
APPENDIXES

Appendix I. Inventory of wells used in this report

[Well locations are shown in figure 1 directly or indirectly with reference to tables 1 and 2, or in figures 31 or 33. USGS, U.S. Geological Survey. Altitude of measuring point usually is land surface, but can be higher. All depths are below measuring point. Permit or other identifier: Permit, State permit number for oil test or production well; W, well number assigned by Florida Geological Survey; MW, monitoring well; PW, production well; WS, water-supply well; TW, test well. Dashes indicate no data or not applicable]

USGS local well number	Permit or other identifier	Location			USGS site identification number	Altitude of measuring point (feet)	Depth drilled (feet)	Bottom of casing (feet)	Diameter of casing (inches)	Depth of completed interval (feet)		End date of construction
		Land net (Section, Township Range)	Latitude	Longitude						Top	Bottom	
C-41	548-121-3	T53S R29E	254839	812147	254839081214702	5	497	--	4.0	--	--	08-49
C-131	F	NWSE S01 T47S R30E	262520	811619	262521081161901	26.7	54	22	6.0	--	--	01-01-52
C-296	F	SESESE S18 T50S R30E	260645	812042	260640081204301	14.1	45	8	4.0	8	45	--
C-308	609-115-1	S01 T50S R30E	260919	811559	260919081155901	15	700	587	2.5	--	--	1959
C-495	F	NENENE S09 T52S R30E	255750	811840	255748081181801	6.6	70	8	6.0	8	70	01-01-71
C-701	Permit 42, W-820	S29 T48S R30E	261606	812024	261606081202401	42	11,626	11,597	7.0	--	--	09-26-43
C-791	Permit 885	S36 T50S R31E	260437	811008	260437081100801	--	--	--	--	--	--	--
C-851	W-10252	S24 T48S R29E	261716	812227	261716081222701	18	2,056	--	--	--	--	--
C-873	Permit 1000	S06 T49S R33E	261436	810340	261436081034001	--	--	3,998	9.6	--	--	--
C-913	W-14919	--	260916	811853	260916081185301	--	1,205	--	--	--	--	--
C-917	W-14934	--	255730	812111	255730081211101	--	785	--	--	--	--	--
C-918	W-10180	--	255708	811845	255708081184501	--	1,282	--	--	--	--	--
C-919	W-10183	--	255530	810425	255530081042501	--	1,151	--	--	--	--	--
C-920	W-10184	--	255604	810722	255555081024501	--	1,171	--	--	--	--	--
C-921	W-10187	--	255550	810025	255550081002501	--	1,140	--	--	--	--	--
C-922	W-10188	--	261300	811345	261300081134501	--	1,112	--	--	--	--	--
C-923	W-10190	--	255500	811405	255500081140501	--	1,302	--	--	--	--	--
C-927	W-8899	--	260200	811945	260200081194501	--	1,032	--	--	--	--	--
C-928	W-8951	--	255500	812130	255500081213001	--	1,247	--	--	--	--	--
C-929	W-9413	--	260110	811515	260110081151501	--	1,491	--	--	--	--	--
C-930	W-9905	--	261035	810740	261035081074001	--	1,265	--	--	--	--	--
C-931	W-10014	--	260205	810925	260205081092501	--	1,198	--	--	--	--	--
C-965	--	NESW S29 T47S R30E	262138	812041	262136081204202	22.0	460	438	2.0	438	460	--
C-966	--	NESW S29 T47S R30E	262138	812041	262136081204201	22.0	40	30	6.0	30	40	--
C-986	--	SESE S18 T49S R30E	261203	812048	261200081204901	16.4	40	28	6.0	28	40	--
C-995	--	SESE S12 T52S R29E	255705	812134	255703081213801	7	37	28	2.0	28	37	--
C-1071	2068 S	NWSENE S14 T48S R30E	261814	811737	261823081171901	19.3	35	20	4.0	20	35	10-01-85
C-1074	2066 I	NESENE S01 T47S R30E	262520	811619	262519081162102	26.7	130	100	4.0	100	130	10-01-85
C-1075	2064 S	NESWSE S18 T46S R30E	262831	812157	262822081213201	30.6	28	8	4.0	8	28	10-01-85
C-1076	2064 I	NESWSE S18 T46S R30E	262831	813158	262822081213202	30.6	85	65	4.0	65	85	10-01-85

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USGS local well number	Permit or other identifier	Location			USGS site identification number	Altitude of measuring point (feet)	Depth drilled (feet)	Bottom of casing (feet)	Diameter of casing (inches)	Depth of completed interval (feet)		End date of construction
		Land net (Section, Township Range)	Latitude	Longitude						Top	Bottom	
C-1077	2064 D	NESWSE S18 T46S R30E	262831	812158	262822081213203	30.6	210	170	4.0	170	210	10-01-85
C-1090	W-16434, Immokalee Core	NENE S3 T47S R30E	262528	811828	262528081182801	25	715	--	--	--	--	1989
C-1091	W-16505, Fakahatchee St. Core	SWNW S06 T50S R30E	260852	812128	260852081212801	13	702	271	--	--	--	02-05-99
C-1115	W-17393, FS Ranger St. Core	S12 T52S R29E	255706	812139	255706081213901	5	160	--	--	--	--	04-21-96
C-1117	W-17394, FS Jones Grade Core	S6 T50S R30E	260834	812100	260834081210001	13	196	--	--	--	--	07-26-96
C-1125	Permit 1063	NESW S20 T50S R33E	260603	810246	260603081025601	14.1	11,759	3,813	9.6	--	--	07-01-82
C-1126	Permit 1065	WNWS06 T50S R32E	260947	811002	260947081100202	15.7	11,802	3,696	9.6	--	--	02-22-83
C-1128	Permit 1094	SWSW S14 T50S R32E	260652	810601	260652081060101	13.2	11,505	11,505	7.0	--	--	10-30-83
C-1129	Permit 1095	NESW S6 T50S R33E	260841	810403	260841081040301	15.2	11,790	3,945	9.6	--	--	03-06-83
C-1133	Permit 1216	NWNW S18 T50S R33E	260723	810400	260723081040001	12.9	11,755	3,995	9.6	--	--	05-23-88
C-1134	W-17970, Dade-Collier Airport Core	SWSW S10 T53S R34E	255152	805504	255152080550401	10	200	--	--	--	--	02-16-97
C-1135	W-17971, FAA Radar Core	NWNE S15 T53S R33E	255146	810038	255146081003801	12	205	160	2.0	--	--	02-07-97
C-1136	W-17972, Monroe Station Core	NWNW S14 T53S R32E	255145	810601	255145081060101	10	200	--	--	--	--	02-16-97
C-1137	W-17974, Doerr's Lake Core	NESW S33 T52S R31E	255351	811328	255351081132801	6	200	--	--	--	--	03-10-97
C-1138	W-17975, Raccoon Point Core	SESE S33 T51S R34E	255856	805533	255856080553301	11.4	185	--	--	--	--	03-09-97
C-1139	W-17976, Noble's Road Core	NESW S31 T49S R33E	261019	810409	261019081040902	13	200	--	--	--	--	04-05-97
C-1140	W-17977, Bass Core	NENW S5 T52S R31E	255832	811431	255832081143101	8	200	--	--	--	--	03-25-97

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USGS local well number	Permit or other identifier	Location			USGS site identification number	Altitude of measuring point (feet)	Depth drilled (feet)	Bottom of casing (feet)	Diameter of casing (inches)	Depth of completed interval (feet)		End date of construction
		Land net (Section, Township Range)	Latitude	Longitude						Top	Bottom	
C-1141	W-17746, Bear Island Core & BI-D	SESW S29 T49S R31E	261058	811452	261058081145201	15	207	207	2.0	88	108	06-14-97
C-1142	W-17748, Noble's Farm Core	NWNW S07 T49S R33E	261417	810424	261417081042401	16	206	60	2.0	60	100	06-12-97
C-1143	Radar Deep MW	NWNE S15 T53S R33E	255146	810038	255146081003802	--	207	207	2.0	180	200	05-14-97
C-1144	Radar Medium MW	NWNE S15 T53S R33E	255146	810038	255146081003803	--	148	148	2.0	120	130	06-03-97
C-1145	Radar Shallow 1 MW	NWNE S15 T53S R33E	255146	810038	255146081003804	--	40	40	2.0	10	32	05-19-97
C-1146	Radar Shallow 2 MW	NWNE S15 T53S R33E	255148	810038	255148081003801	--	35	35	2.0	10	32	06-19-97
C-1147	Radar Shallow 3 MW	SWNE S15 T53S R33E	255127	810038	255127081003801	--	35	35	2.0	10	32	06-19-97
C-1148	Airport 1 MW	SWSW S10 T53S R34E	255152	805504	255152080550402	--	73	73	2.0	40	70	07-09-97
C-1149	Airport 2 MW	SWSW S10 T53S R34E	255152	805504	255152080550403	--	32	31	2.0	9	29	07-15-97
C-1150	Monroe Station MW	NWNW S14 T53S R32E	255145	810601	255145080060102	--	52	47	2.0	25	45	07-15-97
C-1152	Permit 1059	SE S03 T50S R32E	260840	810630	260840081070001	15	11,795	11,483	7.0	--	--	05-31-82
C-1153	Permit 1115, W-15455	NW S12 T49S R30E	261330	811650	261330081165001	17.4	11,949	11,949	7.0	--	--	11-12-84
C-1154	W-8988	SWSE S08 T48S R30E	261850	812030	261855081203001	20	730	--	--	--	--	--
C-1156	W-10018	S5 T49S R34E	261500	805720	261455080571501	14	1,000	--	--	--	--	04-74
C-1157	W-10029	S13 T49S R33E	261315	805910	261315080591001	14	1,140	--	--	--	--	04-74
C-1158	W-10034	S23 T49S R34E	261230	805415	261230080541501	13	1,010	--	--	--	--	04-74
C-1159	W-16923	S21 T50S R33E	260615	810145	260614081014701	12	3,480	--	--	--	--	--
C-1162	Raccoon Pt. PAD 4 WS 2	NESE S28 T51S R34E	260000	805530	255950080553501	12	350	--	--	--	--	--
C-1163	W-17534, Sunniland I Core	SESW S17 T48S R30E	261801	812044	261801081204401	20	815	--	--	--	--	03-97
C-1164	Sunniland 1 MW	SESW S17 T48S R30E	261801	812044	261801081204402	20	274	--	--	48	253	03-97
C-1165	Bear Island 1 MW	SESW S29 T49S R31E	261058	811452	261058081145202	15	58	58	2.0	24	58	01-07-98
C-1166	Bear Island 2 MW	SESW S29 T49S R31E	261100	811452	261100081145201	15	43	43	2.0	23	43	01-07-98
C-1167	Bear Island PW	SESW S29 T49S R31E	261057	811452	260907081145201	15	59	57	6.0	22	57	01-29-98

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USGS local well number	Permit or other identifier	Location			USGS site identification number	Altitude of measuring point (feet)	Depth drilled (feet)	Bottom of casing (feet)	Diameter of casing (inches)	Depth of completed interval (feet)		End date of construction
		Land net (Section, Township Range)	Latitude	Longitude						Top	Bottom	
C-1169	W-17614, Big Cypress Sanctuary Core	SENE S16 T49S R34E	261317	805552	261320080555301	15	195	137	2.0	77	137	12-20-97
C-1170	BCS-2 MW	SENE S16 T49S R34E	261317	805554	261320080555101	15	120	120	2.0	80	120	01-11-98
C-1171	BCS-P PW	SENE S16 T49S R34E	261317	805551	261320080555102	15	139	136	6.0	76	136	02-05-98
C-1172	Radar PW	NWNE S15 T53S R33E	255145	810038	255145081003801	12	52	50	8.0	9	49	03-04-98
C-1173	Sabine Road Deep MW	NWNW S06 T50S R33E	260953	810417	260953081041701	13	135	135	2.0	65	115	04-02-98
C-1174	Sabine Road Shallow MW	NWNW S06 T50S R33E	260953	810417	260953081041702	13	25	25	2.0	15	25	04-02-98
C-1176	Turner River Road Core	SWNW S06 T51S R31E	260338	811549	260338081154701	12	365	--	--	--	--	01-18-98
C-1177	Turner River Road MW	SWNW S06 T51S R31E	260338	811549	260338081154702	12	168	168	2.0	143	168	03-11-98
C-1178	Sunniland II Core	SWNW S02 T49S R30E	261453	811744	261453081174401	19.2	200	--	--	--	--	02-05-98
C-1179	Sunniland II MW	SWNW S02 T49S R30E	261453	811744	261453081174402	19.2	83	83	2.0	53	83	03-25-98
C-1180	BC HQ Core	SENE S33 T52S R30E	255345	811924	255345081192401	5	200	--	--	--	--	02-18-98
C-1181	Cypress Lane Core	SW S35 T49S R31E	261002	811203	261002081120301	17	200	91	2.0	61	91	03-12-98
C-1182	W-17749, Alligator Alley East Core	NWNW S01 T50S R33E	261011	805921	261011080592101	13	200	125	2.0	75	125	05-30-98
C-1183	W-17750, Baker's Grade Core	NENE S01 T49S R31E	261504	811023	261504081102301	15	179	71	2.0	41	71	07-04-98
C-1184	Noble's Hunt Camp MW	NWSW S31 T49S R33E	261018	810415	261018081041501	--	152	115	2.0	75	115	12-04-98
C-1185	Noble's Road MW	NESW S31 T49S R33E	261019	810410	261019081041001	--	172	145	2.0	115	145	12-19-98
G-2296	BOF-1	S03 T50S T35E	261016	804926	261016080492601	15.5	2,811	2,447	2.4	811	816	01-07-80
G-2311	BRT-22	SESESE S28 T50S R39E	260335	802637	260335080263701	10	209	195	2.0	185	195	05-27-81
G-2312	BRT-19	SENE S32 T48S R39E	261347	802737	261347080273701	15	229	217	2.0	207	217	05-28-81
G-2313	BRT-14	--	261958	804106	261958080410601	12	219	188	2.0	178	188	06-01-81

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USGS local well number	Permit or other identifier	Location			USGS site identification number	Altitude of measuring point (feet)	Depth drilled (feet)	Bottom of casing (feet)	Diameter of casing (inches)	Depth of completed interval (feet)		End date of construction
		Land net (Section, Township Range)	Latitude	Longitude						Top	Bottom	
G-2314	BRT-13	--	261952	805002	261952080500201	20	199	176	2.0	166	176	06-03-81
G-2315	BRT-15	--	261958	803421	261958080342101	19.5	249	235	2.0	225	235	06-04-81
G-2316	BRT-2	--	255732	803256	255732080325601	12	209	191	2.0	181	191	06-08-81
G-2317	BRT-3	SWSWSE S35 T51S R39E	255722	802455	255722080245501	5	139	70	2.0	60	70	06-09-81
G-2318	BRT-4	SWSWSW S34 T51S R40E	255724	802036	255724080203601	5	204	198	2.0	188	198	06-10-81
G-2319	BRT-10	NWNENE S31 T49S R39E	260843	802839	260843080283901	10	219	206	2.0	196	206	06-15-81
G-2320	BRT-9	--	260846	803542	260846080354201	11	219	206	2.0	196	206	06-17-81
G-2321	BRT-11	SWNENE S05 T50S R40E	260742	802200	260742080220001	8	299	262	2.0	252	262	06-22-81
G-2322	BRT-12	NWNENE S17 T50S R41E	260617	801612	260617080161201	13	239	191	2.0	181	191	06-23-81
G-2329	BRT-7	--	261014	805122	261014080512201	14	179	147	2.0	137	147	07-13-81
G-2330	BRT-8	--	260844	804159	260844080415901	12	209	187	2.0	177	187	07-14-81
G-2338	BRT-21	--	260532	805036	260532080503601	16	179	161	2.0	151	161	07-15-81
G-2340	BRT-20	--	261458	804947	261458080494701	14	199	162	2.0	152	162	07-17-81
G-2341	BRT-23	T48S R40E	261343	801758	261343080175801	12	209	136	2.0	126	136	07-21-81
G-2346	BRT-1	--	255958	805222	255958080522201	12	170	127	2.0	117	127	08-06-81
G-2891	W-10075	NW S27 T48S R35E	261715	804940	261717080524801	13	970	--	--	--	--	--
G-2907	WCAS-140D, W-17016	S33 T49S R35E	261016	804933	261016080493301	14	101	101	2.0	91	101	03-01-93
G-2908	WCAS-140S	S33 T49S R35E	261016	804933	261016080493302	14	14	14	2.0	4	14	03-01-93
G-2909	WCAS-8D, W-17015, S-8 pumping station	S06 T48S R36E	261952	804631	261952080463101	16	100	100	2.0	90	100	--
G-2910	WCAS-8S, S-8 pumping station	S06 T48S R36E	261952	804631	261952080463102	16	20	20	2.0	10	20	--
G-2911	I-75 MM35 West WS 1	NW S34 T49S R37E	260842	803736	260842080373601	--	115	100	4.0	100	115	07-20-98
G-2912	South New River, B-5 Core	NWNW S03 T52S R39E	260341	802528	260341080252801	10	90	90	3.0	--	--	08-20-98
G-3238	W-147	S19 T54S R35E	264537	805222	254537080522201	14	4,570	2,000	6.0	--	--	05-32
G-3294	DAT-003TW	--	255707	802548	255707080254801	9	220	197	1.5	197	200	07-22-83
G-3294C	DAT-003C	--	255707	802548	255707080254804	--	150	147	1.5	147	150	07-22-83

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		Land net (Section, Township Range)	Latitude	Longitude						Top	Bottom	
G-3295	DAT-004D	--	255028	805049	255028080504901	12	230	217	1.5	217	220	06-01-83
G-3295A	DAT-004A	--	255028	805049	255028080504902	--	20	17	2.0	17	20	06-01-83
G-3295C	DAT-004C	--	255028	805049	255028080504904	--	130	127	1.5	127	130	06-01-83
G-3296	DAT-005TW	--	255048	803805	255043080380501	5	210	188	1.5	188	191	05-17-83
G-3296A	DAT-005A	--	255048	803805	255043080380502	--	23	20	2.0	20	--	05-17-83
G-3296C	DAT-005C	--	255043	803805	255043080380504	--	144	144	1.5	--	--	05-17-83
G-3297	DAT-006TW	--	255116	802903	255116080290301	11	180	164	1.5	164	167	09-14-83
G-3298	DAT-007TW	--	255043	802310	255043080231001	9	200	163	1.5	163	166	09-21-83
G-3299	DAT-008TW	--	255042	801630	255042080163001	5	310	287	1.5	287	290	09-12-83
G-3301	DAT-010TW	--	254537	804936	254537080493601	11.5	215	170	1.5	170	173	05-26-83
G-3301C	DAT-010C	--	254537	804936	254537080493604	--	130	--	--	--	--	05-27-83
G-3302	DAT-011TW	--	254542	804217	254542080421701	9.5	210	164	1.5	164	167	09-06-83
G-3302A	DAT-011A	--	254542	804217	254542080421702	--	16	14	2.0	14	--	09-07-83
G-3302C	DAT-011C	--	254542	804217	254542080421704	--	123	120	1.5	120	123	09-06-83
G-3303	DAT-012TW	--	254545	803617	254545080361701	11	200	179	1.5	179	182	05-12-83
G-3303A	DAT-012A	--	254545	803617	254545080361702	--	23	20	2.0	20	23	05-12-83
G-3303C	DAT-012C	--	254545	803617	254545080361704	--	130	126	1.5	127	130	05-12-83
G-3304	DAT-013TW	--	254539	803006	254539080300601	11	210	183	1.5	183	186	09-07-83
G-3304C	DAT-013C	--	254539	803006	254539080300604	--	130	127	1.5	127	130	09-08-83
G-3305	DAT-014TW	--	254536	802303	254536080230301	6	200	174	1.5	174	177	09-20-83
G-3305C	DAT-014C	--	254536	802303	254536080230304	--	120	117	1.5	117	120	09-20-83
G-3306	DAT-015TW	--	254600	801737	254600080173701	10	230	212	1.5	212	215	10-21-83
G-3308	DAT-017TW	--	253927	804559	253927080455901	6	230	167	1.5	167	170	05-25-83
G-3308C	DAT-017C	--	253927	804559	253927080455904	--	130	127	1.5	127	130	05-25-83
G-3309	DAT-026TW	--	253954	804025	253954080402501	9	175	--	1.5	--	--	--
G-3309A	DAT-026A	--	253954	804025	253954080402502	--	23	20	2.0	20	23	05-20-83
G-3309C	DAT-026C	--	253954	804025	253954080402504	--	130	127	1.5	127	130	05-20-83

Appendix I. Inventory of wells used in this report (Continued)

[Well locations are shown in figure 1 directly or indirectly with reference to tables 1 and 2, or in figures 31 or 33. USGS, U.S. Geological Survey. Altitude of measuring point usually is land surface, but can be higher. All depths are below measuring point. Permit or other identifier: Permit, State permit number for oil test or production well; W, well number assigned by Florida Geological Survey; MW, monitoring well; PW, production well; WS, water-supply well; TW, test well. Dashes indicate no data or not applicable]

USGS local well number	Permit or other identifier	Location			USGS site identification number	Altitude of measuring point (feet)	Depth drilled (feet)	Bottom of casing (feet)	Diameter of casing (inches)	Depth of completed interval (feet)		End date of construction
		Land net (Section, Township Range)	Latitude	Longitude						Top	Bottom	
G-3310	DAT-018TW	--	253714	803459	253714080345901	10	250	244	1.5	244	247	06-07-83
G-3310A	DAT-018A	--	253714	803459	253714080345902	--	19	19	2.0	--	--	--
G-3310C	DAT-018C	--	253714	803459	253714080345904	--	133	130	1.5	130	133	06-07-83
G-3311	DAT-019TW	--	253746	802950	253746080295001	13	240	214	1.5	214	217	09-16-83
G-3311A	DAT-019A	--	253746	802950	253746080295002	--	23	20	2.0	20	23	09-16-83
G-3311D	DAT-019D	--	253746	802950	253746080295005	--	160	--	1.5	157	160	09-16-83
G-3312	DAT-020TW	--	253842	802258	253842080225801	14	200	167	1.5	164	167	09-26-83
G-3313	DAT-021TW	--	253831	801802	253831080180201	16	230	210	1.5	210	213	10-07-83
G-3314A	DAT-023TW	--	253018	803335	253018080333501	8	260	30	2.0	27	30	06-10-83
G-3314C	DAT-023C	--	253018	803335	253018080333503	--	190	190	1.5	187	190	06-10-83
G-3315	DAT-024TW	--	253119	802748	253119080274801	13	210	187	1.5	187	190	10-04-83
G-3316	DAT-025TW	--	253010	802250	253010080225001	11	210	177	1.5	177	180	10-03-83
G-3317	DAT-027TW	--	252326	804757	252326080475701	6	213	210	1.5	210	213	06-15-83
G-3317C	DAT-027C	--	252326	804757	252326080475704	--	150	147	1.5	147	150	06-15-83
G-3317D	DAT-027D	--	252326	804757	252326080475705	--	28	8	6.0	8	28	02-12-85
G-3318	DAT-028TW	--	252329	804049	252256080363501	5	260	220	1.5	220	223	06-20-83
G-3318A	DAT-028A	--	252329	804049	252256080363502	--	26	23	2.0	23	--	06-20-83
G-3318C	DAT-028C	--	252329	804049	252256080363504	--	161	158	1.5	158	161	06-20-83
G-3319	DAT-029TW	--	252507	803427	252507080342701	14	300	237	1.5	237	240	06-23-83
G-3320	Naval Station	--	252555	802810	252555080281001	8	86	--	--	--	--	--
G-3321	L-31E	--	252506	802128	252506080212801	6	200	--	--	--	--	--
G-3394	DAT-022TW	--	252945	803952	252945080395204	6	210	127	1.5	127	130	02-21-85
G-3394B	DAT-022B	--	252945	803952	252945080395202	--	145	110	6.0	110	145	02-22-85
G-3671	W. Bird Drive Basin, B-1 Core	SESE S11 T54S R38E	254456	802953	254456080295301	6	150	--	--	0	150	08-07-98
G-3673	L-31, B-2B Core	SENE S25 T53S R38E	254822	802902	254822080290202	15	160	18	3.0	18	160	08-10-98
G-3674	Miami Canal, B-3 Core	NWNW S14 T52S R39E	255529	802511	255529080251101	5	160	--	--	0	160	08-16-98
G-3675	Snake Creek, B-4 Core	SESE S27 T50S R39E	255723	802613	255723080261301	5	90	--	--	0	90	08-21-98

Appendix I. Inventory of wells used in this report (Continued)

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USGS local well number	Permit or other identifier	Location			USGS site identification number	Altitude of measuring point (feet)	Depth drilled (feet)	Bottom of casing (feet)	Diameter of casing (inches)	Depth of completed interval (feet)		End date of construction
		Land net (Section, Township Range)	Latitude	Longitude						Top	Bottom	
G-3677	W-17273, UM ENP 1 Core	SW S36 T58S R36E	252210	804200	252210080420001	--	628	--	--	--	--	07-18-95
HE-591	HY-312	S21 T46S R34E	262810	805620	252810080562001	15	100	80	--	--	--	--
HE-855	--	--	263142	810735	263035081073501	27.6	90	70	--	70	90	--
HE-856	--	--	263142	810735	263035081073502	27.6	11	6	--	6	11	--
HE-859	--	SWSESE S24 T46S R32E	262737	810436	262735081044602	26.3	59	58	--	58	59	--
HE-861	--	NWNENW S24 T48S R34E	261809	805335	261735080534001	14.4	70	37	--	37	70	--
HE-862	--	NWNENW S24 T48S R34E	261809	805335	261735080534002	14.4	11	7	--	7	10	--
HE-868	--	SESWSE S22 T47S R33E	262222	810100	262118081002901	20.7	97	84	--	84	97	--
HE-884	--	SESESE S18 T48S R33E	261803	810418	261801081042501	20	67	62	--	62	67	--
HE-901	HY-307	S35 T46S R31E	262545	811135	262545081113601	26	300	--	--	--	--	--
HE-902	HY-306	SE S36 T46S R33E	262610	805900	262612080581901	22	280	--	--	--	--	--
HE-908	HY-309	S33 T46S R32E	262545	810740	262543081074101	24	165	120	--	--	--	--
HE-976	Permit 418, W-10747	S08 T48S R33E	261932	810320	261932081032001	38.5	12,490	3,995	9.6	3,995	12,490	05-03-70
HE-1016	HY-314	NW S26 T47S R31E	262215	811130	262215081113001	23	400	--	--	--	--	04-29-87
HE-1021	HY 310	SE S03 T48S R33E	262000	810120	262042081011801	20	482	--	--	--	--	--
HE-1022	HY-311	NW S23 T48S R32E	261745	810620	261746081061801	20	460	--	--	--	--	08-27-86
HE-1036	H-207-1S	SENESE S30 T45S R33E	263213	810408	263213081040801	--	10	5	2.0	5	10	07-15-87
HE-1037	H-207-1D	SENESE S30 T45S R33E	263213	810408	263213081040802	26.3	120	70	2.0	70	120	07-15-87
HE-1042	H-314-1D	NENENE S26 T47S R31E	262216	811132	262214081113001	22.8	80	40	2.0	40	80	04-29-87
HE-1054	H-308-PD	SWSWSE S14 T47S R32E	262319	810555	262319081055502	--	400	30	6.0	30	100	06-17-86
HE-1062	H-311-1S	SENESE S23 T48S R32E	261746	810618	261746081061803	--	10	5	2.0	5	10	08-27-86
HE-1063	H-311-1D	SENESE S23 T48S R32E	261746	810618	261746081061804	18.3	123	78	2.0	78	123	08-27-86

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USGS local well number	Permit or other identifier	Location			USGS site identification number	Altitude of measuring point (feet)	Depth drilled (feet)	Bottom of casing (feet)	Diameter of casing (inches)	Depth of completed interval (feet)		End date of construction
		Land net (Section, Township Range)	Latitude	Longitude						Top	Bottom	
HE-1075	--	SESESW S27 T45S R34E	263211	805531	263207080553101	16.6	202	135	2.0	135	155	06-10-87
HE-1089	Permit 1242	SW S11 T46S R31E	262930	811220	262925081122001	30	1,510	--	--	--	--	--
HE-1101	Permit 903	NESW S26 T48S R34E	261638	805428	261638080542801	13.9	11,633	3,817	9.6	--	--	12-13-77
HE-1108	HY-301, HM-265	NW S08 T47S R34E	262440	805650	262440080565001	20	132	--	--	--	--	--
HE-1109	HY-315, HM-291	NW S12 T46S R32E	263000	810500	263000081050001	26	120	--	--	--	--	1987
HE-1110	L-3 Deep MW	NESW S22 T47S R34E	262309	805548	262310080554701	15	160	156	2.0	146	156	04-14-98
HE-1111	L-3 Shallow MW	NESW S22 T47S R34E	262309	805548	262310080554702	15	118	118	2.0	38	118	04-14-98
HE-1112	W-17764, Windmill Road Core	SENE S12 T48S R31E	261915	811035	261915081103501	21	151	80	2.0	50	80	10-03-98
HE-1113	W-17782, Prison 1 Core	SESE S16 T48S R31E	261805	811317	261805081131701	20	151	50	2.0	35	50	10-27-98
HE-1114	W-17785, Prison 2 Core	NW S18 T48S R31E	261827	811543	261827081154301	--	181	82	2.0	67	82	11-21-98
HE-1115	W-17810, Mustang Grade Core	NWNW S36 T45S R30E	263153	811709	263153081170901	32	221	120	2.0	105	120	01-23-99
HE-1116	W-17868, L-2 Core	NWSW S04 T46S R34E	263023	805652	263023080565201	--	201	150	2.0	140	150	03-11-99
HE-1117	L-2 Shallow MW	NWSW S04 T46S R34E	263023	805652	263023080565202	--	80	80	2.0	50	80	03-12-99
MO-138	S396, W-445	S06 T55S R34E	254247	805748	254247080574801	14	9,965	3,089	11.9	3,089	10,006	05-27-39
MO-141	Permit 564	S11 T54S R33E	254548	805932	254548080593201	25	12,662	--	--	--	--	--
MO-177	W-17968, Golightly Core	T54S R34E	254456	805558	254456080555801	8	200	--	--	--	--	02-14-97
MO-178	W-17969, Trail Center Core	NE S01 T54S R34E	254815	805231	254815080523101	10	465	457	2.0	412	452	04-04-97
MO-179	W-17973, West Loop Road Core	T54S R33E	254540	810334	254540081033401	6	250	--	--	--	--	03-11-97
MO-180	Trail Center 1 MW	--	254814	805235	254814080523501	10	120	120	2.0	95	120	05-29-97
MO-181	Trail Center 2 MW	--	254814	805237	254814080523701	10	118	18	2.0	93	118	06-24-97
MO-182	Trail Center 3 MW	--	254815	805234	254815080523401	10	118	118	2.0	93	118	06-24-97
MO-183	Trail Center 4 MW	--	254814	805234	254814080523401	10	25	25	2.0	13	23	07-09-97
MO-184	Golightly MW 1	--	254459	805556	254459080555601	--	82	82	2.0	30	80	07-08-97
MO-185	Trail Center 5 MW	--	254814	805239	254814080523901	10	118	118	2.0	98	118	01-05-98
MO-186	Trail Center 6 MW	--	254814	805234	254814080523402	10	135	135	2.0	130	135	01-06-98

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USGS local well number	Permit or other identifier	Location			USGS site identification number	Altitude of measuring point (feet)	Depth drilled (feet)	Bottom of casing (feet)	Diameter of casing (inches)	Depth of completed interval (feet)		End date of construction
		Land net (Section, Township Range)	Latitude	Longitude						Top	Bottom	
MO-187	Trail Center 7 MW	--	254814	805235	254814080523403	10	80	80	2.0	70	80	01-06-98
MO-188	Trail Center PW	--	254814	805234	254814080523404	10	120	114	2.0	89	114	01-22-98
NP-100	W-7363	S14 T58S R37E	252255	803611	252255080361101	4.5	1,333	620	2.0	620	1,333	09-23-64
PB-840	--	--	262713	803750	262713080375001	11	260	84	2.0	--	--	11-07-74
PB-1428	BRT-16	--	262109	801751	262109080175101	12.5	219	188	2.0	176	188	07-02-81
PB-1485	--	S26 T46S R36E	262722	804245	262722080424501	--	225	215	1.5	215	220	08-22-83
PB-1696	W-7500	NWNW S28 T46S R37E	262505	803916	262505080391601	11	1,705	--	--	--	--	1965
PB-1701	W-10102	NW S10 T46S R36E	263000	804400	263000080440001	12	935	--	--	--	--	--
PB-1703	W-17554, G-200 Core Pumping Station	SESW S35 T46S R35E	262606	804838	262606080483801	20	221	85	1.3	75	85	03-15-98
PB-1704	W-17747, Sod Farm Core	SENE S31 T46S R38E	262359	803434	262359080343401	11	201	112	2.0	82	112	04-30-98
PB-1705	WCAS-7D, S-7 Pumping Station	S22 T47S R38E	262006	803214	262006080321401	10	96	96	2.0	86	96	01-28-94
PB-1706	WCAS-7S, S-7 Pumping Station	--	262006	803214	262006080321402	10	16	16	2.0	6	16	01-28-94

Appendix II

Lithologic Descriptions of Selected Cores as Determined for this Study

[Items in the descriptions are arranged in the following order: Rock type with modifiers, color, grain size, sorting, roundness, accessory grains, porosity, hydraulic conductivity, environment, and comments. However, not all of these items are included in every description]

USGS local well No.	Core name
C-1134	Dade-Collier Airport Core
C-1135	FAA Radar Core
C-1136	Monroe Station Core
C-1137	Doerr's Lake Core
C-1138	Raccoon Point Core
C-1139	Nobles Road Core
C-1140	Bass Core
C-1141	Bear Island Campground Core
C-1142	Noble's Farm Core
C-1163	Sunniland No. 1 Core
C-1169	Big Cypress Sanctuary Core (Miller Property)
C-1173	Sabine Road Core
C-1176	Turner River Road Core
C-1178	Sunniland No. 2 Core
C-1180	Big Cypress Headquarter's Core
C-1181	Cypress Lane Core
C-1182	Alligator Alley East Core
C-1183	Baker's Grade Core
HE-1110	L-3 Canal Core
HE-1112	Windmill Road Core
HE-1113	Prison No. 1 Core
HE-1114	Prison No. 2 Core
HE-1115	Mustang Grade Core
HE-1116	L2 Core
MO-177	Golightly Core
MO-178	Trail Center Core
MO-179	West Loop Road Core
PB-1703	G-200 Core Pumping Station
PB-1704	Sod Farm Core

Dade-Collier Airport Core

Florida Geological Survey well number	W-17970
Well number	C-1134
Total depth	200 feet
Cored from	0 to 200 feet
County	Collier
Location	SW, SW, sec. 10, T53S, R34E
Latitude	25°51' 52"
Longitude	80°55'04"
Elevation	10 feet
Completion date	February 16, 1997
Other types of available logs	Gamma ray, induction, fluid velocity, fluid conductivity
Owner	U.S. Geological Survey
Driller	U.S. Geological Survey
Core described by	Ronald S. Reese (description by Weedman and others, 1999, used in part in figure 13)
Fill	0 to 5 feet
Tamiami Limestone, Ochopee Limestone Member	5 to 82 feet
Unnamed sand	82 to 117 feet
Peace River Formation	117 to 200 feet
Upper confining unit	0 to 10 feet
Gray limestone aquifer	10 to 82 feet
Lower confining unit	82 to 200 feet

Depth (feet below land surface)	Lithologic description of well C-1134
0.0 - 2.5	Quartz sand-rich limestone; white N9 to grayish orange 10YR 7/4; fine to medium quartz sand; large mollusk shells; low hydraulic conductivity; dense
2.5 - 5.0	No recovery
5.0 - 5.8	Quartz sand-rich limestone; white N9 to grayish-orange 10YR 7/4 and grayish-yellow-green 5GY 7/2; fine quartz sand; low hydraulic conductivity; dense to locally broken; common micrite
5.8 - 10.0	No recovery
10.0 - 12.0	Limestone; white N9 to grayish-yellow-green 5GY 7/2 to dusky-yellow-green 5GY 5/2; mainly clay size; moldic and vuggy porosity; low to high hydraulic conductivity; very finely crystalline
12.0 - 15.0	No recovery
15.0 - 15.5	Lime mudstone to wackestone; white N9 to grayish-yellow-green 5GY 7/2 to dusky-yellow-green 5GY 5/2; mainly clay size; moderate to high hydraulic conductivity; very fine crystalline
15.5 - 20.0	No recovery
20.0 - 21.5	Carbonate sand; yellowish gray 5Y 8/1; mainly fine to granule; minor fine quartz sand; low hydraulic conductivity; minor lime mud matrix
21.5 - 25.0	No recovery
25.0 - 29.0	Carbonate sand; yellowish-gray 5Y 8/1 to light-olive-gray 5Y 6/1; mainly fine to granule; minor fine to medium quartz sand; abundant shell casts; minor moldic porosity; low to moderate hydraulic conductivity; abundant lime mud matrix
29.0 - 30.0	No recovery
30.0 - 35.0	Carbonate sand; light-gray N7 to light-olive-gray 5Y 6/1; mainly fine to granule; minor fine to medium quartz sand; abundant shells; low hydraulic conductivity; abundant lime mud matrix
35.0 - 37.5	Carbonate sand; light-gray N7 to light-olive-gray 5Y 6/1; mainly fine to granule; trace quartz sand; low to moderate hydraulic conductivity; minor lime mud matrix
37.5 - 40.0	No recovery
40.0 - 44.2	Carbonate sand; medium-gray N5; mainly fine to granule; shell fragments; moderate to high hydraulic conductivity
44.2 - 45.0	No recovery
45.0 - 48.2	Carbonate sand; light-gray N7 to light-olive-gray 5Y 6/1; mainly fine to granule; shell fragments; low to moderate hydraulic conductivity; minor lime mud matrix
48.2 - 50.0	No recovery
50.0 - 54.5	Carbonate sand; light-gray N7 to light-olive-gray 5Y 6/1; mainly fine to pebble; shell fragments; moderate hydraulic conductivity; minor lime mud matrix
54.5 - 55.0	No recovery
55.0 - 59.8	Carbonate sand; light-gray N7 to light-olive-gray 5Y 6/1; mainly fine to pebble; large shell fragments; low hydraulic conductivity; abundant lime mud matrix
59.8 - 60.0	No recovery
60.0 - 65.0	Carbonate sand; light-gray N7 to medium-gray N5; mainly fine to pebble; large shell fragments; minor moldic porosity; low to moderate hydraulic conductivity; minor lime mud matrix
65.0 - 70.0	Carbonate sand; light-gray N7 to medium-gray N5; mainly fine to granule; large shell fragments; minor moldic porosity; moderate hydraulic conductivity; minor lime mud matrix; friable
70.0 - 72.0	Carbonate sand; light-gray N7 to medium-gray N5; mainly very fine to pebble; large shell fragments; minor moldic porosity; low to moderate hydraulic conductivity; minor lime mud matrix; friable
72.0 - 75.0	Limestone; light-gray N7 to dark-gray N3; fine to coarse quartz sand; abundant large mollusks; minor moldic porosity; low hydraulic conductivity
75.0 - 79.0	Limestone; yellowish-gray 5Y 7/2; fine quartz sand; abundant shell fragments, mainly gastropods; minor moldic porosity; moderate hydraulic conductivity; firm and locally broken
79.0 - 80.0	No recovery
80.0 - 82.0	Limestone; yellowish-gray 5Y 7/2; fine quartz sand; abundant shell fragments, mainly gastropods; minor moldic porosity; moderate hydraulic conductivity; firm and locally broken
82.0 - 85.0	Quartz sand; yellowish-gray 5Y 7/2; mainly very fine to fine; trace to 3 percent phosphorite grains; minor shell fragments; low hydraulic conductivity; gradational contact between limestone above and quartz sand in this interval; calcareous
85.0 - 89.0	Quartz sand; yellowish-gray 5Y 7/2; mainly fine; trace to 3 percent phosphorite grains; minor shell fragments; low hydraulic conductivity; calcareous

Depth (feet below land surface)	Lithologic description of well C-1134
89.0 - 90.0	Limestone; yellowish-gray 5Y 7/2; fine quartz sand; abundant shell fragments, mainly gastropods; minor moldic porosity; low to moderate hydraulic conductivity
90.0 - 92.0	Quartz sand; yellowish-gray 5Y 7/2; mainly fine; minor shell fragments; minor moldic porosity; low to moderate hydraulic conductivity; calcareous
92.0 - 94.5	Quartz sand; yellowish-gray 5Y 7/2; mainly fine; trace to 3 percent phosphorite grains; minor shell fragments; minor moldic porosity; low hydraulic conductivity; minor clay matrix
94.5 - 95.0	No recovery
95.0 - 99.5	Quartz sand; yellowish-gray 5Y 7/2; mainly fine; ranges from fine to coarse; trace to 3 percent phosphorite grains; minor moldic porosity; low hydraulic conductivity
99.5 - 100.0	No recovery
100.0 - 104.0	Quartz sand; yellowish-gray 5Y 8/1; very fine to fine; trace to 3 percent phosphorite grains; low hydraulic conductivity
104.0 - 105.0	No recovery
105.0 - 109.8	Quartz sand; yellowish-gray 5Y 8/1; mainly fine; range fine to granule; trace to 3 percent phosphorite grains; low hydraulic conductivity
109.8 - 110.0	No recovery
110.0 - 112.5	Quartz sand; yellowish-gray 5Y 8/1 to light-gray N7; mainly fine to granule; trace to 10 percent fine- to granule-size phosphorite grains; low hydraulic conductivity
112.5 - 115.0	Quartz sand; yellowish-gray 5Y 8/1 to light-gray N7; mainly fine to medium; trace to 3 percent phosphorite grains; low hydraulic conductivity; mottled appearance due to clay matrix
115.0 - 117.0	Quartz sand; yellowish-gray 5Y 8/1 to medium-gray N5; mainly fine; trace to 3 percent phosphorite grains; low hydraulic conductivity; mottled appearance due to clay matrix
117.0 - 119.5	Quartz sand; light-gray N7 to medium-gray N5; mainly clay, very fine and granule; ranges from clay to granule; 3 to 10 percent phosphorite; very low to low hydraulic conductivity; mottled appearance due to clay matrix
119.5 - 120.0	No recovery
120.0 - 123.0	Quartz sand; light-gray N7 to medium-gray N5 to dusky-yellow-green 5GY 5/2; mainly clay and very fine; ranges from clay to fine; minor white shells and 3 to 10 percent phosphorite grains; very low hydraulic conductivity; clay matrix
123.0 - 125.0	Quartz sand; light-gray N7 to medium-gray N5 to dusky-yellow-green 5GY 5/2; mainly clay and coarse to granule; ranges from clay to granule; minor white shells and 3 to 10 percent phosphorite grains; very low hydraulic conductivity; clay matrix
125.0 - 127.0	Quartz sand; dusky-yellow-green 5GY 5/2 to grayish-olive-green 5GY 5/2; mainly clay, very fine and coarse; ranges from clay to coarse; 3 to 10 percent phosphorite grains; very low hydraulic conductivity; clay matrix
127.0 - 129.0	Quartz sand; dusky-yellow-green 5GY 5/2 to grayish-olive-green 5GY 3/2; mainly clay and fine; ranges from clay to fine; trace to 3 percent phosphorite grains; very low hydraulic conductivity; clay matrix
129.0 - 130.0	No recovery
130.0 - 132.0	Quartz sand and clay; grayish-olive-green 5GY 3/2; mainly clay to fine; trace to 3 percent phosphorite grains; very low hydraulic conductivity; clay matrix
132.0 - 175.0	Quartz sand-rich, silty clay; dark-olive
175.0 - 200.0	Quartz sand-rich, silty clay; medium- to dark-olive-green

FAA Radar Core

Florida Geological Survey well number	W-17971
Well number	C-1135
Total depth	205 feet
Cored from	0 to 205 feet
County	Collier
Location	NW, NE, sec. 15, T53S, R33E
Latitude	25°51'46"
Longitude	81°00'38"
Elevation	12 feet
Completion date	February 7, 1997
Other types of available logs	Gamma ray, induction, fluid velocity, fluid conductivity, neutron
Owner	U.S. Geological Survey
Driller	U.S. Geological Survey
Core described by	Kevin J. Cunningham (0 to 87.5 feet) and Scott T. Prinos (87.5 to 205 feet). Lithologies between 87.5 and 205 feet in figure 13 based on notes by Kevin J. Cunningham
Soil and fill	0 to 5 feet
Tamiami Formation, Ochopee Limestone Member	5 to 43.25 feet
Unnamed formation	43.25 to 87.5 feet
Peace River Formation	87.5 to 205 feet
Upper confining unit	0 to 18 feet
Gray limestone aquifer	18 to 43.25 feet
Lower confining unit	43.25 to 118 feet
Sand aquifer	118 to 131 feet
Confining unit	131 to 178 feet
Sand aquifer	178 to 198 feet
Confining unit	198 to 205 feet

Depth (feet below land surface)	Lithologic description of well C-1135
0.0 - 0.1	Dirt and plant material
0.1 - 0.9	Rubble of pelecypod lime floatstone with skeletal, quartz-sand rich lime packstone matrix; dark-yellowish-orange 10YR 6/6, grayish-orange 10YR 7/4, very pale orange 10YR 8/2, pale-yellowish-orange 10YR 8/6, pale-yellowish brown 10YR 6/2, light-brown 5YR 5/6, light-brown 5YR 6/4; mainly clay-size lime mudstone, very fine to fine sand-size quartz sand and granule- to pebble-size fossils; minor medium to very coarse sand-size fossils; well sorted quartz sand; subangular to subrounded quartz sand; pelecypods, skeletal fragments, oysters; 10 to 40 percent quartz sand; 15 to 20 percent moldic and intergrain porosity; low hydraulic conductivity; unit contains calcrete in part, hard when wet, well cemented
0.9 - 5.0	No recovery
5.0 - 6.0	Rubble of pelecypod lime floatstone with skeletal lime packstone and lime-mud rich sandstone matrix; very pale orange 10YR 8/2, dark-yellowish-orange 10YR 6/6; mainly clay-size lime mudstone, very fine to fine sand-size quartz sand and granule- to pebble-size fossils; minor medium to very coarse sand-size fossils; well sorted quartz sand; subangular to subrounded quartz sand; pelecypods, skeletal fragments, oysters; 10 to 60 percent quartz sand; 20 percent moldic and intergrain porosity; low hydraulic conductivity; hard when wet, well cemented; minor laminated calcrete
6.0 - 8.0	No recovery
8.0 - 8.1	Rubble of limestone
8.1 - 10.0	No recovery
10.0 - 11.0	Rubble of pelecypod lime rudstone with skeletal, quartz-sand rich, mud-dominated lime wackestone and packstone matrix; yellowish-gray 5Y 8/1; mainly clay-size lime mudstone, very fine to fine sand-size quartz sand and granule- to pebble-size fossils; minor medium to very coarse sand-size fossils; well sorted quartz sand; subangular to subrounded quartz sand; pelecypods, skeletal fragments, gastropods; 10 to 20 percent quartz sand; 15 percent moldic and intergrain porosity; low hydraulic conductivity; hard when wet, well cemented
11.0 - 15.0	No recovery
15.0 - 17.1	Rubble of pelecypod lime rudstone with skeletal, quartz sand-rich, mud-dominated, lime packstone matrix; yellowish-gray 5Y 8/1; mainly clay-size lime mudstone, very fine to fine quartz sand and granule to pebble-size fossils; minor medium to very coarse sand-size fossils; well sorted quartz sand; subangular to subrounded quartz sand; pelecypods, skeletal fragments, gastropods, <i>Vermicularia</i> ; 10 to 45 percent quartz sand; 20 percent moldic porosity; low hydraulic conductivity; friable to hard when wet, poorly to well cemented
17.1 - 18.0	No recovery
18.0 - 19.4	Rubble of pelecypod lime floatstone with skeletal, grain-dominated lime packstone and grainstone matrix; very pale orange 10YR 8/2; mainly medium sand- to pebble-size fossils; minor clay-size lime mudstone and very fine to fine sand-size fossils; pelecypods, skeletal fragments, gastropods, serpulids, bryozoans, benthic foraminifers; 25 percent intergrain porosity; moderate hydraulic conductivity; mainly friable to minor hard when wet, mainly poorly to minor well cemented
19.4 - 20.0	No recovery
20.0 - 20.3	Rubble of pelecypod lime floatstone with skeletal, grain-dominated lime packstone and grainstone matrix; white N9; mainly medium sand to pebble-size fossils; minor clay-size lime mudstone and very fine to fine sand-size fossils; pelecypods, skeletal fragments, gastropods, serpulids, bryozoans, benthic foraminifers; 25 percent intergrain porosity; moderate hydraulic conductivity; friable to hard when wet, poorly to well cemented
20.3 - 25.0	No recovery
25.0 - 25.4	Rubble of pelecypod lime rudstone with skeletal lime grainstone matrix; very pale orange 10YR 8/2, yellowish-gray 5Y 8/1; mainly fine sand to pebble-size fossils; minor very fine sand-size fossils; pelecypods, skeletal fragments, serpulids, bryozoans; 20 percent intergrain and moldic porosity; moderate hydraulic conductivity; well cemented with isopachous calcite equant spar
25.4 - 30.0	No recovery
30.0 - 30.6	Rubble of pelecypod lime rudstone with skeletal lime grainstone matrix; very pale orange 10YR 8/2; mainly fine sand to pebble-size fossils; minor very fine sand-size fossils; pelecypods, skeletal fragments, serpulids, bryozoans, sand dollars; 20 percent moldic porosity; moderate hydraulic conductivity; well cemented with isopachous calcite equant spar and pore-fill equant spar
30.6 - 32.5	No recovery
32.5 - 32.6	Rubble of pelecypod lime rudstone with skeletal lime grainstone matrix; very pale orange 10YR 8/2; mainly fine sand to pebble-size fossils; minor very fine sand-size fossils; pelecypods, skeletal fragments, serpulids, bryozoans, sand dollars; 20 percent moldic porosity; moderate hydraulic conductivity; well cemented with isopachous calcite equant spar and pore-fill equant spar
32.6 - 35.0	No recovery
35.0 - 36.5	Rubble of pelecypod lime rudstone with skeletal lime grainstone and grain-dominated lime packstone matrix; very pale orange 10YR 8/2, yellowish-gray 5Y 8/1; mainly very fine sand to pebble-size fossils; minor clay-size lime mudstone; pelecypods, skeletal fragments, bryozoans, <i>Vermicularia</i> , sand dollars, barnacles, serpulids; 25 percent moldic and intergrain porosity; high hydraulic conductivity; poorly to moderately cemented

Depth (feet below land surface)	Lithologic description of well C-1135
36.5 - 37.5	No recovery
37.5 - 38.2	Rubble of pelecypod lime rudstone with skeletal lime grainstone and grain-dominated lime packstone matrix; very pale orange 10YR 8/2, yellowish-gray 5Y 8/1; mainly fine sand to pebble-size fossils; minor clay-size lime mudstone; pelecypods, skeletal fragments, bryozoans, <i>Vermicularia</i> , sand dollars, barnacles, serpulids; 25 percent moldic and intergrain porosity; high hydraulic conductivity; poorly cemented
38.2 - 42.5	No recovery
42.5 - 43.25	Rubble of pelecypod lime rudstone with skeletal mud-dominated and grain-dominated lime packstone matrix; very pale orange 10YR 8/2, yellowish-gray 5Y 8/1; mainly fine sand to pebble-size fossils and clay-size lime mudstone; minor very fine sand-size fossils; pelecypods, skeletal fragments, bryozoans, <i>Vermicularia</i> , sand dollars, barnacles, serpulids; 20 to 25 percent moldic and intergrain porosity; moderate hydraulic conductivity; poorly cemented
43.25 - 43.5	No recovery
43.5 - 44.1	Quartz sand; yellowish-gray 5Y 8/1; mainly very fine to fine sand-size quartz sand, clay-size lime mudstone and terrigenous mud; minor medium sand-size quartz sand, very fine sand to pebble-size fossils, very fine to fine sand-size phosphorite and heavy mineral grains; well sorted; subangular quartz sand; 30 percent pelecypods; 5 percent black phosphorite and heavy mineral grains; 15 percent intergrain porosity; low hydraulic conductivity; poorly cemented; friable; soft when wet
44.1 - 48.5	No recovery
48.5 - 50.8	Quartz sand; white N9, yellowish-gray 5Y 8/1; mainly very fine to fine sand-size quartz sand, clay-size lime mudstone and terrigenous mud; minor medium sand-size quartz sand, very fine to fine sand-size phosphorite and heavy mineral grains; well sorted; subangular to subrounded quartz sand; 10 percent skeletal grains; 5 to 10 percent black phosphorite and heavy mineral grains; 15 percent intergrain porosity; low hydraulic conductivity; poorly cemented; friable; soft when wet
50.8 - 51.0	No recovery
51.0 - 52.8	Quartz sand; yellowish-gray 5Y 8/1; mainly very fine to fine sand-size quartz sand; minor medium sand-size quartz sand, very fine to fine sand-size phosphorite and heavy mineral grains; well sorted; subangular to subrounded quartz sand; 10 to 20 percent skeletal grains; 10 percent black phosphorite and heavy mineral grains; 20 percent intergrain porosity; low hydraulic conductivity; poorly cemented; friable; soft when wet
52.8 - 53.0	Quartz sandstone with pelecypod rudstone framework; light-gray N7 to very light gray N8, yellowish-gray 5Y 8/1; mainly very fine to fine sand-size quartz sand and pebble-size fossils; minor medium to coarse sand-size quartz sand, very fine sand-size to granule-size fossils, clay-size terrigenous clay and lime mudstone matrix, very fine to medium sand-size phosphorite grains and very fine to fine sand-size heavy mineral grains; moderately to well sorted; subangular to subrounded quartz sand; pelecypods (moldic); less than 5 percent black phosphorite and heavy mineral grains; 25 percent intergrain and moldic porosity; moderate hydraulic conductivity; poorly to well cemented; friable to well consolidated; soft to hard when wet
53.0 - 54.0	No recovery
54.0 - 58.3	Quartz sandstone with pelecypod rudstone framework; yellowish-gray 5Y 8/1, very pale orange 10YR 8/2; mainly very fine to fine sand-size quartz sand and pebble-size fossils; minor medium to coarse sand-size quartz sand, very fine sand-size to granule-size fossils, clay-size terrigenous clay and lime mudstone matrix, very fine to medium sand-size phosphorite grains and very fine to fine sand-size heavy mineral grains; moderately to well sorted; subangular to subrounded quartz sand; pelecypods (moldic); less than 5 percent black phosphorite and heavy mineral grains; 25 percent intergrain and moldic porosity; moderate hydraulic conductivity; poorly to well cemented; friable to well consolidated; soft to hard when wet
58.3 - 59.0	No recovery
59.0 - 61.5	Quartz sandstone with pelecypod floatstone framework; yellowish-gray 5Y 8/1, very pale orange 10YR 8/2; mainly very fine to fine sand-size quartz sand and pebble-size fossils; minor medium to coarse sand-size quartz sand, very fine sand-size to granule-size fossils, clay-size terrigenous clay and lime mudstone matrix, very fine to fine sand-size phosphorite and heavy mineral grains; moderately to well sorted; subangular to subrounded quartz sand; pelecypods (moldic); less than 5 percent black phosphorite and heavy mineral grains; 25 percent intergrain and moldic porosity; moderate hydraulic conductivity; poorly to moderately cemented; friable to moderately consolidated; soft to moderately hard when wet
61.5 - 62.8	Quartz sand; yellowish-gray 5Y 8/1; mainly fine to medium sand-size quartz sand; minor very fine and coarse sand-size quartz sand, very fine to fine sand-size phosphorite and heavy mineral grains; moderately sorted; subangular to subrounded quartz sand; less than 3 percent black phosphorite and heavy mineral grains; 20 percent intergrain porosity; moderate hydraulic conductivity; poorly cemented; friable; soft when wet
62.8 - 64.3	No recovery
64.3 - 68.8	Quartz sand; yellowish-gray 5Y 8/1; mainly fine to medium sand-size quartz sand; minor very fine and coarse sand-size quartz sand, very fine to coarse sand-size phosphorite and very fine to fine sand-size heavy mineral grains; moderately sorted; subrounded quartz sand; 10 percent skeletal grains; 5 percent black phosphorite and heavy mineral grains; 20 percent intergrain porosity; moderate hydraulic conductivity; poorly cemented; friable; soft when wet
68.8 - 69.5	No recovery
69.5 - 70.8	Quartz sand; yellowish-gray 5Y 8/1; mainly fine to medium quartz sand; minor very fine and coarse quartz sand, very fine to coarse sand-size phosphorite and very fine to fine sand-size heavy mineral grains; moderately sorted; subrounded quartz sand; 5 percent skeletal grains; 5 percent black phosphorite and heavy mineral grains; 20 percent intergrain porosity; moderate hydraulic conductivity; poorly cemented; friable; soft when wet

Depth (feet below land surface)	Lithologic description of well C-1135
70.8 - 71.0	No recovery
71.0 - 75.1	Quartz sand; yellowish-gray 5Y 8/1; mainly fine to medium quartz sand; minor very fine and coarse quartz sand, very fine to coarse sand-size phosphorite and very fine to fine sand-size heavy mineral grains; moderately sorted; subrounded quartz sand; 5 percent skeletal grains; 5 percent black phosphorite and heavy mineral grains; 20 percent intergrain porosity; moderate hydraulic conductivity; poorly cemented; friable; soft when wet; abrupt contact at 75.1 feet
75.1 - 79.5	Quartz sand; yellowish-gray 5Y 8/1; mainly fine to coarse quartz sand; minor very fine and very coarse to small pebble-size quartz sand, very fine sand to pebble-size fossils, very fine to very coarse sand-size phosphorite and very fine to fine sand-size heavy mineral grains; moderately sorted; subangular to rounded quartz sand; 10 to 20 percent skeletal grains, pelecypods, sand dollars; 5 percent black phosphorite and heavy mineral grains; 20 percent intergrain porosity; moderate hydraulic conductivity; poorly cemented; friable; soft when wet; abrupt contact at 75.1 feet
79.5 - 84.7	Quartz sand; yellowish-gray 5Y 8/1; mainly fine to coarse quartz sand; minor very fine and very coarse to granule-size quartz sand, very fine sand to small pebble-size fossils, very fine to very coarse sand-size phosphorite and very fine to fine sand-size heavy mineral grains; moderately sorted; subangular to subrounded quartz sand; less than 5 percent skeletal grains; 5 percent black phosphorite and heavy mineral grains; 20 percent intergrain porosity; moderate hydraulic conductivity; poorly cemented; friable; soft when wet
84.7 - 85.0	No recovery
85.0 - 87.0	Quartz sand; yellowish-gray 5Y 8/1; mainly fine to coarse quartz sand; minor very fine and very coarse to small pebble-size quartz sand, very fine sand to small pebble-size fossils, very fine sand to granule-size phosphorite grains and very fine to fine sand-size heavy mineral grains; moderately sorted; subangular to subrounded quartz sand; 20 percent skeletal grains; 5 percent black phosphorite and heavy mineral grains; 20 percent intergrain porosity; moderate hydraulic conductivity; poorly cemented; friable; soft when wet; abrupt contact at 87 feet
87.0 - 87.5	Quartz sand; yellowish-gray 5Y 7/2; mainly very fine to fine quartz sand; minor medium to very coarse quartz sand, very fine to fine sand-size phosphorite and heavy mineral grains; moderately sorted; subangular to subrounded quartz sand; 15 percent black phosphorite and heavy mineral grains; 20 percent intergrain porosity; moderate hydraulic conductivity; poorly cemented; friable; soft when wet; abrupt contact at 87 feet
87.5 - 88.0	No recovery
88.0 - 90.0	Calcareous clay; grayish-green 5G 5/2; mainly clay to medium; trace to 3 percent phosphorite grains; 5 percent intergrain porosity; very low to low hydraulic conductivity; interval contains lenses of quartz sand
90.0 - 94.0	Quartz sand-rich, silty, calcareous clay; grayish-green 5G 5/2; mainly clay to fine; granule-size quartz grains floating in clay matrix; trace to 3 percent phosphorite grains; 5 percent porosity; very low to low hydraulic conductivity
94.0 - 95.0	Quartz sand-rich, silty, calcareous clay; grayish-green 5G 5/2; mainly clay to fine; granule-size quartz grains floating in clay matrix; skeletal fragments; trace to 3 percent phosphorite grains; 5 percent porosity; very low to low hydraulic conductivity
95.0 - 100.0	Silty, calcareous clay; grayish-olive 10Y 4/2 to light-olive-gray 5Y 5/2; mainly clay to very fine; trace to 3 percent phosphorite grains; very low to low hydraulic conductivity; lenses of fine-grained quartz sand
100.0 - 114.5	Silty, calcareous clay; mottled light-olive-gray 5Y 5/2; mainly clay to silt; very low to low; lenses of fine-grained quartz sand
114.5 - 115.0	No recovery
115.0 - 118.5	Clay-rich quartz sand fining upward to silty, calcareous clay; light-olive-gray 5Y 5/2 and moderate-olive-brown 5Y 4/4; mainly clay to coarse at base grading upward to mainly clay to silt at top; trace to 3 percent phosphorite grains; very low to low hydraulic conductivity
118.5 - 120.0	Clay-rich quartz sand; moderate-olive-brown 5Y 4/4; mainly clay to coarse; trace to 3 percent phosphorite grains; low hydraulic conductivity
120.0 - 123.5	Clay-rich quartz sand; moderate-olive-brown 5Y 4/4; mainly clay to fine and coarse; trace to 3 percent phosphorite grains; 5 percent intergranular; low hydraulic conductivity
123.5 - 125.0	No recovery
125.0 - 128.5	Clay-rich quartz sand; moderate-olive-brown 5Y 4/4; mainly clay to fine and coarse; 3 to 10 percent phosphorite grains; 5 percent intergranular; low hydraulic conductivity; minor pebble-size phosphorite grains
128.5 - 130.0	Quartz sand-rich clay grading upward to clay-rich quartz sand; light-olive-gray 5Y 5/2; mainly clay to very fine at base; mainly clay to fine and coarse at top; trace to 3 percent phosphorite grains; 5 percent intergranular; very low to low hydraulic conductivity
130.0 - 135.0	Clay coarsening upward to quartz sand; clay, olive-gray 5Y 4/1; sand, light-olive-gray 5Y 5/2; mainly clay to silt at base coarsening upward to mainly clay and coarse to pebble at top; quartz sand is mainly coarse to very coarse and phosphorite grains are commonly granule to pebble size; trace to 3 percent phosphorite grains at base increasing upward from 3 to 15 percent nonporous at base to 5 to 10 percent intergranular porosity at top; very low hydraulic conductivity at base; low to moderate hydraulic conductivity at top
135.0 - 136.0	Quartz sand-rich calcareous clay; mottled light-olive-gray 5Y 5/2 to olive 5Y 4/1; mainly clay to silt; trace to 3 percent phosphorite grains; nonporous; very low hydraulic conductivity
136.0 - 140.0	Silty, calcareous clay and quartz sand-rich clay with quartz sand lenses; dusky-yellow-green 5GY 5/2; clay is mainly clay to silt; sand-rich clay is mainly clay to very fine; quartz sand lenses are mainly clay to very fine and coarse to granule; trace to 10 percent phosphorite grains; less than 5 percent intergranular porosity; very low to low hydraulic conductivity

Depth (feet below land surface)	Lithologic description of well C-1135
140.0 - 144.0	Quartz sand-rich clay with quartz sand lenses; dusky-yellow-green 5GY 5/2; sand-rich clay is mainly clay to very fine; quartz sand lenses are mainly clay to very fine and coarse; less than 5 percent intergranular porosity; very low to low hydraulic conductivity
144.0 - 145.0	Quartz sand-rich clay; dusky-yellow-green 5GY 5/2; clay to medium; less than 5 percent intergranular porosity; very low hydraulic conductivity
145.0 - 150.0	Silty, calcareous clay with minor quartz sand-rich clay at base; dusky-yellow-green 5GY 5/2; mainly clay to silt and locally clay to fine; less than 5 percent intergranular porosity; very low hydraulic conductivity
150.0 - 151.5	Silty, calcareous clay; dusky-yellow-green 5GY 5/2; mainly clay to silt; less than 5 percent intergranular porosity; very low hydraulic conductivity
151.5 - 155.0	Calcareous clay coarsening upward to silty, calcareous clay; dusky-yellow-green 5GY 5/2, grayish-yellow-green 5GY 5/2; mainly clay coarsening upward to mainly clay and silt; less than 5 percent intergranular porosity; very low hydraulic conductivity
155.0 - 159.0	Silty, quartz sand-rich, calcareous clay; dusky-yellow-green 5GY 5/2; clay to medium; less than 5 percent intergranular porosity; very low hydraulic conductivity; quartz sand lens at 156.3 feet composed of medium to coarse quartz sand
159.0 - 160.0	Silty, quartz sand-rich, calcareous clay; dusky-yellow-green 5GY 5/2; clay to medium; less than 5 percent intergranular porosity; very low hydraulic conductivity
160.0 - 165.0	Silty, quartz sand-rich, calcareous clay; dusky-yellow-green 5GY 5/2; clay to medium; less than 5 percent intergranular porosity; very low hydraulic conductivity; quartz sand-rich lens at 164 to 164.5 feet
165.0 - 167.0	Silty, quartz sand-rich, calcareous clay; dusky-yellow-green 5GY 5/2; clay to medium; less than 5 percent intergranular porosity; very low hydraulic conductivity
167.0 - 170.0	Very quartz sand-rich, calcareous clay; dusky-yellow-green 5GY 5/2; clay to medium; less than 5 percent intergranular porosity; very low hydraulic conductivity
170.0 - 175.0	Very quartz sand-rich, silty, calcareous mudstone; grayish-olive-green 5GY 3/2, grayish-yellow-green 5GY 7/2; mainly clay to medium; locally mainly clay to pebble; trace to 3 percent phosphorite grains; less than 5 percent intergranular porosity; very low to low hydraulic conductivity
175.0 - 180.0	Very quartz sand-rich, silty, calcareous clay; grayish-yellow-green 5GY 7/2; mainly clay to granule; trace to 3 percent phosphorite grains; less than 5 percent intergranular porosity; very low to low hydraulic conductivity
180.0 - 183.0	Very quartz sand-rich, silty, calcareous clay; mottled grayish-yellow-green 5GY 7/2; mainly clay to granule; trace to 3 percent phosphorite grains; fossil fragments; less than 5 percent intergranular porosity; low hydraulic conductivity
183.0 - 185.0	Very quartz sand-rich, silty, calcareous clay; very light gray N8 to greenish-gray 5GY 6/1; mainly clay to granule; minor pebble-size quartz grains; trace to 3 percent phosphorite grains; less than 5 percent intergranular porosity; low to moderate hydraulic conductivity
185.0 - 187.5	Very quartz sand-rich, silty, calcareous clay; very light gray N8 to greenish-gray 5GY 6/1; mainly clay to granule; minor pebble-size quartz grains; trace to 3 percent phosphorite grains; low to moderate hydraulic conductivity
187.5 - 190.0	No recovery
190.0 - 193.5	Quartz sand with silt and clay matrix; very light gray N8 to greenish-gray 5GY 6/1; poorly sorted; mainly clay to coarse; trace to 3 percent phosphorite grains; less than 5 percent intergranular porosity; low to moderate hydraulic conductivity
193.5 - 195.0	Quartz sand with silt matrix; very light gray N8 to greenish-gray 5GY 6/1; poorly sorted; mainly silt to coarse; less than 5 percent intergranular porosity; moderate to high hydraulic conductivity
195.0 - 200.0	Quartz sand-rich, calcareous clay to quartz sand with silt matrix; light olive gray 5Y 5/2 to dusky yellow green 5GY 5/2; poorly sorted; mainly clay to coarse; trace to 3 percent phosphorite grains; less than 5 percent intergranular porosity; hydraulic conductivity increasing upward from very low and low to moderate and high
200.0 - 201.5	Slightly quartz sand-rich, silty, calcareous clay; dusky-yellow-green 5GY 5/2; clay to very fine; very low hydraulic conductivity
201.5 - 205.0	Silty, calcareous clay; olive-gray 5Y 3/2; clay to silt; very low hydraulic conductivity

Monroe Station Core

Florida Geological Survey well number	W-17972
Well number	C-1136
Total depth	202 feet
Cored from	0 to 202 feet
County	Collier
Location	NW, NW, sec. 14, T53S, R32E
Latitude	25°51'45"
Longitude	81°06'01"
Elevation	10 feet
Completion date	February 16, 1997
Other types of available logs	Gamma ray, induction, fluid velocity, fluid conductivity
Owner	U.S. Geological Survey
Driller	U.S. Geological Survey
Core described by	Scott T. Prinos (description by Weedman and others, 1999, used in part in figure 13)
Soil and fill	0 to 2 feet
Tamiami Formation, Ochopee Limestone Member	2 to 55 feet
Unnamed formation	55 to 128 feet (Weedman and others, 1999)
Peace River Formation	128 to 202 feet (Weedman and others, 1999)
Gray limestone aquifer	2 to 53 feet
Lower confining unit	53 to 78 feet
Sand aquifer	78 to 98 feet
Confining unit	98 to 187 feet
Sand aquifer	187 to 202 feet

Depth (feet below land surface)	Lithologic description of well C-1136
0.0 - 0.5	Soil and limestone gravel; olive-black (5Y 2/1) and white (N9); limestone micritic and well cemented; extensive recrystallization to calcite spar; clay and granule to pebble; very high hydraulic conductivity
0.5 - 2.0	No recovery
2.0 - 2.7	Hard crystalline and soft micritic limestone and pebble-size limestone fragments; bluish-white (5B 9/1) to grayish-orange (10YR 7/4); pebble size; mollusks; loose pieces of wood; very high hydraulic conductivity
2.7 - 6.0	No recovery
6.0 - 6.8	Molluscan limestone; white (N9) to yellowish-gray (5Y 8/1); hard micritic limestone and limestone fragments; 15 percent moldic porosity (molds of mollusks) at base; clay and fine to medium in upper fraction and granule to pebble in lower fraction; very high hydraulic conductivity, high hydraulic conductivity at base; light-olive-gray (5Y 6/1) sand and soil at top
6.8 - 9.0	No recovery
9.0 - 10.0	Limestone gravel and sand with lime mud matrix; very pale orange (10YR 8/2); clay and coarse to pebble; 15 to 20 percent porosity; low to moderate hydraulic conductivity
10.0 - 12.0	No recovery
12.0 - 12.5	Limestone gravel with lime mud matrix; very pale orange (10YR 8/2); clay and coarse to pebble; 15 to 20 percent porosity; low to moderate hydraulic conductivity
12.5 - 14.5	Limestone gravel with lime mud matrix; gradational to relatively more cemented and fossiliferous at base; very pale orange (10YR 8/2); clay and coarse to pebble; 15 to 20 percent porosity; moderate hydraulic conductivity
14.5 - 15.0	No recovery
15.0 - 16.5	Limestone gravel with lime mud matrix; large pebble-size micritic limestone fragments with lime mud matrix; fragments generally decrease in size downward and lime mud content increases downward; white (N9) to very pale orange (10YR 8/2); clay and coarse to pebble; 15 to 20 percent porosity; high to moderate hydraulic conductivity, decreases downward
16.5 - 20.0	No recovery
20.0 - 21.5	Limestone gravel with lime mud matrix; fossil fragments and pieces of micritic limestone (partially recrystallized to sparry calcite) with varying amounts of lime mud matrix (40 to 50 percent); white (N9) to very pale orange (10YR 8/2); clay and coarse to pebble; 15 to 20 percent porosity; very high to high hydraulic conductivity, increases downward
21.5 - 22.5	No recovery
22.5 - 24.0	Limestone gravel with lime mud matrix (about 60 percent) and about 40 percent fossils and limestone fragments; very pale orange (10YR 8/2); clay and coarse to pebble; <i>Pecten</i> , <i>Chione</i> , <i>Turritella</i> and <i>Ostrea</i> ; 15 percent porosity; moderate to low hydraulic conductivity, decreases downward
24.0 - 25.0	No recovery
25.0 - 27.5	Limestone gravel with lime mud matrix (about 60 percent) and about 40 percent fossils and limestone fragments; very pale orange (10YR 8/2); clay and coarse to pebble; minor pebble-size grains; possible echinoid fragments; 10 percent porosity; low hydraulic conductivity; slightly cemented locally
27.5 - 30.0	No recovery
30.0 - 31.5	Limestone gravel with lime mud matrix; partially cemented, soft lime mud and micritic limestone; limestone more fragmented at base; fossiliferous; white (N9); clay and coarse to pebble; 5 to 10 percent porosity; low to moderate hydraulic conductivity
31.5 - 32.8	Fossiliferous limestone; well-cemented micritic limestone; extensively recrystallized to sparry calcite locally; white (N9) to light-gray (N7); very abundant <i>Turritella</i> , and abundant <i>Ostrea</i> , <i>Pecten</i> and <i>Chione</i> ; 20 to 26 percent porosity; very high to high hydraulic conductivity
32.8 - 35.0	No recovery
35.0 - 36.0	Fossiliferous limestone; well-cemented micritic limestone; extensively recrystallized to sparry calcite locally; very light gray (N8) to light-greenish-gray (5GY 8/1); clay and pebble to cobble; very abundant <i>Turritella</i> , and abundant <i>Ostrea</i> , <i>Pecten</i> and <i>Chione</i> ; 20 to 26 percent porosity; high hydraulic conductivity
36.0 - 40.0	No recovery
40.0 - 41.0	Limestone gravel with a lime mud matrix; fragments of limestone with varying amounts of carbonate mud matrix, white (N9) to very pale orange (10YR 8/2); clay and granule to pebble; trace fine mollusks, bryozoans, clams and <i>Chione</i> ; trace fine, subangular quartz sand; 5 to 10 percent porosity; moderate to high hydraulic conductivity
41.0 - 45.0	No recovery
45.0 - 47.5	Limestone gravel with lime mud matrix; lime mud decreases downward; white (N9) to very pale orange (10YR 8/2); clay, fine and granule to pebble; pecten and fossil fragments; fine, subangular quartz sand; gradational from 5 to 10 percent at top to 20 to 25 percent porosity at base; moderate to very high hydraulic conductivity, increases downward

Depth (feet below land surface)	Lithologic description of well C-1136
47.5 - 48.5	Sandy lime mudstone; 20 to 30 percent coarse sand to pebble-size limestone fragments, white (N9) at top to very pale orange (10YR 8/2) at base; 20 percent fine, subangular to subrounded quartz sand; 3 to 10 percent phosphorite grains; 5 to 10 percent porosity; low to moderate hydraulic conductivity
48.5 - 50.0	No recovery
50.0 - 50.2	Sandy lime mudstone; 20 to 30 percent coarse sand and rounded granule to small pebble-size fragments of limestone; increasingly fossiliferous downward, white (N9); clay, very fine and coarse to pebble; 15 to 20 percent and 20 to 25 percent porosity, grades downward; low to moderate and high to very high hydraulic conductivity, grades downward
50.2 - 52.5	Limestone gravel with lime mud matrix; clean, granule to small pebble-size limestone gravel at top, grading downward to lime mudstone with 5 to 10 percent limestone fragments at base; granule to pebble at top grading downward to clay and fine to granule at base; high to very high hydraulic conductivity at top grading downward to low hydraulic conductivity at base
52.5 - 60.0	No recovery
60.0 - 64.0	Clay-rich quartz sand, yellowish-gray (5Y 8/1); subangular quartz sand; mainly very fine to fine quartz sand; clay to granule; microscopic bryozoans(?); about 3 percent black grains possibly phosphorite; low hydraulic conductivity
64.0 - 65.0	No recovery
65.0 - 68.0	Clay-rich quartz sand, white (N9); subangular to subrounded; mainly fine to medium quartz grains, but up to coarse; clay to pebble; 85 to 90 percent quartz grains; 10 to 15 percent calcite grains; less than 1 percent black grains; possible bryozoan; low hydraulic conductivity
68.0 - 69.5	Clay-rich quartz sand, yellowish-gray (5Y 7/2); mainly fine to medium quartz grains; clay to granule; 3 to 10 percent phosphorite grains; minor medium to granule-size shell fragments; low hydraulic conductivity
69.5 - 70.0	No recovery
70.0 - 74.0	Clay-rich quartz sand, yellowish-gray (5Y 7/2); subangular quartz grains; mainly fine to medium quartz grains, but up to coarse to very coarse, well-rounded quartz grains; clay to granule; about 1 percent black grains, possibly phosphorite; 1 percent very coarse to granule-size limestone and sandstone fragments; low hydraulic conductivity
74.0 - 75.0	No recovery
75.0 - 77.5	Clay-rich quartz sand, yellowish-gray (5Y 7/2); subangular quartz grains; mainly fine to medium quartz grains, but up to coarse to very coarse, well-rounded quartz grains; clay to pebble; about 1 percent black grains, possibly phosphorite; 5 percent limestone granules at top of interval; low hydraulic conductivity
77.5 - 80.0	Clay-rich quartz sand, yellowish-gray (5Y 7/2); fine to very coarse quartz grains; clay to pebble; <i>Pecten</i> and <i>Chione</i> , medium to pebble size; 3 to 10 percent phosphorite grains; granule-size sandstone and limestone grains; low hydraulic conductivity
80.0 - 83.0	Fossiliferous, clay-rich quartz sand, grades downward from yellowish-gray (5Y 7/2) to yellowish-gray (5Y 8/1); moderately sorted; mainly very fine to coarse quartz grains, but ranges from very fine to granule-size quartz grains; clay to granule; 30 to 40 percent limestone, sandstone and fossil grains (very coarse to granule); 1 percent phosphorite grains; 5 percent interparticle porosity; gradational low to moderate hydraulic conductivity to low hydraulic conductivity downward
83.0 - 85.0	No recovery
85.0 - 87.5	Fossiliferous, clay-rich quartz sand, yellowish-gray (5Y 7/2); moderately sorted; very fine to granule quartz grains; clay to granule; 30 to 40 percent limestone, sandstone and fossil grains (very coarse to granule); 1 percent phosphorite grains; 5 percent interparticle porosity; gradational low to moderate hydraulic conductivity to moderate hydraulic conductivity downward
87.5 - 90.0	Clay-rich quartz sand, yellowish-gray (5Y 7/2); moderately sorted; subangular to subrounded; mainly medium to coarse quartz grains, but up to very coarse quartz grains; clay to granule; trace to 3 percent phosphorite grains; 5 percent interparticle porosity; grades downward from low hydraulic conductivity to very low to low hydraulic conductivity; more clay-rich from 88.5 to 89.0 feet
90.0 - 95.0	Clay-rich quartz sand, grayish-yellow-green (5GY 7/2); moderately sorted; subangular to subrounded; mainly medium to coarse quartz grains, but up to very coarse quartz grains; clay to granule; 5 percent interparticle porosity; low hydraulic conductivity
95.0 - 96.0	Clay-rich quartz sand, grayish-yellow-green (5GY 7/2); moderately sorted; mainly fine to medium quartz grains, but up to coarse quartz grains; clay to coarse; 1 to 2 percent heavy minerals, carbonate grains and phosphorite grains; low hydraulic conductivity
96.0 - 99.5	Clay-rich quartz sand, grayish-yellow-green (5GY 7/2); moderately sorted; mainly fine to medium quartz grains, but up to coarse quartz grains; clay to coarse; 1 to 2 percent heavy minerals, carbonate grains and phosphorite grains; very low to low hydraulic conductivity; relatively more clay-rich than for 95 to 96 feet
99.5 - 100.0	No recovery
100.0 - 101.8	Clay-rich quartz sand, yellowish-gray (5Y 8/1); poorly sorted; quartz grains, very fine to granule size; clay to granule; small pebble size bone fragments; trace to 3 percent phosphorite grains; low hydraulic conductivity
101.8 - 104.0	Clay-rich quartz sand, mottled greenish-gray (5GY 6/1); very poorly sorted; quartz grains, very fine to granule size; clay to granule; small pebble-size bone fragments; trace to 3 percent phosphorite grains; very low to low hydraulic conductivity

Depth (feet below land surface)	Lithologic description of well C-1136
104.0 - 105.0	No recovery
105.0 - 107.0	Very clay-rich quartz sand with lenses of clean fine to medium quartz sand; sand in clay is very fine to fine, subangular quartz, pale-olive 10Y 6/2 to grayish-olive 10Y 4/2; very poorly sorted; mainly very fine to fine quartz grains; quartz grains, very fine to granule size; clay to granule; 5 percent phosphorite and heavy minerals; mollusks and possibly <i>Chione ulocyma</i> ; very low to low hydraulic conductivity
107.0 - 110.0	No recovery
110.0 - 113.5	Very clay-rich quartz sand to very quartz sand-rich clay with minor lenses of cleaner quartz sand, grayish-olive 10Y 4/2; clay to granule; 50 to 10 percent phosphorite; fossil fragments; one mollusk, possibly <i>Chione ulocyma</i> ; very low hydraulic conductivity
113.5 - 115.0	No recovery
115.0 - 119.0	Very clay-rich quartz sand to very quartz sand-rich clay with minor lenses of cleaner quartz sand, grayish-olive 10Y 4/2; very poorly sorted; mainly very fine to fine quartz grains; clay to granule; 5 to 10 percent phosphorite; fossil fragments; very low hydraulic conductivity
119.0 - 120.0	No recovery
120.0 - 123.5	Very clay-rich quartz sand to very quartz sand-rich clay with minor lenses of cleaner quartz sand, grayish-olive 10Y 4/2; very poorly sorted; mainly very fine to fine quartz grains; clay to granule; 5 to 10 percent phosphorite; fossil fragments; very low hydraulic conductivity
123.5 - 125.0	Very clay-rich quartz sand to very quartz sand-rich clay with minor lenses of cleaner quartz sand, grayish-olive 10Y 4/2; very poorly sorted; mainly very fine to fine quartz grains, but up to small pebble size; all grains, clay to granule; 3 percent phosphorite; fossil fragments; very low hydraulic conductivity
125.0 - 129.0	Very clay-rich quartz sand and quartz sand-rich clay in part; quartz sand-rich clay laminations from 127.5 to 128.2 feet.; clay content increases downward from 128.2 to 129.0 feet, grayish-olive 10Y 4/2; poorly sorted; interval coarsens upward with mainly mud and silt-size grains at base and mud to granule size grains at top; ranges from mud and silt-size grains at base to between mud and granule-size grains at top; phosphorite increases downward from 3 to 10 percent at top to trace and between 3 percent at base; very low hydraulic conductivity
129.0 - 130.0	No recovery
130.0 - 134.0	Silty, calcareous clay with several thin lenses of quartz sand, grayish-olive 10Y 4/2; interval fines upward with mainly mud and silt-size grains at base and mud-size grains at top; ranges from mud- to fine-size grains at base to mud-size grains at top; trace to 3 percent phosphorite grains; very low hydraulic conductivity, becomes increasingly harder downward
134.0 - 135.0	Silty, calcareous clay with thin lenses of quartz sand, grayish-olive 10Y 4/2; mainly mud and silt-size grains; ranges from mud to fine-size grains; trace to 3 percent phosphorite grains; very low hydraulic conductivity; variable hardness
135.0 - 140.0	Silty, calcareous clay with thin lenses of quartz sand, grayish-olive 10Y 4/2; interval coarsens upward with mainly mud and silt-size grains; ranges from mud to silt-size grains at base and middle to mud to fine sand-size grains at top; trace to 3 percent phosphorite grains; very low hydraulic conductivity; variable hardness
140.0 - 141.5	Silty, calcareous clay with thin lenses of quartz sand, grayish-olive 10Y 4/2; interval coarsens upward with mainly mud and silt-size grains; ranges from mud to silt-size grains at base to mud to fine sand-size grains at top; trace to 3 percent phosphorite grains; very low hydraulic conductivity; variable hardness
141.5 - 145.0	Silty clay, grayish-olive 10Y 4/2 mottled with olive-gray 5Y 3/2; mainly clay to silt; ranges from clay to fine; trace to 3 percent phosphorite grains; very low hydraulic conductivity; hard from 141.5 to 143.5 feet and plastic from 143.5 to 145.0 feet
145.0 - 149.0	Silty clay, grayish-olive 10Y 4/2 mottled with olive-gray 5Y 3/2; mainly clay to very fine; clay to fine; trace to 3 percent phosphorite grains; very low hydraulic conductivity; more quartz sand-rich than 141.5 to 145.0 feet
149.0 - 150.0	Very quartz sand-rich silty clay, light-olive-gray 5Y 6/1; mainly clay to fine; ranges from clay to coarse; 3 to 10 percent phosphorite grains; very low hydraulic conductivity; numerous burrows
150.0 - 157.0	Very quartz sand-rich clay to very clay-rich quartz sand, grayish-olive 10Y 4/2; mainly clay to fine; ranges from clay to coarse; 3 to 10 percent phosphorite grains; very low to low hydraulic conductivity; quartz sand is mainly very fine to fine, angular to subangular grains with about 10 to 15 percent medium subangular grains and 5 percent very coarse grains
157.0 - 160.0	Very quartz sand-rich clay to very clay-rich quartz sand; grayish olive 10Y 4/2; mainly clay to fine; ranges from clay to small pebble; 3 to 10 percent phosphorite grains; very low to low hydraulic conductivity; coarse fraction of quartz sand composed of granule and small pebble-size, well-rounded grains
160.0 - 165.0	Very quartz sand-rich clay to very clay-rich quartz sand, grayish-olive 10Y 4/2; mainly clay to fine; ranges from clay to coarse; 3 to 10 percent phosphorite grains; very low to low hydraulic conductivity
165.0 - 170.0	Very quartz sand-rich clay to very clay-rich quartz sand, grayish-olive 10Y 4/2; mainly clay to fine; ranges from clay to granule; 3 to 10 percent phosphorite grains; very low to low hydraulic conductivity; relatively more well rounded, very coarse quartz sand than interval above; pebble-size concretion
170.0 - 172.5	Quartz sand-rich, silty clay, grayish-olive 10Y 4/2; mainly clay to fine; ranges from clay to coarse; 3 to 10 percent phosphorite grains; stringers of very fine to fine quartz sand; very low to low hydraulic conductivity

Depth (feet below land surface)	Lithologic description of well C-1136
172.5 - 175.0	Quartz sand-rich, silty clay; grayish-olive 10Y 4/2; mainly clay to fine; ranges from clay to coarse; 3 to 10 percent phosphorite grains; very low to low hydraulic conductivity; about 20 percent coarse, well-rounded quartz and phosphorite sand
175.0 - 178.0	Quartz sand-rich, silty clay, grayish-olive 10Y 4/2, pale-olive 10Y 6/2; coarsens upward from mainly clay and silt to clay to fine; coarsens upward from clay and silt to coarse; trace to 10 percent phosphorite grains; very low hydraulic conductivity; concretions and granule-size quartz at 177 feet
178.0 - 180.0	Very clay-rich quartz sand, light-olive-gray 5Y 5/2; mainly clay to granule; ranges from clay to pebble; 5 to 10 percent well rounded quartz and phosphorite grains; low hydraulic conductivity
180.0 - 180.8	No recovery
180.8 - 183.0	Quartz sand-rich, silty clay, light-olive-gray 5Y 5/2 mottled with white N9; mainly clay to pebble; fossil fragments and quartz granules; 3 to 10 percent phosphorite grains; low hydraulic conductivity
183.0 - 188.0	Clay-rich, silty quartz sand grading downward to a clean, medium-grained, quartz sand, light-olive-gray 5Y 5/2 to very light gray N8; grading downward from clay and pebble to fine to medium; fossil fragments and well-rounded small quartz pebbles grading downward to clean, medium-grained, quartz sand; 3 to 10 percent phosphorite grains; low to medium hydraulic conductivity, grading downward
188.0 - 191.5	Clean, medium-grained sand, very light gray N8; mainly fine to medium; ranges from clay to granule; abundant fossil fragments from 188.3 to 191 feet; trace to 3 percent phosphorite grains; 5 percent porosity; medium hydraulic conductivity; several thin (2-millimeter thick) laminations of clay; quartz sand becomes coarser locally
191.5 - 193.0	No recovery
193.0 - 196.5	Very coarse, fossiliferous, clay-rich, quartz sand, very light gray N8 mottled with dusky-yellow-green 5GY 5/2; mainly medium to granule; ranges from clay to pebble; 3 to 10 percent phosphorite grains; 5 percent intergranular porosity; moderate to high hydraulic conductivity; well-rounded quartz granules and pebbles grading downward to a coarse to medium-grained, clean, quartz sand
196.5 - 197.5	No recovery
197.5 - 200.0	Very coarse, fossiliferous, quartz sand grading downward to a clean, fine-grained quartz sand, light gray N7; mainly very fine to very coarse; ranges from silt to very coarse; 3 to 10 percent phosphorite grains; 5 percent intergranular porosity; moderate to high hydraulic conductivity
200.0 - 202.0	Chalky limestone, light-gray N7; massive; very porous; moderate hydraulic conductivity; well cemented

Doerr's Lake Core

Florida Geological Survey well number	W-17974
Well number	C-1137
Total depth	200 feet
Cored from	0 to 200 feet
County	Collier
Location	NE, SW, sec. 33, T52S, R31E
Latitude	25°53'51"
Longitude	81°13'28"
Elevation	6 feet
Completion date	March 10, 1997
Other types of available logs	Gamma ray, induction, neutron, fluid velocity, fluid conductivity
Owner	U.S. Geological Survey
Driller	Florida Geological Survey
Core described by	Kevin J. Cunningham
Undifferentiated quartz sand	0 to 0.5 foot
Tamiami Formation, Ochopee Limestone Member	0.5 to 35 feet
Unnamed formation	35 to 198 feet
Gray limestone aquifer	0 to 35 feet
Lower confining unit	35 to 189 feet

Depth (feet below land surface)	Lithologic description of well C-1137
0.0 - 0.5	Quartz sand, mottled colors of grayish-orange 10YR 7/4, dark-yellowish-orange 10YR 6/6 and very pale orange 10YR 8/2, mainly fine to medium grain size; ranges from very fine to medium; broken fossil fragments; 20 percent interparticle porosity; high hydraulic conductivity
0.5 - 1.4	Mollusk lime rudstone with quartz sand-rich matrix, mottled colors of grayish-orange 10YR 7/4, dark-yellowish-orange 10YR 6/6 and very pale orange 10YR 8/2; mud to cobble; 20 percent moldic and vuggy porosity; high hydraulic conductivity
1.4 - 5.0	No recovery
5.0 - 6.0	Mollusk lime rudstone with lime packstone matrix, mottled colors of grayish-orange 10YR 7/4, dark-yellowish-orange 10YR 6/6 and very pale orange 10YR 8/2; mud to cobble; 20 percent moldic and vuggy porosity; high hydraulic conductivity
6.0 - 6.9	Mollusk lime rudstone with lime packstone matrix; white (N9) to very light gray (N8) and yellowish-gray (5Y 7/2); mud to cobble; 20 percent moldic and vuggy porosity; high hydraulic conductivity
6.9 - 10.0	No recovery
10.0 - 11.0	Rubble of mollusk lime rudstone with lime packstone matrix; white (N9) to very light gray (N8) and yellowish-gray (5Y 7/2), mainly mud to pebble; ranges from mud to cobble; 15 percent moldic and vuggy porosity; moderate hydraulic conductivity
11.0 - 14.0	No recovery
14.0 - 15.0	Rubble of mollusk lime rudstone with lime packstone matrix; white (N9) to very light gray (N8) and yellowish-gray (5Y 7/2); mainly mud to pebble; ranges from mud to cobble; 20 percent moldic porosity; high hydraulic conductivity
15.0 - 17.0	Mollusk lime mudstone with marl matrix, white (N9) and minor very light gray (N8); mainly mud to pebble; ranges from mud to cobble; 10 percent moldic porosity; low hydraulic conductivity
17.0 - 20.0	No recovery
20.0 - 23.5	Mollusk lime mudstone with marl matrix, white (N9) and minor very light gray (N8); mainly mud to pebble; ranges from mud to cobble; mollusks, gastropods and oysters; 10 percent moldic porosity; low hydraulic conductivity
23.5 - 24.0	No recovery
24.0 - 28.2	Mollusk lime mudstone with marl matrix, white (N9) and minor very light gray (N8); mainly mud to pebble; ranges from mud to cobble; mollusks, gastropods and oysters; 10 percent moldic porosity; low hydraulic conductivity
28.2 - 29.4	No recovery
29.4 - 33.5	Mollusk lime rudstone with quartz sand-rich skeletal wackestone matrix, white (N9) to very light gray (N8); mainly mud to pebble; ranges from mud to cobble; mollusks and gastropods; trace to 3 percent phosphorite grains; 15 percent moldic and vuggy porosity; moderate hydraulic conductivity; rubbly texture
33.5 - 34.5	No recovery
34.5 - 35.0	Mollusk lime rudstone with quartz sand-rich skeletal wackestone matrix, white (N9) to very light gray (N8); mainly mud to pebble; ranges from mud to cobble; mollusks and gastropods; trace to 3 percent phosphorite grains; 15 percent moldic and vuggy porosity; moderate hydraulic conductivity; rubbly texture
35.0 - 40.0	No recovery
40.0 - 43.0	Friable quartz sand, yellowish-gray (5Y 8/1); mainly very fine to fine grain size; ranges from clay and very fine to medium; trace mollusks; 3 to 10 percent phosphorite grains; 20 percent interparticle porosity; moderate hydraulic conductivity
43.0 - 45.0	No recovery
45.0 - 51.0	Friable quartz sand, yellowish-gray (5Y 8/1); mainly very fine to fine grain size; ranges from clay and very fine to medium; trace mollusks; 3 to 10 percent phosphorite grains; 20 percent interparticle porosity; moderate hydraulic conductivity
51.0 - 52.2	Friable quartz sand with lime mud matrix, yellowish-gray (5Y 8/1); mainly clay and very fine to fine grain size; ranges from clay and very fine to granule; minor mollusks; 3 to 10 percent phosphorite grains; 10 percent interparticle porosity; low hydraulic conductivity
52.2 - 55.0	No recovery
55.0 - 57.7	Friable quartz sand with lime mud matrix, yellowish-gray (5Y 8/1); mainly clay and fine to medium grain size; ranges from clay and fine to pebble; mollusks; 3 to 10 percent phosphorite grains; 10 percent interparticle porosity; low hydraulic conductivity

Depth (feet below land surface)	Lithologic description of well C-1137
57.7 - 58.7	Friable quartz sand, pale-yellowish-brown (10YR 6/2); mainly fine to medium grain size; ranges from clay and fine to pebble; mollusks; trace to 3 percent phosphorite grains; 15 percent interparticle porosity; moderate hydraulic conductivity
58.7 - 60.0	No recovery
60.0 - 62.0	Friable quartz sand, pale-yellowish-brown (10YR 6/2); mainly fine to medium grain size; ranges from clay and fine to pebble; trace to 3 percent phosphorite grains; 10 percent interparticle porosity; low hydraulic conductivity
62.0 - 63.5	Friable quartz sand, medium-dark-gray (N4); mainly fine to medium grain size; ranges from clay and fine to pebble; trace to 3 percent phosphorite grains; 10 percent interparticle porosity; low hydraulic conductivity
63.5 - 65.0	No recovery
65.0 - 66.5	Friable quartz sand; medium-dark-gray (N4), mainly fine to medium grain size; ranges from clay and fine to pebble; trace to 3 percent phosphorite grains; 10 percent interparticle porosity; low hydraulic conductivity
66.5 - 70.0	No recovery
70.0 - 73.0	Friable quartz sand, yellowish-gray (5Y 7/2) to light-olive-gray (5Y 5/2); mainly fine to medium; clay and fine to granule; trace to 3 percent phosphorite grains; 10 percent interparticle porosity; low hydraulic conductivity
73.0 - 75.0	Friable quartz sand, yellowish-gray (5Y 7/2) to light-olive-gray (5Y 5/2); mainly fine to medium grain size; ranges from clay and fine to pebble; trace to 3 percent phosphorite grains; 10 percent interparticle porosity; low hydraulic conductivity
75.0 - 80.0	Friable quartz sand, light-olive-gray (5Y 5/2); mainly fine to medium grain size; ranges from clay and fine to pebble; trace to 3 percent phosphorite grains; 10 percent interparticle porosity; low hydraulic conductivity
80.0 - 81.5	No recovery
81.5 - 84.5	Friable quartz sand, yellowish-gray (5Y 8/1); mainly fine to medium grain size; ranges from clay and fine to granule; trace to 3 percent; phosphorite grains; minor mica; 15 percent interparticle porosity; moderate hydraulic conductivity
84.5 - 85.0	Friable quartz sand, yellowish-gray (5Y 8/1); mainly clay to medium grain size; ranges from clay to coarse; trace to 3 percent phosphorite grains; minor mica; 10 percent interparticle porosity; low hydraulic conductivity; abrupt contact at 84.5 feet
85.0 - 90.0	No recovery
90.0 - 91.0	Friable quartz sand, yellowish-gray (5Y 8/1); mainly fine to medium grain size; ranges from clay to coarse; trace to 3 percent phosphorite grains; minor mica; 15 percent interparticle porosity; moderate hydraulic conductivity
91.0 - 94.5	Friable quartz sand, yellowish-gray (5Y 8/1); mainly very fine to fine grain size; ranges from clay to medium; trace to 3 percent phosphorite grains; minor mica; 15 percent interparticle porosity; moderate hydraulic conductivity
94.5 - 95.0	No recovery
95.0 - 98.5	Friable quartz sand, yellowish-gray (5Y 8/1); mainly very fine to fine grain size; ranges from clay to pebble; mollusks; trace to 3 percent phosphorite grains; minor mica; 15 percent interparticle porosity; moderate hydraulic conductivity
98.5 - 100.0	No recovery
100.0 - 101.6	Friable quartz sand, yellowish-gray (5Y 8/1); mainly very fine to medium grain size; ranges from silt to pebble; mollusks; trace to 3 percent phosphorite grains; minor mica; 20 percent interparticle porosity; moderate hydraulic conductivity
101.6 - 106.0	Friable quartz sand, yellowish-gray (5Y 7/2); mainly fine to medium grain size; ranges from silt to pebble; mollusks; trace to 3 percent phosphorite grains; minor mica; 15 percent interparticle porosity; moderate hydraulic conductivity
106.0 - 108.0	Friable quartz sand, yellowish-gray (5Y 7/2); mainly fine to medium grain size; ranges from silt to pebble; trace to 3 percent phosphorite grains; minor mica; 20 percent interparticle porosity; moderate hydraulic conductivity
108.0 - 110.0	Friable quartz sand, yellowish-gray (5Y 7/2); mainly fine to coarse grain size; ranges from silt to pebble; trace to 3 percent phosphorite grains; minor mica; 20 percent interparticle porosity; moderate hydraulic conductivity
110.0 - 113.0	Friable quartz sand, yellowish-gray (5Y 7/2); mainly fine to coarse grain size; ranges from silt to cobble; mollusks; trace to 3 percent phosphorite grains; 15 percent interparticle porosity; moderate hydraulic conductivity
113.0 - 114.0	Friable quartz sand, yellowish-gray (5Y 7/2); mainly fine to coarse grain size; ranges from silt to pebble; mollusks; trace to 3 percent phosphorite grains; 15 percent interparticle porosity; moderate hydraulic conductivity
114.0 - 115.0	No recovery
115.0 - 117.0	Friable quartz sand, yellowish-gray (5Y 7/2); mainly very fine to medium grain size; ranges from silt to pebble; mollusks; trace to 3 percent phosphorite grains; 20 percent interparticle porosity; moderate hydraulic conductivity
117.0 - 119.0	Friable quartz sand, yellowish-gray (5Y 7/2); mainly very fine to medium grain size; ranges from silt to cobble; mollusks; trace to 3 percent phosphorite grains; 20 percent interparticle porosity; moderate hydraulic conductivity

Depth (feet below land surface)	Lithologic description of well C-1137
119.0 - 120.0	Friable quartz sand, yellowish-gray (5Y 8/1); mainly very fine to fine grain size; ranges from silt to pebble; mollusks; trace to 3 percent phosphorite grains; 20 percent interparticle porosity; moderate hydraulic conductivity
120.0 - 121.0	Friable quartz sand, yellowish-gray (5Y 8/1); mainly very fine to fine grain size; ranges from silt to granule; mollusks; trace to 3 percent phosphorite grains; 15 percent interparticle porosity; moderate hydraulic conductivity
121.0 - 125.0	Friable quartz sand, yellowish-gray (5Y 8/1); mainly very fine to fine grain size; ranges from silt to granule; trace to 3 percent phosphorite grains; 20 percent interparticle porosity; moderate hydraulic conductivity
125.0 - 127.0	Friable quartz sand, yellowish-gray (5Y 8/1); mainly very fine to medium grain size; ranges from silt to pebble; trace to 3 percent phosphorite grains; 20 percent interparticle porosity; moderate hydraulic conductivity
127.0 - 128.0	Friable quartz sand, yellowish-gray (5Y 8/1); mainly very fine to fine grain size; ranges from silt to coarse; trace to 3 percent phosphorite grains; 20 percent interparticle porosity; moderate hydraulic conductivity; minor clay clasts or clay drapes, olive-gray (5Y 4/1)
128.0 - 130.0	Friable quartz sand, yellowish-gray (5Y 8/1); mainly very fine to fine grain size; ranges from silt to coarse; trace to 3 percent phosphorite grains; 20 percent interparticle porosity; moderate hydraulic conductivity
130.0 - 134.5	Friable quartz sand, yellowish-gray (5Y 8/1); mainly fine grain size; ranges from silt to coarse; trace to 3 percent phosphorite grains; 20 percent interparticle porosity; moderate hydraulic conductivity
134.5 - 135.0	No recovery
135.0 - 139.3	Friable quartz sand, yellowish-gray (5Y 8/1); mainly fine grain size; ranges from silt to coarse; trace to 3 percent phosphorite grains; 20 percent interparticle porosity; moderate hydraulic conductivity; minor clay clasts or clay drapes at 135.7 to 136.8 feet, olive-gray (5Y 4/1)
139.3 - 140.0	No recovery
140.0 - 144.3	Friable quartz sand, yellowish-gray (5Y 8/1); mainly fine grain size; ranges from silt to coarse; trace to 3 percent phosphorite grains; 20 percent interparticle porosity; moderate hydraulic conductivity; minor clay clasts at 140.2 to 140.8 feet, olive-gray (5Y 4/1)
144.3 - 145.0	No recovery
145.0 - 145.7	Friable quartz sand, yellowish-gray (5Y 8/1); mainly fine to medium grain size; ranges from silt to pebble; trace to 3 percent phosphorite grains; 20 percent interparticle porosity; moderate hydraulic conductivity
145.7 - 147.5	Friable quartz sand, yellowish-gray (5Y 8/1); mainly fine to medium grain size; ranges from silt to coarse; trace to 3 percent phosphorite grains; 20 percent interparticle porosity; moderate hydraulic conductivity; minor clay clasts or clay drapes or both, olive-gray (5Y 4/1)
147.5 - 149.0	Friable quartz sand, yellowish-gray (5Y 8/1); mainly fine to medium grain size; ranges from silt to coarse; trace to 3 percent phosphorite grains; 20 percent interparticle porosity; moderate hydraulic conductivity
149.0 - 150.0	No recovery
150.0 - 150.8	Friable quartz sand, yellowish-gray (5Y 8/1); mainly medium to coarse grain size; ranges from silt to pebble; trace to 3 percent phosphorite grains; 20 percent interparticle porosity; moderate hydraulic conductivity
150.8 - 152.0	Friable quartz sand, yellowish-gray (5Y 8/1); mainly fine to medium grain size; ranges from silt to coarse; trace to 3 percent phosphorite grains; 20 percent interparticle porosity; moderate hydraulic conductivity
152.0 - 154.0	Friable quartz sand, yellowish-gray (5Y 8/1); mainly medium to coarse grain size; ranges from silt to pebble; trace to 3 percent phosphorite grains; 20 percent interparticle porosity; moderate hydraulic conductivity
154.0 - 154.5	Friable quartz sand, yellowish-gray (5Y 8/1); mainly fine to medium grain size; ranges from silt to coarse; trace to 3 percent phosphorite grains; 20 percent interparticle porosity; moderate hydraulic conductivity
154.5 - 155.0	No recovery
155.0 - 159.0	Friable quartz sand, yellowish-gray (5Y 8/1); mainly fine to medium grain size; ranges from silt to granule; trace to 3 percent phosphorite grains; minor pebble- to cobble-size clay clasts, olive-gray (5Y 4/1); 20 percent interparticle porosity; moderate hydraulic conductivity
159.0 - 160.0	No recovery
160.0 - 165.0	Friable quartz sand, yellowish-gray (5Y 8/1); mainly fine to medium grain size; ranges from silt to granule; trace to 3 percent phosphorite grains; 20 percent interparticle porosity; moderate hydraulic conductivity
165.0 - 166.5	No recovery
166.5 - 170.8	Friable quartz sand, yellowish-gray (5Y 8/1); mainly fine to medium grain size; ranges from silt to granule; trace to 3 percent phosphorite grains; 20 percent interparticle porosity; moderate hydraulic conductivity

Depth (feet below land surface)	Lithologic description of well C-1137
170.8 - 174.0	Friable quartz sand, yellowish gray (5Y 8/1); mainly fine to medium; ranges from silt to granule; trace to 3 percent phosphorite grains; 20 percent interparticle porosity; moderate hydraulic conductivity; cobble-size clay clasts and clay laminae with soft sediment deformation, olive-gray (5Y 4/1)
174.0 - 175.0	No recovery
175.0 - 178.5	Friable quartz sand, yellowish-gray (5Y 8/1); mainly fine to medium grain size; ranges from silt to granule; trace to 3 percent phosphorite grains; 20 percent interparticle porosity; moderate hydraulic conductivity; clay clasts at 175.4 feet, olive-gray (5Y 4/1)
178.5 - 180.0	No recovery
180.0 - 182.0	Friable quartz sand, yellowish-gray (5Y 8/1); mainly fine to medium grain size; ranges from silt to granule; trace to 3 percent phosphorite grains; 20 percent interparticle porosity; moderate hydraulic conductivity; clay laminae from 181.7 to 182 feet, olive-gray (5Y 4/1)
182.0 - 185.0	No recovery
185.0 - 186.5	Friable quartz sand, yellowish-gray (5Y 8/1); mainly fine to medium grain size; ranges from silt to granule; trace to 3 percent phosphorite grains; 20 percent interparticle porosity; moderate hydraulic conductivity
186.5 - 190.0	No recovery
190.0 - 190.8	Clay drape, olive-gray (5Y 4/1); no porosity; very low hydraulic conductivity; laminae of silt to very fine quartz sand at base
190.8 - 195.0	No recovery
195.0 - 198.0	Friable quartz sand, yellowish-gray (5Y 8/1); mainly fine to medium grain size; ranges from silt to granule; trace to 3 percent phosphorite grains; 20 percent interparticle porosity; moderate hydraulic conductivity
198.0 - 200.0	No recovery

Raccoon Point Core

Florida Geological Survey well number	W-17975
Well number	C-1138
Total depth	185 feet
Cored from	0 to 185 feet
County	Collier
Location	SE, SE, sec. 33, T51S, R34E
Latitude	25°58'56"
Longitude	80°55'33"
Elevation	11.4 feet
Completion date	March 9, 1997
Other types of available logs	Gamma ray, induction, neutron, fluid velocity
Owner	U.S. Geological Survey
Driller	U.S. Geological Survey
Core described by	Kevin J. Cunningham
Possible fill	0 to 2.5 feet
Tamiami Formation, undifferentiated limestone and quartz sand	2.5 to 20 feet
Tamiami Formation, Ochopee Limestone Member	20 to 107 feet
Unnamed formation	107 to 147.5 feet
Peace River Formation	147.5 to 185 feet
Water-table aquifer	0 to 20 feet
Upper confining unit	20 to 52 feet
Gray limestone aquifer	52 to 109 feet
Lower confining unit	109 to 185 feet

Depth (feet below land surface)	Lithologic description of well C-1138
0.0 - 2.5	No recovery
2.5 - 3.5	Quartz sand-rich, mollusk lime floatstone with quartz sand-rich packstone matrix, yellowish-gray 5Y 8/1 and dark-yellowish-orange 10YR 6/6; mainly clay and very fine to medium grain size; ranges from clay to pebble; 5 percent moldic and vuggy porosity; low hydraulic conductivity
3.5 - 4.5	Quartz sand-rich, mollusk lime floatstone with quartz sand-rich packstone matrix, yellowish-gray 5Y 8/1 and dark-yellowish-orange 10YR 6/6; mainly clay and very fine to medium grain size; ranges from clay to pebble; 15 percent moldic and vuggy porosity; high hydraulic conductivity
4.5 - 5.5	Calcareous quartz sandstone, yellowish-gray 5Y 8/1 and 5Y 7/2; mainly clay and fine to medium grain size; ranges from clay to pebble; 10 percent interparticle porosity; low hydraulic conductivity
5.5 - 6.0	Calcareous quartz sandstone, yellowish-gray 5Y 8/1 and 5Y 7/2; mainly fine to pebble grain size; ranges from clay to pebble; 10 percent moldic and vuggy porosity; low hydraulic conductivity
6.0 - 7.0	Mollusk lime rudstone with quartz sand-rich lime packstone matrix, yellowish-gray 5Y 8/1 and 5Y 7/2; mainly fine to pebble grain size; ranges from clay to pebble; 15 percent moldic and vuggy porosity; moderate hydraulic conductivity
7.0 - 9.0	No recovery
9.0 - 9.5	Fossiliferous quartz sandstone, yellowish-gray 5Y 8/1 and 5Y 7/2; mainly fine to medium grain size; ranges from clay to pebble; 15 percent interparticle porosity; moderate hydraulic conductivity
9.5 - 10.0	Mollusk lime rudstone with quartz sand-rich lime packstone matrix, yellowish-gray 5Y 8/1 and 5Y 7/2; mainly clay and fine to pebble grain size; trace to 3 percent phosphorite grains; 15 percent interparticle porosity; moderate hydraulic conductivity
10.0 - 20.0	No recovery
20.0 - 22.0	Fossil fragment-rich marl, yellowish-gray 5Y 8/1; mainly clay to pebble grain size; ranges from clay to cobble; mollusks; 5 percent interparticle porosity; low hydraulic conductivity
22.0 - 22.5	No recovery
22.5 - 23.5	Fossil fragment-rich marl, yellowish-gray 5Y 8/1; mainly clay to pebble grain size; ranges from clay to cobble; mollusks; 5 percent interparticle porosity; low hydraulic conductivity
23.5 - 25.0	No recovery
25.0 - 27.0	Fossil fragment-rich marl, yellowish-gray 5Y 8/1; mainly clay to pebble grain size; ranges from clay to cobble; mollusks, oysters; 5 percent interparticle porosity; low hydraulic conductivity
27.0 - 30.0	No recovery
30.0 - 31.5	Fossil fragment-rich marl, yellowish-gray 5Y 8/1; mainly clay to pebble grain size; ranges from clay to cobble; mollusks, oysters; 5 percent interparticle porosity; low hydraulic conductivity
31.5 - 35.0	No recovery
35.0 - 36.0	Fossil fragment-rich marl, yellowish-gray 5Y 7/2; mainly clay to pebble grain size; ranges from clay to cobble; mollusks, oysters; 5 percent interparticle porosity; low hydraulic conductivity
36.0 - 40.0	No recovery
40.0 - 42.0	Fossiliferous, quartz sand-rich marl, yellowish-gray 5Y 7/2; mainly clay and very fine to fine grain size; ranges from clay to pebble; 5 percent interparticle porosity; low hydraulic conductivity
42.0 - 47.0	Quartz sand-rich marl, yellowish-gray 5Y 7/2; mainly clay and very fine to fine grain size; ranges from clay to pebble; oysters; 5 percent interparticle porosity; low hydraulic conductivity
47.0 - 50.0	No recovery
50.0 - 52.0	Fossiliferous marl, yellowish-gray 5Y 8/1 with medium-dark-gray N4 intraclasts; mainly clay to pebble grain size; ranges from clay to cobble; intraclasts in upper half; 5 percent interparticle porosity; low hydraulic conductivity
52.0 - 54.3	Mollusk lime rudstone with marl matrix, mottled medium-light-gray N6, gray N7, yellowish-gray 5Y 8/1; mainly clay to pebble grain size; ranges from clay to cobble; bryozoans, oysters; interparticle and moldic porosity; low hydraulic conductivity
54.3 - 55.0	No recovery

Depth (feet below land surface)	Lithologic description of well C-1138
55.0 - 58.5	Mollusk lime rudstone with marl matrix, mottled medium-light-gray N6, gray N7, yellowish-gray 5Y 8/1; mainly from clay to pebble grain size; ranges from clay to cobble; fossil fragments, bivalves; interparticle and moldic porosity; low hydraulic conductivity
58.5 - 65.0	No recovery
65.0 - 67.5	Mollusk lime rudstone with marl matrix, mottled medium-light-gray N6, gray N7, yellowish-gray 5Y 8/1; mainly from clay to pebble grain size; ranges from clay to cobble; echinoids, bryozoans, oysters; interparticle and moldic porosity; low hydraulic conductivity
67.5 - 70.0	No recovery
70.0 - 74.0	Mollusk lime rudstone with marl matrix, mottled medium-light gray N6, gray N7, yellowish-gray 5Y 8/1; mainly clay to pebble grain size; ranges from clay to cobble; echinoids, bryozoans, oysters; interparticle and moldic porosity; low hydraulic conductivity
74.0 - 75.0	No recovery
75.0 - 79.0	Mollusk lime rudstone with marl matrix, mottled medium-light-gray N6, gray N7, yellowish-gray 5Y 8/1; mainly clay to pebble grain size; ranges from clay to cobble; echinoids, bryozoans, oysters; interparticle and moldic porosity; low hydraulic conductivity
79.0 - 80.0	No recovery
80.0 - 89.0	Mollusk lime rudstone with marl matrix, mottled medium-light gray N6, gray N7, yellowish-gray 5Y 8/1; mainly clay to pebble grain size; ranges from clay to cobble; echinoids, bryozoans, oysters; interparticle and moldic porosity; low hydraulic conductivity
89.0 - 90.0	No recovery
90.0 - 94.2	Mollusk lime rudstone with marl matrix, mottled medium-light-gray N6, gray N7, yellowish-gray 5Y 8/1; mainly clay to pebble grain size; ranges from clay to cobble; echinoids, bryozoans, oysters; interparticle and moldic porosity; low hydraulic conductivity
94.2 - 95.0	No recovery
95.0 - 96.0	Mollusk lime rudstone with marl matrix, mottled medium-light-gray N6, gray N7, yellowish gray 5Y 8/1; mainly clay to pebble grain size; ranges from clay to cobble; minor quartz sand; echinoids, bryozoans, oysters; interparticle and moldic porosity; low hydraulic conductivity
96.0 - 98.5	Mollusk lime rudstone with marl matrix, mottled medium-light-gray N6, gray N7, yellowish-gray 5Y 8/1, very pale orange 10YR 8/2; mainly clay to pebble grain size; ranges from clay to cobble; minor quartz sand; echinoids, bryozoans, oysters; interparticle and moldic porosity; low hydraulic conductivity
98.5 - 100.0	No recovery
100.0 - 104.0	Mollusk lime rudstone with quartz sand-rich matrix, mottled medium-light-gray N6, gray N7, yellowish-gray 5Y 8/1, very pale orange 10YR 8/2; mainly clay to granule grain size; ranges from clay to pebble; fossil fragments, bivalves, oysters; 5 percent interparticle and moldic porosity; low hydraulic conductivity
104.0 - 105.0	No recovery
105.0 - 106.0	Mollusk lime rudstone with quartz sand-rich matrix; mottled medium-light-gray N6, gray N7, yellowish-gray 5Y 8/1, very pale orange 10YR 8/2; mainly clay to granule grain size; ranges from clay to pebble; fossil fragments, bivalves, oyster; 5 percent interparticle and moldic porosity; low hydraulic conductivity
106.0 - 107.0	Mollusk lime floatstone, mottled medium-light-gray N6, gray N7, yellowish-gray 5Y 8/1, very pale orange 10YR 8/2; mainly clay to granule grain size; ranges from clay to pebble; 10 percent moldic porosity; moderate hydraulic conductivity
107.0 - 109.0	Friable quartz sand, yellowish-gray 5Y 8/1; mainly fine to medium grain size; ranges from fine to medium; trace fossil fragments; trace to 3 percent phosphorite; 10 percent interparticle and moldic porosity; moderate hydraulic conductivity
109.0 - 110.0	No recovery
110.0 - 113.0	Quartz sand, yellowish-gray 5Y 8/1; fine to medium grain size; minor fossil fragments; trace to 3 percent phosphorite grains; 15 percent interparticle porosity; moderate hydraulic conductivity
113.0 - 114.5	Mollusk lime rudstone with quartz sand-rich marl matrix; mainly clay and fine to medium grain size; ranges from clay to pebble; trace to 3 percent phosphorite grains; 5 percent interparticle porosity; low hydraulic conductivity

Depth (feet below land surface)	Lithologic description of well C-1138
114.5 - 115.0	No recovery
115.0 - 116.0	Quartz sand, yellowish-gray 5Y 8/1; mainly clay and fine to medium grain size; ranges from clay to pebble; fossil fragments; trace to 3 percent phosphorite grains; 15 percent interparticle porosity; moderate hydraulic conductivity
116.0 - 117.5	Quartz sand; yellowish-gray 5Y 8/1; mainly clay and fine to medium grain size; fossil fragments; trace to 3 percent phosphorite grains; 15 percent interparticle porosity; moderate hydraulic conductivity
117.5 - 118.3	Quartz sand; yellowish-gray 5Y 8/1; mainly clay to pebble grain size; fossil fragments; trace to 3 percent phosphorite grains; 10 percent interparticle porosity; low hydraulic conductivity
118.3 - 120.0	No recovery
120.0 - 124.0	Mollusk lime floatstone with quartz sand-rich marl matrix, yellowish-gray 5Y 8/1; mainly clay to pebble grain size; ranges from clay to cobble; mollusks, fossil fragments; trace to 3 percent phosphorite grains; 5 percent interparticle porosity; low hydraulic conductivity
124.0 - 124.4	Quartz sand, yellowish-gray 5Y 8/1; fine to medium grain size; trace to 3 percent phosphorite; 15 percent interparticle porosity; moderate hydraulic conductivity
124.4 - 125.0	No recovery
125.0 - 127.5	Friable quartz sand, yellowish-gray 5Y 8/1; mainly fine to medium grain size; ranges from clay to medium; fossil fragments; trace to 3 percent phosphorite; 15 percent interparticle porosity; moderate hydraulic conductivity; calcareous
127.5 - 128.5	No recovery
128.5 - 129.0	Friable quartz sand, yellowish-gray 5Y 8/1; mainly very fine to granule grain size; ranges from clay to granule; fossil fragments; trace to 3 percent phosphorite; 15 percent interparticle porosity; moderate hydraulic conductivity; calcareous
129.0 - 133.0	Friable quartz sand, yellowish-gray 5Y 8/1; mainly very fine to medium grain size; ranges from clay to medium; fossil fragments; trace to 3 percent phosphorite; 15 percent interparticle porosity; moderate hydraulic conductivity; calcareous
133.0 - 134.5	Friable quartz sand, yellowish-gray 5Y 8/1; mainly very fine to medium grain size; ranges from clay to medium; fossil fragments; trace to 3 percent phosphorite; 15 percent interparticle porosity; high hydraulic conductivity; calcareous
134.5 - 135.0	No recovery
135.0 - 135.5	Friable quartz sand, yellowish-gray 5Y 8/1; mainly very fine to medium grain size; ranges from clay to medium; fossil fragments; trace to 3 percent phosphorite; 15 percent interparticle porosity; high hydraulic conductivity; calcareous
135.5 - 136.0	No recovery
136.0 - 137.0	Quartz sand, pale-olive 10Y 6/2, light-olive-gray 5Y 6/1; mainly very fine grain size; ranges from clay to fine; trace mollusk fragments, fossil fragments; greater than 10 percent phosphorite; 15 percent interparticle porosity; moderate hydraulic conductivity
137.0 - 144.0	Quartz sand, pale-olive 10Y 6/2, light-olive-gray 5Y 6/1; mainly very fine grain size; ranges from clay to fine; trace mollusk fragments; greater than 10 percent phosphorite; 15 percent interparticle porosity; low hydraulic conductivity; low-inclination planar laminations at base
144.0 - 144.5	No recovery
144.5 - 146.0	Quartz sand, pale-olive 10Y 6/2, light-olive-gray 5Y 6/1; mainly very fine grain size; ranges from clay to fine; trace mollusk fragments; greater than 10 percent phosphorite; 15 percent interparticle porosity; low hydraulic conductivity
146.0 - 147.0	No recovery
147.0 - 147.5	Quartz sand, pale-olive 10Y 6/2, light-olive-gray 5Y 6/1; mainly very fine grain size; ranges from clay to fine; trace mollusk fragments; greater than 10 percent phosphorite; 15 percent interparticle porosity; low hydraulic conductivity
147.5 - 148.0	Quartz sand, pale-olive 10Y 6/2, light-olive-gray 5Y 6/1, olive-gray 5Y 4/1; mainly clay; ranges from clay to very fine; 5 percent interparticle porosity; very low hydraulic conductivity
148.0 - 149.0	Mudstone interbedded with quartz sand laminations, olive-gray 5Y 4/1; mainly clay and very fine sand grain size; ranges from clay to very fine; 5 percent interparticle porosity; very low hydraulic conductivity
149.0 - 154.5	Mudstone, olive-gray 5Y 4/1; mainly clay grain size; ranges from clay to very fine; accebenthic foraminifers, mollusk fragments; 5 percent interparticle porosity; very low hydraulic conductivity
154.5 - 155.0	No recovery

Depth (feet below land surface)	Lithologic description of well C-1138
155.0 - 157.0	Mudstone, olive-gray 5Y 4/1; mainly clay grain size; ranges from clay to very fine; benthic forams; 5 percent interparticle porosity; very low hydraulic conductivity
157.0 - 159.0	Mudstone, light-olive-gray 5Y 5/2; mainly clay grain size; ranges from clay to very fine; benthic forams, diatoms; 5 percent interparticle porosity; very low hydraulic conductivity
159.0 - 162.5	Mudstone, pale-olive 10Y 6/2; mainly clay grain size; ranges from clay to very fine; benthic forams, diatoms; 5 percent interparticle porosity; very low hydraulic conductivity
162.5 - 164.0	Mudstone; yellowish-gray 5Y 7/2; mainly clay grain size; ranges from clay to very fine; benthic forams, diatoms; 5 percent interparticle porosity; very low hydraulic conductivity
164.0 - 165.0	No recovery
165.0 - 170.0	Diatomaceous mudstone, yellowish-gray 5Y 7/2; mainly clay grain size; ranges from clay to very fine; diatoms; 5 percent interparticle porosity; very low hydraulic conductivity
170.0 - 171.0	Quartz sand-rich mudstone, yellowish-gray 5Y 7/2; mainly clay grain size; ranges from clay to very fine; minor mollusks, fossil fragments, diatoms; greater than 10 percent phosphorite; 5 percent interparticle porosity; low hydraulic conductivity
171.0 - 174.0	Quartz sand-rich mudstone; yellowish-gray 5Y 7/2; mainly clay grain size; ranges from clay to very fine; minor mollusks, fossil fragments, diatoms; trace to 3 percent phosphorite; 5 percent interparticle porosity; low hydraulic conductivity
174.0 - 175.0	Quartz sand-rich mudstone, yellowish-gray 5Y 7/2; mainly clay grain size; ranges from clay to very fine; minor mollusks, fossil fragments, diatoms; trace to 3 percent phosphorite; 5 percent interparticle porosity; very low hydraulic conductivity
175.0 - 179.0	Quartz sand with clay matrix, yellowish-gray 5Y 7/2; mainly very fine grain size; ranges from clay to coarse; 3 to 10 percent phosphorite; 10 percent interparticle porosity; low hydraulic conductivity
179.0 - 179.5	Diatomaceous mudstone, yellowish-gray 5Y 7/2; mainly clay grain size; ranges from clay to very fine; diatoms; trace to 3 percent phosphorite; 5 percent interparticle porosity; very low hydraulic conductivity
179.5 - 181.5	Clay-rich quartz sand, pale-olive 10Y 6/2; mainly very fine grain size; ranges from clay to cobble; mollusks; trace to 3 percent phosphorite; 5 percent interparticle porosity; low hydraulic conductivity
181.5 - 185.0	Clay-rich quartz sand, pale-olive 10Y 6/2; mainly very fine grain size; ranges from clay to pebble; mollusks; trace to 3 percent phosphorite; 5 percent interparticle porosity; low hydraulic conductivity

Noble's Road Core

Florida Geological Survey well number	W-17976
Well number	C-1139
Total depth	200 feet
Cored from	0 to 200 feet
County	Collier
Location	NE, SW, sec. 31, T49S, R33E
Latitude	26°10'19"
Longitude	81°04'09"
Elevation	13 feet
Completion date	April 5, 1997
Other types of available logs	Gamma ray, induction, flowmeter, neutron, fluid resistivity
Owner	U.S. Geological Survey
Driller	U.S. Geological Survey
Core described by	Kevin J. Cunningham
Fill	0 to 1 foot
Peat	1 to 1.4 feet
Undifferentiated limestone and quartz sand	1.4 to 6 feet
Tamiami Formation, Pinecrest Member	6 to 92 feet
Tamiami Formation, Ochopee Limestone Member	92 to 148 feet
Unnamed sand	148 to 165 feet
Peace River Formation	165 to 200 feet
Water-table aquifer	0 to 40 feet
Upper confining unit	40 to 92 feet
Gray limestone aquifer	92 to 148 feet
Lower confining unit	148 to 200 feet

Depth (feet below land surface)	Lithologic description of well C-1139
0.0 - 1.0	Mechanically broken skeletal fragment-rich quartz sand, very pale orange 10YR 8/2, grayish-orange 10YR 7/4, dark-yellowish-orange 10YR 6/6; mainly fine to medium grain size; ranges from very fine to granule; 15 percent interparticle porosity; moderate hydraulic conductivity; soft
1.0 - 1.4	Peat, brownish-black 5YR 2/1; clay to pebble grain size, 15 percent interparticle porosity; moderate hydraulic conductivity; soft
1.4 - 1.8	Laminated calcrete, very pale orange 10YR 8/2, grayish-orange 10YR 7/4, dark-yellowish-orange 10YR 6/6, moderate-yellowish-orange 10YR 5/5; mainly clay to very fine grain size; ranges from clay to coarse; 5 percent vuggy porosity; low hydraulic conductivity; hard
1.8 - 2.1	Quartz sand, pale-yellowish-brown 10YR 6/2; mainly fine to medium grain size; ranges from clay to medium; 10 percent interparticle porosity; low hydraulic conductivity; soft
2.1 - 3.4	Gastropod and mollusk lime packstone; very pale orange 10YR 8/2, grayish-orange 10YR 7/4, pale-yellowish-orange 10YR 8/6; mainly clay-size lime mud; ranges from clay to pebble; 10 percent moldic porosity; low hydraulic conductivity; hard
3.4 - 4.5	No recovery
4.5 - 6.0	Gastropod lime packstone, very pale orange 10YR 8/2, grayish-orange 10YR 7/4, pale-yellowish-orange 10YR 8/6; mainly clay-size lime mud; ranges from clay to pebble; 10 percent moldic, vuggy and root mold porosity; low hydraulic conductivity; hard; root molds
6.0 - 10.0	No recovery
10.0 - 10.8	Mollusk-rich quartz sand, very pale orange 10YR 8/2; mainly fine to medium quartz sand; ranges from very fine to pebble; mollusks; 15 percent interparticle porosity; moderate hydraulic conductivity; soft
10.8 - 13.0	No recovery
13.0 - 14.0	Mollusk-rich quartz sand, very pale orange 10YR 8/2; mainly very fine quartz sand; ranges from clay to pebble; mollusks; 10 percent interparticle porosity; low hydraulic conductivity; minor clay matrix; soft when wet
14.0 - 15.0	No recovery
15.0 - 18.0	Mollusk-rich quartz sand, very pale orange 10YR 8/2; mainly fine quartz sand; ranges from clay to pebble; mollusks, skeletal fragments; 5 percent interparticle, moldic and minor intraparticle porosity; low hydraulic conductivity; minor clay matrix; soft when wet
18.0 - 20.0	No recovery
20.0 - 21.0	Mollusk-rich quartz sand, very pale orange 10YR 8/2; mainly fine quartz sand and pebble-size fossils; grains range from clay to cobble; mollusks, skeletal fragments; minor gastropods, oysters and serpulids; 5 percent interparticle, moldic and minor intraparticle porosity; low hydraulic conductivity; minor clay matrix; soft when wet
21.0 - 25.0	No recovery
25.0 - 26.2	Mollusk-rich quartz sand, very pale orange 10YR 8/2; mainly fine quartz sand and pebble-size fossils; grains range from clay to cobble; mollusks, skeletal fragments; minor gastropods, oysters and serpulids; 5 percent interparticle, moldic and minor intraparticle porosity; low hydraulic conductivity; minor clay matrix; soft when wet
26.2 - 27.6	Mollusk lime rudstone with quartz sand-rich lime packstone matrix, very pale orange 10YR 8/2; mainly fine quartz sand and pebble-size fossils; grains range from very fine to pebble; mollusks; 5 percent interparticle, moldic and minor intraparticle porosity; low hydraulic conductivity; minor clay matrix; soft when wet
27.6 - 29.0	No recovery
29.0 - 29.5	Mollusk lime rudstone with quartz sand-rich lime packstone matrix, very pale orange 10YR 8/2; mainly clay-size lime mudstone and very fine quartz sand-size fossils; grains range from very fine to pebble; mollusks; 5 percent interparticle, moldic and minor intraparticle porosity; low hydraulic conductivity; minor clay matrix; soft when wet
29.5 - 31.0	Mollusk lime rudstone with quartz sand-rich lime packstone matrix, very pale orange 10YR 8/2; mainly clay-size lime mudstone and very fine quartz sand-size fossils; grains range from very fine to pebble; mollusks; 5 percent interparticle, moldic and minor intraparticle porosity; very low hydraulic conductivity; minor clay matrix; soft when wet

Depth (feet below land surface)	Lithologic description of well C-1139
31.0 - 32.6	Mollusk-rich quartz sand, yellowish-gray 5Y 8/1; mainly clay-size terrigenous mud and very fine quartz sand; grains range from clay to pebble; mollusks, skeletal fragments; minor gastropods, oysters and serpulids; 5 percent interparticle porosity; very low hydraulic conductivity; minor clay matrix; soft when wet
32.6 - 34.0	No recovery
34.0 - 34.8	Mollusk-rich quartz sand, yellowish-gray 5Y 8/1; mainly clay-size terrigenous mud and very fine to fine quartz sand; grains range from clay to pebble; mollusks, skeletal fragments; minor gastropods, oysters and serpulids; trace to 3 percent phosphorite grains; 10 percent interparticle porosity; low hydraulic conductivity; minor clay matrix; soft when wet
34.8 - 35.0	No recovery
35.0 - 37.0	Quartz sand, yellowish-gray 5Y 7/2, light-olive-gray 5Y 6/1; mainly very fine to fine quartz sand; grains range from clay to cobble; minor mollusks fragments and trace serpulids and gastropods; trace to 3 percent phosphorite grains; 10 percent interparticle porosity; low hydraulic conductivity
37.0 - 40.0	No recovery
40.0 - 44.0	Quartz sand, mottled light-olive-gray 5Y 6/1 and light-olive-gray 5Y 5/2; mainly very fine to fine quartz sand; grains range from clay to pebble; minor mollusk fragments; trace to 3 percent phosphorite grains; 10 percent interparticle porosity; low hydraulic conductivity; minor terrigenous mud matrix
44.0 - 45.0	No recovery
45.0 - 48.0	Quartz sand, mottled light-olive-gray 5Y 6/1 and light-olive-gray 5Y 5/2; mainly very fine quartz sand; grains range from clay to pebble; minor mollusk fragments; trace to 3 percent phosphorite grains; 10 percent interparticle porosity; low hydraulic conductivity; minor terrigenous mud matrix
48.0 - 50.0	No recovery
50.0 - 53.0	Quartz sand, mottled light-olive-gray 5Y 6/1 and light-olive-gray 5Y 5/2; mainly very fine quartz sand; grains range from clay to fine; trace to 3 percent phosphorite grains; 10 percent interparticle porosity; low hydraulic conductivity; minor terrigenous mud matrix
53.0 - 55.0	No recovery
55.0 - 57.0	Quartz sand, mottled light-olive-gray 5Y 6/1 and light-olive-gray 5Y 5/2; mainly very fine quartz sand; grains range from clay to fine; trace to 3 percent phosphorite grains; 10 percent interparticle porosity; low hydraulic conductivity; minor terrigenous mud matrix
57.0 - 57.5	Quartz sand-rich mudstone, yellowish-gray 5Y 7/2; mainly clay-size terrigenous mud and very fine quartz sand; grains range from clay to fine; 5 percent interparticle porosity; very low hydraulic conductivity; minor terrigenous mud matrix
57.5 - 60.0	No recovery
60.0 - 64.5	Quartz sand-rich mudstone, yellowish-gray 5Y 7/2; mainly clay-size terrigenous mud and very fine quartz sand; grains range from clay to fine; 5 percent interparticle porosity; very low hydraulic conductivity; minor terrigenous mud matrix
64.5 - 65.0	No recovery
65.0 - 69.5	Quartz sand-rich mudstone; yellowish-gray 5Y 7/2; mainly clay size terrigenous mud and very fine quartz sand; grains range from clay to very fine; 5 percent interparticle porosity; very low hydraulic conductivity; minor terrigenous mud matrix
69.5 - 70.0	No recovery
70.0 - 73.0	Terrigenous mud-rich quartz sand, yellowish-gray 5Y 7/2 and minor light-olive-gray 5Y 5/2; mainly very fine quartz; grains range from clay to very fine; trace to 3 percent phosphorite grains; 5 percent interparticle porosity; low hydraulic conductivity
73.0 - 75.0	Terrigenous mud-rich quartz sand, yellowish-gray 5Y 7/2; mainly clay-size terrigenous clay and very fine quartz; grains range from clay to very fine; trace to 3 percent phosphorite grains; 5 percent interparticle porosity; very low hydraulic conductivity
75.0 - 81.0	Terrigenous mud-rich quartz sand; light-olive-gray 5Y 5/2; mainly very fine quartz; grains range from clay to very fine; trace to 3 percent phosphorite grains; 5 percent interparticle porosity; very low hydraulic conductivity
81.0 - 86.0	Terrigenous mudstone, light-olive-gray 5Y 6/1; mainly terrigenous clay; grains range from clay to silt size; trace interparticle porosity; very low hydraulic conductivity; maximum flooding surface at 81 feet

Depth (feet below land surface)	Lithologic description of well C-1139
86.0 - 87.0	Terrigenous mud-rich quartz sand, light-olive-gray 5Y 5/2; mainly terrigenous clay and very fine quartz sand; grains range from clay to very fine; minor mollusks and skeletal fragments; trace to 3 percent phosphorite grains; 5 percent interparticle porosity; very low hydraulic conductivity
87.0 - 88.0	Terrigenous mud-rich quartz sand, light-olive-gray 5Y 5/2; mainly terrigenous clay and very fine to medium quartz sand; grains range from clay to medium; minor mollusks and skeletal fragments; trace to 3 percent phosphorite grains; 5 percent interparticle porosity; very low hydraulic conductivity
88.0 - 90.0	Terrigenous mud-rich quartz sand, yellowish-gray 5Y 7/2; mainly terrigenous clay and very fine to medium quartz sand; grains range from clay to medium; minor mollusks and skeletal fragments; trace to 3 percent phosphorite grains; 5 percent interparticle porosity; very low hydraulic conductivity
90.0 - 92.0	Terrigenous mud-rich quartz sand, yellowish-gray 5Y 7/2; mainly terrigenous clay and very fine to medium quartz sand; grains range from clay to pebble; minor mollusks, skeletal fragments and oysters; trace to 3 percent phosphorite grains; 5 percent interparticle porosity; very low hydraulic conductivity
92.0 - 94.0	Mollusk lime rudstone with matrix of skeletal lime packstone with marl matrix, medium-gray N5 to light-gray N7; mainly clay-size marl and very fine to medium fossils; grains range from clay to pebble; mollusks, skeletal fragments, oysters and bryozoans; trace to 3 percent phosphorite grains; 5 percent interparticle and minor intraparticle, moldic and bored porosity; low hydraulic conductivity; soft lime packstone matrix; rubbly recovery
94.0 - 95.0	Mollusk lime rudstone with matrix of skeletal lime packstone with marl matrix, medium-light-gray N6 to light-gray N7; mainly clay-size marl and very fine to medium fossils; grains range from clay to pebble; mollusks, skeletal fragments, oysters and bryozoans; trace to 3 percent phosphorite grains; 5 percent interparticle and minor intraparticle, moldic and bored porosity; low hydraulic conductivity; soft lime packstone matrix; rubbly recovery
95.0 - 99.5	Mollusk lime rudstone with matrix of skeletal lime packstone with marl matrix, medium-light-gray N6 to light-gray N7; mainly clay-size marl and very fine to medium fossils; grains range from clay to pebble; mollusks, skeletal fragments, oysters and bryozoans; trace to 3 percent phosphorite grains; 5 percent interparticle and minor intraparticle, moldic and bored porosity; low to moderate hydraulic conductivity; cobble-size oysters at 97 feet; soft lime packstone matrix; rubbly recovery
99.5 - 100.0	No recovery
100.0 - 102.0	Mollusk lime rudstone with matrix of skeletal lime packstone with marl matrix, medium-light-gray N6 to light-gray N7; mainly clay-size marl and very fine to medium fossils; grains range from clay to pebble; mollusks, skeletal fragments, oysters and bryozoans; trace to 3 percent phosphorite grains; 5 percent interparticle and minor intraparticle, moldic and bored porosity; low to moderate hydraulic conductivity; soft lime packstone matrix; rubbly recovery
102.0 - 104.2	Mollusk lime rudstone with matrix of skeletal lime packstone with marl matrix, medium-light-gray N6 to light-gray N7; mainly clay-size marl and very fine to medium fossils; grains range from clay to pebble; mollusks, skeletal fragments, oysters and bryozoans; trace to 3 percent phosphorite grains; 5 percent moldic and interparticle porosity; minor intraparticle and bored porosity; low hydraulic conductivity; soft lime packstone matrix; rubbly recovery
104.2 - 105.0	No recovery
105.0 - 112.0	Mollusk lime rudstone with matrix of skeletal lime wackestone and packstone with marl matrix, medium-light-gray N6 to light-gray N7; mainly clay-size marl and very fine to medium fossils; grains range from clay to pebble; mollusks, skeletal fragments, oysters, bryozoans, gastropods and echinoids; trace to 3 percent phosphorite grains; 5 percent moldic and interparticle porosity; minor intraparticle and bored porosity; low to moderate hydraulic conductivity; cobble-size mollusks at 107 and 111 feet; soft lime wackestone and packstone matrix; rubbly recovery
112.0 - 114.8	Mollusk lime rudstone with matrix of skeletal lime wackestone and packstone with marl matrix; medium-light-gray N6 to light-gray N7; mainly clay-size marl and very fine to medium fossils; grains range from clay to pebble; mollusks, skeletal fragments, oysters, bryozoans, gastropods and echinoids; trace to 3 percent phosphorite grains; 5 percent moldic and interparticle porosity; minor intraparticle and bored porosity; low hydraulic conductivity; soft lime wackestone and packstone matrix; rubbly recovery
114.8 - 115.0	No recovery
115.0 - 119.5	Mollusk lime rudstone with matrix of skeletal lime wackestone and packstone with marl matrix, very light gray N8 to yellowish-gray 5Y 8/1; mainly clay-size marl and very fine to granule-size fossils; grains range from clay to pebble; mollusks, skeletal fragments, oysters, bryozoans, gastropods and echinoids; trace to 3 percent phosphorite grains; 5 percent moldic and interparticle porosity; minor intraparticle and bored porosity; low hydraulic conductivity; soft lime wackestone and packstone matrix; rubbly recovery

Depth (feet below land surface)	Lithologic description of well C-1139
119.5 - 120.0	No recovery
120.0 - 122.0	Mollusk lime rudstone with matrix of skeletal lime wackestone and packstone with marl matrix, very light gray N8 to yellowish-gray 5Y 8/1; mainly clay-size marl and very fine to pebble-size fossils; grains range from clay to pebble; mollusks, skeletal fragments, oysters, bryozoans, gastropods and echinoids; trace to 3 percent phosphorite grains; 5 percent moldic and interparticle porosity; minor intraparticle and bored porosity; low hydraulic conductivity; soft lime wackestone and packstone matrix; rubbly recovery
122.0 - 124.0	Mollusk lime rudstone with matrix of skeletal lime wackestone and packstone with marl matrix, very light gray N8 to yellowish-gray 5Y 8/1; mainly clay-size marl and very fine to pebble-size fossils; grains range from clay to pebble; mollusks, skeletal fragments, oysters, bryozoans, gastropods and echinoids; trace to 3 percent phosphorite grains; 5 percent moldic and interparticle porosity; minor intraparticle and bored porosity; low to moderate hydraulic conductivity; cobble-size mollusk at 123 feet.; soft lime wackestone and packstone matrix; rubbly recovery
124.0 - 125.0	No recovery
125.0 - 129.0	Mollusk lime rudstone with matrix of skeletal lime wackestone and packstone with marl matrix, very light gray N8 to yellowish-gray 5Y 8/1; mainly clay-size marl and very fine to pebble-size fossils; grains range from clay to pebble; mollusks, skeletal fragments, oysters, bryozoans, gastropods and echinoids; trace to 3 percent phosphorite grains; 5 percent moldic and interparticle porosity; minor intraparticle and bored porosity; low hydraulic conductivity; soft lime wackestone and packstone matrix; rubbly recovery
129.0 - 130.0	No recovery
130.0 - 139.5	Mollusk lime rudstone with matrix of skeletal lime wackestone and packstone with marl matrix, very light gray N8 to yellowish-gray 5Y 8/1; mainly clay-size marl and very fine to pebble-size fossils; grains range from clay to pebble; mollusks, skeletal fragments, oysters, bryozoans, gastropods and echinoids; trace to 3 percent phosphorite grains; 5 percent moldic and interparticle porosity; minor intraparticle and bored porosity; low to moderate hydraulic conductivity; cobble-size mollusk at 132 feet; soft lime wackestone and packstone matrix; rubbly recovery
139.5 - 140.0	No recovery
140.0 - 142.0	Mollusk lime rudstone with matrix of skeletal lime wackestone and packstone with marl matrix, very light gray N8 to yellowish-gray 5Y 8/1; mainly clay-size marl and very fine to pebble-size fossils; grains range from clay to pebble; mollusks, skeletal fragments, oysters, bryozoans, gastropods and echinoids; trace to 3 percent phosphorite grains; 5 percent moldic and interparticle porosity; minor intraparticle and bored porosity; low to moderate hydraulic conductivity; soft lime wackestone and packstone matrix; rubbly recovery
142.0 - 144.0	Mollusk lime rudstone with matrix of skeletal lime wackestone and packstone with marl matrix, very light gray N8 to yellowish-gray 5Y 8/1; mainly clay-size marl and very fine to pebble-size fossils; grains range from clay to pebble; mollusks, skeletal fragments, oysters, bryozoans, gastropods and echinoids; trace to 3 percent phosphorite grains; 5 percent moldic and interparticle porosity; minor intraparticle and bored porosity; low hydraulic conductivity; soft lime wackestone and packstone matrix; rubbly recovery
144.0 - 145.0	No recovery
145.0 - 147.0	Mollusk lime rudstone with matrix of skeletal lime wackestone and packstone with marl matrix, very light gray N8 to yellowish-gray 5Y 8/1; mainly clay-size marl and very fine to pebble-size fossils; grains range from clay to pebble; mollusks, skeletal fragments, oysters, bryozoans, gastropods and echinoids; trace to 3 percent phosphorite grains; 5 percent moldic and interparticle porosity; minor intraparticle and bored porosity; low to moderate hydraulic conductivity; low to moderate cobble-size mollusk at 146 feet; soft lime wackestone and packstone matrix; rubbly recovery
147.0 - 148.0	Mollusk lime rudstone with matrix of skeletal lime wackestone and packstone with marl matrix, very light gray N8 to yellowish-gray 5Y 8/1; mainly clay-size marl and very fine to pebble-size fossils; grains range from clay to pebble; mollusks, skeletal fragments, oysters, bryozoans, gastropods and echinoids; trace to 3 percent phosphorite grains; 5 percent moldic and interparticle porosity; minor intraparticle and bored porosity; low hydraulic conductivity; soft lime wackestone and packstone matrix; rubbly recovery
148.0 - 154.5	Quartz sand; yellowish-gray 5Y 7/2, mainly very fine quartz sand; grains range from clay to pebble; minor broken mollusks; greater than 10 percent phosphorite grains; 10 percent interparticle porosity; low hydraulic conductivity; cobble-size mollusk at 150 feet; minor terrigenous mud matrix; soft
154.5 - 155.0	No recovery

Depth (feet below land surface)	Lithologic description of well C-1139
155.0 - 164.0	Quartz sand, pale-olive 10Y 6/2; mainly very fine quartz sand; grains range from clay to pebble; minor broken mollusks; greater than 10 percent phosphorite grains; 10 percent interparticle porosity; low hydraulic conductivity; cobble-size mollusk at 157 feet; minor terrigenous mud matrix; soft
164.0 - 165.0	Quartz sand, pale-olive 10Y 6/2; mainly very fine quartz sand; grains range from clay to coarse; minor broken mollusks; 3 to 10 percent phosphorite grains; 5 percent interparticle porosity; very low hydraulic conductivity; minor terrigenous mud matrix; soft
165.0 - 165.1	Quartz sand; pale-olive 10Y 6/2; mainly clay-size terrigenous mud and very fine quartz sand; grains range from clay to pebble; trace broken mollusks; 3 to 10 percent phosphorite grains (up to pebble size); 5 percent interparticle porosity; very low hydraulic conductivity; minor terrigenous mud matrix; soft; phosphorite pebbles may indicate unconformity
165.1 - 170.0	Quartz sand, pale-olive 10Y 6/2, mainly clay-size terrigenous mud and very fine quartz sand; grains range from clay to coarse; trace broken mollusks; 3 to 10 percent phosphorite grains; 5 percent interparticle porosity; very low hydraulic conductivity; abundant terrigenous mud matrix; soft
170.0 - 172.0	Terrigenous mudstone with minor laminae of quartz sand, pale-olive 10Y 6/2; mainly clay-size terrigenous mud; grains range from clay to very fine; trace to 3 percent phosphorite grains; trace interparticle porosity; very low hydraulic conductivity; abundant terrigenous mud matrix; soft when wet
172.0 - 174.6	Terrigenous mudstone with minor laminae of quartz sand, olive-gray 5Y 4/1; mainly clay-size terrigenous mud; grains range from clay to very fine; trace to 3 percent phosphorite grains; trace interparticle porosity; very low hydraulic conductivity; abundant terrigenous mud matrix; soft when wet
174.6 - 175.0	No recovery
175.0 - 178.0	Terrigenous mudstone, olive-gray 5Y 4/1; mainly clay-size terrigenous mud; grains range from clay to very fine benthic forams between 177.5 and 178 feet; minor quartz sand; trace interparticle porosity; very low hydraulic conductivity; soft when wet; maximum flooding surface at 175 feet
178.0 - 187.5	Diatomaceous mudstone, olive-gray 5Y 4/1; mainly clay-size terrigenous mud; grains range from clay to very fine; benthic forams between 178 and 180 feet.; diatoms between 179 and 187 feet; minor quartz sand; trace interparticle porosity; very low hydraulic conductivity; soft when wet; gradational contact with quartz sand below
187.5 - 188.5	Quartz sand, olive-gray 10YR 6/2, mainly clay-size terrigenous mud and very fine quartz sand; grains range from clay to very fine; trace to 3 percent phosphorite grains; 5 percent interparticle porosity; low hydraulic conductivity; abundant terrigenous mud matrix; abundant bioturbation; soft
188.5 - 193.5	Quartz sand, olive-gray 10YR 6/2; mainly very fine quartz sand; grains range from clay to very fine; trace to 3 percent phosphorite grains; 5 percent interparticle porosity; low hydraulic conductivity; abundant terrigenous mud matrix; abundant bioturbation; soft
193.5 - 194.5	Quartz sand, yellowish-gray 5Y 7/2; mainly very fine quartz sand; grains range from clay to very fine; trace to 3 percent phosphorite grains; 5 percent interparticle porosity; low hydraulic conductivity; abundant terrigenous mud matrix; abundant bioturbation; soft
194.5 - 195.0	No recovery
195.0 - 197.0	Quartz sand, yellowish-gray 5Y 7/2; mainly very fine quartz sand; grains range from clay to very fine; trace to 3 percent phosphorite grains; 5 percent interparticle porosity; low hydraulic conductivity; abundant terrigenous mud matrix; abundant bioturbation; soft
197.0 - 200.0	Quartz sand, pale-olive 10Y 6/2; mainly very fine quartz sand; grains range from clay to very fine; trace to 3 percent phosphorite grains; 5 percent interparticle porosity; low hydraulic conductivity; abundant terrigenous mud matrix; abundant bioturbation; soft

Bass Core

Florida Geological Survey well number	W-17977
Well number	C-1140
Total depth	200 feet
Cored from	0 to 200 feet
County	Collier
Location	NE, NW, sec. 5, T52S, R31E
Latitude	25°58'32"
Longitude	81°14'31"
Elevation	8 feet
Completion date	March 25, 1997
Other types of available logs	Gamma ray, induction, neutron, fluid velocity, fluid conductivity
Owner	U.S. Geological Survey
Driller	U.S. Geological Survey
Core described by	Kevin J. Cunningham, with modifications by Ronald S. Reese
Undifferentiated sand, terrigenous mudstone and limestone	0 to 8.5 feet
Tamiami formation, Ochopee Limestone Member	8.5 to 61 feet
Unnamed Formation	61 to 200 feet
Water-table aquifer	0 to 2.5 feet
Upper confining unit	2.5 to 8.5 feet
Gray limestone aquifer	8.5 to 55 feet
Lower confining unit	55 to 200 feet

Depth (feet below land surface)	Lithologic description of well C-1140
0.0 - 2.5	Quartz sand with minor limestone clasts, pale-yellowish-brown 10YR 6/2; mainly fine grain size; ranges from clay to coarse; 20 percent interparticle porosity; moderate hydraulic conductivity
2.5 - 2.9	Mudstone, dark-yellowish-brown 10YR 4/21; mainly clay grain size; ranges from clay to coarse; 5 percent interparticle; very low hydraulic conductivity
2.9 - 3.5	Quartz sand with limestone clasts, dark-yellowish-brown 10YR 4/2; mainly fine grain size; ranges from clay to coarse; 15 percent interparticle; low hydraulic conductivity
3.5 - 7.0	No recovery
7.0 - 8.5	Quartz sand, dark-yellowish-brown 10YR 4/2; mainly fine grain size; ranges from clay to coarse; 15 percent interparticle; low hydraulic conductivity
8.5 - 9.0	Mechanically broken mollusk lime rudstone, very pale orange 10YR 8/2; clay to coarse grain size; 10 percent vuggy(?) porosity; moderate hydraulic conductivity
9.0 - 10.0	No recovery
10.0 - 10.5	Mechanically broken molluscan limestone, white N9; clay to coarse grain size; 10 percent vuggy(?); low to high hydraulic conductivity
10.5 - 15.0	Skeletal fragment mollusk lime floatstone with well-washed skeletal lime packstone matrix, white N9 to very pale orange 10YR 8/2; clay to pebble grain size; 10 percent interparticle and moldic porosity; moderate hydraulic conductivity
15.0 - 20.0	No recovery
20.0 - 23.5	Skeletal fragment mollusk lime floatstone with well-washed skeletal lime packstone matrix, white N9 to very pale orange 10YR 8/2; clay to pebble grain size; range from clay to pebble; 10 percent interparticle and moldic porosity; moderate hydraulic conductivity
23.5 - 25.0	No recovery
25.0 - 28.0	Skeletal fragment mollusk lime floatstone with well-washed skeletal lime packstone matrix, white N9 to very pale orange 10YR 8/2; clay to pebble grain size; barnacle and bryozoans; 10 percent interparticle and moldic porosity; moderate hydraulic conductivity
28.0 - 31.9	Skeletal fragment mollusk lime floatstone with well-washed skeletal lime packstone matrix, white N9 to very pale orange 10YR 8/2; clay to pebble grain size; barnacle and bryozoans; trace to 3 percent phosphorite grains; 10 percent interparticle and moldic porosity; moderate hydraulic conductivity
31.9 - 35.0	No recovery
35.0 - 37.5	Skeletal fragment mollusk lime floatstone with well-washed skeletal lime packstone matrix; white N9 to very pale orange 10YR 8/2; clay to pebble grain size; barnacle and bryozoans; trace to 3 percent phosphorite grains; 10 percent interparticle and moldic porosity; moderate hydraulic conductivity
37.5 - 39.0	Mollusk lime floatstone with well-washed skeletal lime packstone matrix with minor medium quartz sand, medium-gray N6 to light-gray N7; mainly clay to pebble grain size; trace to 3 percent phosphorite grains; 10 percent porosity; moderate hydraulic conductivity
39.0 - 40.0	No recovery
40.0 - 43.5	Mollusk lime floatstone with well-washed skeletal lime packstone matrix with minor medium quartz sand, medium-gray medium N6 to light-gray N7; mainly clay to pebble; trace to 3 percent phosphorite grains; 10 percent porosity; moderate hydraulic conductivity
43.5 - 50.0	No recovery
50.0 - 53.0	Mollusk lime floatstone with well-washed skeletal lime packstone matrix with minor medium quartz sand, very light gray N8 and yellowish-gray 5Y 8/1; mainly clay to pebble grain size; trace to 3 percent phosphorite grains; 10 percent porosity; low to moderate hydraulic conductivity; clay rich
53.0 - 55.0	Mollusk lime floatstone with well-washed skeletal lime packstone matrix with minor medium quartz sand, very light gray N8 and yellowish-gray 5Y 8/1; mainly clay to pebble; trace to 3 percent phosphorite grains; 10 percent porosity; moderate hydraulic conductivity; clay rich
55.0 - 58.0	Mollusk lime floatstone with skeletal lime packstone matrix with minor to abundant medium quartz sand; very light gray N8 and yellowish-gray 5Y 8/1; mainly clay to pebble grain size; trace to 3 percent phosphorite grains; 10 percent interparticle and moldic porosity; low to moderate hydraulic conductivity
58.0 - 60.0	No recovery
60.0 - 61.0	Mollusk lime floatstone with skeletal lime packstone matrix with minor to abundant medium quartz sand, very light gray N8 and yellowish-gray 5Y 8/1; mainly clay to pebble; trace to 3 percent phosphorite grains; 10 percent interparticle and moldic porosity; moderate hydraulic conductivity

Depth (feet below land surface)	Lithologic description of well C-1140
61.0 - 64.0	Quartz sand, very pale orange 10YR 8/2; mainly medium grain size; ranges from silt to granule; trace to 3 percent phosphorite grains; 15 percent interparticle porosity; moderate to high hydraulic conductivity; pebble-size discoid quartz between 63 and 68.8 feet
64.0 - 65.0	No recovery
65.0 - 69.0	Quartz sand, very pale orange 10YR 8/2; mainly medium grain size; ranges from silt to granule; trace to 3 percent phosphorite grains; 15 percent interparticle porosity; moderate to high hydraulic conductivity
69.0 - 70.0	No recovery
70.0 - 74.0	Quartz sand, very pale orange 10YR 8/2; mainly medium grain size; ranges from silt to coarse; trace to 3 percent phosphorite grains; 15 percent interparticle porosity; moderate to high hydraulic conductivity
74.0 - 75.0	No recovery
75.0 - 78.0	Quartz sand, very pale orange 10YR 8/2; mainly medium grain size; ranges from silt to coarse; trace to 3 percent phosphorite grains; 15 percent interparticle porosity; moderate to high hydraulic conductivity; abrupt contact at 77.8 feet
78.0 - 80.0	No recovery
80.0 - 81.0	Quartz sand, very pale orange 10YR 8/2; mainly coarse to granule; ranges from silt to pebble; trace to 3 percent phosphorite grains; 15 percent interparticle porosity; moderate to high hydraulic conductivity; abrupt contact at 81 feet
81.0 - 82.0	Quartz sand, very pale orange 10YR 8/2; mainly medium to coarse grain size; ranges from silt to granule; trace to 3 percent phosphorite grains; 15 percent interparticle porosity; moderate to high hydraulic conductivity
82.0 - 83.0	Quartz sand, very light gray N8; mainly medium to coarse grain size; ranges from silt to granule; trace to 3 percent phosphorite grains; 15 percent interparticle porosity; moderate to high hydraulic conductivity
83.0 - 85.0	No recovery
85.0 - 88.0	Quartz sand, pale-yellowish-brown 10YR 6/2; mainly medium to coarse grain size; ranges from silt to granule; trace to 3 percent phosphorite grains; 15 percent interparticle porosity; moderate to high hydraulic conductivity
88.0 - 89.5	Quartz sand, very light gray N8 to white N9; mainly medium to coarse grain size; ranges from silt to granule; 3 to 10 percent phosphorite grains; 15 percent interparticle porosity; moderate to high hydraulic conductivity
89.5 - 90.0	No recovery
90.0 - 95.0	Quartz sand, very light gray N8; mainly medium to granule grain size; ranges from silt to pebble; 3 to 10 percent phosphorite grains; trace muscovite; 15 percent interparticle porosity; moderate to high hydraulic conductivity
95.0 - 97.0	Quartz sand, yellowish-gray 5Y 8/1; mainly medium grain size; ranges from silt to granule; 3 to 10 percent phosphorite grains; trace muscovite; 15 percent interparticle porosity; moderate to high hydraulic conductivity
97.0 - 100.0	No recovery
100.0 - 103.0	Quartz sand, yellowish-gray 5Y 8/1; mainly fine grain size; ranges from silt to fine; 3 to 10 percent phosphorite grains; minor muscovite; 15 percent interparticle porosity; moderate to high hydraulic conductivity
103.0 - 104.0	Quartz sand, yellowish-gray 5Y 8/1; mainly coarse to pebble grain size; ranges from silt to pebble; 3 to 10 percent phosphorite grains; minor muscovite; 15 percent interparticle porosity; moderate to high hydraulic conductivity; abrupt contact at 104 feet
104.0 - 106.7	Quartz sand, yellowish-gray 5Y 8/1; mainly fine to medium grain size; ranges from silt to pebble; 3 to 10 percent phosphorite grains; minor muscovite; 15 percent interparticle porosity; moderate to high hydraulic conductivity
106.7 - 107.2	Quartz sand, yellowish-gray 5Y 8/1; mainly fine to medium and granule to pebble grain size; ranges from silt to pebble; 3 to 10 percent phosphorite grains; minor muscovite; 15 percent interparticle porosity; moderate to high hydraulic conductivity; abrupt contact at 107.2 feet
107.2 - 109.5	Quartz sand, yellowish-gray 5Y 8/1; mainly medium grain size; ranges from silt to pebble; 3 to 10 percent phosphorite grains; minor muscovite; 15 percent interparticle porosity; moderate to high hydraulic conductivity
109.5 - 110.0	No recovery
110.0 - 111.0	Quartz sand, yellowish-gray 5Y 8/1; mainly fine to pebble grain size; ranges from silt to pebble; 3 to 10 percent phosphorite grains; minor muscovite; 15 percent interparticle porosity; moderate to high hydraulic conductivity; three very thin beds containing pebble-size quartz sand fining upward to fine quartz sand; abrupt contact at 111 feet
111.0 - 114.0	Quartz sand, yellowish-gray 5Y 8/1; mainly coarse to granule grain size; ranges from silt to pebble; 3 to 10 percent phosphorite grains; minor muscovite; 15 percent interparticle porosity; moderate to high hydraulic conductivity
114.0 - 115.0	No recovery
115.0 - 119.0	Quartz sand, yellowish-gray 5Y 8/1; mainly coarse to granule grain size; ranges from silt to pebble; 3 to 10 percent phosphorite grains; minor muscovite; 15 percent interparticle porosity; moderate to high hydraulic conductivity
119.0 - 123.5	No recovery
123.5 - 126.8	Quartz sand, yellowish-gray 5Y 8/1; mainly fine grain size; ranges from very fine to pebble; 3 to 10 percent phosphorite grains; minor muscovite; 15 percent interparticle porosity; moderate to high hydraulic conductivity

Depth (feet below land surface)	Lithologic description of well C-1140
126.8 - 128.5	No recovery
128.5 - 133.5	Quartz sand, yellowish-gray 5Y 8/1; mainly fine grain size; ranges from very fine to pebble at top and very fine to granule at top; 3 to 10 percent phosphorite grains; minor muscovite; 15 percent interparticle porosity; moderate to high hydraulic conductivity
133.5 - 135.0	No recovery
135.0 - 147.0	Quartz sand, yellowish-gray 5Y 7/2; mainly fine; ranges from very fine to coarse; 3 to 10 percent phosphorite grains; minor muscovite; 15 percent interparticle porosity; moderate hydraulic conductivity abrupt contact at 147 feet.; three very thin beds containing very fine to pebble-size quartz sand
147.0 - 148.5	Quartz sand, yellowish-gray 5Y 7/2; mainly fine grain size; ranges from very fine to coarse; 3 to 10 percent phosphorite grains; minor muscovite; 15 percent interparticle porosity; moderate hydraulic conductivity
148.5 - 149.5	Quartz sand, yellowish-gray 5Y 7/2; mainly fine and granule to pebble grain size; ranges from very fine to pebble; 3 to 10 percent phosphorite grains; minor muscovite; 15 percent interparticle porosity; moderate hydraulic conductivity
149.5 - 150.0	No recovery
150.0 - 153.5	Quartz sand, yellowish-gray 5Y 7/2; mainly fine grain size; ranges from very fine to pebble; 3 to 10 percent phosphorite grains; minor muscovite; 15 percent interparticle porosity; moderate hydraulic conductivity
153.5 - 159.0	Quartz sand; yellowish-gray 5Y 7/2; mainly fine and cobble grain size; ranges from very fine to cobble; 3 to 10 percent phosphorite grains; minor mollusks from 157 to 159 feet; 15 percent interparticle porosity; moderate hydraulic conductivity; up to cobble-size clay-rich sand clasts
159.0 - 160.0	No recovery
160.0 - 160.5	Quartz sand, yellowish-gray 5Y 7/2; mainly fine and cobble grain size; ranges from very fine to cobble; 3 to 10 percent phosphorite grains; minor mollusks; 15 percent interparticle porosity; moderate hydraulic conductivity; up to cobble-size clay-rich sand clasts; abrupt contact at 160.5 feet
160.5 - 164.0	Quartz sand, yellowish-gray 5Y 8/1; mainly medium grain size; ranges from very fine to pebble; 3 to 10 percent phosphorite grains; minor mollusks; 20 percent interparticle porosity; moderate to high hydraulic conductivity
164.0 - 164.5	Quartz sand, yellowish-gray 5Y 8/1; mainly medium to pebble grain size; ranges from fine to pebble; 3 to 10 percent phosphorite grains; minor mollusks; 20 percent interparticle porosity; moderate to high hydraulic conductivity; abrupt contact at 164.5 feet
164.5 - 167.5	Quartz sand, yellowish-gray 5Y 7/2 to light-olive-gray 5Y 5/2; fine to cobble grain size; 3 to 10 percent phosphorite grains; minor mollusks; 10 percent interparticle porosity; low hydraulic conductivity; abundant cobble-size sand-rich mudstone clasts
167.5 - 169.0	Quartz sand, yellowish-gray 5Y 8/1; mainly fine to cobble grain size; 3 to 10 percent phosphorite grains; abundant mollusks; 15 percent interparticle porosity; low hydraulic conductivity; abundant cobble-size sand-rich mudstone clasts
169.0 - 172.0	Quartz sand, yellowish-gray 5Y 7/2; mainly fine to cobble grain size; 3 to 10 percent phosphorite grains; abundant mollusks; 15 percent interparticle porosity; low hydraulic conductivity
172.0 - 174.5	Quartz sand; yellowish-gray 5Y 7/2; mainly fine to cobble grain size; 3 to 10 percent phosphorite grains; 15 percent interparticle porosity; low hydraulic conductivity; bioturbated
174.5 - 175.0	No recovery
175.0 - 194.5	Quartz sandstone, yellowish-gray 5Y 7/2; mainly very fine to fine grain size; ranges from clay to fine; 3 to 10 percent phosphorite grains; 15 percent interparticle porosity; low hydraulic conductivity; highly bioturbated; soft; very minor clay matrix
194.5 - 195.0	No recovery
195.0 - 196.0	Quartz sandstone, yellowish-gray 5Y 7/2; mainly very fine to fine grain size; ranges from clay to fine; 3 to 10 percent phosphorite grains; 15 percent interparticle porosity; low hydraulic conductivity; highly bioturbated; soft; very minor clay matrix
196.0 - 200.0	Quartz sandstone, yellowish-gray 5Y 7/2; mainly very fine grain size; ranges from clay to fine; 3 to 10 percent phosphorite grains; 15 percent interparticle porosity; low hydraulic conductivity; highly bioturbated; soft; very minor clay matrix

Bear Island Campground Core

Florida Geological Survey well number	W-17746
Well number	C-1141
Total depth	207 feet
Cored from	0 to 207 feet
County	Collier
Location	SE, SW, sec. 29, T49S, R31E
Latitude	26°10'58"
Longitude	81°14'52"
Elevation	15 feet
Completion date	June 14, 1997
Other types of available logs	Caliper, spontaneous potential, short normal resistivity, long normal resistivity, single point resistivity, gamma ray, neutron, conductivity
Owner	U.S. Geological Survey
Driller	Florida Geological Survey
Core described by	Kevin J. Cunningham (0-79 feet) and Ronald S. Reese and Scott T. Prinos (79-207 feet)
Soil and quartz sand	0 to 2 feet
Lake Flirt Marl	2 to 4 feet
Tamiami Formation, Pinecrest Sand Member	4 to 20.5 feet
Tamiami Formation, Ochopee Limestone Member	20.5 to 71 feet
Unnamed formation	71 to 150 feet
Peace River Formation	150 to 207 feet
Upper confining unit	0 to 20.5 feet
Gray limestone aquifer	20.5 to 71 feet
Lower confining unit	71 to 85 feet
Unnamed sand aquifer	85 to 125 feet
Confining unit	125 to 207 feet

Depth (feet below land surface)	Lithologic description of well C-1141
0.0 - 1.0	Quartz sand-rich soil with grass, dark-yellowish-brown 10YR 4/2; mainly very fine to fine quartz sand; minor terrigenous clay; well sorted quartz sand; angular to subangular quartz sand; abundant organics and plant roots; 15 percent intergrain porosity; low hydraulic conductivity; minor clay matrix; soft when wet; friable
1.0 - 2.0	Quartz sand, dark-yellowish-brown 10YR 4/2; mainly very fine to fine quartz sand; minor terrigenous clay; well sorted quartz sand; angular to subangular quartz sand; plant roots; 10 percent intergrain porosity; low hydraulic conductivity; minor terrigenous clay matrix; soft when wet; friable
2.0 - 4.0	Quartz sand with marl matrix, very light-gray N8; yellowish-gray 5Y 8/1; mainly clay-size marl and very fine to fine quartz sand; well sorted; angular to subangular; minor pelecypods; less than 5 percent porosity; very low hydraulic conductivity; soft when wet
4.0 - 4.5	Rubble of quartz sand-rich skeletal lime wackestone, moderate-yellowish-brown 10YR 5/4, dark-yellowish-brown 10YR 6/6, grayish-orange 10YR 7/4, pale-yellowish-orange 10YR 8/6; mainly clay-size lime mudstone and very fine and fine quartz sand; minor medium sand- to pebble-size fossils; well sorted; angular to subangular; skeletal fragments; greater than 5 percent vuggy porosity; low hydraulic conductivity; very hard when wet
4.5 - 6.0	Quartz sand, yellowish-gray 5Y 8/1; mainly very fine to fine quartz sand; minor terrigenous clay and medium sand to pebble-size fossils; very well sorted; angular to subangular; 10 percent skeletal fragments and pelecypods; 10 percent intergrain porosity; low hydraulic conductivity; soft when wet
6.0 - 6.5	No recovery
6.5 - 10.5	Quartz sand, yellowish-gray 5Y 8/1; mainly very fine to fine quartz sand; minor terrigenous clay and medium sand to pebble-size fossils; very well sorted; angular to subangular; 10 percent skeletal fragments and pelecypods; trace black N1 phosphorite grains and heavy minerals; 10 percent intergrain porosity; low hydraulic conductivity; soft when wet
10.5 - 11.0	No recovery
11.0 - 11.5	Quartz sand, yellowish-gray 5Y 8/1; mainly very fine to fine quartz sand; minor terrigenous clay and medium sand to pebble-size fossils; very well sorted; angular to subangular; 10 percent skeletal fragments and pelecypods; trace black N1 phosphorite grains and heavy minerals; 10 percent intergrain porosity; low hydraulic conductivity; soft when wet
11.5 - 15.0	No recovery
15.0 - 15.5	Marl, yellowish-gray 5Y 8/1; mainly clay-size marl; minor pebble-size fossils; 15 percent pelecypods and barnacles; trace black N1 phosphorite grains and heavy minerals; 5 percent intergrain porosity; very low hydraulic conductivity; soft when wet
15.5 - 20.0	No recovery
20.0 - 20.5	Quartz sand, yellowish-gray 5Y 8/1; mainly very fine quartz sand; minor terrigenous clay and medium sand to pebble-size fossils; very well sorted; angular to subangular; 30 percent skeletal fragments, pelecypods, barnacles and oysters; trace black N1 phosphorite grains and heavy minerals; 10 percent intergrain porosity; low hydraulic conductivity; soft when wet
20.5 - 21.0	Pelecypod lime floatstone with skeletal, <i>Vermicularia</i> grain-dominated lime packstone matrix, yellowish-gray 5Y 8/1, light-gray N7 to very light gray N8; mainly very fine to coarse fossils; minor clay-size lime mudstone, silt and granule to pebble-size fossils, and very fine quartz sand and phosphorite grains; very well sorted; angular to subangular; skeletal fragments, <i>Vermicularia</i> , pelecypods; 5 percent quartz sand; trace black N1 phosphorite grains; 20 percent intergrain and moldic porosity; moderate hydraulic conductivity; middle carbonate ramp; moderate to hard when wet; moderate to well cemented
21.0 - 25.0	No recovery
25.0 - 26.0	Pelecypod lime floatstone with skeletal, bryozoan, grain-dominated, lime grainstone matrix, yellowish-gray 5Y 8/1, very light gray N8; mainly very fine to coarse fossils; minor granule to pebble-size fossils and very fine quartz sand and phosphorite grains; very well sorted; skeletal fragments, branching bryozoans, pelecypods, barnacles, and <i>Pecten</i> ; trace quartz sand; trace black N1 phosphorite and heavy mineral grains; 25 percent intergrain, moldic, and bored porosity; high hydraulic conductivity; middle carbonate ramp; moderate to hard when wet; moderate to well cemented
26.0 - 30.0	No recovery
30.0 - 31.0	Pelecypod lime floatstone with skeletal lime grainstone and grain-dominated lime packstone matrix, light-gray N7 to very light gray N8, yellowish-gray 5Y 8/1; mainly very fine to coarse fossils; minor clay-size lime mudstone, granule to pebble-size fossils and very fine quartz sand and phosphorite grains; very well sorted; angular to subangular; skeletal fragments, pelecypods, branching bryozoans, barnacles, trace quartz sand; trace black N1 phosphorite and heavy mineral grains; 25 percent intergrain, moldic, and bored porosity; high hydraulic conductivity; middle carbonate ramp; moderate to hard when wet; moderate to well cemented
31.0 - 33.0	No recovery

Depth (feet below land surface)	Lithologic description of well C-1141
33.0 - 34.0	Skeletal lime grainstone and grain-dominated lime packstone matrix, light-gray N7 to very light N8, yellowish-gray 5Y 8/1 mainly very fine to coarse fossils; minor clay-size lime mudstone, granule to pebble-size fossils and very fine to coarse quartz sand and phosphorite grains; very well sorted; angular to subangular; skeletal fragments, pelecypods, branching bryozoans, sand dollars, barnacles, 5 percent quartz sand; trace black N1 phosphorite and heavy mineral grains; 25 percent intergrain, moldic, and bored porosity; high hydraulic conductivity; middle carbonate ramp; moderate to hard when wet; moderate to well cemented
34.0 - 36.0	No recovery
36.0 - 37.0	Skeletal lime grainstone and grain-dominated lime packstone matrix, medium-light-gray N6 to very light gray N8 to yellowish-gray 5Y 8/1; mainly very fine to coarse fossils; minor clay-size lime mudstone, granule to pebble-size fossils and very fine to coarse quartz sand and phosphorite grains; moderately sorted; angular to subrounded; skeletal fragments, pelecypods, branching bryozoans, sand dollars, barnacles, gastropods; 5 percent quartz sand; trace black N1 phosphorite and heavy mineral grains; 25 percent intergrain, moldic, and bored porosity; high hydraulic conductivity; middle carbonate ramp; moderate to hard when wet; moderate to well cemented
37.0 - 38.5	No recovery
38.5 - 39.8	Pelecypod lime floatstone with skeletal lime grainstone and skeletal, grain-dominated, lime packstone matrix, medium-light gray N6 to very light gray N8, yellowish-gray 5Y 8/1; mainly very fine to coarse fossils; minor clay-size lime mudstone, granule to pebble-size fossils, very fine to coarse quartz sand, very fine to fine sand-size phosphorite, and very fine sand-size heavy mineral grains; moderately sorted; angular to subrounded; skeletal fragments, pelecypods, encrusting bryozoans, serpulids, 10 percent quartz sand; 1 percent black N1 phosphorite grains; trace heavy mineral grains; 25 percent intergrain, moldic, and bored porosity; high hydraulic conductivity; middle carbonate ramp; moderate to hard when wet; moderate to well cemented
39.8 - 41.0	No recovery
41.0 - 42.5	Pelecypod lime floatstone with quartz sand-rich, skeletal, grain-dominated and mud-dominated lime packstone matrix, medium-gray N5 to very light gray N8, yellowish-gray 5Y 8/1; mainly clay-size lime mudstone and very fine to coarse fossils; minor granule to pebble-size fossils, very fine to coarse quartz sand, very fine to very coarse sand-size phosphorite, and very fine sand-size heavy mineral grains; moderately sorted; angular to subrounded; skeletal fragments, pelecypods, encrusting bryozoans, 40 percent quartz sand; 1 to 3 percent black N1 phosphorite grains; trace heavy mineral grains; 25 percent intergrain, moldic, and bored porosity; high hydraulic conductivity; middle carbonate ramp; moderate to hard when wet; moderate to well cemented
42.5 - 44.0	No recovery
44.0 - 44.8	Pelecypod-rich quartz sandstone, medium-dark-gray N4 to medium-gray N5; mainly clay-size lime mudstone, very fine to fine quartz sand and granule to pebble-size fossils; minor medium to coarse sand-size fossils; very fine to very coarse sand size phosphorite, and very fine sand-size heavy mineral grains; well sorted; angular to subangular; 40 percent skeletal fragments, pelecypods, sand dollars, and barnacles; 59 percent quartz sand; 1 to 3 percent black N1 phosphorite grains; trace heavy mineral grains; 20 percent intergrain and moldic porosity; moderate hydraulic conductivity; middle carbonate ramp; moderate to hard when wet; moderate to well cemented
44.8 - 50.0	No recovery
50.0 - 51.0	Pelecypod lime floatstone with quartz sand-rich, skeletal lime grainstone matrix, medium-dark-gray N4 to medium-gray N5 between 50.0 and 50.1 feet, light-gray N7 to very light gray N8 and yellowish-gray 5Y 8/1 between 50.1 and 51.0 feet; mainly very fine to fine quartz sand and granule to pebble-size fossils; minor medium to coarse sand-size fossils, very fine to fine sand-size phosphorite, and very fine sand-size heavy mineral grains; well sorted; angular to subrounded; skeletal fragments, pelecypods, and barnacles; 45 percent quartz sand; 1 percent black N1 phosphorite grains; trace heavy mineral grains; 20 percent intergrain and moldic porosity; moderate hydraulic conductivity; middle carbonate ramp; hard when wet; well cemented
51.0 - 52.0	No recovery
52.0 - 55.2	Pelecypod lime floatstone with quartz sand-rich, skeletal lime grainstone matrix, light-gray N7 to very light gray N8, yellowish-gray 5Y 8/1; mainly very fine to fine quartz sand and granule to pebble-size fossils; minor medium to coarse sand-size fossils, very fine to fine sand-size phosphorite, and very fine sand-size heavy mineral grains; well sorted; angular to subrounded; skeletal fragments, pelecypods, barnacles, <i>Vermicularia</i> , encrusting bryozoans, gastropods and serpulids; 45 percent quartz sand; 1 percent black N1 phosphorite grains; trace heavy mineral grains; 20 percent intergrain and moldic porosity; moderate hydraulic conductivity; middle carbonate ramp; hard when wet; well cemented

Depth (feet below land surface)	Lithologic description of well C-1141
55.2 - 58.0	Pelecypod-rich quartz sandstone, light-gray N7 to very light gray N8, yellowish-gray 5Y 8/1; mainly very fine to fine quartz sand and granule to pebble-size fossils; minor clay-size lime mudstone matrix, medium to very coarse quartz sand, medium to coarse sand-size fossils, very fine to fine sand-size phosphorite; trace medium to very coarse sand-size phosphorite grains and very fine sand-size heavy mineral grains; well sorted; angular to subrounded; skeletal fragments, pelecypods, barnacles, <i>Vermicularia</i> , and bryozoans; 45 percent quartz sand; 1 percent black N1 phosphorite grains; trace heavy mineral grains; 20 percent intergrain and moldic porosity; moderate hydraulic conductivity; middle mixed siliciclastic-carbonate ramp; hard when wet; well cemented
58.0 - 59.0	No recovery
59.0 - 60.0	Pelecypod-rich quartz sandstone, light-gray N7 to very light gray N8, yellowish-gray 5Y 8/1; mainly very fine to fine quartz sand and granule to pebble-size fossils; minor clay-size lime mudstone matrix, medium to very coarse quartz sand, medium to coarse sand-size fossils, very fine to fine sand-size phosphorite; trace medium to very coarse sand-size phosphorite grains and very fine sand-size heavy mineral grains; well sorted; angular to subrounded; pelecypods, skeletal fragments, barnacles, and bryozoans; 45 percent quartz sand; 1 percent black N1 phosphorite grains; trace heavy mineral grains, 20 percent intergrain and moldic porosity; moderate hydraulic conductivity; middle mixed siliciclastic-carbonate ramp; hard when wet; well cemented
60.0 - 61.0	No recovery
61.0 - 61.5	Pelecypod-rich quartz sandstone, light-gray N7 to very light gray N8, yellowish-gray 5Y 8/1; mainly very fine to fine quartz sand and granule to pebble-size fossils; minor medium to very coarse quartz sand, medium to coarse sand-size fossils; very fine to medium sand-size phosphorite; trace coarse to very coarse sand-size phosphorite grains and very fine sand-size heavy minerals; well sorted; angular to subrounded; 30 percent pelecypods, encrusting bryozoans, serpulids, and barnacles; 45 percent quartz sand; 5 percent black N1 phosphorite grains; trace heavy mineral grains; 20 percent intergrain, moldic, and bored porosity; moderate hydraulic conductivity; middle mixed siliciclastic-carbonate ramp; hard when wet; well cemented
61.5 - 64.0	No recovery
64.0 - 64.2	Rubble of large oyster with lithology from 61 to 61.5 feet
64.2 - 65.8	No recovery
65.8 - 65.9	Rubble of large oyster with lithology from 61 to 61.5 feet
65.9 - 67.0	No recovery
67.0 - 68.0	Quartz sandstone interbedded with pelecypod moldic-rich quartz sandstone, very light gray N8, yellowish-gray 5Y 8/1; mainly very fine to fine quartz sand; minor clay-size lime mudstone to no lime mudstone, medium sand to small pebble-size quartz sand, medium sand- to pebble-size fossils, very fine to medium sand-size phosphorite; trace coarse to very coarse sand-size phosphorite grains and very fine sand-size heavy mineral grains; well sorted; angular to subrounded; up to 40 percent pelecypod molds; 5 percent black N1 phosphorite grains; trace heavy mineral grains; 20 percent intergrain, moldic, and bored porosity; moderate hydraulic conductivity; middle mixed siliciclastic-carbonate ramp; moderately hard to hard when wet; moderately to well cemented; minor small pebble-size discoid quartz grains
68.0 - 68.7	No recovery
68.7 - 70.1	Pelecypod moldic-rich quartz sandstone, very light gray N8, yellowish-gray 5Y 8/1; mainly very fine to fine quartz sand; minor medium sand to small pebble-size quartz sand, very coarse sand to large pebble-size fossils, very fine to fine sand-size phosphorite; trace medium sand to small pebble-size phosphorite grains and very fine sand-size heavy mineral grains; moderately sorted; angular to rounded, abundant pelecypods, gastropods, and serpulids; 3 percent black N1 phosphorite grains; trace heavy minerals; 20 percent intergrain, moldic, and bored porosity; moderately hydraulic conductivity; middle mixed siliciclastic-carbonate ramp; moderately hard to hard when wet; moderate to well cemented
70.1 - 70.8	No recovery
70.8 - 71.0	Pelecypod moldic-rich quartz sandstone, very light gray N8, yellowish-gray 5Y 8/1; mainly very fine sand to small pebble-size quartz sand and lime mudstone matrix; minor medium sand to large pebble-size fossils, very fine sand-size phosphorite, trace fine sand to small pebble-size phosphorite grains and very fine sand-size heavy mineral grains; moderately sorted; angular to rounded; 30 percent pelecypod molds; 10 percent black N1 phosphorite grains; trace heavy mineral grains; 15 percent intergrain and moldic porosity; moderate hydraulic conductivity; middle mixed siliciclastic-carbonate ramp; moderately hard to hard when wet; moderate to well cemented
71.0 - 79.0	No recovery
79.0 - 79.1	Quartz sand, light-gray N7 to medium-light-gray N6; mainly very fine grain size; ranges from very fine to granule; trace to 3 percent phosphorite grains; low hydraulic conductivity
79.1 - 81.0	No recovery
81.0 - 81.3	Quartz sand, medium-gray N5 to greenish-gray 5GY 6/1; mainly very fine grain size; ranges from clay to pebble; poorly sorted; trace to 3 percent phosphorite grains; low hydraulic conductivity
81.3 - 83.0	No recovery

Depth (feet below land surface)	Lithologic description of well C-1141
83.0 - 84.3	Quartz sand, medium-gray N5 to greenish-gray 5GY 6/1; mainly very fine grain size; ranges from clay to pebble; poorly sorted; trace to 3 percent phosphorite grains; low hydraulic conductivity
84.3 - 85.0	Quartz sand; medium-gray N5 to greenish-gray 5GY 6/1; mainly fine and coarse grain size; ranges from very fine to granule; trace to 3 percent phosphorite grains; moderate hydraulic conductivity
85.0 - 85.5	No recovery
85.5 - 87.0	Quartz sand, light-greenish-gray 5GY 8/1; bimodal, mainly fine and coarse grain size; ranges from very fine to granule; trace to 3 percent phosphorite grains; moderate hydraulic conductivity
87.0 - 88.0	No recovery
88.0 - 90.0	Quartz sand, light-gray N7; bimodal, mainly fine and coarse to granule grain size; ranges from fine to granule; trace to 3 percent phosphorite grains; moderate hydraulic conductivity
90.0 - 90.7	Quartz sand, light-gray N7; bimodal, mainly very fine to fine and coarse to granule; ranges from fine to granule; trace to 3 percent phosphorite grains; moderate hydraulic conductivity
90.7 - 93.0	No recovery
93.0 - 94.0	Quartz sand, brownish-gray 5YR 4/1; mainly coarse to granule grain size; trace to 3 percent phosphorite grains; moderate to high hydraulic conductivity
94.0 - 95.0	Quartz sand, brownish-gray 5YR 4/1; mainly fine grain size; ranges from very fine to fine; trace to 3 percent phosphorite grains; low hydraulic conductivity
95.0 - 96.0	Quartz sand, brownish-gray 5YR 4/1; mainly coarse to granule grain size; ranges from medium to granule; trace to 3 percent phosphorite grains; high hydraulic conductivity
96.0 - 97.3	Quartz sand, brownish-gray 5YR 4/1; mainly coarse to granule; ranges from fine to granule; trace to 3 percent phosphorite grains; moderate to high hydraulic conductivity
97.3 - 98.0	No recovery
98.0 - 99.8	Quartz sand, brownish-gray 5YR 4/1; ranges from fine to granule; trace to 3 percent phosphorite grains; moderate hydraulic conductivity
99.8 - 101.0	No recovery
101.0 - 102.0	Quartz sand, brownish-gray 5YR 4/1; very fine to granule grain size; trace to 3 percent phosphorite grains; low to moderate hydraulic conductivity
102.0 - 103.5	Quartz sand, brownish-gray 5YR 4/1; silt to coarse grain size; trace to 3 percent phosphorite grains; low hydraulic conductivity
103.5 - 104.0	No recovery
104.0 - 104.5	Quartz sand, brownish-gray 5YR 4/1; mainly very fine to pebble grain size; ranges from clay to pebble; trace to 3 percent phosphorite grains; moderate to high hydraulic conductivity
104.5 - 105.7	Quartz sand, brownish-gray 5YR 4/1; mainly very fine to pebble grain size; ranges from clay to pebble; trace to 3 percent phosphorite grains; low to moderate hydraulic conductivity
105.7 - 107.0	No recovery
107.0 - 109.0	Quartz sand, brownish-gray 5YR 4/1; mainly very fine grain size; ranges from very fine to coarse; trace to 3 percent phosphorite grains; low hydraulic conductivity
109.0 - 110.0	No recovery
110.0 - 111.0	Quartz sand, brownish-gray 5YR 4/1; bimodal, mainly very fine and granule; ranges from very fine to pebble; trace to 3 percent phosphorite grains; moderate hydraulic conductivity
111.0 - 113.0	Quartz sand, brownish-gray 5YR 4/1; bimodal, mainly very fine and coarse; ranges from very fine to coarse; common shell fragments; trace to 3 percent phosphorite grains; low to moderate hydraulic conductivity
113.0 - 114.5	Quartz sand, medium-gray N6; mainly very fine grain size; ranges from very fine to coarse; common shell fragments; 3 to 10 percent phosphorite grains; low hydraulic conductivity
114.5 - 115.0	No recovery
115.0 - 116.6	Quartz sand, medium-gray N6; mainly very fine grain size; ranges from very fine to coarse; common shell fragments; trace to 10 percent phosphorite grains; low to moderate hydraulic conductivity
116.6 - 118.0	No recovery
118.0 - 119.0	Quartz sand, medium-gray N6; mainly fine to coarse grain size; common shell fragments; 3 to 10 percent phosphorite grains; low to moderate hydraulic conductivity

Depth (feet below land surface)	Lithologic description of well C-1141
119.0 - 120.0	Quartz sand, medium-gray N6; ranges from very fine to coarse; common shell fragments; trace to 3 percent phosphorite grains; low hydraulic conductivity
120.0 - 124.0	No recovery
124.0 - 126.9	Quartz sand, medium-gray N6; mainly very fine grain size; ranges from clay to fine; trace to 3 percent phosphorite grains; low hydraulic conductivity; minor clay matrix
126.9 - 127.0	No recovery
127.0 - 129.0	Quartz sand, medium-gray N6; ranges from clay to fine; trace to 3 percent phosphorite grains; low hydraulic conductivity; minor clay matrix
129.0 - 129.5	No recovery
129.5 - 130.0	Quartz sand and calcareous clay, medium-gray N6; clay to fine grain size; trace to 3 percent phosphorite grains; low hydraulic conductivity; clay matrix
130.0 - 131.5	Quartz sand, light-grayish-tan; mainly fine grain size; ranges from clay to fine; trace to 3 percent phosphorite grains; low hydraulic conductivity; calcareous clay matrix
131.5 - 132.0	No recovery
132.0 - 134.0	Quartz sand, grayish-tan; mainly fine grain size; ranges from clay to fine; low hydraulic conductivity; calcareous clay matrix
134.0 - 135.0	Quartz sand, light-grayish-tan; mainly very fine grain size; ranges from clay to very fine; very low to low hydraulic conductivity; calcareous clay matrix
135.0 - 137.0	No recovery
137.0 - 142.0	Quartz sand-rich calcareous clay, light-grayish-tan; mainly clay and very fine grain size; ranges from clay to very fine; very low to low hydraulic conductivity
142.0 - 150.0	Quartz sand, mottled dark-green; mainly fine grain size; ranges from clay to fine; low hydraulic conductivity; abundant clay matrix
150.0 - 151.0	Quartz sand, mottled dark-green; mainly clay to fine grain size; very low hydraulic conductivity; abundant clay matrix
151.0 - 160.0	Clay-rich quartz sand, mottled green; mainly clay and fine grain size; ranges from clay to coarse; trace to 3 percent phosphorite grains; very low hydraulic conductivity; abundant clay matrix
160.0 - 181.0	Clay-rich quartz sand, mottled green; mainly clay and fine grain size; ranges from clay to coarse; very low hydraulic conductivity; abundant clay matrix
181.0 - 194.0	Clay-rich quartz sand to quartz sand-rich clay; mottled green; mainly clay and fine grain size; ranges from clay to coarse; very low hydraulic conductivity; abundant clay matrix
194.0 - 199.0	Clay-rich quartz sand to quartz sand-rich clay, mottled green and light-greenish-tan; mainly clay and medium grain size; ranges from clay to coarse; shell fragments between 194.5 and 195.5 feet; very low to low hydraulic conductivity; abundant clay matrix
199.0 - 200.0	Clay-rich quartz sand, very light tannish-green; mainly clay and fine grain size; ranges from clay to fine; very low hydraulic conductivity; abundant clay matrix
200.0 - 207.0	No recovery

Noble's Farm Core

Florida Geological Survey well number	W-17748
Well number	C-1142
Total depth	206 feet
Cored from	0 to 206 feet
County	Collier
Location	NW, NW, sec. 7, T49S, R33E
Latitude	26°14'17"
Longitude	81°04'24"
Elevation	16 feet
Completion date	June 12, 1997
Other types of logs available	Gamma ray, neutron, caliper, spontaneous potential, single point resistivity, short normal resistivity, long normal resistivity, conductivity
Owner	U.S. Geological Survey
Driller	Florida Geological Survey
Core described by	Scott T. Prinos (0 to 55.5 feet and 117 to 206 feet) and Kevin J. Cunningham (55.5 to 117 feet)
Undifferentiated limestone	0 to 3 feet
Tamiami formation	3 to 42 feet
Tamiami Formation, Pinecrest Sand Member	42 to 58.1 feet
Tamiami Formation, Ochopee Limestone Member	58.1 to 100 feet
Unnamed Formation	100 to 111 feet
Peace River Formation	111 to 206 feet
Upper confining unit	0 to 58.1 feet
Gray limestone aquifer	58.1 to 100 feet
Lower confining unit	100 to 206 feet

Depth (feet below land surface)	Lithologic description of well C-1142
0.0 - 0.8	Soil and black limestone gravel, black N1 at top and red below; mainly clay-size mud and pebble size; ranges from mud to pebble size; 15 percent porosity; high hydraulic conductivity
0.8 - 2.0	Hard limestone caprock, gray and tan; mainly clay-size mud and pebble size; ranges from mud to pebble size; 5 to 10 percent porosity; low hydraulic conductivity
2.0 - 3.0	Rounded limestone pebbles, white N9 to brownish-red; mainly clay-size mud and pebble size; 25 percent interparticle porosity; very high hydraulic conductivity
3.0 - 3.5	Limestone gravel in a mud matrix, white N9 to brownish-red; mainly clay-size mud and granule to pebble; 5 percent interparticle porosity
3.5 - 4.0	No recovery
4.0 - 5.0	Limestone gravel, white N9; mainly granule to pebble size; 20 to 25 percent interparticle porosity
5.0 - 6.5	Carbonate mud with subangular limestone gravel, white N9; mainly clay-size mud and granule to pebble; 5 percent interparticle porosity; low hydraulic conductivity
6.5 - 7.0	No recovery
7.0 - 8.3	Limestone gravel with mud matrix, white N9 to very light gray N8, mainly clay-size mud and pebble size; 5 percent interparticle porosity; low hydraulic conductivity
8.3 - 9.5	Mixture of quartz sand and limestone gravel, white to very light gray N8; mainly fine quartz sand with minor clay-size mud and pebble-size limestone; 5 percent interparticle porosity; low hydraulic conductivity
9.5 - 12.0	No recovery
12.0 - 15.0	Quartz sand-rich carbonate mud, grayish-tan; mainly clay-size mud and medium sand-size quartz with minor pebble-size fossils; fossil fragments; 5 percent interparticle porosity; moderate to low hydraulic conductivity
15.0 - 18.0	Mixture of carbonate sand and quartz sand-rich carbonate mud, white N9 to light-grayish-tan; mainly clay-size mud and medium sand-size quartz and carbonate grains with minor pebble-size fossils; fossil fragments; 70 percent carbonate and 30 percent quartz sand-size grains; 5 percent interparticle porosity; moderate to low hydraulic conductivity; poorly cemented
18.0 - 20.0	Fossiliferous mixture of carbonate sand and quartz sand-rich carbonate mud, tannish-white; mainly clay-size mud and medium sand-size quartz and carbonate grains with minor granule and pebble-size fossils; fossil fragments; 10 percent interparticle porosity; moderate hydraulic conductivity
20.0 - 25.0	Mollusk-rich terrigenous clay, light-greenish-gray 5Y 8/1; mainly clay-size; minor medium sand to pebble-size fossils; thick-shelled mollusks (<i>Ostrea?</i>); 5 percent porosity; low hydraulic conductivity; appears conformable with lithology above
25.0 - 25.6	Mollusk fragments; mainly pebble-size mollusk fragments; 30 percent porosity; very high hydraulic conductivity
25.6 - 34.0	Mollusk-rich terrigenous clay; light-greenish-gray 5Y 8/1; mainly clay-size mud with minor medium sand to pebble-size fossils; thick-shelled mollusks; 5 percent porosity; low hydraulic conductivity
34.0 - 34.3	Caved lithology
34.3 - 37.5	Mixture of limestone, fossils and quartz sand in a mud matrix, light-gray N7 to light-tan; mainly clay-size mud and granule- to pebble-size limestone and fossils; all grains range from clay to pebble size; fossils and quartz sand; 5 percent porosity; low hydraulic conductivity
37.5 - 38.0	No recovery
38.0 - 42.0	Mixture of limestone, fossils and quartz sand in a mud matrix, light-gray N7 to yellowish-gray 5Y 8/1; mainly clay-size mud and coarse sand and pebble-size fossils; ranges from clay to pebble-size grains; oysters, pelecypods, and barnacles; 5 percent porosity; low to moderate hydraulic conductivity; coarsens upward
42.0 - 46.5	Quartz sand; light-gray N7 to yellowish-gray 5Y 8/1, mainly clay-size mud and medium quartz sand; ranges from clay to pebble-size grains; skeletal fragments including <i>Chione</i> ; 5 percent porosity; low to moderate hydraulic conductivity
46.5 - 51.0	Quartz sand, light-gray N7 to yellowish-gray 5Y 8/1; mainly clay-size mud and medium quartz sand; ranges from clay to pebble-size grains; skeletal fragments including oysters; trace to 3 percent phosphorite grains; 5 percent porosity; low to moderate hydraulic conductivity
51.0 - 55.0	Quartz sand, light-gray N7 to yellowish-gray 5Y 8/1; mainly clay-size mud and medium quartz sand; ranges from clay to pebble-size grains; skeletal fragments including oysters and <i>Pecten</i> ; trace to 3 percent phosphorite grains; 5 percent porosity; low to moderate hydraulic conductivity
55.0 - 55.5	No recovery
55.5 - 58.1	Quartz sandstone, yellowish-gray 5Y 7/2; mainly terrigenous clay and fine quartz sand; minor silt to very fine quartz sand, medium to coarse quartz sand, medium sand to large pebble-size fossils and very fine sand to small pebble-size phosphorite grains; moderately sorted; subangular to subrounded; 5 percent skeletal grains; 3 percent black N1 phosphorite and heavy mineral grains; 10 percent intergrain porosity; low hydraulic conductivity; shallow-marine siliciclastic shelf; abundant terrigenous clay matrix; soft when wet; skeletal fragments, large quartz grains and large phosphorite grains floating in relatively fine quartz sand matrix

Depth (feet below land surface)	Lithologic description of well C-1142
58.1 - 58.8	Pelecypod lime floatstone with skeletal, grain-dominated, lime packstone and grainstone matrix, medium-dark-gray N4 to medium-light-gray N6; mainly coarse sand- to granule- and pebble-size fossils; minor clay-size lime mudstone, very fine quartz sand with subordinate and fine to coarse sand-size quartz, fine to medium sand and granule-size fossils, and very fine to coarse sand-size phosphorite grains; well sorted quartz sand; subangular to subrounded quartz sand; skeletal grains, pelecypods, gastropods, sand-dollars, bryozoans (including <i>Cyclostomata</i>), and serpulids; 10 to 20 percent quartz sand; 1 percent black N1 phosphorite grains; 30 percent intergrain, skeletal, moldic, and intragrain porosity; high hydraulic conductivity; mid-ramp; moderately hard when wet; moderately cemented; upper bounding surface at 58.1 feet, probably hard ground with irregular relief (very thin) with overhanging microtopography
58.8 - 60.8	Pelecypod lime floatstone with skeletal grain-dominated lime packstone and grainstone matrix, medium-gray N5 to medium-light-gray N6; mainly coarse sand to granule and pebble-size fossils; minor clay-size lime mudstone, very fine quartz sand with subordinate silt and fine to coarse sand-size quartz, fine to medium and- and granule-size fossils, and very fine to coarse sand-size phosphorite grains; well sorted; subangular to subrounded; skeletal grains, pelecypods, gastropods, sand dollars, bryozoans (including <i>Cyclostomata</i>), and serpulids; 10 to 20 percent quartz sand; 1 percent black N1 phosphorite grains; 30 percent intergrain, skeletal, moldic, and intragrain porosity; high hydraulic conductivity; mid-ramp; moderately hard when wet; moderately cemented
60.8 - 63.5	Pelecypod lime floatstone with skeletal grain-dominated lime packstone and grainstone matrix, yellowish-gray 5Y 7/2; light-gray N7 to very light gray N8; mainly coarse sand to granule and pebble-size fossils; minor clay-size lime mudstone, very fine quartz sand with subordinate silt and fine to coarse sand-size quartz, fine to medium sand and granule-size fossils, and very fine to coarse sand-size phosphorite grains; well sorted; subangular to subrounded; skeletal grains, pelecypods, gastropods, sand dollars, bryozoans, and serpulids; 10 to 20 percent quartz sand; 1 percent black N1 phosphorite grains; 30 percent intergrain, skeletal, moldic, and intragrain porosity; high hydraulic conductivity; mid-ramp; moderately hard when wet; moderately cemented
63.5 - 65.0	No recovery
65.0 - 67.0	Pelecypod lime rudstone with quartz sand-rich skeletal mud-dominated lime packstone and grainstone matrix, very pale orange 10YR 8/2; light-gray N7 to very light gray N8; mainly fine sand to pebble-size fossils and very fine to fine quartz sand; minor clay-size lime mudstone and very fine to medium sand-size phosphorite grains; well sorted; subangular to subrounded; skeletal grains, pelecypods, bryozoans, gastropods, barnacles, and serpulids; 10 to 40 percent quartz sand; 1 to 3 percent black N1 phosphorite grains; 30 percent intergrain, skeletal, moldic, and intragrain porosity; high hydraulic conductivity; mid-ramp; friable to moderately hard when wet; poorly to moderately cemented; color lightens upward from 67 to 68.1 feet
67.0 - 69.0	Pelecypod lime rudstone with quartz sand-rich, skeletal, mud-dominated, lime packstone and grainstone matrix, yellowish-gray 5Y 8/1; light-gray N7 to very light gray N8; mainly fine sand- to pebble-size fossils and very fine to fine quartz sand; minor clay-size lime mudstone and very fine to medium sand-size phosphorite grains; well sorted; subangular to subrounded; skeletal grains, pelecypods, bryozoans, gastropods, barnacles, and serpulids; 10 to 40 percent quartz sand; 1 to 3 percent black N1 phosphorite grains; 30 percent intergrain, skeletal, moldic, and intragrain porosity; high hydraulic conductivity; mid-ramp; friable to moderately hard when wet; poorly to moderately cemented
69.0 - 73.0	Pelecypod lime rudstone with quartz sand-rich, skeletal, mud-dominated, lime packstone and grainstone matrix, very pale orange 10YR 8/2; very light gray N8; mainly fine sand to pebble-size fossils and very fine to fine quartz sand; minor clay-size lime mudstone and very fine to medium sand-size phosphorite grains; well sorted; subangular to subrounded; skeletal grains, pelecypods, bryozoans, gastropods, barnacles, and serpulids; 10 to 40 percent quartz sand; 1 to 3 percent black N1 phosphorite grains; 30 percent intergrain, skeletal moldic and intragrain porosity; high hydraulic conductivity; mid-ramp; friable to moderately hard when wet; poorly to moderately cemented
73.0 - 77.0	Pelecypod lime rudstone with quartz sand-rich, skeletal, grain-dominated and mud-dominated, lime packstone and skeletal quartz sandstone matrix, yellowish-gray 5Y 8/1; very light gray N8; mainly clay-size lime mudstone, fine sand to pebble-size fossils, and very fine to medium quartz sand; minor coarse quartz sand and very fine to medium sand-size phosphorite grains; moderately sorted; angular to subrounded; skeletal grains, pelecypods, bryozoans, echinoids, sand dollars, and serpulids; 20 to 60 percent quartz sand; 1 percent black N1 phosphorite grains; 25 percent skeletal, moldic, intergrain and intragrain porosity; high hydraulic conductivity; mid-ramp; lime mudstone matrix in quartz sandstone; friable to hard when wet; poorly to well cemented
77.0 - 78.0	Pelecypod lime rudstone with quartz sand-rich, skeletal, grain-dominated and mud-dominated, lime packstone and skeletal quartz sandstone matrix, yellowish-gray 5Y 8/1; very pale orange 10YR 8/2; mainly clay-size lime mudstone, fine sand to pebble-size fossils, and very fine to medium quartz sand; minor coarse quartz sand and very fine to medium sand-size phosphorite grains; moderately sorted quartz sand; angular to subrounded; skeletal grains, pelecypods, bryozoans, echinoids, sand dollars, and serpulids; 20 to 60 percent quartz sand; 1 percent black N1 phosphorite grains; 25 percent skeletal moldic; intergrain, and intragrain porosity; high hydraulic conductivity; mid-ramp; lime mudstone matrix in quartz sandstone; friable to hard when wet; poorly to well cemented
78.0 - 81.0	No recovery

Depth (feet below land surface)	Lithologic description of well C-1142
81.0 - 82.0	Pelecypod lime rudstone with quartz-rich lime mudstone, yellowish-gray 5Y 8/1, very pale orange 10YR 8/2; mainly clay-size lime mudstone, fine sand to pebble-size fossils and fine to coarse quartz sand; minor coarse quartz sand and very fine to coarse sand-size phosphorite grains; moderately sorted; subangular to subrounded; skeletal grains, pelecypods, gastropods and <i>Vermicularia</i> ; 20 to 70 percent quartz sand; 1 percent black N1 phosphorite grains; 20 percent skeletal moldic and intergrain porosity; moderate hydraulic conductivity; mid-ramp; hard when wet; well cemented; color lightens upward from 82 to 87 feet
82.0 - 84.0	No recovery
84.0 - 87.7	Pelecypod lime rudstone with quartz-rich lime wackestone and quartz sandstone, yellowish-gray 5Y 8/1, light-gray N7 to very light gray N8; mainly clay-size lime mudstone, very fine sand to pebble-size fossils and very fine to fine quartz sand; minor medium to coarse quartz sand and very fine to coarse sand-size phosphorite grains; moderately sorted; subangular to subrounded; skeletal grains, pelecypods, bryozoans, and serpulids; 20 to 70 percent quartz sand; 1 percent black N1 phosphorite grains; 20 percent skeletal, moldic porosity; moderate hydraulic conductivity; mid-ramp; hard when wet; well cemented
87.7 - 92.0	No recovery
92.0 - 95.7	Pelecypod-rich quartz sandstone, yellowish-gray 5Y 8/1, light-gray N7 to very light gray N8; mainly clay-size lime mudstone, very fine to coarse quartz sand; minor very coarse quartz sand and very fine to medium sand-size phosphorite grains; moderately sorted; subangular to subrounded; 40 percent skeletal grains, pelecypods, bryozoans, serpulids, gastropods, and sand dollars; 1 percent black N1 phosphorite grains; 20 percent skeletal, moldic, and intergrain porosity; moderate hydraulic conductivity; mid-ramp; lime mudstone matrix; hard when wet; well cemented
95.7 - 97.0	No recovery
97.0 - 98.5	Pelecypod-rich quartz sandstone, yellowish-gray 5Y 8/1, mainly medium to coarse quartz sand; minor very fine to very coarse quartz sand and very fine to medium sand-size phosphorite grains; moderately sorted quartz sand; subangular to subrounded; 40 percent skeletal grains, pelecypods, and bryozoans; 1 percent black N1 phosphorite grains; 20 percent skeletal, moldic, and intergrain porosity; moderate hydraulic conductivity; mid-ramp; lime mudstone matrix; hard when wet; well cemented; color lightens upward from 82 to 98.5 feet
98.5 - 101.0	No recovery
101.0 - 102.5	Pelecypod-rich quartz sandstone, yellowish-gray 5Y 8/1; mainly very fine to fine quartz sand; minor terrigenous clay, medium quartz sand and very fine to fine sand-size phosphorite and heavy minerals grains; moderately sorted; subangular to subrounded; skeletal grains and pelecypods; 5 percent black N1 phosphorite and heavy mineral grains; 15 percent intergrain porosity; low hydraulic conductivity; marine siliciclastic shelf; minor terrigenous clay matrix; moderately hard when wet
102.5 - 111.0	No recovery
111.0 - 113.7	Pelecypod-rich quartz sandstone, yellowish-gray 5Y 8/1; mainly very fine quartz sand and terrigenous clay; minor very fine sand-size phosphorite, granule to pebble-size fossils and heavy minerals grains and subordinate fine to coarse sand-size phosphorite grains; very well sorted; angular to subrounded; 20 percent thin-shelled pelecypods; 20 percent black N1 phosphorite and heavy mineral grains; 15 percent intergrain porosity; low hydraulic conductivity; marine siliciclastic shelf; terrigenous clay matrix; soft when wet; poorly cemented; coarse phosphorite grains floating in quartz sand matrix
113.7 - 114.0	No recovery
114.0 - 117.0	Pelecypod-rich quartz sandstone, yellowish-gray 5Y 8/1; mainly very fine quartz sand and terrigenous clay; minor very fine phosphorite, granule to pebble-size fossils and heavy mineral grains and subordinate fine to coarse sand size phosphorite grains; very well sorted; angular to subrounded; 20 percent thin-shelled pelecypods; 20 percent black N1 phosphorite and heavy mineral grains; 15 percent intergrain porosity; low hydraulic conductivity; marine siliciclastic shelf; terrigenous clay matrix; soft when wet; poorly cemented; coarse phosphorite grains floating in quartz sand matrix
117.0 - 120.5	Quartz sand-rich, silty clay, yellowish-gray 5Y 8/1; mainly terrigenous clay and fine quartz sand; ranges from clay to fine sand-size grains; minor pelecypod fragments; greater than 10 percent black N1 phosphorite and heavy mineral grains; very low to low hydraulic conductivity
120.5 - 121.0	No recovery
121.0 - 125.5	Very sandy silty clay, green; mainly terrigenous clay and fine quartz sand; ranges from clay to fine sand-size grains; minor pelecypod fragments; 3 percent black N1 phosphorite and heavy mineral grains; very low to low hydraulic conductivity
125.5 - 126.0	No recovery
126.0 - 134.0	Slightly sandy clay, green; mainly terrigenous clay; ranges from clay to fine sand-size grains; trace to 3 percent black N1 phosphorite and heavy mineral grains; very low hydraulic conductivity
134.0 - 140.5	Slightly silty clay, green; mainly terrigenous clay; range from clay to silt sand-size grains; foraminifers and diatoms; very low hydraulic conductivity
140.5 - 141.0	No recovery
141.0 - 146.8	Clay, olive-green at top grading downward to light-green; mainly terrigenous clay; ranges from clay to very fine sand-size grains; very low hydraulic conductivity; silt content increases downward, clay grades downward to a very fine grained quartz sand with silt and clay matrix

Depth (feet below land surface)	Lithologic description of well C-1142
146.8 - 151.0	No recovery
151.0 - 156.0	Quartz sand, light-green; mainly very fine quartz sand; ranges from clay to very fine sand-size grains; very low to low hydraulic conductivity; silt and clay matrix
156.0 - 172.0	Quartz sand, light-green; mainly very fine quartz sand; ranges from clay to very fine sand-size grains; minor small skeletal fragments; very low to low hydraulic conductivity; silt and clay matrix
172.0 - 174.5	Sandy, silty clay, dark-gray-green; mainly terrigenous clay; range from clay to very fine sand-size grains; trace to 3 percent phosphorite grains; very low hydraulic conductivity
174.5 - 180.0	Sandy, silty clay, dark-gray-green; mainly terrigenous clay; ranged from clay to very fine sand-size grains; trace to 3 percent phosphorite grains; minor skeletal fragments; very low hydraulic conductivity
180.0 - 181.0	No recovery
181.0 - 185.0	Very sandy clay, dark-gray-green; mainly terrigenous clay; ranges from clay to very fine sand-size grains; trace to 3 percent phosphorite grains; very low to low hydraulic conductivity
185.0 - 188.0	Clay-rich quartz sand, mottled dark-gray-green; mainly terrigenous clay and medium quartz sand; ranges from clay to coarse sand-size grains; trace to 3 percent phosphorite grains; very low to low hydraulic conductivity
188.0 - 195.0	Clay-rich, silty quartz sand, mottled dark-gray-green; mainly fine to coarse quartz sand; ranges from clay to coarse sand-size grains; trace to 3 percent phosphorite grains; very low to low hydraulic conductivity
195.0 - 201.0	Clay-rich, silty quartz sand, mottled dark-gray-green grading to blackish-green; mainly fine to coarse quartz sand; ranges from clay to coarse sand-size grains; trace to 3 percent phosphorite grains; very low to low hydraulic conductivity; grades downward from quartz to silty clay with very fine quartz sand and thin quartz sand lenses
201.0 - 206.0	No recovery

Sunniland No. 1 Core

Florida Geological Survey well number	W-17534
GWSI number	C-1163
Total depth	815 feet
Cored from	0 to 815 feet
County	Collier
Location	SE, SW, sec. 17, T48S, R30E
Latitude	26°18'01"
Longitude	81°20'44"
Elevation	20 feet
Completion date	March 1997
Other types of available logs	Caliper, gamma ray, sonic, resistivity, density
Owner	University of Miami
Driller	Florida Geological Survey
Core described by	Kevin J. Cunningham (for a description of 207.2 to 813 feet, see Cunningham and McNeill, 1997).
Undifferentiated limestone and quartz sand	0 to 12.5 feet
Tamiami Formation, Pinecrest Sand Member	12.5 to 27 feet
Tamiami Formation, Ochopee Limestone Member	27 to 49 feet
Top of unnamed formation	49 feet
Water-table aquifer	0 to 12.5 feet
Upper confining unit	12.5 to 27 feet
Gray limestone aquifer	27 to 49 feet
Top of lower confining unit	49 feet

Depth (feet below land surface)	Lithologic description of well C-1163
0.0 - 4.0	Quartz sand, pale-yellowish-brown 10YR 6/2 and dark-yellowish-orange 10YR 6/6; mainly very fine to fine grain size; ranges from clay to fine; well sorted; subrounded to rounded; interparticle porosity; clay matrix; moderate to high hydraulic conductivity; very poor induration; loose unconsolidated sand
4.0 - 8.5	Lime rudstone with packstone matrix, grayish-orange 10YR 7/4; mainly very coarse to very large pebble size, ranges from clay to very large pebble size; bivalves and broken fossil fragments; 60 percent allochemical constituents; lime mudstone matrix; moldic, vuggy, and intraparticle porosity; moderate to high hydraulic conductivity; moderate to well induration; mostly mechanically broken rubble; poor recovery
8.5 - 10.5	No recovery
10.5 - 12.5	Lime rudstone with packstone matrix, grayish-orange 10YR 7/4; mainly very coarse to very large pebble size, ranges from clay to small pebble size; bivalves, broken fossil fragments; 60 percent allochemical constituents; lime mudstone matrix; moldic, vuggy, and intraparticle porosity; moderate to high hydraulic conductivity; moderate to well induration; mostly mechanically broken rubble; poor recovery
12.5 - 19.0	Quartz sandstone, yellowish-gray 5Y 8/1; mainly very fine grain size; ranges from mud to very fine; well sorted; subangular to subrounded; bivalves, broken fossil fragments; 2 percent black grains; lime mud matrix; interparticle porosity; very low hydraulic conductivity; moderate induration; bioturbated
19.0 - 27.0	Quartz sand-rich lime mudstone, yellowish-gray 5Y 8/1; mainly silt to very fine grain size, ranges from clay to very fine; trace bivalves; trace allochemical constituents; 20 percent quartz sand; lime mudstone matrix; interparticle porosity; very low hydraulic conductivity; moderate induration; mottled texture due to bioturbation
27.0 - 30.0	Lime floatstone with mudstone matrix, very pale orange 10YR 8/2; bimodal, clay to large pebble size; broken fossil fragments, bivalves; 50 percent allochemical constituents; clay; mudstone matrix; moldic porosity; moderate hydraulic conductivity; poor induration; very rubbly recovery
30.0 - 35.5	Lime rudstone with lime packstone matrix, very light gray N8 and very pale orange 10YR 8/2; bimodal, mainly coarse sand and large pebble size, ranges from clay to very large pebble size; bivalves, broken fossil fragments, bryozoans; 60 percent allochemical constituents; trace heavy minerals; lime mud matrix; moldic porosity; moderate hydraulic conductivity well indurated; bioturbated; rock mainly rubble; poor recovery
35.5 - 41.0	Lime rudstone with lime packstone matrix; bimodal, mainly coarse sand and large pebble size, ranges from clay to very large pebble size; bivalves, broken fossil fragments; 60 percent allochemical constituents; trace heavy minerals; lime mud matrix; moldic porosity; moderate hydraulic conductivity; well indurated; bioturbated
41.0 - 47.0	Lime rudstone with quartz sandstone matrix, very light gray N8 and very pale orange 10YR 8/2; bimodal, mainly fine sand and large pebble size, ranges from clay to very large pebble size; bivalves; 60 percent allochemical constituents; 30 percent quartz sand; 2 percent phosphorite grains; lime mud matrix; moldic porosity; moderate hydraulic conductivity; moderate to well induration; very poor recovery
47.0 - 49.0	Lime rudstone with sandstone matrix, very light gray N8 and very pale orange 10YR 8/2; bimodal, mainly fine sand and large pebble size, ranges from clay to very large pebble size; gastropods, bivalves; 60 percent allochemical constituents; 30 percent quartz sand; 2 percent phosphorite grains; lime mud matrix; moldic porosity; moderate hydraulic conductivity; moderate to well induration
49.0 - 69.0	Quartz sand, yellowish-gray 5Y 8/1; mainly very fine grain size, ranges from very fine to coarse; well sorted; subangular to rounded; trace bivalves; trace mica; less than 5 percent phosphorite grains; trace clay matrix; interparticle porosity; moderate hydraulic conductivity; poor induration; poor recovery
69.0 - 77.0	Quartz sand, yellowish-gray 5Y 8/1; mainly very fine to coarse grain size; moderately to well sorted; subangular to rounded; less than 2 percent phosphorite grains; interparticle porosity; moderate hydraulic conductivity; poor induration; poor recovery
77.0 - 81.0	No recovery
81.0 - 86.0	Quartz sand, yellowish-gray 5Y 8/1; mainly very fine to coarse grain size; moderately to well sorted; subangular to rounded; less than 2 percent phosphorite; interparticle porosity; moderate hydraulic conductivity; poor induration; poor recovery
86.0 - 91.8	Quartz sand, yellowish-gray 5Y 8/1; mainly very fine to fine grain size, ranges from very fine to coarse; well sorted; subangular to rounded; less than 5 percent mica and less than 1 percent phosphorite grains; interparticle porosity; moderate hydraulic conductivity; poor induration
91.8 - 102.6	Quartz sand, yellowish-gray 5Y 8/1; mainly very fine grain size, ranges from very fine to fine; well sorted; subangular to rounded; trace mica; less than 5 percent phosphorite grains; interparticle porosity; moderate hydraulic conductivity; poor induration; poor recovery

Depth (feet below land surface)	Lithologic description of well C-1163
102.6 - 103.6	No recovery
103.6 - 107.5	Quartz sand, yellowish-gray 5Y 8/1; mainly very fine grain size, ranges from very fine to fine; well sorted; subangular to rounded; trace mica; less than 5 percent phosphorite grains; interparticle porosity; moderate hydraulic conductivity; poor induration; poor recovery
107.5 - 109.0	No recovery
109.0 - 114.5	Quartz sand, yellowish-gray 5Y 8/1; mainly very fine grain size, ranges from very fine to fine; well sorted; subangular to rounded; trace mica; less than 5 percent phosphorite grains; interparticle porosity; moderate hydraulic conductivity; poor induration; poor recovery
114.5 - 115.0	No recovery
115.0 - 128.0	Quartz sand; yellowish-gray 5Y 8/1; mainly very fine grain size, ranges from very fine to very coarse; well sorted; subangular to rounded; trace mica; less than 2 percent phosphorite grains; trace clay; interparticle porosity; moderate hydraulic conductivity; poor induration; bioturbated
128.0 - 140.0	Quartz sandstone, yellowish-gray 5Y 8/1 to light-olive-gray 5Y 5/2; mainly very fine grain size, ranges from very fine to very coarse; well sorted; subangular to rounded; trace bivalves; 1 percent mica; trace phosphorite grains; clay matrix; interparticle porosity; moderate hydraulic conductivity; moderate induration; minor layers containing very coarse sand grains floating in very fine sand
140.0 - 140.5	Lime floatstone with sandstone matrix, yellowish-gray 5Y 8/1; bimodal, very fine quartz sand to very large pebble-size fossils; well sorted; subangular to rounded; trace bivalves; trace phosphorite grains; calcite; interparticle porosity; moderate hydraulic conductivity; well indurated; recovery mainly rubble
140.5 - 154.5	Quartz sandstone, medium-light-gray N6 to very light gray N8; mainly very fine to quartz, ranges from very fine sand to large pebble size; poor to moderate sorting; subangular to rounded; 10 to 20 percent bivalves; 2 percent phosphorite; clay matrix; interparticle porosity; moderate hydraulic conductivity; poor to moderate induration
154.5 - 158.0	Quartz sand, very light gray N8; fine to medium grain size, ranges from fine sand to small pebble size; moderate sorting; subangular to rounded; 5 percent bivalves; 2 percent phosphorite; interparticle porosity; moderate hydraulic conductivity; poor induration; massive and structureless
158.0 - 160.0	No recovery
160.0 - 162.5	Quartz sand, very light gray N8; mainly fine to medium grain size, ranges from fine to small pebble size; moderate sorting; subangular to rounded; broken bivalves and broken fossil fragments; 1 percent phosphorite grains; interparticle porosity; moderate hydraulic conductivity; poor induration; poor recovery
162.5 - 167.0	No recovery
167.0 - 170.0	Quartz sand, yellowish-gray 5Y 8/1; mainly medium grain size, ranges from fine to very coarse; moderate sorting; subangular to rounded; trace bivalve fragments; less than 3 percent phosphorite grains; interparticle porosity; moderate hydraulic conductivity; poor induration; very poor recovery
170.0 - 173.0	No recovery
173.0 - 191.0	Quartz sand, yellowish-gray 5Y 8/1; mainly medium grain size, ranges from fine to very coarse; moderate sorting; subangular to rounded; trace bivalve fragments; less than 3 percent phosphorite grains; interparticle porosity; moderate hydraulic conductivity; poor induration; very poor recovery
191.0 - 196.5	Quartz sand, very light gray N8; mainly medium to coarse grain size, ranges from fine to very coarse; moderate sorting; subangular to rounded; trace bivalve fragments; less than 3 percent phosphorite; interparticle porosity; moderate hydraulic conductivity; poor induration; poor recovery
196.5 - 206.0	No recovery
206.0 - 207.2	Quartz sand, very light gray N8; mainly medium to coarse grain size, ranges from fine to very coarse; moderate sorting; subangular to rounded; trace bivalve fragments; less than 3 percent phosphorite grains; interparticle porosity; moderate hydraulic conductivity; poor induration; poor recovery

Big Cypress Sanctuary Core (Miller Property)

Florida Geological Survey well number	W-17614
GWSI number	C-1169
Total depth	195 feet
Cored from	0 to 195 feet
County	Collier
Location	SE, NE, sec. 16, T49S, R34E
Latitude	26°13'17"
Longitude	80°55'52"
Elevation	15 feet
Completion date	December 20, 1997
Other types of available logs	Gamma ray, induction resistivity
Owner	U.S. Geological Survey
Driller	Florida Geological Survey
Core described by	Kevin J. Cunningham
Undifferentiated quartz sand	0 to 5 feet
Tamiami Formation	5 to 139 feet
Pinecrest Sand Member	5 to 75 feet
Ochopee Limestone Member	75 to 139 feet
Unnamed formation	139 to 164.5 feet
Peace River Formation	164.5 to 195 feet
Water-table aquifer	0 to 17 feet
Upper confining unit	17 to 75 feet
Gray limestone aquifer	75 to 139 feet
Lower confining unit	139 to 195 feet

Depth (feet below land surface)	Lithologic description of well C-1169
0.0 - 1.0	Quartz sand, dark-gray N3; mainly very fine to medium quartz sand with minor coarse quartz sand; ranges from clay to coarse; moderately sorted; abundant modern roots; minor organic particles; 15 percent interparticle porosity; moderate hydraulic conductivity; clay matrix
1.0 - 1.5	Quartz sand, medium-dark-gray N4 to dark-gray N5; mainly fine to medium quartz sand with minor very fine and coarse quartz sand; ranges from clay to granule; poorly sorted; 10 percent interparticle porosity; low hydraulic conductivity; soft when wet; root molds with laminated calcrete linings; minor marl matrix
1.5 - 2.5	Quartz sand, yellowish-gray 5Y 8/1, white N9, dark-yellowish-orange 10YR 6/6; mainly fine to medium quartz sand with minor very fine and coarse quartz sand; ranges from clay to granule; poorly sorted; 10 percent interparticle porosity; low hydraulic conductivity; soft when wet; root molds with laminated calcrete linings; minor marl matrix
2.5 - 5.0	Equal mix of quartz sand, marl, and skeletal fragments, yellowish-gray 5Y 8/1; mainly clay to granule; ranges from clay to granule; poorly sorted; 10 percent interparticle porosity; low hydraulic conductivity; soft when wet
5.0 - 7.0	Quartz sand, yellowish-gray 5Y 8/1; mainly clay and silt to very fine quartz sand and minor fine quartz sand; ranges from clay to fine; 10 percent interparticle porosity; low hydraulic conductivity; abundant marl matrix; soft when wet
7.0 - 9.5	Quartz sand, yellowish-gray 5Y 8/1; mainly clay; ranges very fine to fine quartz sand and pebble-size mollusks; 40 percent mollusk fragments; 10 percent interparticle porosity; low hydraulic conductivity; white N9 mollusks; soft when wet
9.5 - 10.0	No recovery
10.0 - 12.0	Quartz sand, yellowish-gray 5Y 8/1; mainly very fine to fine quartz sand with minor medium quartz sand; ranges from clay to pebble; 10 percent mollusks; 10 percent interparticle porosity; low hydraulic conductivity; minor marl matrix; soft when wet
12.0 - 12.5	No recovery
12.5 - 34.0	Quartz sand, yellowish-gray 5Y 8/1; mainly very fine to fine quartz sand with trace of pebble-size skeletal and mollusk fragments; ranges from clay to pebble; well sorted; less than 3 percent very fine to fine black grains; trace mica; trace skeletal and mollusk fragments; 10 percent interparticle porosity; low hydraulic conductivity; minor silt and marl matrix
34.0 - 37.5	No recovery
37.5 - 39.5	Quartz sand, yellowish-gray 5Y 7/2; mainly very fine quartz sand and pebble-size mollusk fragments; ranges from clay to pebble; 10 percent whole mollusks and mollusk fragments; less than 3 percent very fine black grains; trace mica; 10 percent interparticle porosity; low hydraulic conductivity; white mollusks N9; minor silt and marl matrix; soft when wet
39.5 - 40.0	No recovery
40.0 - 42.0	Quartz sand, light-olive-gray 5Y 6/1 to yellowish-gray 5Y 7/2; mainly very fine quartz sand and pebble-size mollusk fragments; ranges from clay to pebble; 10 percent whole mollusks and mollusk fragments; less than 3 percent very fine black grains; trace mica; 10 percent interparticle porosity; low hydraulic conductivity; white mollusks N9; minor silt and marl matrix; soft when wet
42.0 - 43.0	Quartz sand-rich mudstone, light-olive-gray 5Y 6/1 to yellowish-gray 5Y 7/2; mainly clay and silt-size quartz sand with minor very fine quartz sand and pebble-size mollusks; ranges from clay to pebble; 10 percent mollusks; 5 percent interparticle porosity; very low hydraulic conductivity
43.0 - 49.0	Quartz sand, light-olive-gray 5Y 6/1 to yellowish-gray 5Y 7/2; mainly clay and silt and very fine quartz sand; ranges from clay to pebble; well sorted quartz sand; poorly sorted mix of clay, sand and mollusks; less than 3 percent very fine black grains; 5 percent interparticle porosity; low hydraulic conductivity; white N9, thin-shelled mollusks; abundant clay matrix; soft when wet
49.0 - 52.0	Quartz sand, light-olive-gray 5Y 6/1 to yellowish-gray 5Y 7/2; mainly clay and silt and very fine quartz sand; ranges from clay to pebble; well sorted quartz sand; poorly sorted mix of clay, sand, and mollusks; less than 3 percent very fine black grains; 5 percent interparticle porosity; low hydraulic conductivity; white N9, thin-shelled mollusks; abundant clay matrix; soft when wet
52.0 - 56.5	No recovery
56.5 - 61.0	Quartz sand, yellowish-gray 5Y 8/1; mainly clay, silt to medium quartz sand and medium to pebble-size mollusks; ranges from clay to pebble; 10 percent mollusk fragments; less than 3 percent very fine to fine undifferentiated black grains and medium phosphorite grains; 5 percent interparticle porosity; very low hydraulic conductivity; white N9 and medium-light-gray N7 to light-gray N6 mollusks; abundant marl matrix; massive bedding; friable
61.0 - 65.0	Quartz sand, light-olive-gray 5Y 6/1 to yellowish-gray 5Y 8/1; mainly fine to coarse quartz sand with minor medium to pebble-size mollusks; ranges from clay to pebble; 3 to 5 percent very fine to fine undifferentiated black grains and medium to coarse phosphorite grains; 10 percent interparticle porosity; low hydraulic conductivity; white N9 and medium-light-gray N7 to light-gray N6 mollusks; minor marl matrix; massive bedding; friable
65.0 - 66.0	No recovery

Depth (feet below land surface)	Lithologic description of well C-1169
66.0 - 68.0	Quartz sand, light-olive-gray 5Y 6/1; mainly very fine quartz sand and pebble-size mollusks; ranges from clay to pebble; fine to pebble-size mollusks; 3 to 5 percent very fine to fine black grains; 10 percent interparticle porosity; low hydraulic conductivity; minor clay matrix; massive bedding; friable
68.0 - 71.0	No recovery
71.0 - 74.2	Quartz sand, light-olive-gray 5Y 6/1; mainly very fine quartz sand and pebble-size mollusks; ranges from clay to pebble; fine to pebble-size mollusks; 3 to 5 percent very fine to fine black grains; 10 percent interparticle porosity; low hydraulic conductivity; minor clay matrix; massive bedding; friable
74.2 - 75.0	Equal mix of quartz sand (very fine to fine), marl, and mollusk fragments, yellowish-gray 5Y 8/1; clay to pebble; <i>Vermicularia</i> ; 3 to 5 percent very fine to fine black grains; 5 percent interparticle porosity; very low hydraulic conductivity
75.0 - 78.5	Mollusk lime rudstone and floatstone with matrix of skeletal fragment packstone with marl matrix, yellowish-gray 5Y 8/1 to light-gray N7; mainly clay and medium to pebble-size fossils; ranges from clay to pebble; skeletal fragments, mollusks, bryozoans, echinoids, gastropods; 10 percent very fine quartz sand; less than 3 percent very fine to fine black grains; 15 percent interparticle and moldic porosity; low hydraulic conductivity; medium-light-gray N6 and light-gray N7 mollusks; poorly cemented; friable
78.5 - 83.0	Mollusk lime rudstone and floatstone with matrix of skeletal fragment lime packstone and well-washed packstone with marl matrix, yellowish-gray 5Y 8/1 to light-gray N7; mainly medium to pebble-size fossils; ranges from clay to pebble; skeletal fragments, mollusks, bryozoans, echinoids, gastropods; 10 percent very fine quartz sand; less than 3 percent very fine to fine black grains; 15 percent interparticle and moldic porosity; medium hydraulic conductivity; poorly cemented; very friable to moderately friable
83.0 - 84.0	No recovery
84.0 - 100.0	Mollusk lime rudstone and floatstone with well-washed skeletal lime packstone matrix, yellowish-gray 5Y 8/1, medium-light-gray N6 to light-gray N7; mainly medium to pebble-size fossils; ranges from clay to pebble; skeletal fragments, mollusks, bryozoans, echinoids, <i>Vermicularia</i> ; less than 3 percent very fine black grains; 15 percent interparticle and moldic porosity; moderate hydraulic conductivity; medium-light-gray N6 to light-gray N7 mollusks and skeletal fragments; poorly to moderately cemented; friable to locally hard; minor local marl matrix
100.0 - 109.5	Mollusk lime rudstone and floatstone with well-washed skeletal lime packstone and grainstone matrix, yellowish-gray 5Y 8/1, medium-light-gray N6 to light-gray N7; mainly medium to pebble-size fossils; ranges from clay to pebble; skeletal fragments, mollusks, bryozoans, <i>Vermicularia</i> , bryozoans, echinoids; 10 percent very fine quartz sand; less than 3 percent very fine black grains; 15 percent interparticle and moldic; moderate hydraulic conductivity; poorly cemented but locally moderately cemented; friable but locally moderately friable
109.5 - 111.5	Mollusk lime rudstone and floatstone with well-washed skeletal lime packstone and grainstone matrix, yellowish-gray 5Y 8/1, medium-light-gray N6 to light-gray N7; mainly medium to pebble-size fossils; ranges from clay to pebble; skeletal fragments, mollusks, bryozoans, <i>Vermicularia</i> , bryozoans, echinoids; 10 percent very fine to medium quartz sand; less than 3 percent very fine black grains; 15 percent interparticle and moldic; moderate hydraulic conductivity; poorly cemented but locally moderately cemented; friable but locally moderately friable
111.5 - 113.5	Well-washed skeletal lime packstone with quartz sand-rich matrix, yellowish-gray 5Y 8/1; mainly very fine to medium fossils; ranges from clay to coarse; skeletal fragments, bryozoans; 20 percent very fine to medium quartz sand; less than 3 percent very fine to fine black grains; 15 percent interparticle and moldic porosity; moderate hydraulic conductivity; poorly cemented; friable
113.5 - 115.0	Mollusk lime floatstone with well-washed skeletal lime packstone, yellowish-gray 5Y 8/1; mainly medium to pebble fossils; ranges from clay to pebble; skeletal grains, mollusks, bryozoans; less than 3 percent very fine to fine black grains; 15 percent interparticle and moldic porosity; moderate hydraulic conductivity; poorly cemented; friable
115.0 - 115.5	No recovery
115.5 - 123.5	Skeletal lime floatstone with well-washed skeletal lime packstone matrix, yellowish-gray 5Y 8/1; mainly fine to granule fossils; ranges from clay to pebble; skeletal fragments, mollusks, echinoids, bryozoans, gastropods; 3 percent very fine to fine black grains; 15 percent interparticle and moldic porosity; moderate hydraulic conductivity; poorly cemented; friable
123.5 - 129.5	Mollusk lime rudstone with well-washed skeletal lime packstone matrix, yellowish-gray 5Y 8/1; mainly very fine to pebble fossils; ranges from clay to pebble; skeletal fragments, mollusks, echinoids, bryozoans, gastropods, serpulids; 10 percent very fine to medium quartz sand; 3 percent very fine to fine black grains; 15 percent interparticle and moldic porosity; moderate hydraulic conductivity; moderately cemented; moderately friable
129.5 - 138.5	Mollusk lime rudstone with skeletal lime packstone and well-washed lime packstone matrix, yellowish-gray 5Y 8/1 to light-gray N7; mainly clay size and silt to pebble-size fossils; ranges from clay to pebble; skeletal fragments, mollusks, gastropods, bryozoans, echinoids; 10 to 30 percent very fine to coarse quartz sand, mainly very fine to fine quartz sand; 3 percent very fine to fine black grains; 15 percent interparticle and moldic porosity; moderate hydraulic conductivity; well cemented; hard
138.5 - 140.5	No recovery

Depth (feet below land surface)	Lithologic description of well C-1169
140.5 - 141.0	Mollusk-rich quartz sandstone, yellowish-gray 5Y 8/1; mainly very fine to fine quartz sand with minor medium quartz sand; ranges from very fine to pebble; mollusks and minor gastropods and bryozoans; 5 percent very fine to fine black grains; 10 percent interparticle porosity; low hydraulic conductivity; well cemented; hard
141.0 - 146.5	No recovery
146.5 - 149.0	Quartz sand, yellowish-gray 5Y 8/1; mainly very fine quartz sand; ranges from clay to very fine; 5 to 10 percent very black grains (probably mainly phosphorite); 10 percent interparticle porosity; low hydraulic conductivity; poorly cemented; silt and clay matrix; friable
149.0 - 149.5	No recovery
149.5 - 150.0	Quartz sand, yellowish-gray 5Y 8/1; mainly very fine quartz sand; ranges from clay to very fine; 5 to 10 percent very black grains (probably mainly phosphorite); 10 percent interparticle porosity; low hydraulic conductivity; poorly cemented; silt and clay matrix; friable
150.0 - 154.0	Quartz sand, yellowish-gray 5Y 8/1; mainly very fine quartz sand; ranges from clay to very fine; 10 percent very fine black grains (mainly phosphorite); trace skeletal fragments; 10 percent interparticle porosity; low hydraulic conductivity; poorly cemented; silt and clay matrix
154.0 - 154.5	No recovery
154.5 - 156.5	Quartz sand, yellowish-gray 5Y 8/1; mainly very fine quartz sand; ranges from clay to very fine; 10 percent very fine black grains (mainly phosphorite); trace skeletal fragments; 10 percent interparticle porosity; low hydraulic conductivity; poorly cemented; silt and clay matrix
156.5 - 160.5	Quartz sand, yellowish-gray 5Y 7/2; mainly very fine quartz sand; ranges from clay to very fine; 10 percent very fine black grains (mainly phosphorite); trace small pebble-size phosphorite grains; less than 3 percent small to medium pebble-size mollusk fragments; 10 percent interparticle porosity; low hydraulic conductivity; poorly cemented; silt and clay matrix
160.5 - 164.5	Quartz sand, light-olive-gray 5Y 6/1; mainly very fine quartz sand; ranges from clay to very fine; 15 percent very fine black grains (mainly phosphorite); less than 5 percent medium sand to small pebble-size mollusks; 10 percent interparticle porosity; low hydraulic conductivity; poorly cemented; friable; minor silt and clay matrix
164.5 - 166.5	Interlaminated quartz sand and mudstone, pale-olive 10Y 6/2; mainly very fine quartz sand; ranges from clay to very fine; 15 percent very fine black grains (mainly phosphorite); 10 percent benthic foraminifers; 10 percent interparticle porosity; low hydraulic conductivity; poorly cemented; friable
166.5 - 167.5	No recovery
167.5 - 168.8	Interlaminated quartz sand and mudstone, pale-olive 10Y 6/2; mainly very fine quartz sand; ranges from clay to very fine; 15 percent very fine black grains (mainly phosphorite); 10 percent benthic foraminifers; 10 percent interparticle porosity; low hydraulic conductivity; poorly cemented; friable
168.8 - 177.5	Silty mudstone, pale-olive 10Y 6/2; mainly clay; ranges from clay to silt; 10 percent benthic foraminifers; less than 5 percent interparticle; very low hydraulic conductivity; soft when wet
177.5 - 182.5	Silty mudstone, pale-olive 10Y 6/2; mainly clay; ranges from clay to silt; 10 to 20 percent benthic foraminifers and diatoms; less than 5 percent interparticle porosity; very low hydraulic conductivity; soft when wet
182.5 - 187.5	No recovery
187.5 - 195.0	Silty mudstone, yellowish-gray 5Y 7/2; mainly clay; ranges from clay to silt; 10 to 20 percent benthic foraminifers and 10 to 20 percent diatoms; less than 5 percent interparticle; very low hydraulic conductivity; soft when wet

Sabine Road Core

Florida Geological Survey well number	Not applicable
GWSI number	C-1173
Total depth	135 feet
Cored from	0 to 135 feet
County	Collier
Location	NW, NW, sec. 6, T50S, R33E
Latitude	26°09'53"
Longitude	81°04'17"
Elevation	13 feet
Completion date	April 2, 1998
Other types of available logs	Gamma ray, induction, single-point resistivity
Owner	U.S. Geological Survey
Driller	South Florida Water Management District
Core described by	Kevin J. Cunningham
Undifferentiated limestone	0 to 5 feet
Tamiami Formation	5 to 114 feet
Pinecrest Sand Member	5 to 65 feet
Ochopee Limestone Member	65 to 114 feet
Unnamed formation	114 to 125 feet
Peace River Formation	125 to 135 feet
Upper confining unit	0 to 65 feet
Gray limestone aquifer	65 to 115 feet
Lower confining unit	115 to 135 feet

Depth (feet below land surface)	Lithologic description of well C-1173
0.0 - 5.0	Mixture of limestone and sand; 70 percent mollusk lime floatstone with quartz sand-rich lime wackestone and packstone matrix, very pale orange 10YR 8/2, grayish-orange 10YR 7/4, dark-yellowish-orange 10YR 6/6, moderate-yellowish-brown 10YR 5/4; mainly clay-size lime mudstone, very fine to fine quartz sand and pebble-size mollusks; quartz sand ranges from very fine to fine; all grains range from clay to pebble size; well sorted quartz sand; mollusks, skeletal fragments; 10 to 40 percent quartz sand; vuggy and moldic porosity; low hydraulic conductivity; hard when wet and 30 percent quartz sand with terrigenous mud matrix, light-gray N7; mainly clay-size terrigenous mud and very fine to fine quartz sand; quartz sand ranges from very fine to fine; grains range from clay to fine sand size; moderately sorted quartz sand; interparticle porosity; very low hydraulic conductivity; friable, soft when wet; abundant terrigenous mud matrix
5.0 - 10.0	Quartz sand, very pale orange 10YR 8/2, grayish-yellow 5Y 8/4; mainly clay-size marl and very fine grained quartz sand; quartz sand is very fine; fossils range from fine to pebble size; grains range from clay to pebble size; very well sorted quartz sand; minor skeletal fragments and mollusks; 5 percent interparticle porosity; very low hydraulic conductivity; inner delta front(?); friable; soft when wet; abundant marl matrix
10.0 - 15.0	Quartz sand, very pale orange 10YR 8/2, grayish-yellowish 5Y 8/4; mainly very fine quartz sand; grains range from clay to very fine; very well sorted quartz sand; trace very fine black grains; 15 percent interparticle porosity; low hydraulic conductivity; inner delta front(?); friable; soft when wet; minor marl matrix
15.0 - 20.0	Quartz sand, yellowish-gray 5Y 8/1; mainly very fine quartz sand; grains range from clay to very fine; very well sorted quartz sand; trace very fine black grains; 15 percent interparticle porosity; low hydraulic conductivity; inner delta front(?) or beach(?); friable; soft when wet; minor marl matrix
20.0 - 25.0	Quartz sand, yellowish-gray 5Y 8/1; mainly very fine quartz sand; grains range from clay to very fine; very well sorted quartz sand; trace very fine black grains; 15 percent interparticle porosity; low hydraulic conductivity inner delta front(?); friable; soft when wet; minor marl matrix
25.0 - 35.0	Quartz sand, yellowish-gray 5Y 8/1, grayish-yellow 5Y 8/4; mainly very fine quartz sand; grains range from clay to very fine; very well sorted quartz sand; trace very fine black grains; 15 percent interparticle porosity; low hydraulic conductivity; inner delta front(?); friable; soft when wet; minor marl matrix
35.0 - 40.0	Quartz sand, light-gray N7; mainly very fine quartz sand; grains range from clay to very fine; very well sorted quartz sand; trace very fine black grains; 15 percent interparticle porosity; low hydraulic conductivity; inner delta front(?); friable; soft when wet; minor marl matrix
40.0 - 50.0	Quartz sand, light-olive-gray 5Y 6/1; mainly clay-size terrigenous mud and silt to very fine quartz sand; quartz sand ranges from silt to very fine sand; grains range from clay to very fine sand; very well sorted quartz sand; trace very fine black grains; 5 percent interparticle porosity; very low hydraulic conductivity; outer delta front(?); friable; soft when wet
50.0 - 55.0	Quartz sand, light-olive-gray 5Y 6/1; mainly clay-size terrigenous mud and silt to very fine quartz sand; quartz sand ranges from silt to very fine sand; fossils range from coarse to pebble size; grains range from clay to very fine sand; very well sorted quartz sand; minor mollusk fragments; trace very fine black grains; 5 percent interparticle porosity; very low hydraulic conductivity; outer delta front(?); friable; soft when wet
55.0 - 65.0	Silty mudstone; dusky-yellow-green 5GY 5/2; mainly terrigenous clay; minor silt-size quartz and fine sand-size foraminifera; grains range from clay to fine; 5 percent interparticle porosity; very low hydraulic conductivity; prodelta(?); soft when wet; maximum flooding surface at 55 feet
65.0 - 70.0	Mollusk lime rudstone with quartz sand-rich skeletal lime packstone and well-washed packstone matrix, medium-gray N5 to light-gray N7; quartz sand is very fine; grains range from clay to pebble size; very well sorted quartz sand; skeletal fragments, mollusks, encrusting bryozoans, sand dollars; 20 percent quartz sand; trace very fine to fine black phosphorite; 20 percent moldic and interparticle porosity; moderate hydraulic conductivity; ramp; poorly to moderately cemented; friable to moderately friable
70.0 - 75.0	Mollusk lime rudstone with quartz sand-rich skeletal well-washed lime packstone and quartz sand-rich skeletal grainstone matrix, medium-gray N5 to light-gray N7; mainly very fine to pebble-size fossils; quartz sand is very fine; grains range from clay to cobble size; very well sorted quartz sand; skeletal fragments, mollusks, encrusting bryozoans, sand dollars, <i>Vermicularia</i> , oysters; 10 percent quartz sand; trace very fine to fine black phosphorite; 25 percent moldic and interparticle porosity; high hydraulic conductivity; ramp; moderately to well cemented; moderately friable to hard; trace <i>Vermicularia</i> bondstone
75.0 - 80.0	Mollusk lime rudstone with skeletal well-washed lime packstone and skeletal grainstone matrix, medium-gray N5 to light-gray N7; mainly very fine to pebble-size fossils; quartz sand is very fine; grains range from clay to cobble size; very well sorted quartz sand; skeletal fragments, mollusks, encrusting bryozoans, serpulids; 5 percent quartz sand; trace very fine to fine black phosphorite; 25 percent moldic and interparticle porosity; high hydraulic conductivity; ramp; moderately to well cemented; moderately friable to hard
80.0 - 85.0	Mollusk lime rudstone with skeletal well-washed lime packstone and skeletal grainstone matrix, light-gray N7 to yellowish-gray 5Y 8/1; mainly very fine to pebble-size fossils; quartz sand ranges from very fine to medium; grains range from clay to cobble size; moderately sorted quartz sand; skeletal fragments, mollusks, encrusting bryozoans, serpulids, trace small hermatypic coral; 5 percent quartz sand; trace very fine to fine black phosphorite; 20 percent moldic and interparticle porosity; high hydraulic conductivity; ramp; moderately to well cemented; moderately friable to hard

Depth (feet below land surface)	Lithologic description of well C-1173
85.0 - 90.0	Mollusk lime rudstone with quartz sand-rich skeletal well-washed lime packstone and quartz sand-rich skeletal grainstone matrix, light-gray N7; mainly very fine to pebble-size fossils; quartz sand mainly ranges from very fine to medium with minor coarse; grains range from clay to cobble size; moderately sorted quartz sand; skeletal fragments, mollusks, encrusting bryozoans, barnacles, serpulids, gastropods, oysters; 20 percent quartz sand; trace very fine to medium black phosphorite; 20 percent moldic and interparticle porosity; high hydraulic conductivity; ramp; moderately to well cemented; moderately friable to hard
90.0 - 95.0	Mollusk lime rudstone with quartz sand-rich skeletal lime packstone, quartz sand-rich skeletal well-washed lime packstone, and quartz sand-rich skeletal grainstone matrix, light-gray N7, very light gray N8, yellowish-gray 5Y 8/1; mainly very fine to pebble-size fossils; quartz sand mainly ranges from very fine to medium; grains range from clay to cobble size; well sorted quartz sand; skeletal fragments, mollusks, encrusting and free-standing bryozoans, oysters, serpulids; 30 percent quartz sand; trace very fine to medium black phosphorite; 20 percent moldic and interparticle porosity; high hydraulic conductivity; ramp; moderately to well cemented; moderately friable to hard
95.0 - 100.0	Mollusk lime rudstone with quartz sand-rich skeletal lime packstone and quartz sand-rich skeletal well-washed lime packstone matrix, light-gray N7, very light gray N8, yellowish-gray 5Y 8/1; mainly clay-size lime mudstone, very fine to fine quartz sand, and medium to pebble-size fossils; quartz sand ranges from very fine to medium; grains range from clay to cobble size; well sorted quartz sand; skeletal fragments, mollusks, encrusting bryozoans; 40 percent quartz sand; trace very fine to medium black phosphorite; 20 percent moldic and interparticle porosity; moderate hydraulic conductivity; ramp; moderately to well cemented; moderately friable to hard
100.0 - 105.0	Mollusk lime rudstone with quartz sand-rich skeletal lime packstone and quartz sand-rich skeletal well-washed lime packstone matrix, very light gray N8, yellowish-gray 5Y 8/1; mainly clay-size lime mudstone, fine quartz sand, and medium to pebble-size fossils; quartz sand ranges from very fine to very coarse; grains range from clay to cobble size; moderately sorted quartz sand; skeletal fragments, mollusks, serpulids, barnacles, encrusting bryozoans; 40 percent quartz sand; trace very fine to fine black phosphorite; 20 percent moldic and interparticle porosity; moderate hydraulic conductivity; ramp; moderately to well cemented; moderately friable to hard
105.0 - 110.0	Mollusk lime rudstone with quartz sand-rich skeletal lime packstone and quartz sand-rich skeletal well-washed lime packstone matrix, yellowish-gray 5Y 8/1, light-gray N7, very light gray N8; mainly clay-size lime mudstone, very fine to fine quartz sand, and medium to pebble-size fossils; quartz sand ranges from very fine to very coarse; grains range from clay to cobble size; moderately sorted quartz sand; skeletal fragments, mollusks, serpulids, <i>Vermicularia</i> , gastropods; 45 percent quartz sand; trace very fine to fine black phosphorite; 20 percent moldic and interparticle porosity; moderate hydraulic conductivity; ramp; moderately to well cemented; moderately friable to hard
110.0 - 114.0	Mollusk lime rudstone with quartz sand-rich skeletal lime packstone matrix, yellowish-gray 5Y 8/1, very light gray N8; mainly clay-size lime mudstone, very fine quartz sand, and medium to pebble-size fossils; quartz sand ranges from very fine to granule size; all grains range from clay to cobble size; moderately sorted quartz sand; skeletal fragments, mollusks, gastropods, <i>Vermicularia</i> , serpulids; 45 percent quartz sand; 5 percent very fine to fine black phosphorite; 20 percent moldic and interparticle porosity; moderate hydraulic conductivity; ramp; moderately to well cemented; moderately friable to hard
114.0 - 115.0	Mollusk-rich quartz sandstone, light-olive-gray 5Y 6/1; mainly very fine quartz sand and pebble-size mollusks; grains range from clay to pebble size; well sorted quartz sand; mollusks, gastropods; 5 to 10 percent very fine to fine black phosphorite; 15 percent moldic and interparticle porosity; moderate hydraulic conductivity; moderately to well cemented; moderately friable to hard; minor lime mudstone matrix
115.0 - 120.0	Phosphate-rich, mollusk-rich quartz sand, light-olive-gray 5Y 6/1; mainly very fine quartz sand; minor fine to pebble size fossils; all grains range from very fine to pebble size; well sorted quartz sand; 20 percent mollusks and minor pectens; 20 percent very fine black phosphorite; 15 percent interparticle porosity; low hydraulic conductivity; friable; soft when wet
120.0 - 125.0	Phosphate-rich, mollusk-rich quartz sand, light-olive-gray 5Y 6/1; mainly very fine quartz sand; minor fine to pebble size fossils; grains range from very fine to pebble size; well sorted quartz sand; 15 percent mollusks and minor pectens and oysters; 30 percent very fine black phosphorite; 15 percent interparticle porosity; low hydraulic conductivity; friable; soft when wet
125.0 - 130.0	Phosphate-rich, mollusk-rich quartz sand, light-olive-gray 5Y 6/1; mainly very fine quartz sand; minor fine to pebble size fossils; grains range from clay to pebble size; well sorted quartz sand; 10 percent mollusks; 30 percent very fine black phosphorite; 10 percent interparticle porosity; low hydraulic conductivity; friable; soft when wet; minor clay matrix
130.0 - 135.0	Interbedded phosphate-rich, clay-rich quartz sand and quartz sand-rich mudstone, light-olive-gray 5Y 6/1; mainly clay-size terrigenous clay and very fine quartz sand; quartz sand ranges from silt to very fine; phosphorite grains are mainly very fine with minor coarse to small pebble size; grains range from clay to pebble size; well sorted quartz sand; 30 percent black phosphorite; 5 percent interparticle porosity; very low hydraulic conductivity; soft when wet; minor clay matrix

Turner River Road Core

Florida Geological Survey well number	Not applicable
GWSI number	C-1176
Total depth	365 feet
Cored from	0 to 365 feet
County	Collier
Location	SW, NW, sec. 6, T51S, R31E
Latitude	26°03'38"
Longitude	81°15'49"
Elevation	12 feet
Completion date	January 18, 1998
Other types of available logs	Gamma ray, spontaneous potential, fluid resistivity, long-normal resistivity, short-normal resistivity, resistivity, temperature, conductivity, neutron
Owner	U.S. Geological Survey
Driller	U.S. Geological Survey
Core described by	Kevin J. Cunningham (description for 50 to 365 feet is on file with the Geologic Division of the U.S. Geological Survey)
Undifferentiated limestone (Fort Thompson Formation?)	0 to 7.6 feet
Tamiami Formation	7.6 to 42.25 feet
Ochopee Limestone Member	7.6 to 42.25 feet
Top of unnamed formation	42.25 feet
Upper confining unit	0 to 7.6 feet
Gray limestone aquifer	7.6 to 42.25 feet
Top of lower confining unit	42.25 feet

Depth (feet below land surface)	Lithologic description of well C-1176
0.0 - 0.5	No recovery
0.5 - 0.6	Skeletal lime packstone, very pale orange 10YR 8/2 to grayish-orange 10YR 7/4; mainly clay size; ranges from clay to pebble; 10 percent interparticle and microporosity; very low hydraulic conductivity
0.6 - 2.0	Mollusk lime floatstone with marl matrix, very pale orange 10YR 8/2 and minor grayish-orange 10YR 7/4; mainly clay size; ranges from clay to pebble; trace very fine to medium quartz sand; 10 percent interparticle and microporosity; very low hydraulic conductivity; calcified marl contains root molds lined with laminated calcrete at 1.8 feet; interval is an exposure zone
2.0 - 5.0	No recovery
5.0 - 7.5	Mollusk lime wackestone with quartz-rich marl matrix, very pale orange 10YR 8/2; mainly clay to very fine; ranges from clay to pebble; 20 percent very fine quartz sand; 10 percent interparticle and microporosity; very low hydraulic conductivity; burrowed
7.5 - 7.6	Mollusk lime floatstone with mollusk, skeletal lime packstone matrix, very pale orange 10YR 8/2; clay to pebble; 5 percent interparticle and microporosity; low hydraulic conductivity
7.6 - 8.0	Rubble of mollusk lime rudstone with marl matrix, very pale orange 10YR 8/2; mainly clay-size marl and granule to pebble size fossils; ranges from clay to pebble; interparticle and microporosity; moderate hydraulic conductivity
8.0 - 8.3	No recovery
8.3 - 10.0	Interbedded mollusk lime floatstone with matrix of mollusk packstone and mollusk lime floatstone with very well-washed skeletal packstone with marl matrix, yellowish-gray 5Y 8/1; mainly clay-size marl and medium to pebble-size fossils; ranges from clay to pebble; mollusks, skeletal fragments; 15 percent interparticle and moldic porosity; moderate hydraulic conductivity; poorly cemented; friable; mechanically induced rubble
10.0 - 13.0	No recovery
13.0 - 15.0	Mollusk lime floatstone with matrix of very well washed skeletal packstone with marl matrix, yellowish-gray 5Y 8/1; mainly medium to pebble-size fossils; ranges from clay to pebble; skeletal fragments, mollusks, echinoids; 20 percent interparticle and moldic; high hydraulic conductivity; poorly cemented; friable; mechanically induced rubble
15.0 - 20.0	No recovery
20.0 - 22.0	Mollusk lime floatstone with matrix of very well washed skeletal packstone with marl matrix, yellowish-gray 5Y 8/1; mainly medium to pebble-size fossils; ranges from clay to pebble; skeletal fragments, mollusks, bryozoans, hermatypic corals, oysters; 20 percent interparticle and moldic; high hydraulic conductivity; poorly cemented; friable; mechanically induced rubble
22.0 - 25.0	No recovery
25.0 - 26.25	Mollusk lime floatstone with matrix of well washed skeletal packstone with marl matrix, yellowish-gray 5Y 8/1; mainly medium to pebble; ranges from clay to pebble; skeletal fragments, mollusks, gastropods, bryozoans, oysters, <i>Vermicularia</i> ; 20 percent interparticle and moldic porosity; high hydraulic conductivity; poorly cemented; friable; mechanically induced rubble
26.25 - 30.0	No recovery
30.0 - 30.5	Mollusk lime floatstone with matrix of well-washed skeletal packstone with marl matrix, yellowish-gray 5Y 8/1 to light-gray N7; mainly medium to pebble; ranges from clay to pebble; skeletal fragments, mollusks, gastropods, oysters; 20 percent interparticle and moldic porosity; high hydraulic conductivity; poorly cemented; friable; mechanically induced rubble
30.5 - 35.0	No recovery
35.0 - 36.5	Mollusk lime floatstone with matrix of well-washed skeletal packstone with marl matrix, very pale orange 10YR 8/2; mainly medium to pebble; ranges from clay to pebble; skeletal fragments, mollusks, bryozoans; 20 percent interparticle and moldic porosity; high hydraulic conductivity; poorly cemented; friable; mechanically induced rubble
36.5 - 37.0	No recovery
37.0 - 37.5	Mollusk lime rudstone with quartz sand-rich skeletal lime grainstone matrix, very pale orange 10YR 8/2; mainly very fine to pebble; ranges from very fine to pebble; skeletal fragments, mollusks, serpulids; trace very fine phosphorite grains; 15 percent interparticle and moldic porosity; high hydraulic conductivity; well cemented
37.5 - 42.0	No recovery
42.0 - 42.25	Cuttings of lithology AA 37 37.5
42.25 - 45.0	No recovery
45.0 - 45.1	Quartz sand, moderate-orange-pink 5YR 8/4; mainly very fine; ranges from clay to very fine; well sorted quartz grains; 3 to 10 percent very fine black grains (mainly phosphorite); 15 percent interparticle porosity; low hydraulic conductivity; friable
45.1 - 49.0	Quartz sand; light-gray N7; mainly very fine grain size; ranges from clay to very fine; well sorted quartz grains; 3 to 10 percent very fine black grains (mainly phosphorite); 15 percent interparticle porosity; low hydraulic conductivity; soft (quartz sand poured into box); friable
49.0 - 50.0	Quartz sand, light-gray N7; mainly very fine; ranges from clay to very fine; well sorted quartz grains; minor <i>Pecten</i> ; 3 to 10 percent very fine black grains (mainly phosphorite); 15 percent interparticle porosity; low hydraulic conductivity; soft (quartz sand poured into box); friable

Sunniland No. 2 Core

Florida Geological Survey well number	Not applicable
GWSI number	C-1178
Total depth	200 feet
Cored from	0 to 200 feet
County	Collier
Location	SW, NW, sec. 2, T49S, R30E
Latitude	26°14'53"
Longitude	81°17'44"
Elevation	19.2 feet
Completion date	February 5, 1998
Other types of available logs	Gamma ray, spontaneous potential, fluid resistivity, long-normal resistivity, short-normal resistivity, induction, temperature, conductivity, neutron
Owner	U.S. Geological Survey
Driller	U.S. Geological Survey
Core described by	Kevin J. Cunningham (description for 150 to 200 feet is on file with the Geologic Division of the U.S. Geological Survey)
Undifferentiated limestone and quartz sand	0 to 2.75 feet
Lake Okeelanta(?) beds	2.75 to 55 feet
Tamiami Formation	55 to 145 feet
Ochopee Limestone Member	55 to 145 feet
Top of unnamed sand	145 feet
Water-table aquifer	0 to 2.75 feet
Upper confining unit	2.75 to 55 feet
Upper gray limestone aquifer	55 to 92.5 feet
Middle confining unit of gray limestone aquifer	92.5 to 119 feet
Lower gray limestone aquifer	119 to 144 feet
Top of lower confining unit	144 feet

Depth (feet below land surface)	Lithologic description of well C-1178
0.0 - 1.0	Mollusk lime floatstone and rudstone with skeletal lime packstone and grainstone matrix, yellowish-gray 5Y 8/1, minor grayish-orange 10YR 7/4; clay to pebble; mollusks and skeletal fragments; 20 percent moldic and interparticle porosity; moderate hydraulic conductivity; broken-up limestone
1.0 - 2.0	No recovery
2.0 - 2.75	Quartz sand, very pale orange 10YR 8/2; mainly very fine to fine quartz sand; minor medium to coarse quartz sand and fine sand to pebble-size fossils; quartz sand ranges from silt to coarse; grains range from very fine to pebble; skeletal fragments, mollusks, probably caved limestone lithoclasts; 20 percent interparticle porosity; moderate hydraulic conductivity; unconsolidated, loose quartz sand
2.75 - 3.5	Peat; sample removed for analysis
3.5 - 5.0	No recovery
5.0 - 5.4	Peat; sample removed for analysis; delta plain(?) environment
5.4 - 5.8	Quartz sandstone with lime mud matrix, very pale orange 10YR 8/2; mainly very fine to fine quartz sand and clay-size lime mud; quartz sand ranges from silt to fine; grains range from clay to pebble size; 5 percent moldic and root-mold porosity; low hydraulic conductivity; interval contains root molds lined with laminated calcrete; interval is an exposure zone (cycle cap or sequence boundary)
5.8 - 6.5	No recovery
6.5 - 8.0	Quartz sandstone with lime mud matrix, very pale orange 10YR 8/2; mainly very fine to fine quartz sand and clay-size lime mud; quartz sand ranges from silt to fine; grains range from clay to pebble size; gastropods, mollusks; 5 percent moldic and root-mold porosity; low hydraulic conductivity; interval contains root molds lined with laminated calcrete; same exposure zone as 5.4 to 5.8 feet
8.0 - 9.75	Quartz sand, very pale orange 10YR 8/2; mainly very fine to fine quartz sand and clay-size lime mud; quartz sand ranges from silt to fine; grains range from clay to pebble size; mollusks, skeletal fragments; 10 percent interparticle porosity; low hydraulic conductivity; soft; minor clay matrix
9.75 - 10.0	No recovery
10.0 - 11.0	Quartz sand, very pale orange 10YR 8/2; mainly very fine to fine quartz sand, pebble-size mollusks and clay-size terrigenous clay; quartz sand ranges from silt to fine; grains range from clay to pebble; abundant mollusks (uncommonly articulated), minor gastropods; 10 percent interparticle porosity; low hydraulic conductivity; soft; minor clay matrix; mollusks and gastropods floating in quartz sand matrix
11.0 - 13.0	Quartz sand, yellowish-gray 5Y 8/1; mainly very fine to fine quartz sand, pebble-size mollusks and clay-size terrigenous clay; quartz sand ranges from silt to fine; grains range from clay to pebble; abundant mollusks (uncommonly articulated), minor gastropods; 10 percent interparticle porosity; low hydraulic conductivity; soft; minor clay matrix; mollusks and gastropods floating in quartz sand matrix
13.0 - 14.0	Quartz sand, grayish-orange 10YR 7/4, pale-yellowish-brown 10YR 6/2; mainly very fine to fine quartz sand and clay-size terrigenous clay; quartz sand ranges from silt to fine; grains range from clay to fine; 5 percent interparticle porosity; low hydraulic conductivity; calcrete matrix in upper half; calcareous clay matrix in lower half; lower half is soft; root molds lined with laminated calcrete throughout interval; interval is an exposure zone (cycle cap or sequence boundary)
14.0 - 15.0	No recovery
15.0 - 16.0	Quartz sand, very pale orange 10YR 8/2, grayish-orange 10YR 7/4; mainly very fine to fine quartz sand and terrigenous clay; quartz sand ranges from silt to fine; grains range from clay to fine; uncommon mollusk fragments; 10 percent interparticle porosity; low hydraulic conductivity; local clay matrix and calcrete matrix; root molds with laminated calcrete linings; same exposure zone as 13.0 to 14.0 feet
16.0 - 17.0	Quartz sand, yellowish-gray 5Y 8/1; mainly from very fine to fine quartz sand; quartz sand ranges from silt to fine; grains range from clay to pebble; mollusks, gastropods; 10 percent interparticle porosity; low hydraulic conductivity; minor clay matrix; soft
17.0 - 18.0	No recovery
18.0 - 20.0	Quartz sand, yellowish-gray 5Y 7/2; mainly very fine to fine quartz sand; quartz sand ranges from silt to medium; grains range from clay to pebble; mollusks, gastropods; 10 percent interparticle porosity; low hydraulic conductivity; minor clay matrix; clay content decreases upward; soft
20.0 - 22.3	Quartz sand, light-olive-gray 5Y 6/1; mainly very fine to fine quartz sand and terrigenous clay; quartz sand ranges from silt to medium; grains range from clay to pebble; mollusks, gastropods; 5 percent interparticle porosity; low hydraulic conductivity; clay matrix; clay content decreases upward; soft
22.3 - 23.0	No recovery

Depth (feet below land surface)	Lithologic description of well C-1178
23.0 - 23.5	Quartz sand, light-olive-gray 5Y 6/1; mainly very fine to fine quartz sand and terrigenous clay; quartz sand ranges from silt to medium; grains range from clay to pebble; mollusks, gastropods; 5 percent interparticle porosity; very low hydraulic conductivity; clay matrix; soft
23.5 - 24.0	Sample removed for analysis; probably exposure zone
24.0 - 24.3	Quartz sand, light-olive-gray 5Y 6/1; mainly very fine to fine quartz sand and terrigenous clay; quartz sand ranges from silt to medium; grains range from clay to pebble; mollusks, gastropods; 5 percent interparticle porosity; very low hydraulic conductivity; clay matrix; soft
24.3 - 26.0	Gastropod-rich terrigenous mudstone, light-olive-gray 5Y 6/1; mainly terrigenous clay; minor silt-size quartz; grains range from clay to pebble; abundant gastropods, minor mollusks; 5 percent microporosity; very low hydraulic conductivity; calcareous; silty; locally gastropods form a framework; soft; root molds; probable exposure zone
26.0 - 26.2	Sample removed for analysis; probably same lithology as interval between 24.3 and 26.0 feet
26.2 - 27.0	Gastropod-rich terrigenous mudstone, light-olive-gray 5Y 6/1; mainly terrigenous clay; minor silt-size quartz; grains range from clay to pebble; abundant gastropods, minor mollusks; 5 percent microporosity; very low hydraulic conductivity; calcareous; silty; soft; root molds; probable exposure zone as interval from 24.3 to 26.0 feet with different exposure zone cap at 26.8 feet and different exposure zone from 26.8 to 27.0 feet
27.0 - 28.0	No recovery
28.0 - 28.9	Gastropod-rich terrigenous mudstone, yellowish-gray 5Y 8/1 at top, light-olive-gray 5Y 6/1 in middle, pale-yellowish-brown 10YR 6/2 at base; mainly terrigenous clay; minor silt-size quartz; grains range from clay to pebble; abundant gastropods; 5 percent microporosity; very low hydraulic conductivity; calcareous; silty; soft; root molds; probable exposure zone as interval from 26.2 to 27.0 feet
28.9 - 29.7	Gastropod-rich terrigenous mudstone, yellowish-gray 5Y 8/1 at top, light-olive-gray 5Y 6/1 in middle, pale-yellowish-brown 10YR 6/2 at base; mainly terrigenous clay; minor silt-size quartz; grains range from clay to pebble; abundant gastropods; 5 percent microporosity; very low hydraulic conductivity; calcareous; silty; soft; root molds; unconformity and exposure zone cap at 28.9 feet
29.7 - 29.8	Peat; grayish black N2; top of an unconformity and exposure zone; exposure zone with cap at 29.7 feet in interval from 29.7 to 29.8 feet
29.8 - 32.0	Gastropod-rich terrigenous mudstone, very pale orange 10YR 8/2 at top to pale-yellowish-brown 10YR 6/2 at base; mainly terrigenous clay and coarse to pebble-size fossils; minor silt-size quartz; grains range from clay to pebble; abundant gastropods; 5 percent microporosity; very low hydraulic conductivity; calcareous; silty; soft; root molds; local gastropod supported framework;
32.0 - 33.0	No recovery
33.0 - 34.8	Gastropod-rich terrigenous mudstone, pale-yellowish-brown 10YR 6/2 at top to dark-yellowish-brown 10YR 4/2 at base; mainly terrigenous clay and coarse to granule-size fossils; minor silt-size quartz; grains range from clay to granule; abundant gastropods; 5 percent microporosity; very low hydraulic conductivity; calcareous; silty; soft
34.8 - 35.0	No recovery
35.0 - 35.5	Peat; sample removed for analysis; top of exposure zone at 35 feet
35.5 - 39.0	Gastropod-rich terrigenous mudstone very pale orange 10YR 8/2 at top to yellowish-gray 5Y 8/1 at base; mainly terrigenous clay and coarse to granule-size fossils; minor silt-size quartz; grains range from clay to granule; abundant gastropods; 5 percent microporosity; very low hydraulic conductivity; calcareous; silty; soft; root molds
39.0 - 40.0	No recovery
40.0 - 48.2	Peat; sample removed for analysis; top of exposure zone at 40 feet
48.2 - 50.0	No recovery
50.0 - 51.0	Peat; sample removed for analysis
51.0 - 52.3	Quartz sand, yellowish-gray 5Y 8/1; mainly very fine to fine quartz sand; quartz skeletal fragments range from fine to pebble; grains range from very fine to pebble; skeletal fragments; 15 percent interparticle porosity; moderate hydraulic conductivity
52.3 - 54.0	Mollusk-rich quartz sand; light-gray N7 to yellowish-gray 5Y 8/1; mainly very fine to fine quartz sand and granule to pebble-size mollusks; quartz sand ranges from very fine to fine; grains range from very fine to pebble; well sorted quartz sand; abundant mollusks (minor articulated mollusks), minor gastropods; 15 percent interparticle porosity; moderate hydraulic conductivity; unconsolidated, friable quartz sand; mollusks form a grain-supported framework
54.0 - 55.0	No recovery

Depth (feet below land surface)	Lithologic description of well C-1178
55.0 - 56.5	Mollusk lime floatstone and rudstone with quartz sand-rich lime mudstone matrix, dark-gray N3 to medium-gray N5; mainly clay-size lime mud, very fine to fine quartz sand and pebble-size fossils; quartz sand ranges from silt to fine; fossils range from silt to pebble; grains range from clay to pebble; 45 percent quartz sand; 20 percent moldic and root-mold porosity; high hydraulic conductivity; hard; mainly white N9 mollusk; root molds lined with calcite cement; top of exposure zone at 55 feet
56.5 - 56.7	No recovery
56.7 - 57.8	Gastropod and mollusk lime floatstone with quartz sand-rich lime mudstone matrix, grayish-black N2 to medium-dark-gray N4; pale yellowish-brown 10YR 6/2; mainly clay-size lime mud, very fine quartz sand and pebble-size fossils; quartz sand ranges from silt to very fine; fossils range from silt to pebble; grains range from clay to pebble; 45 percent quartz sand; 15 percent moldic, root-mold, and small vug porosity; high hydraulic conductivity; hard; lime floatstone is mechanically broken; root molds; same exposure zone as 55.0 to 56.5 feet
57.8 - 59.5	Mollusk-rich quartz sand, yellowish-gray 5Y 8/1; mainly very fine to fine quartz sand and granule to pebble-size fossils; quartz sand ranges from silt to fine; fossils range from silt to pebble; grains range from silt to pebble; well sorted quartz sand; 75 percent quartz sand; abundant mollusks, minor gastropods; 15 percent interparticle; moderate hydraulic conductivity; hard; mollusks form a grain-supported framework
59.5 - 60.0	No recovery
60.0 - 61.0	Quartz sand, light-olive-gray 5Y 6/1; very fine to medium quartz sand and granule to pebble-size intraclasts; quartz sand ranges from silt to medium; grains range from silt to pebble; well sorted quartz sand; intraclasts; 15 percent interparticle porosity; moderate hydraulic conductivity; hard; intraclasts are pale-yellowish-brown 10YR 6/2 reworked fragments from the 61.0 to 61.8-foot interval below (interval indicates flooding of exposure surface at 61 feet)
61.0 - 61.8	Mollusk lime rudstone with quartz sand-rich lime mudstone matrix, grayish-black N2 to medium-dark-gray N4, pale-yellowish-brown 10YR 6/2; mainly clay-size lime mud and very fine to fine quartz sand; quartz sand ranges from silt to fine; fossils range from silt to pebble; grains range from clay to pebble; well sorted quartz sand; 45 percent quartz sand; 15 percent moldic, root-mold, and small vug porosity; high hydraulic conductivity; mechanically broken lime rudstone; minor fractures; root molds; exposure zone at 61 feet
61.8 - 62.2	Quartz sand, yellowish-gray 5Y 8/1, mainly clay-size lime mud and very fine to fine quartz sand; quartz sand ranges from silt to fine; intraclasts range from medium to pebble; grains range from clay to pebble; intraclasts of mollusk lime rudstone as in interval 61.0 to 61.8 feet; 15 percent interparticle microporosity; low hydraulic conductivity; hard; quartz sand and intraclasts appear to be caved from intervals above
62.2 - 65.0	Mollusk lime floatstone with quartz sand-rich lime mudstone matrix, mottled grayish-black N2 to medium-dark-gray N4 and very pale orange 10YR 6/2 to pale-yellowish-brown 10YR 6/2; mainly clay-size lime mud and very fine to fine quartz sand; quartz sand ranges from silt to fine; fossils range from silt to pebble; grains range from clay to pebble; 45 percent quartz sand; 20 percent micro-vug, root-mold, and moldic porosity; high hydraulic conductivity; hard; lime floatstone mechanically broken throughout interval; micro-vugs form a tripolitic-like texture; root molds lined with laminated calcrete; continuation of exposure zone above
65.0 - 68.5	Mollusk lime floatstone with quartz sand-rich lime mudstone matrix, mottled medium-dark-gray N4 to medium-light-gray N6 and very pale orange 10YR 6/2 to pale-yellowish-brown 10YR 6/2; mainly clay-size lime mud, very fine to fine quartz sand and pebble-size fossils; quartz sand ranges from silt to fine; fossils range from silt to pebble; grains range from clay to pebble; quartz sand; abundant mollusks, minor gastropods; 20 percent micro-vug and root-mold porosity; high hydraulic conductivity; hard; lime floatstone mechanically broken throughout interval; micro-vugs form a tripolitic-like texture; root molds lined with laminated calcrete; continuation of exposure zone above
68.5 - 70.2	Mollusk lime rudstone with quartz sand-rich lime mudstone matrix, mottled medium-light-gray N6 to light-gray N7 and very pale orange 10YR 6/2 to pale-yellowish-brown 10YR 6/2; mainly clay-size lime mud, very fine to fine quartz sand and pebble-size fossils; quartz sand ranges from silt to fine; fossils range from silt to pebble; grains range from clay to pebble; quartz sand; abundant mollusks, minor gastropods, echinoids; 20 percent micro-vug and root-mold porosity; high hydraulic conductivity; hard; lime rudstone mechanically broken throughout interval; micro-vugs form a tripolitic-like texture
70.2 - 73.5	No recovery
73.5 - 74.5	Mollusk lime floatstone with lime wackestone matrix and quartz sand-rich lime mudstone matrix; mottled medium-light-gray N6 to light-gray N7 and very pale orange 10YR 6/2 to pale-yellowish-brown 10YR 6/2; mainly clay-size lime mud, very fine to fine quartz sand and pebble-size fossils; quartz sand ranges from silt to fine; fossils range from silt to pebble; grains range from clay to pebble; 45 percent quartz sand; abundant mollusks, minor gastropods, echinoids, miliolids, coral; 15 percent micro-vug and root-mold porosity; high hydraulic conductivity; hard; lime floatstone mechanically broken throughout interval; root molds; micro-vugs form a tripolitic-like texture
74.5 - 78.5	No recovery

Depth (feet below land surface)	Lithologic description of well C-1178
78.5 - 79.0	Skeletal lime floatstone with quartz sand-rich lime wackestone matrix and quartz sand-rich lime mudstone matrix, mottled medium-light-gray N6 to light-gray N7 and very pale orange 10YR 6/2 to pale-yellowish-brown 10YR 6/2; mainly clay-size lime mud, very fine to fine quartz sand and pebble-size fossils; quartz sand ranges from silt to fine; fossils range from silt to pebble; grains range from clay to pebble; 45 percent quartz sand; abundant skeletal fragments and mollusks; 15 percent micro-vug and root-mold porosity; high hydraulic conductivity; hard; lime floatstone mechanically broken throughout interval; root molds; micro-vugs form a tripolitic-like texture
79.0 - 81.0	No recovery
81.0 - 81.5	Oyster lime rudstone with quartz sand-rich lime wackestone matrix, medium-light-gray N6 to light-gray N7; mainly clay-size lime mud, very fine to fine quartz sand and pebble-size fossils; quartz sand ranges from silt to fine; fossils range from silt to pebble; grains range from clay to pebble; 45 percent quartz sand; abundant oysters; minor bryozoans and serpulids; 15 percent micro-vug, bored and intraparticle porosity; moderate hydraulic conductivity; hard; lime rudstone mechanically broken throughout interval
81.5 - 83.5	No recovery
83.5 - 84.5	Mollusk lime rudstone and floatstone with quartz sand-rich lime mudstone matrix, mottled medium-gray N5 to light-gray N7 and very pale orange 10YR 8/2 to pale-yellowish-brown 10YR 6/2; mainly clay-size lime mud, very fine to fine quartz sand and pebble-size fossils; quartz sand ranges from silt to fine; fossils range from silt to pebble; grains range from clay to pebble; 45 percent quartz sand; abundant mollusks; minor bryozoans; 15 percent micro-vug and intraparticle porosity; high hydraulic conductivity; hard; possible root molds; lime rudstone and floatstone mechanically broken throughout interval; micro-vugs form a tripolitic-like texture
84.5 - 86.0	No recovery
86.0 - 86.5	Mollusk lime rudstone with quartz sand-rich lime wackestone matrix, mottled medium-gray N5 to light-gray N7 and very pale orange 10YR 8/2 to pale-yellowish-brown 10YR 6/2; mainly clay-size lime mud, very fine to fine quartz sand and pebble-size fossils; quartz sand ranges from silt to fine; fossils range from silt to pebble; grains range from clay to pebble; 5 to 45 percent quartz sand; abundant mollusks and skeletal fragments; 15 percent micro- and macro-vug and intraparticle porosity; high hydraulic conductivity; hard; possible root molds; lime rudstone mechanically broken throughout interval
86.5 - 90.0	No recovery
90.0 - 91.5	Oyster lime rudstone with quartz sand-rich skeletal lime packstone matrix, dark-gray N3 to light-gray N7; mainly clay-size lime mud, very fine to fine quartz sand and pebble-size fossils; quartz sand ranges from silt to fine; fossils range from silt to pebble; grains range from clay to pebble; abundant oysters, minor mollusks; 5 to 45 percent quartz sand; 20 percent moldic and micro- to macro-scale vuggy porosity; high hydraulic conductivity; hard; lime rudstone mechanically broken throughout interval
91.5 - 92.5	No recovery
92.5 - 94.5	Mollusk-rich, marly quartz sand, yellowish-gray 5Y 8/1; mainly clay-size marl, very fine to fine quartz sand and granule to pebble-size fossils; quartz sand ranges from silt to fine; fossils range from silt to pebble; grains range from clay to pebble; abundant mollusks, minor gastropods; 65 percent quartz sand; 10 percent interparticle and moldic porosity; low hydraulic conductivity; soft when wet; fossils floating in quartz sand matrix
94.5 - 95.0	No recovery
95.0 - 98.0	Mollusk-rich, marly quartz sand, yellowish-gray 5Y 8/1; mainly clay-size marl, very fine to fine quartz sand and granule to pebble-size fossils; quartz sand ranges from silt to fine; fossils range from silt to pebble; grains range from clay to pebble; abundant mollusks, minor gastropods; 65 percent quartz sand; 10 percent interparticle and moldic porosity; low hydraulic conductivity; soft when wet; fossils floating in quartz sand matrix
98.0 - 98.5	No recovery
98.5 - 99.0	Mollusk-rich, marly quartz sand; yellowish-gray 5Y 7/2; mainly clay-size marl, very fine to fine quartz sand and granule to pebble-size fossils; quartz sand ranges from silt to fine; fossils range from silt to pebble; grains range from clay to pebble; abundant mollusks, minor gastropods; 65 percent quartz sand; 10 percent interparticle and moldic porosity; low hydraulic conductivity; soft when wet; burrowed; fossils floating in quartz sand matrix
99.0 - 99.5	Quartz sand-rich, skeletal fragment, lime wackestone, yellowish-gray 5Y 7/2; mainly clay-size marl and very fine to fine quartz sand; quartz sand ranges from silt to fine; fossils range from silt to pebble; grains range from clay to pebble; abundant skeletal fragments and mollusks; 10 to 60 percent quartz sand; 5 percent interparticle microporosity; very low hydraulic conductivity; hard when wet
99.5 - 103.5	No recovery
103.5 - 103.8	Quartz sand-rich, skeletal fragment, mollusk lime wackestone, yellowish-gray 5Y 7/2; mainly clay-size marl and very fine to fine quartz sand; quartz sand ranges from silt to fine; fossils range from silt to pebble; grains range from clay to pebble; abundant skeletal fragments and mollusks; 10 to 60 percent quartz sand; 5 percent interparticle microporosity; very low hydraulic conductivity; hard when wet

Depth (feet below land surface)	Lithologic description of well C-1178
103.8 - 108.5	No recovery
108.5 - 113.1	Skeletal fragment lime floatstone and rudstone with matrix of skeletal lime wackestone and packstone with marl matrix, yellowish-gray 5Y 8/1; mainly clay-size marl and medium to granule fossils; quartz sand ranges from very fine to fine; grains range from clay to pebble; abundant skeletal fragments, mollusks; trace quartz sand; 10 percent interparticle and moldic porosity; low hydraulic conductivity; soft when wet
113.1 - 115.0	No recovery
115.0 - 119.0	Skeletal fragment lime floatstone and rudstone with matrix of skeletal lime wackestone and packstone with marl matrix; yellowish-gray 5Y 8/1; mainly clay-size marl and medium to granule fossils; grains range from clay to pebble; abundant skeletal fragments, mollusks; minor gastropods, bryozoans, <i>Vermicularia</i> ; 10 percent interparticle and moldic porosity; low hydraulic conductivity; friable; zone of maximum flooding(?)
119.0 - 125.0	Skeletal fragment lime floatstone with matrix of skeletal well-washed lime packstone with marl matrix, medium-light-gray N6 to light-gray N7; mainly medium to pebble fossils; grains range from clay to pebble; abundant skeletal fragments, mollusks; minor <i>Vermicularia</i> , bryozoans, gastropods, oysters, echinoids; 20 percent interparticle and intraparticle porosity; moderate hydraulic conductivity; poorly cemented; friable; cool-water carbonate(?)
125.0 - 130.2	Skeletal fragment lime floatstone with matrix of skeletal well-washed lime packstone with marl matrix, medium-light-gray N6 to light-gray N7; mainly medium to pebble fossils; grains range from clay to pebble; abundant skeletal fragments, mollusks; minor bryozoans, oysters, echinoids; 20 percent interparticle and intraparticle porosity; high hydraulic conductivity; poorly cemented; friable; cool-water carbonate(?)
130.2 - 135.0	Skeletal fragment lime floatstone and rudstone with matrix of skeletal well-washed lime packstone with marl matrix; yellowish-gray 5Y 8/1; mainly medium to pebble fossils; grains range from clay to pebble; abundant skeletal fragments, mollusks; minor bryozoans, gastropods, echinoids; 20 percent interparticle and intraparticle porosity; high hydraulic conductivity; poorly cemented; friable; cool-water carbonate(?)
135.0 - 140.0	Skeletal fragment lime floatstone and rudstone with matrix of skeletal well-washed lime packstone with marl matrix; yellowish-gray 5Y 8/1; mainly medium to pebble fossils; grains range from clay to pebble; abundant skeletal fragments, mollusks; minor bryozoans, gastropods; trace hermatypic coral; 20 percent interparticle and intraparticle porosity; moderate hydraulic conductivity; poorly cemented; friable; cool-water carbonate(?)
140.0 - 142.0	Skeletal fragment lime floatstone and rudstone with matrix of quartz sand-rich skeletal well-washed lime packstone with marl matrix, yellowish-gray 5Y 8/1; mainly medium to pebble fossils; quartz sand ranges from silt to fine; grains range from clay to pebble; abundant skeletal fragments, mollusks; minor bryozoans, <i>Vermicularia</i> ; 10 to 20 percent quartz sand; 20 percent interparticle porosity; moderate hydraulic conductivity; poorly cemented; friable; cool-water carbonate(?)
142.0 - 144.0	Skeletal fragment lime rudstone with matrix of quartz sand-rich skeletal well-washed lime packstone with marl matrix, light-gray N7; mainly clay-size marl, medium to pebble fossils and very fine to medium quartz sand; quartz ranges from silt to medium; grains range from clay to pebble; abundant skeletal fragments, mollusks; 10 to 40 percent quartz sand; 15 percent interparticle porosity; moderate hydraulic conductivity; poorly cemented; friable; cool-water carbonate(?)
144.0 - 145.0	Skeletal fragment lime rudstone and floatstone with matrix of quartz sand-rich skeletal lime packstone with marl matrix, light-gray N7; mainly clay-size marl, medium to pebble fossils and very fine to medium quartz sand; quartz sand ranges from silt to medium; grains range from clay to pebble; abundant skeletal fragments, mollusks; 40 to 70 percent quartz sand; trace to 3 percent phosphorite grains 15 percent interparticle porosity; low hydraulic conductivity; poorly cemented; friable; cool-water carbonate(?)
145.0 - 146.0	Quartz sand, very light gray; mainly very fine to fine quartz sand; minor medium to pebble fossil fragments; quartz sand ranges from very fine to medium; grains range from very fine to pebble; minor mollusks; trace to 3 percent phosphorite grains; 15 percent interparticle porosity; moderate hydraulic conductivity; friable
146.0 - 149.5	Quartz sand, very light gray; mainly very fine to fine quartz sand; quartz sand ranges from very fine to medium; grains range from very fine to pebble; trace to 3 percent phosphorite grains; 15 percent interparticle porosity; moderate hydraulic conductivity; friable
149.5 - 150.0	No recovery

Big Cypress Headquarter's Core

Florida Geological Survey well number	Not applicable
GWSI number	C-1180
Total depth	200 feet
Cored from	0 to 200 feet
County	Collier
Location	SE, NW, sec. 33, T52S, R30E
Latitude	25°53'45"
Longitude	81°19'24"
Elevation	~5 feet
Completion date	February 18, 1998
Other types of available logs	Gamma, spontaneous potential, temperature, long-normal resistivity, short-normal resistivity, fluid resistivity
Owner	U.S. Geological Survey
Driller	U.S. Geological Survey
Core described by	Kevin J. Cunningham (description for 95 to 200 feet is on file with the Geologic Division of the U.S. Geological Survey)
Undifferentiated quartz sand	0 to 5.5 feet
Tamiami Formation	5.5 to 45 feet
Ochopee Limestone Member	5.5 to 45 feet
Unnamed sand	45 to 130 feet
Peace River Formation	130 to 200 feet
Water-table aquifer	0 to 5.5 feet
Gray limestone aquifer	5.5 to 45 feet
Sand aquifer	53 to 130 feet

Depth (feet below land surface)	Lithologic description of well C-1180
0.0 - 1.0	Quartz sand, medium-gray N5; mainly very fine to coarse; ranges from clay to coarse; moderately sorted; mechanically broken fragments of mollusk lime rudstone with skeletal lime packstone and grainstone matrix, very pale orange 10YR 8/2; 15 percent interparticle porosity; low hydraulic conductivity; friable; clay matrix
1.0 - 4.5	No recovery
4.5 - 5.0	Quartz sand, very pale orange 10YR 8/2 to pale yellowish-brown 10YR 6/2; fine to coarse; well sorted; minor skeletal grains; 20 percent interparticle porosity; moderate hydraulic conductivity; friable
5.0 - 5.5	No recovery
5.5 - 6.0	Mollusk lime rudstone with quartz sand-rich lime skeletal grainstone matrix, yellowish-gray 5Y 8/1 to white N9; mainly fine to pebble; ranges from very fine to pebble; 10 to 20 percent very fine to fine quartz sand; mollusks, skeletal fragments; 15 percent moldic and interparticle porosity; moderate hydraulic conductivity; well cemented; hard
6.0 - 8.5	No recovery
8.5 - 9.5	Cuttings of friable, very fine to coarse, well sorted, quartz sand mixed with limestone cuttings, very pale orange 10YR 8/2 to grayish-orange 10YR 7/4 to pale-yellowish-brown 10YR 6/2
9.5 - 10.0	No recovery
10.0 - 10.25	Mollusk lime rudstone with quartz sand-rich lime skeletal grainstone matrix, yellowish-gray 5Y 8/1 to white N9; mainly fine to pebble; ranges from very fine to pebble; 10 to 20 percent very fine to fine quartz sand; skeletal fragments, mollusks; 15 percent moldic and interparticle; moderate hydraulic conductivity; well cemented; hard
10.25 - 15.0	No recovery
15.0 - 17.5	Mollusk lime rudstone with well-washed skeletal lime packstone matrix, yellowish-gray 5Y 8/1 to white N9; mainly medium to pebble; ranges from clay to pebble; skeletal fragments, mollusks, echinoids, oysters; 15 percent interparticle and moldic porosity; moderate hydraulic conductivity; poorly cemented; friable; matrix soft when wet; mechanically broken
17.5 - 19.0	No recovery
19.0 - 20.25	Mollusk lime rudstone with well-washed skeletal lime packstone matrix, yellowish-gray 5Y 8/1 to white N9; mainly medium to pebble; ranges from clay to pebble; skeletal fragments, mollusks, echinoids, oysters; 15 percent interparticle and moldic porosity; moderate hydraulic conductivity; poorly cemented; friable; matrix soft when wet; mechanically broken
20.25 - 22.0	Mollusk lime rudstone with skeletal lime grainstone matrix, yellowish-gray 5Y 8/1 to white N9; medium to pebble; ranges from very fine to pebble; skeletal fragments, mollusks, echinoids, <i>Vermicularia</i> , bryozoans; 15 percent moldic and interparticle; moderate hydraulic conductivity; well cemented with isopachous equant calcite; hard; upper 6 feet is mechanically broken
22.0 - 25.0	No recovery
25.0 - 29.5	Mollusk lime rudstone and floatstone with well-washed skeletal packstone matrix, yellowish-gray 5Y 8/1 to white N9; mainly medium to pebble; ranges from clay to pebble; 5 to 10 percent very fine to fine quartz sand; skeletal fragments, mollusks, echinoids, bryozoans, <i>Vermicularia</i> ; 15 percent interparticle and moldic porosity; moderate hydraulic conductivity; poorly cemented; friable; matrix soft when wet
29.5 - 30.0	No recovery
30.0 - 31.75	Mollusk lime rudstone and floatstone with well-washed skeletal packstone matrix, yellowish-gray 5Y 8/1 to white N9; mainly medium to pebble; ranges from clay to pebble; 5 to 10 percent very fine to fine quartz sand; skeletal fragments, mollusks, echinoids, bryozoans, <i>Vermicularia</i> , barnacles; 15 percent interparticle and moldic porosity; moderate hydraulic conductivity; poorly cemented; friable; matrix soft when wet; mechanically broken
31.75 - 32.25	Mollusk lime rudstone and floatstone with quartz sand matrix, very light gray N8; mainly very fine to pebble size; well sorted quartz sand; 45 percent very fine to fine quartz sand; mollusks and skeletal fragments; 15 percent interparticle and moldic porosity; moderate hydraulic conductivity; poorly cemented, friable
32.25 - 33.0	No recovery
33.0 - 33.75	Mollusk-rich quartz sandstone and loose quartz sand; very light gray N8 to white N9; mainly very fine to fine quartz sand and minor medium quartz sand; grains range from very fine to pebble; well sorted quartz sand; 3 percent very fine to fine black grains; 15 percent interparticle and moldic porosity; moderate hydraulic conductivity; well cemented; mollusks fragments floating in quartz sand; mechanically broken sandstone
33.75 - 35.0	No recovery
35.0 - 36.3	Mollusk-rich quartz sandstone and loose quartz sand, medium-light-gray N6 to white N9; mainly very fine to fine quartz sand and minor medium to coarse quartz sand; grains range from very fine to pebble; well sorted quartz sand; 3 percent very fine to fine black grains; mollusks, echinoids; 15 percent interparticle and moldic porosity; moderate hydraulic conductivity; well cemented; mollusk fragments floating in quartz sand; mechanically broken sandstone
36.3 - 37.0	No recovery

Depth (feet below land surface)	Lithologic description of well C-1180
37.0 - 38.5	Quartz sandstone with framework composed of whole mollusk shells and fragments, yellow-gray 5Y 8/1 and very light gray N8 to white N9; mainly very fine to fine quartz sand with minor medium to coarse quartz sand; grains range from very fine to pebble; well sorted quartz grains; mollusks, trace gastropods; 3 percent very fine to fine black grains; 15 percent interparticle and moldic porosity; moderate hydraulic conductivity; well cemented; hard
38.5 - 40.0	No recovery
40.0 - 42.0	Mollusk fragment-rich quartz sandstone, yellowish-gray 5Y 8/1 and very light gray N8 to white N9; mainly very fine to fine quartz sand with minor medium to very coarse quartz; grains range from very fine to pebble; moderately sorted quartz grains; mollusks, gastropods, coral, bryozoans, serpulids, echinoids; 3 percent very fine to fine black grains; 15 percent interparticle and moldic porosity; moderate hydraulic conductivity; well to moderately cemented; hard; mechanically broken
42.0 - 50.0	No recovery
50.0 - 51.5	Quartz sand, light-olive-gray 5Y 5/2; mainly fine to medium quartz sand with minor very fine quartz sand; well sorted; trace mollusks; less than 3 percent very fine black grains; 20 percent interparticle porosity; low hydraulic conductivity; trace clay matrix; burrowed
51.5 - 52.0	Quartz sand, yellowish-gray 5Y 7/2; mainly fine to medium quartz sand with minor coarse quartz sand; grains range from fine to pebble; moderately sorted quartz grains; 40 percent thick-shelled mollusk fragments; less than 3 percent very fine to fine black grains; 20 percent interparticle porosity; low hydraulic conductivity
52.0 - 53.0	No recovery
53.0 - 54.0	Quartz sand, yellowish-gray 5Y 7/2; mainly fine to medium quartz sand with minor coarse to very coarse quartz sand; grains range from fine to pebble; moderately to well sorted quartz sand; 30 percent mollusk fragments and minor gastropods; 3 percent very fine to fine black grains; 20 percent interparticle porosity; moderate hydraulic conductivity; mainly very pale orange 10YR 8/2 thin to thick mollusk shells and minor medium-light-gray N6 to light-gray N7 mollusk shells
54.0 - 55.0	No recovery
55.0 - 59.0	Quartz sand, yellowish-gray 5Y 7/2 to very pale orange 10YR 8/2; mainly fine quartz sand with minor medium quartz sand; medium to small pebble mollusk fragments; grains range from fine to pebble; well sorted quartz sand; mollusks and minor gastropods; 3 percent fine black grains; 20 percent interparticle porosity; moderate hydraulic conductivity; thin to moderately thick, very pale orange 10YR 8/2 mollusk shells; friable
59.0 - 60.0	No recovery
60.0 - 65.0	Quartz sand, yellowish-gray 5Y 8/1 to very pale orange 10YR 8/2; mainly fine to medium quartz grains with coarse quartz grains; grains range from fine to pebble; well sorted; 20 percent mollusks and minor gastropods; 3 percent fine black grains; 20 percent interparticle porosity; moderate hydraulic conductivity; thin to moderately thick, very pale orange 10YR 8/2 and medium-light-gray N6 to light-gray N7 shells
65.0 - 66.0	No recovery
66.0 - 69.2	Quartz sand, yellowish-gray 5Y 8/1 to very pale orange 10YR 8/2; mainly fine to medium quartz grains with minor coarse quartz; grains range from fine to pebble; well sorted quartz grains; poorly sorted mix of quartz sand and shells; 40 percent mollusk shells and minor gastropods and echinoids; less than 3 percent very fine to fine black grains; 20 percent interparticle porosity; low hydraulic conductivity; thin to thick, very pale orange 10YR 8/2 and medium-light-gray N6 to light-gray N7 shells
69.2 - 70.0	No recovery
70.0 - 72.0	Quartz sand, yellowish-gray 5Y 8/1 to very pale orange 10YR 8/2; mainly fine to medium quartz grains with minor coarse quartz; grains range from clay to pebble; well sorted quartz grains; poorly sorted mix of quartz sand and shells; 40 percent mollusk shells and minor gastropods and echinoids; less than 3 percent very fine to fine black grains; 20 percent interparticle porosity; low hydraulic conductivity; thin to thick, very pale orange 10YR 8/2 and medium-light-gray N6 to light-gray N7 shells; minor lime mud matrix
72.0 - 72.5	No recovery
72.5 - 78.5	Quartz sand, yellowish-gray 5Y 8/1 to light-olive-gray 5Y 6/1; mainly fine to medium quartz grains with minor coarse quartz sand; grains range from clay to pebble; well sorted quartz grains; poorly sorted mix of quartz sand and shells; 45 percent mollusks; 3 percent very fine to fine undifferentiated black grains and medium to coarse black phosphorite grains; 15 percent interparticle porosity; low hydraulic conductivity; mainly thick, very pale orange 10YR 8/2 mollusks; minor clay matrix
78.5 - 80.0	No recovery
80.0 - 82.75	Quartz sand, yellowish-gray 5Y 8/1 to light-olive-gray 5Y 6/1; mainly fine to medium quartz grains with minor very fine and coarse to small pebble; grains range from very fine to pebble; well sorted quartz grains; poorly sorted mix of quartz sand and shells; mollusks; 3 percent very fine to fine undifferentiated black grains and medium to small pebble-size phosphorite grains; 15 percent interparticle porosity; moderate hydraulic conductivity; thin to thick, very pale orange 10YR 8/2 mollusk shells

Depth (feet below land surface)	Lithologic description of well C-1180
82.75 - 85.5	Quartz sand, yellowish-gray 5Y 8/1 to light-olive-gray 5Y 6/1; mainly fine to medium quartz grains with minor very fine and coarse to small pebble; grains range from very fine to pebble; well sorted quartz grains; poorly sorted mix of quartz sand and shells; 10 percent mollusks; 3 percent very fine to fine undifferentiated black grains and medium to small pebble-size phosphorite grains; 20 percent interparticle porosity; moderate hydraulic conductivity; thin to thick, very pale orange 10YR 8/2 mollusk shells
85.5 - 94.0	Quartz sand, yellowish-gray 5Y 8/1 to very light gray N8; mainly fine to medium quartz grains with minor very fine and coarse; grains range from very fine to coarse; well sorted quartz grains; poorly sorted mix of quartz sand and shells; 3 percent very fine to fine undifferentiated black grains and medium to coarse phosphorite grains; 20 percent interparticle porosity; moderate hydraulic conductivity
94.0 - 95.0	No recovery

Cypress Lane Core

Florida Geological Survey well number	Not applicable
GWSI number	C-1181
Total depth	200 feet
Cored from	0 to 200 feet
County	Collier
Location	SW, sec. 35, T49S, R31E
Latitude	26°10'02"
Longitude	81°12'03"
Elevation	17 feet
Completion date	March 12, 1998
Other types of available logs	Gamma ray, induction, neutron
Owner	U.S. Geological Survey
Driller	U.S. Geological Survey
Core described by	Kevin J. Cunningham (description for 100 to 200 feet is on file with the Geologic Division of the U.S. Geological Survey).
Undifferentiated limestone and quartz sand	0 to 10 feet
Tamiami Formation	10 to 99 feet
Pinecrest Sand Member	10 to 41.5 feet
Ochopee Limestone Member	41.5 to 99 feet
Top of unnamed sand	99 feet
Water-table aquifer	0 to 10 feet
Upper confining unit	10 to 41.5 feet
Gray limestone aquifer	41.5 to 99 feet
Lower confining unit	99 to 163 feet
Sand aquifer	163 to 182 feet
Confining unit	182 to 200 feet

Depth (feet below land surface)	Lithologic description of well C-1181
0.0 - 0.25	Quartz sand-rich lime mudstone, grayish-orange 10YR 7/4, dark-yellowish-orange 10YR 6/6; mainly clay-size lime mud and very fine to fine quartz sand; ranges from clay to pebble; 20 percent very fine to fine quartz sand; 5 percent interparticle porosity; very low hydraulic conductivity; glaebules(?) with circumgranular cracking
0.25 - 0.75	Mollusk lime floatstone and rudstone with skeletal fragment lime grainstone matrix; mainly medium to pebble-size fossils; ranges from clay to pebble; mollusks, skeletal fragments, echinoids; 20 percent interparticle porosity; moderate hydraulic conductivity
0.75 - 9.25	No recovery
9.25 - 10.0	Mechanically mixed fragments of mollusk lime rudstone with quartz sand-rich skeletal lime matrix and loose quartz sand, very pale orange 10YR 8/2, grayish-orange 10YR 7/4; mainly very fine to fine quartz sand and medium sand to pebble-size fossils; ranges from very fine to fine; 20 percent very fine to fine quartz sand; skeletal fragments, mollusks, echinoids; 20 percent interparticle and intraparticle porosity; moderate hydraulic conductivity
10.0 - 13.0	Quartz sand; yellowish-gray 5Y 8/1; mainly very fine quartz sand; ranges from clay to very fine; 3 percent very fine black grains (heavy minerals?); minor silt and clay; trace skeletal fragments; 15 percent interparticle porosity; low hydraulic conductivity; minor silt and clay matrix; soft when wet; minor ripple cross laminations
13.0 - 18.0	Quartz sand, yellowish-gray 5Y 8/1; mainly very fine quartz sand; ranges from clay to very fine; 3 percent very fine black grains (probably heavy minerals); skeletal grains; 15 percent interparticle porosity; low hydraulic conductivity; minor silt and clay matrix; soft when wet; minor ripple cross laminations
18.0 - 20.0	No recovery
20.0 - 23.25	Quartz sand, yellowish-gray 5Y 8/1; mainly very fine quartz sand; ranges from clay to pebble; mollusks, oysters, bryozoans; 3 percent very fine black grains (probably heavy minerals); 15 percent interparticle porosity; low hydraulic conductivity; minor silt and clay matrix; soft when wet; fossil fragments floating in quartz sand matrix
23.25 - 29.0	Quartz sand, yellowish-gray 5Y 8/1; mainly very fine quartz sand; ranges from clay to very fine; trace skeletal fragments; trace mica; 3 percent very fine black grains (probably heavy minerals); 15 percent interparticle porosity; low hydraulic conductivity; silt and clay matrix; soft when wet
29.0 - 30.0	Quartz sand, yellowish-gray 5Y 8/1; mainly very fine quartz sand; ranges from clay to pebble; abundant skeletal fragments, minor mollusks and oysters; 3 percent very fine black grains (probably heavy minerals); 15 percent porosity; low hydraulic conductivity; silt and clay matrix; soft when wet; fossils floating in quartz sand matrix
30.0 - 34.0	Quartz sand, yellowish-gray 5Y 7/2; mainly very fine quartz sand; ranges from clay to pebble; abundant skeletal fragments, minor mollusks and oysters; 3 percent very fine black grains (probably heavy minerals); 10 percent porosity; low hydraulic conductivity; abundant silt and clay matrix; soft when wet; fossils floating in quartz sand matrix
34.0 - 35.0	No recovery
35.0 - 37.0	Quartz sand, yellowish-gray 5Y 7/2; mainly very fine quartz sand; ranges from clay to pebble; abundant skeletal fragments, minor mollusks; 3 percent very fine black grains (probably heavy minerals); 5 percent interparticle porosity; low hydraulic conductivity; abundant silt and clay matrix; soft when wet; fossils floating in quartz sand matrix
37.0 - 39.0	Terrigenous mudstone, pale-olive 10Y 6/2; mainly terrigenous clay and silt-size quartz grains; ranges from clay to granule; benthic forams, mollusks, skeletal fragments; silt and very fine quartz sand; 5 percent interparticle porosity; very low hydraulic conductivity; minor ripple cross laminations; fossils floating in mudstone
39.0 - 40.1	Terrigenous mudstone, light-olive-gray 5Y 5/2; mainly terrigenous clay and silt-size quartz grains; ranges from clay to granule; benthic forams, mollusks, skeletal fragments; silt and very fine quartz sand; 5 percent interparticle porosity; very low hydraulic conductivity; minor ripple cross laminations; fossils floating in mudstone
40.1 - 41.5	Phosphorite grains and quartz sand in terrigenous clay matrix, light-olive-gray 5Y 6/1; mainly fine sand to small pebble-size phosphorite grains, silt to medium quartz sand and terrigenous clay; ranges from clay to pebble; 10 percent interparticle porosity; very low hydraulic conductivity
41.5 - 42.0	Mollusk lime rudstone with skeletal lime packstone matrix, yellowish-gray 5Y 7/2 to black N1 to medium-light-gray N6; mainly medium to pebble-size fossils; ranges from clay to pebble; mollusks, skeletal fragments, bryozoans; 15 percent interparticle, intraparticle and moldic porosity; medium hydraulic conductivity; probably surface of maximum starvation; black-colored rock is phosphorite or chert, but possibly blackened calcrete
42.0 - 49.0	Skeletal fragment lime rudstone with well-washed skeletal lime packstone matrix, yellow-gray 5Y 8/1; mainly medium to pebble-size fossils; ranges from clay to pebble; skeletal fragments, mollusks, bryozoans, echinoids; 15 percent interparticle, intraparticle and moldic; medium hydraulic conductivity; poorly cemented; friable; soft when wet
49.0 - 50.0	No recovery
50.0 - 51.5	Skeletal fragment lime mudstone with matrix of skeletal fragment lime packstone with terrigenous mudstone matrix; medium-light-gray N6 to light-gray N7, light-olive-gray 5Y 6/1 clay matrix; mainly clay to pebble size; ranges from clay to pebble size; skeletal fragments, mollusks; 15 percent interparticle and moldic porosity; low hydraulic conductivity; poorly cemented; friable; soft when wet; locally well cemented and hard
51.5 - 55.0	No recovery

Depth (feet below land surface)	Lithologic description of well C-1181
55.0 - 57.5	Skeletal lime rudstone with well-washed lime packstone matrix, medium-light-gray N6 to very light gray N8 to yellowish-gray 5Y 8/1; mainly medium to pebble-size fossils; ranges from clay to pebble; skeletal fragments, mollusks; 10 percent very fine to fine quartz sand; 15 percent interparticle and moldic porosity; moderate hydraulic conductivity; poorly cemented; friable; soft when wet
57.5 - 60.0	No recovery
60.0 - 63.0	Skeletal lime rudstone with quartz sand-rich skeletal lime packstone matrix, medium light-gray N6 to very light gray N8; mainly medium to pebble-size fossils; ranges from clay to pebble; skeletal fragments, mollusks, bryozoans, echinoids; 20 percent very fine to medium quartz sand; 15 percent interparticle and moldic porosity; moderate hydraulic conductivity; poorly to well cemented; locally friable; soft to hard when wet
63.0 - 65.0	No recovery
65.0 - 65.25	Skeletal lime rudstone with quartz sand-rich skeletal lime packstone matrix, medium-light-gray N6 to very light gray N8; mainly medium to pebble-size fossils; ranges from clay to pebble; skeletal fragments, mollusks, bryozoans, echinoids; 20 percent very fine to medium quartz sand; 15 percent interparticle and moldic porosity; moderate hydraulic conductivity; poorly to well cemented; locally friable; soft to hard when wet
65.25 - 72.2	Mollusk lime rudstone with quartz sand matrix, very light gray N8 to white N9; mainly very fine to fine quartz sand and medium sand to pebble-size fossils; ranges from very fine to pebble; mollusks, skeletal fragments; 60 percent very fine to fine quartz sand; 15 percent interparticle porosity; moderate hydraulic conductivity; poorly cemented; friable; soft to moderately hard when wet
72.2 - 77.0	Mollusk lime floatstone with quartz sand-rich skeletal fragment well-washed lime packstone matrix, medium-gray N5 to white N9; mainly very fine to fine quartz sand and medium sand to pebble-size fossils; ranges from clay to pebble; skeletal fragments, mollusks, echinoids; 40 percent very fine to fine quartz sand; 15 percent interparticle porosity; moderate hydraulic conductivity; poorly cemented, friable; soft to moderately hard when wet
77.0 - 79.5	Mollusk lime rudstone and floatstone with quartz sand-rich skeletal lime packstone, light-gray N7 to very light gray N8; mainly clay to pebble; mollusks, skeletal fragments; 20 to 40 percent very fine to fine quartz sand; 10 percent moldic and interparticle porosity; low hydraulic conductivity; poorly to moderately cemented; locally friable
79.5 - 80.0	No recovery
80.0 - 82.0	Mollusk lime rudstone and floatstone with quartz sand-rich skeletal lime packstone, very light gray N8; mainly clay to pebble; mollusks, skeletal fragments; 20 to 40 percent very fine to fine quartz sand; 10 percent moldic and interparticle porosity; low hydraulic conductivity; poorly to moderately cemented; locally friable
82.0 - 87.7	Mollusk lime rudstone and floatstone with quartz sand-rich well-washed skeletal lime packstone matrix, yellowish-gray 5Y 8/1; mainly very fine to fine quartz sand and medium sand to pebble-size fossils; ranges from clay to pebble; mollusks, skeletal fragments; 20 to 40 percent very fine to fine quartz sand; 15 percent interparticle and moldic porosity; moderate hydraulic conductivity; poorly cemented; friable; soft to moderately hard when wet
87.7 - 89.0	Mollusk lime rudstone and floatstone with quartz sand-rich well-washed skeletal lime packstone matrix, very light gray N8; mainly very fine to fine quartz sand and medium sand to pebble-size fossils; ranges from clay to pebble; mollusks, skeletal fragments; 20 to 40 percent very fine to fine quartz sand; 15 percent interparticle and moldic porosity; moderate hydraulic conductivity; poorly cemented; friable; soft to moderately hard when wet
89.0 - 90.0	No recovery
90.0 - 98.5	Mollusk lime rudstone with matrix of quartz sand-rich skeletal lime packstone and well-washed quartz sand-rich skeletal lime packstone, yellowish-gray 5Y 8/1; mainly very fine to fine quartz sand and medium sand to pebble-size quartz fossils; minor medium to very coarse quartz sand; ranges from clay to pebble; mollusks, skeletal fragments, gastropods; 20 to 45 percent very fine to fine quartz sand; trace medium to small pebble-size black phosphorite grains; 15 percent interparticle and moldic porosity; moderate hydraulic conductivity; poorly cemented; friable; soft to moderately hard when wet
98.5 - 99.0	Mollusk lime rudstone with matrix of quartz sand-rich skeletal lime packstone and well-washed quartz sand-rich skeletal lime packstone, light-gray N7; mainly very fine to fine quartz sand and medium sand to pebble-size quartz fossils; minor medium to very coarse quartz sand; ranges from clay to pebble; mollusks, skeletal fragments, gastropods; 20 to 45 percent very fine to fine quartz sand; trace medium to small pebble-size black phosphorite grains; 15 percent interparticle and moldic porosity; moderate hydraulic conductivity; poorly cemented; friable; soft to moderately hard when wet
99.0 - 99.5	Quartz sand, yellowish-gray 5Y 8/1; mainly very fine quartz sand; ranges from silt to coarse; minor mollusks; 3 to 10 percent very fine black phosphorite grains; 15 percent interparticle porosity; moderate hydraulic conductivity; poorly cemented; friable; soft when wet; marine sands; appears conformable with overlying limestone
99.0 - 100.0	Quartz sand, light-olive-gray 5Y 6/1; mainly very fine quartz sand; ranges from silt to coarse; minor mollusks; 3 to 10 percent very fine black phosphorite grains; 15 percent interparticle porosity; moderate hydraulic conductivity; poorly cemented; friable; soft when wet; marine sands

Alligator Alley East Core

Florida Geological Survey well number	W-17749
GWSI number	C-1182
Total depth	200 feet
Cored from	0 to 200 feet
County	Collier
Location	NW, NW, sec. 1, T50S, R33E
Latitude	26°10'11"
Longitude	80°59'21"
Elevation	13 feet
Completion date	May 30, 1998
Other types of logs available	Gamma ray, induction, single-point resistivity, spontaneous potential
Owner	U.S. Geological Survey
Driller	Florida Geological Survey
Core described by	Kevin J. Cunningham
Undifferentiated limestone	0 to 3.7 feet
Tamiami Formation	3.7 to 128 feet (128 feet picked from gamma-ray log)
Pinecrest Sand Member	3.7 to 74 feet
Ochopee Limestone Member	74 to 125 feet
Unnamed formation	125 to 145.5 feet
Top of Peace River Formation	145.5 to 199.8 feet
Upper confining unit	0 to 74 feet
Gray limestone aquifer	74 to 125 feet
Top of lower confining unit	125 feet

Depth (feet below land surface)	Lithologic description of well C-1182
0.0 - 3.7	Quartz sand-rich, pelecypod lime wackestone, very pale orange 10YR 8/2, grayish-orange 10YR 7/4, dark-yellowish-orange 10YR 6/6, moderate-yellowish-brown 10YR 5/4; mainly clay-size lime mudstone and very fine to fine quartz sand, minor silt-size quartz and medium sand to pebble-size fossils; 10 percent quartz sand; 5 percent moldic porosity; low hydraulic conductivity; shallow marine; drilled with rotary cone bit from 0 to 3.7 feet; results from observation cuttings between 0 and 3.7 feet
3.7 - 4.8	Quartz sand, very pale orange 10YR 8/2, yellowish-gray 5Y 8/1; mainly very fine to fine quartz sand and sand to pebble-size fossil fragments; minor medium sand to pebble-size fossils, silt and medium to coarse quartz sand and very fine sand size phosphorite and heavy mineral grains; very well sorted quartz sand; angular to subangular very fine to fine sand-size quartz; subangular to subrounded, medium to coarse sand-size quartz; 35 percent broken pelecypods and caved rock fragments; trace black N1 phosphorite and heavy mineral grains; 10 percent interparticle porosity; low hydraulic conductivity; shallow-marine siliciclastic shelf; minor lime mud matrix; soft when wet; friable; abundant caved rock fragments; massive with no apparent bedding
4.8 - 5.8	Quartz sand, mottled very pale orange 10YR 8/2, grayish-orange 10YR 7/4; dark-yellowish-orange 10YR 6/6; mainly very fine to fine quartz sand; minor terrigenous clay, silt-size quartz sand, medium sand to pebble-size fossils and very fine phosphorite and heavy mineral grains; very well sorted quartz sand; angular to subangular quartz sand; 20 percent skeletal and pelecypods fragments; trace black N1 phosphorite and heavy mineral grains; 15 percent intergranular porosity; low hydraulic conductivity; shallow-marine siliciclastic shelf; trace terrigenous clay matrix; soft when wet; friable; massive with no apparent bedding
5.8 - 8.0	No recovery
8.0 - 11.3	Quartz sand, mottled very pale orange 10YR 8/2, grayish-orange 10YR 7/4; dark-yellowish-orange 10YR 6/6; mainly very fine quartz sand; minor terrigenous clay, silt and fine quartz sand, medium sand and pebble-size fossils and very fine sand-size phosphorite and heavy mineral grains; very well sorted quartz sand; angular to subangular quartz sand; 5 percent broken pelecypod fragments (possible cave from above) and rock fragments (cave from above); trace black N1 phosphorite grains and heavy mineral grains; trace mica; 15 percent interparticle porosity; low hydraulic conductivity; shallow-marine siliciclastic shelf; trace terrigenous clay matrix; soft when wet; friable; massive with no apparent bedding
11.3 - 13.0	No recovery
13.0 - 17.0	Quartz sand, yellowish-gray 5Y 8/1; minor mottling with grayish-orange 10YR 7/4; mainly very fine quartz sand; minor terrigenous clay, silt, and fine quartz sand, medium sand- and granule-size fossils and very fine sand-size phosphorite and heavy mineral grains; very well sorted quartz sand; angular to subangular quartz sand; trace skeletal fragments; trace mica; 1 percent black N1 phosphorite and heavy mineral grains; 15 percent interparticle porosity; low hydraulic conductivity; shallow-marine siliciclastic shelf; trace terrigenous clay matrix; soft when wet; friable; massive with no apparent bedding
17.0 - 18.0	No recovery
18.0 - 20.0	Quartz sand, yellowish-gray 5Y 8/1; minor mottling with grayish-orange 10YR 7/4; mainly very fine quartz sand; minor terrigenous clay, silt, and fine quartz sand; medium sand and granule-size fossils and very fine sand-size phosphorite and heavy mineral grains; very well sorted quartz sand; angular to subangular quartz sand; trace skeletal fragments; trace mica; 1 percent black N1 phosphorite and heavy mineral grains; 15 percent interparticle porosity; low hydraulic conductivity; shallow-marine siliciclastic shelf; trace terrigenous clay matrix; soft when wet; friable; massive with no apparent bedding
20.0 - 23.0	No recovery
23.0 - 25.0	Quartz sand, yellowish-gray 5Y 8/1, minor mottling with grayish-orange 10YR 7/4; mainly very fine quartz sand and terrigenous clay; minor silt and fine quartz sand, medium sand and granule-size fossils and very fine sand-size phosphorite and heavy mineral grains; very well sorted quartz sand; angular to subangular quartz sand; trace skeletal and pelecypods fragments; trace mica; 1 percent black N1 phosphorite and heavy mineral grains; 5 percent interparticle porosity; low hydraulic conductivity; shallow-marine siliciclastic shelf; minor terrigenous clay matrix; soft when wet; friable; burrowed; massive with no apparent bedding
25.0 - 28.0	No recovery
28.0 - 42.0	Quartz sand, yellowish-gray 5Y 8/1; minor mottling with moderate-orange-pink 5YR 8/4 and moderate-yellow 5Y 7/6; mainly very fine quartz sand; minor terrigenous clay, minor silt and fine quartz sand, medium sand and granule-size fossils and very fine sand-size phosphorite and heavy mineral grains; very well sorted quartz sand; angular to subangular quartz sand; trace skeletal and pelecypods fragments; trace mica; 1 percent black N1 phosphorite and heavy mineral grains; 10 percent interparticle porosity; low hydraulic conductivity; shallow-marine siliciclastic shelf; minor terrigenous clay matrix; soft when wet; friable; burrowed; massive with no apparent bedding
42.0 - 47.0	Quartz sand, yellowish-gray 5Y 7/2; mainly very fine quartz sand; minor terrigenous clay, minor silt-size quartz sand, medium sand and granule-size fossils and very fine sand-size phosphorite and heavy mineral grains; very well sorted quartz sand; angular to subangular quartz sand; trace skeletal and pelecypods fragments; trace mica; 1 percent black N1 phosphorite and heavy mineral grains; 10 percent interparticle porosity; low hydraulic conductivity; shallow-marine siliciclastic shelf; minor terrigenous clay matrix; soft when wet; friable; burrowed; massive with no apparent bedding
47.0 - 51.5	No recovery

Depth (feet below land surface)	Lithologic description of well C-1182
51.5 - 52.5	Terrigenous clay-rich quartz sand, yellowish-gray 5Y 7/2; mainly terrigenous clay and very fine quartz sand; minor silt-size quartz sand and very fine sand-size phosphorite and heavy mineral grains; very well sorted quartz sand; angular to subangular quartz sand; trace skeletal fragments; trace black N1 phosphorite and heavy mineral grains; 5 percent interparticle porosity; very low hydraulic conductivity; shallow marine below wave base; abundant terrigenous clay matrix; soft when wet; cohesive when wet
52.5 - 53.8	Terrigenous mudstone, yellowish-gray 5Y 7/2, light-olive-gray 5Y 6/1; mainly terrigenous clay; minor silt to very fine quartz sand and very fine to fine sand-size black phosphorite grains; very well sorted quartz sand; angular to subangular quartz sand; trace fish scales; 3 percent black N1 phosphorite grains; 5 percent interparticle porosity; very low hydraulic conductivity; marine below storm-wave base(?), prodelta(?); thin laminations; soft when wet; top of unit is maximum flooding surface
53.8 - 54.5	Quartz sand, yellowish-gray 5Y 7/2, light-olive-gray 5Y 6/1; mainly very fine quartz sand; minor terrigenous clay, silt, and very fine and medium to coarse quartz sand and very fine sand-size phosphorite grains; well sorted quartz sand; angular to subangular quartz sand; 3 percent black N1 phosphorite grains; trace mica; 10 percent interparticle porosity; low hydraulic conductivity; marine above storm-wave base; soft when wet
54.5 - 57.0	Terrigenous mudstone, light-olive-gray 5Y 6/1; mainly terrigenous clay; minor silt and very fine quartz sand; very fine sand-size phosphorite grains; very well sorted quartz sand; angular to subangular quartz sand; trace black N1 phosphorite grains; fish scales; 5 percent interparticle porosity; very low hydraulic conductivity; marine below storm wave base(?), prodelta(?); very fine laminations; soft when wet
57.0 - 62.0	Terrigenous mudstone, light-olive-gray 5Y 5/2; mainly terrigenous clay; minor silt-size quartz sand; very fine sand-size phosphorite grains; trace fish scales, mica and black N1 phosphorite grains; 5 percent interparticle porosity; very low hydraulic conductivity; marine below storm wave base(?), prodelta(?); soft when wet
62.0 - 63.0	Quartz sandstone, light-olive-gray 5Y 5/2; mainly terrigenous clay and silt to very fine quartz sand; minor pebble-size skeletal fragments and phosphorite grains that are mainly very fine sand size with minor fine to medium sand size; mainly very fine sand-size phosphorite grains with minor fine to medium sand-size grains; trace black N1 phosphorite grains, mica and skeletal fragments; 5 percent interparticle porosity; very low hydraulic conductivity; marine above storm wave base(?), prodelta(?); soft when wet; abundant terrigenous clay matrix
63.0 - 65.0	Terrigenous mudstone, light-olive-gray 5Y 6/1; mainly terrigenous clay; minor silt to very fine sand-size quartz sand, and mainly very fine sand-size phosphorite grains with minor fine to medium sand-size grains; moderately sorted quartz sand; angular to subangular; 20 percent quartz sand; trace black N1 phosphorite grains, mica and fish scales; 5 percent interparticle porosity; very low hydraulic conductivity; marine below storm wave base(?), prodelta(?); soft when wet
65.0 - 66.0	Terrigenous mudstone, light-olive-gray 5Y 6/1; mainly terrigenous clay; minor quartz sand that is mainly very fine to fine quartz sand and silt- and medium to very coarse quartz sand, and mainly very fine sand-size phosphorite grains with minor fine to medium sand-size grains; moderately sorted quartz sand; angular to subangular silt to fine sand-size quartz sand and subangular to subrounded medium to very coarse quartz sand; 20 to 40 percent quartz sand; trace black N1 phosphorite grains, mica and pelecypods; 5 percent interparticle porosity; very low hydraulic conductivity; marine below storm wave base(?), prodelta(?); soft when wet; quartz sand floating mudstone matrix
66.0 - 67.0	Terrigenous mudstone, yellowish-gray 5Y 7/2; mainly terrigenous clay; minor quartz sand that is mainly very fine to fine quartz sand and silt and medium to very coarse quartz sand, and mainly very fine sand-size phosphorite grains with minor fine to medium sand-size grains; moderately sorted quartz sand; angular to subangular silt- to fine sand-size quartz sand and subangular to subrounded medium to very coarse quartz sand; 20 to 40 percent quartz sand; trace black N1 phosphorite grains, mica and pelecypods; 5 percent interparticle porosity; very low hydraulic conductivity; marine below storm wave base(?), prodelta(?); soft when wet; quartz sand floating mudstone matrix
67.0 - 68.0	Terrigenous mudstone, yellowish-gray 5Y 7/2; mainly terrigenous clay; mainly very fine to fine quartz sand, silt and medium to coarse quartz sand, and very fine sand-size phosphorite grains; moderately sorted quartz sand; angular to subangular silt to fine quartz sand and subangular to subrounded medium to very coarse quartz sand; 20 to 40 percent quartz sand; trace black N1 phosphorite grains, mica and pelecypods; 5 percent interparticle porosity; very low hydraulic conductivity; marine below storm wave base(?), soft when wet; quartz sand floating mudstone matrix
68.0 - 70.0	Terrigenous mudstone, yellowish-gray 5Y 8/1; mainly terrigenous clay; minor quartz sand that is mainly very fine to fine silt and medium to coarse, and very fine sand-size phosphorite grains; moderately sorted quartz sand; angular to subangular silt to fine quartz sand and subangular to subrounded medium to very coarse quartz sand; 20 to 40 percent quartz sand; trace black N1 phosphorite grains, mica and pelecypods; 5 percent interparticle porosity; very low hydraulic conductivity; marine below storm wave base(?); soft when wet; quartz sand floating mudstone matrix
70.0 - 73.0	Quartz sandstone, yellowish-gray 5Y 8/1; mainly medium to coarse quartz sand and terrigenous clay; minor silt to fine quartz sand and very fine to coarse sand-size phosphorite grains; well sorted quartz sand; subangular to subrounded quartz sand; 10 to 30 percent pelecypod fragments and disarticulated valves; trace black N1 phosphorite grains and mica; 10 percent interparticle porosity; low hydraulic conductivity; marine below storm wave base(?); soft when wet; some quartz sand floating mudstone matrix or grain supported with abundant mud matrix

Depth (feet below land surface)	Lithologic description of well C-1182
73.0 - 74.0	Quartz sandstone, yellowish-gray 5Y 7/2; mainly medium to coarse quartz sand and terrigenous clay; minor silt to fine quartz sand and very fine to coarse sand-size phosphorite grains; well sorted quartz sand; subangular to subrounded quartz sand; 10 to 30 percent pelecypod fragments and disarticulated valves; trace black N1 phosphorite grains and mica; 10 percent interparticle porosity; low hydraulic conductivity; marine below storm wave base(?); soft when wet; some quartz sand floating mudstone matrix or grain supported with abundant mud matrix
74.0 - 76.5	Pelecypod lime rudstone with skeletal lime grainstone and mud-dominated lime packstone matrix, light-gray N7, yellowish-gray 5Y 8/1; mainly medium sand and pebble-size fossils; minor clay-size lime mudstone and silt to medium sand-size fossils; skeletal fragments, pelecypods, encrusting and branching bryozoans and barnacles; 25 percent interparticle, intraparticle, moldic, and bored porosity; moderate hydraulic conductivity; ramp; soft to moderately hard when wet; friable to moderately friable; blackened upper bounding surface with 0.5-inch microtopography, either maximum starvation surface or blackened exposure surface
76.5 - 79.0	No recovery
79.0 - 83.0	Pelecypod lime rudstone and floatstone with skeletal lime grain-dominated lime packstone and skeletal lime grainstone matrix; light-gray N7; mainly medium sand and pebble-size fossils; minor clay-size lime mudstone and silt to fine sand-size fossils; skeletal fragments, pelecypods, encrusting and branching bryozoans, sand dollars, serpulids and gastropods; 30 percent interparticle, moldic, intraparticle and bored porosity; high hydraulic conductivity; ramp; moderately hard to hard when wet
83.0 - 83.7	No recovery
83.7 - 88.0	Pelecypod lime rudstone and floatstone with skeletal grain-dominated lime packstone and grainstone matrix, light-gray N7, yellowish-gray 5Y 8/1; mainly medium sand and pebble-size fossils; minor clay-size lime mudstone and silt to fine sand-size fossils, very fine to fine quartz sand and very fine sand-size phosphorite and heavy mineral grains; very well sorted quartz sand; angular to subrounded quartz sand; skeletal fragments, pelecypods, encrusting and branching bryozoans, serpulids and gastropods; trace to 10 percent quartz sand; trace black N1 phosphorite and heavy mineral grains; 30 percent interparticle, moldic, intraparticle and bored porosity; high hydraulic conductivity; ramp; hard when wet
88.0 - 91.0	No recovery
91.0 - 95.2	Pelecypod lime rudstone and floatstone with skeletal grain-dominated lime packstone and mud-dominated packstone matrix, light-gray N7 to very light gray N8, yellowish-gray 5Y 8/1; mainly medium sand and pebble-size fossils and clay-size lime mudstone; minor silt to fine sand-size fossils, very fine to coarse (mainly very fine to fine) sand-size quartz sand, and very fine sand-size phosphorite and heavy mineral grains; well sorted quartz sand; angular to subrounded quartz sand; skeletal fragments, pelecypods, sand dollars, and <i>Vermicularia</i> ; trace to 30 percent quartz sand; trace black N1 phosphorite and heavy mineral grains; 30 percent interparticle, moldic, intraparticle, bored, and shelter porosity; high hydraulic conductivity; ramp; hard to moderately hard when wet
95.2 - 97.0	No recovery
97.0 - 99.5	Pelecypod lime rudstone and floatstone with skeletal grainstone matrix, light-gray N7 to very light gray N8, yellowish-gray 5Y 8/1; mainly medium sand and pebble-size fossils; minor silt to fine sand-size fossils, very fine to coarse (mainly very fine to fine) quartz sand, and very fine sand-size phosphorite and heavy mineral grains; well sorted quartz sand; angular to subrounded quartz sand; skeletal fragments, pelecypods, serpulids, <i>Vermicularia</i> , gastropods, and trace coral; 10 percent quartz sand; trace black N1 phosphorite and heavy mineral grains; 30 percent interparticle, moldic, intraparticle, bored, and shelter porosity; high hydraulic conductivity; ramp; hard to moderately hard when wet
99.5 - 101.0	No recovery
101.0 - 107.0	Pelecypod lime floatstone and rudstone with quartz sand-rich skeletal grain-dominated packstone matrix, light-gray N7 to very light gray N8, yellowish-gray 5Y 8/1; mainly medium sand and pebble-size fossils; minor clay-size lime mudstone, silt to fine sand-size fossils, very fine to coarse (mainly very fine to fine) quartz sand, and very fine to fine sand-size phosphorite and heavy mineral grains; moderately sorted quartz sand; angular to subrounded quartz sand; skeletal fragments, pelecypods, serpulids, gastropods and bryozoans; 10 to 30 percent quartz sand; 1 percent black N1 phosphorite and heavy mineral grains; 25 percent interparticle, moldic, intraparticle, bored and shelter porosity; high hydraulic conductivity; ramp; hard to moderately hard when wet
107.0 - 108.0	No recovery
108.0 - 115.0	Pelecypod lime floatstone and rudstone with quartz sand-rich skeletal mud-dominated packstone matrix, light-gray N7 to very light gray N8, yellowish-gray 5Y 8/1; mainly medium sand and pebble-size fossils, very fine to fine quartz sand and clay-size lime mudstone; minor silt to fine sand-size fossils, very fine and medium to very coarse quartz sand, and very fine to fine sand-size phosphorite and heavy mineral grains; moderately sorted quartz sand; angular to subangular very fine to fine quartz sand and subangular to subrounded medium to very coarse quartz sand; skeletal fragments, pelecypods, gastropods, serpulids and bryozoans; 20 to 45 percent quartz sand; 2 percent black N1 phosphorite and heavy mineral grains; 25 percent interparticle, moldic, intraparticle, bored and shelter porosity; high hydraulic conductivity; ramp; hard to moderately hard when wet

Depth (feet below land surface)	Lithologic description of well C-1182
115.0 - 122.0	Quartz sand-rich pelecypod lime floatstone with quartz sand-rich skeletal mud-dominated packstone matrix and skeletal-rich quartz sandstone with lime mudstone matrix, light-gray N7 to very light gray N8, yellowish-gray 5Y 8/1; mainly medium sand and pebble-size fossils, very fine to fine quartz sand and clay-size lime mudstone; minor silt to fine sand-size fossils, very fine and medium to very coarse quartz sand, and very fine to fine sand-size phosphorite and heavy mineral grains; moderately sorted quartz sand; angular to subangular very fine to fine quartz sand and subangular to subrounded medium to very coarse quartz sand; skeletal fragments, pelecypods, gastropods, sand dollars, and serpulids; 30 to 70 percent quartz sand; 2 percent black N1 phosphorite and heavy mineral grains; 25 percent interparticle, moldic, intraparticle, bored, and shelter porosity; high hydraulic conductivity; ramp; hard to moderately hard when wet
122.0 - 128.0	No recovery
128.0 - 131.0	Quartz sand, yellowish-gray 5Y 8/1; mainly very fine quartz sand; minor terrigenous clay, silt-size quartz sand, very fine sand to pebble-size fossils and very fine sand-size phosphorite and heavy mineral grains; very well sorted quartz sand; angular to subangular quartz sand; skeletal fragments and pelecypods; 15 to 20 percent black N1 phosphorite grains; trace heavy mineral grains; trace mica; 15 percent interparticle porosity; low hydraulic conductivity; subtidal marine; soft when wet; friable; burrowed
131.0 - 131.8	No recovery
131.8 - 135.5	Quartz sand, yellowish-gray 5Y 7/2; mainly very fine quartz sand; minor terrigenous clay, silt-size quartz sand, very fine sand to pebble-size fossils (mainly pebble size) and very fine sand-size phosphorite and heavy mineral grains; very well sorted quartz sand; angular to subangular quartz sand; 10 to 35 percent thin-shelled pelecypods; 20 to 30 percent black N1 phosphorite grains; trace heavy mineral grains; trace mica; 15 percent interparticle porosity; low hydraulic conductivity; subtidal marine; soft when wet; friable
135.5 - 136.0	No recovery
136.0 - 140.2	Quartz sand; yellowish-gray 5Y light-olive-gray 7/2, 5Y 6/1; mainly very fine quartz sand; minor terrigenous clay, silt-size quartz sand, very fine sand- to pebble-size fossils (mainly pebble size) and very fine to medium sand-size (mainly very fine) phosphorite and very fine sand-size heavy mineral grains; very well sorted quartz sand; angular to subangular quartz sand; 10 to 30 percent thin-shelled pelecypods; 30 percent black N1 phosphorite grains; trace heavy mineral grains; trace mica; 10 percent interparticle porosity; low hydraulic conductivity; subtidal marine; soft when wet; friable
140.2 - 140.8	No recovery
140.8 - 145.5	Quartz sand, yellowish-gray 5Y 7/2, light-olive-gray 5Y 6/1; mainly very fine quartz sand; minor terrigenous clay, silt-size quartz sand, very fine sand to pebble-size fossils (mainly pebble-size) and very fine sand to small pebble-size (mainly very fine) phosphorite and very fine sand-size heavy mineral grains; very well sorted quartz sand; angular to subangular quartz sand; absent to 10 percent thin-shelled pelecypods in upper half of interval; 30 to 40 percent black N1 phosphorite grains; trace heavy mineral grains; trace mica; 10 percent interparticle porosity; low hydraulic conductivity; subtidal marine; soft when wet; friable; coarse phosphorite float in quartz sand matrix possibly indicating deposition as a mass flow or reworking by bioturbation
145.5 - 150.0	Terrigenous mudstone with minor quartz sand laminations; olive-gray 5Y 4/1 terrigenous mudstone, pale-olive 10Y 6/2; mainly terrigenous clay, silt to very fine quartz sand, very fine sand to very coarse sand-size (mainly very fine) phosphorite, very fine sand-size heavy mineral grains, fine to medium sand-size benthic foraminifers and trace pebble-size quartz sandstone intraclasts; very well sorted quartz sand; angular to subangular quartz sand; benthic foraminifers and fish scales; 20 to 40 percent black N1 phosphorite grains, trace heavy minerals and trace mica in quartz-sand laminations; trace quartz sandstone intraclasts; less than 5 percent interparticle porosity; very low hydraulic conductivity; subtidal marine, distal shelf; soft when wet; coarse phosphorite float in quartz sand matrix possibly indicating deposition as a mass flow; very finely laminated mudstone in part; trace horizontal <i>Ophiomorpha</i> (?), possibly compacted round tube
150.0 - 154.5	Terrigenous mudstone, light-olive-gray 5Y 5/2, yellowish-gray 5Y 7/2; mainly terrigenous clay and fine to medium sand-size foraminifers; small benthic foraminifers; less than 5 percent interparticle porosity; very low hydraulic conductivity; subtidal marine, distal shelf; soft when wet; very finely laminated mudstone in part; trace burrowing that includes horizontal <i>Ophiomorpha</i> (?), possibly compacted round tube; discontinuous laminations that are benthic foram lime grainstones (80 percent forams), hydraulically sorted lag deposit
154.5 - 160.0	Diatomaceous terrigenous mudstone, yellowish-gray 5Y 7/2; mainly terrigenous clay and fine to medium sand-size diatoms and foraminifers; diatoms, small benthic foraminifers and fish scales; less than 5 percent interparticle porosity; very low hydraulic conductivity; subtidal marine, distal shelf; soft when wet; very finely laminated mudstone in part; trace burrowing
160.0 - 170.0	Diatomaceous terrigenous mudstone, yellowish-gray 5Y 7/2; mainly terrigenous clay and fine to medium sand-size diatoms and foraminifers and very fine sand-size phosphorite grains; abundant diatoms, minor small benthic foraminifers and fish scales; trace black N1 phosphorite grains and mica less than 5 percent interparticle porosity; very low hydraulic conductivity; subtidal marine, distal shelf; soft when wet; very finely laminated mudstone in part; trace burrowing
170.0 - 171.0	Quartz sandstone with abundant terrigenous clay matrix, yellowish-gray 5Y 7/2; mainly silt to very fine quartz sand and terrigenous clay; minor medium to very coarse quartz sand, very fine to fine sand-size phosphorite and fine to medium sand-size foraminifers; moderately sorted, angular to subangular, very fine to fine quartz sand and subangular to subrounded, medium to very coarse quartz sand; 15 percent black N1 phosphorite grains; 10 percent small benthic foraminifers; 10 percent interparticle porosity; low hydraulic conductivity; subtidal marine, distal shelf(?); soft when wet; cohesive

Depth (feet below land surface)	Lithologic description of well C-1182
171.0 - 174.0	No recovery
174.0 - 198.5	Quartz sandstone with minor terrigenous clay matrix, light-olive-gray 5Y 5/2, minor yellowish-gray 5Y 7/2; mainly very fine to fine quartz sand; minor terrigenous clay; medium to very coarse-size quartz sand, very fine to fine sand-size phosphorite and pebble-size pelecypods; moderately sorted, angular to subangular, very fine to fine, and subangular to subrounded medium to very coarse quartz sand; 15 percent black N1 phosphorite grains; trace large thin-shelled pelecypods; 10 percent interparticle porosity; low hydraulic conductivity; subtidal marine, distal shelf(?); soft when wet; cohesive
198.5 - 194.0	Quartz sandstone with minor terrigenous clay matrix, light-olive-gray 5Y 5/2, minor yellowish-gray 5Y 7/2; mainly very fine to fine quartz sand; minor terrigenous clay; very fine to fine sand-size phosphorite; well sorted quartz sand; angular to subangular quartz sand; 15 percent black N1 phosphorite grains; 10 percent interparticle porosity; low hydraulic conductivity; subtidal marine, distal shelf(?); soft when wet; cohesive
194.0 - 195.0	No recovery
195.0 - 197.2	Quartz sandstone with minor terrigenous clay matrix, light-olive-gray 5Y 5/2, minor yellowish-gray 5Y 7/2; mainly very fine to fine quartz sand; minor clay-size terrigenous clay; very fine to fine sand-size phosphorite; well sorted quartz sand; angular to subangular quartz sand; 15 percent black N1 phosphorite grains; 10 percent interparticle porosity; low hydraulic conductivity; subtidal marine, distal shelf(?); soft when wet; cohesive
197.2 - 197.6	Silty terrigenous mudstone, yellowish-gray 5Y 7/2; mainly terrigenous clay; minor very fine to fine sand-size phosphorite; abundant small benthic foraminifers; 3 percent black N1 phosphorite grains; less than 5 percent interparticle porosity; very low hydraulic conductivity; subtidal marine, distal shelf(?); soft when wet; cohesive
197.6 - 199.8	Quartz sandstone with minor terrigenous clay matrix, light-olive-gray 5Y 5/2, minor yellowish-gray 5Y 7/2; mainly very fine to fine quartz sand; minor terrigenous clay; very fine to fine sand-size phosphorite; well sorted quartz sand; angular to subangular quartz sand; 15 percent black N1 phosphorite grains; 10 percent interparticle porosity; low hydraulic conductivity; subtidal marine, distal shelf(?); soft when wet; cohesive; heavily bioturbated
199.8 - 200.0	No recovery

Baker's Grade Core

Florida Geological Survey well number	W-17750
GWSI number	C-1183
Total depth	179 feet
Cored from	0 to 179 feet
County	Collier
Location	SW, sec. 7, T49S, R32E
Latitude	26°15'04"
Longitude	81°10'23"
Elevation	15 feet
Completion date	July 4, 1998
Other types of available logs	Gamma ray, induction, spontaneous potential, single-point resistivity
Owner	U.S. Geological Survey
Driller	Florida Geological Survey
Core described by	Kevin J. Cunningham
Undifferentiated quartz sand and minor limestone	0 to 5.9 feet
Tamiami Formation	5.9 to 86 feet
Pinecrest Sand Member	5.9 to 40.6 feet
Ochopee Limestone Member	40.6 to 83 feet
Unnamed formation	83 to 109 feet
Peace River Formation	109 to 179 feet
Water-table aquifer	0 to 5.9 feet
Upper confining unit	5.9 to 40.6 feet
Gray limestone aquifer	40.6 to 83 feet
Lower confining unit	83 to 179 feet

Depth (feet below land surface)	Lithologic description of well C-1183
0.0 - 2.0	Quartz sand, very pale orange 10YR 8/2, pale-yellowish-brown 10YR 6/2; black N1 phosphorite and heavy mineral grains; mainly very fine to fine quartz sand; minor medium quartz sand; very fine to fine sand-size phosphorite and heavy mineral grains; well sorted quartz sand; subrounded to rounded quartz sand; trace phosphorite and heavy mineral grains; 20 percent intergrain porosity; moderate hydraulic conductivity; soft when wet; friable; modern roots in upper 1 foot of interval
2.0 - 3.8	Quartz sand, very pale orange 10YR 8/2, pale-yellowish-brown 10YR 6/2 and mottling with 10YR 7/4 grayish-orange; black N1 phosphorite and heavy mineral grains; mainly fine quartz sand; minor very fine and medium to coarse quartz sand; very fine to fine sand-size phosphorite and heavy mineral grains; well sorted quartz sand; subrounded to rounded quartz sand; 1 percent phosphorite and heavy mineral grains; 20 percent intergrain porosity and trace root-mold porosity; moderate hydraulic conductivity; soft when wet; friable; minor root molds lined with dusky-brown 5YR 2/2 organic stain
3.8 - 4.0	Quartz sand-rich lime mudstone, very pale orange 10YR 8/2, dark-yellowish-orange 10YR 6/6, grayish-orange 10YR 7/4; mainly clay-size lime mud and very fine quartz sand; very well sorted quartz sand; subangular to subrounded quartz sand; 5 percent vuggy porosity; low hydraulic conductivity; hard when wet; very well consolidated and cemented; iron-oxide staining suggests subaerial exposure at 3.8 feet
4.0 - 5.9	Quartz sand, very pale orange 10YR 8/2, pale-yellowish-brown 10YR 6/2; black N1 phosphorite and heavy mineral grains; mainly fine quartz sand; minor very fine and medium to coarse quartz sand; very fine to fine sand-size phosphorite and heavy mineral grains; well sorted quartz sand; subrounded to rounded quartz sand; trace phosphorite and heavy mineral grains; 20 percent intergrain porosity; moderate hydraulic conductivity; soft when wet; friable
5.9 - 6.0	Quartz sandstone, light-gray N7, grayish-orange 10YR 7/4, pale-yellowish-orange 10YR 8/6, dark-yellowish-orange 10YR 6/6; black N1 phosphorite and heavy mineral grains; mainly very fine to fine quartz sand; minor medium to coarse quartz sand; very fine to fine sand-size phosphorite and heavy mineral grains; well sorted quartz sand; subrounded to rounded quartz sand; trace phosphorite and heavy mineral grains; 5 percent vuggy porosity; low hydraulic conductivity; hard when wet; well cemented with calcite; abrupt contact with soft sand above and iron-oxide staining suggests possible subaerial exposure surface at 5.9 feet
6.0 - 6.6	Fill with lithology from interval between 4 and 5.9 feet
6.6 - 8.0	Quartz sand, yellowish-gray 5Y 8/1; black N1 phosphorite and heavy mineral grains; mainly very fine to fine quartz sand; minor clay-size lime mud and terrigenous clay; fine to coarse sand-size skeletal fragments; very fine to fine sand-size phosphorite and heavy mineral grains; very well sorted quartz sand; subangular to subrounded quartz sand; trace skeletal fragments; trace phosphorite and heavy mineral grains; 10 percent intergrain porosity; low hydraulic conductivity; marine siliciclastic shelf; soft when wet; friable
8.0 - 10.5	Quartz sand, yellowish-gray 5Y 8/1; black N1 phosphorite and heavy mineral grains; mainly very fine to fine quartz sand; minor clay-size lime mud and terrigenous clay; fine sand to large pebble-size fossils; very fine to fine sand-size phosphorite and heavy mineral grains; very well sorted quartz sand; subangular to subrounded quartz sand; 5 percent pelecypod fragments, barnacles, benthic foraminifers; trace to 2 percent phosphorite and heavy mineral grains; 10 percent intergrain porosity; low hydraulic conductivity; marine siliciclastic shelf; soft when wet; friable
10.5 - 11.0	No recovery
11.0 - 24.0	Quartz sand, yellowish-gray 5Y 8/1; black N1 phosphorite and heavy mineral grains; mainly very fine to fine quartz sand; minor clay-size lime mud and terrigenous clay; fine sand to large pebble-size fossils; very fine to fine sand-size phosphorite and heavy mineral grains; very well sorted quartz sand; subangular to subrounded quartz sand; 5 percent pelecypod fragments, barnacles, benthic foraminifers; trace to 2 percent phosphorite and heavy mineral grains; 10 percent intergrain porosity; low hydraulic conductivity; marine siliciclastic shelf, below wave base; soft when wet; friable; moderately bioturbated
24.0 - 25.0	Quartz sand, yellowish-gray 5Y 7/2; black N1 phosphorite and heavy mineral grains; mainly very fine to fine quartz sand; minor clay-size lime mud and terrigenous clay; fine sand to large pebble-size fossils; very fine to fine sand-size phosphorite and heavy mineral grains; very well sorted quartz sand; subangular to subrounded quartz sand; 5 percent pelecypod fragments, barnacles, benthic foraminifers; trace to 2 percent phosphorite and heavy mineral grains; 10 percent intergrain porosity; low hydraulic conductivity; marine siliciclastic shelf below wave base; soft when wet; friable; moderately bioturbated
25.0 - 27.5	Terrigenous mudstone interlaminated with quartz sand, 5Y 6/1 light-olive-gray mudstone; yellowish-gray 5Y 8/1 quartz sand; black N1 phosphorite and heavy mineral grains; mainly clay-size terrigenous mud; minor very fine quartz sand; very fine to fine sand-size phosphorite and heavy mineral grains; very well sorted quartz sand; subangular to subrounded quartz sand; abundant benthic foraminifers; trace to 3 percent phosphorite and heavy mineral grains; trace mica; less than 5 percent intergrain porosity; low hydraulic conductivity; marine siliciclastic shelf below storm wave base; prodelta(?), soft when wet; quartz sand, friable; moderately bioturbated; abrupt irregular contact at 25 feet; soft sediment loading may have produced irregular contact at 25 feet; coarsening upward succession from 27.5 to 5.9 feet
27.5 - 31.0	Quartz sand, yellowish-gray 5Y 7/2 and 5Y 8/1; black N1 phosphorite and heavy mineral grains; mainly very fine quartz sand; minor terrigenous clay; fine sand to large pebble-size fossils; very fine to fine sand-size phosphorite and heavy mineral grains; very well sorted quartz sand; subangular to subrounded quartz sand; minor skeletal fragments; trace phosphorite, and heavy mineral grains; 10 percent intergrain porosity; low hydraulic conductivity; marine siliciclastic shelf below wave base; soft when wet; friable; moderately bioturbated; minor terrigenous mudstone laminations

Depth (feet below land surface)	Lithologic description of well C-1183
31.0 - 31.7	Terrigenous mudstone, yellowish-gray 5Y 7/2 and 5Y 8/1; mainly terrigenous clay and silt-size quartz sand; absent to 5 percent pelecypods and skeletal fragments; trace in situ plant roots; trace intergrain microporosity; very low hydraulic conductivity; marine siliciclastic shelf; prodelta(?); soft when wet; well consolidated
31.7 - 32.5	Terrigenous mudstone, light-olive-gray 5Y 8/1, grayish-yellow 5Y 8/4; mainly terrigenous clay and silt-size quartz sand; trace in situ plant roots; trace intergrain microporosity; very low hydraulic conductivity; marine siliciclastic shelf; prodelta(?); soft when wet; well consolidated; bioturbated
32.5 - 34.5	Terrigenous mudstone with minor quartz sand laminations, yellowish-gray 5Y 7/2, light-olive-gray 5Y 8/1; black N1 phosphorite and heavy mineral grains; mainly terrigenous clay; minor silt and very fine quartz sand, very fine sand-size phosphorite and heavy mineral grains; very well sorted quartz sand; subangular to subrounded quartz sand; minor benthic foraminifers; trace fish scales(?) and fish teeth(?); trace in situ plant roots; 1 to 3 percent phosphorite grains, trace intergrain microporosity in mudstone; 5 percent intergrain porosity in sand; very low hydraulic conductivity; marine siliciclastic shelf below storm wave base; prodelta(?); soft when wet; well consolidated mudstone and friable sand; bioturbated
34.5 - 35.0	Quartz sand, yellowish-gray 5Y 8/1; black N1 and moderate-yellowish-brown 10YR 6/6 phosphorite grains; black N1 heavy mineral grains; mainly very fine to fine quartz sand; very fine sand to granule-size phosphorite; very fine sand-size heavy mineral grains; moderately sorted quartz sand; subangular to subrounded quartz sand; less than 10 percent pelecypods and barnacles; less than 10 percent phosphorite and heavy mineral grains; 20 percent intergrain porosity; moderate hydraulic conductivity; marine siliciclastic shelf below wave base; soft when wet; friable
35.0 - 36.0	Terrigenous mudstone with minor quartz sand laminations, yellowish-gray 5Y 8/1, moderate-yellowish-brown (10YR 6/6); black N1 phosphorite and heavy mineral grains; mainly terrigenous clay and very fine quartz sand; minor silt and fine quartz sand; very fine to very coarse sand-size phosphorite; very fine sand-size heavy mineral grains; well sorted quartz sand; subangular to subrounded quartz sand; abundant benthic foraminifers; minor skeletal fragments and pelecypods; trace in situ plant roots; trace intergrain microporosity in mudstone; 5 percent intergrain porosity in sand; very low hydraulic conductivity; marine siliciclastic shelf below storm wave base; prodelta(?); soft when wet; well consolidated mudstone and friable sand
36.0 - 40.0	Terrigenous mudstone with minor quartz sand laminations, yellowish-gray 5Y 8/1, light-olive-gray 5Y 6/1; mainly clay-size terrigenous clay; minor silt and fine quartz sand; very well sorted quartz sand; subangular to subrounded quartz sand; abundant benthic foraminifers; trace in situ plant roots; trace intergrain microporosity in mudstone; 5 percent intergrain porosity in sand; very low hydraulic conductivity; marine siliciclastic shelf below storm wave base and above base photic zone; prodelta(?); soft when wet; well consolidated mudstone and friable sand; irregular discontinuous sand laminations; bioturbated
40.0 - 40.6	Terrigenous mudstone with minor quartz sand laminations, light-olive-gray 5Y 6/1; mainly terrigenous clay; minor silt-size quartz sand; abundant benthic foraminifers; trace intergrain microporosity in mudstone; very low hydraulic conductivity; marine siliciclastic shelf below storm wave base; prodelta(?); soft when wet; well consolidated
40.6 - 40.7	<i>Cheilostome</i> bryozoan, pelecypod lime rudstone with skeletal mud-dominated packstone matrix, black N1 to light-gray N7; black N1 phosphorite grains; mainly clay-size lime mudstone and silt to very large pebble-size fossils; minor very fine quartz sand; very fine to coarse sand-size phosphorite grains; very well sorted quartz sand; subangular to subrounded quartz sand; <i>Cheilostome</i> bryozoans, pelecypods, encrusting bryozoans; trace phosphorite grains; 25 percent moldic porosity; moderate hydraulic conductivity; mid-ramp; hard when wet; well cemented; uppermost 1 inch is a blackened (N1 to N4) surface (maximum flooding surface or maximum starvation surface; probably phosphatic) with 1 inch of microrelief that contains overhanging microtopography (terrigenous mudstone from interval above fills microtopography)
40.7 - 44.0	<i>Vermicularia</i> lime bindstone and pelecypod lime rudstone with grain-dominated lime packstone and skeletal lime grainstone matrix, medium-dark-gray N4 to light-gray N7; black N1 phosphorite grains; mainly clay-size lime mudstone and silt to very large pebble-size fossils; minor very fine quartz sand; very fine to medium sand-size phosphorite grains; very well sorted quartz sand; subangular to subrounded quartz sand; <i>Vermicularia</i> , pelecypods, skeletal fragments, encrusting bryozoans; 10 to 20 percent quartz sand; trace to 1 percent phosphorite grains; 30 percent moldic and intergrain porosity; high hydraulic conductivity; mid-ramp; hard when wet; well cemented
44.0 - 45.5	Pelecypod lime floatstone with skeletal lime grainstone matrix, medium-dark-gray N4 to light-gray N7; black N1 phosphorite grains; mainly very fine sand to pebble-size fossils; minor very fine to medium quartz sand; very fine sand-size phosphorite grains; well sorted quartz sand; subangular to subrounded quartz sand; skeletal fragments, pelecypods, <i>Vermicularia</i> , barnacles; trace quartz sand; trace phosphorite grains; 35 percent moldic and intergrain porosity; high hydraulic conductivity; mid-ramp; hard when wet; well cemented
45.5 - 47.0	No recovery
47.0 - 49.5	Pelecypod lime floatstone with skeletal mud-dominated lime packstone and skeletal lime grainstone matrix, medium-light-gray N6 to very light gray N8; black N1 phosphorite grains; mainly clay-size lime mudstone and very fine sand to pebble-size fossils; minor very fine quartz sand; very fine sand-size phosphorite grains; very well sorted quartz sand; subangular to subrounded quartz sand; skeletal fragments, pelecypods, barnacles, bryozoans, serpulids; trace to 10 percent quartz sand (increases upward); trace phosphorite grains; 30 percent moldic, intergrain, and intragrain porosity; high hydraulic conductivity; mid-ramp; hard when wet; well cemented; color darkens upward

Depth (feet below land surface)	Lithologic description of well C-1183
49.5 - 50.8	Pelecypod lime rudstone with skeletal lime grainstone matrix, medium-light-gray N6 to very light gray N8, yellowish-gray 5Y 8/1; black N1 phosphorite grains; mainly very fine sand to pebble-size fossils; minor very fine quartz sand; very fine sand-size phosphorite grains; very well sorted quartz sand; subangular to subrounded quartz sand; skeletal fragments, pelecypods, barnacles, bryozoans, serpulids; trace to 10 percent quartz sand; trace phosphorite grains; 35 percent moldic, intergrain, and intragrain porosity; very high hydraulic conductivity; mid-ramp; hard when wet; well cemented; color lightens upward; abrupt contact with interval below
50.8 - 52.4	Pelecypod lime rudstone with quartz sand, skeletal mud-dominated lime packstone and skeletal lime grainstone matrix; light-gray N7 to very light gray N8, yellowish-gray 5Y 8/1; black N1 phosphorite grains; mainly clay-size lime mudstone and silt to pebble-size fossils; minor very fine to very coarse quartz sand; very fine to medium sand-size phosphorite grains; moderately sorted quartz sand; subangular to rounded quartz sand; skeletal fragments, pelecypods, barnacles; 10 to 25 percent quartz sand; trace phosphorite grains; 25 percent moldic, intragrain porosity; moderate hydraulic conductivity; mid-ramp; hard when wet; well cemented; color lightens upward; one of microrelief with overhanging microtopography on upper bounding surface (abrupt contact) at 50.8 feet
52.4 - 55.0	No recovery
55.0 - 56.3	Pelecypod lime rudstone with quartz sand, skeletal mud-dominated lime packstone matrix, light-gray N7 to very light gray N8, yellowish-gray 5Y 8/1; black N1 phosphorite grains; mainly clay-size lime mudstone, silt- to pebble-size fossils and very fine to fine quartz sand; minor very fine to medium sand-size phosphorite grains; moderately sorted quartz sand; subangular to rounded quartz sand; skeletal fragments, pelecypods, sand dollars; 35 to 45 percent quartz sand; less than 2 percent phosphorite grains; 25 percent moldic, shelter porosity; moderate hydraulic conductivity; mid-ramp; hard when wet; well cemented
56.3 - 61.0	No recovery
61.0 - 62.5	Pelecypod lime rudstone with quartz sand, skeletal grain-dominated lime packstone matrix, light-gray N7 to very light gray N8, yellowish-gray 5Y 8/1; black N1 phosphorite grains; mainly silt to pebble-size fossils and very fine to coarse quartz sand; minor clay-size lime mud; very fine to medium sand-size phosphorite grains; moderately sorted quartz sand; subangular to rounded quartz sand; skeletal fragments, pelecypods, barnacles, oysters, bryozoans, serpulids; 45 percent quartz sand; less than 5 percent phosphorite grains; 25 percent moldic, intergrain porosity; moderate hydraulic conductivity; mid-ramp; hard when wet; well cemented
62.5 - 63.0	Quartz sandstone with skeletal rudstone framework, yellowish-gray 5Y 8/1; black N1 phosphorite and heavy mineral grains; mainly very fine to fine quartz sand; minor very fine sand to pebble-size fossils; medium to very coarse quartz sand; very fine to coarse sand-size phosphorite grains; very fine sand-size heavy minerals; moderately sorted quartz sand; subangular to rounded quartz sand; skeletal fragments, barnacles, pelecypods, bryozoans; 65 percent quartz sand; 5 percent phosphorite grains; trace heavy mineral grains; 20 percent intergrain, moldic porosity; moderate hydraulic conductivity; moderately hard when wet; moderately cemented
63.0 - 65.0	No recovery
65.0 - 67.0	Quartz sandstone with skeletal rudstone framework, yellowish-gray 5Y 8/1; black N1 phosphorite and heavy mineral grains; mainly very fine to fine quartz sand; minor very fine sand to pebble-size fossils; medium to very coarse quartz sand; very fine to coarse sand-size phosphorite grains; very fine sand-size heavy minerals; moderately sorted quartz sand; subangular to rounded quartz sand; skeletal fragments, barnacles, pelecypods, bryozoans; 65 percent quartz sand; 5 percent phosphorite grains; trace heavy mineral grains; 20 percent intergrain, moldic porosity; moderate hydraulic conductivity; moderately hard when wet; moderately cemented
67.0 - 69.0	No recovery
69.0 - 72.8	Quartz sandstone with gastropod, pelecypod rudstone framework; yellowish-gray 5Y 8/1; black N1 phosphorite and heavy mineral grains; mainly very fine to fine quartz sand; minor very fine sand to pebble-size fossils; medium to very coarse quartz sand; very fine to coarse sand-size phosphorite grains; very fine sand-size heavy minerals; moderately sorted quartz sand; subangular to rounded quartz sand; <i>Turritella</i> gastropods, pelecypods, sand dollars, oysters, serpulids, bryozoans; 70 percent quartz sand; less than 5 percent phosphorite grains; trace heavy mineral grains; 25 percent intergrain, moldic porosity; moderate hydraulic conductivity; moderately hard when wet; moderately cemented
72.8 - 74.0	No recovery
74.0 - 76.7	Quartz sandstone supporting skeletal floatstone, yellowish-gray 5Y 8/1; black N1 phosphorite and heavy mineral grains; mainly very fine to fine quartz sand; minor very fine sand to pebble-size fossils; medium to granule-size quartz sand; very fine to very coarse sand-size phosphorite grains; very fine sand-size heavy minerals; moderately sorted quartz sand; subangular to rounded quartz sand; skeletal, pelecypods, bryozoans, barnacles, serpulids, <i>Turritella</i> gastropods; less than 5 percent phosphorite grains; trace heavy mineral grains; 20 percent intergrain, moldic porosity; moderate hydraulic conductivity; moderately hard when wet; moderately cemented
76.7 - 78.0	No recovery
78.0 - 80.0	Quartz sandstone with pelecypod rudstone framework, yellowish-gray 5Y 8/1; black N1 phosphorite and heavy mineral grains; mainly fine quartz sand; minor terrigenous mud matrix; very fine sand to pebble-size fossils; very fine and medium to granule-size quartz sand; very fine to very coarse sand-size phosphorite grains; very fine sand-size heavy minerals; moderately sorted quartz sand; subangular to rounded quartz sand; pelecypods, skeletal, barnacles, <i>Turritella</i> gastropods; less than 5 percent phosphorite grains; trace heavy mineral grains; 25 percent intergrain, moldic porosity; moderate hydraulic conductivity; moderately hard when wet; moderately cemented
80.0 - 81.0	No recovery

Depth (feet below land surface)	Lithologic description of well C-1183
81.0 - 81.7	Quartz sandstone with pelecypod rudstone framework, yellowish-gray 5Y 8/1; black N1 phosphorite and heavy mineral grains; mainly fine quartz sand; minor terrigenous clay matrix; very fine sand to pebble-size fossils; very fine and medium to granule-size quartz sand; very fine to very coarse sand-size phosphorite grains; very fine sand-size heavy minerals; moderately sorted quartz sand; subangular to rounded quartz sand; pelecypods, skeletal, barnacles, <i>Turritella</i> gastropods; less than 5 percent phosphorite grains; trace heavy mineral grains; 25 percent intergrain, moldic porosity; moderate hydraulic conductivity; moderately hard when wet; moderately cemented
81.7 - 82.5	Quartz sandstone with pelecypod rudstone framework, yellowish-gray 5Y 8/1; black N1 phosphorite and heavy mineral grains; mainly very fine quartz sand; minor terrigenous clay matrix; very fine sand to pebble-size fossils; very fine and medium to coarse-size quartz sand; very fine to very coarse sand-size phosphorite grains; very fine sand-size heavy minerals; moderately sorted quartz sand; subangular to rounded quartz sand; pelecypods, gastropods; less than 5 percent phosphorite grains; trace heavy mineral grains; 20 percent intergrain, moldic porosity; moderate hydraulic conductivity; moderately hard when wet; moderately cemented
82.5 - 87.0	No recovery
87.0 - 90.2	Quartz sandstone, yellowish-gray 5Y 7/2; black N1 phosphorite and heavy mineral grains; mainly very fine quartz sand; minor terrigenous clay matrix; coarse sand to pebble-size fossils; very fine phosphorite and heavy mineral grains; very well sorted quartz sand; subangular to subrounded quartz sand; 20 percent skeletal grains including thin-shelled pelecypods and <i>Turritella</i> gastropods; 25 percent phosphorite grains; trace heavy mineral grains; 15 percent intergrain, minor moldic porosity; low hydraulic conductivity; moderately hard to soft when wet; moderately cemented to friable
90.2 - 91.0	No recovery
91.0 - 92.0	Quartz sandstone, yellowish-gray 5Y 7/2; black N1 phosphorite and heavy mineral grains; mainly very fine quartz sand; minor terrigenous clay matrix; coarse sand to pebble-size fossils; very fine phosphorite and heavy mineral grains; very well sorted quartz sand; subangular to subrounded quartz sand; 20 percent skeletal grains including thin-shelled pelecypods, oysters; 25 percent phosphorite grains; trace heavy mineral grains; 15 percent intergrain, minor moldic porosity; low hydraulic conductivity; moderately hard to soft when wet; moderately cemented to friable
92.0 - 96.0	No recovery
96.0 - 96.1	Quartz sandstone, yellowish-gray 5Y 7/2; black N1 phosphorite and heavy mineral grains; mainly very fine quartz sand; minor terrigenous clay matrix; coarse sand to pebble-size fossils; very fine phosphorite and heavy mineral grains; very well sorted quartz sand; subangular to subrounded quartz sand; 20 percent skeletal grains including thin-shelled pelecypods, oysters; 25 percent phosphorite grains; trace heavy mineral grains; 15 percent intergrain, minor moldic porosity; low hydraulic conductivity; moderately hard to soft when wet; moderately cemented to friable
96.1 - 101.0	No recovery
101.0 - 101.8	Quartz sandstone, yellowish-gray 5Y 7/2; black N1 phosphorite and heavy mineral grains; mainly very fine quartz sand; minor terrigenous clay matrix; trace fine sand to granule-size quartz grains; coarse sand-size to pebble-size fossils; very fine to very coarse sand-size phosphorite grains; very fine sand-size heavy mineral grains; well sorted quartz sand; subangular to subrounded very fine quartz sand and subrounded to rounded fine sand- to granule-size quartz sand; 10 percent moderately thick-shelled pelecypods; 25 percent phosphorite grains; trace heavy mineral grains; trace mica; 10 percent intergrain porosity; low hydraulic conductivity; soft when wet; friable; fine sand- to granule-size quartz grains floating in matrix of very fine sand-size quartz grains
101.8 - 102.0	No recovery
102.0 - 106.0	Quartz sandstone, light-olive-gray 5Y 6/1; black N1 phosphorite and heavy mineral grains; mainly very fine quartz sand; minor terrigenous clay matrix; trace fine sand to granule-size quartz grains; coarse sand to pebble-size fossils; very fine to very coarse sand-size phosphorite grains; very fine sand-size heavy mineral grains; well sorted quartz sand; subangular to subrounded very fine quartz sand and subrounded to rounded fine sand- to granule-size quartz sand; less than 5 percent pelecypods; 25 percent phosphorite grains; trace heavy mineral grains; trace mica; 10 percent intergrain porosity; low hydraulic conductivity; soft when wet; friable; fine sand to granule-size quartz grains floating in matrix of very fine sand-size quartz grains
106.0 - 109.0	Quartz sandstone, light-olive-gray 5Y 6/1; black N1 phosphorite and heavy mineral grains; mainly very fine quartz sand; minor terrigenous clay matrix; trace fine sand to granule-size quartz grains; coarse sand to pebble-size fossils; very fine to very coarse sand-size phosphorite grains; very fine sand-size heavy mineral grains; well sorted quartz sand; subangular to subrounded very fine quartz sand and subrounded to rounded fine sand to granule-size quartz sand; trace skeletal and pelecypod fragments; 25 percent phosphorite grains; trace heavy mineral grains; trace mica; 10 percent intergrain porosity; low hydraulic conductivity; soft when wet; friable; fine sand to granule-size quartz grains floating in matrix of very fine sand-size quartz grains
109.0 - 112.7	Quartz sandstone, light-olive-gray 5Y 6/1; black N1 phosphorite and heavy mineral grains; mainly very fine quartz sand and terrigenous clay matrix; minor fine sand to granule-size quartz grains; very fine sand to granule-size phosphorite grains; very fine sand-size heavy mineral grains; moderately sorted quartz sand; subangular to subrounded very fine quartz sand and subrounded to rounded fine sand to granule-size quartz sand; trace to 2 percent fine sand to granule-size quartz grains; 25 percent phosphorite grains; trace heavy mineral grains; trace mica; 10 percent intergrain porosity; low hydraulic conductivity; soft when wet; friable; fine sand to granule-size quartz grains floating in matrix of very fine sand-size quartz grains; thin laminations of terrigenous clay

Depth (feet below land surface)	Lithologic description of well C-1183
112.7 - 113.7	Silty terrigenous mudstone, yellowish-gray 5Y 7/2, light-olive-gray 5Y 5/2; mainly terrigenous clay and silt-size quartz grains; trace intergrain microporosity; very low hydraulic conductivity; minor thin laminations and lenses of very fine sand-size quartz sand; uncommon horizontal laminations
113.7 - 114.0	No recovery
114.0 - 120.0	Silty terrigenous mudstone, yellowish-gray 5Y 7/2, light-olive-gray 5Y 5/2; mainly terrigenous clay and silt-size quartz grains; trace intergrain microporosity; very low hydraulic conductivity; minor thin laminations and lenses of very fine quartz sand; uncommon horizontal laminations
120.0 - 123.5	Quartz sandstone, light-olive-gray 5Y 5/2; black N1 phosphorite and heavy mineral grains; mainly very fine quartz sand; minor terrigenous clay matrix; fine to very coarse sand-size quartz grains; very fine to very coarse sand-size phosphorite grains; very fine sand-size heavy mineral grains; moderately sorted quartz sand; subangular to subrounded very fine quartz sand and subrounded to rounded fine to very coarse sand-size quartz sand; trace to 5 percent fine very coarse sand-size quartz grains; less than 5 percent phosphorite grains; trace heavy mineral grains; trace mica; 10 percent intergrain porosity; low hydraulic conductivity; soft when wet; friable; fine to very coarse sand-size quartz grains floating in matrix of very fine sand-size quartz grains
123.5 - 128.0	No recovery
128.0 - 131.0	Quartz sandstone, light-olive-gray 5Y 5/2; black N1 phosphorite and heavy mineral grains; mainly very fine quartz sand; minor terrigenous clay matrix; fine to very coarse sand-size quartz grains; very fine to very coarse sand-size phosphorite grains; very fine sand-size heavy mineral grains; moderately sorted quartz sand; subangular to subrounded very fine quartz sand and subrounded to rounded fine to very coarse sand-size quartz sand; trace to 5 percent fine to very coarse sand-size quartz grains; less than 5 percent phosphorite grains; trace heavy mineral grains; trace mica; 10 percent intergrain porosity; low hydraulic conductivity; soft when wet; friable; fine to very coarse sand-size quartz grains floating in matrix of very fine sand-size quartz grains; bioturbated
131.0 - 132.5	Quartz sandstone, light-olive-gray 5Y 5/2; black N1 phosphorite and heavy mineral grains; mainly very fine quartz sand, minor terrigenous clay matrix; fine to very coarse sand-size quartz grains; very fine to very coarse sand-size phosphorite grains; very fine sand-size heavy mineral grains; moderately sorted quartz sand; subangular to subrounded very fine quartz sand and subrounded to rounded fine to very coarse sand-size quartz sand; trace to 5 percent fine to very coarse sand-size quartz grains; less than 5 percent phosphorite grains; trace heavy mineral grains; trace mica; 10 percent intergrain porosity; low hydraulic conductivity; soft when wet; friable; fine to very coarse sand-size quartz grains floating in matrix of very fine sand-size quartz grains; bioturbated; minor thin laminations of clay-rich matrix
132.5 - 134.0	No recovery
134.0 - 137.0	Quartz sandstone, light-olive-gray 5Y 5/2 and 5Y 6/1; black N1 phosphorite and heavy mineral grains; mainly very fine quartz sand; minor terrigenous clay matrix; fine to very coarse sand-size quartz grains; very fine to very coarse sand-size phosphorite grains; very fine sand-size heavy mineral grains; moderately sorted quartz sand; subangular to subrounded very fine quartz sand and subrounded to rounded fine to very coarse sand-size quartz sand; 5 to 15 percent fine to very coarse sand-size quartz grains; less than 5 percent phosphorite grains; trace heavy mineral grains; trace mica; 10 percent intergrain porosity; low hydraulic conductivity; soft when wet; friable; fine to very coarse sand-size quartz grains floating in matrix of very fine sand-size quartz grains; bioturbated
137.0 - 139.5	Quartz sandstone, light-olive-gray 5Y 5/2, 5Y 6/1; black N1 phosphorite and heavy mineral grains; mainly very fine quartz sand; minor terrigenous clay matrix; fine to very coarse sand-size quartz grains; very fine to very coarse sand-size phosphorite grains; very fine sand-size heavy mineral grains; moderately sorted quartz sand; subangular to subrounded very fine quartz sand and subrounded to rounded fine to very coarse sand-size quartz sand; 10 to 30 percent fine to very coarse sand-size quartz grains; less than 5 percent phosphorite grains; trace heavy mineral grains; trace mica; 10 percent intergrain porosity; low hydraulic conductivity; soft when wet; friable; fine to very coarse sand-size quartz grains floating in matrix of very fine sand-size quartz grains; bioturbated
139.5 - 141.0	No recovery
141.0 - 145.0	Quartz sandstone, light-olive-gray 5Y 5/2; black N1 phosphorite and heavy mineral grains; mainly very fine to very coarse quartz sand; minor terrigenous clay matrix; very fine sand to small pebble-size phosphorite grains; very fine sand-size heavy mineral grains; moderately sorted quartz sand; subangular to rounded quartz grains; less than 5 percent phosphorite grains; trace pelecypods; trace heavy mineral grains; trace mica; 15 percent intergrain porosity; low hydraulic conductivity; soft when wet; friable; mixture of framework composed of coarse sand-size quartz grains and very fine sand-size quartz grains
145.0 - 146.5	Quartz sandstone, light-olive-gray 5Y 5/2; black N1 phosphorite and heavy mineral grains; mainly very fine to medium quartz sand; minor coarse quartz sand; terrigenous clay matrix; very fine to coarse sand-size phosphorite grains; very fine sand-size heavy mineral grains; moderately sorted quartz sand; subangular to rounded quartz grains; 15 percent phosphorite grains; trace pelecypods; trace heavy mineral grains; trace mica; 15 percent intergrain porosity; low hydraulic conductivity; soft when wet; friable; coarse sand-size quartz grains floating in a finer matrix of quartz sand
146.5 - 147.0	No recovery
147.0 - 149.3	Quartz sandstone, light-olive-gray 5Y 5/2; black N1 phosphorite and heavy mineral grains; mainly very fine to medium quartz sand; minor coarse quartz sand; terrigenous clay matrix; very fine to coarse sand-size phosphorite grains; very fine sand-size heavy mineral grains; moderately sorted quartz sand; subangular to rounded quartz grains; 15 percent phosphorite grains; trace pelecypods; trace heavy mineral grains; trace mica; 15 percent intergrain porosity; low hydraulic conductivity; soft when wet; friable; coarse sand-size quartz grains floating in a finer matrix of quartz sand

Depth (feet below land surface)	Lithologic description of well C-1183
149.3 - 152.2	Quartz sandstone, light-olive-gray 5Y 5/2; black N1 phosphorite and heavy mineral grains; mainly very fine quartz sand; minor terrigenous clay matrix; fine to very coarse sand-size quartz grains; very fine to coarse sand-size phosphorite grains; very fine sand-size heavy mineral grains; moderately sorted quartz sand; subangular to subrounded very fine quartz sand and subrounded to rounded fine to very coarse sand-size quartz sand; 5 to 10 percent fine to very coarse sand-size quartz grains; 10 to 15 percent phosphorite grains; trace thin-shelled pelecypods; trace heavy mineral grains; trace mica; 10 percent intergrain porosity; low hydraulic conductivity; soft when wet; friable; fine to very coarse sand-size quartz grains floating in matrix of very fine sand-size quartz grains; abrupt contact at 149.3 feet
152.2 - 153.0	No recovery
153.0 - 160.0	Quartz sandstone, light-olive-gray 5Y 5/2; black N1 phosphorite and heavy mineral grains; mainly very fine quartz sand; minor terrigenous clay matrix; fine to very coarse sand-size quartz grains; very fine to coarse sand-size phosphorite grains; very fine sand-size heavy mineral grains; moderately sorted quartz sand; subangular to subrounded very fine quartz sand and subrounded to rounded fine to very coarse sand-size quartz sand; trace to 10 percent fine to very coarse sand-size quartz grains; less than 5 percent phosphorite grains; trace heavy mineral grains; trace to 3 percent pelecypod shells; trace mica; 10 percent intergrain porosity; low hydraulic conductivity; soft when wet; friable; fine to very coarse sand-size quartz grains floating in matrix of very fine sand-size quartz grains
160.0 - 163.0	Quartz sandstone, light-olive-gray 5Y 5/2; black N1 phosphorite and heavy mineral grains; mainly very fine quartz sand; minor terrigenous clay matrix; fine to very coarse sand-size quartz grains; very fine to very coarse sand-size phosphorite grains; very fine sand-size heavy mineral grains; very well to moderately sorted quartz sand; subangular to subrounded very fine quartz sand and subrounded to rounded fine to very coarse quartz sand; trace to 5 percent fine to very coarse sand-size quartz grains; less than 5 percent phosphorite grains; trace heavy mineral grains; trace to 3 percent pelecypod shells; trace mica; 10 percent intergrain porosity; low hydraulic conductivity; soft when wet; friable; fine to very coarse sand-size quartz grains floating in matrix of very fine sand-size quartz grains
163.0 - 166.5	Quartz sandstone, light-olive-gray 5Y 5/2; black N1 phosphorite and heavy mineral grains; mainly very fine quartz sand; minor terrigenous clay matrix; fine sand to granule-size quartz grains; very fine sand to granule-size phosphorite grains; very fine sand-size heavy mineral grains; moderately sorted quartz sand; subangular to subrounded very fine quartz sand and subrounded to rounded fine to very coarse sand-size quartz sand; 5 to 60 percent fine sand to granule size quartz grains; less than 5 percent phosphorite grains; trace heavy mineral grains; trace mica; trace sharks teeth; 15 percent intergrain porosity; low hydraulic conductivity; soft when wet; friable; vertical mixture of coarse quartz sand supporting framework and very fine quartz sand supporting framework
166.5 - 170.0	Quartz sandstone, light-olive-gray 5Y 5/2, yellowish-gray 5Y 7/2; black N1 phosphorite and heavy mineral grains; mainly very fine medium quartz sand; minor terrigenous clay matrix; coarse sand to granule-size quartz grains; very fine sand to granule-size phosphorite grains; very fine sand-size heavy mineral grains; moderately sorted quartz sand; subangular to rounded; less than 5 percent phosphorite grains; trace heavy mineral grains; trace mica; 15 percent intergrain porosity; low hydraulic conductivity; soft when wet; friable
170.0 - 170.5	No recovery
170.5 - 171.0	Quartz sandstone, light-olive-gray 5Y 5/2, yellowish-gray 5Y 7/2; black N1 phosphorite and heavy mineral grains; mainly very fine medium quartz sand; minor terrigenous clay matrix; coarse sand to granule-size quartz grains; very fine sand to granule-size phosphorite grains; very fine sand-size heavy mineral grains; moderately sorted quartz sand; subangular to rounded; less than 5 percent phosphorite grains; trace heavy mineral grains; trace mica; 15 percent intergrain porosity; low hydraulic conductivity; soft when wet; friable
171.0 - 175.0	Quartz sandstone, yellowish-gray 5Y 7/2; black N1 phosphorite and heavy mineral grains; mainly fine to medium-size quartz sand; minor terrigenous clay matrix; very fine and coarse sand to granule-size quartz sand; very fine sand to granule-size phosphorite grains; very fine sand-size heavy mineral grains; moderately sorted quartz sand; subangular to rounded; less than 5 percent phosphorite grains; trace heavy mineral grains; trace mica; 20 percent intergrain porosity; moderate hydraulic conductivity; soft when wet; friable; clay lamination at 173.4 feet
175.0 - 177.2	Quartz sandstone, yellowish-gray 5Y 7/2; black N1 phosphorite and heavy mineral grains; mainly medium-size quartz sand; very fine to fine and coarse to very coarse sand-size quartz sand; very fine to medium sand-size phosphorite grains; very fine sand-size heavy mineral grains; moderately sorted quartz sand; subangular to rounded; less than 3 percent phosphorite grains; trace heavy mineral grains; trace mica; 25 percent intergrain porosity; moderate hydraulic conductivity; soft when wet; friable
177.2 - 179.0	No recovery

L-3 Canal Core

Florida Geological Survey well number	Not applicable
Well number	HE-1110
Total depth	160 feet
Cored from	0 to 160 feet
County	Hendry
Location	NE, SW, sec. 22, T47S, R34E
Latitude	26°23'09"
Longitude	80°55'48"
Elevation	15 feet
Completion date	April 14, 1998
Other types of available logs	Gamma ray, induction, spontaneous potential, single-point resistivity
Owner	U.S. Geological Survey
Driller	South Florida Water Management District
Core described by	Kevin J. Cunningham
Undifferentiated surficial quartz sand and Pinecrest Sand Member	0 to 35 feet
Tamiami Formation	0 to 148 feet
Ochopee Limestone Member	35 to 148 feet (top based on gamma-ray log)
Unnamed formation	148 to 160 feet
Upper confining unit	0 to 35 feet
Gray limestone aquifer	35 to 148 feet
Top of lower confining unit	148 feet

Depth (feet below land surface)	Lithologic description of well HE-1110
0.0 - 5.0	Quartz sand, yellowish-gray 5Y 8/1; mainly very fine to fine quartz sand; minor medium phosphorite and fine to coarse skeletal fragments; ranges from very fine to coarse; well sorted quartz grains; minor skeletal fragments; trace to 3 percent phosphorite grains; 20 percent interparticle porosity; moderate hydraulic conductivity; friable; very soft
5.0 - 10.0	Quartz sand, yellowish-gray 5Y 8/1; mainly clay-size lime mudstone and very fine to fine quartz sand; minor medium quartz sand and medium to very coarse skeletal fragments; ranges from clay to coarse; moderately sorted quartz sand; 10 percent skeletal fragments; 10 percent interparticle and pin-point porosity; low hydraulic conductivity; abundant lime mudstone matrix; moderately hard when wet; cohesive
10.0 - 15.0	Quartz sand, very pale orange 10YR 8/2; mainly very fine to fine quartz sand; minor medium quartz sand, medium to very coarse fossils, and medium to coarse phosphorite; ranges from very fine to coarse; well sorted quartz sand; 15 percent skeletal fragments and broken bivalves; trace black phosphorite grains; 20 percent interparticle porosity; moderate hydraulic conductivity; friable; very soft when wet
15.0 - 20.0	Quartz sand, yellowish-gray 5Y 8/1; mainly very fine to fine quartz sand; minor medium sand to pebble-size fossils and very fine to medium phosphorite; ranges from very fine to pebble size; well sorted quartz sand; 15 percent skeletal fragments, bivalves and trace echinoid spines; 3 percent black phosphorite grains; 20 percent interparticle porosity; moderate hydraulic conductivity; friable; very soft when wet
20.0 - 25.0	Quartz sand, yellowish-gray 5Y 8/1; mainly very fine to fine quartz sand; minor medium sand to pebble-size fossils and very fine to medium phosphorite; ranges from very fine to pebble size; well sorted quartz sand; 15 percent skeletal fragments, bivalves and trace echinoid spines and oysters; 3 percent black phosphorite grains; 20 percent interparticle porosity; moderate hydraulic conductivity; friable; very soft when wet
25.0 - 30.0	Bivalve lime rudstone with matrix of quartz sand-rich skeletal lime packstone and skeletal-rich quartz sand, yellowish-gray 5Y 8/1; mainly clay-size lime mudstone, very fine to fine quartz sand and pebble-size bivalves; minor medium to granule skeletal fragments and very fine to fine phosphorite; ranges from clay to pebble size; well sorted quartz sand; skeletal fragments, bivalves, <i>Vermicularia</i> echinoid spines and gastropods; 40 to 60 percent quartz sand; 3 percent black phosphorite grains; 15 percent moldic, interparticle, intraparticle, and bored porosity; moderate hydraulic conductivity; poorly cemented to moderately cemented; friable to moderately friable; moderately hard to hard
30.0 - 35.0	Quartz sand, yellowish-gray 5Y 8/1; mainly clay-size lime mudstone matrix, very fine to fine quartz sand; minor medium sand to pebble-size fossils and very fine to fine phosphorite grains; ranges from clay to pebble size; well sorted quartz sand; 15 percent bivalves and skeletal fragments; 5 percent black phosphorite grains; 20 percent moldic and minor interparticle, intraparticle, and bored porosity; moderate hydraulic conductivity; friable; soft
35.0 - 40.0	Bivalve lime rudstone with matrix of quartz sand-rich skeletal lime packstone and skeletal-rich quartz sand, light-gray N7 to very light gray N8 and yellowish-gray 5Y 8/1; mainly clay-size lime mudstone, very fine to fine quartz sand and pebble-size bivalves; minor medium to granule skeletal fragments and very fine to fine phosphorite; ranges from clay to pebble size; well sorted quartz sand; bivalves, skeletal fragments, gastropods and minor bryozoans and <i>Vermicularia</i> ; 40 to 60 percent quartz sand; 3 percent black phosphorite grains; 20 percent moldic, interparticle, intraparticle, and bored porosity; moderate hydraulic conductivity; poorly cemented to moderately cemented; friable to moderately friable; moderately hard to hard
40.0 - 45.0	Bivalve lime rudstone with matrix of quartz sand-rich skeletal well-washed lime packstone and quartz sand-rich skeletal lime packstone; light-gray N7 to very light gray N8; mainly clay-size lime mudstone, very fine to fine quartz sand and pebble-size bivalves; minor very fine to granule skeletal fragments and cobble-size oysters; ranges from clay to cobble size; well sorted quartz sand; bivalves, skeletal fragments, bryozoans and echinoids (sand dollars); 20 to 40 percent quartz sand; 20 percent moldic, interparticle, intraparticle, and bored porosity; high hydraulic conductivity; poorly to well cemented; friable to well consolidated; soft to hard
45.0 - 50.0	Bivalve lime rudstone with matrix of quartz sand-rich skeletal well-washed lime packstone and quartz sand-rich skeletal lime grainstone, medium-gray N5 to very light gray N8 and yellowish-gray 5Y 8/1; mainly very fine to fine quartz sand and medium sand to pebble-size fossils; minor medium to coarse quartz sand and cobble-size bivalves; ranges from clay to cobble size; moderately sorted quartz sand; bivalves, skeletal fragments, bryozoans, and echinoids (sand dollars); 20 percent quartz sand; 20 percent moldic, interparticle, intraparticle, and bored porosity; high hydraulic conductivity; poorly to moderately cemented; friable to moderately friable
50.0 - 55.0	Bivalve lime rudstone with matrix of quartz sand-rich skeletal well-washed lime packstone and quartz sand-rich skeletal lime grainstone, light-gray N7 to very light gray N8 and yellowish-gray 5Y 8/1; mainly very fine to fine quartz sand and medium sand to pebble-size fossils; minor clay-size lime mudstone; ranges from clay to pebble size; well sorted quartz sand; skeletal fragments, bivalves, echinoids (sand dollars), bryozoans, gastropods and barnacles; 20 percent quartz sand; 20 percent moldic, interparticle, intraparticle, and bored porosity; high hydraulic conductivity; poorly to moderately cemented; friable to well consolidated

Depth (feet below land surface)	Lithologic description of well HE-1110
55.0 - 60.0	Skeletal fragment lime rudstone with matrix of quartz sand-rich skeletal well-washed lime packstone and quartz sand-rich skeletal lime grainstone, medium-light-gray N6 to very light gray N8 and yellowish-gray 5Y 8/1; mainly very fine to fine quartz sand and medium sand to pebble-size fossils; minor clay-size lime mudstone and very fine to fine phosphorite grains; ranges from clay to pebble size; well sorted quartz sand; skeletal fragments, bivalves, echinoids (sand dollars), gastropods and barnacles; 20 to 40 percent quartz sand; trace to 3 percent black phosphorite; 20 percent moldic, interparticle, intraparticle, and bored porosity; high hydraulic conductivity; moderately to well cemented; moderately friable to well consolidated
60.0 - 65.0	Skeletal fragment lime rudstone with matrix of quartz sand-rich skeletal well-washed lime packstone and quartz sand-rich skeletal lime grainstone; medium-light-gray N6 to very light gray N8; mainly very fine to fine quartz sand and medium sand to pebble-size fossils; minor clay-size lime mudstone and very fine to fine phosphorite grains; ranges from clay to pebble size; well sorted quartz sand; skeletal fragments, bivalves, and echinoids (sand dollars); 20 to 40 percent quartz sand; 3 percent black phosphorite; 20 percent moldic, interparticle, intraparticle, and bored porosity; high hydraulic conductivity; mainly poorly cemented, ranges from poorly to well cemented; mainly moderately friable, ranges from moderately friable to well consolidated
65.0 - 70.0	Skeletal fragment lime rudstone with matrix of quartz sand-rich skeletal well washed lime packstone and quartz sand-rich skeletal lime packstone; medium-light-gray N6 to very light gray N8 and yellowish-gray 5Y 8/1; mainly clay-size lime mudstone, very fine to fine quartz sand, medium sand to pebble-size fossils and very fine to very phosphorite grains; ranges from clay to pebble size; well sorted quartz sand; skeletal fragments and bivalves; 20 to 40 percent quartz sand; trace black phosphorite; 20 percent moldic, interparticle, intraparticle, and bored porosity; high hydraulic conductivity; moderately to well cemented; moderately friable to well consolidated
70.0 - 80.0	Skeletal fragment lime rudstone with matrix of quartz sand-rich skeletal well-washed lime packstone and quartz sand-rich skeletal lime packstone; medium-light-gray N6 to very light gray N8; mainly clay-size lime mudstone, very fine to fine quartz sand and medium sand to pebble-size fossils; minor very fine to fine phosphorite grains; ranges from clay to pebble size; well sorted quartz sand; skeletal fragments, bivalves, and echinoids (sand dollars); 20 to 40 percent quartz sand; trace black phosphorite; 20 percent moldic, interparticle, intraparticle; and bored porosity; high hydraulic conductivity; moderately to well cemented; moderately friable to well consolidated
80.0 - 85.0	Skeletal fragment lime rudstone with matrix of quartz sand-rich skeletal well-washed lime packstone; medium-light-gray N6 to very light gray N8; mainly very fine to fine quartz sand and medium sand to pebble-size fossils; minor clay-size lime mudstone, very fine to fine phosphorite grains and cobble-size oysters; ranges from clay to cobble size; well sorted quartz sand; skeletal fragments, bivalves, echinoids (sand dollars), gastropods, oysters, and <i>Vermicularia</i> ; 20 percent quartz sand; 3 percent black phosphorite; 20 percent moldic, interparticle, intraparticle, and bored porosity; high hydraulic conductivity; poorly to well cemented; friable to well consolidated
85.0 - 90.0	Skeletal fragment lime rudstone with matrix of quartz sand-rich skeletal well-washed lime packstone and quartz sand-rich skeletal packstone; medium-light-gray N6 to very light gray N8; mainly clay-size lime mudstone, very fine to fine quartz sand and medium sand to pebble-size fossils; minor very fine to fine phosphorite grains and cobble-size bivalves; ranges from clay to cobble size; well sorted quartz sand; skeletal fragments, bivalves, echinoids (sand dollars), gastropods, <i>Vermicularia</i> , bryozoans, and serpulids; 20 percent quartz sand; 3 percent black phosphorite; 20 percent moldic, interparticle, intraparticle and bored porosity; high hydraulic conductivity; poorly to moderately cemented; friable to well consolidated
90.0 - 95.0	Skeletal fragment and bivalve lime rudstone with matrix of quartz sand-rich skeletal well-washed lime packstone and quartz sand-rich skeletal grainstone, light-gray N7 to white N9; mainly very fine to fine quartz sand and medium sand to pebble-size fossils; minor clay-size lime mudstone, very fine to fine phosphorite grains and cobble-size bivalves; ranges from clay to cobble size; well sorted quartz sand; skeletal fragments, bivalves, <i>Vermicularia</i> , serpulids, bryozoans, gastropods, and echinoids (sand dollars); 20 to 40 percent quartz sand; trace black phosphorite; 20 percent moldic, interparticle, intraparticle, and bored porosity; high hydraulic conductivity; poorly to moderately cemented; friable to well consolidated
95.0 - 100.0	Skeletal fragment and bivalve lime rudstone with matrix of quartz sand-rich skeletal well-washed lime packstone and quartz sand-rich skeletal grainstone; light-gray N7 to white N9; mainly very fine to fine quartz sand and medium sand to pebble-size fossils; minor clay-size lime mudstone, very fine to fine phosphorite grains; ranges from clay to pebble size; well sorted quartz sand; skeletal fragments, bivalves (minor <i>Pecten</i>), <i>Vermicularia</i> , serpulids, bryozoans, gastropods, and echinoids (sand dollars); 20 to 40 percent quartz sand; trace black phosphorite; 20 percent moldic, interparticle, intraparticle, and bored porosity; high hydraulic conductivity; poorly to moderately cemented; friable to well consolidated; local <i>Vermicularia</i> bindstones (reefs)

Depth (feet below land surface)	Lithologic description of well HE-1110
100.0 - 115.0	Skeletal fragment lime rudstone with matrix of skeletal well-washed lime packstone with matrix of quartz sand-rich lime mud or quartz sand and quartz sand-rich skeletal grainstone, light-gray N7 to white N9 and yellowish-gray 5Y 8/1; mainly very fine to fine quartz sand and medium sand- to pebble-size fossils; minor clay-size lime mudstone, medium to coarse quartz sand, very fine to medium phosphorite grains and cobble-size bivalves, oysters, and sand dollars; ranges from clay to cobble size; moderately sorted quartz sand; skeletal fragments, bivalves (minor <i>Pecten</i>), <i>Vermicularia</i> , serpulids, bryozoans, echinoids (sand dollars), gastropods, barnacles, and oysters; 20 to 60 percent quartz sand; trace to 5 percent black phosphorite; trace glauconite grains (dark-yellowish-green 10GY 4/4) at 105 to 110 feet 20 percent moldic, interparticle, intraparticle, and bored porosity; high hydraulic conductivity; moderately to well cemented; moderately friable to well consolidated; local <i>Vermicularia</i> bindstones (reefs); caved, fine to medium, loose, quartz sand (grayish-orange 10YR 7/4, moderate-yellowish-brown 10YR 5/4 and very pale orange 10YR 8/2)
115.0 - 120.0	Skeletal fragment lime rudstone with matrix of skeletal lime packstone with matrix of quartz sand-rich lime mud or quartz sand, light-gray N7 to very light gray N8; mainly clay-size lime mudstone, fine quartz sand and medium sand to pebble-size fossils; minor very fine and medium to coarse quartz sand and very fine to medium phosphorite; ranges from clay to pebble size; moderately sorted quartz sand; skeletal fragments, bivalves, gastropods, bryozoans, serpulids, and barnacles; 20 to 60 percent quartz sand; trace to 5 percent black N1 and minor moderate-yellowish-brown 10YR 5/4 phosphorite; trace glauconite grains (dark-yellowish-green 10GY 4/4); 20 percent moldic, interparticle, intraparticle, and bored porosity; high hydraulic conductivity; poorly to well cemented; friable to well consolidated
120.0 - 125.0	Skeletal fragment-rich quartz sandstone, light-gray N7 to very light gray N8; mainly fine quartz sand; minor very fine and medium quartz sand, medium sand to pebble-size fossils and very fine to medium phosphorite grains; ranges from clay to pebble size; moderately sorted quartz sand; 20 to 40 percent fossils including skeletal fragments, bivalves, echinoids (sand dollars), gastropods, barnacles, and serpulids; 5 percent black N1 and minor moderate-yellow-brown 10YR 5/4 phosphorite; 15 percent moldic, interparticle, and intraparticle porosity; moderate hydraulic conductivity; poorly to well cemented; friable to well consolidated; trace lime mud matrix
125.0 - 130.0	Skeletal fragment-rich quartz sand, very light gray N8; mainly very fine and fine quartz sand; minor medium quartz sand, medium sand to pebble-size fossils and very fine to medium phosphorite grains; ranges from very fine to pebble size; well sorted quartz sand; 15 percent fossils including skeletal fragments, bivalves, and barnacles; 5 percent black N1 and minor moderate-yellowish-brown 10YR 5/4 phosphorite; 20 percent interparticle porosity; moderate; very poorly cemented; very friable; very soft
130.0 - 135.0	Skeletal fragment-rich quartz sand and skeletal floatstone with matrix of skeletal-rich quartz sandstone matrix, light-gray N7 to very light gray N8; mainly very fine and fine quartz sand; minor medium quartz sand, medium sand to pebble-size fossils, very fine to medium phosphorite grains and cobble-size oysters; ranges from very fine to cobble size; well sorted quartz sand; 15 percent fossils including skeletal fragments, bivalves, serpulids, encrusting foraminifers, oysters, bryozoans and echinoids (sand dollars); 3 percent black N1 phosphorite; 20 percent interparticle, moldic, and intraparticle porosity; moderate hydraulic conductivity; poorly to moderately cemented; very friable to moderately friable
135.0 - 140.0	Bivalve-rich quartz sand and gastropod rudstone with matrix of skeletal-rich quartz sandstone matrix; light-gray N7 to very light gray N8; mainly very fine and fine quartz sand; minor medium quartz sand, medium sand to pebble-size fossils and very fine to medium phosphorite grains; ranges from very fine to pebble size; well sorted quartz sand; 40 to 70 percent quartz sand; skeletal fragments, bivalves, gastropods (<i>Turritella</i>) and <i>Vermicularia</i> ; 5 to 10 percent black N1 phosphorite; 20 percent interparticle and moldic porosity; moderate hydraulic conductivity; poorly to well cemented; friable to well consolidated; minor lime mudstone in sandstone matrix of rudstone
140.0 - 145.0	Bivalve rudstone with matrix of skeletal-rich quartz sandstone matrix, light-gray N7 to very light gray N8; mainly very fine and fine quartz sand; minor medium sand- to pebble-size fossils and very fine to fine phosphorite grains; ranges from very fine to pebble size; well sorted quartz sand; 40 to 60 percent quartz sand; bivalves and gastropods (<i>Turritella</i>); 5 to 10 percent black N1 phosphorite; 20 percent interparticle and moldic porosity; moderate hydraulic conductivity; moderately to well cemented; moderately friable to well consolidated
145.0 - 148.0	Bivalve rudstone with matrix of skeletal-rich quartz sandstone matrix, very light gray N8; mainly very fine and fine quartz sand; minor medium sand to cobble-size fossils, cobble-size bivalves and very fine to fine phosphorite grains; ranges from very fine to cobble size; well sorted quartz sand; 40 to 60 percent quartz sand; bivalves, gastropods (<i>Turritella</i>) and bryozoans; 5 to 10 percent black N1 phosphorite; 20 percent interparticle and moldic porosity; moderate hydraulic conductivity; moderately to well cemented; moderately friable to well consolidated
148.0 - 160.0	Quartz sand, light-gray N7 to very light gray N8; mainly very fine quartz sand; minor fine quartz sand, medium sand to pebble-size fossils and very fine to fine phosphorite grains; ranges from very fine to pebble size; well sorted quartz sand; minor bivalves and skeletal fragments; 15 to 20 percent black N1 phosphorite; 20 percent interparticle porosity; low hydraulic conductivity; very poorly cemented; very friable; very soft; trace to minor clay matrix

Windmill Road Core

Florida Geological Survey well number	W-17764
GWSI number	HE-1112
Total depth	151 feet
Cored from	0 to 151 feet
County	Hendry
Location	SE, NE, sec. 12, T48S, R31E
Latitude	26°19'15"
Longitude	81°10'35"
Elevation	21 feet
Completion date	October 3, 1998
Other types of available logs	Gamma ray, induction, spontaneous potential, single-point resistivity
Owner	U.S. Geological Survey
Driller	Florida Geological Survey
Core described by	Kevin J. Cunningham (cored with a compression core from 0 to 60 feet and a rotary core from 60 to 151 feet)
Undifferentiated quartz sand and minor limestone	0 to 14 feet
Tamiami Formation	14 to 80.2 feet
Pinecrest Sand Member	14 to 46.2 feet
Ochopee Limestone Member	42.6 to 64 feet
Unnamed formation	64 to 80.2 feet
Peace River Formation	80.2 to 149.7 feet
Water-table aquifer	0 to 46.2 feet
Gray limestone aquifer	46.2 to 80.2 feet
Lower confining unit	80.2 to 149.7 feet

Depth (feet below land surface)	Lithologic description of well HE-1112
0.0 - 0.9	Quartz sand, grayish-orange 10YR 7/4; black N1 organic soil and grains; mainly fine quartz sand; minor very fine and medium to coarse quartz sand; well sorted quartz sand; subangular to rounded quartz sand; 5 to 10 percent organic grains; 20 percent intergrain porosity; moderate hydraulic conductivity; soft when wet; friable; modern roots throughout interval; black organic soil in upper and lower 1 inch of interval
0.9 - 2.2	Quartz sand, light-gray N7 to very light gray N8; black N1 organic soil and grains; mainly fine to medium quartz sand; minor very fine and coarse quartz sand; well sorted quartz sand; subangular to rounded quartz sand; 10 percent organic grains; 20 percent intergrain porosity; moderate hydraulic conductivity; soft when wet; friable; modern roots throughout interval
2.2 - 6.8	Quartz sand, very pale orange 10YR 8/2, grayish-orange 10YR 7/4, pale-yellowish-brown 10YR 6/2, moderate-yellowish-brown 10YR 5/4; black N1 phosphorite and heavy mineral grains; mainly fine to medium quartz sand; minor very fine and coarse quartz sand, very fine sand-size phosphorite and heavy mineral grains; well sorted quartz sand; subangular to rounded quartz sand; trace phosphorite and heavy mineral grains; 20 percent intergrain porosity; moderate hydraulic conductivity; soft when wet; friable; trace modern roots throughout interval
6.8 - 7.0	No recovery
7.0 - 12.0	Quartz sand, very pale orange 10YR 8/2, pale-yellowish-brown 10YR 6/2, moderate-yellowish-brown 10YR 5/4; black N1 phosphorite and heavy mineral grains; mainly very fine to medium quartz sand; minor coarse quartz sand, very fine sand-size phosphorite and heavy mineral grains; well sorted quartz sand; subangular to rounded quartz sand; trace phosphorite and heavy mineral grains; 20 percent intergrain porosity; moderate hydraulic conductivity; soft when wet; friable; trace modern roots throughout interval
12.0 - 14.0	No recovery
14.0 - 18.1	Quartz sand, very pale orange 10YR 8/2, yellowish-gray 5Y 8/1; black N1 phosphorite and heavy mineral grains; mainly fine to medium quartz sand; minor very fine and coarse quartz sand, very fine to medium sand-size phosphorite, very fine to fine heavy mineral grains; well sorted quartz sand; subangular to subrounded quartz sand; minor rounded quartz sand; 5 to 10 percent skeletal fragments; 3 percent phosphorite and heavy mineral grains; 20 percent intergrain porosity; moderate hydraulic conductivity; marine siliciclastic shelf; soft when wet; friable
18.1 - 19.0	No recovery
19.0 - 23.0	Quartz sand, very pale orange 10YR 8/2, yellowish-gray 5Y 8/1; black N1 phosphorite and heavy mineral grains; mainly fine to medium quartz sand; minor very fine and coarse quartz sand, very fine to very coarse fossils, very fine to medium sand-size phosphorite, very fine to fine heavy mineral grains; well sorted quartz sand; subangular to subrounded quartz sand; minor rounded quartz sand; 5 to 15 percent skeletal fragments, pelecypods, barnacles; 3 to 5 percent phosphorite and heavy mineral grains; 20 percent intergrain porosity; moderate hydraulic conductivity; marine siliciclastic shelf; soft when wet; friable
23.0 - 24.7	Quartz sand, yellowish-gray 5Y 8/1, very pale orange 10YR 8/2; black N1 phosphorite and heavy mineral grains; mainly fine to coarse quartz sand; minor very fine and very coarse quartz sand, very fine sand to very large pebble-size fossils, very fine to very coarse sand-size phosphorite, very fine to fine heavy mineral grains; well sorted quartz sand; subangular to subrounded quartz sand; minor rounded quartz sand; 5 to 15 percent skeletal fragments, pelecypods; 3 to 5 percent phosphorite and heavy mineral grains; 20 percent intergrain porosity; moderate hydraulic conductivity; marine siliciclastic shelf; soft when wet; friable
24.7 - 25.0	No recovery
25.0 - 26.7	Quartz sand, yellowish-gray 5Y 7/2; black N1 phosphorite and heavy mineral grains; mainly fine to coarse quartz sand; minor very fine and very coarse quartz sand, very fine sand to very large pebble-size fossils, very fine to very coarse sand-size phosphorite, very fine to fine heavy mineral grains; well sorted quartz sand; subangular to subrounded quartz sand; minor rounded quartz sand; 5 to 15 percent skeletal fragments, pelecypods; 3 to 5 percent phosphorite and heavy mineral grains; 20 percent intergrain porosity; moderate hydraulic conductivity; marine siliciclastic shelf; soft when wet; friable
26.7 - 28.0	No recovery
28.0 - 32.2	Quartz sand, yellowish-gray 5Y 7/2; black N1 phosphorite and heavy mineral grains; mainly fine to medium quartz sand; minor very fine and coarse to very coarse quartz sand, very fine sand to large pebble-size fossils, very fine to very coarse sand-size phosphorite, very fine to fine heavy mineral grains; well sorted quartz sand; subangular to subrounded quartz sand; minor rounded quartz sand; 5 to 15 percent skeletal fragments, pelecypods, barnacles; 3 to 5 percent phosphorite and heavy mineral grains; 20 percent intergrain porosity; moderate hydraulic conductivity; marine siliciclastic shelf; soft when wet; friable; bioturbated
32.2 - 33.0	No recovery

Depth (feet below land surface)	Lithologic description of well HE-1112
33.0 - 35.0	Quartz sand, yellowish-gray 5Y 7/2; black N1 phosphorite and heavy mineral grains; mainly very fine to medium quartz sand; minor coarse to very coarse quartz sand, very fine sand to large pebble-size fossils, very fine to very coarse sand-size phosphorite, very fine to fine heavy mineral grains; well sorted quartz sand; subangular to subrounded quartz sand; minor rounded quartz sand; 5 to 15 percent skeletal fragments, pelecypods; 3 to 5 percent phosphorite and heavy mineral grains; 20 percent intergrain porosity; moderate hydraulic conductivity; marine siliciclastic shelf; soft when wet; friable; bioturbated
35.0 - 36.5	No recovery
36.5 - 37.0	Quartz sand, yellowish-gray 5Y 7/2; black N1 phosphorite and heavy mineral grains; mainly very fine to medium quartz sand; minor coarse to very coarse quartz sand, very fine sand to large pebble-size fossils, very fine to very coarse sand-size phosphorite, very fine to fine heavy mineral grains; well sorted quartz sand; subangular to subrounded quartz sand; minor rounded quartz sand; 5 to 15 percent skeletal fragments, pelecypods; 3 to 5 percent phosphorite and heavy mineral grains; 20 percent intergrain porosity; moderate hydraulic conductivity; marine siliciclastic shelf; soft when wet; friable; bioturbated
37.0 - 38.0	No recovery
38.0 - 41.5	Quartz sand, yellowish-gray 5Y 7/2; black N1 phosphorite and heavy mineral grains; mainly very fine to medium quartz sand; minor coarse to very coarse quartz sand, very fine sand to large pebble-size fossils, very fine to very coarse sand-size phosphorite, very fine to fine heavy mineral grains; well sorted quartz sand; subangular to subrounded quartz sand; minor rounded quartz sand; 5 percent skeletal fragments, pelecypods; 3 to 5 percent phosphorite and heavy mineral grains; 20 percent intergrain porosity; moderate hydraulic conductivity; marine siliciclastic shelf; soft when wet; friable; bioturbated
41.5 - 43.0	No recovery
43.0 - 46.2	Quartz sand, yellowish-gray 5Y 7/2; black N1 phosphorite and heavy mineral grains; mainly very fine to medium quartz sand, minor coarse to very coarse quartz sand, very fine sand to large pebble-size fossils, very fine to very coarse sand-size phosphorite, very fine to fine heavy mineral grains; well sorted quartz sand; subangular to subrounded quartz sand; minor rounded quartz sand; 5 percent skeletal fragments, pelecypods; 3 to 5 percent phosphorite and heavy mineral grains; 20 percent intergrain porosity; moderate hydraulic conductivity; marine siliciclastic shelf; soft when wet; friable; bioturbated
46.2 - 46.6	Mechanically broken and disturbed pelecypod lime floatstone with skeletal lime grainstone and grain-dominated lime packstone matrix, light-gray N7 to very light gray N8; black N1 phosphorite; mainly fine sand- to pebble-size fossils and fossil fragments; minor silt to very fine fossil fragments, lime mud, very fine quartz sand, very fine to medium sand-size phosphorite grains; well sorted quartz sand; subangular quartz sand; skeletal fragments, pelecypods; 5 percent quartz sand; trace phosphorite grains; 25 percent intergrain and moldic porosity; moderate hydraulic conductivity; mid-ramp; soft to moderately soft when wet; poorly cemented; friable
46.6 - 47.0	No recovery
47.0 - 47.8	Mechanically broken and disturbed pelecypod lime floatstone with skeletal lime grainstone and grain-dominated lime packstone matrix, light-gray N7 to very light gray N8; black N1 phosphorite; mainly fine sand to pebble-size fossils and fossil fragments; minor silt to very fine fossil fragments, lime mud, very fine quartz sand, very fine to medium sand-size phosphorite grains; well sorted quartz sand; subangular quartz sand; skeletal fragments, pelecypods; 5 percent quartz sand; trace phosphorite grains; 25 percent intergrain and moldic porosity; moderate hydraulic conductivity; mid-ramp; soft to moderately soft when wet; poorly cemented; friable
47.8 - 48.0	No recovery
48.0 - 51.0	Mechanically broken and disturbed pelecypod lime floatstone and rudstone with skeletal lime grainstone and grain-dominated lime packstone matrix and minor <i>Vermicularia</i> lime bindstone, medium-light-gray N6 to very light gray N8; black N1 phosphorite; mainly fine sand to pebble-size fossils and fossil fragments; minor silt to very fine fossil fragments, lime mud, very fine quartz sand, very fine to medium sand-size phosphorite grains; well sorted quartz sand; subangular quartz sand; skeletal fragments, pelecypods, <i>Vermicularia</i> , bryozoans, gastropods, serpulids; 5 percent quartz sand; 3 percent phosphorite grains; 25 percent intergrain and moldic porosity; moderate hydraulic conductivity; mid-ramp; moderately cemented
51.0 - 60.0	Mechanically broken and disturbed pelecypod lime floatstone and rudstone with skeletal lime grainstone and grain-dominated lime packstone matrix, light-gray N7 to very light gray N8; black N1 phosphorite; mainly fine sand to pebble-size fossils and fossil fragments; minor silt to very fine fossil fragments, lime mud, very fine to medium quartz sand, very fine to medium sand-size phosphorite grains; well sorted quartz sand; subangular quartz sand; skeletal fragments, pelecypods, <i>Vermicularia</i> , bryozoans, echinoids; 5 percent quartz sand; 3 percent phosphorite grains; 25 percent intergrain and moldic porosity; moderate hydraulic conductivity; mid-ramp; poorly to moderately cemented; friable in part
60.0 - 60.8	Mechanically broken and disturbed pelecypod lime floatstone and rudstone with skeletal lime grainstone and grain-dominated lime packstone matrix, light-gray N7 to very light gray N8; black N1 phosphorite; mainly fine sand to pebble-size fossils and fossil fragments; minor silt to very fine fossil fragments, lime mud, very fine to medium quartz sand, very fine to medium sand-size phosphorite grains; well sorted quartz sand; subangular quartz sand; skeletal fragments, pelecypods, <i>Vermicularia</i> , bryozoans, echinoids, oysters; 5 percent quartz sand; 3 percent phosphorite grains; 25 percent intergrain and moldic porosity; high hydraulic conductivity; mid-ramp; poorly to moderately cemented; friable in part
60.8 - 61.0	No recovery

Depth (feet below land surface)	Lithologic description of well HE-1112
61.0 - 61.2	Pelecypod lime rudstone with quartz-sand rich skeletal grain-dominated lime packstone matrix, light-gray N7 to very light gray N8; yellowish-gray 5Y 8/1; black N1 phosphorite and heavy mineral grains; mainly fine sand to pebble-size fossils and fossil fragments, very fine quartz sand; minor fine to very coarse quartz sand, silt to very fine fossil fragments, lime mud, fine to coarse sand-size phosphorite grains, very fine to fine sand-size heavy mineral grains; moderately sorted quartz sand; subangular to rounded quartz sand; skeletal fragments, pelecypods, bryozoans, oysters, gastropods; 25 to 45 percent quartz sand; 5 percent phosphorite and heavy mineral grains; 25 percent intergrain and moldic porosity; high hydraulic conductivity; mid-ramp; hard when wet; well cemented; possible 1-inch thick phosphorite hard ground at 61 feet
61.2 - 64.0	Pelecypod lime rudstone with quartz-sand rich skeletal grain-dominated lime packstone matrix, light-gray N7 to very light gray N8; yellowish-gray 5Y 8/1; black N1 phosphorite and heavy mineral grains; mainly fine sand to pebble-size fossils and fossil fragments, very fine quartz sand; minor fine to very coarse quartz sand, silt to very fine fossil fragments, lime mud, very fine to coarse sand-size phosphorite grains, very fine to fine sand-size heavy mineral grains; moderately sorted quartz sand; subangular to rounded quartz sand; skeletal fragments, pelecypods, bryozoans, oysters, gastropods; 25 to 45 percent quartz sand; 5 percent phosphorite and heavy mineral grains; 25 percent intergrain and moldic porosity; high hydraulic conductivity; mid-ramp; hard when wet; well cemented
64.0 - 67.0	No recovery
67.0 - 70.2	Quartz sandstone with pelecypod rudstone framework, yellowish-gray 5Y 8/1; black N1 phosphorite and heavy mineral grains; mainly very fine to fine quartz sand; minor medium to very coarse quartz sand, fine to coarse sand-size phosphorite grains, very fine sand-size heavy mineral grains; moderately sorted quartz sand; subangular to rounded quartz sand; 20 to 35 percent pelecypods, gastropods, barnacles, skeletal fragments, oysters; 5 percent phosphorite and heavy mineral grains; 20 percent intergrain and moldic porosity; high hydraulic conductivity; marine siliciclastic shelf; hard when wet; well cemented
70.2 - 74.0	No recovery
74.0 - 77.0	Quartz sandstone with pelecypod rudstone framework; light-gray N7 to very light gray N8; black N1 phosphorite and heavy mineral grains; mainly very fine to fine quartz sand; minor medium to very coarse quartz sand, fine to coarse sand-size phosphorite grains, very fine sand-size heavy mineral grains; moderately sorted quartz sand; subangular to rounded quartz sand; 20 to 35 percent pelecypods, gastropods, skeletal fragments, barnacles, coral; 5 percent phosphorite and heavy mineral grains; 20 percent intergrain and moldic porosity; high hydraulic conductivity; marine siliciclastic shelf; hard when wet; well cemented
77.0 - 78.0	Quartz sandstone with pelecypod rudstone framework, light-gray N7 to very light gray N8; black N1 and dark-yellowish-orange 10YR 6/6 phosphorite; black N1 heavy mineral grains; mainly very fine quartz sand; minor fine to coarse quartz sand, granule to pebble-size fossils, very fine sand-size phosphorite and heavy mineral grains; well sorted quartz sand; subangular to rounded quartz sand; 25 percent pelecypods, gastropods; 15 percent phosphorite and heavy mineral grains; 20 percent intergrain and moldic porosity; moderate hydraulic conductivity; marine siliciclastic shelf; moderately hard to hard when wet; well cemented
78.0 - 80.0	No recovery
80.0 - 80.2	Quartz sandstone with pelecypod rudstone framework, light-gray N7 to very light gray N8; black N1 and dark-yellowish-orange 10YR 6/6 phosphorite; black N1 heavy mineral grains; mainly very fine quartz sand; minor fine to coarse quartz sand, granule to pebble-size fossils, very fine sand-size phosphorite and heavy mineral grains, terrigenous clay; well sorted quartz sand; subangular to rounded quartz sand; 25 percent pelecypods, gastropods; 15 percent phosphorite and heavy mineral grains; trace terrigenous clay matrix; 20 percent intergrain and moldic porosity; moderate hydraulic conductivity; marine siliciclastic shelf; moderately hard to hard when wet; well cemented
80.2 - 80.9	Quartz sandstone, yellowish-gray 5Y 8/1; black N1 and dark-yellowish-orange 10YR 6/6 phosphorite; black N1 heavy mineral grains; mainly very fine quartz sand; minor very fine sand-size phosphorite and heavy mineral grains; terrigenous clay; well sorted quartz sand; subangular to subrounded quartz sand; 5 percent pelecypods; 20 percent phosphorite and heavy mineral grains; trace terrigenous clay matrix, trace mica; 15 percent intergrain and very minor moldic porosity; low hydraulic conductivity; marine siliciclastic shelf; soft when wet; friable; poorly cemented
80.9 - 81.0	No recovery
81.0 - 83.5	Quartz sand, yellowish-gray 5Y 8/1 to light-olive-gray 5Y 6/1; black N1 phosphorite and heavy mineral grains; mainly very fine quartz sand, very fine sand-size phosphorite; minor very fine sand-size heavy mineral grains, terrigenous clay; well sorted quartz sand; subangular to subrounded quartz sand; 5 to 15 percent thin-shelled pelecypods; 20 percent phosphorite and heavy mineral grains; trace terrigenous clay matrix; trace mica; 15 percent intergrain porosity; low hydraulic conductivity; marine siliciclastic shelf; soft when wet; friable; very poorly cemented
83.5 - 87.0	No recovery
87.0 - 93.5	Quartz sand, yellowish-gray 5Y 8/1 to light-olive-gray 5Y 6/1; black N1 phosphorite and heavy mineral grains; mainly very fine quartz sand, very fine sand-size phosphorite grains; minor fine to coarse sand-size phosphorite, very fine sand-size heavy mineral grains, granule to large pebble-size pelecypods, terrigenous clay; well sorted quartz sand; subangular to subrounded quartz sand; 5 percent thin-shelled pelecypods; 20 to 25 percent phosphorite and heavy mineral grains; trace terrigenous clay matrix; trace mica; 15 percent intergrain porosity; low hydraulic conductivity; marine siliciclastic shelf; soft when wet; friable; very poorly cemented
93.5 - 96.0	No recovery

Depth (feet below land surface)	Lithologic description of well HE-1112
96.0 - 97.2	Quartz sand, yellowish-gray 5Y 8/1 to light-olive-gray 5Y 6/1; black N1 phosphorite and heavy mineral grains; mainly very fine quartz sand, very fine sand-size phosphorite grains; minor fine to coarse sand-size phosphorite, very fine sand-size heavy mineral grains, granule to large pebble-size pelecypods, terrigenous clay; well sorted quartz sand; subangular to subrounded quartz sand; trace to 5 percent thin-shelled pelecypods; 20 to 25 percent phosphorite and heavy mineral grains; trace terrigenous clay matrix; trace mica; 15 percent intergrain porosity; low hydraulic conductivity; marine siliciclastic shelf; soft when wet; friable; very poorly cemented
97.2 - 101.0	No recovery
101.0 - 105.5	Quartz sand, light-olive-gray 5Y 6/1 to 5Y 5/2; black N1 phosphorite and heavy mineral grains; mainly very fine quartz sand, very fine sand-size phosphorite; minor very fine to very coarse quartz sand, fine sand- to small pebble-size phosphorite grains, very fine sand-size heavy mineral grains, terrigenous clay; well sorted quartz sand; subangular to subrounded quartz sand; 20 to 25 percent phosphorite and heavy mineral grains; trace fine to very coarse quartz sand; trace terrigenous clay matrix; trace mica; 15 percent intergrain porosity; low hydraulic conductivity; marine siliciclastic shelf; soft when wet; friable; very poorly cemented; coarser quartz sand and phosphorite grains floating in very fine quartz sand matrix
105.5 - 107.6	Quartz sand, light-olive-gray 5Y 6/1 to 5Y 5/2; black N1 phosphorite and heavy mineral grains; mainly very fine quartz sand, very fine sand-size phosphorite; minor very fine to very coarse quartz sand, fine sand to small pebble-size phosphorite grains, very fine sand-size heavy mineral grains, terrigenous clay; well sorted quartz sand; subangular to subrounded quartz sand; 20 to 25 percent phosphorite and heavy mineral grains; trace fine to very coarse quartz sand; 5 percent terrigenous clay matrix and laminations; trace mica; 10 percent intergrain porosity; low hydraulic conductivity; marine siliciclastic shelf; soft when wet; friable; very poorly cemented; coarse quartz sand and phosphorite grains floating in very fine quartz sand matrix; bioturbated; laminations of silty terrigenous mudstone
107.6 - 108.0	No recovery
108.0 - 110.5	Quartz sand with laminations of silty terrigenous mudstone, light-olive-gray 5Y 6/1 to 5Y 5/2 quartz sand; olive-gray 5Y 4/1 clay laminations; black N1 phosphorite and heavy mineral grains; mainly very fine quartz sand, very fine sand-size phosphorite, terrigenous clay; minor very fine sand-size heavy mineral grains; well sorted quartz sand; subangular to subrounded quartz sand; 20 to 25 percent phosphorite and heavy mineral grains; trace fine to very coarse quartz sand; 5 percent terrigenous clay matrix and laminations; trace mica; 5 percent intergrain porosity; very low hydraulic conductivity; marine siliciclastic shelf; soft when wet; friable; very poorly cemented; bioturbated including horizontal burrows; laminations of silty terrigenous mudstone
110.5 - 116.2	Terrigenous mudstone, olive-gray 5Y 4/1 clay laminations; light-olive-gray 5Y 6/1 to 5Y 5/2 quartz sand; black N1 phosphorite and heavy mineral grains; mainly clay-size terrigenous mudstone; minor very fine quartz sand, very fine sand-size phosphorite and heavy mineral grains; well sorted quartz sand; subangular to subrounded quartz sand; 20 to 25 percent phosphorite and heavy mineral grains; trace mica; less than 5 percent intergrain microporosity; very low hydraulic conductivity; marine siliciclastic shelf; soft when wet; bioturbated including horizontal burrows filled with quartz sand
116.2 - 120.0	Quartz sand, light-olive-gray 5Y 5/2 quartz sand; black N1 phosphorite and heavy mineral grains; mainly very fine quartz sand; minor fine quartz sand, very fine sand-size phosphorite and heavy mineral grains, terrigenous clay matrix; well sorted quartz sand; subangular to subrounded quartz sand; 5 to 10 percent phosphorite and heavy mineral grains; trace mica; trace terrigenous clay matrix; 15 percent intergrain porosity; low hydraulic conductivity; marine siliciclastic shelf; soft when wet; friable; very poorly cemented; bioturbated; abrupt color change and reduction in percentage of phosphorite grains at top of interval of 116.2 feet
120.0 - 125.8	Quartz sand, light-olive-gray 5Y 5/2 quartz sand, black N1 phosphorite and heavy mineral grains; mainly very fine quartz sand; minor fine quartz sand, very fine sand-size phosphorite and heavy mineral grains, terrigenous clay matrix; well sorted quartz sand; subangular to subrounded quartz sand; 5 to 15 percent phosphorite and heavy mineral grains; trace mica; trace terrigenous clay matrix; 15 percent intergrain porosity; low hydraulic conductivity; marine siliciclastic shelf; soft when wet; friable; very poorly cemented; bioturbated
125.8 - 128.0	No recovery
128.0 - 130.5	Quartz sand, light-olive-gray 5Y 5/2 quartz sand; black N1 phosphorite and heavy mineral grains; mainly very fine quartz sand; minor fine quartz sand, very fine sand-size phosphorite and heavy mineral grains, terrigenous clay matrix; well sorted quartz sand; subangular to subrounded quartz sand; 5 to 10 percent phosphorite and heavy mineral grains; trace mica; trace terrigenous clay matrix; 15 percent intergrain porosity; low hydraulic conductivity; marine siliciclastic shelf; soft when wet; friable; very poorly cemented; bioturbated
130.5 - 131.0	No recovery
131.0 - 138.0	Quartz sand, light-olive-gray 5Y 5/2 quartz sand; black N1 phosphorite and heavy mineral grains; mainly very fine quartz sand; minor fine quartz sand, very fine sand-size phosphorite and heavy mineral grains, terrigenous clay matrix; well sorted quartz sand; subangular to subrounded quartz sand; 5 to 15 percent phosphorite and heavy mineral grains; trace mica; trace terrigenous clay matrix; 15 percent intergrain porosity; low hydraulic conductivity; marine siliciclastic shelf; soft when wet; friable; very poorly cemented; bioturbated

Depth (feet below land surface)	Lithologic description of well HE-1112
138.0 - 140.5	Quartz sand, light-olive-gray 5Y 5/2 quartz sand; black N1 phosphorite and heavy mineral grains; mainly very fine quartz sand; minor fine to coarse quartz sand, very fine sand-size phosphorite and heavy mineral grains, terrigenous clay matrix; well sorted quartz sand; subangular to subrounded very fine quartz sand; subrounded to rounded fine to coarse quartz sand; 5 to 15 percent phosphorite and heavy mineral grains; less than 10 percent fine to coarse quartz sand; trace mica; trace terrigenous clay matrix; 15 percent intergrain porosity; low hydraulic conductivity; marine siliciclastic shelf; soft when wet; friable; very poorly cemented; bioturbated; fine to coarse quartz sand floating in very fine quartz sand matrix
140.5 - 141.0	No recovery
141.0 - 143.3	Quartz sand, light-olive-gray 5Y 5/2 quartz sand; black N1 phosphorite and heavy mineral grains; mainly very fine quartz sand; minor fine to very coarse quartz sand, very fine to coarse sand-size phosphorite grains, very fine sand-size heavy mineral grains, terrigenous clay matrix; moderately sorted quartz sand; subangular to rounded quartz sand; 5 to 10 percent phosphorite and heavy mineral grains; 10 to 35 percent fine to very coarse quartz sand; trace to 5 percent thin-shelled pelecypods; trace mica; trace terrigenous clay matrix; 15 percent intergrain porosity; low hydraulic conductivity; marine siliciclastic shelf; soft when wet; friable; very poorly cemented; bioturbated; fine to coarse quartz sand floating in very fine quartz sand matrix
143.3 - 144.5	Quartz sand, light-olive-gray 5Y 5/2 quartz sand; black N1 phosphorite and heavy mineral grains; mainly very fine quartz sand, terrigenous clay; minor fine to very coarse quartz sand, very fine to coarse sand-size phosphorite grains, very fine sand-size heavy mineral grains; moderately sorted quartz sand; subangular to rounded quartz sand; 5 to 10 percent phosphorite and heavy mineral grains; 10 to 35 percent fine to very coarse quartz sand; trace to 5 percent thin-shelled pelecypods; trace mica; abundant terrigenous clay matrix; 10 percent intergrain porosity; very low hydraulic conductivity; marine siliciclastic shelf; soft when wet; friable; very poorly cemented; bioturbated; fine to coarse quartz sand floating in very fine quartz sand matrix
144.5 - 145.0	Quartz sand, light-olive-gray 5Y 5/2 quartz sand; black N1 phosphorite and heavy mineral grains; mainly medium to coarse quartz sand; minor very fine to fine and very coarse quartz sand; terrigenous clay; very fine to coarse sand-size phosphorite grains, very fine sand-size heavy mineral grains; moderately sorted quartz sand; subangular to rounded quartz sand; 5 to 10 percent phosphorite and heavy mineral grains; 15 percent thin-shelled pelecypods; trace mica; uncommon terrigenous clay matrix; 20 percent intergrain porosity; low hydraulic conductivity; marine siliciclastic shelf; soft when wet; friable; very poorly cemented; bioturbated
145.0 - 146.0	Quartz sand, light-olive-gray 5Y 5/2 quartz sand; black N1 phosphorite and heavy mineral grains; mainly medium to coarse quartz sand; minor very fine to fine and very coarse quartz sand; terrigenous clay; very fine to coarse sand-size phosphorite grains, very fine sand-size heavy mineral grains; moderately sorted quartz sand; subangular to rounded quartz sand; 5 to 10 percent phosphorite and heavy mineral grains; 15 percent thin-shelled pelecypods; trace mica; uncommon terrigenous clay matrix; 15 percent intergrain porosity; low hydraulic conductivity; marine siliciclastic shelf; soft when wet; friable; very poorly cemented; bioturbated
146.0 - 149.7	Quartz sand, light-olive-gray 5Y 5/2 quartz sand; black N1 phosphorite and heavy mineral grains; mainly very fine quartz sand; minor fine to medium quartz sand; terrigenous clay; very fine to coarse sand-size phosphorite grains, very fine sand-size heavy mineral grains; well sorted quartz sand; subangular to subrounded quartz sand; 5 to 10 percent phosphorite and heavy mineral grains; trace thin-shelled pelecypods; trace mica; uncommon terrigenous clay matrix; 15 percent intergrain porosity; low hydraulic conductivity; marine siliciclastic shelf; soft when wet; friable; very poorly cemented; bioturbated
149.7 - 151.0	No recovery

Prison No. 1 Core

Florida Geological Survey well number	W-17782
GWSI number	HE-1113
Total depth	151 feet
Cored from	0 to 151 feet
County	Hendry
Location	SE, SE, sec. 16, T48S, R31E
Latitude	26°18'05"
Longitude	81°13'17"
Elevation	20 feet
Completion date	October 27, 1998
Other types of available logs	Gamma ray, induction, spontaneous potential, single-point resistivity
Owner	U.S. Geological Survey
Driller	Florida Geological Survey
Core described by	Kevin J. Cunningham (cored with a compression core from 0 to 35 feet and a rotary core from 35 to 151 feet)
Undifferentiated quartz sand and minor limestone	0 to 12 feet
Tamiami Formation	12 to 50.1 feet
Pinecrest Sand Member	12 to 33 feet
Ochopee Limestone Member	33 to 50.1 feet
Unnamed formation	50.1 to 81 feet
Peace River Formation	81 to 150.7 feet
Water-table aquifer	0 to 12 feet
Upper confining unit	12 to 35 feet
Gray limestone aquifer	35 to 50.1 feet
Lower confining unit	50.1 to 150.7 feet

Depth (feet below land surface)	Lithologic description of well HE-1113
0.0 - 3.0	Quartz sand, pale-yellowish-brown 10YR 6/2, dark-yellowish-brown 10YR 4/2; black N1 organic soil and grains; mainly very fine to fine quartz sand; minor quartz silt and medium to coarse quartz sand and silt to fine sand-size organic grains; well sorted quartz sand; angular to subrounded quartz sand; 5 to 10 percent organic grains; 25 percent intergrain porosity; moderate hydraulic conductivity; soft when wet; friable
3.0 - 4.0	Quartz sand, very pale orange 10YR 8/2; black N1 phosphorite and heavy mineral grains; mainly very fine to fine quartz sand; minor quartz silt, medium to coarse quartz sand and very fine to fine phosphorite and heavy mineral grains; well sorted quartz sand; angular to subrounded quartz sand; trace phosphorite and heavy mineral grains; 25 percent intergrain porosity; moderate hydraulic conductivity; soft when wet; friable
4.0 - 4.8	Quartz sand, mottled very pale orange 10YR 8/2, grayish-orange 10YR 7/4, pale yellowish-brown 10YR 6/2, dark - yellowish-brown 10YR 4/2; black N1 phosphorite and heavy mineral grains; mainly very fine to fine quartz sand; minor quartz silt, medium to coarse quartz sand, and very fine to fine phosphorite and heavy mineral grains; well sorted quartz sand; angular to subrounded quartz sand; trace phosphorite and heavy mineral grains; 25 percent intergrain porosity; moderate hydraulic conductivity; soft when wet; friable
4.8 - 6.0	Quartz sand, very pale orange 10YR 8/2, grayish-orange 10YR 7/4; black N1 phosphorite and heavy mineral grains; mainly very fine to coarse quartz sand; minor quartz silt and very fine to fine phosphorite and heavy mineral grains; moderately sorted quartz sand; angular to subrounded quartz sand; trace phosphorite and heavy mineral grains; 25 percent intergrain porosity; moderate hydraulic conductivity; soft when wet; friable
6.0 - 7.0	No recovery
7.0 - 10.0	Quartz sand, pale-yellowish-brown 10YR 6/2; black N1 phosphorite, heavy mineral and organic grains; mainly very fine to fine quartz sand; minor silt and medium to coarse quartz sand, very fine to fine phosphorite and heavy mineral grains, and very fine organic grains; well sorted quartz sand; angular to subrounded quartz sand; 5 percent organic grains; trace phosphorite and heavy mineral grains; 25 percent intergrain porosity; moderate hydraulic conductivity; soft when wet; friable
10.0 - 12.0	Quartz sand, pale-yellowish-brown 10YR 6/2; black N1 phosphorite, heavy mineral and organic grains; mainly very fine to medium quartz sand; minor quartz silt, coarse quartz sand, very fine to fine phosphorite and heavy mineral grains, and very fine organic grains; moderately sorted quartz sand; angular to subrounded quartz sand; 5 percent organic grains; trace phosphorite and heavy mineral grains; 25 percent intergrain porosity; moderate hydraulic conductivity; soft when wet; friable
12.0 - 14.1	Quartz sand-rich terrigenous mudstone, yellowish-gray 5Y 7/2; mainly terrigenous clay and medium to coarse quartz sand; minor quartz silt and very fine to fine quartz sand; well sorted quartz sand; angular to subrounded quartz sand; trace to 30 percent quartz sand; trace pelecypods; less than 2 percent intergrain microporosity; very low hydraulic conductivity; soft when wet; hard dry; possible paleosol with oxidized diffuse nodules in upper part of interval with color of white N9, yellowish-gray 5Y 8/1, and dark-yellowish-orange 10YR 6/6
14.1 - 14.6	Quartz sand with marly terrigenous clay matrix, yellowish-gray 5Y 7/2 and 5Y 8/1; black N1 heavy mineral grains; black N1 and dark-yellowish-orange 10YR 6/6 phosphorite grains; mainly terrigenous clay and silt to very fine quartz sand; minor fine to very coarse quartz sand, very fine to very coarse sand-size phosphorite grains and very fine sand-size heavy mineral grains; well sorted quartz sand; angular to subrounded quartz sand; trace phosphorite and heavy mineral grains; 5 percent intergrain porosity; low hydraulic conductivity; soft when wet; friable
14.6 - 17.0	Quartz sand, yellowish-gray 5Y 7/2 and 5Y 8/1; black N1 heavy mineral grains; black N1 and dark-yellowish-orange 10YR 6/6 phosphorite grains; mainly medium to coarse quartz sand; minor quartz silt, fine and very coarse quartz sand, very fine sand to small pebble-size fossils, terrigenous clay and lime mud, very fine to very coarse sand-size phosphorite grains and very fine sand-size heavy mineral grains; moderately sorted quartz sand; angular to rounded quartz sand; 10 to 15 percent pelecypods, barnacles, echinoid spines; trace phosphorite and heavy mineral grains; 10 percent intergrain porosity; low hydraulic conductivity; soft when wet; friable
17.0 - 22.0	No recovery
22.0 - 22.9	Quartz sand, yellowish-gray 5Y 7/2; black N1 and light-brown 5YR 5/6 heavy minerals; black N1 phosphorite grains; mainly very fine to coarse quartz sand; minor quartz silt, very fine sand to small pebble-size fossils, clay-size terrigenous clay and lime mud, very fine to coarse sand-size phosphorite grains and very fine to medium sand-size heavy mineral grains; moderately sorted quartz sand; angular to rounded quartz sand; 10 to 20 percent skeletal fragments, pelecypods, barnacles; trace phosphorite and heavy mineral grains; 15 percent intergrain porosity; low hydraulic conductivity; soft when wet; friable
22.9 - 24.0	No recovery

Depth (feet below land surface)	Lithologic description of well HE-1113
24.0 - 25.75	Quartz sand, yellowish-gray 5Y 7/2; black N1 and light-brown 5YR 5/6 heavy minerals; black N1 phosphorite grains; mainly very fine to coarse quartz sand; minor quartz silt, very fine sand to small pebble-size fossils, terrigenous clay and lime mud, very fine to coarse sand-size phosphorite grains and very fine to medium sand-size heavy mineral grains; moderately sorted quartz sand; angular to rounded quartz sand; 10 to 20 percent skeletal fragments, pelecypods, barnacles; trace phosphorite and heavy mineral grains; 15 percent intergrain porosity; low hydraulic conductivity; soft when wet; friable
25.75 - 29.0	No recovery
29.0 - 32.3	Quartz sand, yellowish-gray 5Y 8/1; black N1 and light-brown 5YR 5/6 heavy minerals; black N1 phosphorite grains; mainly very fine to fine quartz sand; minor quartz silt, medium to coarse quartz sand, very fine sand to granule-size fossils, terrigenous clay and lime mud, and very fine to medium sand-size phosphorite and heavy mineral grains; moderately sorted quartz sand; angular to subrounded quartz sand; 5 to 15 percent skeletal fragments, pelecypods, barnacles; trace phosphorite and heavy mineral grains; 15 percent intergrain porosity; low hydraulic conductivity; soft when wet; friable; bioturbated
32.3 - 33.0	Quartz sand, yellowish-gray 5Y 8/1; black N1 and light-brown 5YR 5/6 heavy minerals; black N1 phosphorite grains; mainly very fine to coarse quartz sand; minor quartz silt, very fine sand to granule-size fossils, terrigenous clay and lime mud, and very fine to medium sand-size phosphorite and heavy mineral grains; moderately sorted quartz sand; angular to subrounded quartz sand; 10 to 20 percent skeletal fragments, barnacles, pelecypods; trace phosphorite and heavy mineral grains; 15 percent intergrain porosity; low hydraulic conductivity; soft when wet; friable; bioturbated
33.0 - 35.0	Pelecypod lime floatstone with skeletal grain and mud-dominated lime packstone matrix, yellowish-gray 5Y 8/1 and 5Y 7/2; black N1 phosphorite and heavy mineral grains; mainly very fine to medium to very coarse fossils; minor clay-size lime mud, very fine to fine sand and granule to pebble-size fossils, quartz silt, very fine to medium quartz sand, and very fine to fine sand size phosphorite and heavy mineral grains; well sorted quartz sand; angular to subangular quartz sand; skeletal fragments, pelecypods, barnacles, serpulids; trace phosphorite and heavy mineral grains; 15 percent intergrain and moldic porosity; low hydraulic conductivity; moderately hard when wet, moderately cemented; abrupt contact with quartz sand above
35.0 - 35.6	Pelecypod lime rudstone with quartz sand-rich, mud-dominated lime packstone matrix, yellowish-gray 5Y 8/1; black N1 phosphorite and heavy mineral grains; mainly medium sand to large pebble-size fossils and clay-size lime mud; minor very fine to fine sand-size fossils, quartz silt, very fine to fine quartz sand, and very fine sand size phosphorite and heavy mineral grains; well sorted quartz sand; angular to subangular quartz sand; skeletal fragments, pelecypods, barnacles, bryozoans, serpulids; trace to 20 percent quartz sand; trace phosphorite and heavy mineral grains; 25 percent moldic and intergrain porosity; high hydraulic conductivity; hard when wet, well cemented
35.6 - 41.0	No recovery
41.0 - 44.4	Pelecypod lime rudstone with skeletal grain-dominated lime packstone matrix, very pale orange 10YR 8/2; black N1 phosphorite and heavy mineral grains; mainly medium sand to large pebble-size fossils and very fine to fine quartz sand; minor clay-size lime mud, very fine to fine sand-size fossils, quartz silt, medium to very coarse quartz sand, and very fine to fine sand-size phosphorite and heavy mineral grains; moderately sorted quartz sand; angular to subrounded quartz sand; skeletal fragments, pelecypods, barnacles, bryozoans, gastropods (including <i>Turritella</i>), serpulids, coral; 10 to 20 percent quartz sand; trace phosphorite and heavy mineral grains; 30 percent moldic and intergrain porosity; high hydraulic conductivity; hard when wet, well cemented
44.4 - 45.6	Pelecypod lime rudstone with skeletal grain-dominated lime packstone matrix, very pale orange 10YR 8/2; black N1 phosphorite and heavy mineral grains; mainly medium sand to large pebble-size fossils and very fine to fine quartz sand; minor clay-size lime mud, very fine to fine sand-size fossils, quartz silt, medium to very coarse quartz sand, and very fine to fine sand-size phosphorite and heavy mineral grains; moderately sorted quartz sand; angular to subrounded quartz sand; skeletal fragments, pelecypods, barnacles, bryozoans, gastropods (including <i>Turritella</i>), serpulids, coral; 40 percent quartz sand; 3 percent phosphorite grains; trace heavy mineral grains; 30 percent moldic and intergrain porosity; high hydraulic conductivity; hard when wet, well cemented
45.6 - 48.0	No recovery
48.0 - 49.0	Pelecypod lime rudstone with skeletal-rich quartz sand matrix, very pale orange 10YR 8/2; black N1 phosphorite and heavy mineral grains; mainly medium sand to large pebble-size fossils and very fine to fine quartz sand; minor clay-size lime mud, very fine to fine sand-size fossils, quartz silt, medium to coarse quartz sand, and very fine to fine sand-size phosphorite and heavy mineral grains; moderately sorted quartz sand; angular to subrounded quartz sand; skeletal fragments, pelecypods, gastropods (including <i>Turritella</i>), sand dollars, barnacles; 40 to 60 percent quartz sand; 3 percent phosphorite grains; trace heavy mineral grains; 30 percent moldic and intergrain porosity; high hydraulic conductivity; hard when wet, well cemented; quartz sandstone has minor lime mud matrix

Depth (feet below land surface)	Lithologic description of well HE-1113
49.0 - 50.1	<i>Turritella</i> pelecypod rudstone with quartz sand-rich skeletal packstone matrix and quartz sand with a framework of <i>Turritella</i> and pelecypods; yellowish-gray 5Y 8/1; black N1 phosphorite and heavy mineral grains; mainly medium sand to large pebble-size fossils and very fine to fine quartz sand; minor clay-size lime mud, very fine to fine sand-size fossils, quartz silt, medium to coarse quartz sand, and very fine to fine sand-size phosphorite and heavy mineral grains; moderately sorted quartz sand; angular to subrounded quartz sand; <i>Turritella</i> , pelecypods, skeletal fragments, 40 to 60 percent quartz sand; 3 percent phosphorite grains; trace heavy mineral grains; 25 percent moldic and intergrain porosity; high hydraulic conductivity; hard when wet, well cemented; quartz sandstone has minor lime mud matrix
50.1 - 51.1	Quartz sandstone, yellowish-gray 5Y 8/1; black N1 phosphorite and heavy mineral grains; mainly very fine quartz sand; minor quartz silt, terrigenous clay, and very fine sand size phosphorite and heavy mineral grains; well sorted quartz sand; angular to subangular quartz sand; trace to 15 percent skeletal fragments; 5 to 15 percent phosphorite grains; trace heavy mineral grains; trace mica; 15 percent intergrain porosity; low hydraulic conductivity; moderately soft when wet; friable; bioturbated
51.1 - 56.3	No recovery
56.3 - 57.9	Quartz sandstone, yellowish-gray 5Y 8/1; black N1 phosphorite and heavy mineral grains; mainly very fine quartz sand; minor quartz silt, terrigenous clay, and very fine sand size phosphorite and heavy mineral grains; well sorted quartz sand; angular to subangular quartz sand; trace to 15 percent skeletal fragments; 15 percent phosphorite grains; trace heavy mineral grains; trace mica; 15 percent intergrain porosity; low hydraulic conductivity; moderately soft when wet; friable; bioturbated
57.9 - 60.0	No recovery
60.0 - 63.8	Quartz sand, yellowish-gray 5Y 7/2; black N1 phosphorite and heavy mineral grains; mainly very fine quartz sand; minor quartz silt, clay-size terrigenous clay, and very fine sand-size phosphorite and heavy mineral grains; well sorted quartz sand; angular to subangular quartz sand; trace to 10 percent skeletal fragments and thin-shelled pelecypods; 15 percent phosphorite grains; trace heavy mineral grains; trace mica; 15 percent intergrain porosity; low hydraulic conductivity; soft when wet; friable; bioturbated
63.8 - 64.0	No recovery
64.0 - 68.9	Quartz sand, yellowish-gray 5Y 7/2; black N1 phosphorite and heavy mineral grains; mainly very fine quartz sand; minor quartz silt, terrigenous clay, and very fine sand size phosphorite and heavy mineral grains; trace fine to very coarse sand-size phosphorite grains; well sorted quartz sand; angular to subangular quartz sand; trace to 5 percent skeletal fragments and thin-shelled pelecypods; 15 to 20 percent phosphorite grains; trace heavy mineral grains; trace mica; 15 percent intergrain porosity; low hydraulic conductivity; soft when wet; friable; bioturbated
68.9 - 70.0	No recovery
70.0 - 71.5	Quartz sand, yellowish-gray 5Y 7/2; black N1 phosphorite and heavy mineral grains; mainly very fine quartz sand; minor quartz silt, terrigenous clay, and very fine sand size phosphorite and heavy mineral grains; trace fine to very coarse sand-size phosphorite grains; well sorted quartz sand; angular to subangular quartz sand; trace to 5 percent thin-shelled pelecypods; 15 to 20 percent phosphorite grains; trace heavy mineral grains; trace mica; 15 percent intergrain porosity; low hydraulic conductivity; soft when wet; friable; bioturbated
71.5 - 75.5	Quartz sand, light-olive-gray 5Y 6/1; black N1 phosphorite and heavy mineral grains; mainly very fine quartz sand; minor quartz silt, terrigenous clay, and very fine sand-size phosphorite and heavy mineral grains; trace fine to very coarse sand-size phosphorite grains; well sorted quartz sand; angular to subangular quartz sand; trace to 5 percent thin-shelled pelecypods; 20 to 25 percent phosphorite grains; trace heavy mineral grains; trace mica; 15 percent intergrain porosity; low hydraulic conductivity; soft when wet; friable; bioturbated
75.5 - 76.0	No recovery
76.0 - 76.9	Quartz sand, light-olive-gray 5Y 6/1; black N1 phosphorite and heavy mineral grains; mainly very fine quartz sand; minor quartz silt, terrigenous clay, and very fine sand size phosphorite and heavy mineral grains; trace fine to very coarse sand-size quartz and phosphorite grains; well sorted quartz sand; angular to subangular quartz sand; trace to 5 percent thin-shelled pelecypods; 20 to 25 percent phosphorite grains; trace heavy mineral grains; trace mica; 15 percent intergrain porosity; low hydraulic conductivity; soft when wet; friable; bioturbated; coarse quartz and phosphorite grains floating in very fine grain quartz sand matrix
76.9 - 81.0	No recovery

Depth (feet below land surface)	Lithologic description of well HE-1113
81.0 - 83.4	Quartz sand interlaminated with terrigenous mudstone, yellowish-gray 5Y 8/1 quartz sand; olive-gray 5Y 3/2 mudstone; black N1 phosphorite and heavy mineral grains; mainly very fine quartz sand and terrigenous clay; minor quartz silt, and very fine sand-size phosphorite and heavy mineral grains; trace fine to very coarse sand size quartz and phosphorite grains; well sorted quartz sand; angular to subrounded quartz sand; 20 percent phosphorite grains; trace heavy mineral grains; trace mica; trace fish scales; 15 percent intergrain porosity in quartz sand; trace porosity in mudstone; low hydraulic conductivity in quartz sand; very low in mudstone; quartz sand soft when wet; friable quartz sand; bioturbated; coarse quartz and phosphorite grains floating in very fine grain quartz sand matrix; mudstone laminated (about 1-inch thick)
83.4 - 87.0	Terrigenous mudstone interlaminated with yellowish-gray 5Y 8/1 quartz sand; olive-gray 5Y 3/2 mudstone; black N1 phosphorite and heavy mineral grains; mainly very fine quartz sand and terrigenous clay; minor quartz silt, and very fine sand-size phosphorite and heavy mineral grains; trace fine to very coarse sand-size quartz and phosphorite grains; well sorted quartz sand; angular to subrounded quartz sand; 20 percent phosphorite grains; trace heavy mineral grains; trace mica; trace fish scales; 15 percent intergrain porosity in quartz sand; trace porosity in mudstone; low hydraulic conductivity in quartz sand; very low in mudstone; quartz sand soft when wet; friable quartz sand; bioturbated; coarse quartz and phosphorite grains floating in very fine grain quartz sand matrix
87.0 - 88.0	No recovery
88.0 - 88.7	Terrigenous mudstone, olive-gray 5Y 3/2; mainly terrigenous clay; minor quartz silt; trace mica; trace fish scales; trace microporosity; very low hydraulic conductivity; hard when wet
88.7 - 89.0	No recovery
89.0 - 91.0	Terrigenous mudstone, olive-gray 5Y 3/2; mainly terrigenous clay; minor quartz silt; trace mica; trace microporosity; very low hydraulic conductivity; hard when wet
91.0 - 94.5	Terrigenous mudstone with minor diatoms, olive-gray 5Y 3/2; mainly terrigenous clay; minor quartz silt; trace to 5 percent diatoms; trace microporosity; very low hydraulic conductivity; hard when wet
94.5 - 94.7	Diatomaceous mudstone, yellowish-gray 5Y 7/2; mainly terrigenous clay; minor quartz silt; 20 to 40 percent diatoms; trace microporosity; very low hydraulic conductivity; moderately hard when wet
94.7 - 95.0	No recovery
95.0 - 97.6	Diatomaceous mudstone, yellowish-gray 5Y 7/2, light-olive-gray 5Y 5/2; black N1 phosphorite grains; mainly clay-size terrigenous clay; minor quartz silt, very fine sand-size quartz sand and phosphorite grains; 20 to 40 percent diatoms; quartz sand contains 15 percent phosphorite grains; trace microporosity; very low hydraulic conductivity; moderately hard when wet; minor interlaminations of quartz sand
97.6 - 100.3	Quartz sand, light-olive-gray 5Y 5/2; black N1 phosphorite and heavy mineral grains; mainly very fine quartz sand; minor quartz silt, terrigenous clay, and very fine sand-size phosphorite and heavy mineral grains; well sorted quartz sand; angular to subangular quartz sand; 10 percent phosphorite grains; trace heavy mineral grains; trace mica; 10 percent intergrain porosity; low hydraulic conductivity; soft when wet; friable; bioturbated; minor disturbed laminations of terrigenous mudstone; very minor terrigenous clay matrix
100.3 - 101.0	No recovery
101.0 - 107.4	Quartz sand, yellowish-gray 5Y 7/2, light-olive-gray 5Y 5/2; black N1 phosphorite and heavy mineral grains; mainly very fine quartz sand; minor quartz silt, terrigenous clay, and very fine sand-size phosphorite and heavy mineral grains; well sorted quartz sand; angular to subangular quartz sand; 5 to 10 percent phosphorite grains; trace heavy mineral grains; trace mica; 15 percent intergrain porosity; low hydraulic conductivity; soft when wet; friable; bioturbated; very minor terrigenous clay matrix
107.4 - 110.0	Quartz sand, yellowish-gray 5Y 7/2, light-olive-gray 5Y 5/2; black N1 phosphorite and heavy mineral grains; mainly very fine quartz sand; minor quartz silt, terrigenous clay, and very fine sand size phosphorite and heavy mineral grains; trace fine to coarse quartz sand; well sorted quartz sand; angular to subrounded quartz sand; 5 to 10 percent phosphorite grains; trace heavy mineral grains; trace mica; 15 percent intergrain porosity; low hydraulic conductivity; soft when wet; friable; bioturbated; very minor terrigenous clay matrix; coarse quartz grains floating in very fine quartz sand matrix
110.0 - 111.0	No recovery
111.0 - 118.0	Quartz sand, yellowish-gray 5Y 7/2, light-olive-gray 5Y 5/2; black N1 phosphorite and heavy mineral grains; mainly very fine quartz sand; minor quartz silt, terrigenous clay, and very fine sand size phosphorite and heavy mineral grains; trace fine to medium quartz sand and fine to medium sand-size phosphorite grains; well sorted quartz sand; angular to subrounded quartz sand; 10 percent phosphorite grains; trace heavy mineral grains; trace mica; 15 percent intergrain porosity; low hydraulic conductivity; soft when wet; friable; bioturbated; very minor terrigenous clay matrix; coarse quartz grains floating in very fine quartz sand matrix

Depth (feet below land surface)	Lithologic description of well HE-1113
118.0 - 120.3	Quartz sand, yellowish-gray 5Y 7/2, light-olive-gray 5Y 5/2; black N1 phosphorite and heavy mineral grains; mainly very fine quartz sand; minor quartz silt, fine to coarse quartz sand, terrigenous clay, and very fine sand-size phosphorite and heavy mineral grains; trace fine to medium sand-size phosphorite grains; moderately sorted quartz sand; angular to subrounded quartz sand; 10 percent phosphorite grains; 5 to 10 percent fine to coarse quartz sand; trace heavy mineral grains; trace mica; trace thin-shelled pelecypods; 15 percent intergrain porosity; low hydraulic conductivity; soft when wet; friable; bioturbated; very minor terrigenous clay matrix; coarse quartz grains floating in very fine quartz sand matrix
120.3 - 121.0	No recovery
121.0 - 131.0	Quartz sand, yellowish-gray 5Y 7/2, light-olive-gray 5Y 5/2; black N1 phosphorite and heavy mineral grains; mainly very fine quartz sand; minor quartz silt, fine to coarse quartz sand, terrigenous clay, and very fine sand size phosphorite and heavy mineral grains; trace fine to medium sand-size phosphorite grains; moderately sorted quartz sand; angular to subrounded quartz sand; 10 percent phosphorite grains; 5 to 10 percent fine to coarse quartz sand; trace heavy mineral grains; trace mica; trace thin-shelled pelecypods; 15 percent intergrain porosity; low hydraulic conductivity; soft when wet; friable; bioturbated; very minor terrigenous clay matrix; coarse quartz grains floating in very fine quartz sand matrix
131.0 -142.0	Quartz sand, yellowish-gray 5Y 7/2, light-olive-gray 5Y 5/2; black N1 phosphorite and heavy mineral grains; mainly very fine quartz sand; minor quartz silt, fine to very coarse quartz sand, terrigenous clay, and very fine sand size phosphorite and heavy mineral grains; trace fine to medium sand size phosphorite grains; moderately sorted quartz sand; angular to subrounded quartz sand; 10 percent phosphorite grains; trace to 70 percent fine to very coarse quartz sand; trace heavy mineral grains; trace mica; trace thin-shelled pelecypods; 10 to 15 percent intergrain porosity; low hydraulic conductivity; soft when wet; friable; bioturbated; minor terrigenous clay matrix
142.0 - 146.0	Quartz sand, yellowish-gray 5Y 7/2, light-olive-gray 5Y 5/2; black N1 phosphorite and heavy mineral grains; mainly very fine quartz sand; minor quartz silt, fine to coarse quartz sand, terrigenous clay, and very fine sand-size phosphorite and heavy mineral grains; trace fine to coarse sand-size phosphorite grains; moderately sorted quartz sand; angular to subrounded quartz sand; 5 percent phosphorite grains; trace to 15 percent fine to very coarse quartz sand; trace heavy mineral grains; trace mica; trace thin-shelled pelecypods; 10 to 15 percent intergrain porosity; low hydraulic conductivity; soft when wet; friable; bioturbated; minor terrigenous clay matrix; locally clay-rich matrix
146.0 - 150.7	Quartz sand, yellowish-gray 5Y 7/2, light-olive-gray 5Y 5/2; black N1 phosphorite and heavy mineral grains; mainly very fine quartz sand; minor quartz silt, fine to coarse quartz sand, terrigenous clay, and very fine sand size phosphorite and heavy mineral grains; trace fine to coarse sand-size phosphorite grains; moderately sorted quartz sand; angular to subrounded quartz sand; 3 percent phosphorite grains; trace to 15 percent fine to very coarse quartz sand; trace heavy mineral grains; trace mica; trace thin-shelled pelecypods; 10 to 15 percent intergrain porosity; low hydraulic conductivity; soft when wet; friable; bioturbated; minor terrigenous clay matrix; locally clay-rich matrix
150.7 - 151.0	No recovery

Prison No. 2 Core

Florida Geological Survey well number	W-17785
GWSI number	HE-1114
Total depth	181 feet
Cored from	0 to 181 feet
County	Hendry
Location	NW, sec. 18, T48S, R31E
Latitude	26°18'27"
Longitude	81°15'43"
Elevation	20 feet
Completion date	November 21, 1998
Other types of available logs	Induction log, gamma ray, spontaneous potential, resistivity
Owner	U.S. Geological Survey
Driller	Florida Geological Survey
Core described by	Kevin J. Cunningham
Pamlico Sand	0 to 16 feet
Caloosahatchee Marl(?)	16 to 34 feet
Tamiami Formation	34 to 91 feet
Pinecrest Sand	34 to 63 feet
Ochopee Limestone	63 to 91 feet
Unnamed formation	91 to 113 feet
Peace River Formation	113 to 181 feet
Water-table aquifer	0 to 16 feet
Gray limestone aquifer	63 to 91 feet
Lower confining unit	91 to 181 feet

Depth (feet below land surface)	Lithologic description of well HE-1114
0 - 16	Quartz sand
16 - 34	Marl with oysters, soft when wet; minor sandy limestone
34 - 48	Quartz sand
48 - 63	Clay
63 - 91	Pelecypod rudstone
91 - 113	Quartz sand, very fine to fine with minor micrite matrix; 10 to 20 percent black phosphate grains
113 - 181	Very fine to fine quartz sand, minor medium to very coarse quartz grains; up to 25 percent black phosphate grains; local clay matrix or micrite matrix

Mustang Grade Core

Florida Geological Survey well number	W-17810
GWSI number	HE-1115
Total depth	221 feet
Cored from	0 to 221 feet
County	Hendry
Location	NW, NW, sec. 36, T45S, R30E
Latitude	26°31'53"
Longitude	81°17'09"
Elevation	32 feet
Completion date	January 23, 1999
Other types of available logs	Induction, gamma ray, spontaneous potential, resistivity
Owner	U.S. Geological Survey
Driller	Florida Geological Survey
Core described by	Kevin J. Cunningham
Undifferentiated sand	0 to 4.5 feet
Caloosahatchee Marl(?)	4.5 to 18 feet
Tamiami Formation	18 to 123 feet
Pinecrest Sand	18 to 100 feet
Lower Tamiami Limestone	100 to 123 feet
Peace River Formation	123 to 221 feet
Water-table aquifer	0 to 4 feet
Gray limestone aquifer	100(?) to 123 feet
Lower confining unit	123 to 221 feet

Depth (feet below land surface)	Lithologic description of well HE-1115
0.0 - 4.5	Quartz sand
4.5 - 18.0	Sandy marl and quartz sand with micrite matrix
18.0 - 56.5	Quartz sand
56.5 - 100.0	Quartz sand
100.0 - 106.0	Pelecypod lime rudstone
106.0 - 108.0	<i>Vermicularia</i> boundstone
108.0 - 122.0	Loose quartz sand
122.0 - 123.0	Pelecypod lime rudstone with oysters
123.0 - 221.0	Mainly quartz sand with clay matrix; top of unit at 123 feet is a sharp contact

L2 Core

Florida Geological Survey well number	W-17868
Well number	HE-1116
Total depth	201 feet
Cored from	0 to 201 feet
County	Hendry
Location	NW, SW, sec. 4, T46S, R34E
Latitude	26°30'23''
Longitude	80°56'52''
Elevation	18 feet
Completion date	March 11, 1999
Other types of logs available	Induction, gamma ray, spontaneous potential, single-point resistivity
Owner	U.S. Geological Survey
Driller	Florida Geological Survey
Core described by	Kevin J. Cunningham
Undifferentiated quartz sand (Pamlico Sand?)	0 to 11 feet
Tamiami Formation	11 to 152 feet
Pinecrest sand member	11 to 46 feet
Ochopee Limestone Member	46 to 152 feet
Unnamed formation	152 to 191 feet
Peace River Formation	191 to 201 feet
Water-table aquifer	0 to 11 feet
Upper confining unit	11 to 31 feet
Gray limestone aquifer	31 to 152 feet
Lower confining unit	152 to 201 feet

Depth (feet below land surface)	Lithologic description of well HE-1116
0.0 - 9.5	Quartz sand, pale-yellowish-brown 10YR 6/2, grayish-orange 10YR 8/2, dark-yellowish-orange 10YR 6/6, moderate-yellowish-brown 6/2, dark-yellowish-brown 10YR 4/2; black N1 heavy minerals; mainly fine quartz sand; minor quartz silt to medium quartz sand and very fine to fine sand-size heavy mineral grains; well sorted quartz sand; subangular to subrounded quartz sand; trace heavy mineral grains; 25 percent intergrain porosity; moderate hydraulic conductivity; minor modern plant roots in upper 1 foot; very soft when wet; unconsolidated
9.5 - 11.0	No recovery
11.0 - 12.5	Quartz sand, yellowish-gray 5Y 7/2 and white N9; black N1 heavy mineral grains; black and 10YR 5/4 moderate-yellowish-brown phosphorite grains mainly fine quartz sand; minor silt to medium quartz sand and very fine sand size phosphorite and heavy mineral grains; trace clay; well sorted quartz sand; subangular to subrounded quartz sand; 5 percent pelecypods and undifferentiated fossil fragments; 5 percent phosphorite and heavy mineral grains; 15 percent intergrain porosity; low hydraulic conductivity; soft when wet; friable; marine
12.5 - 20.0	Marl, white N9 to very light gray N8; mainly clay-size carbonate and minor quartz silt; trace undifferentiated fossil fragments; 5 percent microporosity; very low hydraulic conductivity; soft when wet; hard when dry; upper 1 inch very hard, wet, and contains dark-yellowish-gray 10YR 6/6 coloration (possible exposure surface); friable; marine; burrowed
20.0 - 20.5	No recovery
20.5 - 23.0	Quartz sand, yellowish-gray 5Y 7/2; black phosphorite grains mainly very fine quartz sand; minor silt and fine to coarse quartz sand, very fine to fine sand-size phosphorite grains and clay; moderate sorted quartz sand; subangular to subrounded quartz sand; 35 percent pelecypods and undifferentiated fossil fragments; 5 percent phosphorite grains; 15 percent intergrain porosity; low hydraulic conductivity; soft when wet; friable; fining upward; marine
23.0 - 24.0	Quartz sand, yellowish-gray 5Y 7/2; black phosphorite grains mainly coarse to very coarse quartz sand; minor silt and fine to medium quartz sand, very fine to fine sand-size phosphorite grains and trace clay; moderate sorted quartz sand; subangular to subrounded quartz sand; 35 percent pelecypods and undifferentiated fossil fragments; 5 percent phosphorite grains; 20 percent intergrain porosity; moderate hydraulic conductivity; soft when wet; friable; fining upward; marine
24.0 - 31.0	No recovery
31.0 - 35.0	Quartz sand, yellowish-gray 5Y 7/2; black phosphorite grains mainly fine to coarse quartz sand; minor silt to very fine and very coarse quartz sand, very fine sand to granule-size phosphorite grains and clay; fine sand to pebble-size fossils; moderately sorted quartz sand; subangular to rounded quartz sand; pelecypods and undifferentiated fossil fragments; 3 percent phosphorite grains 20 percent intergrain porosity; moderate hydraulic conductivity; soft when wet; friable; fining upward; marine
35.0 - 38.5	No recovery
38.5 - 46.0	Quartz sand, yellowish-gray 5Y 7/2; black phosphorite grains mainly fine to coarse quartz sand; minor silt to very fine and very coarse quartz sand, very fine sand to granule-size phosphorite grains and clay; fine sand to pebble-size fossils; moderately sorted quartz sand; subangular to rounded quartz sand; pelecypods and undifferentiated fossil fragments; 3 percent phosphorite grains; 20 percent intergrain porosity; moderate hydraulic conductivity; soft when wet; friable; fining upward; marine
46.0 - 66.5	Pelecypod lime floatstone and rudstone with quartz sand-rich skeletal lime packstone matrix, medium-light-gray N6 to light-gray N8; black phosphorite grains; mainly fine sand to very large pebble size fossils; minor silt to coarse quartz sand, very fine sand size phosphorite grains; moderately sorted quartz sand; subangular to subrounded quartz sand; pelecypods, undifferentiated skeletal fragments, sand dollars, <i>Vermicularia</i> , gastropods, bryozoans, encrusting foraminifers; trace phosphorite grains; 25 percent moldic and intergrain porosity; moderate hydraulic conductivity; soft when wet; poorly consolidated and mechanically broken; local thin beds that are hard when wet and well cemented; marine; gradational contact with quartz sand above
66.5 - 75.5	No recovery
75.5 - 76.5	Pelecypod-rich quartz sandstone, light-gray N8; black phosphorite grains; mainly fine to medium quartz sand; minor silt to very fine and coarse to very coarse quartz sand, very fine to medium sand-size phosphorite grains; fine sand to large pebble-size fossils; moderately sorted quartz sand; subangular to rounded quartz sand; pelecypods, undifferentiated skeletal fragments, sand dollars, bryozoans; 2 percent phosphorite grains; 30 percent intergrain and moldic porosity; high hydraulic conductivity; hard when wet; well cemented
76.5 - 80.5	No recovery

Depth (feet below land surface)	Lithologic description of well HE-1116
80.5 - 81.5	Pelecypod-rich quartz sandstone, light-gray N8; black phosphorite grains; mainly fine to medium quartz sand; minor silt to very fine and coarse quartz sand, very fine to medium sand-size phosphorite grains; fine sand to large pebble-size fossils; moderately sorted quartz sand; subangular to rounded quartz sand; 20 percent pelecypods, undifferentiated skeletal fragments, sand dollars; 2 percent phosphorite grains; 25 percent intergrain and moldic porosity; moderate hydraulic conductivity; hard when wet; well cemented
81.5 - 87.5	No recovery
87.5 - 89.0	Pelecypod-rich quartz sandstone, light-gray N8; black phosphorite grains; mainly fine to medium quartz sand; minor silt to very fine and coarse quartz sand, very fine to medium sand-size phosphorite grains; fine sand to large pebble-size fossils; moderately sorted quartz sand; subangular to rounded quartz sand; pelecypods, undifferentiated skeletal fragments; 3 percent phosphorite grains; 25 percent intergrain and trace moldic porosity; moderate hydraulic conductivity; hard when wet; well cemented
89.0 - 100.5	No recovery
100.5 - 101.0	Pelecypod-rich quartz sandstone, light-gray N8; black phosphorite grains; mainly fine to medium quartz sand; minor silt to very fine and coarse quartz sand, very fine to fine sand-size phosphorite grains; fine sand to large pebble-size fossils; moderately sorted quartz sand; subangular to rounded quartz sand; 25 percent pelecypods, undifferentiated skeletal fragments; 2 percent phosphorite grains; 30 percent intergrain and trace moldic porosity; high hydraulic conductivity; hard when wet; well cemented
101.0 - 104.5	No recovery
104.5 - 107.5	Pelecypod-rich quartz sandstone, light-gray N8; black phosphorite grains; mainly fine to medium quartz sand; minor silt to very fine and coarse quartz sand, very fine to fine sand-size phosphorite grains; fine sand to large pebble-size fossils; moderately sorted quartz sand; subangular to rounded quartz sand; 20 to 35 percent pelecypods, undifferentiated skeletal fragments; 2 percent phosphorite grains; 25 percent intergrain and trace moldic porosity; moderate hydraulic conductivity; hard when wet; well cemented
107.5 - 121.0	No recovery
121.0 - 125.0	Pelecypod-rich quartz sandstone, light-gray N8; black phosphorite grains; mainly fine to medium quartz sand; minor silt to very fine and coarse quartz sand, very fine to fine sand-size phosphorite grains; fine sand to granule-size fossils; well sorted quartz sand; subangular to rounded quartz sand; pelecypods, undifferentiated skeletal fragments; 2 percent phosphorite grains; 20 percent intergrain porosity; low hydraulic conductivity; soft when wet; friable; minor lime mud matrix
125.0 - 130.0	Pelecypod-rich quartz sandstone and quartz sand-rich pelecypod lime mud-dominated and grain-dominated lime packstone, light-gray N8; black phosphorite grains; mainly fine to medium quartz sand; minor silt to very fine and coarse quartz sand, very fine to fine sand-size phosphorite grains; fine sand to granule-size fossils; well sorted quartz sand; subangular to rounded quartz sand; pelecypods, undifferentiated skeletal fragments, barnacles; trace to 2 percent phosphorite grains; 20 percent intergrain porosity; low hydraulic conductivity; soft when wet; friable; minor lime mud matrix
130.0 - 132.0	No recovery
132.0 - 136.0	Pelecypod lime rudstone with pelecypod mud-dominated lime packstone matrix, light-gray N8; black phosphorite grains; mainly fine sand to pebble-size fossils, minor very fine to fine sand-size phosphorite grains; pelecypods, undifferentiated skeletal fragments, bryozoans; trace phosphorite grains; 25 percent intergrain porosity; moderate hydraulic conductivity; soft when wet
136.0 - 138.0	Pelecypod lime rudstone with pelecypod quartz sand-rich mud-dominated lime packstone matrix, light-gray N8; black phosphorite grains; mainly fine sand to pebble-size fossils, minor very fine to fine sand-size quartz sand and phosphorite grains; well sorted quartz sand; subangular to rounded quartz sand; pelecypods, undifferentiated skeletal fragments, bryozoans; trace phosphorite grains; 25 percent intergrain porosity; moderate hydraulic conductivity; soft when wet
138.0 - 139.5	No recovery
139.5 - 143.5	<i>Turritella</i> and pelecypod lime rudstone and <i>Vermicularia</i> bindstone with quartz sandstone matrix, light-gray N8; black phosphorite grains; mainly fine sand to large pebble-size fossils and very fine to fine sand-size quartz sand; minor phosphorite grains; well sorted quartz sand; subangular to subrounded quartz sand; <i>Vermicularia</i> , <i>Turritella</i> , pelecypods, undifferentiated skeletal fragments, bryozoans; 3 percent phosphorite grains; 30 percent moldic and intergrain porosity; high hydraulic conductivity; hard to moderately hard when wet; well to moderately cemented; minor lime mud matrix in quartz sandstone
143.5 - 145.0	No recovery

Depth (feet below land surface)	Lithologic description of well HE-1116
145.0 - 151.0	<i>Turritella</i> and pelecypod lime rudstone with skeletal-rich quartz sand matrix, light-gray N8; black phosphorite grains; mainly fine sand to large pebble-size fossils and fine sand-size quartz sand; minor very fine quartz sand and very fine to fine phosphorite grains; well sorted quartz sand; subangular to subrounded quartz sand; <i>Vermicularia</i> , <i>Turritella</i> , pelecypods, undifferentiated skeletal fragments; 3 percent phosphorite grains; 30 percent moldic and intergrain porosity; high hydraulic conductivity; hard to moderately hard when wet; well to moderately cemented
151.0 - 152.0	No recovery
152.0 - 156.5	Quartz sand, yellowish-gray 5Y 8/1; black N1 and dark-yellowish-orange 10YR 6/6 phosphorite grains; mainly very fine quartz sand; minor quartz silt, very fine sand-size phosphorite grains and very fine to coarse sand-size fossils; trace clay and mica; well sorted quartz sand; subangular to subrounded quartz sand; trace to 10 percent pelecypods, undifferentiated skeletal fragments; 5 to 10 percent phosphorite grains; 25 percent intergrain porosity; low to moderate hydraulic conductivity; soft when wet; friable
156.5 - 161.0	No recovery
161.0 - 167.5	Quartz sand, yellowish-gray 5Y 8/1; black N1 and dark-yellowish-orange 10YR 6/6 phosphorite grains; mainly very fine quartz sand; minor quartz silt, very fine sand-size phosphorite grains and very fine to coarse sand-size fossils; trace clay and mica; well sorted quartz sand; subangular to subrounded quartz sand; trace to 10 percent pelecypods, undifferentiated skeletal fragments; 10 to 15 percent phosphorite grains; 25 percent intergrain porosity; low to moderate hydraulic conductivity; soft when wet; friable
167.5 - 168.5	No recovery
168.5 - 172.5	Quartz sand, yellowish-gray 5Y 8/1; black N1 and dark-yellowish-orange 10YR 6/6 phosphorite grains; mainly very fine quartz sand; minor quartz silt, very fine sand-size phosphorite grains and very fine to coarse sand-size fossils; trace clay and mica; well sorted quartz sand; subangular to subrounded quartz sand; trace to 10 percent pelecypods, undifferentiated skeletal fragments; 10 to 15 percent phosphorite grains; 25 percent intergrain porosity; low to moderate hydraulic conductivity; soft when wet; friable
172.5 - 175.0	No recovery
175.0 - 183.0	Quartz sand, yellowish-gray 5Y 8/1; black N1 and dark-yellowish-orange 10YR 6/6 phosphorite grains; mainly very fine quartz sand; minor quartz silt, very fine sand size phosphorite grains and very fine to coarse sand-size fossils; trace clay and mica; well sorted quartz sand; subangular to subrounded quartz sand; trace to 10 percent pelecypods, undifferentiated skeletal fragments; 10 to 15 percent phosphorite grains; 25 percent intergrain porosity; low to moderate hydraulic conductivity; soft when wet; friable
183.0 - 189.3	Quartz sand, light-olive-gray 5Y 6/1; black N1 phosphorite grains; mainly very fine quartz sand; minor quartz silt, very fine sand size phosphorite grains and very fine to coarse sand-size fossils; trace clay and mica; well sorted quartz sand; subangular to subrounded quartz sand; trace to 10 percent pelecypods, undifferentiated skeletal fragments; 15 to 20 percent phosphorite grains; 25 percent intergrain porosity; low to moderate hydraulic conductivity; soft when wet; friable; burrowed
189.3 - 191.0	No recovery
191.0 - 196.5	Burrowed mixture of quartz sand and terrigenous clay, light-olive-gray 5Y 6/1 and olive-gray 5Y 4/1; black N1 phosphorite grains; mainly clay, quartz silt and very fine quartz sand; minor quartz silt, very fine sand size phosphorite grains; well sorted quartz sand; subangular to subrounded quartz sand; trace to 5 percent undifferentiated skeletal fragments and fish scales; 20 to 30 percent phosphorite grains; less than 5 to 20 percent intergrain porosity; very low to low hydraulic conductivity; soft when wet; friable; burrowed; quartz sand fills burrows
196.5 - 200.9	Terrigenous mudstone, light-olive-gray 5Y 6/1 and 5Y 5/2, olive-gray 5Y 4/1; black N1 phosphorite grains; mainly clay, quartz silt and very fine quartz sand; minor quartz silt, very fine sand-size phosphorite grains; well sorted quartz sand; subangular to subrounded quartz sand; trace to 5 percent undifferentiated skeletal fragments and fish scales; trace to 15 percent phosphorite grains; minor microporosity; very low hydraulic conductivity; moderately hard when wet; well consolidated; minor burrows filled with quartz sand
200.9 - 201.0	Diatomaceous mudstone, light-olive-gray 5Y 6/1; mainly clay minor microporosity; very low hydraulic conductivity; moderately hard when wet; well consolidated

Golightly Core

Florida Geological Survey well number	W-17968
Well number	MO-177
Total depth	200 feet
Cored from	0 to 200 feet
County	Monroe
Location	T54S, R34E
Latitude	25°44'56"
Longitude	80°55'58"
Elevation	8 feet
Completion date	February 14, 1997
Other types of available logs	Gamma ray, induction, temperature, fluid velocity
Owner	U.S. Geological Survey
Driller	U.S. Geological Survey
Core described by	Ronald S. Reese
Tamiami Formation, Ochopee Limestone Member	0 to 78.2 feet
Unnamed formation	78.2 to 131.2 feet
Peace River Formation	131.2 to 200 feet
Gray limestone aquifer	0 to 78.2 feet (78.2 feet corresponds to results of flowmeter)
Lower confining unit	78.2 to 200 feet

Depth (feet below land surface)	Lithologic description of well MO-177
0.0 - 1.4	Limestone, white N9; fine to coarse quartz sand in matrix; minor shells; minor moldic porosity; high hydraulic conductivity; hard but broken
1.4 - 2.0	Limestone, white N9; abundant fine to coarse sand grains in matrix; minor moldic porosity; low hydraulic conductivity; quartz sand fills some vertical dissolution cavities
2.0 - 3.3	Limestone, very pale orange 10YR 8/2, grayish-orange 10YR 7/4; abundant fine to coarse quartz sand; shell molds; minor moldic porosity; high hydraulic conductivity; hard
3.3 - 4.0	No recovery
4.0 - 6.7	Limestone, light-gray N7, light-olive-gray 5Y 6/1; trace quartz; local shells; moldic porosity; high hydraulic conductivity; locally hard and competent; locally broken
6.7 - 9.0	No recovery
9.0 - 12.0	Limestone, light-gray N7, light-olive-gray 5Y 6/1; trace quartz; local shells; moldic porosity; high hydraulic conductivity; locally hard and competent; locally broken
12.0 - 14.0	No recovery
14.0 - 14.4	Lime grainstone, very pale orange 10YR 8/2, grayish-orange 7/4; silty; up to granule size; interparticle porosity; high hydraulic conductivity; poorly sorted
14.4 - 15.0	No recovery
15.0 - 15.6	Limestone, gray to white; quartz sand-rich matrix in lower half of interval; interparticle porosity; high hydraulic conductivity; well sorted
15.6 - 16.0	No recovery
16.0 - 18.0	Limestone, very light gray N8, light-greenish-gray 5GY 8/1; molds and casts of mollusks; silty; moldic porosity; high to very high hydraulic conductivity; lime mud increases downward
18.0 - 19.0	No recovery
19.0 - 20.0	Limestone, very light gray N8, light-greenish-gray 5GY 8/1; molds and casts of mollusks; oyster fragments; silty; moldic porosity; high to very high hydraulic conductivity
20.0 - 21.6	Limestone, very light gray N8, light-greenish-gray 5GY 8/1; molds and casts of mollusks; oyster fragments; silty; moldic porosity; high hydraulic conductivity; hard
21.6 - 25.0	No recovery
25.0 - 25.2	Limestone, grayish-white; minor very fine quartz sand; very low hydraulic conductivity; hard and dense
25.2 - 30.0	No recovery
30.0 - 30.25	Carbonate sand, light-gray N7; coarse to pebble-size skeletal grains; less than 5 percent phosphorite; moderate to high hydraulic conductivity
30.25 - 32.0	Carbonate sand, light-gray N7, medium-light-gray N6; shell fragments; silty; 5 to 10 percent phosphorite grains; fine to pebble; low to moderate hydraulic conductivity; poorly sorted
32.0 - 33.0	No recovery
33.0 - 35.0	Carbonate sand, light-gray N7, medium-light gray N6; shell fragments; silty; 5 to 10 percent phosphorite grains; coarse to pebble; moldic; moderate to high hydraulic conductivity
35.0 - 35.5	Carbonate sand, medium-light-gray N6; silty matrix; medium to coarse; moldic porosity; moderate hydraulic conductivity
35.5 - 36.2	Carbonate sand, light-gray N7, medium-light-gray N6; shell fragments; silty; 5 to 10 percent phosphorite grains; coarse to pebble; moldic; moderate hydraulic conductivity
36.2 - 37.5	No recovery
37.5 - 38.3	Carbonate sand, light-gray N7; large shell fragments near base of interval; trace phosphorite grains; mainly very coarse to granule; high hydraulic conductivity; loose carbonate grains; poorly sorted
38.3 - 40.0	No recovery

Depth (feet below land surface)	Lithologic description of well MO-177
40.0 - 41.3	Carbonate sand, very light gray N8; mainly very fine to granule; low to moderate hydraulic conductivity; silty to muddy matrix; poorly sorted
41.3 - 45.0	No recovery
45.0 - 46.2	Carbonate sand, very light gray N8; mainly fine; low hydraulic conductivity; common quartz grains; silty to muddy matrix; moderately sorted
46.2 - 47.0	No recovery
47.0 - 47.5	Carbonate sand, very light gray N8; mainly fine and coarse to granule; low hydraulic conductivity; uncommon quartz grains; silty to muddy matrix; poorly sorted
47.5 - 50.0	Carbonate sand, light-gray N7 to medium-light-gray N6; mainly very fine to coarse; minor shells; trace to 3 percent phosphorite grains at 48.5 feet; low to moderate hydraulic conductivity; cohesive to crumbly; silty to muddy matrix
50.0 - 54.0	Carbonate sand, light-gray N7 to medium-light-gray N6; mainly fine to pebble; oysters; 1 to 3 percent phosphorite grains; low to moderate hydraulic conductivity; moderately cohesive to very crumbly; silty to muddy matrix
54.0 - 55.0	No recovery
55.0 - 55.8	Carbonate sand, light-gray N7 to medium-light-gray N6; mainly fine to large pebble; 1 to 3 percent phosphorite grains; low to moderate hydraulic conductivity; moderately cohesive to very crumbly; silty to muddy matrix
55.8 - 56.0	No recovery
56.0 - 57.9	Carbonate sand, light-gray N7 to medium-light-gray N6; mainly fine to large pebble; oysters; 1 to 3 percent phosphorite grains; low to moderate hydraulic conductivity; moderately cohesive to very crumbly; silty to muddy matrix
57.9 - 59.8	Carbonate sand, medium-gray N5 to medium-light-gray N6; fine to coarse; shell fragments; moderate to high hydraulic conductivity; minor silty matrix
59.8 - 60.0	No recovery
60.0 - 61.0	Carbonate sand, medium-gray N5 to medium-light-gray N6; fine to coarse; shell fragments; moderate to high hydraulic; minor silty matrix; moderate to well sorted
61.0 - 63.3	Carbonate sand, light-gray N7 to medium-light-gray N6; mainly very fine to coarse; minor large shell fragments; low to moderate hydraulic conductivity; crumbly; silty to muddy matrix
63.3 - 65.0	No recovery
65.0 - 69.0	Carbonate sand, light-gray N7; mainly silt to pebble; common shell fragments locally; low to moderate hydraulic conductivity; cohesive to friable; silty to muddy matrix
69.0 - 70.0	No recovery
70.0 - 74.0	Carbonate sand, light-gray N7 to medium-gray N6; mainly silty to pebble; large pebble-size shell fragments locally; low to moderate hydraulic conductivity; friable; silty to muddy matrix
74.0 - 75.0	No recovery
75.0 - 78.2	Carbonate sand, light-gray N7 to medium-gray N6; mainly silt to pebble; large pebble-size shell fragments locally; low to moderate hydraulic conductivity; friable; silty to muddy matrix
78.2 - 79.0	No recovery
79.0 - 83.2	Quartz sandstone, white N9 to very light gray N8 to yellowish-gray 5Y 8/1; fine sand-size quartz grains; well sorted; abundant gastropod molds; low hydraulic conductivity; hard and dense at top grading to friable at base; possible exposure surface at top
83.2 - 84.0	No recovery
84.0 - 85.3	Quartz sandstone, white N9 to very light gray N8 to yellowish-gray 5Y 8/1; fine sand-size quartz grains; well sorted; abundant gastropod molds; local high moldic porosity; moderate to high hydraulic conductivity; hard
85.3 - 86.8	No recovery
86.8 - 87.8	Quartz sandstone, light-greenish-gray 5GY 8/1; medium grain size; well sorted; trace very fine phosphorite black grains; low hydraulic conductivity; soft
87.8 - 90.0	No recovery

Depth (feet below land surface)	Lithologic description of well MO-177
90.0 - 93.1	Quartz sand, light-greenish-gray 5GY 8/1; fine with local fine to coarse grains; well with local bimodal sorting; minor shell fragments; trace very fine black phosphorite grains; low to moderate hydraulic conductivity
93.1 - 94.5	No recovery
94.5 - 97.5	Quartz sand, light-greenish-gray 5GY 8/1; fine with local fine to granule size; well with local bimodal sorting; minor shell fragments; trace very fine phosphorite black grains with minor fine to granule-size grains; low to moderate hydraulic conductivity
97.5 - 98.0	No recovery
98.0 - 100.0	Quartz sand, light-greenish-gray 5GY 8/1; very fine to fine with local very fine to granule; well with local bimodal sorting; lower 0.3 foot contains minor mollusk shells and trace to 3 percent very fine phosphorite grains with minor fine to granule-size grains; low to moderate hydraulic conductivity
100.0 - 104.0	Quartz sand, light-greenish-gray 5GY 8/1; very fine to fine with local very fine to granule; abundant granule-size grains; well with bimodal sorting; trace to 3 percent very fine phosphorite grains with minor fine to granule-size grains; contains abundant mollusk shells from 102 to 102.5 feet; low to moderate hydraulic conductivity
104.0 - 105.0	No recovery
105.0 - 108.0	Quartz sand, light-greenish-gray 5GY 8/1; fine to small pebble size; trace to 3 percent phosphorite grains in lower two-thirds and 3 to 10 percent phosphorite in upper one-third; moderate hydraulic conductivity (lower one-third) and moderate to high conductivity (upper two-thirds); interval coarsens upward from fine to medium sand size at base and from fine to small pebble size at top
108.0 - 110.0	No recovery
110.0 - 114.4	Quartz sand, very light gray N8; fine to granule grain size; trace to 3 percent phosphorite grains; moderate to high hydraulic conductivity (lower one-third) and moderate hydraulic conductivity (upper two thirds); interval fines upward from fine to granule size at base and from fine to medium at top
114.4 - 115.0	No recovery
115.0 - 117.5	Quartz sand, very light gray N8; fine to coarse grain size; 3 to 10 percent phosphorite grains; moderate hydraulic conductivity (lower two-thirds) and moderate to high hydraulic conductivity (upper one-third); interval coarsens upward from fine to medium to medium to coarse
117.5 - 118.0	No recovery
118.0 - 119.3	Quartz sand, very light gray N8; fine to small pebble grain size; 3 to 10 percent phosphorite grains; moderate hydraulic conductivity
119.3 - 119.5	No recovery
119.5 - 120.0	Quartz sand, very light gray N8; fine to granule grain size; 3 to 10 percent phosphorite grains; moderate hydraulic conductivity
120.0 - 124.5	No recovery
124.4 - 127.0	Quartz sand, greenish-gray 5GY 6/1; very fine to granule grain size; 5 percent phosphorite grains; low hydraulic conductivity (lower half) and moderate hydraulic conductivity (upper half); coarsens upward from very fine to fine at base to fine to granule at top; minor silt and clay matrix
127.0 - 129.5	Quartz sand, greenish-gray 5GY 6/1; very fine grain size; low hydraulic conductivity; minor silt and clay matrix
129.5 - 130.0	No recovery
130.0 - 131.2	Quartz sand, greenish-gray 5GY 6/1; very fine to medium; moderate hydraulic conductivity
131.2 - 133.2	Quartz sand and clay, greenish-gray 5GY 6/1 to olive-gray 5Y 4/4; clay to very fine grain size; very low to low hydraulic conductivity
133.2 - 135.0	No recovery
135.0 - 143.0	Mudstone, olive-gray 5Y 4/1; clay grain size; very low hydraulic conductivity
143.0 - 143.3	Quartz sand, greenish-gray 5GY 6/1; mainly very fine with minor silt and medium to coarse grains; low hydraulic conductivity
143.3 - 145.0	No recovery

Depth (feet below land surface)	Lithologic description of well MO-177
145.0 - 147.9	Quartz sand, greenish-gray 5GY 6/1; mainly fine with minor medium to coarse; moderately sorted; 5 percent phosphorite grains; low to moderate hydraulic conductivity
147.9 - 148.8	Quartz sand, greenish-gray 5GY 6/1; mainly fine sand with minor silt and clay matrix; 3 to 10 percent phosphorite grains; low hydraulic conductivity
148.8 - 150.0	No recovery
150.0 - 150.8	Quartz sand, light-olive-gray 5Y 6/1 to olive-gray 5Y 4/1; very fine to fine grain size; low hydraulic conductivity
150.8 - 154.0	No recovery
154.0 - 156.0	Quartz sand, light-olive-gray 5Y 6/1 to olive-gray 5Y 4/1; very fine to fine grain size; low hydraulic conductivity
156.0 - 157.0	Quartz sand, light-olive-gray 5Y 6/1 to olive-gray 5Y 4/1; very fine to fine with minor medium to granule size; poorly sorted; 10 to 20 percent phosphorite grains; low to moderate hydraulic conductivity
157.0 - 159.7	Quartz sand, light-olive-gray 5Y 6/1 to olive-gray 5Y 4/1; mainly medium to coarse grain size; moderately to well sorted; 3 to 10 percent phosphorite grains; moderate to high hydraulic conductivity
159.7 - 160.0	No recovery
160.0 - 163.0	Quartz sand, light-gray N7; mainly medium to coarse with minor granule size; well sorted ; 3 to 5 percent phosphorite grains; high hydraulic conductivity
163.0 - 164.0	Quartz sand, light-gray N7; mainly medium grain size; moderately to well sorted; moderate hydraulic conductivity
164.0 - 166.5	Quartz sand, light-gray N7; mainly medium to coarse grain size; moderate to high hydraulic conductivity
166.5 - 167.5	Quartz sand, light-gray N7; mainly medium to coarse with minor granule and small pebble size; moderate to high hydraulic conductivity
167.5 - 168.5	Quartz sand, light-gray N7; mainly medium to coarse with minor clay matrix; low hydraulic conductivity; mottled coloration
168.5 - 170.0	No recovery
170.0 - 173.6	Quartz sand, greenish-gray 5GY 6/1; mainly fine to coarse with minor clay matrix; poorly sorted; low hydraulic conductivity
173.6 - 174.0	No recovery
174.0 - 179.3	Quartz sand, dusky-yellowish-green 10GY 3/2 to grayish-olive-green 5GY 3/2; mainly fine with minor medium to granule size and clay matrix; low hydraulic conductivity
179.3 - 180.0	No recovery
180.0 - 185.0	Quartz sand, dark-greenish-gray 5GY 4/1; mainly fine with minor clay matrix; very low to low hydraulic conductivity; minor alternations of quartz sand and mudstone
185.0 - 186.5	Quartz sand, dusky-yellowish-green 10GY 3/2 to grayish-olive-green 5GY 3/2; mainly fine with minor medium to granule size and clay matrix; very low to low hydraulic conductivity
186.5 - 187.0	No recovery
187.0 - 188.6	Quartz sand, dark-greenish-gray 5GY 4/1; mainly fine with minor medium to granule size and clay matrix; very low to low hydraulic conductivity
188.6 - 190.0	No recovery
190.0 - 200.0	Quartz sand, dark-greenish-gray 5GY 4/1 to grayish-olive-green 5GY 3/2; mainly very fine with minor fine to granule-size and clay matrix; very low hydraulic conductivity

Trail Center Core

Florida Geological Survey well number	W-17969
Well number	MO-178
Total depth	464 feet
Cored from	0 to 464 feet
County	Monroe
Location	NE, sec. 1, T54S, R34E
Latitude	25°48'15"
Longitude	80°52'31"
Elevation	10 feet
Completion date	April 4, 1997
Other types of available logs	Gamma ray, induction, temperature, fluid velocity, fluid conductivity, caliper, neutron
Owner	U.S. Geological Survey
Driller	U.S. Geological Survey
Core described by	Kevin J. Cunningham (for a description of 146.7 to 464 feet, see Weedman and others, 1999)
Miami Limestone	0 to 0.75 feet
Fort Thompson Formation	0.75 to 6.5 feet
Tamiami Formation	6.5 to 126.3 feet
Pinecrest Sand Member	6.5 to 46.5 feet
Ochopee Limestone Member	46.5 to 126.3 feet
Unnamed formation	126.3 to 237 feet
Top of Peace River Formation	237 feet
Water-table aquifer	0 to 25 feet
Upper confining unit	25 to 47.7 feet
Gray limestone aquifer	47.7 to 126.3 feet
Top of lower confining unit	126.3 feet
Top of sand aquifer	130 feet
Base of sand aquifer	165 feet?

Depth (feet below land surface)	Lithologic description of well MO-178
0.0 - 0.75	Pelecypod lime floatstone with pelmoldic grainstone to packstone matrix, very pale orange 10YR 8/2, grayish-orange 10YR 7/4, dark-yellowish-orange 10YR 6/6, light-brown 5YR 5/6; mainly clay-size lime mudstone, very fine to fine quartz sand and very fine sand to pebble-size fossils; well sorted quartz sand; subangular to subrounded quartz sand; peloids, pelecypods, gastropods, bryozoans (including <i>Schizoporella</i>); 5 to 30 percent quartz sand; 20 percent vuggy and moldic porosity; moderate hydraulic conductivity; moderate; unit contains calcrete in part, hard when wet, well cemented
0.75 - 1.5	Quartz sand-rich calcrete, very pale orange 10YR 8/2, light-brown 5YR 5/6, grayish-orange 10YR 7/4, light-brown 5YR 6/4; very fine to coarse quartz sand, mainly fine to medium quartz sand and lime mudstone matrix; moderately sorted quartz sand; subangular to subrounded quartz sand; 10 to 70 percent quartz sand; 15 percent vuggy, and skeletal-mold and root-mold porosity; low hydraulic conductivity; autobrecciated, hard when wet, well cemented
1.5 - 4.0	No recovery
4.0 - 5.5	Pelecypod floatstone with matrix of quartz sandstone with lime mudstone matrix, very pale orange 10YR 8/2, light-brown 5YR 5/6, grayish-orange 10YR 7/4, light-brown 5YR 6/4; very fine to coarse quartz sand, mainly very fine to fine quartz sand and lime mudstone matrix; moderately sorted quartz sand; subangular to rounded quartz sand; pelecypods and skeletal fragments; 70 percent quartz sand; 15 percent vuggy, skeletal-mold and root-mold, and intergrain porosity; low hydraulic conductivity; hard when wet, well cemented
5.5 - 6.5	No recovery
6.5 - 7.0	Rubble of quartz sandstone with framework of pelecypod floatstone and rudstone, very pale orange 10YR 8/2, medium-light-gray N6 to very light gray N8; mainly very fine to fine quartz sand and pebble-size fossils; minor limestone and silt to granule-size fossils and medium to coarse quartz sand; moderately sorted; subangular to rounded quartz sand; pelecypods and skeletal fragments; 70 percent quartz sand; 15 percent intergrain porosity; moderate hydraulic conductivity; hard when wet, well cemented
7.0 - 10.0	No recovery
10.0 - 10.5	Rubble of calcrete and gray-colored limestone
10.5 - 11.4	Quartz sand with pelecypod rudstone framework, very pale orange 10YR 8/2, light-gray N7; mainly very fine to coarse quartz sand and pebble-size fossils; minor very fine to granule-size fossils and very coarse quartz sand; moderately sorted; subangular to subrounded quartz sand; pelecypods and skeletal fragments; 45 percent quartz sand; 25 percent intergrain porosity; moderate hydraulic conductivity; friable, poorly cemented
11.4 - 15.0	Quartz sand with pelecypod floatstone framework, yellowish-gray 5Y 8/1; mainly fine to medium quartz sand and granule to pebble-size fossils; minor very fine- to coarse-size fossils and very fine and coarse quartz sand; very fine to fine phosphorite and heavy mineral grains; moderately sorted; subangular to subrounded quartz sand; pelecypods and skeletal fragments; 60 percent quartz sand; trace black phosphorite and heavy mineral grains; 25 percent intergrain porosity; moderate hydraulic conductivity; friable, poorly cemented
15.0 - 20.0	No recovery
20.0 - 21.5	Pelecypod rudstone with skeletal, quartz-sand rich grainstone matrix, yellowish-gray 5Y 8/1; mainly medium to coarse quartz sand and very fine to pebble-size fossils; very fine to fine phosphorite and heavy mineral grains; well sorted; subrounded quartz sand; pelecypods, skeletal fragments gastropods; 25 percent quartz sand; trace black phosphorite and heavy mineral grain; 25 percent intergrain porosity; moderate hydraulic conductivity; friable, poorly cemented
21.5 - 25.0	No recovery
25.0 - 27.4	Pelecypod floatstone with quartz-sand and skeletal-rich grainstone and fossiliferous quartz sand matrix, yellowish-gray 5Y 8/1 and 5Y 7/2; mainly fine to medium quartz sand and medium to pebble-size fossils; minor very fine and coarse quartz sand; very fine to fine phosphorite and heavy mineral grains; trace clay matrix moderately sorted; subangular to rounded quartz sand; pelecypods, skeletal fragments, bryozoans, gastropods; 40 to 60 percent quartz sand; trace black phosphorite and heavy mineral grains; 20 percent intergrain and intragrain porosity; moderate hydraulic conductivity; friable, poorly cemented
27.4 - 28.5	No recovery
28.5 - 30.5	Fossiliferous quartz sand, yellowish-gray 5Y 8/1; mainly very fine to fine quartz sand; minor medium and coarse quartz sand, very fine to pebble-size fossils, very fine to fine phosphorite and heavy mineral grains with subordinate medium to coarse phosphorite grains; trace terrigenous clay; moderately sorted; subangular to rounded quartz sand; pelecypods, skeletal fragments; 75 percent quartz sand; trace black phosphorite and heavy mineral grains; 20 percent intergrain porosity; moderate hydraulic conductivity; friable, poorly cemented
30.5 - 32.5	No recovery

Depth (feet below land surface)	Lithologic description of well MO-178
32.5 - 34.5	Fossiliferous quartz sand, yellowish-gray 5Y 8/1; mainly very fine to fine quartz sand; minor coarse quartz sand, very fine to pebble-size fossils, terrigenous clay, very fine to medium phosphorite grains and very fine to fine heavy mineral grains; well sorted; subangular to subrounded quartz sand; skeletal fragments, pelecypods; 60 percent quartz sand; less than 3 percent black phosphorite and heavy mineral grains; 15 percent intergrain porosity; friable, poorly cemented
34.5 - 37.5	No recovery
37.5 - 44.0	Fossiliferous quartz sand, yellowish-gray 5Y 8/1 and light-gray N7; mainly fine to coarse quartz sand and medium to pebble-size fossils; minor very fine quartz sand, very fine to fine-size fossils, terrigenous clay, very fine to coarse phosphorite grains and very fine to fine heavy mineral grains; well sorted; subangular to subrounded quartz sand; skeletal fragments, pelecypods; 75 percent quartz sand; less than 3 percent black phosphorite and heavy mineral grains; 15 percent intergrain porosity; medium hydraulic conductivity; friable, poorly cemented
44.0 - 45.0	No recovery
45.0 - 46.5	Fossiliferous quartz sand, yellowish-gray 5Y 8/1 and light-gray N7; mainly fine to coarse quartz sand and medium- to pebble-size fossils; minor very fine quartz sand, very fine to fine-size fossils, terrigenous clay, very fine to coarse phosphorite grains and very fine to fine heavy mineral grains; well sorted; subangular to subrounded quartz sand; skeletal fragments, pelecypods, sand dollars; 75 percent quartz sand; less than 3 percent black phosphorite and heavy mineral grains; 15 percent intergrain porosity; medium hydraulic conductivity; friable, poorly cemented
46.5 - 47.7	Pelecypod lime rudstone and floatstone with quartz sand-rich skeletal lime wackestone matrix, very light gray N8; mainly very fine to pebble-size fossils and lime mudstone; minor very fine to medium quartz sand, very fine to fine phosphorite and heavy mineral grains; well sorted; subangular to subrounded quartz sand; skeletal fragments, pelecypods; 10 to 20 percent quartz sand; less than 3 percent black phosphorite and heavy mineral grains; 10 percent intergrain porosity; low hydraulic conductivity; moderately hard, moderate cementation
47.7 - 50.0	Pelecypod lime rudstone with skeletal lime grainstone and grain-dominated lime packstone matrix, very light gray N8; mainly very fine to pebble-size fossils and lime mudstone; minor very fine to medium quartz sand, and very fine to fine phosphorite and heavy mineral grains; well sorted; subangular to subrounded quartz sand; skeletal fragments, pelecypods; 10 to 20 percent quartz sand; trace black phosphorite and heavy mineral grains; 20 percent intergrain porosity; moderate to high hydraulic conductivity; interval is mechanically broken; friable to moderately hard; poorly to moderately cemented
50.0 - 54.25	Pelecypod lime floatstone with skeletal grain-dominated and minor mud-dominated lime packstone matrix, light-gray N7 to very light gray N8; mainly medium to pebble-size fossils; minor very fine to fine quartz sand; well sorted; subangular to subrounded quartz sand; pelecypods, skeletal fragments, gastropods, bryozoans, <i>Vermicularia</i> , barnacles, coral; trace quartz sand; trace black phosphorite and heavy mineral grains; 25 percent moldic porosity, intergrain and intragrain porosity; moderate hydraulic conductivity; much of interval is mechanically broken; friable to moderately hard; poorly to moderately cemented
54.25 - 55.0	No recovery
55.0 - 55.4	Pelecypod lime floatstone with skeletal grain-dominated and minor mud-dominated lime packstone matrix, light-gray N7 to very light gray N8; mainly medium to pebble-size fossils; minor very fine to fine quartz sand; well sorted; subangular to subrounded quartz sand; pelecypods, skeletal fragments, gastropods, bryozoans, <i>Vermicularia</i> , barnacles, coral; trace quartz sand; trace black phosphorite and heavy mineral grains; 25 percent moldic, intergrain, and intragrain porosity; moderate hydraulic conductivity; much of interval is mechanically broken; friable to moderately hard; poorly to moderately cemented
55.4 - 57.25	Pelecypod lime floatstone and rudstone with skeletal mud-dominated lime packstone matrix, yellowish-gray 5Y 8/1; mainly medium to pebble-size fossils and lime mudstone; minor very fine to fine quartz sand and very fine to fine-size fossils; well sorted; subangular to subrounded quartz sand; pelecypods, skeletal fragments, gastropods, bryozoans, <i>Vermicularia</i> , barnacles, coral; less than 5 percent quartz grains; trace black phosphorite and heavy mineral grains; 20 percent moldic porosity; low to moderate hydraulic conductivity; much of interval is mechanically broken; friable; poorly cemented
57.25 - 64.25	Pelecypod lime floatstone with quartz-sand, skeletal, clay-rich mud-dominated lime packstone matrix, yellowish-gray 5Y 8/1; mainly medium to pebble-size fossils and lime mudstone; minor very fine to fine quartz sand, very fine to fine-size fossils, phosphorite and heavy mineral grains, and terrigenous clay; well sorted; subangular to subrounded quartz sand; pelecypods, skeletal fragments, gastropods, <i>Vermicularia</i> ; 5 to 25 percent quartz grains; less than 5 percent black phosphorite and heavy mineral grains; trace mica; 15 percent moldic porosity; low hydraulic conductivity; friable; poorly cemented
64.25 - 65.0	No recovery
65.0 - 67.0	Pelecypod lime floatstone with quartz-sand, skeletal, clay-rich mud-dominated lime packstone matrix, yellowish-gray 5Y 8/1; mainly medium to pebble-size fossils and lime mudstone; minor very fine to fine quartz sand, very fine to fine-size fossils, phosphorite and heavy mineral grains, and terrigenous clay; well sorted; subangular to subrounded quartz sand; pelecypods, skeletal fragments, gastropods, <i>Vermicularia</i> ; 5 to 25 percent quartz grains; less than 5 percent black phosphorite and heavy mineral grains; trace mica; 15 percent moldic porosity; low hydraulic conductivity; friable; poorly cemented

Depth (feet below land surface)	Lithologic description of well MO-178
67.0 - 70.0	Pelecypod lime floatstone with quartz sand, skeletal, clay-rich mud-dominated lime packstone matrix, yellowish-gray 5Y 8/1, light-gray N7 to very light gray N8; mainly medium- to pebble-size fossils and lime mudstone; minor very fine to fine quartz sand, very fine to fine-size fossils, phosphorite and heavy mineral grains, and terrigenous clay; well sorted; subangular to subrounded quartz sand; pelecypods, skeletal fragments, gastropods, <i>Vermicularia</i> ; 5 to 25 percent quartz grains; less than 5 percent black phosphorite and heavy mineral grains; trace mica; 15 percent moldic porosity; low hydraulic conductivity; friable; poorly cemented
70.0 - 72.0	Pelecypod lime floatstone and rudstone with skeletal, mud-dominated lime packstone matrix, yellowish-gray 5Y 8/1, light-gray N7 to very light gray N8; mainly medium to pebble-size fossils and lime mudstone; minor very fine to fine quartz sand, very fine to fine-size fossils, phosphorite and heavy mineral grains; well sorted; subangular to subrounded quartz sand; pelecypods, skeletal fragments, gastropods, sand dollars; less than 10 percent quartz grains; trace black phosphorite and heavy mineral grains; 20 percent moldic porosity; medium hydraulic conductivity; friable; poorly cemented; mechanically broken in part
72.0 - 75.0	Pelecypod lime rudstone with skeletal, mud-dominated lime packstone matrix, yellowish-gray 5Y 8/1, light-gray N7 to very light gray N8; mainly medium to pebble-size fossils and lime mudstone; minor very fine to fine quartz sand, very fine to fine-size fossils, phosphorite and heavy mineral grains; well sorted; subangular to subrounded quartz sand; pelecypods, skeletal fragments, gastropods; trace quartz grains; trace black phosphorite and heavy mineral grains; 20 percent moldic porosity; medium hydraulic conductivity; friable; poorly cemented; mechanically broken in part
75.0 - 79.5	Pelecypod lime rudstone with skeletal, grain-dominated lime packstone matrix, yellowish-gray 5Y 8/1, light-gray N7 to very light gray N8; mainly medium to pebble-size fossils; minor very fine to fine quartz sand, lime mudstone, very fine to fine-size fossils, phosphorite and heavy mineral grains; well sorted; subangular to subrounded quartz sand; pelecypods, skeletal fragments, gastropods, serpulids; trace quartz sand; trace black phosphorite and heavy mineral grains; 25 percent moldic and interparticle porosity; medium to high hydraulic conductivity; friable; poorly cemented; mechanically broken in part
79.5 - 80.0	No recovery
80.0 - 86.0	Pelecypod lime floatstone with skeletal, quartzsand-rich, grain-dominated lime packstone and lime grainstone matrix, yellowish-gray 5Y 8/1; mainly very coarse to granule-size fossils and very fine quartz sand; minor fine to medium quartz sand, lime mudstone, very fine to coarse and pebble-size fossils, and very fine to fine phosphorite and heavy mineral grains; well sorted; subangular to subrounded quartz sand; pelecypods, skeletal fragments, bryozoans, barnacles, gastropods; 30 to 40 percent quartz sand; less than 5 percent black phosphorite and heavy mineral grains; 20 percent moldic porosity; medium hydraulic conductivity; friable; poorly cemented
86.0 - 88.5	Pelecypod lime floatstone with skeletal, quartz sand-rich, mud-dominated lime packstone and lime grainstone matrix, yellowish-gray 5Y 8/1; mainly very coarse to pebble-size fossils, very fine quartz sand and lime mudstone; minor fine to medium quartz sand, very fine to coarse fossils, terrigenous clay, very fine to fine phosphorite and heavy mineral grains; well sorted; subangular to subrounded quartz sand; pelecypods, skeletal fragments, gastropods; 20 to 40 percent quartz sand; less than 5 percent black phosphorite and heavy mineral grains; 15 percent intergrain porosity; low hydraulic conductivity; moderately consolidated; moderately cemented
88.5 - 94.75	Pelecypod lime floatstone and rudstone with skeletal grain-dominated lime packstone and skeletal, quartzsand-rich, mud-dominated lime packstone matrix, yellowish-gray 5Y 8/1; mainly very coarse to pebble-size fossils, very fine quartz sand; minor fine quartz sand, very fine to coarse fossils, very fine to fine phosphorite and heavy mineral grains; well sorted; subangular to subrounded quartz sand; pelecypods, skeletal fragments, bryozoans, gastropods; trace to 30 percent quartz sand; trace to 5 percent black phosphorite and trace heavy mineral grains; 15 percent intergrain and moldic porosity; moderate hydraulic conductivity; poorly cemented; friable
94.75 - 95.0	No recovery
95.0 - 95.5	Pelecypod lime floatstone and rudstone with skeletal grain-dominated lime packstone and skeletal, quartz-sand rich, mud-dominated lime packstone matrix, yellowish-gray 5Y 8/1; mainly very coarse to pebble-size fossils, very fine quartz sand; minor fine quartz sand, very fine to coarse fossils, very fine to fine phosphorite and heavy mineral grains; well sorted; subangular to subrounded quartz sand; pelecypods, skeletal fragments, bryozoans, gastropods; trace to 30 percent quartz sand; trace to 5 percent black phosphorite and trace heavy mineral grains; 15 percent intergrain and moldic porosity; moderate hydraulic conductivity; poorly cemented; friable
95.5 - 98.75	Pelecypod lime rudstone with skeletal grain-dominated lime packstone and skeletal lime grainstone matrix, yellowish-gray 5Y 8/1, light-gray N7 to very light gray N8; mainly very coarse to pebble-size fossils; minor fine quartz sand, very fine to coarse fossils, very fine to fine phosphorite and heavy mineral grains; well sorted; subangular quartz sand; pelecypods, skeletal fragments, gastropods, bryozoans, <i>Vermicularia</i> ; less than 5 percent quartz sand; trace black phosphorite and heavy mineral grains; 25 percent intergrain and moldic porosity; moderate to high hydraulic conductivity; poorly cemented; friable
98.75 - 100.0	No recovery

Depth (feet below land surface)	Lithologic description of well MO-178
100.0 - 104.5	Pelecypod lime rudstone with skeletal grain-dominated lime packstone and skeletal lime grainstone matrix, yellowish-gray 5Y 8/1, light-gray N7 to very light gray N8; mainly very fine to pebble size fossils; minor fine quartz sand, very fine to fine phosphorite and heavy mineral grains; well sorted; subangular quartz sand; pelecypods, skeletal fragments, gastropods, bryozoans, sand dollars, serpulids; less than 10 percent quartz sand; less than 5 percent black phosphorite and trace heavy mineral grains; 25 percent intergrain and moldic porosity; moderate to high hydraulic conductivity; poorly cemented; friable
104.5 - 105.0	No recovery
105.0 - 111.0	Pelecypod lime rudstone with skeletal grain-dominated and mud-dominated lime packstone matrix, yellowish-gray 5Y 8/1, light-gray N7 to very light gray N8; mainly very fine to pebble-size fossils and very fine quartz sand; minor fine quartz sand, lime mudstone, and very fine to fine phosphorite and heavy mineral grains; well sorted; subangular to subrounded quartz sand; pelecypods, skeletal fragments, gastropods, bryozoans, <i>Vermicularia</i> , oysters; less than 30 percent quartz sand; less than 3 percent black phosphorite and trace heavy mineral grains; 20 to 25 percent intergrain and moldic porosity; moderate hydraulic conductivity; poorly cemented; friable
111.0 - 114.8	No recovery
114.8 - 115.3	Pelecypod lime rudstone with skeletal grain-dominated and mud-dominated lime packstone matrix, yellowish-gray 5Y 8/1, light-gray N7 to very light gray N8; mainly very fine to pebble-size fossils and very fine quartz sand; minor fine quartz sand, lime mudstone, and very fine to fine phosphorite and heavy mineral grains; well sorted; subangular to subrounded quartz sand; pelecypods, skeletal fragments, gastropods, bryozoans, <i>Vermicularia</i> , oysters; less than 30 percent quartz sand; less than 3 percent black phosphorite and trace heavy mineral grains; 20 to 25 percent intergrain and moldic porosity; moderate hydraulic conductivity; poorly cemented; friable
115.3 - 117.0	Pelecypod lime rudstone with skeletal grain-dominated lime packstone matrix, very pale orange 10YR 8/2; mainly very fine to medium and pebble-size fossils and very fine quartz sand; minor coarse to granule-size fossils, fine quartz sand, lime mudstone, and very fine to fine phosphorite and heavy mineral grains; well sorted; subangular to subrounded quartz sand; pelecypods, skeletal fragments, sand dollars, serpulids, bryozoans, barnacles; less than 20 percent quartz sand; trace black phosphorite and trace heavy mineral grains; 25 percent intergrain and moldic porosity; high hydraulic conductivity; poorly cemented; friable
117.0 - 118.8	Pelecypod lime rudstone with skeletal grain-dominated lime packstone matrix, light-gray N7 to very light gray N8; mainly very fine to pebble-size fossils and very fine quartz sand; minor fine quartz sand, lime mudstone, and very fine to fine phosphorite and heavy mineral grains; well sorted; subangular to subrounded quartz sand; pelecypods, skeletal fragments, sand dollars, serpulids, bryozoans, barnacles; less than 20 percent quartz sand; less than 3 percent black phosphorite and heavy mineral grains; 25 percent intergrain and moldic porosity; high hydraulic conductivity; poorly cemented; friable
118.8 - 120.0	No recovery
120.0 - 123.0	Pelecypod lime floatstone with skeletal, quartz sand-rich, grain-dominated lime packstone matrix, very pale orange 10YR 8/2; mainly very fine to pebble-size fossils and very fine to fine quartz sand; minor lime mudstone and very fine to fine phosphorite and heavy mineral grains; well sorted; subangular to subrounded quartz sand; pelecypods, skeletal fragments, bryozoans, gastropods; 10 to 40 percent quartz sand; trace black phosphorite and heavy mineral grains; 20 percent intergrain and moldic porosity; moderate hydraulic conductivity; poorly cemented; friable
123.0 - 124.5	Pelecypod lime floatstone with skeletal, quartz sand-rich, grain-dominated lime packstone matrix, light-gray N7 to very light gray N8; mainly very fine to pebble-size fossils and very fine to fine quartz sand; minor lime mudstone, and very fine to fine phosphorite and heavy mineral grains; well sorted; subangular to subrounded quartz sand; pelecypods, skeletal fragments, bryozoans, gastropods; 10 to 40 percent quartz sand; less than 5 percent black phosphorite and heavy mineral grains; 20 percent intergrain porosity; moderate hydraulic conductivity; poorly cemented; friable
124.5 - 125.0	No recovery
125.0 - 125.2	Pelecypod lime rudstone and pelecypod rudstone with skeletal, quartz sand-rich, mud-dominated, and grain-dominated lime packstone matrix, very pale orange 10YR 8/2; light-gray N7 to very light gray N8; mainly very fine to pebble-size fossils, very fine to fine quartz sand and lime mudstone; minor medium to very coarse quartz sand, lime mudstone, very fine to coarse phosphorite and very fine to fine heavy mineral grains; moderately sorted; subangular to rounded quartz sand; pelecypods, skeletal fragments; 10 to 45 percent quartz sand; less than 3 percent black phosphorite and heavy mineral grains; 25 percent moldic porosity; moderate hydraulic conductivity; well cemented; hard
125.2 - 125.5	No recovery
125.5 - 126.3	Pelecypod lime rudstone and pelecypod rudstone with skeletal, quartzsand-rich, mud-dominated, and grain-dominated lime packstone matrix, very pale orange 10YR 8/2; light-gray N7 to very light gray N8; mainly very fine to pebble-size fossils, very fine to fine quartz sand and lime mudstone; minor medium to very coarse quartz sand, lime mudstone, very fine to coarse phosphorite and very fine to fine heavy mineral grains; moderately sorted; subangular to rounded quartz sand; pelecypods, skeletal fragments; 10 to 45 percent quartz sand; less than 3 percent black phosphorite and heavy mineral grains; 25 percent moldic porosity; moderate hydraulic conductivity; well cemented; hard

Depth (feet below land surface)	Lithologic description of well MO-178
126.3 - 127.0	Quartz sand, very pale orange 10YR 8/2; mainly very fine to fine quartz sand; minor medium to very coarse quartz sand, very fine to medium sand-size phosphorite grains and very fine to fine heavy minerals; moderately sorted; subangular to subrounded quartz sand; 10 to 20 percent skeletal grains; less than 3 percent black phosphorite and heavy mineral grains; 25 percent intergrain and moldic porosity; low hydraulic conductivity; very poorly cemented; friable; soft when wet
127.0 - 130.0	No recovery
130.0 - 132.6	Quartz sand, yellowish-gray 5Y 8/1; mainly very fine to fine quartz sand; minor medium to very coarse quartz sand, very fine to medium sand-size phosphorite grains and very fine to fine heavy minerals; moderately sorted; subangular to subrounded quartz sand; 10 to 20 percent skeletal grains; less than 3 percent black phosphorite grains; trace heavy mineral grains; 25 percent moldic porosity; moderate hydraulic conductivity; very poorly cemented; friable; soft when wet
132.6 - 134.5	No recovery
134.5 - 137.0	Quartz sand, yellowish-gray 5Y 8/1; mainly very fine to fine quartz sand; minor medium to very coarse quartz sand, very fine to medium sand-size phosphorite grains and very fine to fine heavy minerals; moderately sorted; subangular to subrounded quartz sand; 10 to 20 percent skeletal grains; less than 3 to 5 percent black phosphorite grains; trace heavy mineral grains; 25 percent intergrain and moldic porosity; low hydraulic conductivity; very poorly cemented; friable; soft when wet
137.0 - 137.3	Pelecypod floatstone and rudstone with quartz sand matrix, yellowish-gray 5Y 8/1; mainly very fine to fine quartz sand and pebble-size fossils; minor medium to coarse quartz sand and fine to granule-size fossils; moderately sorted; subangular to subrounded quartz sand; pelecypod; 10 to 45 percent quartz sand; less than 3 to 5 percent black phosphorite and heavy mineral grains; 30 percent intergrain and moldic porosity; high hydraulic conductivity; moderately cemented; moderately hard
137.3 - 142.3	Quartz sand, yellowish-gray 5Y 8/1; mainly very fine to fine quartz sand; minor medium to very coarse quartz sand, very fine to medium sand-size phosphorite grains and very fine to fine heavy minerals; moderately sorted; subangular to subrounded quartz sand; 5 percent skeletal grains; less than 3 percent black phosphorite grains; trace heavy mineral grains; 25 percent intergrain and moldic porosity; low hydraulic conductivity; very poorly cemented; friable; soft when wet
142.3 - 144.0	No recovery
144.0 - 146.7	Quartz sand, yellowish gray 5Y 8/1; mainly very fine to fine quartz sand; minor medium to very coarse quartz sand, very fine to medium sand-size phosphorite grains and very fine to fine heavy minerals; moderately sorted; subangular to subrounded quartz sand; 10 to 20 percent skeletal grains; less than 3 percent black phosphorite grains; trace heavy mineral grains; 25 percent intergrain and moldic porosity; low hydraulic conductivity; very poorly cemented; friable; soft when wet

West Loop Road Core

Florida Geological Survey well number	W-17973
Well number	MO-179
Total depth	250 feet
Cored from	0 to 250 feet
County	Monroe
Location	T54S, R33E
Latitude	25°45'40"
Longitude	81°03'34"
Elevation	6 feet
Completion date	March 11, 1997
Other types of available logs	Gamma ray, induction, neutron, fluid velocity
Owner	U.S. Geological Survey
Driller	U.S. Geological Survey
Core described by	Ronald S. Reese (for a description of 202 to 250 feet, see Weedman and others, 1999)
Fill	0 to 3 feet
Tamiami Formation, Ochopee Limestone Member	3 to 55.5 feet
Unnamed formation	55.5 to 165 feet
Peace River Formation	165 to 202 feet
Water-table aquifer	0 to 5 feet
Gray limestone aquifer	5 to 55.5 feet
Lower confining unit	55.5 to 202 feet

Depth (feet below land surface)	Lithologic description of well MO-179
0.0 - 0.8	Limestone, brownish-gray 5YR 4/1; moderate hydraulic conductivity; well cemented and locally broken
0.8 - 1.5	No recovery
1.5 - 2.0	Limestone, brownish-gray 5YR 4/1; moderate hydraulic conductivity; well cemented and locally broken
2.0 - 3.0	No recovery
3.0 - 5.0	Limestone, light-gray N7 to orange-gray 10YR 8/2; fine to medium quartz sand; low hydraulic conductivity; limestone is locally lime mudstone
5.0 - 7.0	Lime grainstone and packstone, very pale orange 10YR 8/2; mainly fine to granule; common moldic porosity; low to moderate hydraulic conductivity
7.0 - 7.5	Limestone, light-gray N7; local moldic porosity; low to high hydraulic conductivity; firm and locally broken
7.5 - 9.0	No recovery
9.0 - 9.5	Loose carbonate sand, very light gray N6 to light-gray N7; mainly very fine to granule; low to moderate hydraulic conductivity
9.5 - 11.0	No recovery
11.0 - 11.9	Carbonate sand, very pale orange 10YR 8/2; mainly very fine to pebble; locally abundant quartz grains; moderate to high hydraulic conductivity
11.9 - 13.0	No recovery
13.0 - 13.3	Carbonate sand to lime mudstone, white N9; mainly coarse grain size; ranges from mud to coarse; locally abundant quartz grains; low hydraulic conductivity
13.3 - 15.0	No recovery
15.0 - 15.5	Carbonate sand to lime mudstone, very pale orange 10YR 8/2; mainly medium to granule; ranges from mud to granule; locally abundant quartz grains; moderate hydraulic conductivity; minor lime mud matrix
15.5 - 18.0	No recovery
18.0 - 18.4	Carbonate sand to lime mudstone, very pale orange 10YR 8/2; mainly fine to coarse; ranges from mud to coarse; locally abundant quartz grains; low hydraulic conductivity; minor lime mud matrix
18.4 - 20.0	No recovery
20.0 - 21.5	Carbonate sand, very light gray N8 to white N9; mainly medium to pebble grain size; ranges from mud to pebble; shell fragments; low to moderate hydraulic conductivity; minor lime mud matrix
21.5 - 22.0	No recovery
22.0 - 23.0	Carbonate sand, very light gray N8 to white N9; mainly medium to pebble grain size; ranges from mud to pebble; shell fragments; low hydraulic conductivity; minor lime mud matrix
23.0 - 25.0	No recovery
25.0 - 27.0	Carbonate sand, very light gray N8; mainly medium to pebble grain size; ranges from mud to pebble; shell fragments; moderate hydraulic conductivity; minor lime mud matrix
27.0 - 27.6	No recovery
27.6 - 28.5	Carbonate sand, very light gray N8; mainly medium to pebble grain size; ranges from mud to pebble; shell fragments; low hydraulic conductivity; abundant lime mud matrix
28.5 - 30.0	No recovery
30.0 - 33.0	Carbonate sand, very light gray N8; mainly fine to pebble; shell fragments; low to moderate hydraulic conductivity
33.0 - 35.0	No recovery
35.0 - 35.5	Carbonate sand, very light gray N8; mainly fine to pebble; shell fragments; low to moderate hydraulic conductivity
35.5 - 36.0	No recovery
36.0 - 37.0	Lime grainstone and lime mudstone, very light gray N8 to light-greenish-gray 5GY 8/1; mainly fine to pebble grain size; common vuggy porosity; moderate and possibly high hydraulic conductivity
37.0 - 41.0	No recovery
41.0 - 44.0	Carbonate sand, very light gray N8; fine to pebble grain size; low to moderate hydraulic conductivity
44.0 - 45.0	No recovery
45.0 - 45.5	Well-washed lime packstone, very light gray N8; mainly fine to pebble grain size; ranges from mud to pebble; common moldic porosity; moderate hydraulic conductivity
45.5 - 47.0	No recovery
47.0 - 47.5	Limestone, very light gray N8; mainly granule to pebble grain size; ranges from mud to pebble; large shells; minor moldic porosity; low to moderate hydraulic conductivity; minor lime mud matrix

Depth (feet below land surface)	Lithologic description of well MO-179
47.5 - 50.0	No recovery
50.0 - 50.5	Limestone, very light gray N8 to white N9; mainly granule to pebble grain size; ranges from mud to pebble; shell fragments; possible large vugs; high hydraulic conductivity; common lime mud matrix
50.5 - 55.0	No recovery
55.0 - 55.5	Quartz-sand rich limestone, very light gray N8; mainly fine to granule grain size; fine to coarse sand; moldic porosity; low to moderate hydraulic conductivity
55.5 - 60.0	No recovery
60.0 - 63.0	Quartz sand, very light gray N8; mainly medium grain size; ranges from medium to coarse; moderate hydraulic conductivity; very minor clay matrix
63.0 - 65.0	No recovery
65.0 - 69.0	Quartz sand, yellowish-gray 5Y 7/2; mainly fine to coarse grain size; low to moderate hydraulic conductivity
69.0 - 70.0	No recovery
70.0 - 74.0	Quartz sand, light-gray N7; mainly fine grain size; ranges from clay to coarse; trace to 3 percent phosphorite grains; low hydraulic conductivity; minor clay matrix
74.0 - 75.0	No recovery
75.0 - 77.5	Quartz sand, light-gray N7; mainly very fine to fine; ranges from clay to coarse; trace to 3 percent phosphorite grains; low hydraulic conductivity; minor clay matrix
77.5 - 80.0	No recovery
80.0 - 83.5	Quartz sand, light-gray N7; mainly very fine to fine grain size; trace to 3 percent phosphorite grains; low to moderate hydraulic conductivity; minor clay matrix at base of interval
83.5 - 85.0	No recovery
85.0 - 89.2	Quartz sand, light-gray N7 to yellowish-gray 5Y 8/1; mainly very fine to fine grain size; trace to 3 percent phosphorite grains; low to moderate hydraulic conductivity; silty matrix
89.2 - 90.0	No recovery
90.0 - 94.5	Quartz sand, light-gray N7 to yellowish-gray 5Y 8/1; mainly fine to coarse grain size; trace to 3 percent phosphorite grains; low hydraulic conductivity
94.5 - 95.0	No recovery
95.0 - 99.0	Quartz sand, light-gray N7 to yellowish-gray 5Y 8/1; mainly fine to coarse grain size; trace to 3 percent phosphorite grains; low to moderate hydraulic conductivity at base of interval
99.0 - 100.0	No recovery
100.00 - 107.5	Quartz sand, light-gray N7 to yellowish-gray 5Y 8/1; mainly fine to coarse grain size; trace to 3 percent phosphorite grains; low hydraulic conductivity
107.5 - 108.0	No recovery
108.0 - 110.0	Quartz sand, light-gray N7 to yellowish-gray 5Y 8/1; mainly fine to coarse grain size; trace to 3 percent phosphorite grains; low hydraulic conductivity
110.0 - 117.0	Quartz sand, light-gray N7 to yellowish-gray 5Y 8/1; mainly fine to coarse grain size; trace to 3 percent phosphorite grains; low to moderate hydraulic conductivity
117.0 - 120.0	No recovery
120.0 - 123.5	Quartz sand, light-gray N7; mainly fine to coarse grain size; trace to 3 percent phosphorite grains; low hydraulic conductivity
123.5 - 125.0	No recovery
125.0 - 130.0	Quartz sand, light-gray N7; mainly fine to coarse grain size; trace to 3 percent phosphorite grains; low hydraulic conductivity
130.0 - 134.0	Quartz sand, light-gray N7; mainly fine to granule grain size; trace to 3 percent phosphorite grains; moderate to high hydraulic conductivity
134.0 - 135.0	No recovery
135.0 - 137.8	Quartz sand, light-gray N7; mainly fine to granule grain size; trace to 3 percent phosphorite grains; low to moderate hydraulic conductivity; minor clay matrix
137.8 - 140.0	No recovery
140.0 - 145.5	Quartz sand, light-gray N7; mainly fine to coarse grain size; trace to 3 percent phosphorite grains; low hydraulic conductivity; minor silt matrix
145.5 - 148.5	No recovery

Depth (feet below land surface)	Lithologic description of well MO-179
148.5 - 155.0	Quartz sand, light-gray N7; mainly fine to coarse grain size; trace to 3 percent phosphorite grains; low to moderate hydraulic conductivity; minor silt matrix
155.0 - 159.5	Quartz sand, very light gray N8; mainly medium to coarse grain size; trace to 3 percent phosphorite grains; low to moderate hydraulic conductivity
159.5 - 160.0	No recovery
160.0 - 165.0	Quartz sand, yellowish-gray 5Y 8/1 to light-gray N8 to medium-gray N5; mainly fine to pebble grain size; shell fragments; trace to 10 percent phosphorite grains; low to moderate hydraulic conductivity
165.0 - 169.5	Quartz sand, light-gray N8 to medium-gray N5; mainly fine to pebble grain size; shell fragments; trace to 3 percent phosphorite grains; low hydraulic conductivity; minor clay laminations
169.5 - 170.0	No recovery
170.0 - 175.0	Quartz sand, light-gray N8 to medium-gray N5; mainly fine to pebble grain size; shell fragments; trace to 3 percent phosphorite grains; low hydraulic conductivity; minor clay laminations
175.0 - 179.5	Quartz sand, light-gray N8 to medium-gray N5; mainly fine to granule size; trace to 3 percent phosphorite grains; low to moderate hydraulic conductivity; minor clay laminations
179.5 - 180.0	No recovery
180.0 - 184.5	Quartz sand, light-gray N8 to medium-gray N5; mainly fine to granule size; trace to 3 percent phosphorite grains; low to moderate hydraulic conductivity; minor clay matrix
184.5 - 187.0	No recovery
187.0 - 190.0	Quartz sand, greenish-gray 5GY 6/1; mainly fine to medium grain size; low hydraulic conductivity; abundant clay matrix
190.0 - 195.0	Quartz sand, medium-gray N5 to light-gray N7 to greenish-gray 5GY 6/1; mainly fine to pebble size; ranges from clay to pebble; shell fragments; minor pebble-size phosphorite grains; mainly low with very low to low hydraulic conductivity at base; abundant clay matrix
195.0 - 200.0	Quartz sand, medium-gray N5 to greenish-gray 5GY 6/1; mainly fine grain size; ranges from clay to fine; very low to low hydraulic conductivity; mottled coloration; abundant clay matrix
200.0 - 202.0	Quartz sand, medium-gray N5 to greenish-gray 5GY 6/1; mainly very fine to fine grain size; ranges from clay to fine; very low to low hydraulic conductivity; mottled coloration; abundant clay matrix

G-200 Core Pumping Station

Florida Geological Survey well number	W-17554
GWSI number	PB-1703
Total depth	221 feet
Cored from	0 to 221 feet
County	Palm Beach
Location	SE, SW, sec. 35, T46S, R35E
Latitude	26°26'06"
Longitude	80°48'38"
Elevation	20 feet
Completion date	March 15, 1998
Other types of available logs	Induction resistivity, gamma ray, neutron, spontaneous potential, single-point resistivity, normal resistivity, caliper
Owner	U.S. Geological Survey
Driller	Florida Geological Survey
Core described by	Kevin J. Cunningham
Levee fill	0 to 15 feet
Tamiami Formation	15 to 153 feet
Pinecrest Sand Member	15 to 79.5 feet
Ochopee Limestone Member	79.5 to 153 feet
Unnamed formation	153 to 194 feet
Peace River Formation	194 to 220 feet
Upper confining unit	18.5 to 79.5 feet
Gray limestone aquifer	79.5 to 92 feet
Lower confining unit	92 to 220 feet

Depth (feet below land surface)	Lithologic description of well PB-1703
0.0 - 7.0	No recovery
7.0 - 8.0	Large limestone block within levee fill
8.0 - 8.5	No recovery
8.5 - 9.0	Rubble and wood from levee fill
9.0 - 10.0	No recovery
10.0 - 10.5	Limestone rubble from levee fill
10.5 - 13.0	No recovery
13.0 - 14.0	Rubble of limestone and soil from levee
14.0 - 14.5	Soil
14.5 - 15.0	Rubble of limestone
15.0 - 15.5	Pelecypod lime floatstone with quartz sand-rich skeletal mud-dominated and grain-dominated lime packstone matrix, mottled yellowish-gray 5Y 8/1, medium-light-gray N6, pale-yellowish-brown 10YR 6/2; mainly clay-size lime mudstone, very fine quartz sand and very fine to pebble-size fossils; minor silt-size quartz and cobble-size fossils; very well sorted quartz sand; subangular quartz sand; skeletal fragments, pelecypods and gastropods; 20 percent quartz sand; 15 percent moldic, intraparticle, interparticle, and root-mold porosity; low hydraulic conductivity; subtidal marine; irregular relief on upper bounding exposure surface with local overhanging microtopography; local laminated calcrete (dark-yellowish-brown 10YR 4/2, pale-yellowish-brown 10YR 6/2) at top of upper bounding surface in microtopographic low
15.5 - 17.0	Pelecypod lime floatstone with quartz sand-rich skeletal lime wackestone, mottled very pale orange 10YR 8/2, pale-yellowish-brown 10YR 6/2, light-gray N7; mainly clay-size lime mudstone, very fine quartz sand and very fine to pebble-size fossils; minor silt-size quartz; very well sorted quartz sand; subangular quartz sand; skeletal grains, pelecypods and gastropods; 20 to 45 percent quartz sand; 15 percent moldic, vuggy, and root-mold porosity; low hydraulic conductivity; subtidal marine; irregular relief on upper bounding exposure surface with local overhanging microtopography; probably local calcrete, pale-yellowish-brown 10YR 6/2, dark-yellowish-brown 10YR 4/2; trace irregular root molds; borrowed
17.0 - 17.4	Rubble of limestone
17.4 - 18.0	Pelecypod lime rudstone and floatstone with matrix of skeletal, quartz sand-rich wackestone and quartz sandstone with abundant skeletal fragments and lime mudstone matrix, mottled yellowish-gray 5Y 8/1 and pale-yellowish-brown 10YR 6/2; mainly clay-size lime mudstone, very fine quartz sand and pebble-size fossils; minor silt-size quartz and very fine sand to granule-size fossils; very well sorted quartz sand; subangular quartz sand; skeletal fragments and pelecypods; 25 to 60 percent quartz sand; 15 percent moldic and vuggy porosity; low hydraulic conductivity; subtidal marine;
18.0 - 18.5	No recovery
18.5 - 20.0	Skeletal-rich quartz sandstone with lime mudstone matrix, mottled medium-dark-gray N4 to dark-gray N5, yellowish-gray 5Y 8/1; mainly lime mudstone, very fine sand size quartz sand and pebble-size fossils; minor silt-size quartz sand and very fine sand to granule-size fossils; very well sorted quartz sand; subangular quartz sand; skeletal fragments and pelecypods; 10 percent intergrain porosity; low hydraulic conductivity; subtidal marine;
20.0 - 20.8	Skeletal-rich quartz sandstone, yellowish-gray 5Y 8/1; mainly lime mud and very fine quartz sand; minor silt-size quartz sand, very fine to pebble-size fossils and very fine sand-size phosphorite grains; very well sorted quartz sand; subangular quartz sand; 30 percent skeletal fragments and pelecypods; 1 percent black N1 phosphorite grains; 15 percent intergrain porosity; low hydraulic conductivity; subtidal marine; soft when wet
20.8 - 22.0	No recovery
22.0 - 23.5	Skeletal-rich quartz sandstone, yellowish-gray 5Y 8/1; mainly very fine quartz sand; minor clay-size lime mud, silt-size quartz sand, very fine sand to pebble-size fossils and very fine sand-size phosphorite grains; very well sorted quartz sand; subangular; skeletal fragments, pelecypods, and gastropods; 3 percent black N1 phosphorite; 15 percent intergrain porosity; low hydraulic conductivity; subtidal marine; soft when wet;
23.5 - 24.0	No recovery
24.0 - 24.5	Rubble
24.5 - 26.8	Skeletal-rich quartz sand, yellowish-gray 5Y 7/2, pale-yellowish-brown 10YR 6/2; mainly very fine quartz sand; minor clay-size lime mud, silt-size quartz sand, very fine sand to pebble-size fossils and very fine sand-size phosphorite grains; very well sorted quartz sand; subangular quartz sand; skeletal fragments, pelecypods, gastropods, and branching bryozoans; 3 percent black N1 phosphorite grains; 15 percent intergrain porosity; low hydraulic conductivity; subtidal marine; soft when wet
26.8 - 29.0	No recovery
29.0 - 29.5	Rubble

Depth (feet below land surface)	Lithologic description of well PB-1703
29.5 - 33.0	Skeletal lime rudstone with grain-dominated skeletal lime packstone matrix, yellowish-gray 5Y 7/2, pale-yellowish-brown 10YR 6/2; mainly fine sand to granule-size fossils; minor clay-size lime mudstone, silt to very fine sand and pebble-size fossils, very fine to fine sand-size quartz sand and very fine sand-size phosphorite grains; up to medium pebble-size fossils; well sorted quartz sand; subangular to subrounded quartz sand; skeletal fragments, pelecypods, gastropods and bryozoans; trace to 5 percent quartz sand; trace black N1 phosphorite grains; 20 percent intergrain porosity; low hydraulic conductivity; subtidal marine; unconsolidated, pelecypod, skeletal rudstone facies; soft when wet; noncemented; unconsolidated
33.0 - 34.0	No recovery
34.0 - 43.0	Skeletal lime rudstone with grain-dominated skeletal lime packstone matrix, yellowish-gray 5Y 7/2, pale-yellowish-brown 10YR 6/2; mainly fine sand to granule-size fossils; minor clay-size lime mudstone, silt to very fine sand and pebble-size fossils, very fine to fine quartz sand and very fine sand-size phosphorite grains; trace large pebble-size fossils; well sorted quartz sand; subangular to subrounded quartz sand; skeletal fragments, pelecypods, gastropods, and bryozoans; trace to 5 percent quartz sand; trace black N1 phosphorite grains; 20 percent intergrain porosity; low hydraulic conductivity; subtidal marine; unconsolidated, pelecypod, skeletal rudstone facies; soft when wet; noncemented; unconsolidated; possible calcrete, pale-yellowish-brown 10YR 6/2 and abrupt contact at 42.9 feet, cobble-size lithoclast above contact
43.0 - 43.5	No recovery
43.5 - 46.5	Skeletal lime rudstone with grain-dominated skeletal lime packstone matrix, yellowish-gray 5Y 7/2, pale-yellowish-brown 10YR 6/2; mainly fine sand to granule-size fossils; minor clay-size lime mudstone, silt to very fine sand and pebble-size fossils, very fine to fine sand-size quartz sand and very fine sand-size phosphorite grains; trace large pebble-size fossils; well sorted quartz sand; subangular to subrounded quartz sand; skeletal fragments, pelecypods, gastropods, and bryozoans; trace to 5 percent quartz sand; trace black N1 phosphorite grains; 20 percent intergrain porosity; low hydraulic conductivity; subtidal marine; unconsolidated, pelecypod, skeletal rudstone facies; soft when wet; noncemented; unconsolidated
46.5 - 46.6	Quartz sand, yellowish-gray 5Y 7/2; mainly very fine to fine quartz sand; minor clay-size lime mud matrix, medium quartz sand, very fine sand to pebble-size fossils and very fine to fine phosphorite grains; well sorted quartz sand; subangular to subrounded quartz sand; trace to 20 percent skeletal fragments and pelecypods; 3 to 5 percent black N1 phosphorite grains; 15 percent intergrain porosity; low hydraulic conductivity; subtidal marine; soft when wet; noncemented; minor white pelecypod fragments and disarticulated pelecypods
46.6 - 47.5	Quartz sand, yellowish-gray 5Y 7/2; mainly very fine to fine quartz sand; minor clay-size lime mud matrix, medium quartz sand, very fine sand to pebble-size fossils and very fine to fine phosphorite grains; well sorted quartz sand; subangular to subrounded quartz sand; trace to 20 percent skeletal fragments and pelecypods; 3 to 5 percent black N1 phosphorite grains; 15 percent intergrain porosity; low hydraulic conductivity; subtidal marine; soft when wet; noncemented; minor white pelecypod fragments and disarticulated pelecypods
47.5 - 48.5	Quartz sand, yellowish-gray 5Y 7/2; mainly very fine to fine quartz sand; minor clay-size lime mud matrix, very fine sand to pebble-size fossils and very fine to fine phosphorite grains; well sorted quartz sand; subangular quartz sand; trace to 20 percent skeletal fragments and pelecypods; 3 to 5 percent black N1 phosphorite grains; 15 percent intergrain porosity; low hydraulic conductivity; subtidal marine; soft when wet; noncemented
48.5 - 53.75	Quartz sand, yellowish-gray 5Y 8/1; mainly very fine to fine quartz sand; minor clay-size lime mud matrix, very fine sand to pebble size fossils and very fine to fine phosphorite grains; well sorted quartz sand; subangular quartz sand; trace to 20 percent skeletal fragments and pelecypods; 3 to 5 percent black N1 phosphorite grains; 15 percent intergrain porosity; low hydraulic conductivity; subtidal marine; soft when wet; noncemented
53.75 - 55.0	No recovery
55.0 - 63.0	Quartz sand, yellowish-gray 5Y 8/1; mainly very fine to fine quartz sand; minor clay-size lime mud matrix, very fine sand to pebble-size fossils and very fine to fine phosphorite grains; well sorted quartz sand; subangular quartz sand; trace to 20 percent skeletal fragments and pelecypod fragments; 5 percent black N1 phosphorite grains; 15 percent intergrain porosity; low hydraulic conductivity; subtidal marine; soft when wet; noncemented; possible well-cemented hard ground at 55 feet
63.0 - 64.5	Quartz sandstone, yellowish-gray 5Y 8/1; mainly very fine to fine quartz sand; minor clay-size lime mud matrix, medium quartz sand and very fine sand to large pebble-size fossils; well sorted quartz sand; subangular to subrounded quartz sand; 20 percent skeletal fragments and pelecypod fragments; 5 percent black N1 phosphorite grains; 25 percent intergrain and moldic porosity; low hydraulic conductivity; subtidal marine
64.5 - 68.0	No recovery
68.0 - 71.0	Quartz sandstone, yellowish-gray 5Y 8/1; mainly very fine to fine quartz sand and terrigenous clay matrix, minor medium quartz sand, very fine sand to pebble-size fossils and very fine to fine phosphorite grains; well sorted quartz sand; subangular to subrounded quartz sand; 20 percent skeletal fragments and pelecypod fragments; 3 percent black N1 phosphorite grains; 15 percent intergrain porosity; low hydraulic conductivity; subtidal marine
71.0 - 74.5	Quartz sandstone, yellowish-gray 5Y 8/1; mainly very fine to fine quartz sand; minor terrigenous clay matrix, medium quartz sand, very fine sand to pebble-size fossils and very fine to fine phosphorite grains; well sorted quartz sand; subangular to subrounded quartz sand; 5 to 25 percent skeletal fragments and pelecypod fragments; 5 percent black N1 phosphorite grains; 15 percent intergrain and moldic porosity; low hydraulic conductivity; subtidal marine

Depth (feet below land surface)	Lithologic description of well PB-1703
74.5 - 75.5	Quartz sandstone, yellowish-gray 5Y 8/1; mainly very fine to medium quartz sand; minor terrigenous clay matrix, very fine sand to pebble-size fossils and very fine to fine phosphorite grains; well sorted quartz sand; subangular to subrounded quartz sand; 5 to 25 percent skeletal fragments and pelecypod fragments; 5 percent black N1 phosphorite grains; 15 percent intergrain and moldic porosity; low hydraulic conductivity; subtidal marine
75.5 - 76.0	Terrigenous mudstone, light-olive-gray 5Y 5/2; mainly terrigenous clay matrix; minor silt to very fine quartz sand; 1 percent intergrain porosity; very low hydraulic conductivity; subtidal marine
76.0 - 79.5	Quartz sandstone, yellowish-gray 5Y 8/1; mainly very fine to medium quartz sand; minor terrigenous clay matrix, very fine sand to pebble-size fossils and very fine to fine phosphorite grains; well sorted quartz sand; subangular to subrounded quartz sand; 5 to 25 percent skeletal fragments and pelecypod fragments; 5 percent black N1 phosphorite grains; 15 percent intergrain and moldic porosity; low hydraulic conductivity; subtidal marine
79.5 - 80.5	Pelecypod lime rudstone with skeletal, quartz sand-rich, mud-dominated lime packstone matrix, medium-light-gray N6 to very light gray N8; mainly clay-size lime mudstone, fine to medium quartz sand and very fine sand to pebble-size fossils; moderately sorted quartz sand; subangular to subrounded quartz sand; skeletal fragments, pelecypods, sand dollars and epibiontic bryozoans and serpulids; 30 percent quartz sand; 5 percent phosphorite grains; 20 percent moldic and intergrain porosity; moderate hydraulic conductivity; subtidal marine; hard when wet; well cemented
80.5 - 81.0	Rubble
81.0 - 82.0	Pelecypod lime rudstone with skeletal, quartz sand-rich, mud-dominated lime packstone matrix, medium-light-gray N6 to very light gray N8; mainly clay-size lime mudstone, fine to medium quartz sand and very fine sand to pebble-size fossils; moderately sorted quartz sand; subangular to subrounded quartz sand; skeletal fragments, pelecypods and epibiontic bryozoans and serpulids; 30 percent quartz sand; 5 percent black N1 phosphorite grains; 20 percent moldic and intergrain porosity; moderate hydraulic conductivity; subtidal marine; hard when wet; well cemented
82.0 - 85.0	No recovery
85.0 - 88.0	Skeletal-rich quartz sandstone and pelecypod lime rudstone with skeletal, quartz sand-rich lime grainstone matrix; medium-light-gray N6 to very light gray N8; yellowish-gray 5Y 8/1; mainly fine quartz sand; minor very fine sand and medium quartz sand, very fine sand and pebble-size fossils, and very fine to fine sand-size phosphorite grains; moderately sorted quartz sand; subangular to subrounded quartz sand; 30 to 70 percent skeletal fragments, pelecypods, serpulids, gastropods and sand dollars; 5 percent black N1 phosphorite grains; 20 percent intergrain and moldic porosity; moderate hydraulic conductivity; subtidal marine; hard when wet; well cemented
88.0 - 91.0	No recovery
91.0 - 91.5	Quartz sandstone, yellowish-gray 5Y 8/1; mainly fine to medium quartz sand; minor very fine to coarse-size quartz sand, very fine sand to pebble-size fossils and very fine to coarse sand-size phosphorite grains; well sorted quartz sand; subangular to subrounded quartz sand; 20 percent skeletal fragments and pelecypod fragments; 5 percent black N1 phosphorite grains; 20 percent intergrain and moldic porosity; moderate hydraulic conductivity; subtidal marine; hard when wet; well cemented
91.5 - 101.0	No recovery
101.0 - 103.0	Quartz sand, yellowish-gray 5Y 8/1; mainly fine to medium quartz sand; minor very fine quartz sand, fine to coarse sand-size fossils and fine to medium sand-size phosphorite grains; moderately sorted quartz sand; subangular to subrounded quartz sand; 10 percent skeletal fragments; 5 to 10 percent black N1 phosphorite grains; 20 percent intergrain porosity; moderate hydraulic conductivity; subtidal marine; soft when wet; friable; very poorly cemented; trace lime mud matrix
103.0 - 105.5	No recovery
105.5 - 107.0	Quartz sand, yellowish-gray 5Y 8/1; mainly fine to medium quartz sand; minor clay-size lime mud, very fine quartz sand, fine sand to granule-size fossils and fine to medium sand-size phosphorite grains; moderately sorted quartz sand; subangular to subrounded quartz sand; 30 percent skeletal fragments; 5 percent black N1 phosphorite grains; 15 percent intergrain porosity; low hydraulic conductivity; subtidal marine; soft when wet; friable; very poorly cemented; minor lime mud matrix
107.0 - 109.0	No recovery
109.0 - 111.0	Skeletal-rich quartz sand, yellowish-gray 5Y 8/1, white N9; mainly fine to medium quartz sand and clay-size lime mud; minor very fine quartz sand, fine sand to pebble-size fossils and fine to medium sand-size phosphorite grains; moderately sorted quartz sand; subangular to subrounded quartz sand; 40 percent skeletal fragments, pelecypods and <i>Vermicularia</i> ; 1 percent black N1 phosphorite grains; 15 percent intergrain porosity; low hydraulic conductivity; subtidal marine; soft when wet; friable; very poorly cemented; minor lime mud matrix
111.0 - 111.5	No recovery
111.5 - 115.5	Skeletal-rich quartz sand, yellowish-gray 5Y 8/1; mainly very fine to fine quartz sand; minor clay-size lime mud, medium quartz sand, very fine sand to pebble-size fossils and very fine to fine sand-size phosphorite grains; moderately sorted quartz sand; subangular to subrounded quartz sand; 20 to 40 percent skeletal fragments; 1 percent black N1 phosphorite grains; 15 percent intergrain porosity; low hydraulic conductivity; subtidal marine; soft when wet; friable; very poorly cemented; trace lime mud matrix
115.5 - 116.5	No recovery

Depth (feet below land surface)	Lithologic description of well PB-1703
116.5 - 118.2	Quartz sand, yellowish-gray 5Y 8/1; mainly very fine to fine quartz sand; minor clay-size lime mud, medium and coarse to very coarse quartz sand, very fine sand to pebble-size fossils and very fine to coarse sand-size phosphorite grains; moderately sorted quartz sand; subangular to subrounded quartz sand; 5 percent skeletal fragments and pelecypods; 5 to 10 percent black N1 phosphorite grains; 20 percent intergrain porosity; low hydraulic conductivity; subtidal marine; soft when wet; friable; very poorly cemented; trace lime mud matrix
118.2 - 121.0	No recovery
121.0 - 125.0	Quartz sand, yellowish-gray 5Y 8/1; mainly fine quartz sand; minor clay-size lime mud, medium to very coarse quartz sand, very fine sand to coarse-size fossils and very fine to medium sand-size phosphorite grains; moderately sorted quartz sand; subangular to subrounded quartz sand; trace skeletal fragments; 5 to 10 percent black N1 phosphorite grains; 20 percent intergrain porosity; moderate hydraulic conductivity; subtidal marine; very soft when wet; friable; very poorly cemented
125.0 - 126.5	No recovery
126.5 - 127.0	Quartz sand, yellowish-gray 5Y 8/1; mainly very fine to fine quartz sand; minor clay-size lime mud, medium to coarse quartz sand, very fine sand to coarse-size fossils and fine to medium sand-size phosphorite grains; moderately sorted quartz sand; subangular to subrounded quartz sand; trace skeletal fragments; 5 to 10 percent black N1 phosphorite grains; 20 percent intergrain porosity; moderate hydraulic conductivity; subtidal marine; very soft when wet; friable; very poorly cemented
127.0 - 129.5	No recovery
129.5 - 130.0	Quartz sand, yellowish-gray 5Y 8/1; mainly very fine to medium quartz sand; minor clay-size lime mud, coarse to very coarse quartz sand, very fine sand to granule-size fossils and fine to medium sand-size phosphorite grains; moderately sorted quartz sand; subangular to subrounded quartz sand; trace skeletal fragments; 5 to 10 percent black N1 phosphorite grains; 20 percent intergrain porosity; moderate hydraulic conductivity; subtidal marine; very soft when wet; friable; very poorly cemented
130.0 - 136.5	No recovery
136.5 - 140.5	Skeletal-rich quartz sand and skeletal, quartz sand-rich, grain-dominated lime grainstone, yellowish-gray 5Y 8/1; mainly very fine to fine quartz sand and very fine sand to pebble-size fossils; minor clay-size lime mud, medium to coarse quartz sand and very fine to medium sand-size phosphorite grains; moderately sorted quartz sand; subangular to subrounded quartz sand; 40 to 60 percent skeletal fragments; 3 percent black N1 phosphorite grains; 15 percent intergrain porosity; low hydraulic conductivity; subtidal marine; soft when wet; friable; very poorly cemented; minor lime mud matrix
140.5 - 141.0	No recovery
141.0 - 144.0	Skeletal lime rudstone with skeletal, quartz sand-rich, grain-dominated lime packstone matrix, yellowish-gray 5Y 8/1; mainly very fine to fine quartz sand and very fine sand and pebble-size fossils; minor clay-size lime mudstone and very fine to fine sand-size phosphorite grains; well sorted quartz sand; subangular to subrounded quartz sand; skeletal fragments and pelecypods; 20 percent quartz sand; 1 percent black N1 phosphorite grains; 15 percent intergrain porosity; low hydraulic conductivity; subtidal marine
144.0 - 146.5	Skeletal-rich quartz sand, yellowish-gray 5Y 8/1; mainly very fine to fine sand-size quartz sand; minor clay-size lime mud, very fine sand to pebble-size fossils and very fine to fine sand-size phosphorite grains; well sorted quartz sand; subangular to subrounded quartz sand; 20 to 40 percent skeletal fragments; 5 to 10 percent black N1 phosphorite grains; 15 percent intergrain porosity; low hydraulic conductivity; subtidal marine; soft when wet; friable; very poorly cemented; minor lime mud matrix
146.5 - 147.0	No recovery
147.0 - 153.0	Interbedded skeletal lime rudstone with skeletal, quartz sand-rich, grain-dominated lime packstone matrix and skeletal-rich quartz sand, yellowish-gray 5Y 8/1; mainly very fine to fine quartz sand and very fine sand and pebble-size fossils; minor clay-size lime mudstone and very fine to fine sand-size phosphorite grains; well sorted quartz sand; subangular to subrounded quartz sand; skeletal fragments and pelecypods; 20 to 80 percent quartz sand; 2 to 10 percent black N1 phosphorite grains; 15 percent intergrain porosity; low hydraulic conductivity; subtidal marine
153.0 - 154.0	No recovery
154.0 - 160.0	Skeletal-rich quartz sand, yellowish-gray 5Y 8/1; mainly very fine quartz sand; minor clay-size lime mud, fine quartz sand; very fine sand to pebble-size fossils and very fine sand-size phosphorite grains; well sorted quartz sand; subangular to subrounded quartz sand; 20 to 40 percent skeletal fragments and pelecypods; 5 to 10 percent black N1 phosphorite grains; 15 percent intergrain porosity; low hydraulic conductivity; subtidal marine; soft when wet; friable; very poorly cemented; minor lime mud matrix
160.0 - 161.0	No recovery
161.0 - 161.5	Skeletal-rich quartz sand, yellowish-gray 5Y 8/1; mainly very fine quartz sand; minor clay-size lime mud, fine quartz sand; very fine sand to pebble-size fossils and very fine sand-size phosphorite grains; well sorted quartz sand; subangular to subrounded quartz sand; 20 to 40 percent skeletal fragments and pelecypods; 5 to 10 percent black N1 phosphorite grains; 15 percent intergrain porosity; low hydraulic conductivity; subtidal marine; soft when wet; friable; very poorly cemented; minor lime mud matrix
161.5 - 168.0	No recovery

Depth (feet below land surface)	Lithologic description of well PB-1703
168.0 - 170.5	Skeletal-rich quartz sand, yellowish-gray 5Y 8/1; mainly very fine quartz sand; minor clay-size lime mud, fine quartz sand; very fine sand to pebble-size fossils and very fine sand-size phosphorite grains; well sorted quartz sand; subangular to subrounded quartz sand; 20 to 40 percent skeletal fragments and pelecypods; 5 to 10 percent black N1 phosphorite grains; 15 percent intergrain porosity; low hydraulic conductivity; subtidal marine; soft when wet; friable; very poorly cemented; minor lime mud matrix
170.5 - 172.0	No recovery
172.0 - 173.0	Skeletal-rich quartz sand, yellowish-gray 5Y 8/1; mainly very fine quartz sand and clay-size lime mud; minor fine quartz sand; very fine sand to pebble-size fossils and very fine sand-size phosphorite grains; well sorted quartz sand; subangular to subrounded quartz sand; 20 to 40 percent skeletal fragments and pelecypods; 5 to 10 percent black N1 phosphorite grains; 10 percent intergrain porosity; low hydraulic conductivity; subtidal marine; soft when wet; friable; very poorly cemented; lime mud matrix
173.0 - 173.8	Skeletal-rich quartz sand, yellowish-gray 5Y 7/2; mainly very fine quartz sand and clay-size lime mud; minor fine quartz sand; very fine sand to pebble-size fossils and very fine sand-size phosphorite grains; well sorted quartz sand; subangular to subrounded quartz sand; 20 to 40 percent skeletal fragments and pelecypods; 5 to 10 percent black N1 phosphorite grains; 10 percent intergrain porosity; low hydraulic conductivity; subtidal marine; soft when wet; friable; very poorly cemented; lime mud matrix
173.8 - 174.5	No recovery
174.5 - 179.8	Quartz sand, yellowish-gray 5Y 7/2; mainly very fine quartz sand; minor clay-size lime mud, fine quartz sand; very fine sand to pebble-size fossils and very fine sand-size phosphorite grains; well sorted quartz sand; subangular to subrounded quartz sand; trace to 10 percent skeletal fragments and pelecypods; 10 percent black N1 phosphorite grains; 10 percent intergrain porosity; low hydraulic conductivity; subtidal marine; soft when wet; friable; very poorly cemented; minor lime mud matrix
179.8 - 181.0	No recovery
181.0 - 185.0	Quartz sand, yellowish-gray 5Y 7/2; mainly very fine quartz sand; minor clay-size lime mud, fine quartz sand; very fine sand to pebble-size fossils and very fine sand-size phosphorite grains; well sorted quartz sand; subangular to subrounded quartz sand; trace to 10 percent skeletal fragments and pelecypods; 10 percent black N1 phosphorite grains; 10 percent intergrain porosity; low hydraulic conductivity; subtidal marine; soft when wet; friable; very poorly cemented; minor lime mud matrix; abrupt contact with microtopography at 184.7 feet., slightly more lime mud matrix above abrupt contract
185.0 - 187.0	Skeletal quartz sand, yellowish-gray 5Y 7/2; mainly very fine quartz sand and very fine sand to pebble-size fossils; minor clay-size lime mud, fine quartz sand and very fine sand-size phosphorite grains; well sorted quartz sand; subangular to subrounded quartz sand; 20 to 40 percent skeletal fragments and pelecypods; 2 to 3 percent black N1 phosphorite grains; 10 percent intergrain porosity; low hydraulic conductivity; subtidal marine; soft when wet; friable; very poorly cemented; minor lime mud matrix
187.0 - 188.0	No recovery
188.0 - 190.0	Quartz sand, yellowish-gray 5Y 7/2; mainly very fine quartz sand and very fine sand to pebble-size fossils; minor clay-size lime mud, fine quartz sand and very fine sand-size phosphorite grains; well sorted quartz sand; subangular to subrounded quartz sand; 10 to 20 percent skeletal fragments and pelecypods; 10 percent black N1 phosphorite grains; 10 percent intergrain porosity; low hydraulic conductivity; subtidal marine; soft when wet; friable; very poorly cemented; minor lime mud matrix
190.0 - 193.0	No recovery
193.0 - 194.0	Quartz sand, yellowish-gray 5Y 7/2; mainly very fine quartz sand and very fine sand to pebble-size fossils; minor clay-size lime mud, fine quartz sand and very fine sand-size phosphorite grains; well sorted quartz sand; subangular to subrounded quartz sand; 10 to 20 percent skeletal fragments and pelecypods; 10 percent black N1 phosphorite grains; 10 percent intergrain porosity; low hydraulic conductivity; subtidal marine; soft when wet; friable; very poorly cemented; minor lime mud matrix
194.0 - 195.0	Quartz sand, pale-olive 10Y 6/2; mainly very fine quartz sand; minor terrigenous clay and very fine-sand size phosphorite grains; very well sorted quartz sand; subangular and subrounded quartz sand; 15 percent black N1 phosphorite grains; 10 percent intergrain porosity; low hydraulic conductivity; subtidal marine; soft when wet; friable; very poorly cemented; minor terrigenous clay matrix
195.0 - 196.3	Quartz sand, pale-olive 10Y 6/2; mainly very fine quartz sand; minor terrigenous clay and very fine sand-size phosphorite grains; very well sorted quartz sand; subangular to subrounded quartz sand; 15 percent black N1 phosphorite grains; 10 percent intergrain porosity; low hydraulic conductivity; subtidal marine; soft when wet; friable; very poorly cemented; minor terrigenous clay matrix
196.3 - 197.0	No recovery
197.0 - 204.5	Quartz sand, pale-olive 10Y 6/2; mainly very fine quartz sand, minor terrigenous clay, very fine sand to pebble-size fossils and very fine sand-size phosphorite grains; well sorted quartz sand; subangular to subrounded quartz sand; trace skeletal 15 percent black N1 phosphorite grains; 10 percent intergrain porosity; low hydraulic conductivity; subtidal marine; soft when wet; friable; very poorly cemented; minor terrigenous clay matrix
204.5 - 206.0	No recovery

Depth (feet below land surface)	Lithologic description of well PB-1703
206.0 - 208.0	Quartz sand, pale-olive 10Y 6/2; mainly very fine quartz sand; minor terrigenous clay, very fine sand to pebble-size fossils and very fine sand-size phosphorite grains; well sorted quartz sand; subangular to subrounded quartz sand; trace skeletal fragments; 15 percent black N1 phosphorite grains; 10 percent intergrain porosity; low hydraulic conductivity; subtidal marine; soft when wet; friable; very poorly cemented; minor terrigenous clay matrix
208.0 - 211.8	Quartz sand, light-olive-gray 5Y 5/2; mainly very fine quartz sand and very fine sand-size phosphorite grains; minor terrigenous clay, very fine sand to pebble-size fossils and medium sand to small pebble-size phosphorite grains; well sorted quartz sand; subangular to subrounded quartz sand; subrounded to rounded phosphorite grains; trace skeletal fragments (one cobble-size pelecypod mold); 20 percent black N1 phosphorite grains (1 percent medium sand to small pebble-size phosphorite grains); 10 percent intergrain porosity; low hydraulic conductivity; subtidal marine; soft when wet; friable; very poorly cemented; minor terrigenous clay matrix
211.8 - 213.0	Interlaminated quartz sand, silty terrigenous mudstone, light-olive-gray 5Y 5/2; mainly terrigenous clay, silt to very fine quartz sand and very fine phosphorite grains; well sorted quartz sand; subangular quartz sand; subrounded to rounded phosphorite grains; 20 percent black N1 phosphorite grains; 2 percent mica; 5 percent intergrain porosity; very low hydraulic conductivity; marine prodeltaic(?); flooding unit(?); soft when wet; friable quartz sand
213.0 - 213.5	No recovery
213.5 - 214.0	Interlaminated quartz sand, silty terrigenous mudstone, light-olive-gray 5Y 5/2; mainly terrigenous clay, silt to very fine quartz sand and very fine phosphorite grains; well sorted quartz sand; subangular quartz sand; subrounded to rounded phosphorite grains; 20 percent black N1 phosphorite grains; 2 percent mica; 5 percent intergrain porosity; very low hydraulic conductivity; marine prodeltaic(?); flooding unit(?); soft when wet; friable quartz sand; phosphate pebble float in sandy, silty mudstone at base of unit
214.0 - 215.2	Silty mudstone, light-olive-gray 5Y 5/2; mainly terrigenous clay and very fine phosphorite grains; subrounded to rounded phosphorite grains; 20 percent black N1 phosphorite grains; 2 percent mica; trace intergrain porosity; very low hydraulic conductivity; soft when wet
215.2 - 215.7	Quartz sand-rich, silty mudstone, light-olive-gray 5Y 5/2; mainly terrigenous clay, very fine quartz sand and very fine phosphorite grains; minor medium sand to medium pebble-size phosphorite grains; well sorted quartz sand; subangular to angular quartz sand; subrounded to rounded phosphorite grains; 20 percent black N1 phosphorite grains; 2 percent mica; trace sharks teeth; trace intergrain porosity; very low hydraulic conductivity; base of submarine debris flow(?); soft when wet; medium sand to pebble-size phosphorite grains floating in mudstone matrix
215.7 - 216.0	Quartz, sand-rich, silty mudstone, light-olive-gray 5Y 5/2; mainly terrigenous clay, very fine quartz sand and very fine sand and medium pebble-size phosphorite grains; well sorted quartz sand; subangular to angular quartz sand; subrounded to rounded phosphorite grains; 20 percent black N1 phosphorite grains; 2 percent mica; trace intergrain porosity; very low hydraulic conductivity; base of submarine debris flow(?); soft when wet; medium sand to pebble-size phosphorite grains floating in mudstone matrix
216.0 - 217.5	Diatomaceous terrigenous mudstone, light-olive-gray 5Y 5/2; terrigenous clay; minor fine sand-size diatoms and silt-size quartz sand; diatoms; trace porosity; very low hydraulic conductivity transgressive marine; soft when wet; irregular upper bounding surface; possible maximum flooding surface and downlap at 216 feet(?)
217.5 - 220.0	Diatomaceous terrigenous mudstone, light-olive-gray 5Y 5/2; clay-size terrigenous and minor fine sand-size diatoms; silt-size quartz sand; diatoms; trace porosity; very low hydraulic conductivity; transgressive marine; soft when wet
220.0 - 221.0	No recovery

Sod Farm Core

Florida Geological Survey well number	W-17747
GWSI number	PB-1704
Total depth	200.5 feet
Cored from	0 to 200.5 feet
County	Palm Beach
Location	SE, SE, NE, sec. 31, T46S, R38E
Latitude	26°23'59"
Longitude	80°34'34"
Elevation	11 feet
Completion date	April 30, 1998
Other types of available logs	Gamma ray, induction resistivity, single-point resistivity, spontaneous potential
Owner	U.S. Geological Survey
Driller	Florida Geological Survey
Core described by	Kevin J. Cunningham
Fill	0 to 2.3 feet
Peat	2.3 to 2.7 feet
Lake Flirt Marl	2.7 to 5.5 feet
Lake Okeelanta(?) beds	5.5 to 49.5 feet
Tamiami Formation	49.5 to 157.2 feet
Pinecrest Sand Member	49.5 to 73.3 feet
Ochopee Limestone member	73.3 to 157.2 feet
Unnamed formation	157.2 to 197.5 feet
Upper confining unit	2.7 to 73.3 feet
Gray limestone aquifer	73.3 to 172.5 feet
Lower confining unit	172.5 to 197.5 feet

Depth (feet below land surface)	Lithologic description of well PB-1704
0.0 - 0.5	Lime mudstone rubble, pale-yellowish-brown 10YR 6/2; mainly clay-size lime mudstone and very fine quartz sand; well sorted quartz sand; 5 percent moldic and root-mold porosity; very low hydraulic conductivity; intertidal; hard when wet
0.5 - 2.0	No recovery
2.0 - 2.3	Lime mudstone rubble, pale-yellowish-brown 10YR 6/2; mainly clay-size lime mudstone and very fine quartz sand; well sorted quartz sand; 5 percent moldic and root-mold porosity; very low hydraulic conductivity; intertidal; hard when wet
2.3 - 2.7	Peat, black N1; terrigenous clay and organics, silt and very fine quartz sand and organics; minor pebble-size fossils; well sorted quartz sand; low-spined gastropods and pelecypods; 25 percent intergrain; moderate hydraulic conductivity; freshwater swamp; soft when wet; shallowing upward cycle top at 2.3 feet.
2.7 - 3.2	Marl, very light gray N8; mainly clay-size lime mud; minor silt-size quartz sand; 20 percent root-mold, intergrain, and desiccation-crack porosity; low hydraulic conductivity; freshwater lake; soft when wet
3.2 - 5.5	No recovery
5.5 - 5.75	Limestone rubble
5.75 - 6.0	Gastropod lime wackestone, pale-yellowish-brown 10YR 6/2; mainly clay-size lime mudstone; minor very fine sand to pebble-size fossils; gastropods (<i>Seminolina wilsoni</i>); 10 percent root-mold and enlarged root-mold porosity; low hydraulic conductivity; freshwater lake or pond; hard when wet; irregular microtopography on upper bounding exposure surface; irregular root molds; mangrove(?) root molds, some solution enlarged and some with organics of root still in place; shallowing upward cycle top at 5.75 feet.
6.0 - 6.5	Lime mudstone, very pale orange 10YR 8/2; mainly clay-size lime mudstone; minor very fine to fine sand-size fossils; skeletal fragments; gastropods (including <i>Seminolina wilsoni</i>); 10 percent root-mold and semivertical solution-enlarged channel porosity; low hydraulic conductivity; freshwater lake or pond; hard when wet; burrowed; irregular, semivertical root molds; channel porosity has very high vertical hydraulic conductivity
6.5 - 7.0	Gastropod, quartz sand-rich lime wackestone, pale-yellowish-brown 10YR 6/2, medium-gray N5 to light-gray N7; mainly clay-size lime mudstone and very fine quartz sand; minor very fine sand to pebble-size fossils; very well sorted quartz sand; skeletal fragments; low-spined gastropods (including <i>Seminolina wilsoni</i>); 25 percent quartz sand; 10 percent root-mold and moldic porosity; low hydraulic conductivity; freshwater lake or pond; hard when wet; burrowed; irregular semivertical root molds (larger root molds maybe mangrove and locally solution enlarged); solution-enlarged root molds filled with younger pelecypod lime floatstone
7.0 - 7.5	Pelecypod gastropod, quartz sand-rich lime wackestone and mudstone, mottled pale-yellowish-brown 10YR 6/2, light-brown 5YR 5/6, moderate-yellowish-brown 10YR 5/4, medium-light-gray N6, grayish-orange 10YR 7/4; mainly clay-size lime mudstone and very fine quartz sand; minor very fine sand to pebble-size fossils; very well sorted quartz sand; pelecypods and gastropods; 10 to 20 percent quartz sand; 10 percent moldic and desiccation-crack porosity; low hydraulic conductivity; restricted bay or lagoon; hard when wet; curved-plane and craze-plane desiccation cracks
7.5 - 8.75	No recovery
8.75 - 9.0	Lime mudstone, mottled pale-yellowish-brown 10YR 6/2, light-brown 5YR 5/6, moderate-yellowish-brown 10YR 5/4, medium-light-gray N6, grayish-orange 10YR 7/4; mainly clay-size lime mudstone and very fine quartz sand; minor coarse sand to pebble-size fossils; very well sorted quartz sand; trace pelecypods and gastropods; 5 to 20 percent quartz sand; 5 percent vuggy and desiccation-crack porosity; very low hydraulic conductivity; restricted bay or lagoon; hard when wet; craze-plane desiccation cracks; burrowed
9.0 - 10.3	Lime mudstone and gastropod lime wackestone, pale-yellowish-brown 10YR 6/2; mainly clay-size lime mudstone and very fine quartz sand; minor very fine sand to pebble-size fossils; very well sorted quartz sand; gastropods (including <i>Seminolina wilsoni</i>); 25 percent quartz sand; 10 percent root-mold, moldic, and intragrain porosity; very low hydraulic conductivity; freshwater lake or pond; poor recovery, partly rubble; exposure surface at upper bounding surface at 9.0 feet, very pale orange 10YR 8/2, pale-yellowish-brown 10YR 6/2, laminated crust at upper bounding surface; laminated crust overlies brecciated lime mudstone with desiccation cracks; irregular root molds; top of shallowing upward cycle at upper bounding surface at 9.0 feet.
10.3 - 11.0	No recovery
11.0 - 11.6	Lime mudstone, mottled very pale orange 10YR 8/2 and light-gray N7; clay-size lime mudstone; no fossils; 15 percent root-mold porosity; low hydraulic conductivity; hypersaline pond; hard when wet; irregular semivertical root molds; burrowed
11.6 - 12.1	Pel moldic lime grainstone, very pale orange 10YR 8/2; mainly very fine to fine sand-size peloidal molds; minor medium sand to pebble-size skeletal molds; molds of peloids and skeletal fragments; 15 percent moldic, root mold, and solution-enlarged root-mold porosity; low hydraulic conductivity; possible marine beach; hard when wet
12.1 - 12.7	Skeletal lime grainstone, very pale orange 10YR 8/2; mainly very fine to coarse sand-size fossils; minor granule to pebble-size fossils; rare cobble-size fossils; skeletal fragments, peloids, pelecypods, gastropods, peneroplids, serpulids, miliolids; 30 percent intergrain and intragrain porosity; low hydraulic conductivity; marine inner shelf; moderately hard when wet; moderately friable

Depth (feet below land surface)	Lithologic description of well PB-1704
12.7 - 13.7	Gastropod lime mudstone and wackestone, pale-yellowish-brown 10YR 6/2, very pale orange 10YR 8/2, medium-gray N5; mainly clay-size lime mudstone and pebble-size fossils; minor granule-size fossils; low-spined gastropods (including <i>Seminolina wilsoni</i>), and minor high-spined gastropods and pelecypods; 10 percent intragrain, root-mold, solution enlarged root-mold, and desiccation-crack porosity; very low hydraulic conductivity; freshwater pond or lake; irregular to overhanging microtopography on upper bounding exposure surface at 12.7 feet; semivertical and craze desiccation cracks; trace 1-mm diameter irregular root molds; abundant root molds and solution enlarged root molds (mangrove?) partly filled with freshwater facies and inner shelf facies from 12.1 to 12.7 feet; burrowed; top of upper shallowing cycle at 12.7 feet
13.7 - 14.0	Gastropod lime rudstone and floatstone with skeletal fragment, mud-dominated, and grain-dominated lime packstone matrix, pale-yellowish-brown 10YR 6/2, very pale orange 10YR 8/2, medium-gray N5; mainly very fine sand to pebble size fossils; minor clay-size lime mudstone; high spired gastropods and trace pelecypods; 30 percent intragrain and intragrain porosity; moderate hydraulic conductivity; restricted bay or lagoon
14.0 - 14.4	Rubble of gastropod lime rudstone and floatstone with skeletal fragment, mud-dominated, lime packstone matrix; pale-yellowish-brown 10YR 6/2, very pale orange 10YR 8/2, medium-gray N5 mainly clay size lime mudstone and very fine sand to pebble-size fossils; high spired gastropods and trace pelecypods; 20 percent intragrain and intragrain porosity; low hydraulic conductivity; restricted bay or lagoon; very poor recovery; rubble
14.4 - 15.0	Marl, very pale orange 10YR 8/2; mainly lime mudstone; no fossils; 10 percent intergrain porosity; very low hydraulic conductivity; restricted bay, lagoon or freshwater lake
15.0 - 15.5	Rubble
15.5 - 16.5	Lime mudstone and gastropod lime wackestone, grades from light-gray N7 at base to very pale orange 10YR 8/2 at top of interval; mainly clay-size lime mudstone; minor very fine sand to pebble-size fossils; gastropods; 20 percent root-mold, solution-enlarged root-mold and moldic porosity; low hydraulic conductivity; tidal-flat pond; hard when wet; irregular and local overhanging microtopography on upper bounding, subaerial exposure surface; irregular root molds; 3- to 10-mm diameter, irregular, semivertical root molds (mangrove?), locally solution enlarged; local solution-enlarged root molds filled with transgressive lime grainstone; top of shallowing upward cycle at upper bounding surface at 15.5 feet
16.5 - 17.0	Pelecypod-gastropod lime rudstone and floatstone with skeletal-peloid lime grainstone matrix, very pale orange 10YR 8/2; mainly clay-size lime mudstone; minor very fine sand to pebble-size fossils; skeletal fragments, peloids, pelecypods, and gastropods; 30 percent intergrain, intragrain, and root-mold porosity; moderate hydraulic conductivity; marine inner shelf shoal or restricted bay or lagoon shoal; local root molds lined with grayish-orange 10YR 7/4 calcrete
17.0 - 19.0	No recovery
19.0 - 19.5	Limestone rubble
19.5 - 22.5	No recovery
22.5 - 22.7	Limestone rubble
22.7 - 23.3	Gastropod lime wackestone with marl matrix, very pale orange 10YR 8/2; mainly clay-size lime mudstone; minor very fine sand to pebble-size fossils; gastropods (including abundant <i>Seminolina wilsoni</i>); 10 percent intergrain and root-mold porosity; very low hydraulic conductivity; freshwater pond or lake; soft when wet; semivertical, irregular root molds; interval shallows upward; lower 2 inches contains more shells and no root molds; top of shallowing upward cycle between 22.7 and 17 feet.
23.3 - 27.5	No recovery
27.5 - 27.7	Loose marine fossils including pelecypods, gastropods, sand dollars, minor branching porites, encrusting bryozoans, and lithoclasts of pelecypod lime rudstone and floatstone;
27.7 - 27.85	Calcrete, grayish-orange 10YR 7/4; mainly clay-size calcrete; 20 percent semivertical solution-channel, vuggy, root mold, and desiccation-crack porosity; high hydraulic conductivity; subaerial exposure; hard when wet; root molds; top of shallowing-upward cycle at 27.7 feet.
27.85 - 28.0	Pelecypod lime floatstone with skeletal lime wackestone matrix, medium-gray N5; clay-size lime mudstone and granule to pebble-size fossils; pelecypods, skeletal fragments; 20 percent semivertical solution channel, vuggy, root mold, and desiccation-crack porosity; high hydraulic conductivity; marine inner shelf
28.0 - 34.3	No recovery
34.3 - 35.2	Rubble of calcrete and pelecypod lime floatstone as in interval between 27.7 and 28 feet
35.2 - 35.5	Pelecypod gastropod lime floatstone with skeletal lime grainstone and skeletal, grain-dominated, lime packstone matrix, very pale orange 10YR 8/2; mainly fine sand to pebble-size fossils; minor clay-size lime mudstone and very fine sand-size fossils and up to small pebble-size lithoclasts; pelecypods, gastropods, skeletal fragments, and pelecypod lime rudstone and floatstone lithoclasts; 25 percent intergrain porosity; moderate hydraulic conductivity; marine inner shelf shoal
35.5 - 37.5	No recovery

Depth (feet below land surface)	Lithologic description of well PB-1704
37.5 - 38.5	Pelecypod gastropod lime floatstone with skeletal lime grainstone and skeletal, mud-dominated, and grain-dominated lime packstone matrix, very pale orange 10YR 8/2; mainly very fine sand to pebble-size fossils; minor clay-size lime mudstone, cobble-size fossils, and up to small pebble-size lithoclasts; pelecypods, gastropods, skeletal fragments, and lithoclasts of medium-gray N5 to medium-light-gray N6 pelecypod lime rudstone and floatstone; 25 percent intergrain porosity; low to moderate hydraulic conductivity; marine inner shelf
38.5 - 40.5	No recovery
40.5 - 40.8	Rubble of pelecypod lime floatstone as in interval from 37.5 to 38.5 feet
40.8 - 42.0	No recovery
42.0 - 42.2	Gastropod lime mudstone, pale-yellowish-brown 10YR 6/2; mainly clay-size lime mudstone; minor coarse sand to pebble-size fossils; gastropods (including <i>Seminolina wilsoni</i>); 10 percent intragrain, root mold, and pinpoint vug porosity; low hydraulic conductivity; freshwater lake or pond; semivertical root molds (mangrove?)
42.2 - 43.0	Gastropod lime rudstone and floatstone with skeletal mud-dominated and grain-dominated lime packstone, pale-yellowish-brown 10YR 6/2; mainly clay-size lime mudstone and coarse sand to pebble-size fossils; gastropods (including <i>Seminolina wilsoni</i> and <i>Seminolina clewistonense</i>) and possible pelecypods; 25 percent root-mold, intragrain, and intergrain porosity; moderate hydraulic conductivity; freshwater lake or pond
43.0 - 43.5	Gastropod lime floatstone with skeletal grainstone matrix, pale-yellowish-brown 10YR 6/2; mainly very fine sand to pebble size fossils; gastropods (including <i>Seminolina wilsoni</i>) and pelecypods; 30 percent intergrain and intragrain porosity; moderate hydraulic conductivity; freshwater lake or pond
43.5 - 46.0	No recovery
46.0 - 46.5	Rubble of gastropod lime floatstone as in interval from 43 to 43.5 feet
46.5 - 49.5	No recovery
49.5 - 52.0	Pelecypod lime rudstone with skeletal, quartz sand-rich lime grainstone and minor skeletal, quartz sand-rich, grain-dominated lime packstone, medium-gray N5 to light-gray N7; mainly very fine sand-size quartz sand and coarse sand to pebble-size fossils; minor clay-size lime mudstone and very fine to medium fossils; very well sorted quartz sand; pelecypods, gastropods, skeletal fragments, and trace nonhermatypic corals and bryozoans; 40 percent quartz sand; 20 to 25 percent intergrain, intragrain, shelter, and root mold porosity; moderate hydraulic conductivity; subtidal marine; well cemented; hard when wet; irregular root molds; probably local calcrete lines subaerial upper bounding surface; top of shallowing upward cycle at upper bounding surface 49.5 feet
52.0 - 53.0	No recovery
53.0 - 53.5	Rubble of pelecypod lime rudstone and floatstone with skeletal, quartz sand-rich lime grainstone, medium-gray N5 to light-gray N7; mainly very fine quartz sand and very fine sand-size to pebble-size fossils; very well sorted quartz sand; pelecypods, gastropods, sand dollars, and serpulid tubes; 40 percent quartz sand; 25 percent intergrain and intragrain porosity; moderate hydraulic conductivity; subtidal marine; well cemented; hard when wet
53.5 - 57.0	No recovery
57.0 - 57.1	Quartz sand matrix with skeletal rudstone framework and quartz sand supporting skeletal floatstone matrix, medium-light-gray N6; mainly very fine sand size quartz sand and very fine sand size to pebble-size fossils; well sorted quartz sand; pelecypods and skeletal grains; 10 percent intergrain and intragrain porosity; low hydraulic conductivity; subtidal marine; well cemented; hard when wet
57.1 - 60.5	No recovery
60.5 - 62.0	Quartz sand, very pale orange 10YR 8/2; mainly fine to medium quartz sand; minor very fine quartz sand and very fine sand to small pebble-size fossils; very fine to fine sand-size phosphorite grains; well sorted quartz sand; 20 percent skeletal fragments, pelecypods, and gastropods; 3 percent black N1 phosphorite grains; 25 percent intergrain porosity; moderate hydraulic conductivity; subtidal marine; friable; soft when wet
62.0 - 65.5	No recovery
65.5 - 66.0	Quartz sand, very pale orange 10YR 8/2; mainly very fine to fine quartz sand; minor very fine to medium sand-size fossils; very fine to fine sand-size phosphorite grains; well sorted quartz sand; 20 percent skeletal fragments; 3 percent black N1 phosphorite grains; 25 percent intergrain porosity; moderate hydraulic conductivity; subtidal marine; friable; soft when wet
66.0 - 67.5	No recovery
67.5 - 69.0	Quartz sand, yellowish-gray 5Y 8/1; mainly very fine to fine quartz sand; minor very fine to coarse sand-size fossils; very fine to fine sand-size phosphorite grains; well sorted quartz sand; 20 percent skeletal fragments and pelecypods; 5 percent black N1 phosphorite grains; 25 percent intergrain porosity; moderate hydraulic conductivity; subtidal marine; friable; soft when wet
69.0 - 72.5	No recovery
72.5 - 72.7	Quartz sand, yellowish-gray 5Y 8/1; mainly very fine quartz sand; minor very fine sand to pebble-size fossils; very well sorted quartz sand; 40 percent skeletal fragments; 25 percent intergrain porosity; moderate hydraulic conductivity; friable; soft when wet; likely cave

Depth (feet below land surface)	Lithologic description of well PB-1704
72.7 - 73.3	Quartz sand, yellowish-gray 5Y 8/1, medium-light-gray N6 to light-gray N7; mainly very fine quartz sand; minor very fine sand to granule-size fossils; very well sorted quartz sand; 40 percent skeletal fragments and pelecypods; 15 percent intergrain porosity; low hydraulic conductivity; friable; soft when wet
73.3 - 75.0	Skeletal lime grainstone, yellowish-gray 5Y 8/1, medium-light-gray N6 to light-gray N7; mainly very fine sand to medium sand-size fossils; minor very fine sand to pebble-size fossils; skeletal fragments, pelecypods, gastropods, and trace bryozoans; 30 percent intergrain porosity; moderate hydraulic conductivity; subtidal marine shoal; very poorly cemented, loose, unconsolidated grains; soft when wet
75.0 - 76.5	Skeletal lime grainstone, yellowish-gray 5Y 8/1, medium-light-gray N6 to light-gray N7; mainly very fine sand to coarse sand size fossils; minor granule to small pebble-size fossils; skeletal fragments, pelecypods, gastropods, and trace bryozoans; 30 percent intergrain porosity; moderate hydraulic conductivity; subtidal marine shoal; very poorly cemented, loose, unconsolidated grains; soft when wet
76.5 - 77.5	No recovery
77.5 - 79.5	Skeletal lime grainstone, yellowish-gray 5Y 8/1, medium-light-gray N6 to light-gray N7; mainly fine sand to medium sand-size fossils; minor very fine sand and coarse sand to small pebble-size fossils; skeletal fragments, pelecypods, and gastropods; 30 percent intergrain porosity; moderate hydraulic conductivity; subtidal marine shoal; very poorly cemented, loose, unconsolidated grains; soft when wet
79.5 - 80.5	No recovery
80.5 - 81.3	Skeletal lime grainstone, yellowish-gray 5Y 8/1, medium-light-gray N6 to light-gray N7; mainly fine to medium sand-size fossils; minor very fine sand and coarse sand to small pebble-size fossils; skeletal fragments, pelecypods, and gastropods; 30 percent intergrain porosity; moderate hydraulic conductivity; subtidal marine shoal; very poorly cemented, loose, unconsolidated grains; soft when wet
81.3 - 82.5	No recovery
82.5 - 84.5	Skeletal, mud-dominated and grain-dominated lime packstone, yellowish-gray 5Y 8/1, very light gray N8; mainly clay-size lime mudstone and very fine sand to medium sand-size fossils; minor coarse sand to small pebble-size fossils and very fine to medium sand-size quartz sand; moderately sorted quartz sand; skeletal fragments, pelecypods, gastropods, bryozoans, and serpulids; 10 percent quartz sand; 20 percent intergrain, solution-enlarged channel, moldic, rootmold, and intragrain porosity; low matrix hydraulic conductivity and very high solution-enlarged channel hydraulic conductivity; subtidal marine; semivertical root molds; solution channels partly filled with transgressive very pale orange 10YR 8/2 skeletal lime grainstone; subaerial exposure at bounding surface at 82.5 feet
84.5 - 85.0	Rubble of lime packstone as in interval from 82.5 to 84.5 feet. with very thick oysters
85.0 - 87.5	No recovery
87.5 - 88.75	Pelecypod lime rudstone with matrix of skeletal fragment-rich quartz sandstone with lime mud matrix, light-olive-gray 5Y 6/1, dark-gray N3 to medium-light-gray N6; mainly clay-size lime mudstone, very fine to medium quartz sand and very fine sand to medium sand-size fossils; minor coarse sand to small pebble-size fossils and very fine to medium quartz sand; moderately sorted quartz sand; skeletal fragments, pelecypods, gastropods, and trace bryozoans; 70 percent quartz sand; 20 percent moldic, intergrain, and possible solution-channel porosity; moderate hydraulic conductivity; subtidal marine
88.75 - 91.8	Pelecypod lime rudstone and floatstone with skeletal, quartz sand-rich lime grainstone and skeletal, quartz sand-rich grain-dominated lime packstone matrix, yellowish-gray 5Y 8/1 and light-gray N7; mainly very fine to fine quartz sand and very fine sand to pebble-size fossils; minor clay-size lime mudstone; moderately sorted quartz sand; skeletal fragments, pelecypods, gastropods, and sand dollars; 40 percent quartz sand; 30 percent moldic, intergrain, and intragrain porosity; high hydraulic conductivity; subtidal marine; upper bounding surface (88.75 feet) is an abrupt surface that contains a laminated calccrete overlain by a black N1 phosphorite crust; upper bounding surface is a subaerial exposure surface
91.8 - 92.8	No recovery
92.8 - 93.2	Rubble of pelecypod lime floatstone with skeletal, quartz sand-rich lime wackestone matrix, very pale orange 10YR 8/2; mainly clay-size lime mudstone, very fine quartz sand and granule to pebble-size fossil fragments; minor fine sand to granule-size fossils; very well sorted quartz sand; pelecypods and sand dollars; 30 percent quartz sand
93.2 - 97.0	No recovery
97.0 - 98.0	Rubble of pelecypod lime floatstone with skeletal, quartz sand-rich lime wackestone matrix, yellowish-gray 5Y 8/1; mainly clay-size lime mudstone, very fine quartz sand and granule- to pebble-size fossil fragments; minor fine sand to granule-size fossils; very well sorted quartz sand; pelecypods; 30 percent quartz sand
98.0 - 100.5	No recovery
100.5 - 101.0	Rubble
101.0 - 106.3	Mostly rubble with pelecypod lime rudstone with skeletal, grain-dominated lime packstone matrix, yellowish-gray 5Y 8/1, medium-light-gray N6 to light-gray N7; mainly medium sand-size fossils; minor clay-size lime mudstone, fine to medium sand-size fossils and very fine quartz sand; pelecypods, skeletal fragments, encrusting bryozoans, barnacles, and echinoid spines; 10 percent quartz sand; intergrain, moldic, and intragrain porosity; moderate hydraulic conductivity
106.3 - 110.0	No recovery

Depth (feet below land surface)	Lithologic description of well PB-1704
110.0 - 114.5	Pelecypod-skeletal lime rudstone and floatstone with skeletal, quartz sand-rich lime packstone matrix, very light gray N8, yellowish-gray 5Y 8/1; mainly clay-size lime mudstone, very fine quartz sand and coarse sand and pebble-size fossils; minor fine to medium sand-size fossils; very well sorted quartz sand; pelecypods, skeletal fragments, encrusting bryozoans; 5 percent intergrain porosity; very low hydraulic conductivity; subtidal marine; soft when wet
114.5 - 116.3	Pelecypod-skeletal lime rudstone with matrix of mud-dominated lime packstone with marl matrix, very light gray N8, yellowish-gray 5Y 8/1; mainly clay-size marl and fine to granule-size fossils; minor very fine sand-size fossils; pelecypods, skeletal fragments, and echinoids; 10 percent intergrain porosity; low hydraulic conductivity; subtidal marine; soft when wet; possible flooding surface at 114.5 feet
116.3 - 120.5	No recovery
120.5 - 121.2	Pelecypod skeletal lime rudstone with matrix of mud-dominated lime packstone with marl matrix, very light gray N8, yellowish-gray 5Y 8/1; mainly clay-size marl and fine to granule-size fossils; minor very fine sand-size fossils; pelecypods, skeletal fragments, and echinoids; 10 percent intergrain porosity; low hydraulic conductivity; subtidal marine; soft when wet
121.2 - 122.0	No recovery
122.0 - 124.5	Pelecypod, quartz sand-rich lime grainstone, yellowish-gray 5Y 8/1 to light-olive-gray 5Y 6/1; mainly very fine sand to granule-size fossils and very fine quartz sand; minor pebble-size fossils; well sorted quartz sand; pelecypods and skeletal fragments; 25 percent intergrain and moldic porosity; moderate hydraulic conductivity; subtidal marine; poorly to moderately cemented; soft to moderately hard when wet
124.5 - 127.5	No recovery
127.5 - 128.0	Skeletal lime grainstone, yellowish-gray 5Y 8/1; mainly very fine to coarse sand-size fossils; minor granule- to pebble-size fossils; skeletal fragments and pelecypods; 25 percent moldic and intergrain porosity; moderate hydraulic conductivity; subtidal marine; moderately cemented; moderately hard when wet
128.0 - 129.5	Skeletal lime grainstone, light-olive-gray 5Y 6/1; mainly very fine to fine fossils and very fine quartz sand; minor terrigenous clay, silt-size quartz sand and medium to coarse sand-size fossils, and very fine to fine phosphorite grains; well sorted quartz sand; skeletal fragments; 10 percent quartz sand; 5 percent black N1 phosphorite grains; 20 percent intergrain porosity; low hydraulic conductivity; subtidal marine; poorly cemented; soft when wet
129.5 - 133.2	No recovery
133.2 - 135.2	Skeletal, quartz sand-rich lime grainstone, light-olive-gray 5Y 6/1; mainly very fine to medium fossils and very fine quartz sand; minor terrigenous clay, silt-size quartz sand and medium to coarse quartz sand, and very fine to fine phosphorite grains; well sorted quartz sand; skeletal fragments, pelecypods and sand dollars; 30 percent quartz sand; 5 percent black N1 phosphorite grains; 20 percent intergrain porosity; low hydraulic conductivity; subtidal marine; poorly cemented; soft when wet
135.2 - 135.5	Pelecypod lime rudstone with skeletal, quartz sand-rich lime wackestone matrix, yellowish-gray 5Y 8/1; mainly clay-size lime mudstone, very fine quartz sand and pebble-size fossils; minor silt-size quartz sand, cobble-size fossils and very fine to fine phosphorite grains; well sorted quartz sand; pelecypods, skeletal fragments; 30 percent quartz sand; 5 percent black N1 phosphorite grains; 20 percent moldic and intergrain porosity; moderate hydraulic conductivity; subtidal marine; moderately cemented; moderately hard
135.5 - 140.5	No recovery
140.5 - 144.5	Pelecypod lime rudstone with skeletal, quartz sand-rich, mud-dominated lime packstone matrix, yellowish-gray 5Y 8/1; mainly clay-size lime mudstone, very fine quartz sand and coarse sand to pebble-size fossils; minor silt-size quartz sand, fine to medium sand-size fossils, and very fine to fine phosphorite grains; well sorted quartz sand; skeletal fragments, pelecypods, and serpulids; 20 to 40 percent quartz sand; 5 percent black N1 phosphorite grains; 20 percent moldic and intergrain porosity; moderate hydraulic conductivity; subtidal marine; poorly to moderately cemented; soft to moderately hard when wet
144.5 - 147.5	No recovery
147.5 - 148.5	Pelecypod lime rudstone with skeletal, quartz sand-rich lime grainstone matrix, yellowish-gray 5Y 8/1; mainly coarse sand to pebble-size fossils and very fine quartz sand; minor silt-size quartz sand, fine to medium sand-size fossils and very fine phosphorite grains; well sorted quartz sand; skeletal fragments, pelecypods, and serpulids; 30 percent quartz sand; 5 percent black N1 phosphorite grains; 25 percent moldic and intergrain porosity; moderate hydraulic conductivity; subtidal marine; poorly to moderately cemented; soft to moderately hard when wet
148.5 - 154.5	No recovery
154.5 - 157.2	Pelecypod lime rudstone with skeletal, mud-dominated and grain-dominated lime packstone matrix, yellowish-gray 5Y 8/1 and very light gray N8; mainly very fine sand to pebble-size fossils and very fine quartz sand; minor clay-size lime mudstone, silt-size quartz sand, cobble-size fossils and very fine phosphorite grains; well sorted quartz sand; skeletal fragments, pelecypods, encrusting bryozoans, gastropods, and serpulids; 10 to 40 percent quartz sand; 3 percent black N1 phosphorite grains; 25 percent intergrain, moldic, and intragrain porosity; moderate hydraulic conductivity; subtidal marine; moderately to well cemented; moderately hard to hard when wet
157.2 - 160.5	No recovery

Depth (feet below land surface)	Lithologic description of well PB-1704
160.5 - 162.3	Pelecypod-rich quartz sand, yellowish-gray 5Y 8/1; mainly very fine quartz sand and coarse sand to pebble-size fossils; minor clay-size lime mud, silt-size quartz sand, cobble-size fossils and very fine phosphorite grains; well sorted quartz sand; pelecypods, skeletal fragments and gastropods; 60 percent quartz sand; 5 percent black N1 phosphorite grains; 25 percent intergrain, moldic, and intragrain porosity; moderate hydraulic conductivity; subtidal marine; moderately cemented; moderately hard when wet
162.3 - 167.5	No recovery
167.5 - 172.0	Pelecypod-rich quartz sand, yellowish-gray 5Y 8/1; mainly very fine quartz sand and coarse sand to pebble-size fossils; minor clay-size lime mud, silt-size quartz sand, cobble-size fossils, and very fine phosphorite grains; well sorted quartz sand; pelecypods, skeletal fragments, and gastropods; 60 percent quartz sand; 5 percent black N1 phosphorite grains; 25 percent intergrain, moldic, and intragrain porosity; moderate hydraulic conductivity; subtidal marine; moderately cemented; moderately hard when wet
172.0 - 173.2	No recovery
173.2 - 180.0	Pelecypod-rich quartz sand, yellowish-gray 5Y 8/1; mainly very fine quartz sand; minor fine sand to pebble-size fossils, clay-size terrigenous and lime mud, silt-size quartz sand, cobble-size fossils and very fine phosphorite grains; very well sorted quartz sand; 30 to 40 percent pelecypods, skeletal fragments, and gastropods; 5 to 10 percent black N1 phosphorite grains; 20 percent intergrain, moldic, and intragrain porosity; low hydraulic conductivity; subtidal marine; moderately cemented; moderately hard when wet
180.0 - 180.5	No recovery
180.5 - 185.0	Pelecypod-rich quartz sand, yellowish-gray 5Y 8/1; mainly very fine quartz sand; minor fine sand to pebble-size fossils, clay-size terrigenous mud, silt-size quartz sand, cobble-size fossils, and very fine phosphorite grains; very well sorted quartz sand; 20 to 40 percent pelecypods, skeletal fragments and gastropods; 5 to 10 percent black N1 phosphorite grains; 20 percent intergrain, moldic, and intragrain porosity; low hydraulic conductivity; subtidal marine; poorly to moderately cemented; soft to moderately hard when wet
185.0 - 187.5	No recovery
187.5 - 191.0	Pelecypod-rich quartz sand, yellowish-gray 5Y 8/1; mainly very fine quartz sand; minor fine sand to pebble-size fossils, terrigenous clay and lime mud, silt-size quartz sand, cobble-size fossils and very fine phosphorite grains; very well sorted quartz sand; 30 to 40 percent pelecypods, skeletal fragments, and gastropods; 10 to 15 percent black N1 phosphorite grains; 20 percent intergrain moldic and intragrain porosity; low hydraulic conductivity; subtidal marine; moderately cemented; moderately hard when wet
191.0 - 192.0	Quartz sand, yellowish-gray 5Y 8/1; mainly very fine quartz sand; minor clay-size terrigenous mud, silt-size quartz sand and very fine phosphorite grains; well sorted quartz sand; 10 to 15 percent black N1 phosphorite grains; 15 percent intergrain porosity; low hydraulic conductivity; subtidal marine; friable; poorly cemented; soft when wet
192.0 - 194.5	No recovery
194.5 - 197.5	Quartz sand, yellowish-gray 5Y 8/1; mainly very fine quartz sand; minor clay-size terrigenous mud, silt-size quartz sand, and very fine phosphorite grains; well sorted quartz sand; 10 to 15 percent black N1 phosphorite grains; 15 percent intergrain porosity; low hydraulic conductivity; subtidal marine; friable; poorly cemented; soft when wet
197.5 - 200.5	No recovery

Appendix III

Thin-Section Descriptions of Rock Samples from Selected Cores as Determined for this Study

USGS local well No.	Core name
C-1141	Bear Island Campground Core
C-1142	Noble's Farm Core
C-1173	Sabine Road Core
C-1176	Turner River Road Core
C-1178	Sunniland No. 2 Core
C-1180	Big Cypress Headquarter's Core
C-1181	Cypress Lane Core
C-1182	Alligator Alley East Core
C-1183	Baker's Grade Core
HE-1110	L-3 Canal Core
MO-178	Trail Center Core

Bear Island Campground Core

Local well No.	C-1141
Sample number	HHW-1
Sample depth	37.5 feet
Described by	Kevin J. Cunningham
County	Collier
Location	SE, SW, sec. 29, T49S, R31E
Latitude	26°10'58"
Longitude	81°14'52"
Formation	Ochopee Limestone Member
Rock type	Pelecypod quartz sand-rich, grain-dominated and mud-dominated lime packstone
Description	Very fine (100 microns) to very coarse (1.5 millimeters) quartz sand, mainly medium (300 to 500 microns) quartz sand, moderate sorting of quartz, angular to subrounded quartz, mainly subangular quartz, low to high sphericity quartz grains, mainly moderate to high sphericity; very poorly sorted carbonate grains
Grain types	50 percent broken pelecypods, 20 percent quartz sand, 2 percent encrusting forams(?), 2 percent intraclasts, 1 percent broken large benthic forams, 1 percent echinoid plates, trace globular planktic forams, trace feldspar
Diagenesis	20 to 40 percent porosity, mainly interparticle and moldic porosity, minor intraparticle, 20 to 40 percent porosity; common bladed calcite cement, 15 to 25 micron long (silt size) irregular to minor isopachous

Local well No.	C-1141
Sample number	HHW-2
Sample depth	60.5 feet
Described by	Kevin J. Cunningham
County	Collier
Location	SE, SW, sec. 29, T49S, R31E
Latitude	26°10'58"
Longitude	81°14'52"
Formation	Unnamed formation
Rock type	Skeletal-rich quartz sandstone (quartz sand matrix supports pelecypod floatstone)
Description	Very fine (100 microns) to granule (3 millimeters) size quartz sand, mainly fine (200 microns) to medium (400 microns), moderate sorting, subangular to rounded, mainly subrounded, low to high sphericity, mainly moderate to high sphericity
Grain types	75 percent quartz sand, abundant disarticulated and/or broken pelecypods, 1 percent feldspar, 1 percent broken large benthic forams, trace echinoids
Diagenesis	20 percent interparticle porosity, 20 percent moldic porosity, trace intraparticle porosity; 20 to 50 percent micron long irregular to minor isopachous bladed calcite cement (silt size)

Noble's Farm Core

Local well No.	C-1142
Sample number	HHW-3
Sample depth	63 feet
Described by	Kevin J. Cunningham
County	Collier
Location	NW, NW, sec. 7, T49S, R33E
Latitude	26°14'17"
Longitude	81°04'24"
Formation	Ochopee Limestone Member
Rock type	Pelecypod grain-dominated lime packstone
Description	Silt (50 microns) to granule (3 millimeters) size quartz sand, mainly very fine (100 microns) to fine (150 microns), poor sorting, angular to subrounded, mainly subangular, low to high sphericity, mainly moderate to high sphericity
Grain types	Abundant disarticulated and/or broken pelecypods, 10 percent quartz sand, 1 percent broken large benthic forams, trace broken bryozoans and echinoids
Diagenesis	20 percent interparticle porosity, 5 percent moldic porosity, trace intraparticle porosity; 20 to 50 micron long irregular to minor isopachous bladed calcite cement (silt size)

Local well No.	C-1142
Sample number	HHW-4
Sample depth	85 feet
Described by	Kevin J. Cunningham
County	Collier
Location	NW, NW, sec, 7 T49S, R33E
Latitude	26°14'17"
Longitude	81°04'24"
Formation	Ochopee Limestone Member
Rock type	Pelecypod quartz sand-rich mud-dominated and grain-dominated lime packstone
Description	Silt (50 microns) to granule (3 millimeters) size quartz sand, mainly very fine (100 microns) to fine (250 microns), poor sorting, angular to subrounded, mainly subangular, low to high sphericity, mainly moderate to high sphericity
Grain types	Abundant disarticulated and/or broken pelecypods, 25 percent quartz sand, 3 percent intrac-lasts, 1 percent broken large benthic forams, trace encrusting forams, echinoids, and globular planktic forams
Diagenesis	35 percent interparticle and moldic porosity, trace intraparticle porosity; 20 to 50 micron long irregular to minor isopachous bladed calcite cement (silt size)

Sabine Road Core

Local well No.	C-1173
Sample number	HHW-7
Sample depth	77.5 feet
Described by	Kevin J. Cunningham
County	Collier
Location	NW, NW, sec. 6, T50S, R33E
Latitude	26°09'53"
Longitude	81°04'17"
Formation	Ochopee Limestone Member
Rock type	Pelecypod lime floatstone with mud-dominated grain-dominated lime packstone matrix
Description	Silt (50 microns) to very coarse (1.5 millimeters) size quartz sand, mainly very fine (100 microns) to fine (150 microns), moderate sorting, angular to subrounded, mainly subangular, low to high sphericity, mainly moderate to high sphericity
Grain types	Abundant disarticulated pelecypods and broken pelecypods, 10 percent quartz sand, 3 percent echinoids, trace large benthic forams (up to 1 millimeter long) and ostracods, trace feldspar
Diagenesis	30 percent moldic and interparticle porosity, minor intraparticle porosity; 25 micron long irregularly distributed minor bladed calcite cement (silt size)

Local well No.	C-1173
Sample number	HHW-8
Sample depth	97.5 feet
Described by	Kevin J. Cunningham
County	Collier
Location	NW, NW, sec. 6, T50S, R33E
Latitude	26°09'53"
Longitude	81°04'17"
Formation	Ochopee Limestone Member
Rock type	Pelecypod lime rudstone with quartz sand-rich skeletal lime wackestone matrix
Description	Silt (50 microns) to granule (2.5 millimeters) size quartz sand, mainly very fine (120 microns) to fine (250 microns), moderate sorting, angular to subrounded, mainly subrounded, low to high sphericity, mainly moderate to high sphericity
Grain types	Abundant disarticulated pelecypods and broken pelecypods, 45 percent quartz sand, 1 percent large benthic forams, trace globular planktonic forams, trace feldspar
Diagenesis	30 percent moldic porosity, minor intraparticle porosity; common 25 micron long irregularly and isopachous bladed calcite cement (silt size)

Turner River Road Core

Local well No.	C-1176
Sample number	HHW-9
Sample depth	14 feet
Described by	Kevin J. Cunningham
County	Collier
Location	SW, NW, sec 6, T51S, R31E
Latitude	26°03'38"
Longitude	81°15'49"
Formation	Ochopee Limestone Member
Rock type	Pelecypod lime floatstone with skeletal mud-dominated, grain-dominated lime packstone
Description	Silt (50 microns) to medium (260 microns) size quartz sand, mainly very fine (120 microns) to fine (200 microns), well sorted, angular to subrounded, mainly subangular, low to high sphericity, mainly moderate to high sphericity
Grain types	20 percent disarticulated pelecypods and broken pelecypods, 5 percent quartz sand, 2 percent large benthic forams up to 2 millimeters long, 1 percent echinoids, trace miliolids
Diagenesis	30 percent moldic and interparticle porosity, minor intraparticle porosity; common 50 to 150 micron long irregularly and isopachous bladed calcite cement

Local well No.	C-1176
Sample number	HHW-10
Sample depth	36 feet
Described by	Kevin J. Cunningham
County	Collier
Location	SW, NW, sec. 6, T51S, R31E
Latitude	26°03'38"
Longitude	81°15'49"
Formation	Ochopee Limestone Member
Rock type	Pelecypod lime floatstone with mud-dominated and grain-dominated lime packstone matrix
Description	Silt (50 microns) to medium (500 microns) size quartz sand, mainly very fine (120 microns) to fine (260 microns), well sorted, angular to subrounded, mainly subangular, low to high sphericity, mainly moderate to high sphericity
Grain types	20 percent disarticulated pelecypods and broken pelecypods, 15 percent quartz sand, 1 percent large benthic forams up to 1.5 millimeters long, trace echinoids and biserial foram
Diagenesis	15 percent moldic and interparticle porosity, minor intraparticle porosity; common equant pore fill calcite cement, common 50 to 75 micron long irregularly and isopachous bladed calcite cement

Sunniland No. 2 Core

Local well No.	C-1178
Sample number	HHW-11
Sample depth	55.5 feet
Described by	Kevin J. Cunningham
County	Collier
Location	SW, NW, sec. 2 T49S, R30E
Latitude	26°14'53"
Longitude	81°17'44"
Formation	Ochopee Limestone Member
Rock type	Quartz sandstone with micrite matrix
Description	Silt (50 microns) to granule (3.5 millimeters) size quartz sand, mainly very fine (120 microns) to fine (250 microns), moderate sorting, angular to subrounded, mainly subangular, low to high sphericity, mainly moderate to high sphericity
Grain types	85 percent quartz sand, 2 percent pelecypod molds
Diagenesis	15 percent moldic and root-mold porosity; minor 150 micron long calcite cement with a flat top on crystal and minor equant calcite associated with long flat-topped crystals, calcrite matrix(?)

Local well No.	C-1178
Sample number	HHW-12
Sample depth	78.8 feet
Described by	Kevin J. Cunningham
County	Collier
Location	SW, NW, sec. 2, T49S, R30E
Latitude	26°14'53"
Longitude	81°17'44"
Formation	Ochopee Limestone Member
Rock type	Pelecypod lime floatstone with skeletal quartz sand-rich lime wackestone matrix
Description	Silt (50 microns) to coarse (1 millimeter) size quartz sand, mainly very fine (120 microns) to medium (400 microns), well sorted, angular to subrounded, mainly subrounded, low to high sphericity, mainly moderate to high sphericity
Grain types	45 percent quartz sand, abundant pelecypods; trace gastropods, bryozoans, miliolids, and other benthic foraminifers
Diagenesis	10 percent moldic and small vug porosity; equant to short bladed (150 microns) isopachous, calcite cement post-dated by equant calcite spar pore-fill

Local well No.	C-1178
Sample number	HHW-13
Sample depth	91.3 feet
Described by	Kevin J. Cunningham
County	Collier
Location	SW, NW, sec. 2, T49S, R30E
Latitude	26°14'53"
Longitude	81°17'44"
Formation	Ochopee Limestone Member
Rock type	Pelecypod lime rudstone with skeletal quartz sand-rich lime wackestone matrix
Description	Silt (50 microns) to medium (400 microns) size quartz sand, mainly very fine (70 microns) to fine (150 microns), well sorted, angular to subrounded, mainly subangular, low to high sphericity, mainly moderate to high sphericity
Grain types	45 percent quartz sand, abundant pelecypods
Diagenesis	10 percent moldic porosity; partial mold-fill with 0.2 to 0.5 millimeter long elongated to equant calcite

Sunniland No. 2 Core (Continued)

Local well No.	C-1178
Sample number	HHW-14
Sample depth	124.8 feet
Described by	Kevin J. Cunningham
County	Collier
Location	SW, NW, sec. 2, T49S, R30E
Latitude	26°14'53"
Longitude	81°17'44"
Formation	Ochopee Limestone Member
Rock type	Pelecypod lime floatstone with skeletal mud-dominated and grain-dominated lime packstone matrix
Description	Silt (50 microns) to medium (400 microns) size quartz sand, mainly very fine (70 microns) to fine (150 microns), well sorted, angular to subrounded, mainly subangular, low to high sphericity, mainly moderate to high sphericity
Grain types	10 percent quartz sand; pelecypods, large benthic forams up to 250 microns long, bryozoans, echinoids, peloids, and gastropods
Diagenesis	30 percent moldic and interparticle porosity; no visible cement

Local well No.	C-1178
Sample number	HHW-15
Sample depth	142.9 feet
Described by	Kevin J. Cunningham
County	Collier
Location	SW, NW, sec. 2, T49S, R30E
Latitude	26°14'53"
Longitude	81°17'44"
Formation	Ochopee Limestone Member
Rock type	Pelecypod lime floatstone with skeletal quartz sand-rich lime wackestone matrix
Description	Silt (50 microns) to coarse (1 millimeter) size quartz sand, mainly fine (180 microns) to medium (400 microns), well sorted, angular to subrounded, mainly subangular, low to high sphericity, mainly moderate to high sphericity
Grain types	45 percent quartz sand; pelecypods, large benthic forams up to 1 millimeter long, bryozoans, echinoids
Diagenesis	30 percent moldic porosity, minor intraparticle porosity; minor 25 micron long bladed irregular to isopachous calcite cement, poorly cemented

Big Cypress Headquarter's Core

Local well No.	C-1180
Sample number	HHW-5
Sample depth	21.5 feet
Described by	Kevin J. Cunningham
County	Collier
Location	SE, NE, sec. 16 T49S, R34E
Latitude	25°53'45"
Longitude	81°19'24"
Formation	Ochopee Limestone Member
Rock type	Benthic foram, pelecypod lime grainstone
Description	Silt (50 microns) to granule (3 millimeters) size quartz sand, mainly very fine (120 microns) to medium (350 microns), poor sorting, angular to subrounded, mainly subangular, low to high sphericity, mainly moderate to high sphericity
Grain types	20 percent broken pelecypods, 5 percent quartz sand; trace gastropod, echinoids and biserial forams
Diagenesis	10 percent moldic and interparticle porosity; mainly abundant block calcite cement up to 150 millimeters, 100 to 180 micron long irregular to minor isopachous bladed calcite cement possible microcodium

Local well No.	C-1180
Sample number	HHW-6
Sample depth	37.7 feet
Described by	Kevin J. Cunningham
County	Collier
Location	SE, NE, sec. 16 T49S, R34E
Latitude	25°53'45"
Longitude	81°19'24"
Formation	Ochopee Limestone Member
Rock type	Skeletal-rich quartz sandstone (quartz-sand matrix supports pelecypod floatstone with common micrite matrix)
Description	Silt (50 microns) to very coarse (1.5 millimeters) size quartz sand, mainly fine (200 microns) to medium (500 microns), moderate sorting, angular to subrounded, mainly subrounded, low to high sphericity, mainly moderate to high sphericity
Grain types	80 percent quartz sand, abundant disarticulated pelecypods and broken pelecypods, trace echinoids
Diagenesis	20 percent moldic and interparticle porosity; common micrite occluding interparticle voids; 25 to 50 micron long irregular to minor isopachous bladed calcite cement (silt size)

Cypress Lane Core

Local well No.	C-1181
Sample number	HHW-16
Sample depth	42 feet
Described by	Kevin J. Cunningham
County	Collier
Location	SW, sec. 35, T49S, R31E
Latitude	26°10'02"
Longitude	81°12'03"
Formation	Ochopee Limestone Member
Rock type	Pelecypod lime floatstone with skeletal mud-dominated and grain-dominated lime packstone matrix
Description	Silt (50 microns) to fine (250 microns) size quartz sand, mainly very fine (80 microns) to fine (200 microns), well sorted, angular to subrounded, mainly subangular, low to high sphericity, mainly moderate to high sphericity
Grain types	15 percent quartz sand; abundant pelecypods, echinoids, bryozoans; trace globular planktonic forams, trace feldspar
Diagenesis	25 percent moldic and interparticle porosity, trace bored porosity; poorly cemented

Local well No.	C-1181
Sample number	HHW-17
Sample depth	61 feet
Described by	Kevin J. Cunningham
County	Collier
Location	SW, sec. 35, T49S, R31E
Latitude	26°10'02"
Longitude	81°12'03"
Formation	Ochopee Limestone Member
Rock type	Pelecypod lime floatstone with pelecypod quartz sand-rich, mud-dominated lime packstone matrix
Description	Silt (50 microns) to very coarse (1.5 millimeters) sized quartz sand, mainly fine (150 microns) to coarse (600 microns), poorly sorted, angular to subrounded, mainly subrounded, low to high sphericity, mainly moderate to high sphericity
Grain types	40 percent quartz sand; pelecypods, at least 1 millimeter long broken benthic forams, echinoids; trace feldspars
Diagenesis	20 percent moldic porosity, trace intraparticle porosity and bored porosity; voids lack cement

Local well No.	C-1181
Sample number	HHW-18
Sample depth	74 feet
Described by	Kevin J. Cunningham
County	Collier
Location	SW, sec. 35, T49S, R31E
Latitude	26°10'02"
Longitude	81°12'03"
Formation	Ochopee Limestone Member
Rock type	Pelecypod mud-dominated and grain-dominated lime packstone
Description	Silt (50 microns) to granule (2.5 millimeters) size quartz sand, mainly fine (150 microns) to medium (400 microns), poorly sorted, angular to subrounded, mainly subrounded, low to high sphericity, mainly moderate to high sphericity
Grain types	10 percent quartz sand; pelecypods, broken large benthic forams, echinoid, intraclasts, peloids
Diagenesis	Underterminable porosity percentage, trace intraparticle porosity and bored porosity, mainly interparticle and moldic porosity; lacks cement in voids

Cypress Lane Core (Continued)

Local well No.	C-1181
Sample number	HHW-19
Sample depth	84 feet
Described by	Kevin J. Cunningham
County	Collier
Location	SW, sec. 35 T49S, R31E
Latitude	26°10'02"
Longitude	81°12'03"
Formation	Ochopee Limestone Member
Rock type	Pelecypod lime rudstone with skeletal quartz sand-rich, mud-dominated and grain-dominated lime packstone
Description	Silt (50 microns) to granule (2.5 millimeters) size quartz sand, mainly very fine (100 microns) to fine (250 microns), poorly sorted, angular to subrounded, mainly subrounded, low to high sphericity, mainly moderate to high sphericity
Grain types	35 percent quartz sand; mostly broken pelecypods, broken large benthic forams at least 1.5 millimeters; minor serpulids, echinoids; trace bryozoans
Diagenesis	40 percent porosity mainly moldic, minor interparticle, trace bored porosity, trace intraparticle porosity; irregular to isopachous up to 100 micron long bladed calcite cement

Local well No.	C-1181
Sample number	HHW-20
Sample depth	96 feet
Described by	Kevin J. Cunningham
County	Collier
Location	SW, sec. 35, T49S, R31E
Latitude	26°10'02"
Longitude	81°12'03"
Formation	Ochopee Limestone Member
Rock type	Pelecypod-rich quartz sandstone with mud-dominated and grain-dominated lime mud matrix
Description	Silt (50 microns) to granule (3 millimeters) size quartz sand, mainly very fine (100 microns) to fine (150 microns), poorly sorted, angular to subrounded, mainly subrounded, low to high sphericity, mainly moderate to high sphericity
Grain types	75 percent quartz sand, abundant broken pelecypods and echinoids, trace feldspar
Diagenesis	15 percent porosity mainly moldic, minor interparticle, trace intraparticle porosity; irregular to isopachous up to 100 micron long bladed calcite cement that post-dates mold formation

Alligator Alley East Core

Local well No.	C-1182
Sample number	HXP-16
Sample depth	17.5 feet
Described by	Kevin J. Cunningham
County	Collier
Location	NW, NW, sec. 1, T50S, R33E
Latitude	26°10'11"
Longitude	80°59'21"
Formation	Pinecrest Sand Member
Rock type	Quartz sand
Description	Silt (40 microns) to medium (450 microns) size quartz sand, mainly very fine (75 microns) to fine (150 microns) quartz sand, well sorted, angular to subrounded, low to high sphericity; patchy distribution of lime mud matrix
Grain types	2 percent heavy minerals grains, 1 percent plagioclase, 1 percent phosphorite grains, trace skeletal fragments
Diagenesis	20 percent intergrain porosity; low permeability because 10 percent lime mud matrix; lime mud may be microcrystalline dolomite (silt size)

Local well No.	C-1182
Sample number	HXP-17
Sample depth	37.5 feet
Described by	Kevin J. Cunningham
County	Collier
Location	NW, sec. 1, T50S, R33E
Latitude	26°10'11"
Longitude	80°59'21"
Formation	Pinecrest Sand Member
Rock type	Quartz sand
Description	Silt (40 microns) to medium (350 microns) size quartz sand, mainly very fine (100 microns) to fine (150 microns) quartz sand, well sorted, granular to subrounded, low to high sphericity
Grain types	2 percent heavy mineral grains, 1 percent plagioclase, 1 percent phosphorite grains, trace benthic and globular planktic foraminifers, trace microcline
Diagenesis	20 percent intergrain porosity; patchy distribution of 15 percent lime mud matrix; low hydraulic conductivity

Local well No.	C-1182
Sample number	HXP-18
Sample depth	45 feet
Described by	Kevin J. Cunningham
County	Collier
Location	NW, sec. 1, T50S, R33E
Latitude	26°10'11"
Longitude	80°59'21"
Formation	Pinecrest Sand Member
Rock type	Quartz sand
Description	Silt (50 microns) to medium (300 microns) size quartz sand; mainly very fine (100 microns) to fine (150 microns) quartz sand, well sorted, angular to subrounded, low to high sphericity
Grain types	3 percent heavy minerals, 1 percent benthic forams, trace pelecypods; trace plagioclase, microcline and phosphorite grains
Diagenesis	20 percent intergrain porosity; patchy distribution of 15 percent lime mud; low hydraulic conductivity

Alligator Alley East Core (Continued)

Local well No.	C-1182
Sample number	HXP-19
Sample depth	53.5 feet
Described by	Kevin J. Cunningham
County	Collier
Location	NW, sec. 1, T50S, R33E
Latitude	26°10'11"
Longitude	80°59'21"
Formation	Pinecrest Sand Member
Rock type	Lime mud-rich terrigenous mudstone
Description	Silt (30 microns) to medium (350 microns) size quartz sand, mainly very fine (70 microns) to fine (150 microns) quartz sand, well sorted, angular to subrounded, low to high sphericity; one 900-micron coarse quartz grain
Grain types	40 to 60 percent lime mud (≤ 10 percent micron diameter), 5 to 25 percent quartz grains, trace skeletal fragments; trace plagioclase, phosphorite grains and heavy mineral grains
Diagenesis	10 percent microcrystalline porosity; areas with abundant microcrystalline dolomite are more porous

Local well No.	C-1182
Sample number	HXP-20
Sample depth	62 feet
Described by	Kevin J. Cunningham
County	Collier
Location	NW, sec. 1, T50S, R33E
Latitude	26°10'11"
Longitude	89°59'21"
Formation	Pinecrest Sand Member
Rock type	Quartz sand-rich, terrigenous mudstone
Description	Silt (40 microns) to medium (400 microns) size quartz sand, mainly very fine (100 microns) to fine (150 microns) quartz sand, moderately sorted, angular to subangular, low to high sphericity; matrix mainly lime mud mixed with terrigenous clay
Grain types	20 to 45 percent quartz grains, 3 percent heavy minerals; trace plagioclase, microcline and phosphorite grains
Diagenesis	15 percent microcrystalline porosity; very low hydraulic conductivity

Local well No.	C-1182
Sample number	HXP-21
Sample depth	129 feet
Described by	Kevin J. Cunningham
County	Collier
Location	NW, sec. 1, T50S, R33E
Latitude	26°10'11"
Longitude	80°59'21"
Formation	Unnamed formation
Rock type	Quartz sand
Description	Silt (40 microns) to fine (250 microns) size quartz sand, mainly very fine (100 microns) to fine (150 microns) quartz sand; medium to very coarse sand-size intraclasts
Grain types	15 percent phosphorite grains, 5 to 10 percent terrigenous mud matrix; ≤ 5 percent skeletal grains including benthic forams, echinoid fragments, and pelecypod fragments; 2 percent heavy minerals, 1 percent terrigenous mud intraclasts, 1 percent plagioclase and microcline
Diagenesis	20 percent intergrain porosity; low hydraulic conductivity

Alligator Alley East Core (Continued)

Local well No.	C-1182
Sample number	HXP-22
Sample depth	143 feet
Described by	Kevin J. Cunningham
County	Collier
Location	NW, sec. 1, T50S, R33E
Latitude	26°10'11"
Longitude	80°59'21"
Formation	Peace River Formation
Rock type	Terrigenous clay-rich quartz sand
Description	Silt (30 microns) to fine (200 microns) size quartz sand, mainly very fine (100 microns) to fine (150 microns) quartz sand, moderately sorted, angular to subrounded, low to high sphericity; silt (50 microns) to very coarse (1,300 microns) phosphorite grains, mainly very fine (100 microns) to fine (150 microns) phosphorite grains; medium (200 to 500 microns) grain intraclasts of terrigenous clay and micrite; 10 to 30 micron carbonate grains subhedral to euhedral calcite and possibly dolomite
Grain types	30 percent terrigenous clay matrix, 30 percent phosphorite grains; 1 percent skeletal grains, including benthic forams and pelecypod fragments
Diagenesis	20 to 30 percent intergrain porosity, but much may be due to expansion of grains and creation of porosity during impregnation; matrix well distributed throughout intergrain area; low hydraulic conductivity

Local well No.	C-1182
Sample number	HXP-23
Sample depth	147.5 feet
Described by	Kevin J. Cunningham
County	Collier
Location	NW, sec. 1, T50S, R33E
Latitude	26°10'11"
Longitude	80°59'21"
Formation	Peace River Formation
Rock type	Benthic foram terrigenous mudstone
Description	Mainly terrigenous clay; subordinate 3 to 15 micron carbonate grains with some euhedral dolomite crystals 10 to 15 micron diameter and silt to very fine sand size quartz grains
Grain types	35 percent micrite, 10 percent quartz grains, 5 to 10 percent benthic forams
Diagenesis	10 percent microporosity and intragrain porosity, but much may be due to expansion of grains and creation of porosity during impregnation; very low hydraulic conductivity

Local well No.	C-1182
Sample number	HXP-24
Sample depth	170 feet
Described by	Kevin J. Cunningham
County	Collier
Location	NW, sec. 1, T50S, R33E
Latitude	26°10'11"
Longitude	80°59'21"
Formation	Peace River Formation
Rock type	Diatomaceous terrigenous mudstone
Description	Silt (20 microns) to fine (140 microns) size quartz sand, mainly silt (50 microns) to very fine (80 microns) quartz sand, moderately sorted quartz grains, angular to subangular, low to high sphericity
Grain types	40 percent terrigenous clay, 20 percent benthic forams, 20 percent diatoms, 20 percent quartz grains
Diagenesis	25 percent microporosity and intergrain porosity; very low hydraulic conductivity

Alligator Alley East Core (Continued)

Local well No.	C-1182
Sample number	HXP-25
Sample depth	185 feet
Described by	Kevin J. Cunningham
County	Collier
Location	NW, sec. 1, T50S, R33E
Latitude	26°10'11"
Longitude	80°59'21"
Formation	Peace River Formation
Rock type	Quartz sand
Description	Silt (30 microns) to very coarse (1,400 microns) size quartz sand, mainly very fine (70 microns) to fine (150 microns) quartz sand, poorly sorted, angular to subrounded, low to high sphericity
Grain types	15 percent phosphorite grains, 10 percent terrigenous mud matrix unevenly distributed, 1 percent heavy minerals, trace benthic forams, trace plagioclase
Diagenesis	Original grain packing disturbed by sample preparation, cannot accurately estimate porosity, but likely ~20 percent; low permeability

Local well No.	C-1182
Sample number	HXP-26
Sample depth	192.5 feet
Described by	Kevin J. Cunningham
County	Collier
Location	NW, sec. 1, T50S, R33E
Latitude	26°10'11"
Longitude	80°59'21"
Formation	Peace River Formation
Rock type	Quartz sand
Description	Silt (25 percent) to medium (400 microns) size quartz sand, mainly very fine (90 microns) to fine (130 microns) quartz, well sorted, angular to subrounded, low to high sphericity; very fine to fine sand-size phosphorite grains
Grain types	15 percent phosphorite grains, 5 percent terrigenous mud matrix, 3 percent heavy minerals, 1 percent plagioclase and microcline
Diagenesis	Original grain packing disturbed by sample preparation, cannot accurately estimate porosity, but likely ~20 percent

Baker's Grade Core

Local well No.	C-1183
Sample number	HXP-1
Sample depth	12.5 feet
Described by	Kevin J. Cunningham
County	Collier
Location	SW, sec. 7, T49S, R32E
Latitude	26°15'04"
Longitude	81°10'23"
Formation	Pinecrest Sand Member
Rock type	Quartz sand
Description	Silt (0.02 millimeter) to fine (0.2 millimeter) size quartz sand, mainly fine (140-180 millimeters) sand, well sorted, angular to subrounded, low to high sphericity, grain dominated texture, but patchy distribution of lime mud matrix with ocludes, locally, intergrain porosity
Grain types	10 percent lime mud matrix, 1 to 2 percent heavy minerals, 1 percent broken pelecypod fragments, 1 percent plagioclase grains, trace benthic forams
Diagenesis	20 percent intergrain porosity; low hydraulic conductivity

Local well No.	C-1183
Sample number	HXP-2
Sample depth	39.5 feet
Described by	Kevin J. Cunningham
County	Collier
Location	SW, sec. 7, T49S, R32E
Latitude	26°15'04"
Longitude	81°10'23"
Formation	Pinecrest Sand Member
Rock type	Quartz sand-rich, terrigenous clay-rich, lime mudstone
Description	Silt (20 microns) to fine (200 microns) size quartz sand, mainly very fine (80 microns) to fine (180 microns), well sorted quartz, angular to subrounded, low to high sphericity, mud-supported rock
Grain types	5 to 20 percent quartz grains, 1 percent heavy minerals, 1 percent benthic forams, trace globular planktic forams and skeletal fragments
Diagenesis	5 percent microporosity; very low hydraulic conductivity

Baker's Grade Core (Continued)

Local well No.	C-1183
Sample number	HXP-3
Sample depth	109 feet
Described by	Kevin J. Cunningham
County	Collier
Location	SW, sec. 7, T49S, R32E
Latitude	26°15'04"
Longitude	81°10'23"
Formation	Unnamed formation
Rock type	Quartz sand
Description	Silt (40 microns) to fine (220 microns) size quartz sand, mainly very fine (80-120 microns) quartz sand, angular to subrounded, well sorted, low to high sphericity; 1 percent coarse to very coarse quartz sand, very fine to coarse phosphorite grains, very fine heavy minerals
Grain types	15 to 20 percent phosphorite grains, 1 to 3 percent heavy mineral grains; trace skeletal fragments and broken pelecypod fragments, sponge spicules(?); trace plagioclase, trace clay
Diagenesis	20 percent intergrain porosity; moderate hydraulic conductivity

Local well No.	C-1183
Sample number	HXP-4
Sample depth	115 feet
Described by	Kevin J. Cunningham
County	Collier
Location	SW, sec. 7, T49S, R32E
Latitude	26°15'04"
Longitude	81°10'23"
Formation	Peace River Formation
Rock type	Terrigenous clay-rich microcrystalline dolomite
Description	Silt (30 microns) to fine (200 microns) size quartz sand, silt to fine, mainly very fine (80-100 microns) quartz sand, angular to subrounded, low to high sphericity; silt-size (5-20 microns) dolomite crystals
Grain types	≤70 percent microcrystalline dolomite, 10 percent quartz grains, trace skeletal fragments
Diagenesis	~10 percent intercrystalline microporosity; euhedral dolomite crystals

L-3 Canal Core

Local well No.	HE-1110
Sample number	HHW-21
Sample depth	57.5 feet
Described by	Kevin J. Cunningham
County	Hendry
Location	NE, SW, sec. 22, T47S, R34E
Latitude	26°23'10"
Longitude	80°55'48"
Formation	Ochopee Limestone Member
Rock type	Pelecypod lime rudstone with skeletal quartz sand-rich mud-dominated packstone and wackestone matrix
Description	Silt (50 microns) to coarse (625 microns) size quartz sand, mainly very fine (100 microns) to fine (200 microns), poorly sorted, angular to subrounded, mainly subrounded, low to high sphericity, mainly moderate to high sphericity
Grain types	Mostly broken pelecypods, 20 percent quartz sand, 10 percent echinoids; 1 percent feldspar; trace gastropods and ostracods
Diagenesis	40 percent porosity mainly moldic, trace interparticle and intraparticle porosity; very little to no cement

Local well No.	HE-1110
Sample number	HHW-22
Sample depth	101.5 feet
Described by	Kevin J. Cunningham
County	Hendry
Location	NE, SW, sec. 22, T47S, R34E
Latitude	26°23'10"
Longitude	80°55'48"
Formation	Ochopee Limestone Member
Rock type	Pelecypod lime rudstone with skeletal quartz sand-rich, mud-dominated packstone matrix
Description	Silt (50 microns) to medium (500 microns) size quartz sand, mainly very fine (100 microns) to medium (375 microns), moderately sorted, angular to subrounded, mainly subangular to subrounded, low to high sphericity, mainly moderate to high sphericity
Grain types	Mostly broken pelecypods, 45 percent quartz sand, 1 percent feldspar; minor up to 0.5 millimeter long benthic forams, echinoids, trace gastropods
Diagenesis	45 percent porosity mainly moldic and interparticle, minor intraparticle and bored porosity; minor irregular craze-plane desiccation(?) cracks; common irregular to isopachous bladed (up to 150 microns) calcite in interparticle voids

Local well No.	HE-1110
Sample number	HHW-23
Sample depth	142.5 feet
Described by	Kevin J. Cunningham
County	Hendry
Location	NE, SW, sec. 22, T47S, R34E
Latitude	26°23'10"
Longitude	80°55'48"
Formation	Ochopee Limestone Member
Rock type	Quartz sandstone matrix with pelecypod rudstone framework
Description	Silt (50 microns) to medium (375 microns) size quartz sand, mainly very fine (100 microns) to fine (250 microns), well sorted, angular to subrounded, mainly subangular, low to high sphericity, mainly moderate to high sphericity; mud-dominated and grain-dominated lime mudstone matrix
Grain types	60 percent quartz sand, mostly broken pelecypods; minor gastropods, echinoids; trace ostracods and small benthic forams; trace feldspar
Diagenesis	35 percent porosity mainly moldic and interparticle, trace intraparticle and bored porosity; common irregular to isopachous bladed (up to 75 microns long) calcite post-date formation of moldic voids

Trail Center Core

Local well No.	MO-178
Sample number	HHW-24
Sample depth	67.5 feet
Described by	Kevin J. Cunningham
County	Monroe
Location	NE, sec. 1, T4S, R34E
Latitude	25°48'15"
Longitude	80°52'31"
Formation	Ochopee Limestone Member
Rock type	Pelecypod lime floatstone with skeletal quartz sand-rich, mud-dominated and grain-dominated packstone matrix
Description	Silt (50 microns) to medium (500 microns) size quartz sand, mainly fine (200 microns) to medium (375 microns), well sorted, angular to subrounded, mainly subangular, low to high sphericity, mainly moderate to high sphericity
Grain types	Mostly broken pelecypods, 25 percent quartz sand; trace up to 1 millimeter long benthic forams, bryozoans, globular planktonic forams, echinoids; trace feldspar
Diagenesis	35 percent porosity mainly moldic and interparticle, minor intraparticle and bored porosity; minor irregular to isopachous bladed (up to 100 microns long) calcite lining interparticle voids

Local well No.	MO-178
Sample number	HHW-25
Sample depth	115.5 feet
Described by	Kevin J. Cunningham
County	Monroe
Location	NE, sec. 1, T4S, R34E
Latitude	25°48'15"
Longitude	80°52'31"
Formation	Ochopee Limestone Member
Rock type	Pelecypod lime floatstone with skeletal grain-dominated lime packstone matrix
Description	Silt (50 microns) to coarse (625 microns) size quartz sand, mainly medium (250-325 microns), moderately sorted, angular to subrounded, mainly subangular, low to high sphericity, mainly moderate to high sphericity
Grain types	Mostly broken pelecypods, 5 percent quartz sand, minor sand dollars and echinoid spines, trace long broken benthic forams up to 1.5 millimeters and planktonic forams
Diagenesis	35 percent porosity mainly moldic and interparticle, minor intraparticle and bored porosity; minor irregular to isopachous bladed (up to 75 microns long) calcite lining interparticle voids and minor up to 25 micron long lining molds