarse skewed	leptokurtic
75	AV-05a	3.10																		
77	AV-05a	3.20																		
78	AV-05a	3.40	0.00	0.06	0.68	15.87	54.37	3.10	21.79	4.14	0.00	74.07	25.93	3.42	1.88	0.74	1.18	poor	strongly fine skewed	leptokurtic
79	AV-05a	3.80																		
76	AV-07a	0.10	21.18	19.40	30.58	26.12	2.63	0.05			21.18	78.78	0.04	-0.07	1.56	-0.31	1.01	poor	strongly coarse skewed	mesokurtic
80	AV-07a	0.40	3.85	12.02	29.02	48.62	6.35	0.09			3.85	96.09	0.06	0.98	0.88	-0.33	0.86	moderate	strongly coarse skewed	platykurtic
81	AV-07a	1.0	5.64	10.25	30.17	49.94	3.89	0.17			5.64	94.32	0.04	0.94	0.89	-0.36	1.14	moderate	strongly coarse skewed	leptokurtic
82	AV-07a	1.70	6.18	6.18	23.82	56.42	7.71	0.13			5.72	94.25	0.03	1.16	0.89	-0.45	1.28	moderate	strongly coarse skewed	leptokurtic
83	AV-07a	1.50	6.56	8.45	25.43	50.97	6.45	0.14			6.56	91.40	0.04	0.94	1.10	-0.43	1.35	poor	strongly coarse skewed	leptokurtic
84	AV-07a	1.90	11.99	10.22	27.48	44.02	5.60	0.31			11.99	87.84	0.17	0.78	1.23	-0.44	1.27	poor	strongly coarse skewed	leptokurtic
86	AV-07a	2.50	2.65	8.35	33.19	50.86	4.68	0.21			2.65	97.28	0.06	1.03	0.75	-0.13	0.89	moderate	strongly fine skewed	platykurtic
87	AV-07b	1.20	3.34	7.74	32.11	51.37	5.33	0.11			3.34	96.66	0.00	1.05	0.71	-0.26	0.83	mod well	coarse skewed	platykurtic
88	AV-07b	1.60	2.42	7.90	28.15	52.28	6.58	0.47			2.42	97.39	0.19	1.10	0.79	-0.27	1.00	moderate	coarse skewed	mesokurtic
89	AV-07b	2.00	0.95	5.30	25.34	55.39	10.36	1.03			0.95	97.44	1.61	1.30	0.78	-0.31	1.09	moderate	strongly coarse skewed	mesokurtic
90	AV-07b	2.45	1.21	8.91	47.36	7.54	1.03	0.31			1.21	97.54	1.25	1.08	0.77	-0.21	0.87	moderate	coarse skewed	platykurtic
91	AV-07c	3.80	0.50	9.92	26.49	55.19	13.65	1.06			0.50	99.36	0.14	1.26	0.74	-0.37	0.91	moderate	strongly coarse skewed	mesokurtic
92	AV-07c	4.10	3.13	9.30	25.43	46.91	13.66	1.06			3.13	96.35	0.52	1.20	0.91	-0.32	0.92	moderate	strongly coarse skewed	mesokurtic
93	AV-07c	4.40	3.29	8.46	29.41	45.95	10.87	1.28			3.29	95.96	0.75	1.16	0.88	-0.19	0.96	moderate	coarse skewed	mesokurtic
94	AV-07c	4.70	7.83	18.69	32.21	35.21	4.88	0.57			7.83	91.56	0.61	0.71	0.90	0.03	0.67	moderate	symmetric	v. platykurtic
95	AV-07c	5.00	6.02	15.37	30.13	41.16	6.27	0.53			6.02	93.45	0.53	0.82	1.00	-0.22	2.65	moderate	coarse skewed	v. leptokurtic
96	AV-08a	0.30	2.75	3.41	12.34	70.39	10.88	0.21			2.75	97.22	0.03	1.44	0.61	-0.37	1.54	mod well	strongly coarse skewed	v. leptokurtic
97	AV-08a	0.80	0.59	0.26	3.75	69.33	21.72	0.97	1.63	1.74	0.59	96.04	3.37	1.79	0.43	0.22	1.60	mod well	fine skewed	v. leptokurtic
98	AV-08a	1.70	8.39	10.77	20.25	51.23	8.48	0.50			8.39	91.23	0.38	0.93	1.09	-0.47	1.28	poor	strongly coarse skewed	leptokurtic
99	AV-08b	1.80																		
100	AV-08b	1.90	2.19	3.27	16.95	65.05	11.64	0.61			2.19	97.57	0.24	1.40	0.65	-0.34	1.29	mod well	strongly coarse skewed	leptokurtic
101	AV-08b	2.60																		
102	AV-08b	2.90	0.38	0.98	11.59	66.55	18.22	0.88			0.38	96.22	3.40	1.63	0.58	-0.13	1.31	mod well	coarse skewed	leptokurtic
103	AV-08b	3.20	0.59	0.26	3.75	69.33	21.72	0.97	1.63	1.74	0.59	96.04	3.37	1.79	0.43	0.22	1.60	well	fine skewed	v. leptokurtic
104	AV-10a	0.45																		
105	AV-10a	0.95	29.96	30.72	21.81	14.51	2.59	0.27			29.96	72.90	0.14	-0.22	1.21	0.10	0.85	poor	fine skewed	platykurtic
106	AV-10a	1.40	37.05	8.34	25.01	20.04	8.07	0.97			37.05	62.44	0.51	-0.16	1.86	-0.25	0.66	poor	coarse skewed	v. platykurtic
107	AV-10a	1.80	36.48	15.92	23.83	17.19	4.58	1.04			36.48	62.55	0.97	-0.18	1.52	-0.03	0.78	poor	symmetric	platykurtic
108	AV-10b	4.40																		
109	AV-10b	5.10	6.66	11.00	41.29	23.50	3.84	1.48	3.55	3.69	6.66	86.10	7.24	0.80	1.74	0.18	3.36	poor	fine skewed	ext leptokurtic
110	AV-10b	3.80	0.96	2.92	7.50	28.67	7.32	2.50	30.62	24.87	0.96	43.55	55.49	5.42	4.16	0.26	0.80	ext poor	fine skewed	platykurtic
111	AV-10b	5.20	1.36	9.14	37.75	38.26	5.14	1.22			1.36	92.52	6.12	1.06	1.34	0.30	2.36	poor	strongly fine skewed	v. leptokurtic
112	AV-10b	5.80	21.67	18.10	20.95	25.62	6.70	1.89			21.67	72.79	5.54	0.36	1.68	-0.08	1.37	poor	symmetric	leptokurtic
113	AV-11a	0.05																		
114	AV-11a	0.20																		
115	AV-11a	0.50	0.71	1.64	15.50	40.80	37.27	2.15	0.97	0.95	0.71	97.37	1.92	1.74	0.78	-0.16	1.05	moderate	coarse skewed	mesokurtic
116	AV-11a	0.90	4.36	2.79	8.30	5.94	38.02	23.99	12.68	3.91	4.36	79.05	16.59	2.67	2.04	0.08	2.90	poor	symmetric	v. leptokurtic
117	AV-11a	1.50	2.11	3.44	20.55	64.13	8.79	0.51			2.11	97.42	0.47	1.31	0.63	-0.18	1.29	mod well	coarse skewed	leptokurtic
118	AV-11a	1.65																		
119	AV-11a	1.95																		
120	AV-11b	2.50	0.82	5.71	30.21	41.40	11.61	0.67	4.57	5.01	0.82	89.60	9.58							
121	AV-11b	3.10	41.10	23.80	16.81	9.31	4.77	1.89	1.71	0.59	41.10	56.60	2.30	-0.64	1.82	0.08	0.85	poor	fine skewed	platykurtic
122	AV-11c	0.05	10.50	9.62	16.34	42.60	18.09	0.88			10.50	87.58	1.92	1.05	1.33	-0.48	1.13	poor	strongly coarse skewed	leptokurtic
123	AV-11c	bottom	16.84	7.32	13.84	39.99	18.15	1.40			16.84	80.79	2.37	0.81	1.66	-0.50	1.16	poor	strongly coarse skewed	leptokurtic

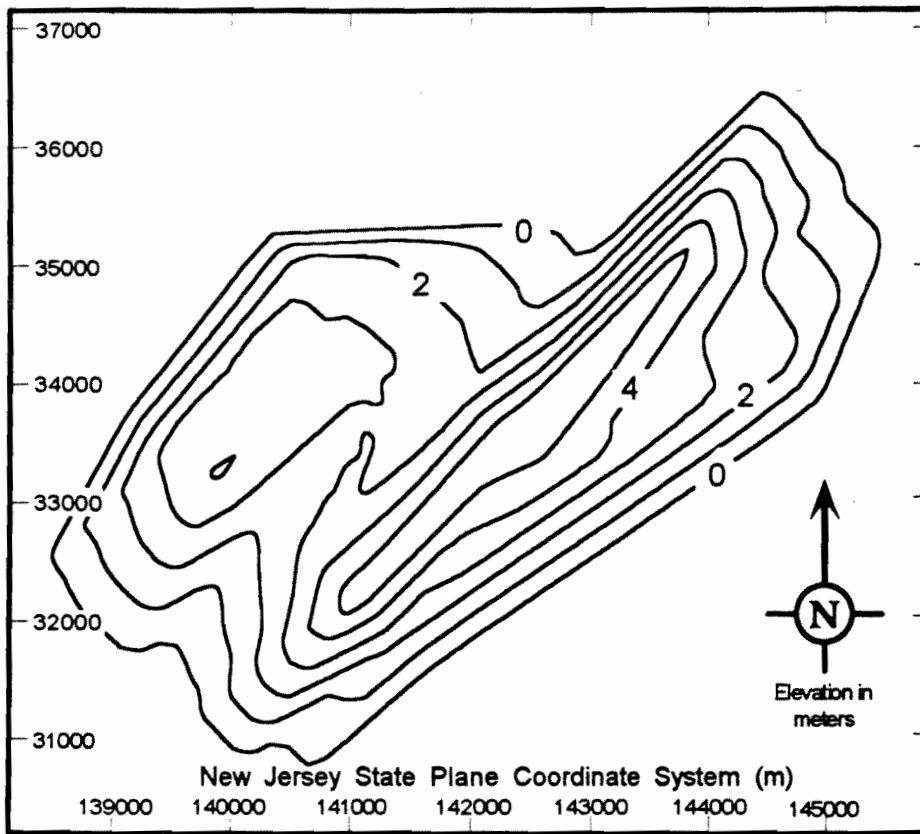
AVS	Core #	Depth (m)	% Grav	% VCS	% CS	% MS	% FS	% VFS	% Silt	% Clay	% Grav	% Sand	% Mud	Mean	SD	Skn	Kur	Sorting	Skewness	Kurtosis	
124	AV-12a	0.40																			
125	AV-12a	0.80																			
126	AV-12a	1.20	1.00	4.23	12.73	24.45	11.63	9.06	26.85	10.04	1.00	62.11	36.89	3.65	3.15	0.52	0.90	poor	strongly fine skewed	platykurtic	
127	AV-12a	1.45	0.82	5.71	30.21	41.40	11.61	0.67	4.57	5.01	0.82	69.60	9.58	1.36	1.84	0.36	3.47	poor	strongly fine skewed	ext leptokurtic	
128	AV-12a	1.65	2.05	7.84	26.71	40.52	13.59	1.41	3.31	4.56	2.05	90.08	7.87	1.34	1.45	0.20	2.21	poor	fine skewed	v. leptokurtic	
129	AV-12b	2.40																			
130	AV-13a	0.05																			
131	AV-13a	0.15	12.78	30.39	27.45	20.11	6.38	0.72			12.78	84.84	2.38	0.30	1.24	0.05	0.90	poor	symmetric	mesokurtic	
132	AV-13a	0.60																			
133	AV-13a	0.90																			
134	AV-13a	1.20	3.08	18.80	37.41	29.01	9.63	1.27			3.08	96.12	0.80	0.77	0.98	0.08	1.00	moderate	symmetric	mesokurtic	
135	AV-14a	0.20	0.05	0.08	1.17	2.02	28.91	58.19	5.77	3.80	0.05	90.36	9.57	3.19	0.98	0.37	3.81	moderate	strongly fine skewed	ext leptokurtic	
136	AV-14a	0.80	1.49	8.74	28.02	32.89	24.03	1.33	1.88	1.62	1.49	95.09	3.42	1.36	1.02	0.00	1.04	poor	symmetric	mesokurtic	
137	AV-14a	1.15																			
138	AV-14a	1.50	0.13	0.60	7.20	32.19	40.98	3.32	9.91	5.67	0.13	84.29	15.58	2.45	1.87	0.48	3.16	poor	strongly fine skewed	ext leptokurtic	
139	AV-14a	1.70	0.21	0.27	1.46	7.14	49.90	11.05	21.32	8.65	0.21	69.83	29.98	3.89	2.18	0.74	1.16	v. poor	strongly fine skewed	leptokurtic	
140	AV-14a	2.80																			
141	AV-19a	0.70																			
142	AV-19a	1.10	3.92	10.27	26.95	46.69	11.64	0.40			3.92	95.96	0.12	1.08	0.91	-0.29	0.98	moderate	coarse skewed	mesokurtic	
143	AV-19a	1.50	4.49	10.32	26.10	46.57	11.45	0.78			4.49	95.22	0.29	1.10	0.95	-0.33	4.37	moderate	strongly coarse skewed	ext leptokurtic	
144	AV-19a	2.10																			
145	AV-19b	2.40	1.08	9.08	32.16	32.18	23.87	0.92			1.08	98.84	0.08	1.23	0.91	-0.13	0.74	moderate	coarse skewed	platykurtic	
146	AV-19b	3.00	1.93	7.51	29.18	48.48	11.68	0.65			1.93	97.49	0.58	1.21	0.82	-0.22	1.08	moderate	coarse skewed	mesokurtic	
147	AV-19b	3.40	0.46	2.97	18.40	59.92	16.99	0.92			0.46	99.20	0.34	1.41	0.68	-0.41	1.04	mod well	strongly coarse skewed	mesokurtic	
148	AV-19b	3.80	0.60	3.27	22.30	55.73	15.25	1.09	0.61	1.16	0.60	97.63	1.77	1.45	0.67	-0.21	1.02	mod well	coarse skewed	mesokurtic	
149	AV-19c	3.20																			
150	AV-19c	4.10																			
151	AV-18a	0.05	0.59	0.54	3.02	43.68	49.93	1.72			0.59	98.89	0.52	1.97	0.41	-0.17	1.35	well	coarse skewed	v. leptokurtic	
152	AV-18a	0.30																			
153	AV-18a	0.70																			
154	AV-18a	2.10																			
155	AV-16a	0.30	2.65	5.42	17.88	46.76	26.88	0.34			2.65	97.28	0.07	1.48	0.87	-0.41	1.08	moderate	strongly coarse skewed	mesokurtic	
156	AV-16a	0.60	7.59	20.44	43.55	21.41	5.93	0.71			7.59	92.01	0.40	0.52	1.05	-0.05	1.13	poor	symmetric	leptokurtic	
157	AV-16a	1.00	1.90	3.15	15.57	48.98	29.57	0.65			1.90	97.91	0.19	1.58	0.75	-0.35	-35.25	moderate	strongly coarse skewed	ext leptokurtic	
158	AV-16a	1.40	6.29	13.38	28.49	30.26	18.60	1.22			6.29	91.92	1.79	1.02	1.19	-0.16	0.93	poor	coarse skewed	mesokurtic	
159	AV-16a	1.65	3.34	4.58	18.20	41.48	31.25	0.78			3.34	96.29	0.37	1.50	0.91	-0.39	1.04	moderate	strongly coarse skewed	mesokurtic	
160	AV-16a	1.85																			
161	AV-16a	2.20																			
162	AV-16a	2.50																			
163	AV-16b	2.75																			
164	AV-16b	2.95																			
165	AV-16b	3.40	0.06	0.77	3.97	7.02	58.24	21.30	4.72	3.92	0.06	91.30	8.64	2.77	1.27	0.37	3.09	poor	strongly fine skewed	ext leptokurtic	
166	AV-16b	3.90	0.00	0.04	0.67	13.75	69.16	7.88	6.12	3.37	0.00	90.51	9.49	2.53	1.10	0.41	4.13	poor	strongly fine skewed	ext leptokurtic	
167	AV-16c	4.30																			
168	AV-16c	5.00	0.10	0.16	1.13	11.31	69.47	7.94	6.06	3.79	0.10	90.05	9.85	2.58	1.11	0.48	4.19	poor	strongly fine skewed	ext leptokurtic	
169	AV-16c	5.50	0.04	0.84	5.50	17.74	57.27	9.14	6.46	3.01	0.04	90.49	9.47	2.43	1.34	0.17	3.17	poor	fine skewed	ext leptokurtic	
170	AV-20a	0.05																			
C-021	AV-01	0.00-0.65	10.71	50.02	17.18	18.37	3.49	0.15			10.71	89.13	0.16	0.11	1.02	0.45	0.89	poor	strongly fine skewed	platykurtic	
C-022	AV-01	0.65-1.30	42.57	26.52	15.78	12.85	1.87	0.17			42.57	56.82	0.61	-0.48	1.27	0.20	0.84	poor	fine skewed	platykurtic	
C-023	AV-01	1.30-1.98	39.26	36.46	11.79	7.95	3.54	0.80			39.26	59.82	0.92	-0.57	1.06	0.37	1.28	poor	strongly fine skewed	leptokurtic	
C-024	AV-01	1.85-2.55 (b)	24.76	50.81	13.17	8.58	2.20	0.28			24.76	74.75	0.48	-0.42	0.92	0.32	1.69	moderate	strongly fine skewed	v. leptokurtic	
C-025	AV-01	2.55-3.30 (b)	22.38	32.39	20.21	12.89	9.32	1.82			22.38	75.99	1.83	0.12	1.35	0.24	0.90	poor	fine skewed	mesokurtic	
C-026	AV-01	3.30-3.50 (b)	4.33	20.95	14.03	25.95	29.37	4.61			4.33	94.88	0.79	1.26	1.26	-0.30	0.70	poor	strongly coarse skewed	platykurtic	



ISOPACH MAP OF SEDIMENT
THICKNESS ABOVE S₁ UNCONFORMITY
(REGIONAL UNCONFORMITY)

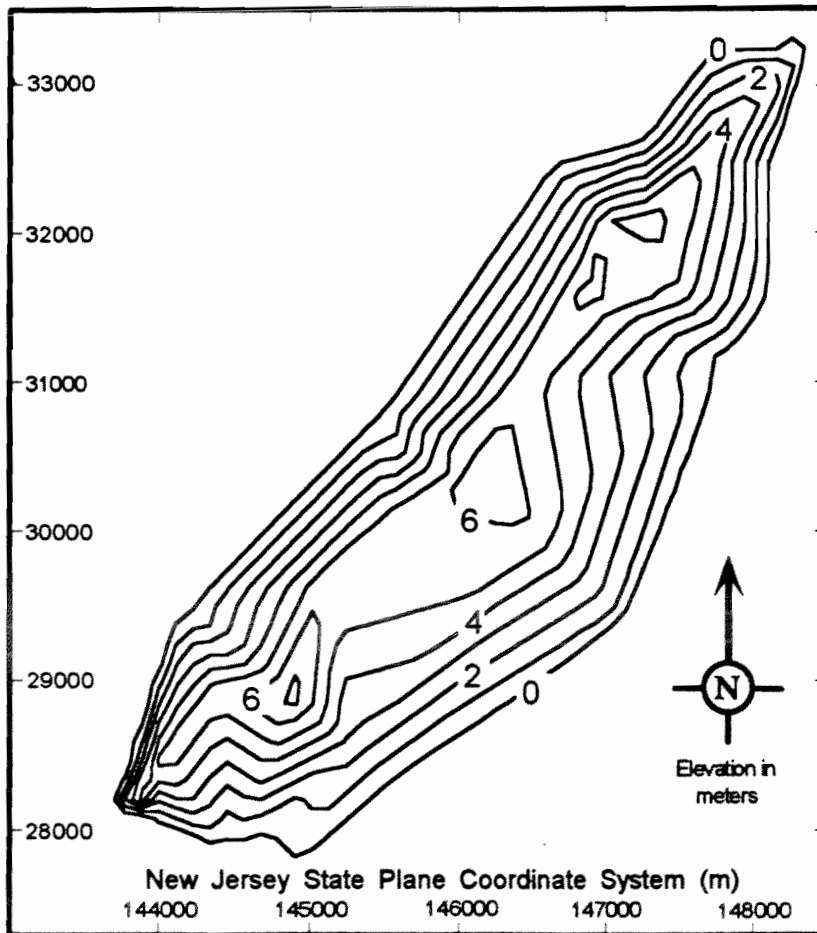
SEDIMENT THICKNESS OVER 5M IS SHADED.

DRAFT



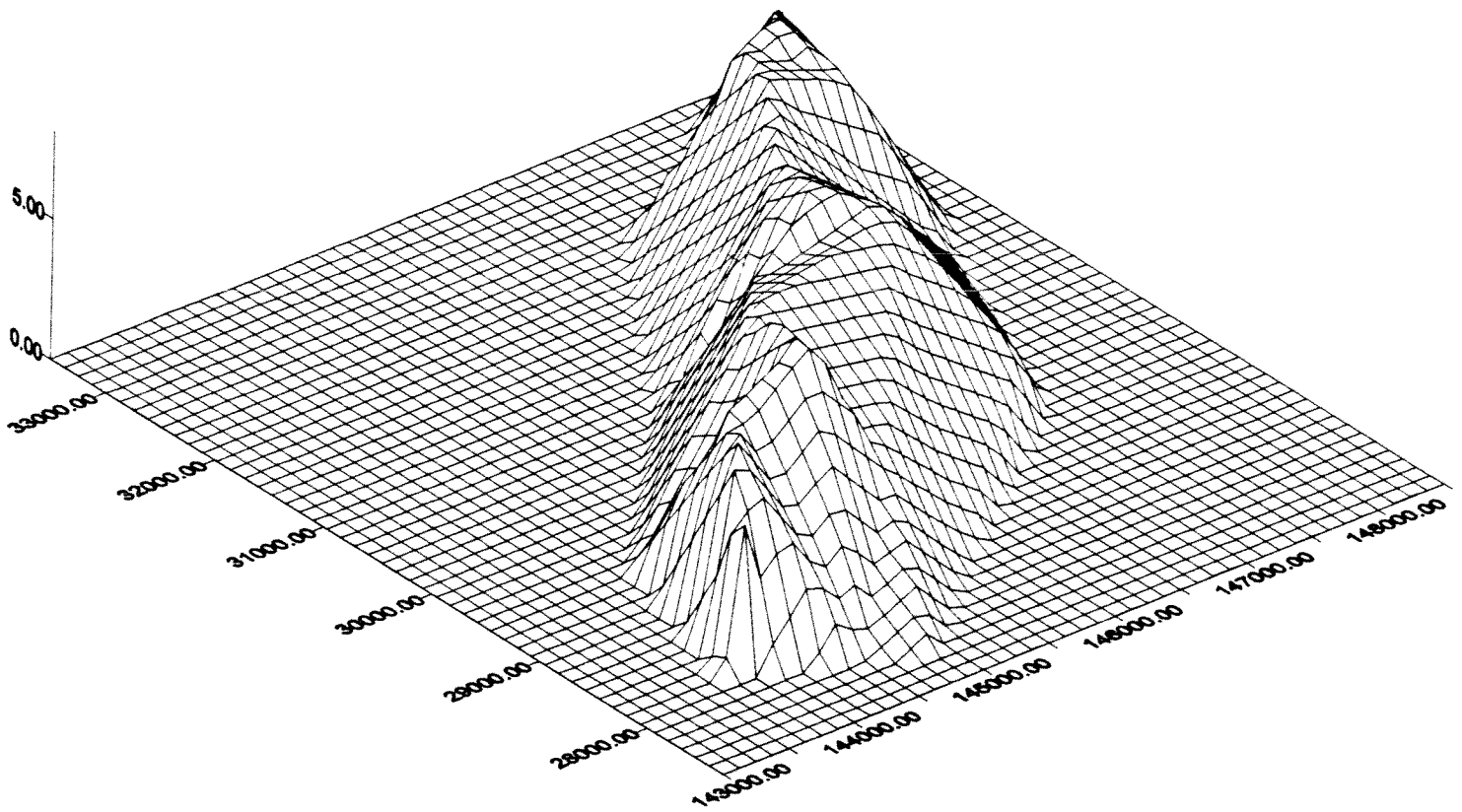
CAMEL SHOAL

DRAFT



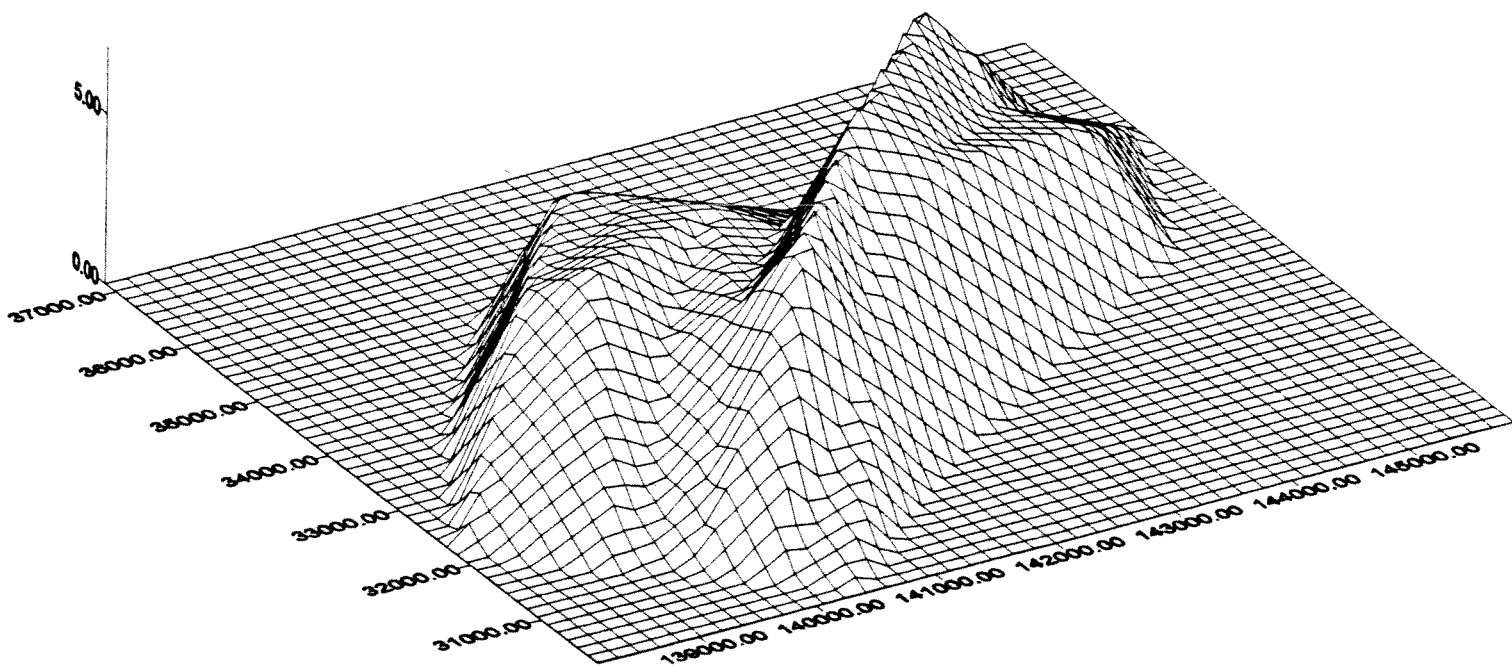
AVALON SHOAL

DRAFT



AVULON SHOAL

DRAFT



INNER SHOAL

DRAFT

VOLUME COMPUTATIONS

UPPER SURFACE

Grid File: C:/WINSURF/INNER2.GRD
Rows: 0 to 32766
Cols: 0 to 32766
Grid size as read: 50 cols by 31 rows
Delta X: 81.1837
Delta Y: 202.067
X-Range: 31512 to 35490
Y-Range: 139031 to 145093
Z-Range: 0.0258893 to 6.92086

LOWER SURFACE

Level Surface defined by $Z = 0$

VOLUMES (m^3)

Approximated Volume by
Trapezoidal Rule: 5.15242E+007
Simpson's Rule: 5.14717E+007
Simpson's 3/8 Rule: 5.15666E+007

CUT & FILL VOLUMES

Positive Volume [Cuts]: 5.15242E+007
Negative Volume [Fills]: 0
Cuts minus Fills: 5.15242E+007

AREAS (m^2)

Positive Planar Area
(Upper above Lower): 1.33779E+007
Negative Planar Area
(Lower above Upper): 0
Blanked Planar Area: 1.07368E+007
Total Planar Area: 2.41146E+007

Positive Surface Area
(Upper above Lower): 1.33781E+007
Negative Surface Area
(Lower above Upper): 0

INNER SHOAL

(SEE AVALON SHOAL
NOTE).

DRAFT

drawn for Jun (AMM) Scale

Handwritten notes: ~~Hand~~ ~~asset~~ ~~back~~ ~~back~~

VOLUME COMPUTATIONS

UPPER SURFACE

Grid File: C:/WINSURF/OUTER.GRD
Rows: 0 to 32766
Cols: 0 to 32766
Grid size as read: 50 cols by 31 rows
Delta X: 99.2857
Delta Y: 145.3
X-Range: 28152 to 33017
Y-Range: 143780 to 148139
Z-Range: -1.77636E-015 to 8.27689

LOWER SURFACE

Level Surface defined by Z = 0

VOLUMES (m³)

Approximated Volume by
Trapezoidal Rule: 4.52821E+007
Simpson's Rule: 4.54539E+007
Simpson's 3/8 Rule: 4.54833E+007

CUT & FILL VOLUMES

Positive Volume [Cuts]: 4.52774E+007
Negative Volume [Fills]: 4.27102E-012
Cuts minus Fills: 4.52774E+007

AREAS (m²)

Positive Planar Area
(Upper above Lower): 9.95409E+006
Negative Planar Area
(Lower above Upper): 0
Blanked Planar Area: 1.12524E+007
Total Planar Area: 2.12065E+007

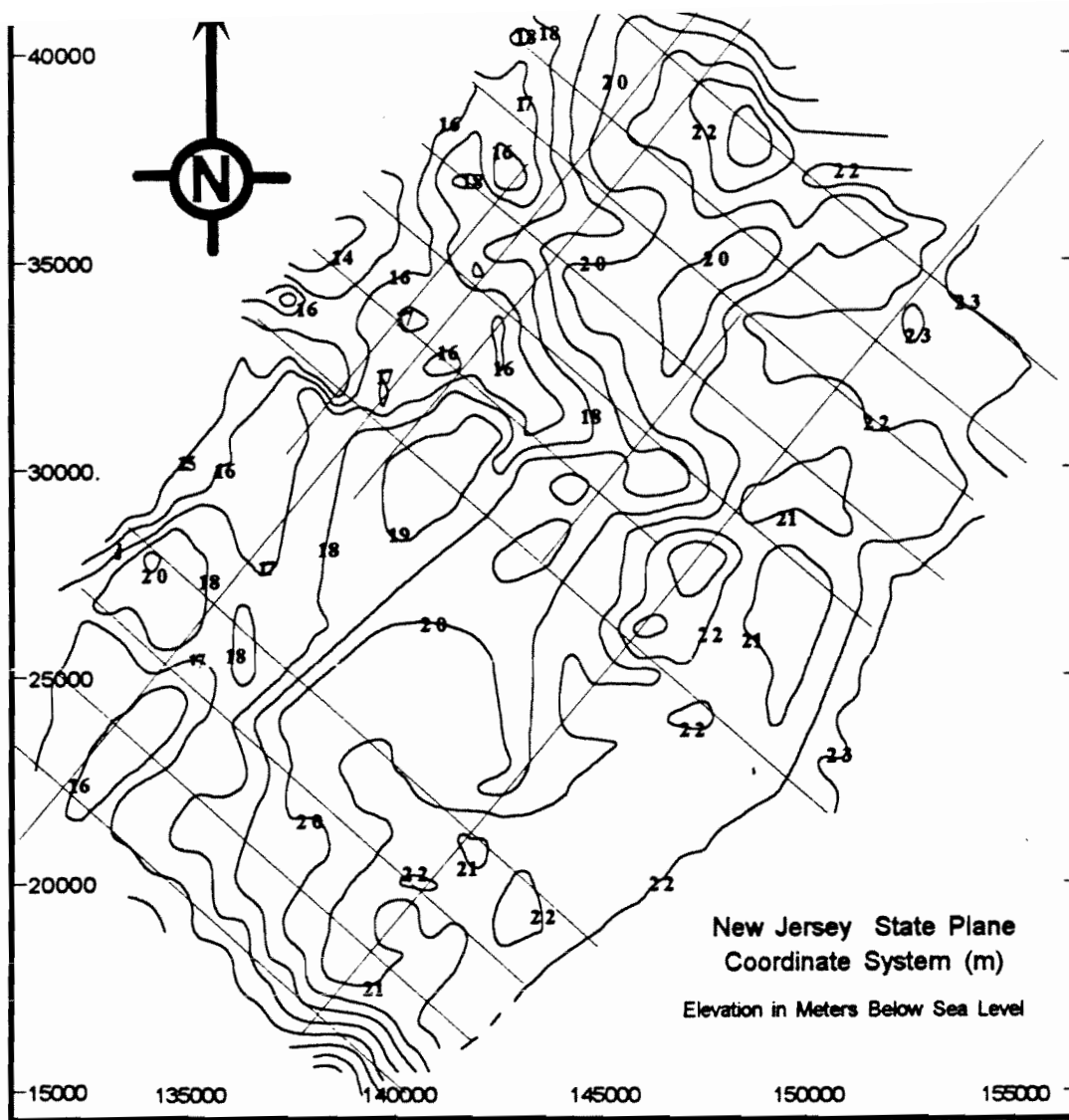
Positive Surface Area
(Upper above Lower): 9.95439E+006
Negative Surface Area
(Lower above Upper): 0

AVALON SHOAL
MAY

NOTE: (THIS VOLUME ~~INCLUDES~~
FINE GRAINED ESTUARINE SED'S WHICH
COMPRISE THE LOWER
SHOAL. USABLE SED'S
AREA ~ 80% OF
(CALCULATED VOLUME)
possibly

DRAFT





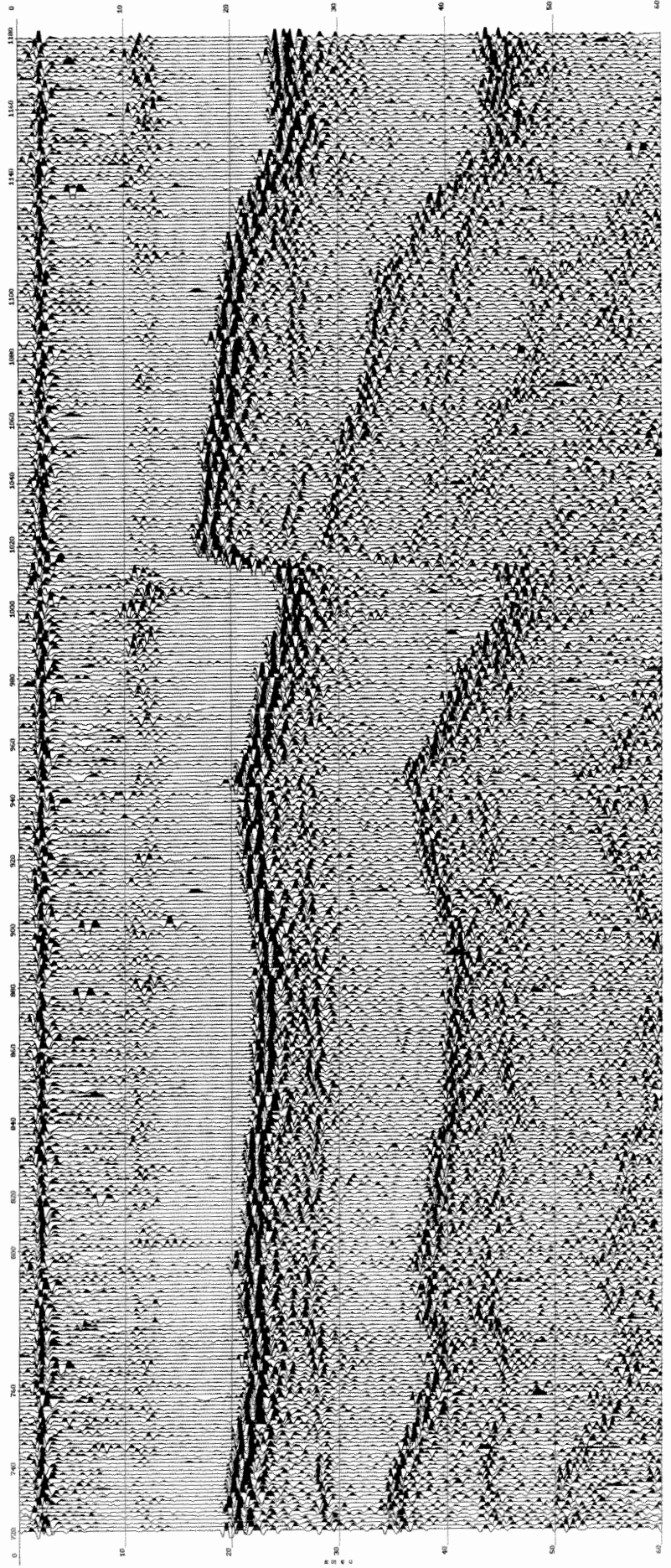
S₁ SURFACE MORPHOLOGY
CONTOUR INTERVAL 1 M

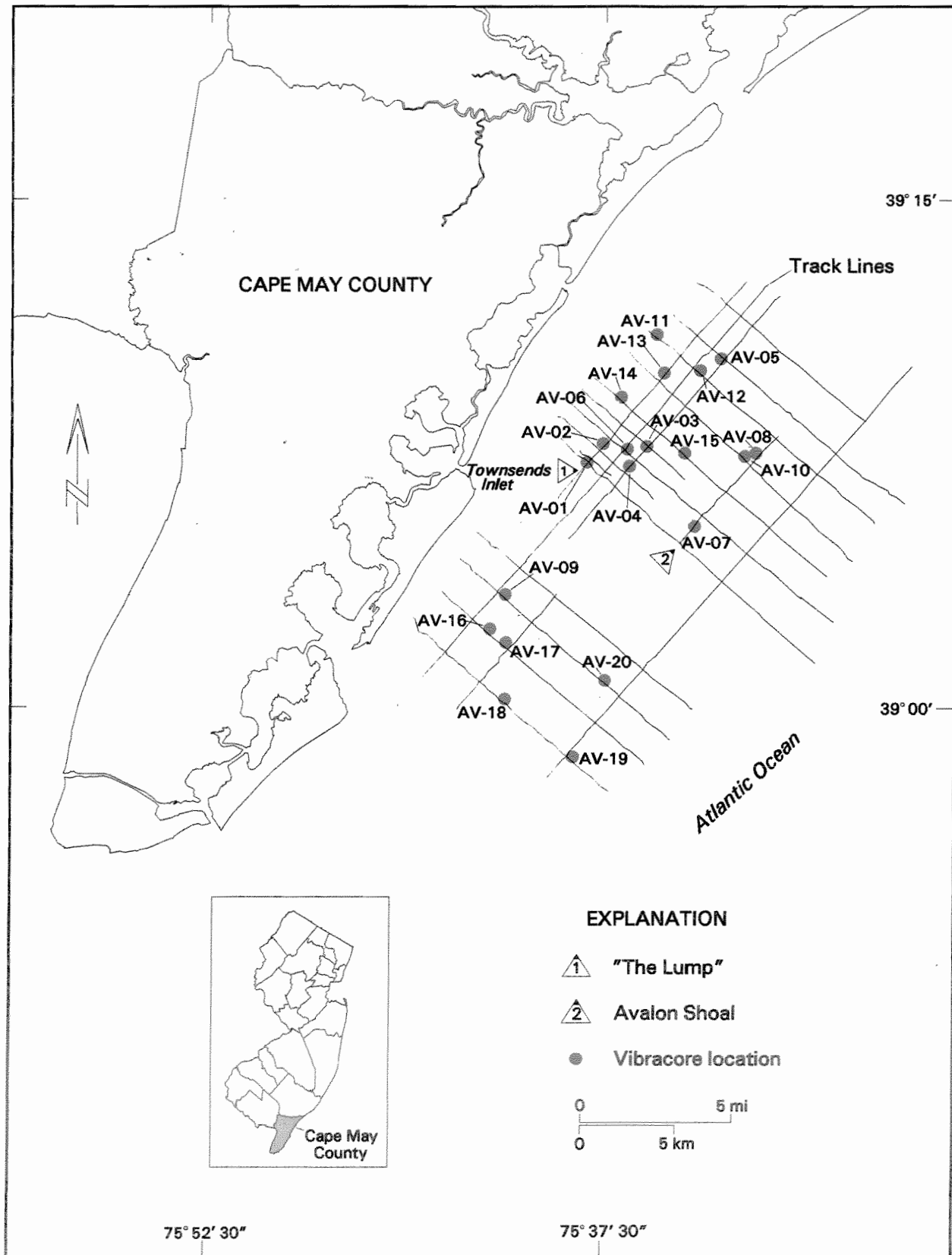
(SEISMIC LINE POSITIONS ARE APPROXIMATE)

DRAFT

DRAFT

6. Condensed digital seismic line from the Townsends Inlet Study Area.





Item 7.--Location of vibracores in the Townsend's Inlet study area. Identification numbers are keyed to vibracore log identification numbers.