

Surficial Geology of the Hackettstown Quadrangle Morris, Warren, and Hunterdon Counties, New Jersey

New Jersey Geological Survey
Open-File Map OFM 79
2010

pamphlet with tables 1 and 2 to accompany map

Table 1.--Selected well and boring records.

Well No.	Identifier ¹	Driller's log with depth and description ²	
1	24-16279	0-215	yellow limestone and clay (Qn over Qwcb)
2	24-14119	0-NR NR-140	sand, boulders (Qn) limestone cased to 120 feet, approximate thickness of surficial material
3	24-13644	0-NR NR-120	boulders, gravel (Qn) limestone cased to 100 feet, approximate thickness of surficial material
4	24-23024	0-25 25-58 58-473	sand, clay, weathered rock (Qn over Qwg) brown weathered rock (Qwg) granite rock, weathered from 103-185
5	24-17802	0-72 72-225	clay-sand (Qn) granite
6	24-16878	0-40 40-168	sand and clay (Qn) granite
7	24-13082	0-120 120-145 145-147	sand, large gravel, clay (Qnm) brown hardpan (Qnm or Qwg) granite
8	24-13081	0-95 95-114 114-147	gray clay, large gravel (Qnm) soft brown sandstone (Qwg) gray granite
9	24-16418	0-68 68-98	sand, clay, large gravel (Qnm) granite
10	24-19566	0-133 133-200	sand mixed with gravel (Qnm) granite rock
11	24-12903	0-77 77-148	sand, brown clay, gravel (Qnm) gray granite
12	24-15632	0-10 10-98	hardpan (Qwg) sandstone (Qwg, gneiss saprolite)
13	24-21634	0-44 44-166 166-198	brown clay, sand, gravel (Qnm) soft sandstone, brown and gray (Qwg, gneiss saprolite) granite
14	24-169	abbreviated log 0-19 19-66	sand, clay, and boulders (Qwg) limestone rock (gneiss)

15	24-23888	0-26 26-173	sand, clay, weathered rock (Qwg) granite
16	24-13795	0-4 4-71	stony overburden (Qwg) granite
17	24-18294	0-76 76-98	sand, silt, gray clay, gravel (Qnm) brown sandstone (Qwg)
18	24-14284	0-10 10-23 23-123	sand, gravel, and clay (Qnm) rotten granite (Qwg) granite
19	24-11798	0-15 15-348	sand and boulders (Qwg) gray granite
20	24-13886	0-27 27-98	sandy overburden (Qwg) gray granite
21	24-4168	0-120 120-138	clay and hardpan (Qnm) granite
22	24-13363	0-85 85-90 cased to 87, yield 20 gpm	gravel, clay, and sand (Qnm) sand, gravel (Qnm or Qwg) cased to 87, yield 20 gpm
23	24-18294	0-76 76-98	sand, silt, gray clay, gravel (Qnm) brown sandstone (Qwg)
24	24-15866	0-144 144-198	clay, sand, gravel (Qnm) granite
25	24-13162	0-148 148-172	sand, gravel, clay (Qnm) gray granite
26	24-13160	0-100 cased to 100, yield 9 gpm	gravel, sand, clay (Qnm) cased to 100, yield 9 gpm
27	24-15174	0-98 98-103	gravel and clay (Qnm) sand, gravel, and water (Qnm or Qwg)
28	24-19990	0-48 48-505	fractured rock (Qnm) granite gneiss
29	24-18974	0-93 93-173	sand, clay, large gravel (Qnm) granite
30	24-8063	abbreviated log 0-35 35-137 137-167 167-207	clay, gravel, stumps, water, some gravel (fill? and Qnm) gray clay, sand, large gravel (Qnm) brown and white rotten sandstone and clay (Qwg) granite
31	24-18165	0-30 30-98	clay, sand, gravel (Qn) granite
32	24-15684	0-62 62-299	hardpan and gravel (Qn) granite
33	24-2413	0-34 34-136	clay and boulders (Qcal over Qcg or Qnm) granite
34	24-2237	0-11 11-90 90-94 94-103 103-105	clay and boulders (Qcg) clay and stones (Qcg over Qf and Qwcb) boulders (Qf) clay and stones (Qf and Qwcb) boulders (Qf)

35	24-6461	0-10	clay (Qf)
		10-16	limestone boulder (Qf)
		16-24	clay and gravel (Qf)
		24-30	granite boulder (Qf)
		30-58	sandy clay (Qf and Qwcb)
		58-395	limestone
36	24-20824	0-30	clay and dirt (Qcg)
		30-50	hard sandstone (Qwg)
		50-100	sandstone (Qwg)
37	24-23189	0-20	sand, clay (Qcg)
		20-33	sandstone (Qwg)
		33-61	soft sandstone (Qwg)
		61-75	hard sandstone (Qwg)
		75-90	sandstone, granite mix (Qwg and unweathered gneiss)
		90-133	sandstone, granite mix, yield 10 gpm
		133-165	quartz granite
38	24-13992	0-197	sand (Qcg over Qwg)
		197-200	boulder (Qwg)
		200-222	sand and rotten limestone (Qwg)
		222-234	limestone (gneiss)
39	24-15658	0-235	clay, hardpan (Qcg over Qwg)
		235-245	soft sandstone (Qwg)
		cased to 242, yield 8 gpm	
40	24-20836	0-92	soft hardpan (Qcg over Qwg)
		92-197	granite
41	24-20835	0-61	clay, hardpan (Qcg over Qwg)
		61-148	granite
42	24-20834	0-43	sandy hardpan (Qcg)
		43-148	granite
43	24-20829	0-4	clay (Qwg)
		4-44	sand and clay (Qwg)
		44-54	soft sandstone (Qwg)
		54-373	granite
44	24-20831	0-5	clay and large gravel (Qwg)
		5-17	sandy clay (Qwg)
		17-298	granite
45	24-18987	0-12	hardpan (Qcg)
		12-25	fractured rock (Qwg)
		25-71	porous limestone (Qwg)
		71-190	limestone (gneiss)
46	24-21378	0-40	sand, clay (Qcg)
		40-60	broken sandstone (Qwg)
		60-348	granite
47	24-18223	0-45	sand and gravel (Qwg)
		45-400	limestone (gneiss)
48	24-327	0-20	clay and hardpan (Qf)
		20-64	slabby limestone (Qwcb)
		64-180	blue and gray limestone
49	24-11543	0-30	overburden with gravel (Qnm)
		30-110	limestone
50	24-3188	0-21	stones and clay (Qwf)
		21-57	sand and gravel (Qwf)
		57-107	hard black rock

		107-138	hard gray rock
51	24-3187	0-30 30-35 35-40 40-49 49-80 80-150	coarse sand, quartz and limestone fragments, some boulders (Qwf) same, some large limestone fragments (Qwf) medium gravel, mostly limestone (Qwf and Qwcb) brown medium-grained clayey sand (Qwf and Qwcb) medium and coarse sand, mixture of quartz and limey shale (Qwcb) limestone bedrock
52	24-3258	0-38 38-42 42-45 45-285	sand and gravel (Qwf) clay and stones (Qwf and Qwcb) rotten limestone (Qwcb) hard black rock
53	24-5582	0-60 60-80 80-86 86-160 160-173	clay and boulders (Qnm) very dirty sand and gravel (Qnm) boulder or ledge rock (Qnm) decayed limestone (Qwcb) soft and hard layers limestone
54	24-3421	0-56 56-110	clay, boulders, hardpan (Qnm) limestone, blue and gray
55	24-15069	0-50 50-55 55-120 120-140 140-166 166-200 200-222	clay, gravel (Qnm) gravel (Qnm) clay, gravel (Qnm) brown sand, clay (Qnm) clay, gravel (Qnm) rock—limestone soft granite
56	24-13342	0-71 71-160 160-165	dense gravel and sand (Qnm) dark brown clay and sand (Qnm and Qwcb) rotten brown limestone
57	24-15065	0-131 131-134	sand, gravel (Qnm) limestone
58	24-13972	0-8 8-11 11-25 25-28 28-90 90-95 95-175 175-180	overburden and boulders (Qnm) boulders (Qnm) sand and gravel and boulders (Qnm) boulders (Qnm) sand and gravel and boulders, no water (Qnm) rotten limestone and clay (Qwcb) limestone brown seam, water (Qwcb)
59	24-15924	0-99	sand and gravel (Qnm) cased to 99, yield 18 gpm
60	24-16329	0-4 4-8 8-75 75-76 76-80 80-108 108-110 110-112 112-122	clay, gravel (Qnm) boulder (Qnm) gravel (Qnm) boulder (Qnm) gravel (Qnm) (not reported) boulder (Qnm) clay and gravel (Qnm) clay and limestone (Qwcb)
61	24-17266	0-18 18-23 23-108 108-110 110-125	clay (Qnm) limestone (Qnm, boulder) clay (Qnm) limestone (boulder in Qnm or bedrock) clay (Qnm or Qwcb) cased to 108, yield 20 gpm
62	24-15479	0-54	brown clay, sand, gravel, silt (Qal over Qnm)

		54-72	limestone
63	24-21060	0-39 39-100	gravel (Qnm) limestone
64	24-1472	0-30 30-152 152-158	boulders, clay, hardpan (Qnm) orange sticky clay, some streaks of hardpan, looks like decayed limestone formation (Qwcb) limestone
65	24-5529	0-3 3-47 47-69 69-90 90-118	yellow clay (Qal) sand and gravel (Qwf) yellow mud, broken rock (Qwcb) rotten limestone (Qwcb) limestone
66	24-7212	0-10 10-15 15-25 25-33 33-45 45-65 65-143	clay and rocks (Qal over Qwf) rocks (Qwf) dirty gravel (Qwf) yellow clay (Qwf or Qwcb) dirty sand and gravel (Qwf, possibly in Qwcb) limestone with mud seams limestone
67	24-6999	0-10 10-24 24-30 30-42 42-57 57-58	clay and rocks (Qal over Qwf) sand and gravel (Qwf) sand (Qwf) yellow clay with stones (Qwcb) rotten limestone (Qwcb) hard limestone
68	24-5556	0-15 15-37	clay and boulders (Qal over Qwf) sand and gravel (Qwf)
69	24-7711	0-42 42-103 103-135 135-150	sand, gravel, and boulders (Qal over Qwf) soft black limestone (Qwcb) hard blue limestone yellow rotten limestone (Qwcb)
70	24-7712	0-41 41-70	overburden, sand and gravel streaks (Qal over Qwf) black limestone with cracks every few feet
71	24-4308	0-65 65-205	clay and hardpan (Qcg) granite
72	24-3816	0-183 183-218	clay and hardpan and slabs of limestone 5 to 6 feet thick, white and soft limestone (Qcg over Qwcb) sandstone rock
73	24-1950	0-15 15-55 55-100	boulders and gravel, as river bottom (Qwf) yellow and orange clay and hardpan (Qwcb) seamy limestone
74	24-14703	0-8 8-300 300-400	sandy overburden (Qwg) soft layers, sandstone (Qwg) granite
75	24-15965	0-32 32-245	clay and hardpan (Qwg) mostly granite, a few streaks of ore rock
76	24-13059	0-20 20-60 60-70	overburden (Qwg) sand (Qwg) sand, gravel (Qwg)
77	24-50785	abbreviated log 0-16 16-22 22-36	brown sand and gravel (Qwg) broken brown rock (Qwg) brown rock and brown clay (Qwg)

36-120 granite

78	24-34614	abbreviated log 0-27 brown silty clay and gravel (Qcal over Qwg) 27-30 broken rock (Qwg) 30-95 brown, gray rock, weathered in places (gneiss)
79	24-38047	abbreviated log 0-6 brown overburden and rock (Qwg) 6-270 blue, gray, brown rock, weathered in places (gneiss)
80	24-5807	abbreviated log 0-30 clayey material with rounded and angular dolomite and gneiss pebbles (Qcg over Qf) 30-85 slightly clayey material with rounded gneiss pebbles, some weathered, and a few dolomite pebbles (Qf and Qis) 85-312 angular and some rounded pebbles and fragments of gneiss and dolomite in clay (Qwcb with collapsed Qcg and Qf)
81	R24-14-351	0-270 clay and shale (Qcg over Qwcb) 270-355 clay, caving in (Qwcb)
82	24-6692	0-7 clay and stones (Qcg) 7-164 leached limestone and a few granite stones (Qcg and Qf over Qwcb) 164-167 soft limestone (Qwcb)
83	24-15026	0-25 gravel, sand (Qcg over Qf) 25-35 clay (Qf and Qwcb) 35-43 clay, mixed with gravel (Qf and Qwcb) 43-105 limestone 105-123 brown limestone
84	24-3919	0-157 clay and hardpan (Qcg over Qf) 157-187 sandstone rock (Qwg)
85	24-8791	0-70 clay and boulders (Qcg over Qf) 70-91 clay (Qwcb) 91-95 soft limestone (Qwcb)
86	24-6998	0-34 clay and rocks (Qal over Qwf) 34-35 limestone 35-70 yellow clay (Qwcb) 70-217 limestone
87	24-3178	0-33 sandy clay (Qwf over Qwcb) 33-90 highly weathered limey shale and crystalline dolomitic limestone (Qwcb)
88	24-4808	0-80 boulders and clay (Qwf over Qwcb) 80-151 soft and hard gray limestone
89	24-7034	0-15 gravel, clay, rocks (Qwf) 15-55 gravel and clay (Qwf and Qf over Qwcb) 55-75 sand, clay, and gravel (Qf and Qwcb) 75-173 limestone and broken limestone
90	24-22657	0-15 clay (Qwcb) 15-25 clay, gravel (Qwcb) 25-36 gravel, sand (Qwcb) 36-115 limestone
91	24-1406	0-38 boulders, clay, and gravel mixed (Qwf over Qwcb) 38-72 gray and blue limestone
92	24-1557	0-30 boulders, clay, hardpan (Qwf over Qwcb) 30-78 gray and blue limestone
93	24-14216	0-20 hardpan (Qis)

		20-42	gravel (Qis)
		42-69	clay and gravel (Qis and Qwcb)
		69-77	clay (Qwcb)
		77-95	limestone
94	24-14914	0-35	sand, gravel (Qis)
		35-98	rotten yellow limestone (Qwcb)
95	24-10740	0-20	gray, yellow clay mixed (Qcg over Qwcb)
		20-25	layer limestone
		25-35	clay with gravel, sand (Qwcb and Qf and Qis)
		35-45	clay, sand (Qwcb and Qis)
		45-55	clay, gravel (Qwcb and Qf and Qis)
		55-88	limestone
96	24-14893	0-4	overburden (Qwcb)
		4-8	soft limestone (Qwcb)
		8-230	limestone
97	24-15596	0-9	sand, soft brown clay (Qwcb)
		9-173	limestone
98	24-6907	0-80	rotten limestone (Qwcb)
		80-225	limestone
99	24-12529	0-15	brown clay and shale (Qpt over Qws)
		15-98	gray shale
100	24-15994	0-7	dirt and shale (Qws)
		7-198	slate
101	24-19437	0-114	clay hardpan (Qcg over Qwcb)
		114-135	limestone
102	24-23995	0-68	clay and gravel (Qcgo over Qwcb)
		68-123	limestone
103	24-21934	0-21	brown clay and gravel (Qcgo)
		21-115	gray fractured limestone
104	24-21400	0-125	sand and gravel (Qaf over Qpt and Qwcb)
105	24-18780	0-140	clay (Qcg over Qwcb)
106	24- 23071	0-130	clay (Qf over Qwcb)
		130-160	broken rock and limestone
107	24-1722	0-23	clay and hardpan (Qal over Qwcb)
		23-72	gray and blue limestone
108	24-10278	0-8	broken-up limestone (Qwcb)
		8-72	limestone, rotten from 65-72
109	24-12034	0-12	overburden (Qpt over Qwcb)
		12-123	limestone
110	24-21363	0-12	fractured rock (Qwcb)
		12-255	fractured shale
111	24-23187	0-5	hardpan (Qcg)
		5-235	hard-packed sand, fine gravel, small pieces of brown limestone (Qcg over Qwcb)
112	24-1499	0-49	clay, boulders, and rotten granite (Qwg)
		49-61	soft granite rock (Qwg)
		61-80	granite rock
113	24-18693	0-30	sandy clay (Qwg)

		30-40	sandstone (Qwg)
		40-200	granite
114	24- 5427	0-12 12-310	hardpan, boulders (Qwg) very hard rock
115	24-10345	0-6 6-20 20-24 24-40 40-45 45-170	overburden (Qcg) sand and gravel (Qcg) boulders (Qcg) sand and gravel (Qwg) rotten granite (Qwg) granite, rotten seams at 52-53 and 168-170
116	R1A	abbreviated log 0-25 25-41	orange, brown, gray fine-to-coarse sand, some clayey silt, some gravel and boulders (Qwg) gneiss
117	R8A	abbreviated log 0-36	light brown to brown fine-to-medium sand, some silt and clayey silt, little gravel (Qcg over Qwg)
118	R16	abbreviated log 0-25 25-46	light brown to orange brown fine-to-coarse sand, some silt, clayey silt, and gravel (Qcg) brown, tan, gray fine-to-coarse sand, little silt, trace gravel (Qcg)
119	S7+7A	abbreviated log 0-19 19-54 54-101	light brown fine-to-medium sand, some silt, little gravel (Qal) tan, orange-yellow, light yellow silt, fine-to-coarse sand, little gravel, trace clay (Qcg and Qwcb) gray and brown dolomite and intervals of tan silt
120	S11	abbreviated log 0-29 29-144	yellowish brown fine-to-coarse sand, little gravel, trace clayey silt (Qal over Qcg) yellow and gray clayey silt with pieces of weathered dolomite, little fine-to-coarse sand (Qwcb)
121	24-2077	0-25 25-39 39-213	yellow clay (Qwcb) hardpan and broken rock (Qwcb) limestone rock
122	R25	abbreviated log 0-44 44-54	orange clayey silt with dolomite decomposed to angular sand and medium-to-fine gravel (Qwcb) gray dolomite
123	R33	abbreviated log 0-25 25-30	tan, brown, white silt and fine-to-coarse sand with weathered granitic rock fragments (Qpt over Qwcb) gray and brown dolomite
124	S18	abbreviated log 0-39 39-44 44-54	gray to tan silty clay with fine-to-coarse sand, little medium-to-fine gravel (Qpt over Qwcb) rock fragments gray and brown dolomite
125	24-2724	0-22 22-133 133-228	mountain grit (Qaf) soft limestone rock (Qwcb) limestone rock
126	24-22216	abbreviated log 0-15 15-17	clayey silt, trace gravel, gneiss boulder from 6-6.5 (Qpt) silt with some clay, little angular gravel—decomposed bedrock (Qwcb)
127	24-39260	0-6	clay (Qpt)

		6-8	boulders (Qpt)
		8-25	clay (Qpt or Qwcb)
		25-30	large gravel (Qpt or Qwcb)
		30-545	limestone
128	24-20048	0-14	clayey sand (Qpt)
		14-20	till, very hard drilling, boulder at 14 (Qpt)
		20-28	clayey sand (Qpt or Qwg)
		28-29	till, very hard drilling (Qpt or Qwg)
129	24-2624	abbreviated log	
		0-20	clay and sand, granitic rock fragments (Qcg)
		20-48	clay and soft rock, granitic rock fragments, a few cherts and quartzites (Qcg with Qpt-derived material)
		48-51	rotten granite (Qwg)
		51-107	granite rock
130	24-13930	0-6	overburden with boulders (Qwg)
		6-24	sand and gravel (Qwg)
		24-165	granite, soft from 160-165
131	24-10343	0-5	overburden (Qpt)
		5-76	clay and gravel (Qpt and Qwcb)
		76-94	limestone
		94-116	rotten limestone (Qwcb)
		116-330	gray limestone
		330-348	granite
132	24-15307	0-25	sand and stone (Qpt)
		25-75	clay (Qwcb)
		75-80	shale
		80-148	limestone
133	24-9579	0-50	clay and boulders (Qwcb with collapsed Qcg or Qpt)
		50-58	clay and sand (Qwcb)
		59-60	gravel (Qwcb, with collapsed Qcg or Qpt), yield 20 gpm
134	24-21711	0-14	stony hardpan (Qwg)
		14-44	sandstone (Qwg)
		44-198	granite
135	24-16095	0-14	hardpan (Qwg)
		14-56	soft sandstone (Qwg)
		59-198	granite
136	24-15364	0-21	hardpan (Qwg)
		21-80	sandstone (Qwg)
		80-123	granite
137	24-14786	0-45	clay (Qwg)
		45-58	rotten granite (Qwg)
		58-83	granite
138	24-14387	0-30	clay and gravel (Qwg)
		30-40	rotten rock (Qwg)
		40-75	granite
139	24-13140	0-40	clay (Qwg)
		40-65	sand and clay (Qwg)
		65-273	granite
140	24-12225	0-32	overburden (Qwg)
		32-50	rotten granite (Qwg)
		50-223	granite
141	24-14683	0-20	clay (Qwg)
		20-70	rotten granite (Qwg)
		70-148	granite

142	24-15015	0-20 20-75 75-123	clay (Qwg) very rotten granite (Qwg) granite
143	24-17661	0-12 12-32 32-344	stony hardpan (Qwg) sandstone (Qwg) granite
144	24-17696	0-22 22-54 54-122	clay hardpan (Qcg over Qwg) sandstone (Qwg) granite
145	24-12396	0-15 15-40 40-320	overburden (Qwg) very soft granite (Qwg) granite
146	24-22922	0-12 12-39 39-250	brown clay (Qwg) white clay (Qwg) granite
147	24-15757	0-13 13-205	hard-packed sand and granite stones (Qwg) granite
148	Hackettstown Theater well	0-30 30-186	hardpan, broken rock (Qf) blue limestone
149	24-16481	0-92 92-105 105-198	hardpan, sand, gravel (Qpt over Qwcb?) sandstone (Qwcb?) granite (should be limestone, log may have been switched with another well by driller)
150	24-15477	0-12 12-55 55-98	overburden (Qwg) soft sandstone granite
151	24-13590	0-10 10-60 60-235	overburden (Qcg) clay (Qwcb) clay and gravel (Qwcb and collapsed Qcg and Qpt)
152	24-16157	0-74 74-198	clay, sand, soft sandstone (Qwg) granite
153	24-12346	0-60 60-88 88-122	overburden, clay, sand (Qcg over Qwg) rotten granite (Qwg) granite
154	24-16579	0-113 113-147	soft sandstone and clay (Qcg over Qwg) granite
155	24-15165	0-11 11-173	stony sand and clay (Qwg) granite
156	24-15166	0-56 56-65	clay, sand, hardpan (Qwg) soft granite (Qwg)
157	24-20584	0-135 135-155	rotten limestone (Qcg over Qwcb) limestone
158	24-12619	0-85 85-118	dirt (Qcg over Qwcb) rotten rock and sand (Qwcb)
159	24-14089	0-34 34-55 55-73	hardpan (Qpt over Qwcb) rotten limestone (Qwcb) limestone
160	N 24-4-695	0-30 30-40	drab-colored clay, sand, and gravel (Qal over Qnm) slightly clayey gray medium-to-coarse sand (Qnm)

		40-50	gravel and sand (Qnm)
		50-105	yellow clay, sand, gravel (Qnm and Qwcb)
161	24-10139	0-10	boulders (Qal)
		10-15	sand gravel (Qnm)
		15-56	boulders (Qnm)
		56-98	clay-gravel (Qnm)
		98-120	water-bearing sand and gravel (Qnm)
162	25-16478	0-25	hardpan (Qwg)
		25-30	soft rock (Qwg)
		30-130	granite
163	24-19228	0-120	clay and boulders (Qnm)
		120-150	limestone (gneiss)

¹Identifiers of the form 24-xxxx or 25-xxxx are well permit numbers issued by the N. J. Department of Environmental Protection, Bureau of Water Allocation. Identifiers of the form “Rxx-xx-xxx” are the N. J. Atlas Sheet coordinates of well records in the Bureau of Water Allocation well files that do not have permit numbers. Identifiers of the form “Nxx-xx-xxx” are N. J. Atlas Sheet coordinates of well logs in the N. J. Geological Survey permanent note collection. Identifiers of the form “Rxx” or “Sxx” are borings drilled in 1996 for Louis A. Berger and Associates, Inc., for a proposed highway, with logs on file at the N. J. Geological Survey. The log of the “Hackettstown Theater well” is from records of the William A. Stothoff Co. collected for a 1963 well compilation by A. N. Quick on file at the N. J. Geological Survey, Bureau of Geology and Topography.

²Depth (in feet below land surface) and driller’s or logger’s description is provided. Notation “NR” indicates depth of contact is not reported. Inferred map units and author’s comments are indicated in parentheses. All descriptions are reproduced as they appear in the original source, except for minor format, punctuation, and spelling changes. Logs identified as “abbreviated” have been condensed for brevity, or have minor details omitted. Many bedrock descriptions have been condensed; these are not identified as abbreviated. Map units are inferred from the known extent of materials at the surface and from known depositional settings, in addition to the drillers’ descriptions. For wells completed in surficial material, the yield (in gallons per minute, gpm) and depth to which the well is cased, if reported, are included after the description.

Table 2.—Selected wells and borings recording thickness of surficial material. All depths are in feet below land surface.

Well Number	Identifier ¹	Depth to base of surficial material ²	Depth to base of saprolite ³	Total depth
1	24-17442	22		305
2	24-19043	8		200
3	24-23542	40		300
4	24-12383	15		98
5	24-14049	12		298
6	24-20237	8		548
7	24-19118	>80		80
8	24-10673	20		147
9	24-18166	32		148
10	24-20672	39		248
11	24-15437	61		98
12	24-14223	10	15	160
13	24-13225	18		98
14	24-18834	9		123
15	24-14565	12		198
16	24-13931	18		248
17	24-10418	6		122
18	24-15632	10		98
19	24-13153	40		197
20	24-10834	5		300
21	24-20940	7		423
22	24-16681	23		98
23	24-16680	16		123
24	24-19209	9		298
25	24-14570	5		399
26	24-18662	17		200
27	24-20830	8		198
28	24-13139	6		50
29	24-13141	20		95
30	24-22527	28		268
31	24-18917	5		298
32	24-20871	29		225
33	24-17129	50		130
34	24-19437	114		135
35	24-15633	20		123
36	14-14976	6		573
37	24-15200	6		440
38	24-14405	8		448
39	24-14230	6		173
40	24-12068	101		223
41	24-18190	0		150
42	24-15440	20		245
43	24-21954	>75		75
44	24-17057	90		300
45	24-5786	23		127
46	24-9129	25		145
47	24-17817	45		123
48	24-19791	18		300
49	24-21939	30		400
50	24-19654	20		200
51	24-21973	20		100
52	24-20862	20		200
53	24-14658	12		190
54	24-21972	15		125
55	24-24523	15		150
56	24-12570	35		148

57	24-22954	18		305
58	24-22951	22		155
59	24-24284	22		180
60	24-24286	18		380
61	24-17054	8		148
62	24-21352	55		125
63	24-21353	40		125
64	24-21354	62		100
65	24-20866	7		298
66	24-15758	6		198
67	24-22136	29		75
68	24-19280	60		175
69	24-22137	20		100
70	24-10110	89		236
71	24-11869	23		98
72	24-24156	26		198
73	24-16076	12		98
74	24-13742	106		107
75	24-23802	53		175
76	24-14310	40		123
77	24-22483	6		198
78	24-14167	8		248
79	24-14166	6		123
80	24-23811	15		298
81	24-18538	8		100
82	24-9367	10		250
83	24-13184	12		198
84	24-22538	27		148
85	24-12207	13		123
86	24-19152	17		123
87	24-19144	42		198
88	24-20608	5		525
89	24-11848	10		98
90	24-12358	16		98
91	24-20188	17		100
92	24-10710	6		172
93	24-20187	16		285
94	24-12061	15		110
95	24-19157	9		173
96	24-18895	19		148
97	24-19145	32		148
98	24-19146	21		198
99	24-19148	31		198
100	24-19153	31		273
101	24-19154	11		148
102	24-19156	10		173
103	24-18896	20		123
104	24-18897	13		148
105	24-19150	39		198
106	24-19149	14		98
107	24-19151	14		123
108	24-19158	15		123
109	24-18548	22		123
110	24-16905	15		325
111	24-17365	15		300
112	24-17703	12		198
113	24-15867	17		123
114	24-15270	20		123
115	24-12530	15		98
116	24-7825	10		235
117	24-20849	40		150
118	24-15634	26		173
119	24-15175	15		148

120	24-15268	12		148
121	24-14450	28		122
122	24-20716	13		223
123	24-18457	15		90
124	24-9672	45	60	277
125	24-16553	12		173
126	24-15532	18		130
127	24-21172	5		98
128	24-21171	6		147
129	24-22482	5		148
130	24-22383	20		100
131	24-24245	6		65
132	24-14581	8		173
133	24-15786	21		65
134	24-14870	23		173
135	24-19210	5		210
136	24-19787	18		298
137	24-12034	12		123
138	24-5-737	66		NR
139	24-21504	11		225
140	24-14069	5	25	348
141	24-14361	44	65	245
142	24-22251	15		200
143	24-14217	26		198
144	24-9060	6		189
145	24-13581	30		420
146	24-21335	18		298
147	24-19788	18		205
148	24-22921	7		300
149	24-18352	6		200
150	24-7430	17		123
151	24-16162	12		98
152	24-13124	3		140
153	24-14627	>120		120
154	24-17733	60		150
155	24-23928	14	149	248
156	24-17255	20		225
157	24-13879	17		173
158	24-13725	6	20	248
159	24-20231	7		373
160	24-20583	177		305
161	24-20024	38	46	227
162	24-13474	13		198
163	24-17549	30	45	100
164	24-19293	18		248
165	24-16908	18		375
166	24-20416	14		198
167	24-20417	28		498
168	24-20418	12		448
169	24-18829	18		605
170	24-15719	24		148
171	24-18600	11		298
172	24-19206	20		198
173	24-19207	16		149
174	24-19740	8		499
175	24-20230	7		248
176	24-12690	3		145
177	24-17352	6		150
178	24-17471	8		123
179	24-19295	16		648
180	24-14866	40		150
181	24-17485	12		548
182	24-20741	6		548

183	24-16028	5		123
184	24-13822	20		200
185	24-15491	4		173
186	24-21208	50		95
187	24-2284	45		82
188	24-10545	19		147
189	24-18706	50		150
190	24-21325	39		175
191	24-12005	28		151
192	24-12057	14		102
193	24-12161	11		177
194	24-21721	10	28	473
195	24-21715	11		398
196	24-21722	19	29	573
197	24-21720	28		173
198	24-21723	30		598
199	24-21707	8	19	295
200	24-21708	25		298
201	24-21226	43		323
202	24-21718	6		248
203	24-21231	15		248
204	24-20736	10		248
205	24-20735	12		248
206	24-20729	11		248
207	24-20728	12		223
208	24-20733	6		198
209	24-21065	6		423
210	24-21227	23		198
211	24-21700	9	31	598
212	24-21066	8		273
213	24-20738	12	21	323
214	24-15785	8		298
215	24-15807	25		123
216	24-16773	17		148
217	24-15922	11		298
218	24-15983	36	56	173
219	24-15984	22	55	195
220	24-15985	14		298
221	24-16942	12		98
222	24-15360	18		198
223	24-15361	20		310
224	24-15362	11		398
225	24-15366	31		273
226	24-15369	14		98
227	24-15773	21		410
228	24-16626	12		198
229	24-16627	23		223
230	24-14066	64	>72	72
231	24-14168	14		198
232	24-14384	65		97
233	24-17018	15		555
234	24-18833	42		98
235	24-16935	25		300
236	24-21772	22		355
237	24-1680	35		140
238	24-16934	21		223
239	24-18247	12		505
240	24-17361	2		425
241	24-13580	8		198
242	24-18828	8		585
243	24-13544	20		223
244	24-17281	8		200
245	24-12922	18		298

246	24-14711	5		445
247	24-21190	80		275
248	24-18658	10		520
249	24-16455	38		300
250	24-12360	47		98
251	24-12860	8		98
252	24-13362	48		273
253	24-19664	22		300
254	24-12162	9		202
255	24-17160	35		570
256	24-16457	15		428
257	24-13183	8		548
258	24-13973	8		350
259	24-17256	6		450
260	24-17963	12		123
261	24-17659	7		198
262	24-18596	9		198
263	24-17734	8		700
264	24-17495	15		600
265	24-17964	7		173
266	24-17962	35		123
267	24-16307	7		448
268	24-17965	37		123
269	24-19083	14		505
270	24-15260	11		148
271	24-16790	14		198
272	24-17966	45		123
273	24-18598	11		348
274	24-19837	27		123
275	24-20017	18		325
276	24-10558	10		100
277	24-16826	9		265
278	24-16963	10		323
279	24-17332	11		223
280	24-17324	18		573
281	24-17325	6		148
282	24-21970	23		248
283	24-21969	19		248
284	24-19160	14		148
285	24-19838	7		148
286	24-15648	8		345
287	24-19635	20		205
288	24-18528	35		205
289	24-16288	18		198
290	24-17499	8		323
291	24-12479	20		102
292	24-12481	30		102
293	24-12826	12		198
294	24-17657	30		198
295	24-17658	18		98
296	24-18006	9		173
297	24-18008	8		298
298	24-22429	22		480
299	24-11160	20		135
300	24-17845	25		250
301	24-14517	9		198
302	24-15346	5		373
303	24-20232	14		173
304	24-23094	75		175
305	24-19633	17		305
306	24-22087	22		148
307	24-11630	18		140
308	24-12291	5		350

309	24-15836	8		147
310	24-22616	30		300
311	24-10199	20		90
312	24-12152	6		72
313	24-13426	30		275
314	24-17098	25		70
315	24-15173	43		110
316	24-14759	18		218
317	24-10505	>110		110
318	24-12620	28		123
319	24-15581	<65		172
320	24-15868	9		198
321	24-15869	29		140
322	24-15870	16		198
323	24-15966	32		173
324	24-18305	20		148
325	24-16089	35		173
326	24-16259	35		193
327	24-16260	38		198
328	24-16310	38		173
329	24-16608	32		148
330	24-16752	48		148
331	24-16754	35		198
332	24-20337	74		173
333	24-24513	62		198
334	24-16775	38		173
335	24-17258	45		200
336	24-14210	>122		122
337	24-10629	14		234
338	24-15651	5		323
339	24-16093	6		298
340	24-16099	16		98
341	24-16101	21		198
342	24-16104	10	66	98
343	24-16107	10		298
344	24-16109	23	57	298
345	24-19082	30		400
346	24-16037	12		123
347	24-16255	7		385
348	24-16257	11		148
349	24-16156	11		148
350	24-16791	28		123
351	24-16509	8		450
352	24-22430	12		330
353	24-21595	16		248
354	24-22411	29	40	173
355	24-20785	18		370
356	24-9181	24		173
357	24-10466	119		198
358	24-12938	22		120
359	24-12939	22		148
360	24-14476	9		450
361	24-13127	27		223
362	24-22084	21		373
363	24-22085	48		152
364	24-22086	36		369
365	24-20011	40		200
366	24-20013	40		200
367	24-6342	21		146
368	24-13699	8		97
369	24-9743	3		223
370	24-11962	14		148
371	24-12397	20		298

372	24-15138	6	22	247
373	24-15145	20		73
374	24-17364	40		250
375	25-20505	63	80	148
376	24-9720	70		198
377	24-14562	10		100
378	24-23031	34	48	198
379	24-13403	7		172
380	24-14549	45		320
381	24-14698	11		148
382	24-17571	9		223
383	24-15226	17		222
384	24-9987	15		125
385	24-5498	10		300
386	24-10206	60		125
387	24-10435	6		223
388	24-21523	19		84
389	24-13932	30		400
390	24-15311	10		123
391	24-15312	13		148

¹Identifiers of the form 24-xxxxx and 25-xxxxx are well permit numbers issued by the N. J. Department of Environmental Protection. Identifiers of the form 24-x-xxx are N. J. Atlas Sheet coordinates of well logs in the N. J. Geological Survey permanent note collection.

²Described by drillers as “overburden”, “hardpan”, “clay and gravel”, “clay”, “sand and clay”, “sandy hardpan”, and “stony hardpan”.

³Described by drillers as “sandstone”, “rotten rock”, “rotten granite”, and “soft sandstone”.