

APPENDICES

APPENDIX I

WALTER'S PUDDLE ARBOREAL POLLEN PERCENTAGES

Level Pollen Sample		Pi	Ab	Pn	Be	Ts	Fa	Ac	Ul	Fr	Os/C	Qu	Ca	Cs	J/Th	Po	
Depth	Date(s)																
1	0.5	0	0.0	0.0	5.1	0.0	2.0	1.0	0.0	0.0	0.0	0.0	49.0	9.2	0.0	0.0	0.0
2	10.5	1119	0.0	0.0	3.8	0.0	1.0	2.9	0.0	0.0	0.0	0.0	55.2	6.7	0.0	0.0	1.0
3	20.5	2238	0.0	0.0	5.9	0.9	0.0	0.0	0.0	0.0	0.0	0.0	64.3	6.3	0.5	0.0	0.0
4	29.5	3245	0.0	0.0	8.2	0.5	1.1	3.3	0.0	0.0	0.0	0.0	53.3	6.0	0.0	0.5	0.0
5	41.5	4588	0.7	0.0	3.3	0.7	0.7	0.7	2.0	0.0	0.0	0.0	58.3	4.0	0.0	0.0	0.0
6	58.5	5820	0.0	0.0	3.9	0.4	0.4	0.4	0.4	0.0	0.0	0.0	50.4	1.7	0.0	0.0	0.0
7	63.5	11880	11.1	0.0	10.1	6.1	1.0	0.0	0.0	0.0	0.0	0.0	29.3	3.0	0.0	0.0	1.0
8	122.5	14986	24.8	0.0	35.6	5.9	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0
9	150.5	16626	14.4	0.0	43.3	0.0	1.1	0.0	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10	212.5	20260	9.3	0.0	43.0	7.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
11	254.0	22721	21.1	0.0	32.9	10.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

KEY:

Pi = Picea (Spruce) Ab = Abies (Fir) Pn = Pinus (Pine) Be = Betula (Birch)
 Fa = Fagus (Beech) Ac = Acer (Maple) Ul = Ulmus (Elm) Fr = Fraxinus (Ash)
 Qu = Quercus (Oak) Ca = Carya (Hickory) Ts = Tsuga (Hemlock) Po = Populus (Poplar)
 Cs = Castanea (Chestnut) Os/C = Ostrya/Carpinus (Hazel/Ironwood)
 J/Th = Juniperus/Thuja (Juniper/Cedar)

APPENDIX I: Continued

WALTER'S PUDDLE NON-ARBOREAL POLLEN PERCENTAGES

Level Pollen Sample																
Depth	Date(s)	Al	Sa	Li	Cy	Gr	Ar	Am	Co	Ce	Ny	My	Th	OtT	OtS	OtH
1	0.5	0	2.0	0.0	0.0	7.1	6.1	0.0	1.0	1.0	14.3	1.0	0.0	0.0	0.0	1.0
2	10.5	1119	1.9	0.0	2.9	1.0	0.0	0.0	0.0	1.0	21.9	0.0	0.0	1.0	0.0	0.0
3	20.5	2238	0.9	0.0	1.8	1.8	0.9	0.0	0.0	0.9	14.0	0.0	0.0	0.0	1.8	0.0
4	29.5	3245	0.5	0.0	2.2	0.5	2.2	0.0	0.0	1.1	18.1	0.0	0.0	2.2	0.0	0.0
5	41.5	4588	1.3	0.0	4.6	0.0	4.0	0.0	0.7	1.3	17.9	0.0	0.0	0.0	0.0	0.0
6	58.5	5820	2.2	0.0	3.9	3.0	5.6	0.4	0.4	1.3	24.1	0.4	0.4	0.0	0.4	0.0
7	63.5	11880	1.0	1.0	1.0	5.1	10.1	0.0	1.0	0.0	18.2	0.0	0.0	0.0	0.0	1.0
8	122.5	14986	2.0	5.0	0.0	0.0	10.9	1.0	0.0	2.0	0.0	0.0	0.0	1.0	8.9	0.0
9	150.5	16626	0.0	2.2	2.2	21.1	8.9	1.1	2.2	0.0	0.0	0.0	0.0	2.2	0.0	0.0
10	212.5	20260	0.9	0.0	0.0	23.4	6.5	2.8	0.0	1.9	0.0	0.0	0.0	2.8	0.0	1.9
11	254.0	22721	1.3	1.3	0.0	23.7	5.3	2.6	0.0	1.3	0.0	0.0	0.0	0.0	0.0	0.0

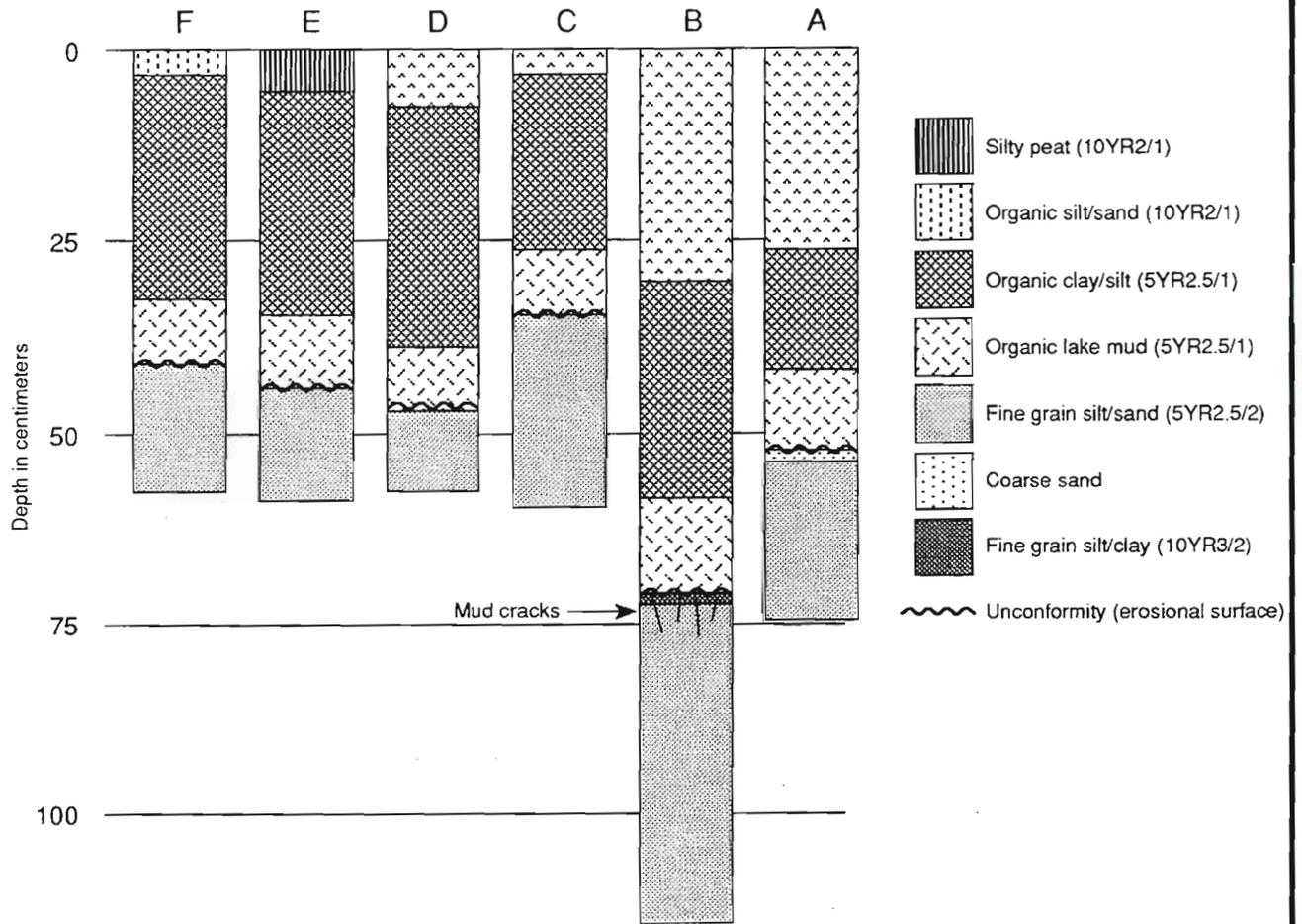
KEY:

Al = Alnus (Alder) Sa = Sanguisorba (Burnet) Li = Liquidambar (Sweet Gum)
 Cy = Cyperaceae (Sedges) Gr = Gramininae (Grasses) Ar = Artemisia (Woorwood)
 Am = Ambrosia (Ragweed) Co = Compositae (Composite family) Ny = Nyssa (Tupelo)
 Ce = Cephalanthus (Buttonbus) My = Myrica (Wax-Myrtle) Th = Thalictrum (Meadow-Rue)
 OtT = Other trees OtS = Other shrubs OtH = Other herbs

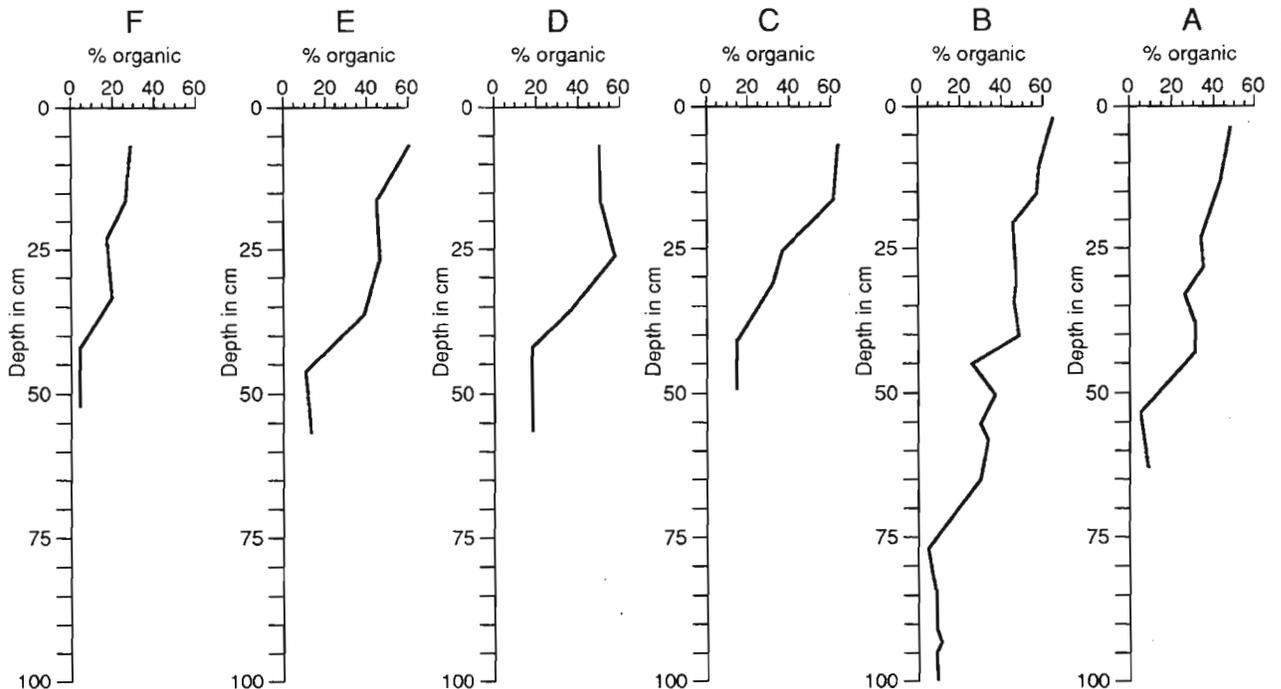
APPENDIX II

**Core Diagrams and Loss-On-Ignition Curves for
Bay/Basin Study Localities**

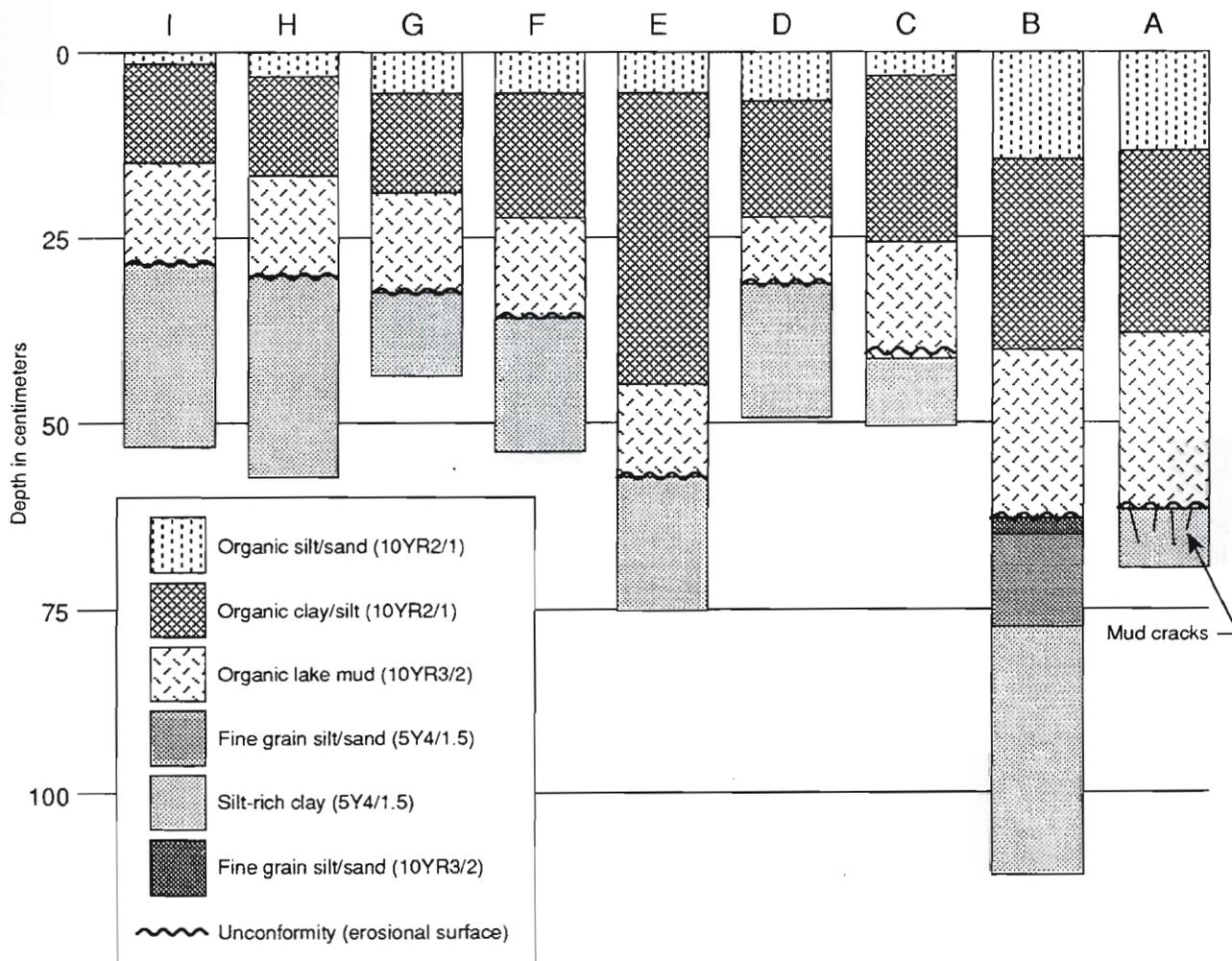
LONGHAUSER POND



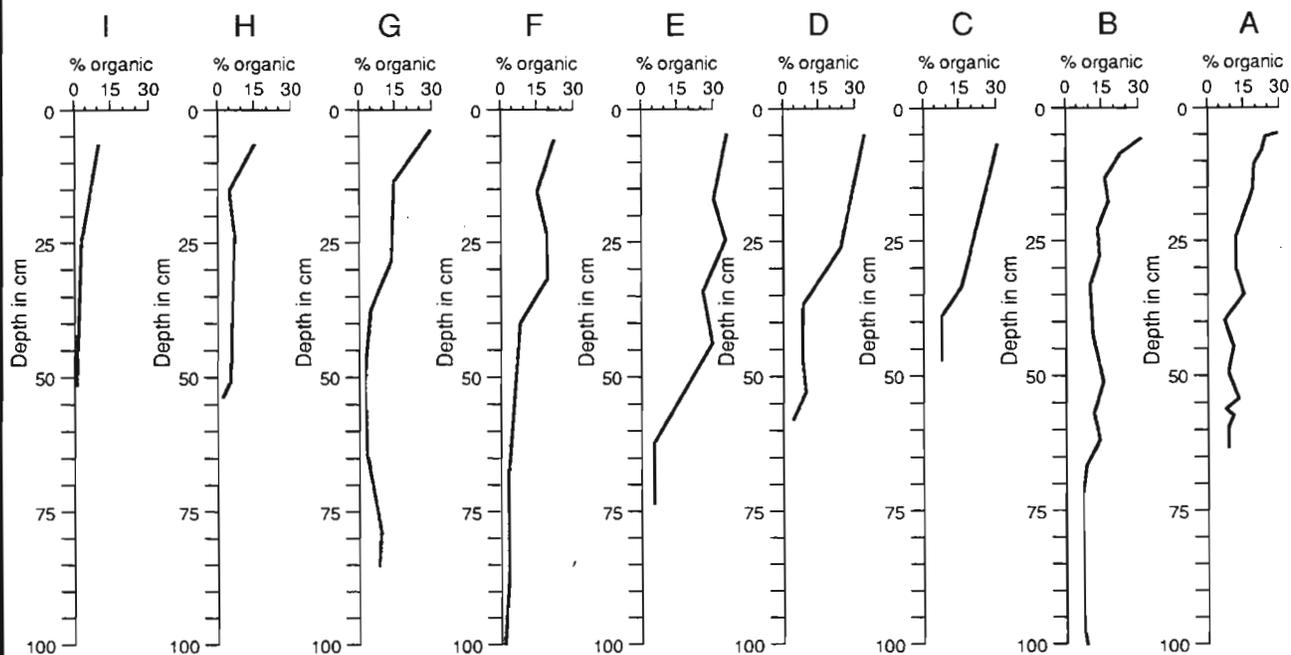
LONGHAUSER POND LOSS-ON-IGNITION DATA

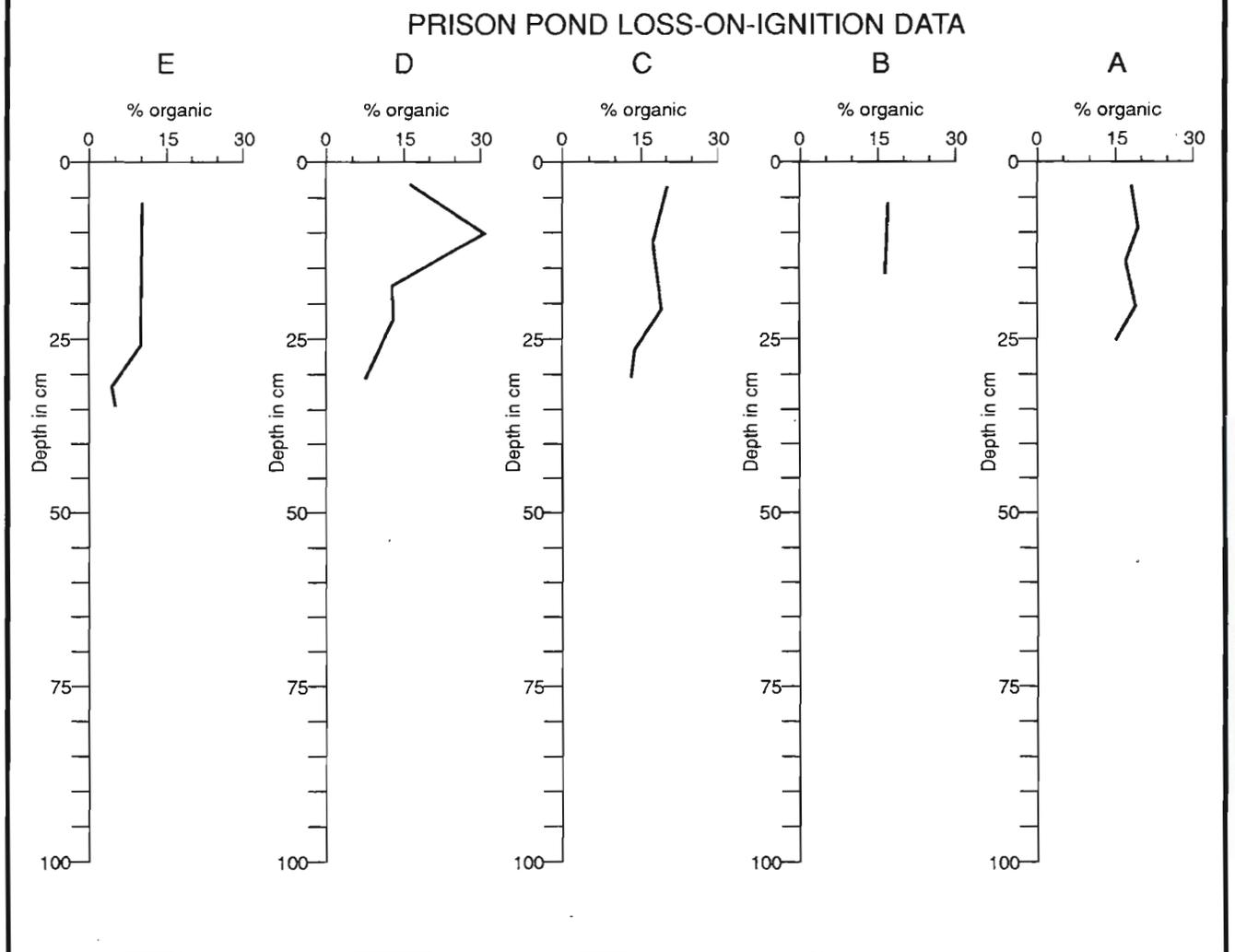
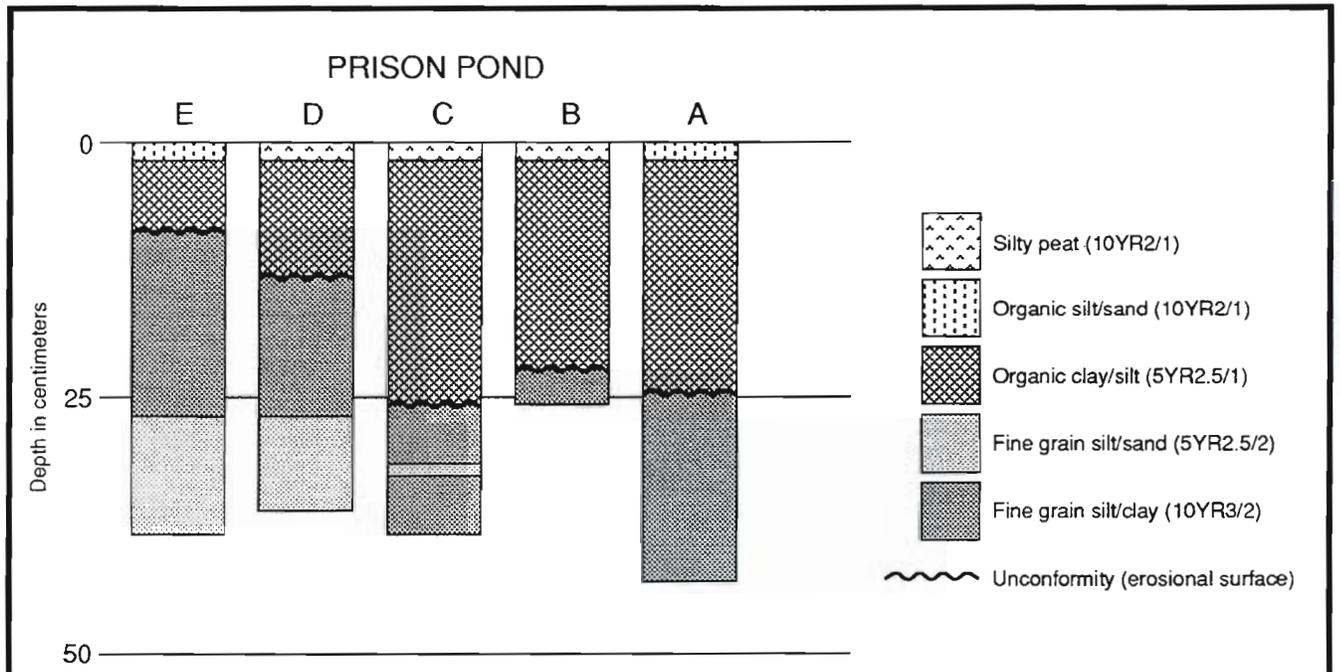


NOWAKOWSKI POND

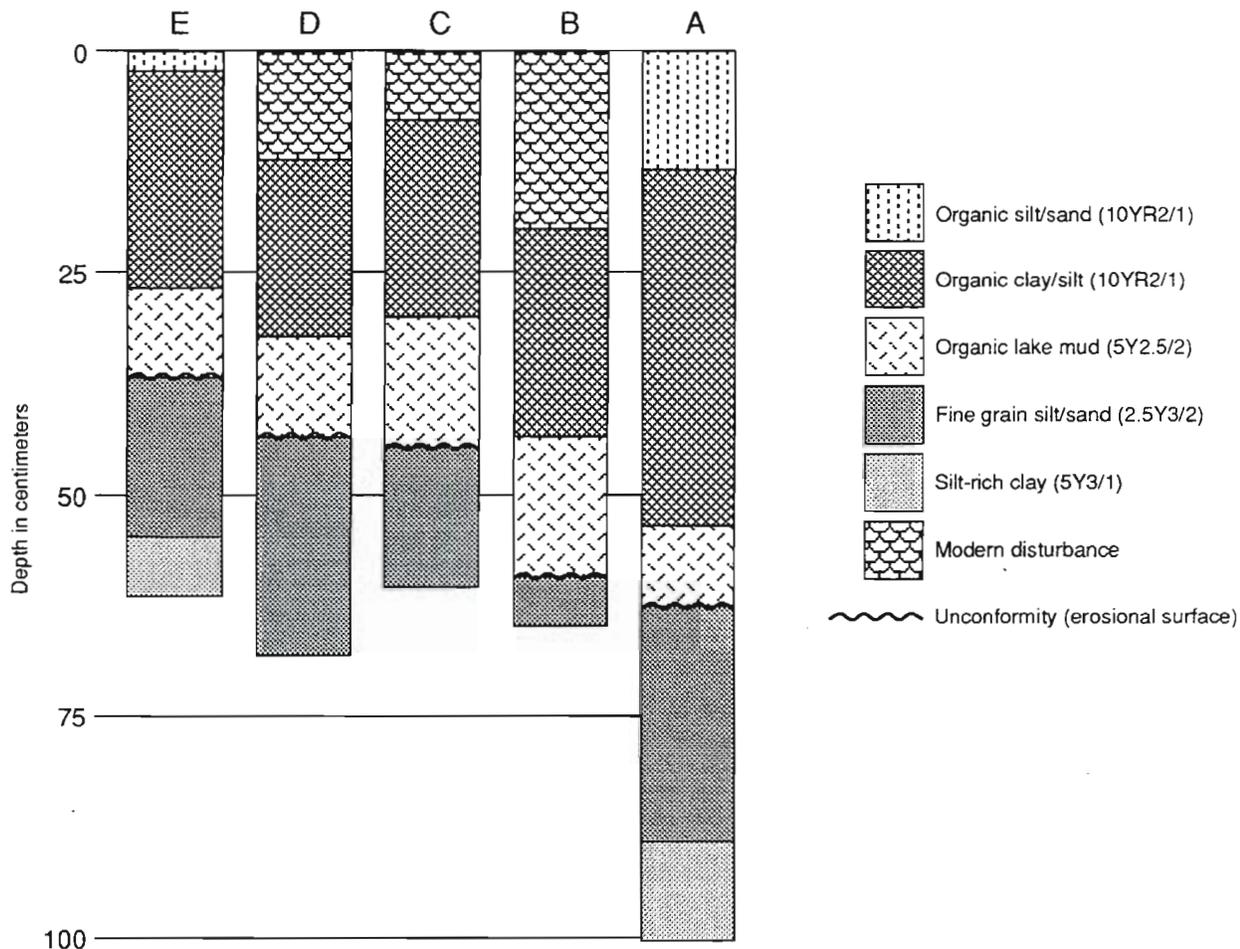


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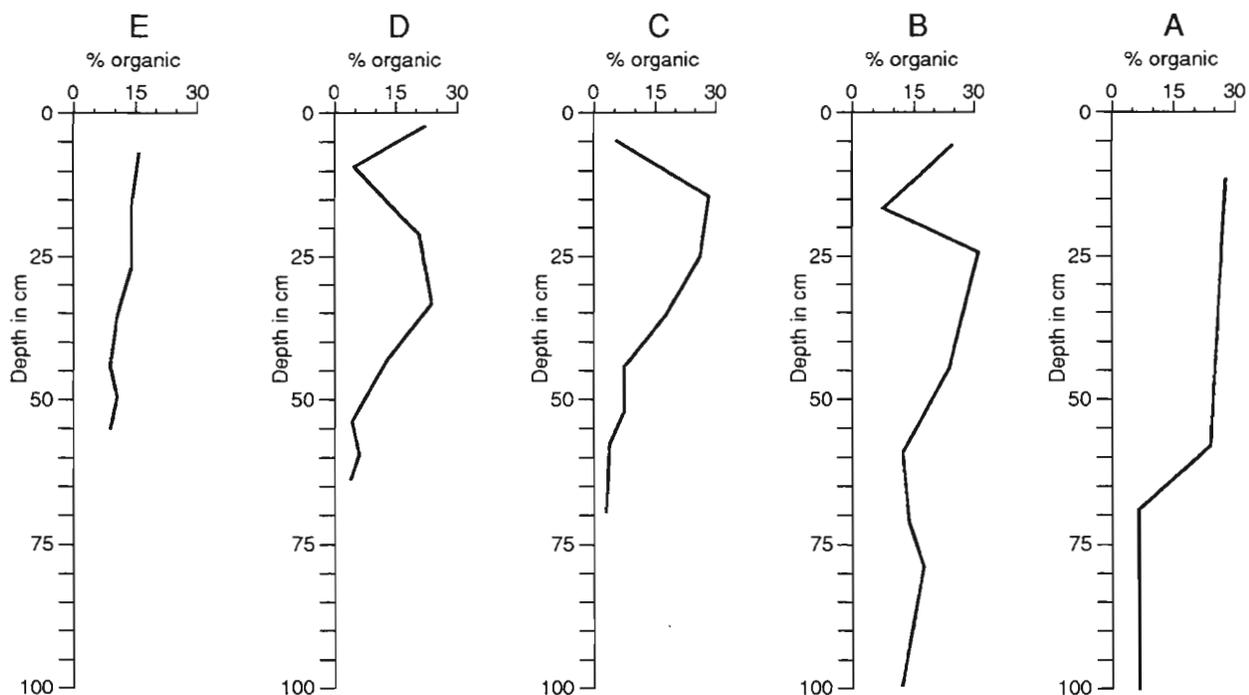




WALTER'S PUDDLE



WALTER'S PUDDLE LOSS-ON-IGNITION DATA



APPENDIX III

Grain Size Analysis Data for Wetland Cores

Core	Depth (cm)	Mass Sand (g)	Mass Mud (g)	Sand + Mud	% Sand*	Lithology	Environment
TS-4	5.0	0.029	5.369	5.398	0.5	Mud	Channel
TS-4	35.0	0.036	4.190	4.226	0.9	Mud	Channel
SJ-4A	0.1	0.032	2.966	2.998	1.1	Mud	Channel
SJ-4A	20.0	0.058	3.887	3.945	1.5	Mud	Channel
TS-2	20.0	0.081	5.420	5.501	1.5	Mud	Channel
TS-10	10.0	0.094	4.278	4.372	2.2	Mud	Channel
TS-10	25.0	0.137	4.676	4.831	2.8	Mud	Channel
TS-10	40.0	0.170	3.828	3.998	4.3	Mud	Channel
TS-2	15.0	0.251	5.259	5.510	4.6	Mud	Channel
SJ-4A	43.0	0.283	3.754	4.037	7.0	Mud	Channel
TS-2	5.0	0.284	3.711	3.995	7.1	Mud	Channel
TS-5	9.0	0.485	5.466	5.951	8.1	Mud	Channel
TS-5	2.0	0.555	5.128	5.683	9.8	Sandy Mud	Channel
TS-5	35.0	0.773	5.345	6.118	12.6	Sandy Mud	Channel
TS-2	10.0	0.580	2.510	3.090	18.8	Sandy Mud	Channel
TS-PC-3	2.0	1.367	3.900	5.267	26.0	Sandy Mud	Channel
TS-5	0.1	0.766	1.268	2.034	37.7	Sandy Mud	Channel
TS-8	12.0	6.580	2.419	8.999	73.1	Muddy Sand	Point Bar
TS-8	17.0	8.257	2.400	10.657	77.5	Muddy Sand	Point Bar
TS-7	20.0	15.590	2.956	18.546	84.1	Muddy Sand	Point Bar
TS-8	5.0	18.246	3.056	21.302	85.7	Muddy Sand	Point Bar
TS-9	30.0	18.883	2.184	21.067	89.6	Sand	Point Bar
TS-3	2.0	11.314	1.114	12.428	91.0	Sand	Point Bar
TS-6	15.0	13.150	1.156	14.306	91.9	Sand	Point Bar
TS-7	30.0	18.415	1.505	19.920	92.4	Sand	Point Bar
TS-6	10.0	10.446	0.755	11.201	93.3	Sand	Point Bar
TS-7	40.0	14.354	0.955	15.309	93.8	Sand	Point Bar
TS-7	10.0	25.493	1.670	27.163	93.9	Sand	Point Bar
TS-6	5.0	11.533	0.426	11.959	96.4	Sand	Point Bar
TS-9	20.0	28.573	0.598	29.171	98.0	Sand	Point Bar
TS-9	10.0	26.799	0.557	27.356	98.0	Sand	Point Bar

* in ascending order by percent sand

APPENDIX IV

Loss-on-Ignition Data for Wetland Cores

Loss-On-Ignition by Environment

LOI Interval	Riverine	Estuarine	Palustrine	Flat	Emergent		Forested
					(Est.)	(Pal.)	
0.0 to 5.0	41.9	0.0	0.0	0.0	0.0	0.0	0.0
5.0 to 10.0	25.8	0.0	0.0	0.0	0.0	0.0	0.0
10.0 to 15.0	12.9	37.5	0.0	11.0	45.0	13.3	0.0
15.0 to 20.0	3.2	35.0	0.0	67.0	26.0	0.0	0.0
20.0 to 25.0	6.4	10.0	0.0	22.0	6.5	0.0	7.7
25.0 to 30.0	6.4	10.0	15.4		13.0	13.3	7.7
30.0 to 35.0	3.2	5.0	23.1		6.5	26.7	15.4
35.0 to 40.0		2.5	15.4		3.2	20.0	7.7
40.0 to 45.0			11.5			6.7	15.4
45.0 to 50.0			7.7			6.7	7.7
50.0 to 55.0			7.7			6.7	7.7
55.0 to 60.0			0.0			0.0	0.0
60.0 to 65.0			3.8			0.0	7.7
65.0 to 70.0			7.7			6.7	7.7
70.0 to 75.0			7.7				15.4

Key: LOI Interval = Percent Loss-On-Ignition range
 (Est.) = Estuarine
 (Pal.) = Palustrine

Percent Loss-On-Ignition of Subsurface Deposits

Leipsic River Subsurface Data

Peat (High)	Mud (High)	Peat (Low)	Mud (Low)	Sandy Mud
56.0	16.0	44.3	26.3	5.2
64.8	14.7	38.0	34.0	12.4
48.7	30.9	50.2	30.1	5.0
40.9	30.3	49.6		
58.8	27.6	47.1		
66.7	28.1	44.6		
67.1	29.7	56.2		
74.1				
62.6				
46.4				
60.8				
42.8				
45.8				
64.1				
53.4				

APPENDIX IV: continued

Percent Loss-On-Ignition of Subsurface Deposits

Duck Creek Subsurface Data

Peat	Low-Organic Mud	Mud	Muddy Sand	Sandy Mud	Root Zone
50.0	8.6	16.2	25.1	38.6	40.4
79.9	9.6	18.2	5.4	12.9	28.9
38.8	10.5	19.6		14.1	48.1
61.4	7.3			11.1	27.6
39.6	8.6				
74.8	8.1				
46.2	8.6				
53.1	8.9				
	9.5				
	8.9				
	9.8				
	8.8				
	11.8				
	11.9				
	11.3				
	9.9				
	12.7				

St. Jones River Subsurface Data

Mud 1	Mud 2	Peat	Sandy Mud	Low-Organic Mud	SJ-6 Deep Mud
34.2	20.1	50.2	4.5	11.4	26.8
26.3	14.9	34.8	5.8	12.2	43.7
23.8	17.2	54.4	9.9	12.1	30.5
33.5	19.0	65.1	5.8	10.8	
24.5	16.0	43.7	14.9	10.7	
	15.7	53.4	11.3	14.6	
	19.3	47.6	3.2	12.7	
	14.4	37.9	5.9	10.4	
	14.5		7.3	10.5	
			12.5	12.9	
				15.4	
				13.3	
				15.9	
				14.1	
				10.3	
				12.1	
				10.6	
				13.7	

APPENDIX IV: continued

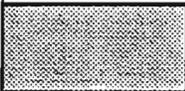
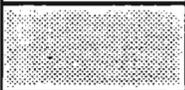
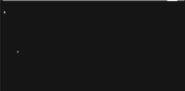
Loss-On-Ignition Values for Modern Wetland Environments

RIVERINE				ESTUARINE				PALUSTRINE							
Unconsolidated Bottom				Flat	Emr.	Total	Tot.	Tot.	Emr.	For.	Total	Emr.	For.	Emr.	For.
Mud	Sandy	Sand	Total	Mud	Mud	Total	Mud	Peat	Tot.	Tot.	Total	Peat	Peat	Mud	Mud
Mud															
14.7	20.5	3.1	C1+	20.3	13.8	C5+	10.7	68.3	68.3	30.6	C10+	68.3	44.9	10.7	30.6
26.2	32.6	0.5	C2+	19.1	12.8	C6	14.6	47.3	47.3	24.5	C11	47.3	54.3	14.6	24.5
15.1	7.0	1.1	C3	12.8	12.4		33.5	41.1	41.1	37.7		41.1	70.6	33.5	37.7
12.5	7.3	3.3		14.1	14.1		32.2	52.0	52.0	28.9		52.0	44.6	32.2	28.9
14.1	7.6	1.8		19.1	12.9		28.1	39.2	39.2	31.4		39.2	65.5	28.1	31.4
12.3	8.2	4.7		16.2	14.9		26.0	34.7	34.7	44.9		34.7	72.4	26.0	
	8.7	2.9		16.0	18.4		30.6	32.5	10.7	54.3		32.5	64.3		
	28.7	3.6		17.1	13.1		24.5	38.7	14.6	70.6		38.7	49.1		
	23.1	1.7		22.5	11.6		37.7	35.5	33.5	44.6		35.5			
		0.7			11.4		28.9	44.9	32.2	65.5					
		7.0			10.9		31.4	54.3	28.1	72.4					
		6.1			11.5			70.6	26.0	64.3					
		7.6			10.9			44.6	32.5	49.1					
		0.4			13.0			65.5	38.7						
		0.5			38.3			72.4	35.5						
		1.2			31.3			64.3							
					19.9			49.1							
					31.7										
					29.2										
					16.2										
					23.5										
					28.2										
					17.5										
					29.5										
					26.3										
					19.6										
					16.5										
					17.9										
					13.3										
					16.8										
					22.9										

Key: Emr. = Emergent
 For. = Forested
 Tot. = Total

APPENDIX V
Wetland Core Logs

LITHOLOGIES

		SAND; fine (0.06 to 0.25 mm) *
		SAND; medium (0.25 to 0.50 mm) *
		SAND; coarse (0.50 to 1.0 mm) *
		ORGANIC FRAGMENTS > 2 cm diameter.
		PEAT; > 18% organic carbon (Loss-On-Ignition values > 35%).**
		MUD; with abundant fibers, roots, stems, twigs, leaves. L.O.I. values 10-35%. ***
		MUD; compact, lesser organic content; L.O.I. values typically < 10%. ***
		MUD; sandy. (10-50% sand) ***
		<p>* After Compton, 1962.</p> <p>** After U.S. Soil Conservation Service, 1975.</p> <p>*** After Folk, Andrews, and Lewis, 1970.</p>

CORE DC-1		Location: Along Duck Creek ~0.5 mile east of Rt. 13 bridge, NW of Smyrna, DE.	
Depth(cm) Below Core top	Symbol	Description	Percent Loss On Ignition
0		MUD: dark yel brn w/ fibers & wood fragments (3 x 8 cm & 4 x 6 cm both from 16-28 cm depth. 2 x 4 cm fragment at 34 cm depth). Grades into underlying peat (0-71 cm).	13.0
30			38.3
60			31.3
90			19.9
120			31.7
150		PEAT: muddy, grayish black grading to dsky yel brn. Irregular lenses of fine sand, 2 cm dia frag @ 115 cm (71-205 cm).	50.0
180			79.7
210		SAND: line to v. line pale yel brn., horizontal laminae of coarser med. to fine sand near the base (205-306 cm).	38.8
240			61.4
270		Incr. mud content 170-205 cm.	39.6
300			C-14 date 11480 +/- 150 BP.
330		SAND: medium, pale yel brn.-v. pale orange, contoured (by coring?) irreg. black laminae (306-336 cm).	
360			

CORE DC-2		Location: Along Duck Creek ~. 0.5 miles east of Rt. 13 bridge, NW of Smyrna, DE.	
Depth(cm) Below Core top	Symbol	Description	Percent Loss On Ignition
0		MUD: dsky yel brn, many fibers, wood fragments at top, horiz. bedding of orange organics. Organics increase basal 20 cm. Distinct basal contact (0-55 cm).	16.2
30			23.5
60			28.2
90		MUD: dsky yel brn, compact, few fibers, gradually increasing organics w/ depth grading into underlying peat (55-118 cm).	8.6
120			9.6
150		PEAT: sandy, black, many lg wood frags, esp. 140-147 (118-147 cm).	16.2
180			18.2
210		SAND: muddy, bluish brn grading to dk yel brn, peaty lens 162-163. Sharp basal contact (147-165 cm).	74.8
240			25.1
270		SAND: fine to very fine, laminated, somewhat muddy. Few vertical organics- rootlets? Pebbles and lg wood fragments @ ~213 cm. (165-225 cm).	5.4
300			
330			
360			

CORE DC-3		Location: Approx. 100' south of DC 2 taken on muddy flat at edge of channel.	
Depth(cm) Below Core top	Symbol	Description	Percent Loss On Ignition
0		MUD: dsky brn. w/ abundant organic detritus, grading to peat (0-39 cm)	20.3
30			19.1
60		MUD: olive gray, increased organics from 78-110 cm, grades into underlying muddy peat (39-110 cm).	48.1
90			10.5
120		PEAT: muddy, brownish black, lg wood fragment at 113 cm (110-150 cm).	19.5
150			46.2
180		MUD: sandy, fine, brnsh blk w/ abndt fibers. (150-184 cm).	53.1
210			38.6
240		SAND: muddy w/ fibers grading to clean medium light olive gray sand (208-230 cm).	
270			
300			
330			
360			

CORE DC-4		Location: Southern side of Duck Creek across channel from DC-3.	
Depth(cm) Below Core top	Symbol	Description	Percent Loss On Ignition
0		MUD: dusky yel brn w/ fibers, a large fragment @ 23 cm. Sharp basal contact (0-44 cm).	17.5
30			29.5
60		MUD: olive gray, dense. Grades into underlying unit (44-209 cm).	26.3
90			12.7
120			9.9
150			11.3
180			11.9
210		MUD: sandy, dsky yel brn., w/ few organic fragments and variable fibers. Mottled lenses of fine dark yellow brown sand, more with depth (209-270 cm).	11.8
240			12.9
270		MUD: olive black, fibrous, loose (270-272 cm).	14.1
300			11.1
330			
360			

CORE DC-5		Location: Slightly north of DC-4 on south side of Duck Creek.	
Depth(cm) Below Core top	Symbol	Description	Percent Loss On Ignition
0		MUD; dusky yel brn w/ many small fibers. Becomes darker and more compact towards base (0-49 cm).	19.6
30			16.5
60			17.9
240			27.6
60		MUD; olive black, compact, very few fibers (49-238).	8.1
90			8.6
120			8.9
150			9.5
180			8.9
210			9.8
240			8.8

CORE DC-6		Location: Slightly northwest of DC-5 on south side of Duck Creek.	
Depth(cm) Below Core top	Symbol	Description	Percent Loss On Ignition
0		MUD; olive black w/ scattered white stems, twigs & fibers (0-36 cm).	13.3
30			16.8
60			22.9
60		PEAT; dsky yel brn, few twigs, grading to mud at the base (36-61 cm).	40.4
90			28.9
90		MUD; olive black, few scattered plant fibers, denser than unit 1. Thin bed of black organics at 94 cm (61-104 cm).	7.3
120			8.6
150			
180			
210			
240			
270			
300			
330			
360			

CORE SJ-1		Location: Southwest side of island in St. Jones River located just north of the Rt.10 bridge, Dover DE.	
Depth(cm) Below Core top	Symbol	Description	Percent Loss On Ignition
0		PEAT, muddy, grayish brn w/ abndt fibers (0-43 cm).	68.3
40			47.3
80			41.1
80		MUD; grayish brn w/ fibers. Large wood fragment @ 94 cm (43-97 cm).	34.2
120			26.3
120		MUD; grayish brn w/ lesser organics (97-178 cm).	23.8
160			20.1
200			14.9
200		PEAT; muddy, mottled w/ fine lt. ol. gray sand, esp 190-230 cm. (178-249 cm).	17.2
240			50.2
240		SAND; medium, olive gray (249-298 cm).	34.8
280			54.4
280		Fiber ball, matted (298-303 cm). C14 date of 1890 +/- 220 BP.	65.1
320			43.7
320		SAND; olive gray, interbedded; med to fine beds 5-20 cm thick interbedded w/ coarse sand to gravel beds 2-10 cm thick (303-403).	
360			
400			
440			
400		MUD; sandy (fine), dsky yel brn (403-413).	4.5
440			5.8
440		SAND; fine-crse (poorly sorted), ol. gray. MUD; sandy (fine), dsky yel brn (429-445).	9.9
480			9.9

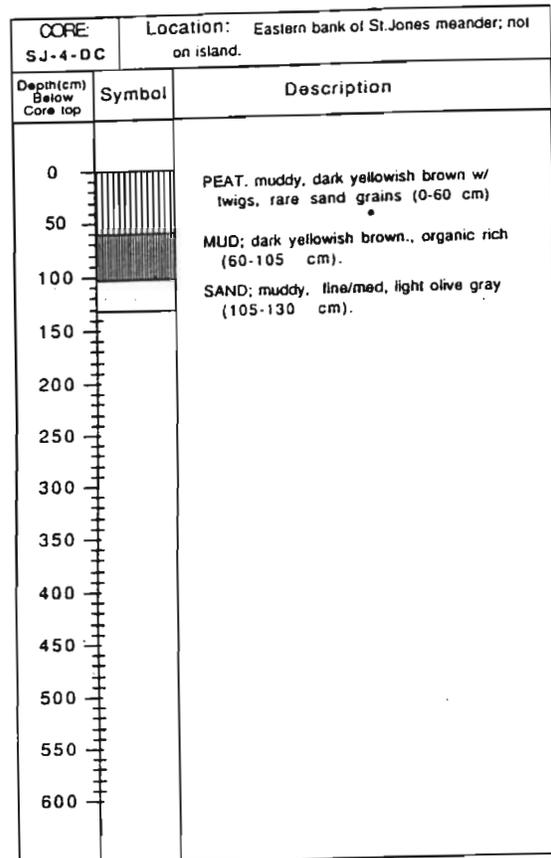
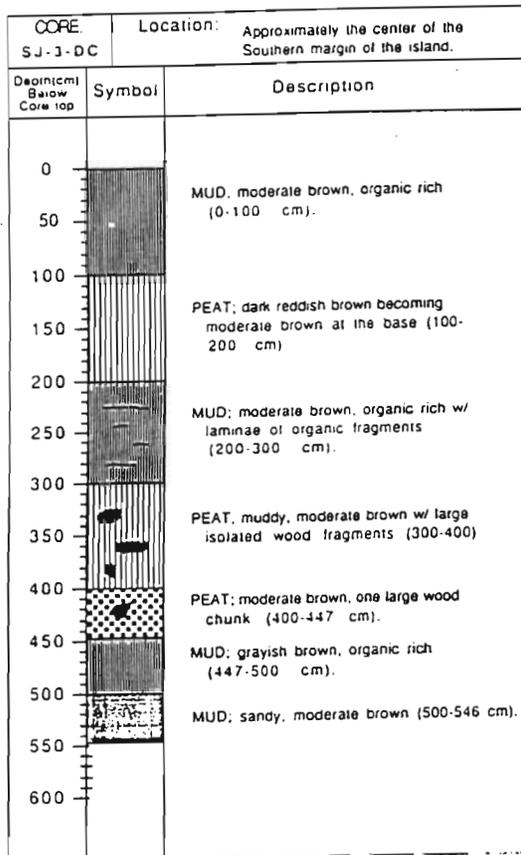
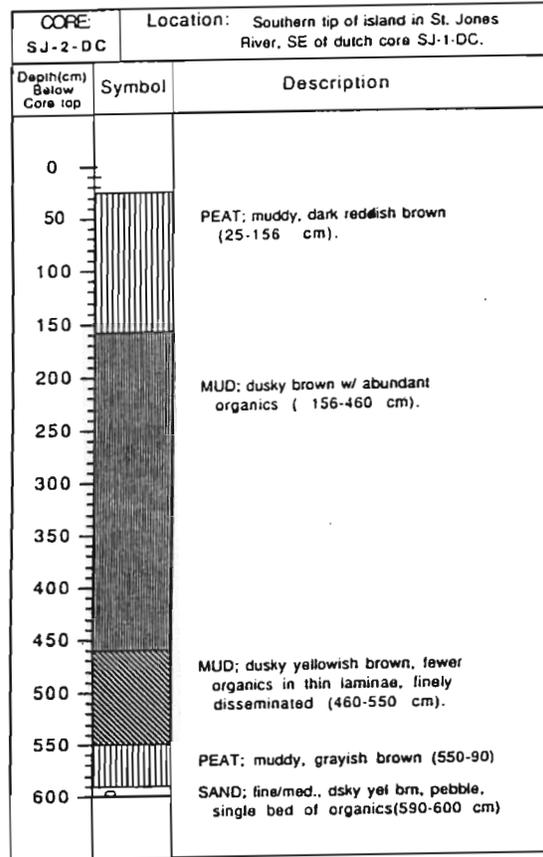
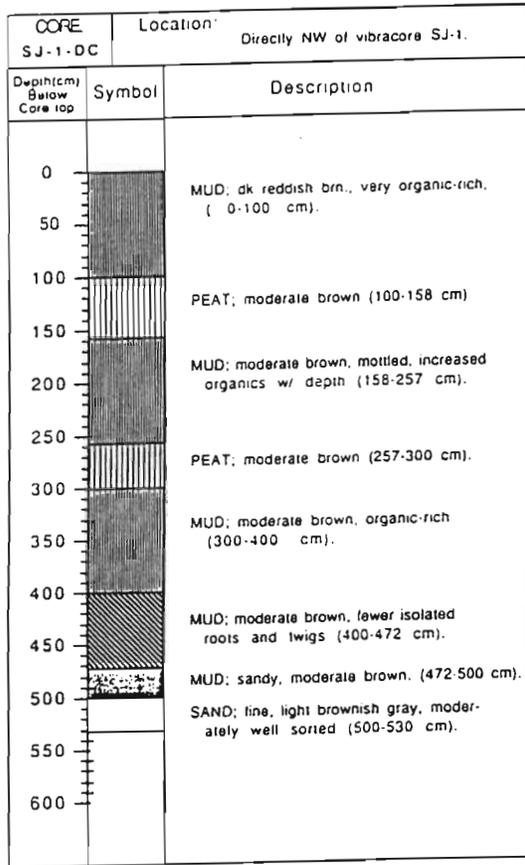
CORE SJ-3		Location: East-southeast of SJ-1 on the east bank of the St. Jones River (not on the island).	
Depth(cm) Below Core top	Symbol	Description	Percent Loss On Ignition
0		PEAT; muddy, grayish brown, grades to mud (0-63 cm).	52.0
40			39.2
80			34.7
80		MUD; dusky yellowish brown w/ very few small fibers. Weak horizontal stratification in basal 20 cm. (63-341 cm).	36.9
120			16.0
160		SAND; muddy, fine, olive gray (400-426 cm).	11.4
200			11.4
240		MUD; sandy, fine, olive black w/ few organics. (341-372 cm).	12.2
280			12.2
320		MUD; sandy, fine, olive gray, weakly laminated. (372-400 cm).	12.1
360			12.1
400		SAND; muddy, fine, olive gray (400-426 cm).	5.8
440			5.8
480			

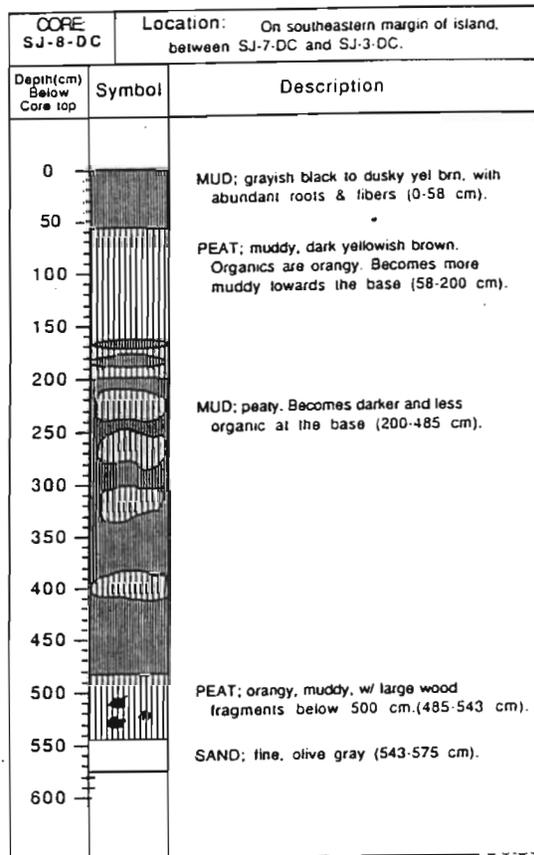
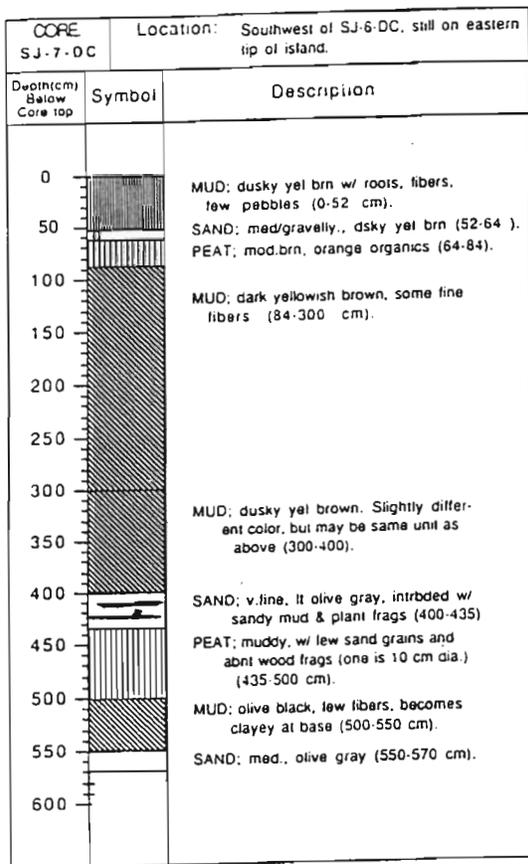
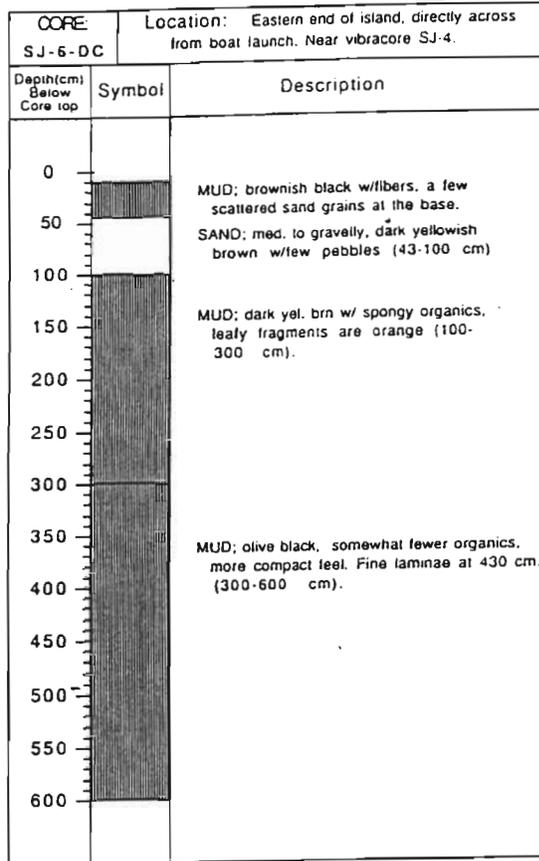
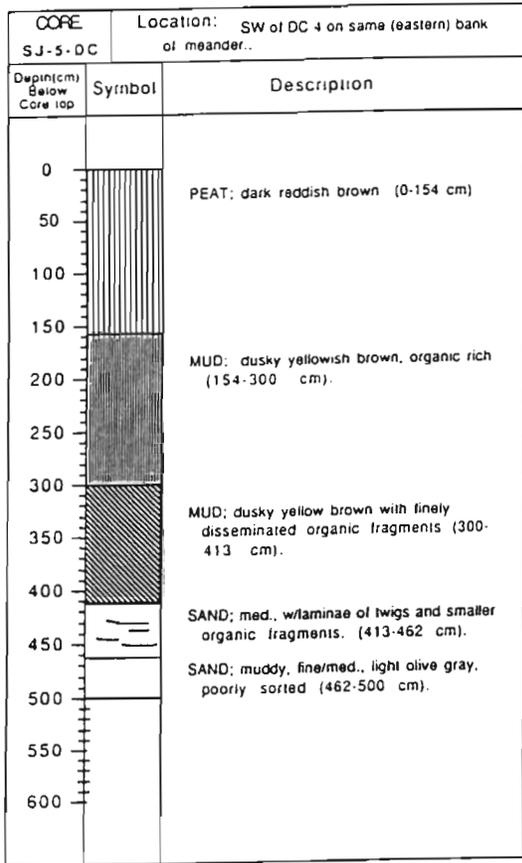
CORE SJ-4 A		Location: Taken in center of St. Jones River. Modern tidal stream deposit (dredged). Meander is cutoff; may be currently inactive.	
Depth(cm) Below Core top	Symbol	Description	Percent Loss On Ignition
0		MUD; black, smooth, porous, few fibers, roots, lg stick at 13 cm (0-38 cm).	12.5 14.1 12.3
40		MUD; sandy, grayish black w/ abndt fibers	14.9
		SAND; peaty, grayish black w/litter.	11.3
80		MUD; grayish black w/few small plant fibers. Thin beds of dk yel brn mud @ 61, 79, 81 cm (55-86 cm).	10.8
120			
160			
200			
240			
280			
320			
360			
400			
440			
480			

CORE SJ-4		Location: Easternmost tip of the island, directly across St. Jones River from boat pull-in.	
Depth(cm) Below Core top	Symbol	Description	Percent Loss On Ignition
0		SAND; med to crs. brnsh blk w/ wood & pbis (0-12 cm).	10.7
		MUD; dsky yel brn w/ fibers (12-35 cm).	14.6
40		MUD; peaty, dsky yel brn w/ leaf bed @ 43 cm and fiber mat at base (35-64 cm).	33.5 24.5
80			15.7
120		MUD; interbeds of light and dark olive black w/ fine organics, weakly horizontally bedded. (64-200 cm).	12.7
160			10.4
200		MUD; sandy, dsky yel brn, w/sand bed, small wood frags 205.6 (198-206 cm).	3.2
		SAND; med-crs. lf of gray (206-219 cm).	
240			
280			
320			
360			
400			
440			
480			

CORE SJ-5		Location: Northeast margin of the island, NW of SJ-4.	
Depth(cm) Below Core top	Symbol	Description	Percent Loss On Ignition
0		MUD; dsky yel brn w/ twigs & stems, loose, wet (0-33 cm).	32.2 28.1 26.0
40		PEAT; muddy, dsky yel brn. Lg wood frag. Grades into mud below (33-68 cm).	53.4 47.6
80		MUD; dusky yel brn w/fibers (68-85 cm).	37.9 14.5
120			10.5
160		MUD; dusky yel brn to olive blk, w/few threadlike fibers. Scattered lenses of higher amts of organics. Abundant 1 mm wood chunks at 350-354 cm (68-354 cm).	12.9 15.4
200			
240			13.3
280			15.9
320			14.1
360		MUD; sandy, fine, alternating w/SAND: line, mddy, dk yel brn (354-374).	5.9
		SAND; fine-v. fine, v. pale orange-dk yel orange, splotchy, dense. Pre-Holocene? (374-398 cm).	
400			
440			
480			

CORE SJ-6		Location: West of SJ-5 on north margin of island in St. Jones River.	
Depth(cm) Below Core top	Symbol	Description	Percent Loss On Ignition
0		MUD; dusky brn w/ litter, grades to peat from 7-35 cm, then organics gradually lessen grading into next unit (0-43 cm).	32.5 38.7 35.5
40		MUD; dusky yel brn w/ fibers (43-75 cm).	19.3
80			14.4
120		MUD; dusky yellow brown, compact, fewer organics (75-241 cm).	10.3
160			12.1
200			10.6
240		MUD; sandy, dsky yel brn, intrbed w/ med, pale yel brn sand, esp from 274-282 cm. Pbbles at base of unit (241-292 cm).	13.7 7.3 12.5
280		MUD; dusky brn, fine fibers & wood frags. peaty in middle (292-334 cm). C14 date 3460 +/- 80 BP.	26.8 43.7 30.5
320		MUD; sandy, dk yel brn, v. dense, blue flecks (Vivianite), (334-351).	
360		SAND; fine, mod yel brn-grayish orange, blue-gray flecks, dense. Pre-Holocene? (351-371 cm).	
400			
440			
480			





CORE LR-3		Location: South side of Leipsic River southeast of site LR 2.	
Depth (cm) Below Core top	Symbol	Description	Percent Loss On Ignition
0	[Symbol: horizontal lines]	MUD: dk yel brn w/ abnt fibers, grades into peat, large wood fragment at 15-20 cm (0-27 cm).	28.9
20			31.4
40	[Symbol: vertical lines]	PEAT: dusky yel brn w/ increased fibers and large wood fragments > 2 cm diameter. Organics have orange hue w/ sawdust texture. Sharp basal contact (27-113 cm).	62.6
60			46.4
80			
100			
120	[Symbol: horizontal lines]	MUD: grayish brn w/ fewer orange organic fibers. Grades into peat (113-134 cm).	30.3
140	[Symbol: vertical lines]	PEAT: dsky brn w/ increased fibers and fragments (some >2cm-dia.) Sawdust texture. Mud content increases as organics decrease w/depth. Large wood chunk at base (134-183 cm).	44.3
160			
180			38.0
200			
220			
240			

CORE LR-4		Location: Same cove as LR-3, but on the eastern margin.	
Depth (cm) Below Core top	Symbol	Description	Percent Loss On Ignition
0	[Symbol: vertical lines]	PEAT: muddy, dsky yel brn, wet, loose, few wood fragments. Becomes compacted w/ sawdust texture at depth (0-57 cm).	44.9
20			54.3
40			70.6
60	[Symbol: horizontal lines]	MUD: dk yel brn, w/ lesser organics. Grades into underlying peat (57-84 cm).	60.8
80			42.8
100	[Symbol: vertical lines]	PEAT: dusky yel brn w/ more fibers and fragments > 2 cm (84-154 cm).	27.6
120			28.1
140			50.2
160			
180	[Symbol: horizontal lines]	C14 date on lg wood frag @ 154 cm = 3515 +/- 85 BP. MUD: brnsh blk w/ few fibers. SAND: fine, pale to dk yel brn, compact, slightly mottled. Pre-Holocene? (160-164 cm).	26.3
200			
220			
240			

CORE LR-5		Location: Taken from eastern edge of cove (site of LR-3 and 4) at intersection with main channel.	
Depth (cm) Below Core top	Symbol	Description	Percent Loss On Ignition
0	[Symbol: vertical lines]	PEAT: muddy, dsky brn, loose (0-3 cm). SAND: muddy, brnsh blk (3-7 cm).	44.6
20			5.0
40	[Symbol: vertical lines]	PEAT: muddy, dsky brn to brnsh blk, organics of sawdust texture. Sharp basal contact (7-76 cm).	45.8
60			64.1
80			53.4
100			
120	[Symbol: horizontal lines]	MUD: dk yel brn w/ fewer fibers. Some horiz. bedding. Grades into underlying peat (76-98 cm).	29.7
140	[Symbol: vertical lines]	PEAT: muddy, dsky brown w/ large wood pieces (trees?) (115-129 cm and 131-139 cm). Scattered 2 cm diameter fragments down to the base (98-190 cm).	49.6
160			47.1
180			44.6
200			56.2
220	[Symbol: horizontal lines]	MUD: dsky brn w/ scattered fine organic fibers (190-213 cm).	34.0
240		MUD: black, peaty. Thin bed of muddy sand and wood frags at top (213-220 cm). C14 date 217-220 cm = 8020 +/- 100 BP.	30.1

CORE TS-1		Location: Tidal stream - 0.6 mi. south of Mill Creek fork - 1.5 mi. west of Smyrna DE	
Depth(cm) Below Core top	Symbol	Description	Percent Loss On Ignition
0		PEAT: muddy, dusky brn w/abund matted fibers, roots, blades of grasses, rhi- zomes. Grades into unit 2 (0-20 cm).	65.5 72.4 64.3 49.1
20		MUD: olive black to dsky yel brn w/ lesser but still abndt stems & fibers. Many 1mm thick peat lenses. Sharp contact w/ unit 3 (20-118 cm)	21.0 15.9
40			13.9
60			12.4
80			12.4
100			
120		PEAT: dense grayish black w/fibers and wood chunks, little mud. Large (1.5 cm dia) wood fig at base (118-124 cm).	87.2
140			

CORE TS-2		Location: Downstream (north) -0.1 mile from TS-1 site.	
Depth(cm) Below Core top	Symbol	Description	Percent Loss On Ignition
0		MUD: sandy (6-13%), gray blk, mealy li- bers, wood chunks, lg stick (0-12 cm).	20.5 32.6 14.0
20		MUD: olive black, more compact w/less fibers except in horiz. beds 1mm thick throughout, fiber layer at base (12-42 cm).	16.9 15.2 27.9
40		MUD: olive blk, peaty at depth, lg wood fragment, twig layer 52-53 cm (42-58 cm).	30.3 40.3
60		MUD, olive black, finely organic, clayey (58-75 cm).	22.4 17.0 13.2
80			

CORE TS-3		Location: Downstream (northwest) - 0.1 mile from TS-2 site.	
Depth(cm) Below Core top	Symbol	Description	Percent Loss On Ignition
0		SAND: muddy, fine, dk yel brn w/plant fragments (0-5 cm).	3.1
20		MUD: dsky yel brn, dense, few fibers. Black beds 1-2 mm thick scattered throughout (5-79 cm).	8.1 9.0
40			9.8
60			9.2
80		MUD: sandy, brownish black, mottled w/ 4 mm thick pods of fine to med. dk yel brn sand (79-94 cm).	7.5 15.2
100			

CORE TS-4		Location: North bank of confluence of two tributaries -0.1 mi. south of Mill Creek fork.	
Depth(cm) Below Core top	Symbol	Description	Percent Loss On Ignition
0		MUD: slightly sandy, olive black, gradational increase in sand content, and compactness downsection (0- 76 cm).	12.8 14.1 19.1
20			18.2
40			8.1
60			11.5
80		MUD: olive black, very compact w/low fibers (76-97 cm).	8.5
100			

CORE TS-5		Location: Directly across stream from TS-4, on south bank.	
Depth(cm) Below Core top	Symbol	Description	Percent Loss On Ignition
0		MUD: sandy (35%), ol. blk (0-1 cm).	7.0 7.3 7.6
20		MUD: slightly sandy (8-14%), olive black, dense "clayey", diagonal cracks @ 3-6 cm and 15 cm, surrounded by mottled yel brn mud. Very few organics (1-70 cm).	8.2
40			
60			8.7
80			

CORE TS-6		Location: Upstream (south) end of sandy point bar on sharp bend -0.2 mi. downstream from Mill Creek fork.	
Depth(cm) Below Core top	Symbol	Description	Percent Loss On Ignition
0		SAND: med. fine, dk yel brn, fines down- ward. Lg wood fragments (0-15 cm).	0.5 3.3
20		SAND: fine, muddy, dsky yel brn (15-18 cm) MUD: dsky yel brn w/ horizontal beds of small organics (18-41 cm).	14.1 13.2
40		SAND: muddy, fine, dusky yel brn w/wood fragments -1.5 mm (41-44 cm).	15.5 1.5
60			

CORE TS-7		Location: Crust of TS 6 point bar, ~40 feet downstream from TS-6 site.	
Depth(cm) Below Core top	Symbol	Description	Percent Loss On Ignition
0		SAND: fine-v.fine, mod to dk yel brn, mottled w/ ol. gray mud. Scattered -horiz. layers of black sand & peat. Lg wood frag. (2x2 cm) @ 60 cm. (0-64 cm).	1.7
20			4.7
40			2.9
60			3.6
60		SAND: mddy, fine, dsky yel brn(64-71)	1.7
80		SAND: medium, dk yel brn, peaty layers @ 80-81, 86, 89 cm (71-120 cm)	0.7
100			
120		MUD: silty sandy(6%), dsky brn, lg wood. SAND, v.fine, dsky brn (125-126 cm)	16.9
140			

CORE TS-8		Location: Chute edge of TS-6 and TS-7 point bar.	
Depth(cm) Below Core top	Symbol	Description	Percent Loss On Ignition
0		SAND: muddy, v.fine, dsky brn w/fibers & twigs (0-18 cm). Organic layer @ 19 cm.	6.9
20			6.1
40			7.6
40		MUD: dusky brn w/few fibers, sawdust texture, weak horiz. bedding of fiber layers @19-31, 58-62, 92-100 cm. Large wood frag. @ 85 cm(19-102 cm)	13.5
60			14.0
80			17.7
100			12.7
120		MUD: dusky brn w/ fewer fibers, more compact. Lg 3 x 3 cm wood frag at 112 cm. (102-135 cm).	7.4
140			7.5
160		MUD: sandy (17-55%), dsky brn, few fibers, mottled w/ fine pale yel brn sand. Sand lense 161-165 (135-193 cm).	6.8
180			5.0
200		Lg. wood frag @ 180-184	8.9
220			27.9
240		C-14 date 1730 +/- 60 BP. SAND: fine, brnsh to lt olive gray, bio-turbated at top, muddy 199-201 cm coarsens at base. pbl @ 204 cm. (193-211 cm).	20.0
			16.9

CORE TS-9		Location: Obtained at shallow water edge of TS point bar.	
Depth(cm) Below Core top	Symbol	Description	Percent Loss On Ignition
0		SAND: fine, pale to moderate yel brn, mottled w/ greyish brn muddy sand @ 27-28 and 49-53 cm. Some scattered organics. Basal granules (0-53 cm).	0.0
20			0.0
40			1.2
60		SAND: fine to coarse, dk yel orange to light brown, laminated w/ scattered granules. Pre-Holocene Columbia Fm (53-130.5 cm).	
80			
100			
120			
140			
160			
180			
200			
220			
240			

CORE TS-10		Location: Marsh edge of point bar chute.	
Depth(cm) Below Core top	Symbol	Description	Percent Loss On Ignition
0		MUD: dusky yel brn w/ fine organics throughout & in thin layers ~1mm thick. Organics lessen at base, grading into unit 2 (0-60 cm).	15.9
20			17.1
40			22.5
60		MUD: dusky yel brn, few fibers, compact, homogenous (60-188 cm).	17.5
80			11.3
100			6.7
120			7.3
140			6.5
160			
180			7.4
200			7.9
220			
240			

CORE TS-PC-1		Location: Marsh surface, west bank of channel, site of TS-DC 1	
Depth(cm) Below Core top	Symbol	Description	Percent Loss On Ignition
0		MUD: dark yel brn w/abnt matted roots, stems, fibers, rhizomes (0-11 cm).	13.8
11		MUD: dsky yel brn w/lesser fibers, not matted (11-29 cm).	12.4
20			11.0

CORE TS-PC-4		Location: Eastern channel margin adjacent to an opening in the marsh.	
Depth(cm) Below Core top	Symbol	Description	Percent Loss On Ignition
0		MUD: grayish brn, gooey w/abnt detritus.	15.4
11		PEAT: muddy, brnsh blk, tightly woven fibers (3-12 cm).	52.4
20		MUD: peaty, mod brn w/ abnt matted fibers (12-33 cm).	14.6

CORE TS-PC-2		Location: Same as TS-DC-2.	
Depth(cm) Below Core top	Symbol	Description	Percent Loss On Ignition
0		MUD: dusky brn, loose, gooey, w/ few small twigs (0-5 cm).	14.7
5		PEAT: grayish brn Dense matted fibers 23-29 cm. Graces to mud at base (5-34 cm).	49.0
20			24.3

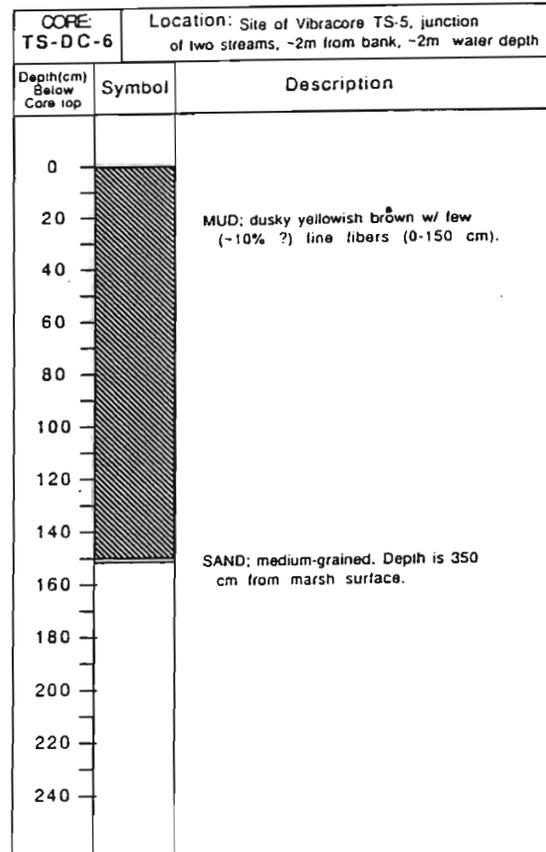
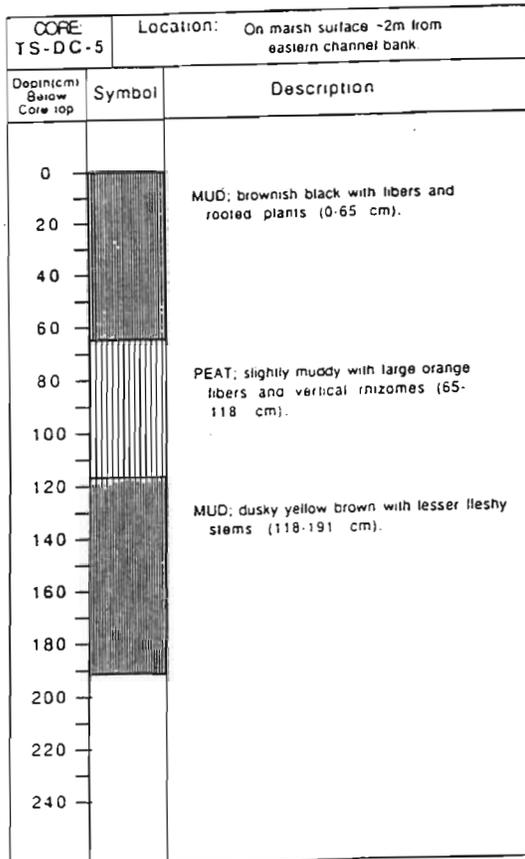
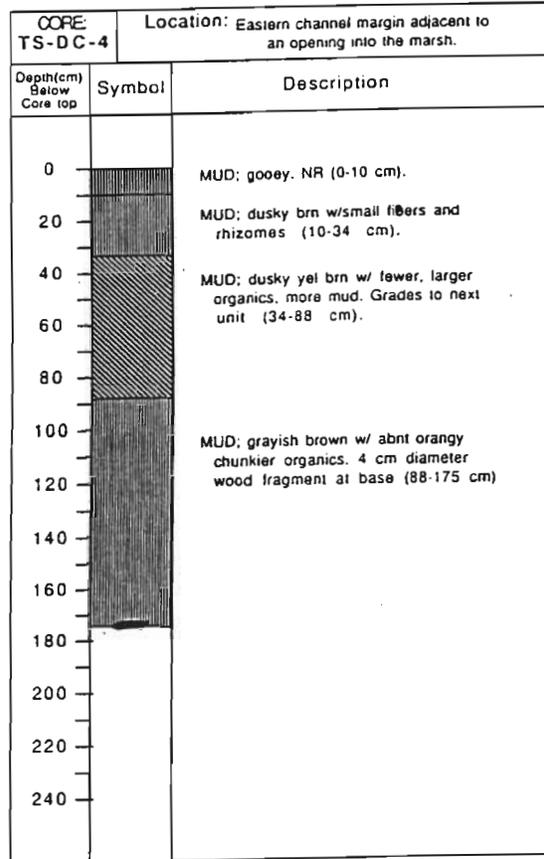
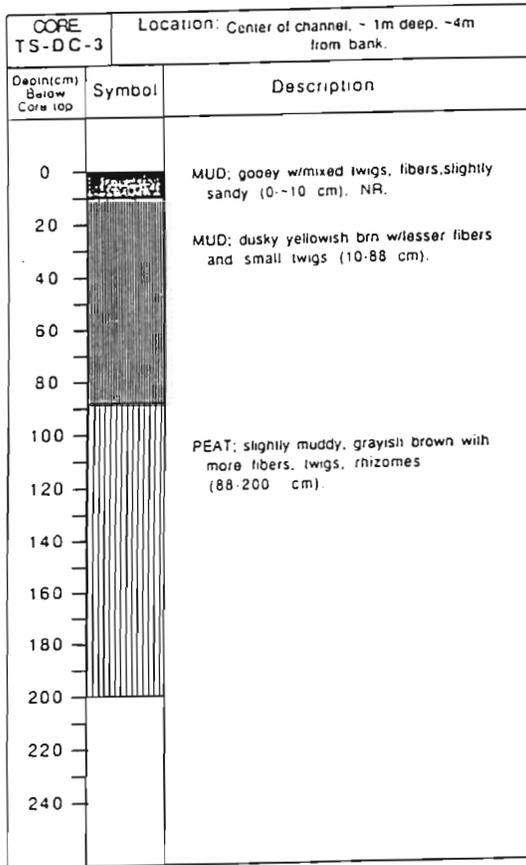
CORE TS-PC-5		Location: On marsh surface ~2m from eastern channel bank.	
Depth(cm) Below Core top	Symbol	Description	Percent Loss On Ignition
0		MUD: dsky yel brn w/ matted fibers, rhizomes (0-24 cm).	14.1
11			12.9
20			13.1

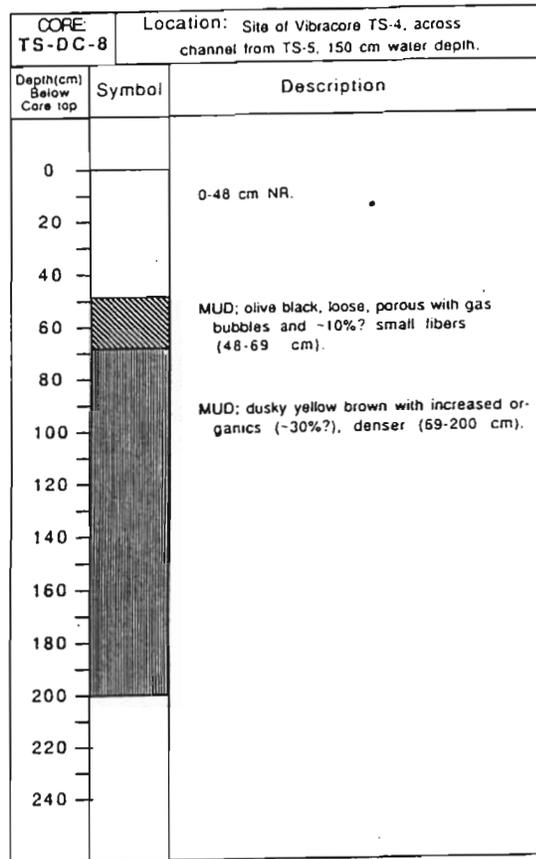
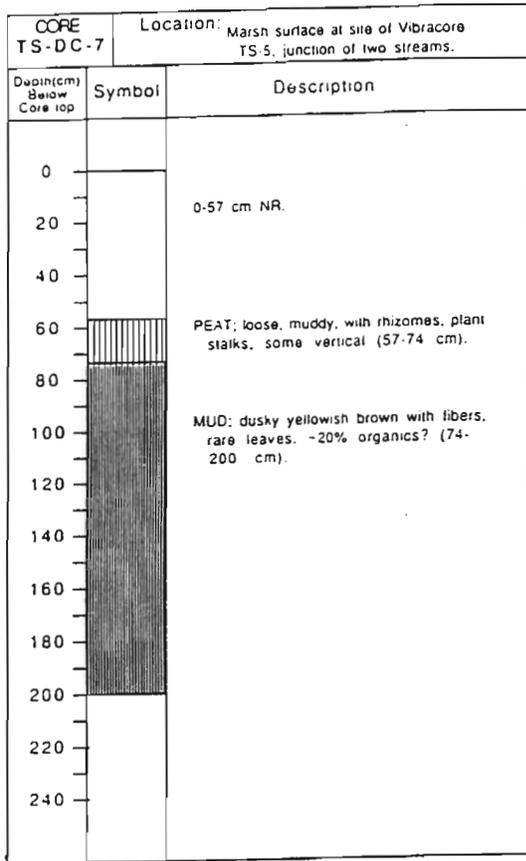
CORE TS-PC-3		Location: Center of channel, same as TS-DC-3.	
Depth(cm) Below Core top	Symbol	Description	Percent Loss On Ignition
0		MUD: sandy, dsky yel brn w/abnt twigs wood chunks, few stems (0-6 cm).	28.7
6		MUD: dsky yel brn w/ few fibers, dense, clayey 1 mm fiber bed at 11 cm. (6-41 cm)	11.3
20			11.3

CORE TS-PC-6		Location: Marsh surface at confluence of two streams, site of TS-DC-7 also.	
Depth(cm) Below Core top	Symbol	Description	Percent Loss On Ignition
0		MUD: dusky yel brn w/ fibers, rootlets and rhizomes (0-24 cm).	11.6
11			10.9
20			10.9

CORE TS-DC-1		Location: Marsh surface on western bank of stream, site of Vibracore TS-1.	
Depth(cm) Below Core top	Symbol	Description	
0		MUD: moderate brown w/ rooted plants and fibers (0-10 cm).	
20		MUD: dusky yellowish brown w/lesser fibers (10-80 cm).	
80		MUD: grayish brown w/ loose organic material (80-122 cm).	
122		MUD: dusky yellowish brown with lesser organic fibers (122-192 cm).	

CORE TS-DC-2		Location: In channel 1.8 m from bank at site of TS-DC-1, 89 cm below marsh surface.	
Depth(cm) Below Core top	Symbol	Description	
0		MUD: dusky yel brn, gooey w/ few fine fibers, twigs (0-8 cm).	
8		PEAT: matted fibers, slightly muddy (8-27 cm).	
27		MUD: grayish brn w/abnt fibers (27-35 cm).	
35		MUD: dusky yellowish brn w/ fewer fibers, few beds of darker organics (35-183 cm).	
183			





APPENDIX VI

Pollen and Seed Taxa in Wetland Cores

Alphabetical Listing of Taxa for Each Core

CORE DC-3

Angiosperms (Flowering plants):

Acer (Maple)
Acnida sp. (Water hemp)
Alnus (Alder)
Alnus serrulata (Common alder)
Ambrosia (Ragweed)
Betula (Birch),
Bidens laevis (Bur-marigold)
Carex (Sedge)
Carya (Hickory)
Castanea (Chestnut)
Cicuta maculata (Water hemlock)
Chenopodium (Pigweed)
Cornus ammonum (Silky dogwood)
Cyperaceae (Sedge family)
Dulichium sp. (Sedge)
Eleocharis sp. (Spike-rush)
Ericaceae (Blueberry family)
Eupatorium sp. (Thoroughwort)
Fagus (Beech)
Fraxinus (Ash)
Gramineae (Grass family)
Ilex (Holly)
Juglans (Walnut)
Kalmia angustifolia (Lambkill)
Liquidambar (Sweet gum)
Najas gracillima (Naiad)
Nymphaeaceae (Water lily family)
Nyssa (Black gum, Tupelo)
Platanus (Sycamore)
Polygonum punctatum (Water smartweed)
Polygonum arifolium (Tearthumb)
Potamogeton sp. (Pondweed)
Prunus (Cherry)
Rosa palustris (Marsh rose)
Rubus sp. (Bramble)
Scirpus validus (Soft-stem bulrush)
Scirpus sp. (Bulrush)
Sagittaria sp. (Arrowhead)
Salix (Willow)
Solidago (Goldenrod)

Angiosperms (Flowering plants) continued:

Sparganium (Burreed)
Stellaria (Chickweed)
Thalictrum (Meadow-rue)
Typha (Cattail)
Vaccinium sp. (Blueberry)
Viburnum dentatum (Southern arrowwood)
Viburnum sp. (Arrowwood)
Zizania (Wild rice)

Conifers (Evergreens):

Cupressaceae (Juniper, Bald cypress, etc.)
Pinus rigida (Pitch pine)
Pinus (Pine)
Tsuga (Hemlock)

Pteridophytes (Ferns and Fern allies):

Osmunda (Flowering fern; Cinnamon fern)
Pteridium (Bracken fern)
Lycopodium (Club-moss)

Mosses:

Sphagnum

(Latin name followed by common name in parentheses)

CORE LR-1

Angiosperms (Flowering plants):

Acer (Maple)
Alnus (Alder)
Ambrosia (Ragweed)
Betula (Birch)
Carya (Hickory)
Castanea (Chestnut)
Chenopodium (Pigweed)
 Cyperaceae (Sedge family)
 Ericaceae (Blueberry family)
Fagus (Beech)
Fraxinus (Ash)
 Gramineae (Grass family)
Ilex (Holly)
Juglans (Walnut)
Liquidambar (Sweet gum)
 Nymphaeaceae (Water lily family)
Nyssa (Black gum)
Plantago (Plantain)
Platanus (Sycamore)
Prunus (Cherry)
Sagittaria (Arrowhead)
Salix (Willow)
Solidago (Goldenrod)
Sparganium (Burreed)
Stellaria (Chickweed)
Typha (Cattail)
Thalictrum (Meadow-rue)
Ulmus (Elm)
 Umbelliferae (Parsley family)
Viburnum (Arrowwood)
Vitis (Grape)
Zizania (Wild rice)

Conifers (Evergreens):

Cupressaceae (Juniper, Bald cypress, etc.)
Pinus (Pine)
Tsuga (Hemlock)

Pteridophytes (Ferns and Fern allies):

Lycopodium (Club-moss)
Osmunda (Flowering fern)
Pteridium (Bracken fern)

Mosses:

Sphagnum

APPENDIX VI: continued

CORE SJC-3

Angiosperms (Flowering plants):

Acer (Maple)
Alnus (Alder)
Alnus serrulata (Common alder)
Ambrosia (Ragweed)
Betula (Birch)
Bidens laevis (Bur-marigold)
Carex (Sedge)
Carya (Hickory)
Castanea (Chestnut)
Cephalanthus occidentalis (Button bush)
Cicuta maculata (Water hemlock)
Chenopodium (Pigweed)
Cyperaceae (Sedge family)
Dulichium sp. (Sedge)
Eleocharis sp. (Spike-rush)
Ericaceae (Blueberry family)
Eupatorium sp. (Thoroughwort)
Fagus (Beech)
Fraxinus (Ash)
Gramineae (Grass family)
Ilex (Holly)
Juglans (Walnut)
Kalmia angustifolia (Lambkill)
Leersia oryzoides (Rice-cutgrass)
Liquidambar (Sweet gum)
Magnolia (Magnolia)
Najas gracillima (Naiad)
Nymphaeaceae (Water lily family)
Nyssa (Black gum)
Phragmites sp. (Reed)
Platanus (Sycamore)
Polygonum punctatum (Water smartweed)
Polygonum arifolium (Tearthumb)
Potamogeton diversifolius (Pondweed)
Prunus (Cherry)
Rhynchospora sp. (Sedge)
Rosa palustris (Marsh rose)
Rumex verticillata (Swamp dock)
Scirpus sp. (Bulrush)
Sagittaria latifolia (Arrowhead)
Salix (Willow)
Solidago (Goldenrod)
Sparganium (Burreed)
Stellaria (Chickweed)
Typha (Cattail)
Thalictrum (Meadow-rue)
Viburnum (Arrowwood)
Zannichellia palustris (Horned pondweed)
Zizania (Wild rice)

Conifers (Evergreens):

Cupressaceae (Juniper, Bald cypress, etc.)
Pinus (Pine)
Tsuga (Hemlock)

Pteridophytes (Ferns and Fern allies):

Lycopodium (Club-moss)
Osmunda (Flowering fern)
Pteridium (Bracken fern)
Selaginella (Spike moss)

Mosses:

Sphagnum

APPENDIX VII

GLOSSARY

Aboriginal - Prehistoric peoples in North America.

Aeolian - Carried by the wind. For example, sand dunes are aeolian deposits.

Alluvium - Deposits of gravel, sand, and soil which are transported by flowing water.

Archaeology - The study of the people of the past through the recovery and analysis of the artifacts and other material left behind and context of the finds.

Artifact - Any object shaped or modified by humans, or as a result of human activity.

Base camp - A prehistoric dwelling site for hunter-gatherers from which resource procurement forays are made.

Bay/basin feature - Also known as whale wallows, these shallow ponds, thought to have been formed at the end of the Pleistocene, were favored locations for prehistoric settlement.

Boreal - Northern forests and tundra.

B.P. - Years before present, relative to A.D. 1950 — the zero year for radiocarbon dating.

Catchment - The area surrounding an archaeological site from which resources were obtained. Also, a drainage basin - the area that feeds a stream.

Cenozoic - The latest of four eras into which geological time is divided. The Cenozoic extends from the end of the Mesozoic up to the present time.

Colluvium - A loose deposit of rock or soil debris accumulated at the base of a cliff or slope.

Columbia Formation - The name given to a particular group of sediment bodies that cover the Upper Coastal plain of northern Delaware.

Chronostratigraphic - Pertaining to geologic time, or geologic time intervals.

Culture - The non-biological mechanism of human adaptation, and the customs, manners, and traditions of a particular society.

Deciduous - Leaf bearing trees that shed in autumn.

Deglaciation - The melting of glaciers or ice sheets.

Detrital - Formed by detritus.

Detritus - Loose fragments, particles, or grains of material. Disintegrated matter, or debris.

Diagenesis - Physical and chemical processes that turn sediment into consolidated rock.

Diagnostic - Distinctive artifacts with characteristic traits that identify a specific time period in the past.

Diatoms - Microscopic, single-celled plants that live in marine or fresh water. Diatoms secrete siliceous bodies with a great variety of shapes that accumulate in sediments.

Ecofact - The non-artifactual remains found in archaeological sites, such as seeds, bones, and plant remains.

Ecotone - The transition zone between ecological communities; for example, the border between grassland and forest.

Edaphic factors - The physical, chemical, and biological characteristics of the soil and local environment.

Eijkelkamp core - A particular brand of sediment coring device made by a company in Denmark.

Emergent - A plant that grows up through water into the air.

Estuary - A partially-enclosed coastal body of water where salt water and fresh water mix due to currents and tides.

Facie - A body of rock or sediment distinguished from others by appearance, composition, or mode of deposition.

Fall line - A transition zone from the Piedmont Uplands to the flatter Coastal Plain, where rivers flow becomes more sluggish and rapids end.

Feature - Any soil disturbance or discoloration that reflects human activity, or an artifact that, is too large to remove from a site; for example, house or storage pits. A feature can also be a very dense cluster of artifacts; for example, a lithic chipping feature.

Flocculation - The process in which particles of sediment aggregate to form small lumps.

Floodplain - That part of a river valley, adjacent to the river channel, that is covered with water when the river overflows its banks during floods.

Flotation - The recover of tiny plant and bone fragments from archaeological deposits using liquid suspension. Also refers to very small artifacts recovered on fine screens during flotation.

Fluvial - Produced by the action of flowing water.

Fossil - The remains or traces of animals or plants that lived in the past which have been preserved by natural processes. Does not include material from historical times.

Fungal hyphae - Cell tubes that form the underground portion of mushrooms and other fungi.

Geomorphology - The study of land forms.

Herbaceous - Having the characteristics of an herb - a plant without a persistent woody stem.

Hiatus - A gap in a sediment sequence due to a lack of deposition, or erosion.

Historic - The time period after the appearance of written records. In North America, the Historic period generally begins with European colonization about A.D. 1600.

Holocene - The latest epoch of the Quaternary geological period, that began 10,000 B.P. The Holocene epoch is preceded by the Pleistocene epoch and includes the present.

Hydrology - The scientific study of the properties, distribution, and effects of water on the earth's surface, in the soil and underlying rocks, and in the atmosphere.

Hydrophyte - A plant that grows in, and is adapted to, an aquatic or very wet environment.

Illuviation - The movement of colloids, soluble salts, and mineral particles (clay) down through a soil profile through the leaching action of water.

In situ - In the original place of deposition.

Interface - The boundary between two bodies or spaces.

Isostatic rebound - Upward movement of the earth's crust following the removal of a load, such as a glacier.

Lacustrine - Of, or pertaining to a lake environment.

Laminae - Thin layers of sediment less than 1.0 mm thick.

Landsat satellite - Satellite placed in orbit around the earth to obtain photographs of the earth's surface for scientific study.

Lithic - Pertaining to, or consisting of rock or stone.

Lithology - The physical characteristics of a rock, or sediment body.

Loam - A loose soil composed of roughly equal parts of silt, clay, and sand, often containing organic matter, as well. Usually very fertile and conducive to plant growth.

Locus - A clearly-defined archaeological site or testing location.

Loss-on-ignition - An analytical technique to determine the percent of organic matter within a sample of soil or sediment. A small quantity of dry material is carefully weighed, heated to 500 degrees Celsius for four hours, and then weighed again. All organic matter is burned off in the process.

Macro-band base camp- An archaeological site one hectare or larger in area characterized by a wide variety of tool types, abundant ceramics, semi-subterranean house structures, storage pit features, and abundant debitage from tool manufacture and reduction.

Macrophyte - A macroscopic plant (visible to the naked eye) in an aquatic environment.

Marine - Ocean or sea water; salt water environments.

Marl - Calcareous clay, usually a lake deposit.

Megafauna - Large extinct mammals, including mammoths and mastodons, that lived during the last ice age.

Mesic forest - A forest of relatively, wet-adapted plant species, such as hemlock forests.

Mesozoic - One of the great divisions of geologic time; follows the Paleozoic era and precedes the Cenozoic era.

Micro-band- A component of macro-band, perhaps one or two extended families, that periodically operate independently of the macro-band group.

Microenvironment - A small scale environment; part of a larger ecological community. For example, a floodplain with sycamore trees within a deciduous forest dominated by oaks, beech, and tulip tree.

Morphology - Observations on the shape of land; or the study of the form or structure of organisms.

Morphometry - Measurements of shape.

Oxidation - Chemical reaction between oxygen and other substances.

Paleobotanical - Pertaining to old, or fossil, plant material.

Paleoecology - The science of the relationship between ancient organisms and their environments.

Paleoenvironment - An environment of the past (which may have no modern analog).

Paleogeography - The geography of an area in the past. The study of past geography.

Paleohydrology - The hydrology of an area in the past. The study of past hydrology.

Palustrine - Pertaining to material deposited in a swamp environment.

- Palynology** - The scientific study of pollen and spores.
- Pediments** - Gently-sloping erosional surfaces between mountains and valleys.
- Pedogenic** - Pertaining to soil development.
- Periglacial** - An area, process, or conditions close to the margin of a glacier or ice sheet.
- Physiographic zone** - Regions or areas that are characterized by a particular geography, geology, and topography.
- Piedmont region** - An area of gently rolling to hilly land lying between the Appalachian Mountains and the Atlantic Coastal Plain. The division between the Piedmont region and the Coastal Plain is marked by the Fall Line.
- Plant macrofossil** - Larger fragments or pieces of ancient, or fossilized plant material.
- Pleistocene** - One of two divisions of the Quaternary geological period, which began 1.6 million years ago. The Pleistocene is characterized by the "Ice Ages" in which large ice sheets covered high latitudes of the earth. Followed by the Holocene epoch.
- Pollen** - The fine, powder-like material that is the male element of flowering plants.
- Pollen signal** - The pollen assemblage that results from all of the pollen-producing plants in an area at a particular time.
- Prehistoric** - The archaeological time period before the appearance of written records. In the New World, prehistoric generally refers to indigenous, non-European societies.
- Primary lithic resource** - Outcrops of workable stone that are found within the matrix of their original formation.
- Procurement site** - A place that is visited because there is a particular item to acquire in the vicinity; i.e., a wetland where edible wild foods are known to grow.
- Projectile point** - Strictly speaking, a biface attached to the head of an airborne item of weaponry, like an arrow or a thrown dart. In general usage, refers to any biface.
- Quarry site** - An archaeological site located at either a primary or secondary outcrop of lithic material used in the manufacture of stone tools.
- Quarry reduction station** - A place where material obtained from a quarry, such as large flakes, cores and very early stage bifaces were taken for further reduction into smaller primary-thinned bifaces.
- Quaternary** - The latest period of the Cenozoic geological era. Includes two epochs - the earlier Pleistocene from 1.6 million B.P. to 10,000 B.P., and the Holocene from 10,000 B.P. to the present.

Rhythmites - Layers of sediment laid down in a regular sequence. For example, alternating bands of sediment deposited in a lake by seasonal fluctuations of water temperature and stream flow.

Riparian - Pertaining to the banks of a body of water.

Rip-up clast - A chunk of sediment moved, or disturbed, so that it is out of sequence. Evidence of erosion or root disturbance.

Riverine - Of, or pertaining to a river.

Secondary lithic resource - Cobbles and boulders of variable size that have been removed from the matrix of their original formation, transported by alluvial or glacial agents, and redeposited at a new location which may be quite distant from their original source.

Sediment - Solid material, either mineral or organic, that has been moved from its place of origin by wind, water, or ice, and has come to rest on the earth's surface either above or below sea level.

Semidiurnal tides - Tides that usually occur twice a day.

Site - A place with evidence of human occupation.

Soilhorizon- Soils are classified into three (A, B, and C) horizons, due to different kinds of chemical and physical processes.

Sponge spicules - Microscopic siliceous spines that form within the tissues of fresh water and marine sponges.

Staging site - A temporary camp where preparations are made for another operation, such as a hunting foray.

Stratigraphy - The study of sediment layers. Also, refers to the sequence of strata at a particular locality. The characteristics of each individual stratum and its relationship to other strata in the sequence is critical to understanding the temporal and spatial characteristics of the site.

Strata - The various layers of soils or sediments of human or geological origin which comprise archaeological sites.

Synchronic - Referring to a single period in time.

Taxa - Plural of taxon. Named groups of organisms.

Taxon - A named group of organisms; for example, a species of animal.

Thermokarst - Settling or caving of the ground due to the melting of ice in the ground.

Tidal range - The vertical distance between high tide and low tide.

Tool kit - A collection of artifacts interpreted as being designed for a specific task.

Topography - The physical surface features and configuration of land.

Transgressive environment - An environment undergoing a sea-level transgression. Sea-level rise causes water to over-ride the landscape so that environmental zones are pushed in land.

Vibracore - A core obtained by vibracoring.

Vibracoring - A technique of sediment coring that uses a motorized concrete smoother for use as a vibrator to force a metal coring tube down into sediments. Vibracoring avoids several problems encountered in other methods of coring.

Wetland - Marshes, swamps, bogs, or other wet ecosystems characterized by plants adapted to growth in saturated soils or standing water.

Xeric Forest - A forest characterized by plants adapted to dry conditions, such as grasslands and forests of oak and hickory.

Xerophyte - A plant that grows in arid conditions.

Note: Many of the definitions above were taken from the "Dictionary of Geological Terms" published by the American Geological Institute (Towbridge 1962).