DEPARTMENT OF ENVIRONMENTAL PROTECTION
WATER RESOURCES MANAGEMENT
NEW JERSEY GEOLOGICAL AND WATER SURVEY

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U.S. GEOLOGICAL SURVEY
NATIONAL COOPERATIVE GEOLOGIC MAPPING PROGRAM

SURFICIAL GEOLOGIC MAP OF THE HIGH BRIDGE QUADRANGLE
HUNTERDON AND WARREN COUNTIES, NEW JERSEY
OPEN-FILE MAP SERIES OFM 145
pamphlet containing table 1 accompanies map

INTRODUCTION

Surficial geologic data are useful for land-use planning, management of groundwater resources, contaminant remediation, and delineation of geologic resources and hazards. Surficial materials in the High Bridge quadrangle are highly variable, cover most of the bedrock surfaces, and are found in many types of landscape settings. They include: 1) weathered bedrock derived from carbonate rock, shale, sandstone, gneiss, granite, and conglomerate, that formed throughout the Quaternary and possibly during the Neogene; 2) glacial deposits, including till and glaciofluvial sand and gravel of early Pleistocene age, and glaciofluvial sand and gravel of late Pleistocene age; 3) colluvium mostly of middle and late Pleistocene age; 4) fluvial terrace deposits of middle and late Pleistocene age; and 5) alluvium and swamp deposits of late Pleistocene and Holocene age. Surficial deposits are depicted on the map based on their physical characteristics, readily distinguishable boundaries, and location on the landscape. They are further delineated by genetic and morphologic criteria. Thickness is as much as 30 feet for glacial sediment, 50 feet for colluvium, 150 feet for weathered rock, and less than 20 feet for alluvium and fluvial terrace deposits. Bedrock geology is provided by Monteverde and others (2015).

Over the last 2.5 million years, the landscape of the map area has been shaped by multiple periods of glacial and periglacial erosion and weathering related to the growth and decay of the Laurentide ice sheet in North America. Braun (1989) estimated that there may have been as many as ten glaciations of a magnitude sufficient to introduce a periglacial climate to this region. During these periods, cold temperatures enhanced the break-up and fragmentation of rock largely by frost shattering, and mass-wasting of slope materials was brought about by permafrost and a change to a shallow-rooted vegetative cover. Colluvium, a major weathering product of periglacial climate, was deposited where weathered rock material was eroded off uplands onto the lower parts of hillslopes and onto the floors of narrow valleys and heads of drainage basins. This material was later partly eroded by streams during interglacial periods. Remnants of deposits of an early Pleistocene glaciation are found throughout the quadrangle in areas where they have been protected from mass wasting and fluvial erosion. Although the effects of glaciation in modifying the landscape are pronounced, these modifications have been largely erased in the map area by subsequent periods of periglacial erosion and deposition. Since the map area was last glaciated, streams have cut as much as 100 feet into the older landscape. This incision of the land was probably caused by the drop in sea level due to growth of ice sheets in the northern hemisphere during the early and middle Pleistocene. Flexural uplift related to Pleistocene erosion on land and sediment loading offshore may have also contributed to stream downcutting.

PHYSIOGRAPHY AND BEDROCK GEOLOGY

The High Bridge quadrangle lies mostly in the New Jersey Highlands physiographic province except for its southern part, which lies in the Piedmont physiographic province (fig. 1). The map area is a mix of rural and suburban settings, marked by patchwork woodlands, cultivated land, and larger forested areas that cover parts of the Highlands. The highest point is 1,034 feet above sea level near Woodglen, and the lowest point, approximately 178 feet above sea level, lies on the South Branch of the Raritan River (hereafter, just "South Branch") in Clinton. Major landform elements define a southwest-northeast topographic grain. Musconetcong Mountain is part of a broad upland that covers the center part of the quadrangle and Pohatcong Mountain is a narrow ridge in the northwestern corner of the quadrangle. The Musconetcong Valley separates these two uplands. South of the Highlands, the Piedmont is a rolling lowland that contains Spruce Run Reservoir.

In the Highlands, Musconetcong Mountain and Pohatcong Mountain rise between 300 and 700 feet above the valleys and are chiefly underlain by gneiss and granite of Middle Proterozoic age (fig. 2). Topography here is rugged and deeply dissected. Ridgelines generally follow layering in the gneiss and granite bedrock, although discordant trends are common. Rock outcrops are limited to a few narrow ridgetops, steep slopes, and streambanks. Elsewhere, the rock surface is covered by thick saprolite and colluvium (fig. 3). Musconetcong Valley is underlain by carbonate rocks of Cambrian and Ordovician age with some minor shale. Rock outcrops here are limited to steep riverbanks and small outcrops on flatter surfaces that are the tops of pinnacles and ridges protruding through the otherwise continuous mantle of silty clay weathering residuum (fig. 3).

The Piedmont area in the quadrangle is underlain by shale, sandstone, and carbonate rock of Cambrian and Ordovician age, and conglomerate, sandstone, and siltstone of Triassic age. Outcrops are few and typically limited to quarries, excavations, and road and railroad cuts. Relief in the Piedmont area is less than 200 feet.

The quadrangle lies mostly in the Raritan River drainage basin. The Piedmont and most of Musconetcong Mountain are in the Raritan basin and are drained by the South Branch and its tributaries Spruce Run and Mulhockaway Creek. The northwestern third of the quadrangle is in the Delaware River basin. The northwestern slope of Musconetcong Mountain and Musconetcong Valley are in the Delaware basin and are drained by the Musconetcong River, which flows southwestward through a broad valley that follows the strike of the underlying carbonate rocks.

PREVIOUS INVESTIGATIONS

The surficial geology of the High Bridge quadrangle and surrounding area was first discussed by Cook (1880). He noted the distribution of quartzite boulders and scattered patches of thin gravelly drift in Musconetcong Valley. Most of this material was thought to be "modified glacial drift", possibly deposited by meltwater and reworked later by weather- [illegible]

[illegible] Pennsylvania consisted of the late Wisconsinan Olean drift, and that the older glacial deposits were represented by the Warrensville drift of early Wisconsinan age and the Muncy drift of Illinoian age. Cotter and others (1986) indicated the youngest glacial deposits in New Jersey and eastern Pennsylvania are of late Wisconsinan age, and are correlative with the Olean drift in Pennsylvania, and Ridge and others (1990) proposed that older weathered drift in the Delaware valley is of Illinoian age and not early Wisconsinan. Stone and others (2002) and Stanford and others (2021) also indicated that the youngest glacial deposits in New Jersey are of late Wisconsinan age, and that the two older drifts are of Illinoian and pre-Illinoian age. Ridge (2004) and Stanford and others (2021) showed that pre-Illinoian fluvial and lacustrine deposits in New Jersey have reversed magnetic polarity at two locations, and Gardner and others (1994) and Braun (2004) showed that pre-Illinoian lacustrine deposits in central and eastern Pennsylvania are also magnetically reversed, indicating that the pre-Illinoian glaciation is of early Pleistocene age (older than 780 ka, ka = thousand years ago).

PREGLACIAL DRAINAGE AND GEOMORPHOLOGY

The primary drainage routes in the quadrangle and surrounding area were probably established well before the Pleistocene. Transverse gaps in the Highlands, including the Glen Gardner gap in the High Bridge quadrangle, are possibly relicts of an earlier ancestral Raritan River drainage system that flowed in a southeasterly direction in the middle Miocene at elevations 300 to 400 feet above modern valleys (Stanford, 1997; Witte, 1997). The Glen Gardner gap is aligned with the Delaware Water Gap in Kittatinny Mountain and with gaps in Pohatcong Mountain near Oxford, New Jersey, defining the route of this southeasterly flowing river. This route grades topographically to coastal and fluvial deposits of middle and late Miocene age in the lower Raritan basin in the New Jersey Coastal Plain (Stanford, 1997). Incision by streams in response to sustained sea-level drops in the middle and late Miocene allowed the Delaware River, through headward erosion and stream capture, to enlarge its drainage area by extending its tributaries like the Musconetcong River upvalley along the strike of less resistant rock. In response to a second sustained lowering of sea level during the early and middle Pleistocene, the drainage incised again. Along the Delaware and Raritan rivers and their larger tributaries this incision has resulted in the formation of a lower, narrower, inner valley, including Musconetcong Valley and the valleys of the South Branch and Spruce Run in the Piedmont area of the quadrangle. Pleistocene incision has also deepened valleys in the Highlands. For example, Glen Gardner gap consists of an upper, broader gap above an elevation of about 600 feet and a narrower, steeper inner valley below 600 feet through which Spruce Run flows. The upper gap was probably cut by the former southeasterly flowing ancestral river before it was captured by Delaware tributaries in the late Miocene. The inner valley was cut by Spruce Run during Pleistocene downcutting. The location of Illinoian glaciofluvial deposits in the Delaware valley (Ridge and others, 1990; Witte and Stanford, 1995) suggests that the river valleys in the study area had been lowered or nearly lowered to their present levels by the time of the Illinoian glaciation.

The physiography of the High Bridge quadrangle reflects a composite landscape that is chiefly the result of these periods of river downcutting in the late Miocene and early Pleistocene, with additional modification in the Pleistocene by periglacial and glacial erosion and deposition during glacial periods and fluvial erosion during interglacial periods. The weathering of bedrock to form saprolite and residuum during temperate and subtropical climates in the Neogene before the advent of glacial climates and during temperate interglacial periods in the Pleistocene also provided additional sediment.

The landforms of the map area can be grouped into geomorphic terrains based on their differences in elevation and topography (fig. 1). It is convenient to do this in order to discuss the history of the landscape in reference to erosional processes and bedrock type. This methodology was applied by Germanowski (1999) to the Lehigh Valley and surrounding area in eastern Pennsylvania, which is similar to the landscape of the High Bridge quadrangle.

Uplands consist of two terrains. Upland terrain 1 is marked by broad, relatively undissected areas of low relief (< 60 feet), underlain by gneiss and granite, with surficial materials that include weathered rock (thin to thick saprolite, scattered rubbly regolith), thin colluvium, and thin patches of older drift including scattered erratics. Upland terrain 2 is marked by narrow ridges and deep narrow valleys in areas of moderate to high relief (100 to 400 feet) underlain by gneiss and granite. Surficial materials include thin to thick colluvium and thin weathered rock (saprolite and rubbly regolith).

Valleys consist of three terrains. Valley terrain 1 includes modern valley floors, which are within deep (up to 100 feet), narrow, rock walled inner valleys underlain chiefly by carbonate rock. Surficial materials in this terrain include alluvium and colluvium. Valley terrain 2 is the old valley floor, which are broad areas of low relief (typically < 40 feet) and gentle slopes underlain by carbonate rock, shale, and sandstone. Surficial materials include thin (< 30 feet thick) pre-Illinoian till, till stone lag, weathered carbonate rock, thin weathered shale and sandstone, and thin colluvium. In places carbonate bedrock is deeply weathered to depths exceeding 150 feet. Valley terrain 3 includes areas of intermediate elevation consisting of rolling hills and narrow ridges 100 to 200 feet higher than valley terrain 2. It is underlain by shale, sandstone, and conglomerate. Surficial materials include thin, patchy pre-Illinoian till, shale-chip residuum, shale-chip colluvium, weathered shale, sandstone, and conglomerate, and conglomerate colluvium.

Comparison between geomorphic terrains and bedrock clearly shows that rocks more resistant to weathering form areas of higher elevation. Gneiss and granite underlie the mountains. Shale, sandstone, and conglomerate underlie areas of intermediate elevation. Carbonate rock underlies the lowest areas.

The broad upland areas of low relief (upland terrain 1), which are represented in the High Bridge quadrangle by the areas around Woodglen, Bunnvale, and Charlestown, are erosion surfaces that are part of a regional upland surface termed the "Schooley peneplain" by Davis and Wood (1889) and Johnson (1931) and "Kittatinny base level" by Salisbury (1898). They considered it to be the product of fluvial erosion during an extended period of stable base level that was then partly preserved on resistant rock as rivers incised when base level lowered. This view later fell into disfavor, in part because it was thought to require long periods of tectonic quiescence and because Davis and Woods' (1889) proposed Cretaceous age for the peneplain was inconsistent with observed Cenozoic offshore sediment volumes (Mathews, 1975; Poag and Sevon, 1989). Gardner (1989), Poag and Sevon (1989), Pazzaglia and Gardner (2000), Rowley and others (2013), and Liu (2015) showed that the U. S. middle Atlantic region has undergone uplift and subsidence in the Cenozoic caused by mantle dynamics and lithospheric flexure due to offshore sediment loading and inland denudation. In the New Jersey area, these tectonic effects are of lesser magnitude (<100 feet since the Oligocene) than sea-level change, because sea level was as much as 500 feet lower during Pleistocene glacial periods than in the middle Miocene (Miller and others, 2020). Permanent sea-level drops in the middle to late Miocene and in the early Pleistocene correlate well with the two observed periods of river incision and valley deepening in northern and central New Jersey (Stanford and others, 2001). Two periods of long-term sea-level stability or slight rise, one from the Oligocene to the middle Miocene and the other in the Pliocene, prevented downcutting and kept base level stable for the long periods required to create planation surfaces like upland terrain 1 (which corresponds to the Oligocene-middle Miocene sea-level high) and valley terrain 2 (which corresponds to the Pliocene sea-level high) (Stanford and others, 2001).

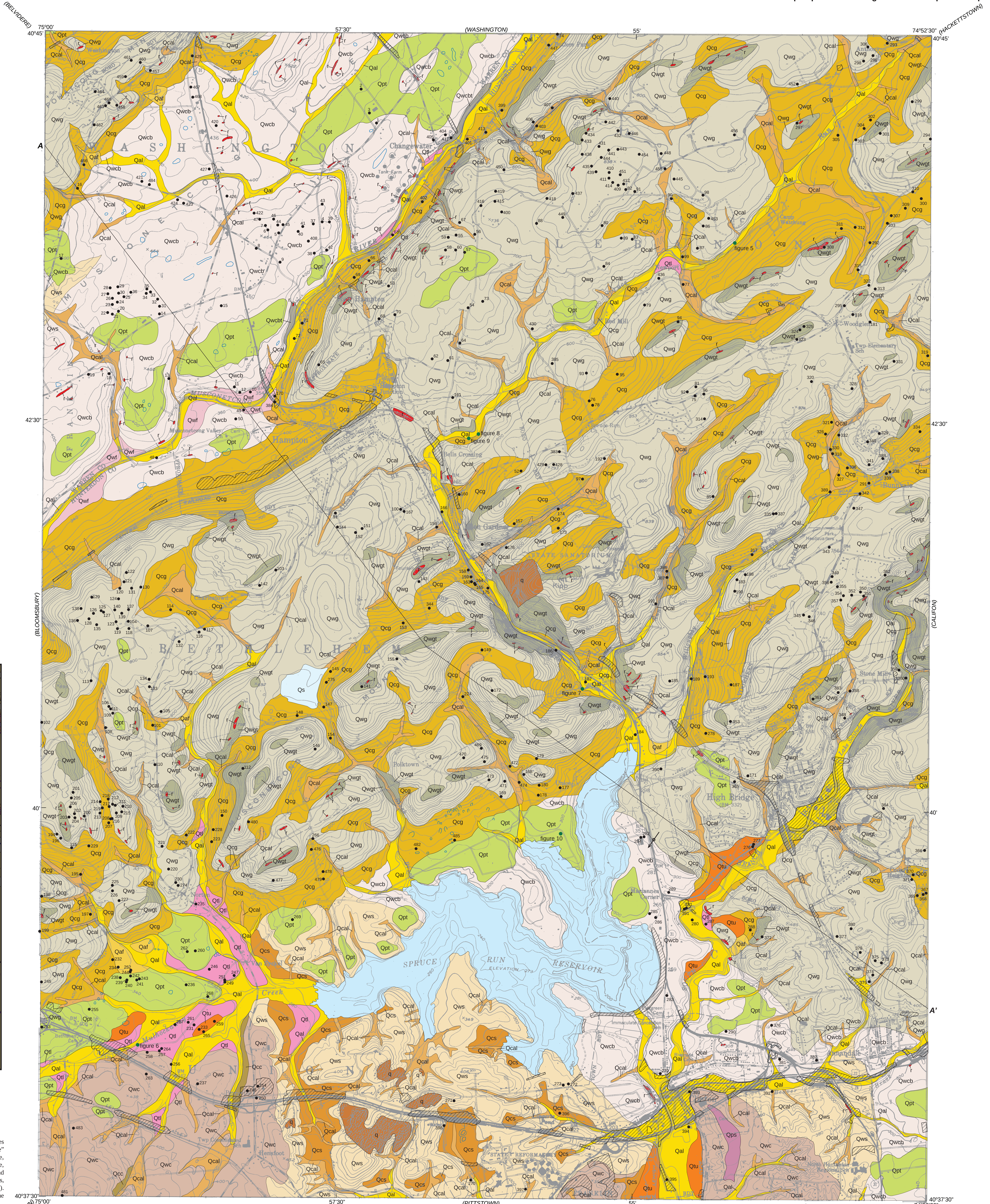
QUATERNARY GEOLOGY

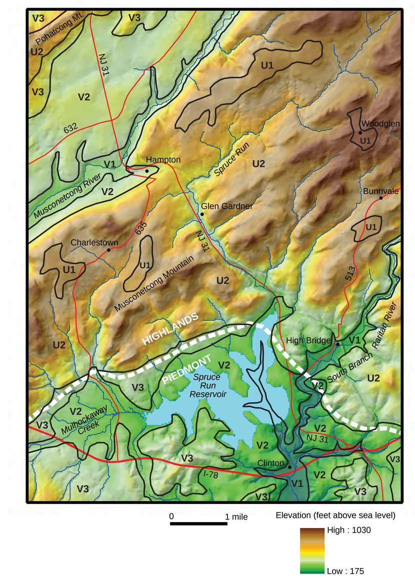
The position and difference in weathering characteristics of glacial drift in New Jersey indicate that continental ice sheets reached New Jersey at least three times (Salisbury, 1902; Stone and others, 2002). The oldest glaciation is of early Pleistocene age and covered the entire High Bridge quadrangle (fig. 4). This glaciation is represented by the Port Murray Formation (Stone and others, 2002), which includes till (unit Qpt) and meltwater deposits (Qps). It is highly and deeply weathered, and it lies on weathered bedrock. Constructional topography is not preserved, and on uplands the deposits are present only on flat to gently sloping surfaces (upland terrain 1) that are not subject to mass wasting and fluvial erosion. In lowlands they are present only on the broad old valley surfaces (valley terrain 2), as much as 120 feet above modern valley bottoms, not within the inner valleys (valley terrain 1). The age of this glaciation is uncertain. Samples collected from a silty-clay bed in a deeply weathered fluvial deposit in the Pohatcong Creek valley near Kennedys, about 8 miles southwest of Hampton, and samples of a lacustrine silt and clay at Bernardsville, about 18 miles east of High Bridge, are magnetically reversed (Ridge, 2004; Stanford and others, 2021), placing the age of the deposits older than 780 ka. If the Kennedys deposit is not outwash, but rather older alluvium laid down by Pohatcong Creek or the Delaware River, its position within the belt of older glacial drift shows that this older drift is the same age or older than the suspected outwash. An earliest Pleistocene age (between 2-2.5 Ma, Ma = million years ago) for this glaciation is suggested by pollen in lake clays of probable pre-Illinoian age in Budd Lake, about 16 miles northeast of High Bridge, which include taxa that are generally considered to be of pre-Pleistocene age (Harmon, 1968), and by the similar weathering properties and topographic position of the Port Murray deposits and the Pensauken Formation, which is a preglacial fluvial deposit of Pliocene age in central New Jersey (fig. 4) (Stanford and others, 2021).

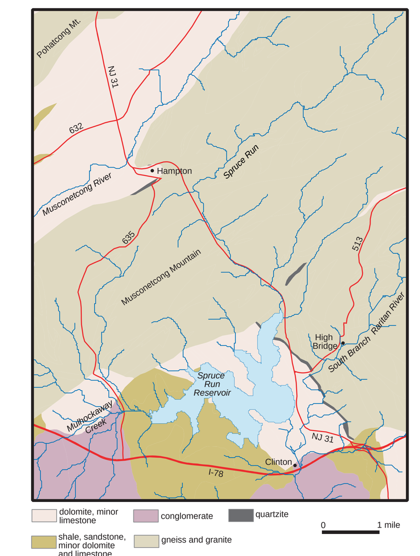
The distribution of Port Murray till shows that the overall form of the terrain at the time of this glaciation was similar to that at present, with the exception of the inner valleys (valley terrain 1), which had not yet been cut. The height of the mountains above the old valley floors (valley terrain 2) is largely unchanged. Since the pre-Illinoian glaciation the Raritan and Musconetcong rivers and their tributaries have cut down as much as 120 feet in the older valley floor. The position of Illinoian glaciofluvial deposits in the Delaware valley, and of fluvial terrace deposits of likely Illinoian age in the Raritan valley, suggest that most of the erosion took place well before the Illinoian glaciation. The narrow, rock-walled valleys that the Raritan and Musconetcong rivers flow through support the above hypothesis. Tributary streams have likewise cut down in the uplands, which is reflected by incision and retreat of hillslopes (formation of upland terrain 2). In places streams lie as much as 200 to 300 feet below the ridge tops and upland flats of upland terrain 1.

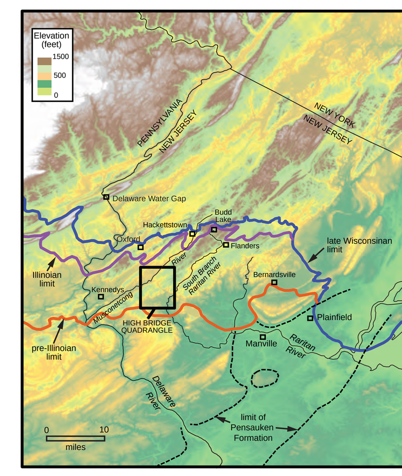
The Illinoian ice sheet stopped just to the north of the quadrangle at about 150 ka and deposited a terminal moraine across the Pohatcong valley near the town of Washington (fig. 4). This glaciation is represented by the Lamington and Flanders Formations (Stone and others, 2002). These deposits are moderately weathered, and the underlying bedrock is not as weathered as it is beneath the Port Murray deposits. The deposits lie in modern valleys and constructional topography is preserved, although it has been subdued by erosion, and the drift in many places has not been eroded from hillslopes. They do not occur in the quadrangle, although the upper terrace deposits (Qtu) in the South Branch valley are fluvial deposits laid down in part during the Illinoian and may include some glacial outwash.

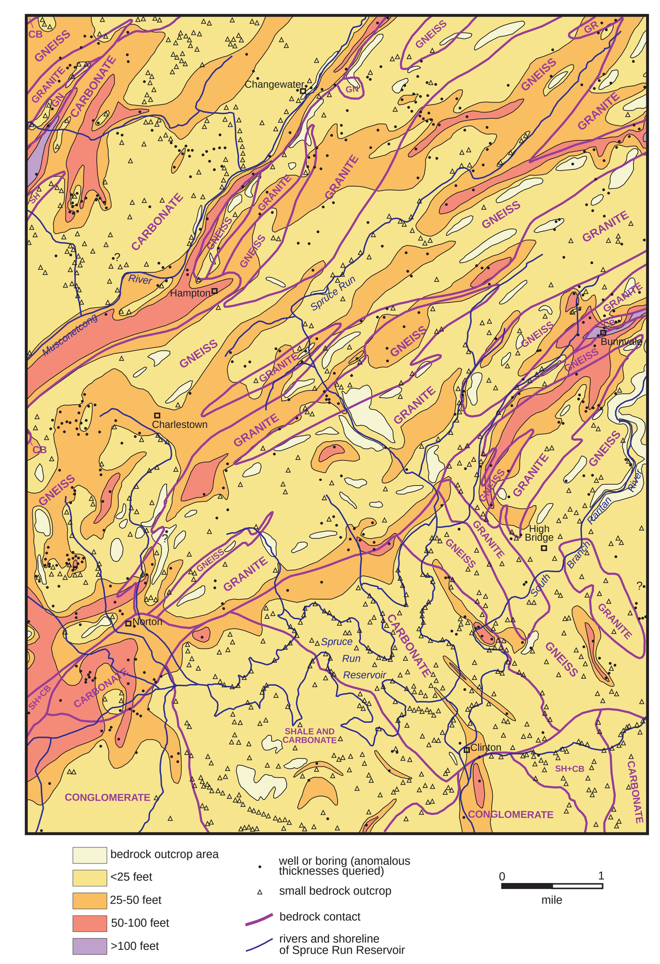
The youngest ice sheet reached its terminus north of the quadrangle during the late Wisconsinan substage of the Wisconsinan stage; approximately 25 to 24 ka (Cotter and others, 1986; Stone and others, 2002; Stanford and others, 2021) (fig. 4). Its farthest advance is [illegible]

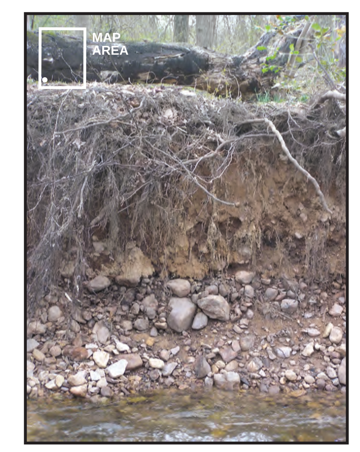


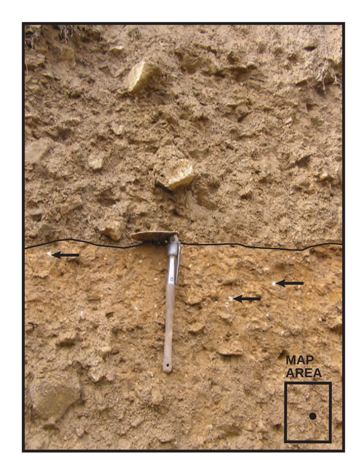


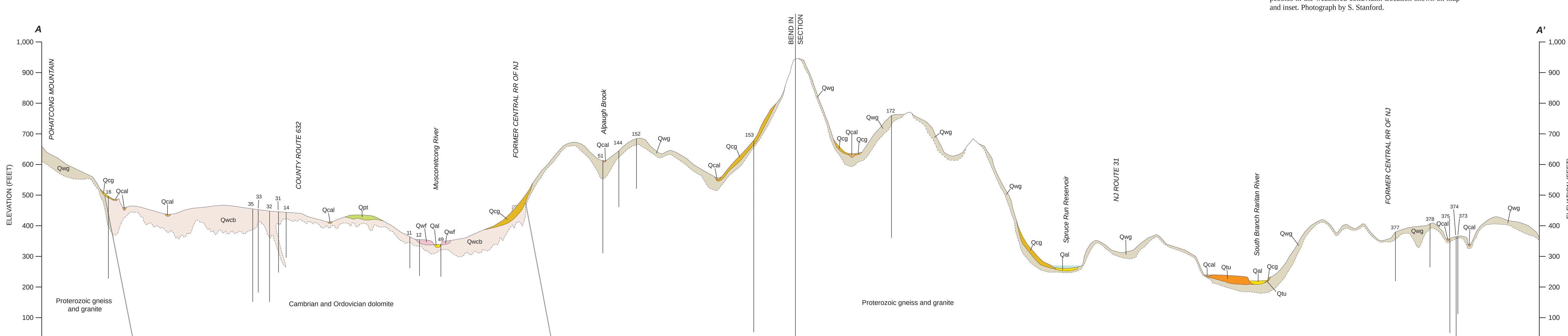


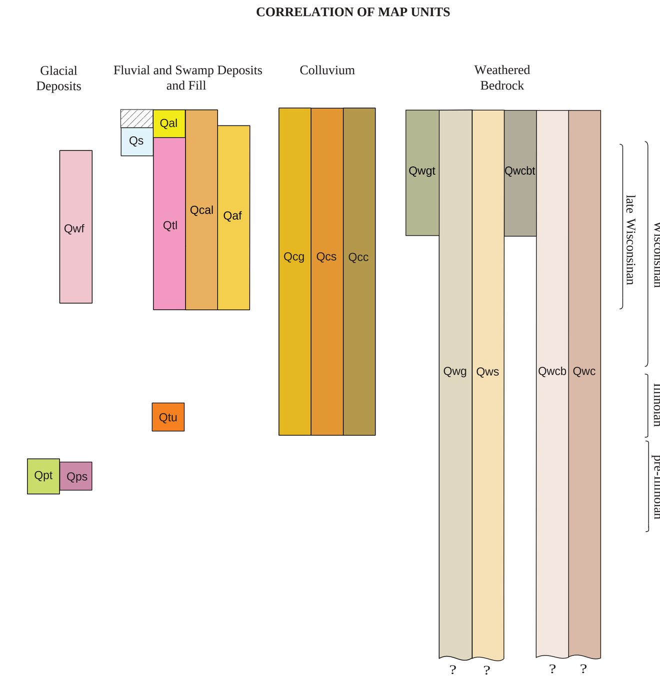


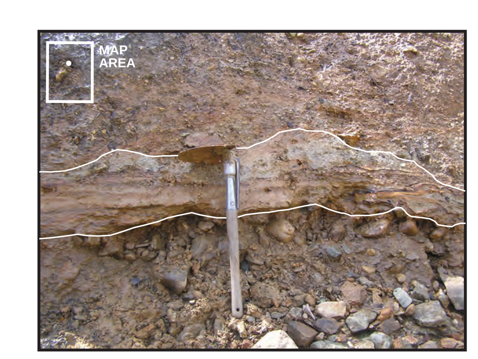












SURFICIAL GEOLOGIC MAP OF THE HIGH BRIDGE QUADRANGLE
HUNTERDON AND WARREN COUNTIES, NEW JERSEY

By

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2022

Surficial Geology of the High Bridge Quadrangle
Hunterdon and Warren Counties, New Jersey

New Jersey Geological and Water Survey
Open-File Map OFM 145
2022

Pamphlet with Table 1 to accompany map

Table 1. Records of selected wells in the High Bridge quadrangle. Well number is the number shown on the geologic map. Permit number is a unique identifier issued by the N. J. Department of Environmental Protection. All are prefixed by "24-" except those of the form “44-xxx”. Well locations are based on tax parcels as reported on well permits and are generally accurate to within 200 feet of actual location. Depths and static water level are in feet below land surface. Discharge is in gallons per minute. Depths, static water level, discharge, and log are as reported on driller's well record. No entry indicates value not reported on well record. Query indicates information not readable on well record. Brackets indicate inferences by authors.

Well Number	Permit Number	Total Depth	Casing Depth	Static Water Level	Discharge	Driller's Log
1	31915	205	81	40	10	0-15 clay 15-205 hard dark gray limestone
2	27620	155	84	40	10	0-30 yellow clay 30-155 gray and blue limestone
3	29216	150	80	40	10	0-25 yellow clay 25-150 hard gray limestone
4	23122	87	83	25	40	0-10 clay 10-40 broken limestone 40-87 limestone
5	26493	295	130	72	10	0-15 clay 15-110 broken limestone 110-295 limestone
6	34698	605	60	80	2	0-35 yellow clay 35-605 hard gray limestone
7	31225	445	124	75	9	0-10 clay 10-92 solid limestone 92-95 broken clay seam 95-380 limestone 380-384 soft fractured limestone 384-445 solid limestone
8	17586	275	50	80	10	0-30 clay 30-275 limestone

Well Number	Permit Number	Total Depth	Casing Depth	Static Water Level	Discharge	Driller's Log
9	18000	225	95	85	20	0-10 clay 10-80 broken limestone 80-225 limestone
10	17459	75	50	20	50	0-30 overburden 30-75 limestone
11	18134	100	54	-	30	0-18 overburden 18-100 limestone
12	24379	115	62	22	30	0-20 sandy clay and gravel 20-42 broken limestone 42-115 limestone
13	21059	125	110	30	60	0-110 clay 110-125 limestone
14	32655	148	81	90	16	0-14 clay 14-25 fractured limestone 25-148 limestone
15	20929	350	60	29	30	0-8 overburden 8-350 limestone
16	18926	263	130	72	8	0-110 clay 110-263 limestone
17	21408	245	191	85	-	0-190 clay and sand 190-245 fractured weathered limestone
18	17674	575	50	5	5	0-7 overburden 7-575 limestone
19	32662	205	50	30	10	0-12 yellow clay 12-205 light and dark limestone with small fractures
20	35128	123	100	48	40	0-39 clay 39-123 limestone
21	32749	123	111	65	30	0-53 orange sandy clay 53-123 blue limestone
22	32750	145	101	51	30	0-45 clay hardpan 45-54 opening 54-64 rotten limestone 64-145 blue limestone
23	35328	398	60	80	15	0-36 orange clay 36-398 blue limestone
24	32753	348	142	75	11	0-12 orange clay 12-35 blue limestone 35-54 rotten limestone with clay 54-77 blue limestone 77-99 rotten limestone with clay 99-104 blue limestone 104-114 rotten limestone with clay 114-348 blue limestone

Well Number	Permit Number	Total Depth	Casing Depth	Static Water Level	Discharge	Driller's Log
25	35327	160	150	65	50	0-58 orange clay hardpan 58-102 rotten limestone and clay 102-160 limestone
26	32754	198	60	85	11	0-17 soft sandy clay 17-198 limestone
27	32755	173	101	65	30	0-7 orange clay 7-58 clay seams, openings and limestone 58-173 blue limestone
28	32756	173	61	67	25	0-29 sandy clay 29-173 blue limestone
29	32757	173	71	65	30	0-8 orange clay 8-173 blue limestone
30	32758	198	61	85	15	0-18 stony orange clay 18-1198 blue limestone
31	32765	198	177	80	30	0-41 clay 41-92 limestone 92-143 mud seams and rotten limestone 143-198 limestone
32	32764	298	115	68	10	0-33 orange clay 33-87 soft limestone 87-298 limestone
33	35333	273	80	75	40	0-38 orange and yellow clay 38-273 blue limestone
34	32742	173	81	70	25	0-19 clay 19-22 rotten limestone 22-46 blue limestone 46-48 opening 48 173 blue limestone
35	32761	298	101	60	8	0-38 clay hardpan 38-69 soft limestone 69-298 limestone
36	35326	148	60	90	30	0-29 orange clay 29-148 blue limestone
37	32391	398	81	32	12	0-23 clay 23-398 limestone
38	31247	155	105	40	10	0-15 yellow clay 15-75 hard limestone 75-80 clay void 80-155 hard blue limestone
39	26794	228	112	74	20	0-2 clay 2-18 broken rock 18-33 hard rock 33-87 broken limestone and clay 87-228 limestone

Well Number	Permit Number	Total Depth	Casing Depth	Static Water Level	Discharge	Driller's Log
40	26713	385	130	85	4	0-25 clay 25-110 broken limestone 110-385 limestone
41	26653	295	110	55	8	0-20 clay 20-90 broken limestone 90-295 limestone
42	25785	148	126	48	40	0-12 clay 12-104 broken limestone 104-148 limestone
43	23279	500	93	70	12	0-10 clay 10-70 broken limestone 70-500 limestone
44	29474	355	60	30	35	0-2 soil 2-15 clay 15-355 limestone
45	29254	480	50	40	7	0-2 topsoil 2-8 clay 8-12 broken up limestone 12-480 limestone
46	28307	300	50	40	10	0-20 yellow clay 20-300 hard gray limestone
47	28273	205	50	40	18	0-2 soil 2-8 clay 8-205 limestone
48	17229	80	70	15	50	0-3 overburden 3-80 gravel
49	30510	105	57	12	10	0-20 sand, gravel mixed with clay 20-105 light gray limestone
50	30439	155	63	20	10	0-40 yellow clay and broken limestone 40-155 hard gray limestone
51	21699	300	87	40	15	0-65 sandy clay 65-300 limestone
52	19898	150	50	30	25	0-30 clay and broken rock 30-150 hard granite
53	37208	252	62	14	70	0-28 clay and sand 28-40 weathered rock 40-252 granite
54	37167	177	50	50	12	0-13 clay with boulders 13-22 fractured rock layers 22-177 granite
55	36275	540	60	140	5	0-30 soil 30-540 limestone

Well Number	Permit Number	Total Depth	Casing Depth	Static Water Level	Discharge	Driller's Log
56	36302	102	59	10	50	0-7 clay and sand 7-35 weathered granite 35-38 granite 38-87 fractured granite 87-102 granite
57	35874	340	79	20	10	0-40 soil 40-340 limestone
58	35873	400	61	30	9	0-25 soil 25-400 limestone, quartz
59	35872	540	60	80	3	0-35 soil and clay 35-540 limestone
60	35471	480	59	100	10	0-31 soil and loose rock 31-480 limestone
61	34912	198	60	40	12	0-18 sandy hardpan 18-110 sandstone 110-198 granite
62	33454	98	51	13	20	0-15 sandy hardpan 15-98 limestone
63	33826	185	51	-	30	0-10 gravel and clay 10-185 limestone
64	35377	250	58	60	12	0-3 topsoil 3-10 clay and sand 10-200 sandstone 200-250 limestone
65	33275	255	63	30	10	0-40 sandy yellow clay mixed with rock fragments 40-255 hard gray granite
66	32435	325	94	65	8	0-65 clay 65-92 clay, gravel and broken rock 92-325 limestone
67	32224	305	50	40	10	0-25 sandy clay 25-305 hard gray granite
68	28504	305	51	20	10	0-25 clay mixed with rock fragments 25-305 hard gray granite
69	24103	380	100	50	3	0-97 clay and ledges 97-100 argillite and dolomite 100-380 dolomite
70	21135	220	60	40	15	0-12 soil and gravel 12-220 granite
71	26043	100	80	30	10	0-60 clay, sand and gravel 60-100 hard gray limestone

Well Number	Permit Number	Total Depth	Casing Depth	Static Water Level	Discharge	Driller's Log
72	31826	70	62	13	70	0-22 sand and gravel 22-70 limestone
73	30257	245	60	22	12	0-10 clay and boulders 10-13 sandy clay 13-15 sandstone 15-245 granite with weathered layers
74	19287	175	100	60	20	0-100 overburden with clay 100-175 limestone
75	19949	275	60	flowing	35	0-16 soil 16-45 weathered gneiss 45-278 gneiss, granite, and amphibolite
76	21985	102	52	4	50	0-26 sandy clay 26-102 granite
77	22589	250	81	30	-	0-50 yellow clay 5-70 very coarse brown sand 70-250 hard gray granite
78	24480	140	52	20	25	0-20 sandy overburden 20-140 granite with some blue rock
79	25726	173	100	35	15	0-67 clay 67-141 sandstone 141-173 granite and sandstone
80	24500	460	53	8	-	0-50 yellow clay 50-70 very coarse brown sand 70-460 hard gray granite
81	26942	205	51	30	10	0-28 clay with broken granite 228-205 hard gray granite
82	29378	255	63	20	5	0-35 clay mixed with broken rock and sand 35-225 hard gray granite
83	30038	200	50	20	20	0-20 overburden 20-200 granite
84	30255	500	62	15	4	0-6 clay 6-30 weathered granite 30-500 granite
85	30273	300	60	42	10	0-2 soil 2-21 clay 21-26 weathered rock 26-300 granite
86	30406	200	51	28	30	0-2 soil 2-6 clay 6-28 weathered rock 28-200 granite

Well Number	Permit Number	Total Depth	Casing Depth	Static Water Level	Discharge	Driller's Log
87	30407	405	60	32	9	0-2 soil 2-7 clay 7-28 weathered rock 28-405 granite
88	30994	250	52	65	40	0-10 soil and boulders 10-27 broken rock 27-250 granite
89	31828	205	50	50	10	0-15 clay mixed with broken rock 15-205 hard gray granite
90	32250	730	50	20	5	0-15 brown clay 15-730 hard gray granite
91	32054	200	80	25	20	0-14 soil and boulders 14-55 weathered granite 55-200 granite
92	32338	305	50	30	7	0-20 yellow clay 20-305 hard gray granite
93	34730	375	61	30	4	0-7 clay 7-33 weathered rock 33-375 granite
94	35185	125	50	55	50	0-19 sand, clay and broken rock 19-125 granite
95	35587	205	70	10	40	0-45 sandy clay mixed with broken rock fragments 45-205 hard gray granite
96	33758	160	76	35	30	0-10 broken rock and clay 10-54 clay 54-160 granite
97	33184	170	60	25	8	0-8 clay 8-18 sandy clay 18-37 soft sandstone 37-170 granite
98	35807	400	70	20	5	0-47 soil and loose rock 47-210 sandstone 210-400 limestone
99	36765	215	70	15	15	0-20 clay and sandy soil 20-50 weathered granite 50-215 granite
100	14803	200	50	30	15	0-10 overburden 10-200 granite
101	18536	300	74	50	5	0-55 sand and gravel 55-300 limestone
102	18776	150	50	15	40	0-80 limestone 80-150 granite
103	18811	100	54	30	40	0-30 overburden (sand and gravel) 30-100 limestone

Well Number	Permit Number	Total Depth	Casing Depth	Static Water Level	Discharge	Driller's Log
104	21335	75	51	12	35	0-12 overburden 12-21 decayed sandstone 21-75 salt and pepper granite
105	21546	280	70	-	12	0-68 soft granite 68-280 granite
106	24229	700	61	50	6	0-30 overburden 30-700 granite
107	24800	420	175	flowing	20	0-50 clay and mud 50-60 broken granite 60-420 gray granite
108	25144	250	53	30	5	0-12 clay 12-250 hard gray granite
109	26163	280	50	30	12	0-20 sandy clay 12-35 weathered granite 35-280 hard granite
110	26590	355	57	30	7	0-25 dirt and rock 25-355 granite
111	27587	380	50	40	25	0-9 overburden 9-380 granite
112	27969	700	63	20	5	0-30 soft rock 30-700 hard gray granite
113	27990	305	50	40	7	0-26 soft granite 26-306 hard gray granite
114	31766	205	68	15	10	0-45 clay mixed with sand 45-205 hard gray granite
115	32393	150	53	30	20	0-18 overburden 18-250 limestone
116	33831	405	50	35	2	0-10 yellow clay 10-405 hard gray granite
117	33832	530	50	200	7	0-30 yellow clay 30-530 hard gray granite
118	34884	405	50	23	7	0-25 clay 25-405 granite
119	34885	280	50	20	15	0-3 clay 3-25 weathered granite 25-280 hard granite
120	35039	230	50	20	50	0-10 clay 10-30 weathered granite 30-230 granite
121	35040	230	50	25	40	0-23 clay, weathered granite 23-230 hard granite
122	35041	305	50	30	12	0-28 weathered granite 28-305 granite

Well Number	Permit Number	Total Depth	Casing Depth	Static Water Level	Discharge	Driller's Log
123	35076	280	50	25	12	0-5 fill 5-10 clay 10-30 weathered granite 30-280 hard granite
124	35077	490	50	30	75	0-25 clay 25-45 weathered granite 45-490 hard granite
125	35078	305	50	25	8	0-8 clay 8-25 weathered granite 25-305 hard granite
126	35080	280	50	25	10	0-30 clay, weathered granite 30-280 hard granite
127	35079	255	52	25	10	0-35 weathered granite 35-255 granite
128	35081	305	50	25	15	0-35 weathered granite35-305 hard granite
129	35084	255	20	20	12	0-30 clay, weathered granite 30-255 hard granite
130	35085	305	50	30	25	0-30 weathered granite 30-305 granite
131	35086	255	53	25	40	0-15 weathered granite 15-255 granite
132	35149	600	50	10	3	0-17 overburden 17-600 granite
133	35228	480	60	30	30	0-38 sandy clay mixed with rock fragments 38-480 hard gray granite
134	35229	505	60	40	6	0-40 sandy clay mixed with rock fragments 40-505 hard gray granite
135	36047	248	50	40	10	0-7 hardpan 7-27 sandstone 27-248 granite
136	36087	305	50	25	-	0-14 clay and sand 14-305 hard gray granite
137	36088	305	52	25	30	0-17 weathered granite 17-305 hard granite
138	36089	280	50	25	50	0-18 clay and sand 18-280 hard gray granite
139	36090	305	50	25	50	0-16 weathered granite 16-305 hard granite
140	36091	255	50	25	50	0-25 clay and sandy silt 25-255 hard gray granite
141	29459	375	50	150	6	0-13 stony hardpan 13-373 granite

Well Number	Permit Number	Total Depth	Casing Depth	Static Water Level	Discharge	Driller's Log
142	27411	305	64	30	-	0-20 clay/rock 20-255 hard gray granite 255-305 granite
143	26723	300	60	38	15	0-40 sand and rock 40-200 sandstone 200-300 limestone
144	25616	180	50	30	10	0-20 sandy clay mixed with broken rock 20-180 hard gray granite
145	24246	398	82	13	6	0-46 clay hardpan 46-98 sandstone 98-398 soft dark gray rock
146	21437	420	50	80	2	0-22 gravel and clay 22-420 gneiss
147	19361	200	60	35	30	0-30 sandy loam 30-200 limestone
148	16990	250	130	80	10	0-130 overburden 130-250 bedrock
149	15875	440	84	100	2	0-75 "unconsolidated" 75-440 gray granite
150	15649	247	51	90	9	0-10 sandy clay 10-30 sandstone 30-247 granite
151	13812	160	57	25	12	0-20 overburden 20-160 granite
152	13811	150	50	20	15	0-20 overburden 20-160 granite
153	13357	620	50	150	1	0-10 loose rock 10-620 gneiss
154	11024	600	51	50	1	0-15 dirt and boulders 15-600 gray granite
155	10653	400	50	60	25	0-15 overburden 15-400 limestone
156	24005	200	60	10	20	0-20 gravel 20-200 granite
157	23792	250	70	70	15	0-60 overburden 60-250 granite
158	20590	200	75	8	12	0-35 overburden 35-200 pink granite
159	20550	300	53	40	12	0-35 overburden 35-300 limestone
160	19021	250	61	40	25	0-40 clay 40-250 granite

Well Number	Permit Number	Total Depth	Casing Depth	Static Water Level	Discharge	Driller's Log
161	17744	267	50	20	100	0-35 sand and clay 35-267 granite
162	17647	400	52	80	15	0-25 overburden 25-400 granite
163	17060	100	52	15	50	0-50 overburden 50-100 granite
164	17058	120	50	20	25	0-35 overburden 35-120 granite
165	16897	100	50	50	60	0-25 overburden 25-100 green sandstone
166	15688	200	70	3	40	0-70 loose rock 70-200 granite
167	14013	150	52	25	10	0-30 overburden 30-150 limestone
168	17947	370	52	30	15	0-20 overburden 20-370 gneiss
169	17684	225	63	12	15	0-40 overburden 40-225 sandstone and limestone
170	15038	41	-	-	-	0-10 fill 10-41 weathered dolomite; clay with local hard zones
171	12180	300	50	114	39	0-20 overburden 20-35 soft gray limestone 35-190 hard limestone and granite 190-230 soft granite 230-300 hard granite
172	13847	400	50	-	5	0-20 sandy soil 20-400 gray granite
173	12580	300	55	50	50	0-40 soft limestone 40-200 sandstone
174	20828	300	50	50	65	0-30 overburden 30-300 granite
175	24809	200	60	50	25	0-50 overburden 50-200 granite
176	33693	600	66	60	1	0-3 topsoil 3-8 clay 8-15 sand and small gravel 15-170 pink and white granite 170-171 rotten granite 171-600 granite
177	9567	225	78	30	5	0-10 overburden 10-90 brown rock 90-225 limestone
178	16841	95	71	40	30	0-71 broken rock 71-95 white granite

Well Number	Permit Number	Total Depth	Casing Depth	Static Water Level	Discharge	Driller's Log
179	28605	605	64	20	7	0-37 sandy clay mixed with broken rock 37-605 hard gray granite
180	34105	100	59	40	50	0-38 clay 38-100 granite
181	12507	115	50	10	15	0-20 sandy overburden 20-115 granite
182	15047	360	60	flowing	10	0-20 sand, rocks and gravel 20-225 sandstone
183	16171	275	50	40	8	0-2 soil 2-6 subsoil 6-17 fractured rock 17-275 granite/gneiss
184	17956	175	68	15	25	0-25 boulders and gravel 25-175 limestone
185	21596	248	50	39	12	0-19 brown clay and rock 19-248 granite
186	23133	670	50	4	50	0-25 overburden 25-670 limestone
187	25645	500	100	30	20	0-5 overburden 5-42 clay 42-500 granite
188	25721	273	100	56	7	0-70 stony hardpan 70-80 weathered rock 80-273 granite
189	26197	500	50	8	5	0-25 boulders, sand and gravel; very little clay 25-500 hard salt and pepper granite
190	29998	450	62	20	12	0-38 overburden 38-450 limestone
191	32469	302	41	-	-	0-28 clay and boulders 28-287 hard gray trap rock 287-302 gray sandstone
192	34635	125	52	20	30	0-2 topsoil 2-10 clay 10-30 clay, sand and boulders 30-125 trap rock
193	36266	180	80	44	12	0-60 brown clay, gravel and boulders 60-80 mixed rock, granite 80-106 black granite 106-107 muddy seam 107-180 gray granite
194	35487	200	50	20	50	0-20 sandy clay 20-200 hard gray granite

Well Number	Permit Number	Total Depth	Casing Depth	Static Water Level	Discharge	Driller's Log
195	35158	500	52	30	20	0-3 topsoil 3-20 sand and clay 20-500 limestone
196	34326	230	50	30	10	0-20 sandy clay 20-305 hard gray granite
197	34133	130	50	30	150	0-30 sandy clay mixed with rock fragments 30-130 granite with limestone beds
198	33470	355	207	30	10	0-182 clay 182-355 granite
199	33392	655	189	30	5	0-160 clay 160-655 granite
200	30970	105	50	30	10	0-20 clay 20-105 hard gray granite
201	30965	305	50	30	5	0-28 clay mixed with sand and rock fragments 28-305 hard gray granite
202	30403	405	51	25	5	0-21 clay mixed with broken rock 21-405 hard gray granite
203	30401	405	60	25	7	0-38 clay mixed with rock fragments 38-405 hard gray granite
204	30125	355	50	25	5	0-24 yellow clay mixed with sand 24-355 granite mixed with iron ore
205	29792	130	50	20	10	0-26 clay mixed with broken rock 26-130 hard gray granite
206	29779	305	50	40	5	0-35 yellow clay mixed with sand 35-305 hard gray granite
207	28381	305	63	60	5	0-42 clay mixed with rock fragments 42-305 hard gray granite
208	28380	205	72	30	10	0-52 clay mixed with broken rock fragments 52-205 hard gray granite
209	28379	205	50	30	10	0-28 clay and broken rock fragments 28-205 hard gray granite
210	28378	255	56	20	10	0-35 broken rock fragments 35-200 granite 200-255 weathered limestone
211	28377	230	56	30	7	0-34 clay mixed with rock fragments 34-255 hard gray granite
212	28376	280	50	30	5	0-28 sandy clay 28-280 hard gray granite
213	28375	305	63	25	7	0-38 clay mixed with sand 38-305 hard gray granite

Well Number	Permit Number	Total Depth	Casing Depth	Static Water Level	Discharge	Driller's Log
214	28374	285	51	20	7	0-31 clay mixed with broken rock 31-285 hard gray granite
215	28373	330	63	40	7	0-41 clay mixed with rock fragments 41-330 hard gray granite
216	28372	255	74	20	7	0-52 sand, clay and boulders 52-255 hard gray granite
217	28371	130	55	20	10	0-33 clay mixed with sand 33-130 hard gray granite
218	28365	130	53	30	10	0-18 sandy clay mixed with rock fragments 18-130 hard gray granite
219	28364	230	70	25	5	0-48 sand and clay mixed with rock fragments 48-230 hard gray granite
220	26852	155	85	30	10	0-60 yellow clay and limestone 60-155 gray consolidated limestone
221	26851	255	64	20	10	0-40 decomposed rock 40-255 hard gray granite
222	21412	355	52	-	12	0-14 overburden and boulders 14-355 yellow, gray and black sandstone
223	20874	500	50	60	15	0-2 overburden 2-25 clay 25-140 rotten limestone 140-500 limestone
224	20593	805	51	artesian	4	0-15 overburden 15-805 limestone
225	19055	150	51	50	25	0-10 overburden 10-70 sandstone 70-150 limestone
226	19054	100	50	50	25	0-10 overburden 10-70 sandstone 70-100 limestone
227	19005	800	223	60	6	0-20 clay, sand and gravel 20-800 argillite
228	15524	225	60	40	15	0-50 broken rock 50-225 black and green granite
229	13145	100	50	-	50	0-15 overburden 15-100 granite
230	11940	150	50	20	5	0-30 sandy soil 30-150 sandstone
231	33280	120	60	15	10	0-1 topsoil 1-15 clay, sand, and gravel 15-27 weathered shale 27-42 red shale 42-120 conglomerate

Well Number	Permit Number	Total Depth	Casing Depth	Static Water Level	Discharge	Driller's Log
232	35027	275	184	40	30	0-21 clay 21-32 weathered limestone 32-174 black limestone 174-275 granite
233	34507	28	-	-	-	0-8 clay and gravel 8-28 clay and sand
234	34466	100	79	40	25	0-2 topsoil 2-60 clay, sand overburden 60-100 white limestone
235	34134	455	60	10	5	0-15 yellow clay 15-38 soft limestone 38-340 hard gray limestone 340-455 hard gray granite
236	33775	505	85	40	20	0-12 soft clay 12-20 open void 20-60 broken limestone mixed with heavy clay 60-505 hard gray limestone
237	34046	610	103	60	20	0-25 cobbles, broken rock 25-610 sandstone
238	33720	110	73	25	30	0-48 clay 48-110 limestone
239	33645	125	101	20	40	0-75 clay 75-125 limestone
240	33644	130	117	18	30	0-95 clay 95-130 limestone
241	33643	130	99	15	50	0-55 clay 55-130 limestone
242	33638	150	130	18	70	0-108 clay 108-150 limestone
243	33485	100	61	24	50	0-33 clay 33-100 limestone
244	33372	125	82	20	50	0-57 clay 57-125 limestone
245	33675	173	71	70	25	0-27 sandy hardpan 27-84 sandstone 84-173 gray granite
246	31920	205	56	30	10	0-34 soft clay mixed with gravel 34-205 gray limestone
247	29768	100	80	12	50	0-18 soil 18-25 clay 25-52 broken up limestone 52-100 limestone

Well Number	Permit Number	Total Depth	Casing Depth	Static Water Level	Discharge	Driller's Log
248	29419	14	-	-	-	0-6 reddish-brown clayey silt 6-13 reddish brown clayey silt and weathered shale 13-14 reddish-brown weathered shale
249	27792	305	50	30	7	0-2 top soil 2-13 clay 13-23 clay and gravel 23-305 limestone
250	27485	42	-	-	-	0-32 red brown clayey silt 32-42 red brown weathered shale
251	25524	400	71	20	5	0-50 red clay, sand, and gravel 50-200 soft red sandstone 200-320 red shale 320-400 blue slate
252	25630	130	101	35	10	0-81 clay mixed with sand and broken rock 81-130 consolidated limestone
253	25225	250	115	20	25	0-80 clay and gravel 80-250 argillite
254	24090	30	-	-	-	0-6 fill 6-23 reddish-brown clay with some gravel 23-30 reddish-brown silty clay with stone fragments
255	21394	245	133	25	100	0-33 sand, gravel and boulders 33-120 clay and conglomerate 120-245 limestone
256	22536	340	100	30	6	0-80 clay, sand and conglomerate 80-340 sandstone
257	20975	300	117	25	20	0-40 sand and gravel 40-170 conglomerate 170-300 dolomite
258	20962	150	105	10	-	0-70 overburden 70-150 red rock
259	20573	150	51	40	25	0-25 clay and gravel 25-150 red sandstone
260	20382	280	70	8	15	0-50 sandy sub soil 50-280 rock
261	19133	200	150	80	20	0-120 clay, sand and gravel 120-200 limestone
262	18570	450	105	10	4	0-80 sand and clay 80-450 limestone
263	16780	500	12	5	60	0-12 overburden 12-500 Stockton Sandstone
264	16146	100	54	20	50	0-40 boulders, sand and gravel 40-100 limestone

Well Number	Permit Number	Total Depth	Casing Depth	Static Water Level	Discharge	Driller's Log
265	15011	53	35	4	-	0-7 sandy gravel 7-35 gravelly clay 35-53 conglomerate
266	22102	300	58	50	5	0-5 soil 5-40 broken granite 40-300 granite
267	24163	100	61	15	10	0-20 yellow clay mixed with broken limestone 20-100 hard blue limestone
268	24866	250	53	30	-	0-30 clay, sand and gravel 30-250 hard blue limestone
269	25174	175	105	25	25	0-40 clay and sand 40-60 rotten limestone 60-175 broken limestone
270	25698	205	53	-	-	0-15 sand and gravel 15-205 blue limestone
271	33797	330	101	60	12	0-55 broken rock 55-80 weathered sandstone 80-172 limestone 172-264 sandstone 264-330 shale
272	29732	255	52	30	10	0-20 brown clay 20-255 blue shale
273	22906	590	60	15	10	0-16 light brown clay 16-22 soft shale 22-590 limestone
274	10696	150	52	30	10	0-30 soft limestone 30-150 hard limestone
275	21058	340	63	40	4	0-20 sand, gravel and boulders 20-340 mixture of pink quartz and ?
276	31101	55	42	8	15	0-19 sand and gravel 19-55 granite
277	29729	90	80	8	5	0-19 sand and gravel 19-36 weathered granite 36-90 granite
278	22473	500	84	90	-	0-60 overburden 60-500 granite
279	25007	200	30	-	-	0-11 clay 11-15 broken gray rock 15-200 gray limestone
280	24848	320	177	90	30	0-160 unconsolidated sand and gravel 160-320 granite

Well Number	Permit Number	Total Depth	Casing Depth	Static Water Level	Discharge	Driller's Log
281	16624	189	79	6	200	0-30 heavy sand and gravel 30-60 unconsolidated sand and gravel 60-75 weathered limestone and broken limestone 75-140 consolidated and weathered limestone 140-165 stable consolidated limestone 165-189 weathered limestone
282	30577	48	28	-	16	0-1 asphalt and stone 1-39 orange-brown silty clay, trace fine sand 39-48 limestone
283	33131	23	-	-	-	0-3 topsoil 3-13 orange-brown clayey sand 13-255 limestone
284	33034	40	25	30	-	0-2 grass and topsoil 2-14 yellow-brown clay, some sand, trace silt and gravel 14-22 gray clay, some sand, trace silt and gravel 22-28 weathered rock 28-40 limestone
285	25440	26	18	-	-	0-13 orange-brown clayey silt 13-16 weathered rock 16-26 light gray dolomite
286	25441	15	-	-	-	0-5 dark brown clayey silt and sand 5-8 gravel, some sand and trace of silt 8-15 light gray dolomite
287	21897	225	56	20	15	0-56 sand and gravel 56-225 limestone
288	21428	300	82	40	5	0-40 sand, gravel and boulders 41-82 weathered granite granite
289	19491	200	51	25	30	0-40 clay and broken limestone 40-60 weathered limestone 60-200 limestone
290	35865	39	-	-	-	0-7 yellow-brown silt, little clay, trace vfs 7-20 yellow-brown silt, little clay, sand and gravel 20-39 yellow-brown clay, some silt
291	42742	94	69	15	0.5	0-50 stiff yellowish brown clay trace sand and gravel 50-60 tan clay, trace sand and rounded gravel 60-65 brown clay, trace sand 65-80 reddish brown and light gray clay loam with black mottles 80-88 tan to reddish brown clay with sand 88-95 brown sandy loam

Well Number	Permit Number	Total Depth	Casing Depth	Static Water Level	Discharge	Driller's Log
292	38039	105	62	15	20	0-10 fill 10-25 broken rock mixed with clay 25-40 soft weathered rock 40-105 hard gray granite
293	41968	305	58	40	12	0-35 overburden 35-305 limestone
294	42157	385	58	35	4	0-30 overburden 30-385 limestone
295	23204	200	50	50	40	0-10 overburden 10-200 limestone
296	23886	400	50	60	20	0-10 overburden 10-400 granite
297	21529	200	90	20	30	0-70 gray and red weathered rock conglomerate 70-200 argillite
298	26260	285	50	200	10	0-28 brown sandy loam 28-285 hard gray granite rock
299	28586	200	60	50	15	0-20 overlay 20-200 granite
300	30859	200	60	28	30	0-15 hardpan 15-38 fractured rock 38-200 granite
301	31206	273	50	150	50	0-5 stony hardpan 5-273 granite
302	31208	398	60	36	8	0-15 sandy hardpan 15-34 weathered rock 34-398 gray granite rock
303	31207	123	50	22	17	0-24 sandy hardpan 24-34 brown granite rock 34-123 green/gray granite rock
304	31209	573	50	38	4	0-6 stony hardpan 6-573 granite rock
305	32942	148	71	12	30	0-46 sand, clay, hardpan 46-148 granite

Well Number	Permit Number	Total Depth	Casing Depth	Static Water Level	Discharge	Driller's Log
306	32330	525	54	5	3	0-32 soil 32-525 granite
307	37999	250	100	28	40	0-20 overburden 20-75 weathered rock 75-250 granite
308	39080	625	60	80	9	0-7 clay 7-625 granite
309	40458	300	60.5	28	20	0-40 clay and silt with large cobbles 40-46 yellow sandstone 46-300 granite
310	40677	290	60	7	15	0-3 soil 3-35 overburden 35-290 gray granite
311	42520	245	58	50	15	0-33 sand and clay 33-120 sandstone 120-245 gray argillite
312	42286	305	78	15	10	0-35 overburden 35-50 rotten limestone 50-305 gray limestone
313	42328	173	50	35	50	0-9 stony-sandy clay hardpan 9-18 tan granite (weathered) 18-173 gray granite
314	26913	305	80	5	30	0-5 soil 5-15 hardpan 15-60 fractured rock 60-305 granite
315	33051	305	52	30	10	0-20 clay 20-305 hard gray granite
316	38204	165	51	40	12	0-4 topsoil 4-15 overburden 15-80 sandstone 80-165 limestone
317	40063	125	58	50	25	0-4 topsoil 4-20 overburden 20-125 limestone
318	39465	305	63	4	8	0-18 fill 18-38 yellow clay 38-305 hard gray granite
319	41841	240	61	30	15	0-13 clay 13-32 sandstone 32-240 granite
320	41705	368	63	19	33	0-20 brown soil and gravel 20-368 gray granite

Well Number	Permit Number	Total Depth	Casing Depth	Static Water Level	Discharge	Driller's Log
321	44518	180	50	flowing	50	0-20 overlay 20-180 granite
322	43409	180	50	30	25	0-15 overlay 15-180 granite
323	45757	205	50	60	>50	0-5 clay 5-205 hard gray granite
324	22516	285	50	50	35	0-5 overlay 5-285 granite
325	24243	250	50	50	9	0-20 overlay 20-250 granite
326	23491	140	76	2	10	0-8 soil and overburden 8-64 sand and gravel 64-97 hard granite and white quartz 97-103 pink or orange quartz 103-140 granite
327	27735	355	63	30	10	0-78 yellow clay mixed with rock fragments 78-355 hard gray gneiss
328	28126	300	50	30	10	0-10 clay mixed with rock fragments 10-300 hard salt and pepper granite
329	33251	705	102	100	25	0-8 broken rock 8-705 granite
330	34013	400	68	40	7	0-28 cobbles, broken rock 28-400 granite
331	35072	298	49.5	46	32	0-16 sandy stony hardpan 16-298 granite
332	35863	255	58	40	12	0-20 broken rock 20-255 granite
333	37612	200	50	54	30	0-19 sand, boulders, broken rock 19-180 granite 180-200 limestone, granite
334	39660	223	50.5	24	12	0-7 overburden 7-223 granite

Well Number	Permit Number	Total Depth	Casing Depth	Static Water Level	Discharge	Driller's Log
335	39738	298	51	60	20	0-25 stony hardpan 25-36 brown granite 36-298 gray granite
336	42375	600	103	60	5	0-43 clay and sand 43-70 weathered granite 70-600 gray gneiss
337	35375	673	49.5	25	20	0-26 stony-sandy clay hardpan 26-673 granite
338	22479	320	81	50	6	0-15 overburden 15-320 limestone
339	22480	500	85	50	4.5	0-15 overburden 15-500 limestone
340	22117	200	50	40	9	0-23 overburden 23-200 granite
341	23312	140	54	40	25	0-8 broken rock 8-140 granite
342	25009	200	120	30	25	0-3 soil and broken rock 3-110 clay 110-120 brown granite 120-200 gray granite
343	25173	200	102	-	-	0-60 fine quartz sand to tan to yellow silty clay (weathered rock) 60-85 fractured weathered gneiss 85-200 granite
344	40058	145	58	30	25	0-30 sand and clay 30-145 limestone
345	42194	198	61.5	100	17	0-31 stony-sandy clay hardpan 31-198 granite
346	44322	800	58.5	28	1	0-22 overburden 22-800 granite
347	43828	120	85	30	30	0-55 overlay 55-120 granite
348	25851	400	51	40	10	0-5 sandy clay 5-400 hard gray granite

Well Number	Permit Number	Total Depth	Casing Depth	Static Water Level	Discharge	Driller's Log
349	26254	200	50	40	25	0-10 overlay 10-200 granite
350	27268	350	50	30	4	0-30 overlay 30-350 granite
351	27747	200	50	30	18	0-30 overlay 30-200 granite
352	27943	425	80	30	1	0-50 overlay 50-425 gray and red granite
353	28349	360	60	40	8	0-5 soil 5-30 broken granite 30-360 granite
354	28594	150	64	30	50	0-40 overlay 40-150 granite
355	28593	200	50	15	15	0-30 overlay 30-200 gray sandstone
356	30306	500	50	30	1.5	0-12 overlay 12-500 granite
357	30307	175	70	20	30	0-50 overlay 50-175 granite
358	34052	140	50	10	30	0-25 overlay 25-140 granite
359	32917	305	50	40	10	0-10 clay mixed with sand 10-305 hard gray granite
360	33763	280	50	30	12	0-5 hard clay 5-280 hard gray granite rock
361	35339	365	50	50	>50	0-5 broken rock 5-20 sand 20-365 gray gneiss
362	35919	345	106	60	40	0-20 broken rock 20-345 granite
363	36810	100	52	15	40	0-15 overburden 15-100 limestone

Well Number	Permit Number	Total Depth	Casing Depth	Static Water Level	Discharge	Driller's Log
364	29246	405	51	30	7	0-22 sandy clay mixed with broken rock 22-405 hard gray granite
365	43161	43	9	17.8	-	0-9 silt, clay, little sand and gravel 9-17 weathered shale 17-43 siltstone/shale
366	44569	205	80	30	25	0-58 sandy clay 58-205 brown and gray granite
367	42702	425	50	20	12	0-12 overlay 12-425 granite
368	42701	500	50	20	6	0-10 overlay 10-500 granite
369	42700	500	50	10	4	0-12 overlay 12-500 granite
370	42696	500	50	15	8	0-12 overlay 12-500 granite
371	42697	425	50	20	8	0-12 overlay 12-425 granite
372	39240	625	62	300	5	0-5 overburden 5-625 granite
373	42719	255	61	0	>100	0-23 clay 23-255 granite
374	42721	425	62	32	4	0-20 clay and sand 20-425 limestone
375	42720	305	62	29	20	0-3 dirt and clay 3-305 sandstone
376	44535	590	79	flowing	>100	0-27 soil 27-590 granite
377	21373	160	61	35	20	0-20 sand and rocky soil (conglomerate) 21-160 gray gneiss and mica
378	21374	140	63	10	30	0-10 soil 10-40 limestone 40-140 argillite

Well Number	Permit Number	Total Depth	Casing Depth	Static Water Level	Discharge	Driller's Log
379	23525	300	63	6	3	0-58 broken rock 58-300 granite
380	21958	200	63	25	25	0-35 sand and gravel 35-50 weathered rock 50-200 gray gneiss
381	25223	168	52	46	851	0-10 clay 10-12 clay and sand 12-15 sand 15-168 limestone, gray, white, brown
382	38972	20	-	7	-	0-10 fill 10-15 light brown silty clay 15-20 bedrock
383	33383	200	50	50	15	0-15 overlay 15-200 granite
384	10484	225	203	22	732	0-5 yellow clay 5-206 rotten limestone, yellow clay, hard ledges 206-225 hard ledges, limestone, soft spots
385	31892	200	50	30	10	0-15 overlay 15-200 granite
386	44-32469	302	40	20	25	0-28 clay and boulders 28-302 gneiss
387	44-32470	241	35	-	-	0-20 earth and boulders 20-421 gray granite
388	24119	500	60	30	15	0-30 soil and gravel 30-500 argillite
389	44-41	230	-	27	140	0-10 stones 10-81 sand, clay, and stones 81-230 hard granite
390	10993	300	50.5	70	30	0-10 overburden 10-300 limestone
391	18383	115	55	8	500	0-55 overburden 55-115 limestone
392	44-28409	160	69	16	668	0-4 soil 4-160 white gneiss

Well Number	Permit Number	Total Depth	Casing Depth	Static Water Level	Discharge	Driller's Log
393	44318	370	105	12	>200	0-35 sand, gravel 35-370 shale
394	45311	660	79	23	500	0-28 gravel, rocks 28-32 clay, gravel 32-42 gravel, rocks 42-58 brown clay 58-660 red shale and sandstone
395	6788	475	76	8	205	0-10 loam and sand 10-15 sand and gravel 15-26 rotten shale-clay 26-56 soft red shale 56-475 red shale
396	1545	200	83.5	7.5	97	0-45 yellow clay and some gravel 45-80 soft limestone rock 80-200 hard limestone
397	26131	122	89	30	518	0-60 overburden 60-122 gray shale
398	44317	500	50	33	250	0-20 broken brown shale 20-70 soft brown shale 70-500 red and gray shale and gray limestone
399	38784	148	79	65	25	0-48 clay and rocks 48-148 granite
400	37734	179	62	27	20	0-3 brown clay 3-37 sand and boulders 37-179 mixed granite
401	43048	140	70	20	70	0-20 soil 20-25 loose rock 25-140 limestone
402	42947	155	84	56	15	0-41 brown clay and gravel 41-84 gray slate 84-155 gray and tan shale
403	43915	562	67	0	6	0-18 overburden 18-562 granite
404	41870	262	98.5	52	30	0-16 overburden 16-262 limestone
405	44136	242	99	54	20	0-8 overburden 8-242 limestone
406	44316	502	107.5	10	4	0-21 overburden 21-502 granite

Well Number	Permit Number	Total Depth	Casing Depth	Static Water Level	Discharge	Driller's Log
407	26005	298	50	10	5	0-10 clay, boulders 10-22 soft rotten rock 22-298 granite
408	26685	302	120	85	12	0-10 clay 10-100 broken limestone and clay 100-302 limestone
409	30007	205	50	30	10	0-12 clay mixed with sand 12-205 hard gray granite
410	30008	155	51	15	10	0-28 clay mixed with sand 28-155 hard gray granite
411	30009	100	50	40	10	0-27 clay mixed with sand 27-100 hard gray granite
412	30011	405	53	30	10	0-25 sandy clay mixed with rock fragments 25-405 hard gray granite
413	31203	225	58.5	37	6	0-20 clay 20-225 limestone
414	30610	205	57	25	10	0-34 sandy clay mixed with rock fragments 34-205 hard gray gneiss
415	32483	180	50	30	20	0-12 overlay 12-180 granite
416	31977	320	60	30	15	0-30 overlay 30-320 granite
417	33467	285	148.5	30	30	0-5 clay 5-285 limestone
418	33120	275	60	30	>10	0-2 soil 2-12 hardpan 12-35 fractured rock 35-275 granite
419	33604	160	50	70	30	0-15 overlay 15-160 granite
420	39021	166	108.5	70	50	0-18 clay overburden 18-166 limestone
421	43700	142	99	38	>50	0-68 clay 68-142 limestone

Well Number	Permit Number	Total Depth	Casing Depth	Static Water Level	Discharge	Driller's Log
422	40064	115	81	60	20	0-7 stony hardpan 7-115 limestone
423	20342	108	91	36	50	0-5 clay 5-108 limestone
424	20334	104	58	25	30	0-10 clay 10-104 limestone
425	20294	98	60	6	40	0-40 sand and clay 40-98 granite
426	35343	115	107.5	65	50	0-10 clay 10-115 limestone
427	35442	150	87	30	100	0-65 soft yellow clay mixed with limestone fragments 65-150 hard gray limestone
428	37874	305	56	50	5	0-30 soft sandy clay mixed with layers of granite rock 30-305 hard gray granite
429	40000	205	50	80	>15	0-5 soft broken rock 5-205 hard gray granite
430	43587	200	60	20	15	0-15 overlay 15-200 granite
431	39134	420	50	20	5	0-15 overlay 15-420 granite
432	39155	300	50	20	8	0-12 overlay 12-300 cobblestone, sandstone
433	38996	225	50	20	14	0-10 overlay 10-225 cobblestone
434	39212	220	50	60	15	0-12 overlay 12-220 granite
435	39282	300	60	30	12	0-15 overlay 15-300 gray cobblestone
436	39325	300	61	42	>40	0-38 fill sand 38-300 sandstone

Well Number	Permit Number	Total Depth	Casing Depth	Static Water Level	Discharge	Driller's Log
437	37837	400	50	60	8	0-10 overlay 10-400 sandstone
438	38260	180	50	25	25	0-25 overlay 25-180 granite
439	38424	200	60	25	18	0-15 overlay 15-200 sandstone-cobbles
440	39231	698	52	26	1.4	0-9 stony-sandy clay hardpan 9-698 granite
441	38630	275	60	15	12	0-12 overlay 12-275 granite
442	38631	425	60	40	4	0-10 overlay 10-425 sandstone and argillite
443	39525	200	50	25	15	0-20 overlay 20-200 granite
444	39584	240	60	50	12	0-25 overlay 25-240 granite
445	41967	465	78	40	4	0-55 overburden 55-465 argillite
446	44491	300	53	32	20	0-13 overburden 13-300 granite
447	44808	205	105	80	>50	0-75 soft yellow clay mixed with rock fragments 75-180 light gray limestone 180-205 hard gray granite
448	25913	300	51	3	5	0-28 sandy clay/broken rock 28-300 hard salt and pepper granite
449	28451	165	58.5	30	15	0-21 overburden 21-165 granite
450	29761	165	50.5	18	20	0-9 overburden 9-165 granite
451	30270	305	50	20	10	0-26 sandy clay mixed with granite fragments 26-305 hard, gray granite

Well Number	Permit Number	Total Depth	Casing Depth	Static Water Level	Discharge	Driller's Log
452	33468	173	50.5	10	8	0-22 clay, large cobbles 22-173 granite
453	35886	225	58.5	80	12	0-10 overburden 10-225 granite
454	37683	250	61	27	7	0-4 sand fill 4-250 granite
455	37056	505	100	12	7	0-22 weathered granite 22-505 hard gray granite
456	43729	325	80	10	35	0-21 soil 21-325 limestone
457	43609	422	61.5	24	4	0-30 overburden 30-422 granite
458	20281	255	74	30	15	0-40 dirt and rock 40-255 granite
459	20184	300	50	30	7	0-30 sand gravel conglomerate 30-300 granite
460	20369	180	62	25	50	0-35 conglomerate 35-180 granite
461	20370	360	56	40	5	0-30 conglomerate 30-360 granite
462	22962	108	50	20	40	0-20 sand clay 20-30 sandstone broken 30-108 granite
463	22836	295	83	20	1.5	0-60 sand clay 60-295 granite
464	32011	165	82.5	47	37	0-10 overburden 10-37 hard 37-48 soft granular 48-165 granite
465	33939	305	82.5	38	4	0-60 soft sandstone 60-305 granite
466	23029	108	62	20	40	0-40 clay sand 40-108 granite

Well Number	Permit Number	Total Depth	Casing Depth	Static Water Level	Discharge	Driller's Log
467	31385	76	41	61	-	0-37 sandy clay 37-76 limestone
468	31386	63	38	59	-	0-33 sandy clay 33-63 limestone
469	40921	200	50	40	30	0-15 overlay 15-200 granite
470	42306	400	70	40	12	0-5 overburden 5-400 granite
471	42449	200	63	30	25	0-30 overburden 30-200 granite
472	22967	760	60	50	3	0-25 overburden 25-760 limestone
473	21380	260	52	60	7.5	0-5 dirt 5-260 granite
474	34237	170	91	3	50	0-4 clay 4-35 gravel 35-65 broken rock 65-101 granite 101-170 limestone
475	27186	600	50	54	1.5	0-5 fractured rock 5-600 rock
476	43591	220	50	30	15	0-20 overlay 20-220 granite
477	42996	605	120	35	2.5	0-10 brown clay 10-100 soft weathered gneiss 100-605 hard gray granite
478	38213	500	50	30	5	0-20 overlay 20-500 granite
479	25376	725	70	153	4	0-40 overlay 40-725 granite
480	42664	280	280	-	-	0-58 sand and gravel 58-72 red shale 72-180 [probably 280] blue rock

Well Number	Permit Number	Total Depth	Casing Depth	Static Water Level	Discharge	Driller's Log
481	35882	275	80	40	4	0-12 overlay 12-275 argillite and conglomerate
482	25691	100	50	40	10	0-39 soil 39-58 gray limestone 58-100 open
483	34263	205	61	25	50	0-40 red clay mixed with gravel and sand 40-205 red sandstone with quartz pebbles
484	31690	125	103.5	40	50	0-20 clay 20-125 limestone
485	7172	468	176	50	159	0-46 hard pan with sinkholes 46-53 broken limestone 53-88 firm limestone 88-393 limestone with faults 393-468 black streaky limestone