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Albert D. Rosellini, Governor

DEPARTMENT OF CONSERVATION
Earl Coe, Director

DIVISION OF WATER RESOURCES
Murray G. Walker, Supervisor

Water Supply Bulletin No. 20

GEOLOGY and GROUND-WATER RESOURCES of NORTHWESTERN KING COUNTY, WASHINGTON

By

Bruce A. Liesch, Charles E. Price and Kenneth L. Walters

Prepared in cooperation with
UNITED STATES GEOLOGICAL SURVEY
GROUND-WATER BRANCH

1963

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Liesch, Bruce A.
Geology and ground-water resources of northwestern King County, Washington

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FOREWORD

A prerequisite to the orderly development and conservation of the State's ground-water resources is a thorough understanding of the geologic factors which control the storage and movement of ground water in and through the various rock materials which mantle the earth's surface. "Geology and Ground Water Resources of Northwest King County" was designed principally to furnish geologic and other basic data needed by those actually engaged in the development and distribution of both private and public water supplies serving the Seattle metropolitan area, one of the most rapidly expanding areas of the State of Washington and the United States.

It is recognized that the area's ground-water supplies alone are not adequate to satisfy the present and future water needs of northwest King County. However, with a planned orderly development they will serve the area's domestic, irrigation, and light industrial needs during its youth and will bridge the transition from a rural economy to urbanization. Ground water will also play an important role in and become a permanent part of the integrated water system needed to meet the ever-increasing needs of the metropolitan area.

In keeping with the policy of the Division of Water Resources and the U.S. Geological Survey, the material in Water Supply Bulletin No. 20 has been presented in a manner which makes it of value not only to those interested in water supply development but will also serve as a reference for geologists, engineers, and others working in associated fields which require a knowledge and understanding of the geologic factors which limit man's activity on and beneath the earth's surface.

"Geology and Ground Water Resources of Northwest King County" was prepared in cooperation with the U.S. Geological Survey, Ground Water Branch, as a part of the Division of Water Resources' overall inventory of the water resources of the State of Washington.

-Robert H. Russell
Assistant Supervisor
Division of Water Resources

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GEOLOGY AND GROUND WATER RESOURCES OF NORTHWESTERN KING COUNTY, WASHINGTON

By

Bruce A. Liesch, Charles E. Price, and Kenneth L. Walters

ABSTRACT

King County, in the west-central part of the State of Washington, includes about 2,135 square miles. The eastern part of the county lies in the Sierra-Cascade Mountains province and the remainder is in the Puget Trough of the Pacific Border province. The area covered by the present investigation is almost entirely within the Puget Trough and includes about 450 square miles.

The land surface consists principally of glacial drift plains which rise to altitudes of 600 feet above sea level and are separated by lakes or stream valleys. East-trending hills of sedimentary and volcanic rocks of Tertiary age occur along the southern boundary of the area and attain an altitude of over 2,200 feet.

The deposits exposed in the project area range in age from Eocene to Recent. More than half the surface of the area is mantled by glacial drift of Vashon age. The Vashon stratified drifts are the principal aquifers of the area; the older consolidated and unconsolidated deposits are of secondary importance.

The annual precipitation at Seattle ranges from about 19½ inches to about 56½ inches; the average is about 33½ inches. Most of the precipitation occurs during the late fall and winter; the summer is relatively dry.

Ground water in northwest King County is replenished almost entirely by precipitation on or near the area. Water levels in wells generally are within 100 feet of the land surface. Yields of wells in the area range from less than 10 gpm (gallons per minute) to as much as 500 gpm. Present ground-water use is principally for domestic and public supply.

The ground water of northwest King County is generally of good chemical quality. Only five wells are known to have yielded water containing more than 250 ppm (parts per million) of chloride. The high chloride content of the water from three of these wells was probably caused by salt-water intrusion and that of two may have been caused by incompletely flushed connate water (water trapped in the pores of sedimentary materials at the time of deposition). Several wells yield water that

contains more than 0.2 ppm iron. One well which taps Oligocene and Miocene marine sediments yields water containing 0.70 ppm of manganese. No other ground water in the area is known to contain more than 0.1 ppm manganese. Ground-water temperatures range from 45° to 50° F.

INTRODUCTION

Purpose and Scope of the Investigation

The investigation was made by the U.S. Geological Survey in cooperation with the Washington State Department of Conservation, Division of Water Resources, as part of a continuing program for the collection and interpretation of basic data concerned with ground-water supplies of the State of Washington.

The investigation was made because the project area is one of very rapidly increasing population; much of the water supplying the suburban area not served by the city of Seattle is obtained from ground-water sources. The rapid increase in population and the increased per capita consumption of ground water have resulted in many requests for data relating to ground water, indicating that a systematic appraisal of the ground-water resources of the area was needed.

The objective of the investigation was to gather, interpret, and present available data pertaining to the occurrence of ground water in northwestern King County and to make an appraisal of the quantity and quality of these supplies. The study also had as an objective the differentiation of the lithologic units and correlation of surface outcrops with subsurface features. The data collected during the study include records of wells and springs and information on the depth, thickness, and areal extent of the aquifers and their ability to store and transmit water, and on the sources of recharge and the direction of ground-water movement.

The investigation was made under the general direction of A. Nelson Sayre and Philip E. LaMoreaux, successive Chiefs, Ground Water Branch, U.S. Geological Survey, and Murray G. Walker, Supervisor, State Division of Water Resources, and under the direct supervision of A. A. Garrett, District Engineer, U.S. Geological Survey, and Robert H. Russell, Assistant Supervisor, Division of Water Resources.

The inventory of wells was made largely by D. E. Wegner, L. J. Gadbois, and B. A. Liesch during 1951-53 and was completed by K. L. Walters, G. D. Holmberg, and K. A. Jones in 1958-59. S. C. Awasthi, of the Geological Survey of India, assisted in the preparation of the report during August, September, and October 1958.

Location of the Area

The area covered by this investigation contains about 450 square miles in the northwestern part of King County, Wash., and includes the city of Seattle and the adjacent suburban area. It lies almost entirely within the Puget Trough section

of the Pacific Border province (Fenneman, 1931, p. 443-454). On the west it is bounded by Puget Sound, on the east by the foothills of the Cascade Mountains, and on the north by the southern boundary of Snohomish County. On the south the project area is bounded by lat 47°30'N. from Puget Sound east to long 122°07'30"W., from there to the foothills it is bounded by the south edge of T. 23 N. The location of the project area in relation to the remainder of the county and to the State is shown in figure 1.

Previous Investigations

None of the previous investigations of the geology of northwest King County discussed ground-water features in detail; their scope was restricted largely to the stratigraphy and geologic history of the area. The first detailed study of the unconsolidated deposits of the Puget Sound lowland was made by Bretz (1910, 1913); his interpretation of the late Pleistocene lake sequence is a contribution of singular importance. The first detailed study of the consolidated rocks in South Seattle and at Alki Point was made by Weaver (1937, p. 152-154); he postulated that the Oligocene marine sediments exposed there are correlative with the Oligocene marine sediments exposed at Restoration Point on the other side of Puget Sound, about 3 miles west of Alki Point.

The consolidated rocks of the Newcastle-Grand Ridge hills were studied by Weaver (1937, p. 155-156) and by Warren and others (1945). The unconsolidated deposits of Seattle were described by Stark and Mullineaux in 1950. A soil survey report of western King County was prepared by Poulson and others in 1952, and an engineering soils manual to be used with that report was written by McLerran and Krashevski in 1954.

Many other papers about particular geologic problems of northwest King County are referred to where pertinent in this report. Valuable information on the geology and ground-water hydrology of adjacent areas was obtained from papers by Newcomb (1952) and Sceva (1957).

History of the Investigation

An investigation of the ground-water resources in an area east of Lake Washington was made by A. M. Piper and T. E. Eakin in 1944. The area included parts of Tps. 23 to 29 N., between Rs. 3 and 6 E. The results of that investigation were not published, although information was supplied informally to King County Water District 59.

In February 1951, B. A. Liesch of the Geological Survey began a ground-water investigation in the part of the northwest King County area that is east of Lake Washington. The initial phase of this investigation, which consisted of a collection of hydrologic data and a study of the geology, was halted in November 1952. Liesch started a similar investigation in the area west of Lake Washington in June 1953. So that the data collected in the area east of Lake Washington could be made available before completion of the expanded study, the well and spring records of that area were

compiled by Liesch, and were released in February 1955 as an open-file report titled "Records of Wells, Water Levels, and Quality of Ground Water in the Sammamish Lake Area, King County, Washington" (Liesch, 1955).

In 1956, the investigation in and north of the city of Seattle--the area of expanded study--was recessed. In 1958, the work was resumed by C. E. Price with the assistance of G. D. Holmberg and K. A. Jones. The previous work was reviewed, and additional wells were canvassed to update the well inventory.

The geology of the Seattle South and Duwamish Head quadrangles was mapped in 1955 and 1959 by H. H. Waldron of the U.S. Geological Survey. Geologic mapping in the Shilshole Bay, Kirkland, Seattle North, and Mercer Island quadrangles was field checked in 1960 by D. R. Crandell, also of the Geological Survey. The report was written in 1959 from notes prepared by Liesch and from additional field reconnaissance studies as cited above. K. L. Walters, in charge of the project from April 1959 to its completion in 1960, designed many of the illustrations, and completed the checking of geologic mapping.

Acknowledgments

The well records presented in this report were obtained from well owners, users, and drillers. The friendly cooperation of these people is appreciated and acknowledged. Special thanks are given to H. O. Meyer, well driller of Kirkland, who gave free access to his files of well logs, and to Robinson and Roberts, consulting ground-water geologists of Tacoma, who supplied hydrologic data from their files. The helpful comments of Waldron and Crandell, who read the manuscript, are appreciated.

The data furnished from the files of the State of Washington Department of Conservation, Division of Water Resources; the Washington Toll Bridge Authority; the Washington State Highway Department; and the City of Seattle Engineering Department are gratefully acknowledged.

Well-Location Symbols

In this report wells are designated by symbols that indicate their location according to the rectangular grid system for subdivision of public land. For example, in the symbol 25/5-21M2 the part preceding the hyphen indicates successively the township and range north and east of the Willamette base line and meridian (T. 25 N., R. 5 E.). Because all townships in northwest King County are north and east of this base line and meridian, the letters "N" and "E" are omitted.

The first number after the hyphen indicates the section in which the well is located; the letter denotes the 40-acre subdivision of the section, according to the following diagram. The last number is the serial number of the well in the 40-acre subdivision. For example, well 25/5-21M2 is in the NW$\frac{1}{4}$SW$\frac{1}{4}$ sec. 21, T. 25 N., R. 5 E., and is the second well in that tract to be listed.

Springs are numbered in the same manner and the letter "s" is added. Thus, the first spring recorded in that 40-acre tract would have the number 25/5-21M1s.

D	C	B	A
E	F	G	H
M	L	K	J
N	P	Q	R

GEOGRAPHY

Topography and Drainage

Except for an area of about 30 square miles east of the Snoqualmie River, within the foothills of the Cascade Mountains, northwest King County is in the Puget Sound lowland, a topographic basin that extends from the Cascade Mountains on the east to the Olympic Mountains on the west. Most of northwest King County consists of extensive, gently rolling plains, commonly ranging in altitude from 200 to 600 feet. The drift mantling these plains was deposited by the latest (Vashon) glacier, and the numerous surface depressions left by the retreating glacier are now occupied by small lakes and peat bogs. The plains are separated by broad-floored north-trending major valleys, which are underlain by deposits of Recent age. The steeply sloping valley walls have been included with the drift plains; only the valley floors are included in the discussions of the valleys. In the southern part of northwest King County, an east-trending ridge of bedrock hills--the Newcastle-Grand Ridge hills (fig. 1)--rises more than a thousand feet above the drift plains. These hills are composed of Tertiary rocks thinly mantled by Vashon drift.

In northwest King County, the surface of the Vashon glacial drift has not been greatly modified by postglacial erosion; however, spring-fed streams have cut short, steep-sided canyons into the margins of the drift plains, and many slopes adjacent to Puget Sound have been steepened by wave erosion.

Listed generally from west to east, arbitrary but convenient designations for the physiographic units of the area are as follows:

West Seattle drift plain
Duwamish River valley floor
Seattle drift plain
Mercer Island
Interlake drift plain
Newcastle-Grand Ridge hills
Sammamish River valley floor
Eastern drift plain
Snoqualmie River valley floor
Cascade foothills

These units are shown on figure 1, though their boundaries are not everywhere definite.

Most of northwest King County is drained either by the Snoqualmie River or by the Lake Washington canal; some of the area west of Lake Washington is drained by the Duwamish River and by short streams flowing directly into the Sound.

Climate

The Puget Sound lowland has an equable climate. Because of its nearness to the Pacific Ocean and because the prevailing winds blow from the ocean, extremes in temperature are uncommon. Moderate to heavy precipitation occurs in the winter. Although some rain may fall during the summer, this season is generally dry. To the east, in the Cascade Mountains and foothills, precipitation is heavier than in the lowland, and much of the precipitation is snow. In northwest King County, as elsewhere in the Puget Sound lowland, local variations in precipitation, temperature, and wind direction and intensity are caused by the irregular relief of the area.

Precipitation

Precipitation, averaging about 30 to 35 inches a year in northwest King County,usually occurs in the form of a drizzle or light rain. Thunderstorms are uncommon and average only about five a year. Approximately 70 percent of the precipitation occurs in the 6-month period October through March, some precipitation occurring almost every day during the winter. December is the wettest month and July or August is the driest (fig. 2).

The isohyetal map of King County (fig. 3) shows that the area of greatest recorded precipitation is not at the crest of the Cascade Mountains as might be expected, but rather on the western flank, some 10 or 15 miles west of the divide. For example, the greatest average annual precipitation recorded in the county is at Cedar Lake, about 13 miles west of the crest of the Cascade Mountains. At the crest, specifically at Snoqualmie Pass, the average precipitation is about 92 percent of that at Cedar Lake. The greatest precipitation at Seattle during the period 1878-1956 was 56½ inches, in 1879, and the least was 19½ inches, in 1952.

Temperature

The average annual temperature at Seattle for the 67-year period, 1890-1956, is 53.2°F; July is the warmest month, with an average temperature of 65.6°F, and January is the coolest, with an average temperature of 40.7°F. The frost-free period is about 260 days on the average. These temperature data probably are fairly typical of the entire northwest King County area. At the Seattle weather station, the highest temperature for the period of record was 100°F, on July 16, 1941, and June 9, 1955; the lowest was 3°F, on January 31, 1893.

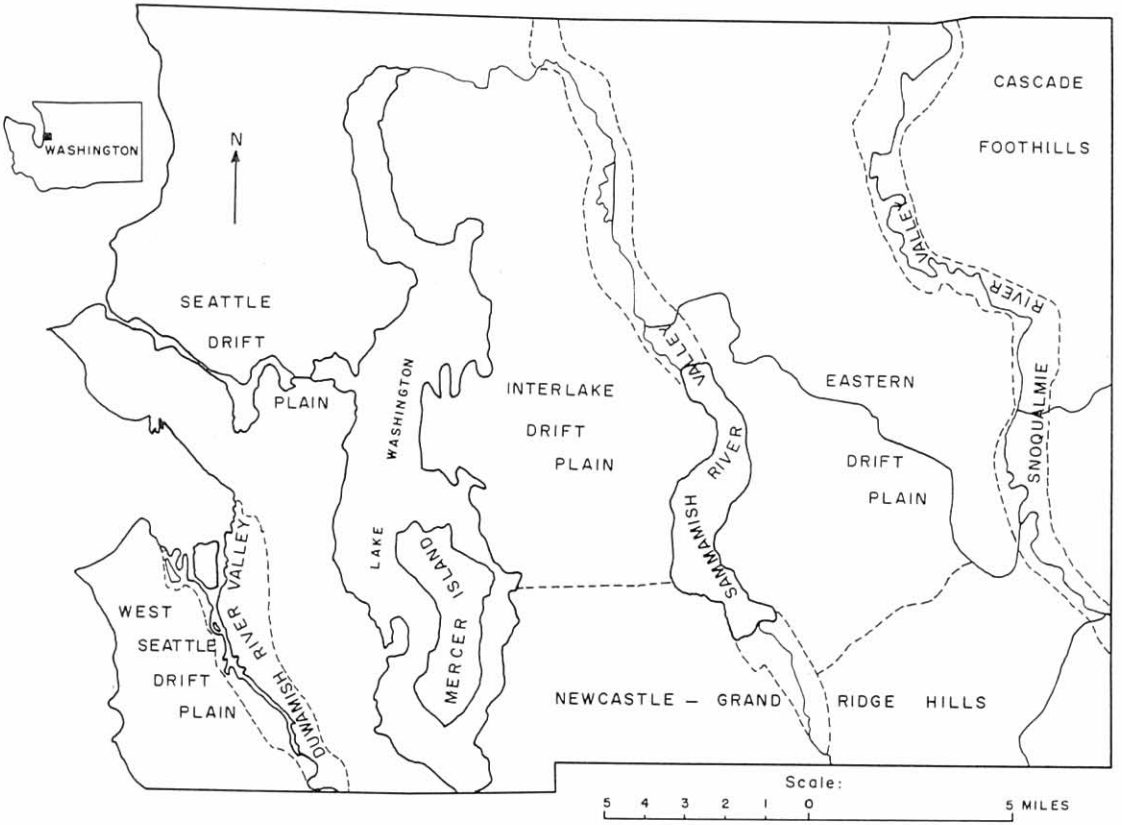


Figure 1.-- Map of northwestern King County showing principal topographic units.

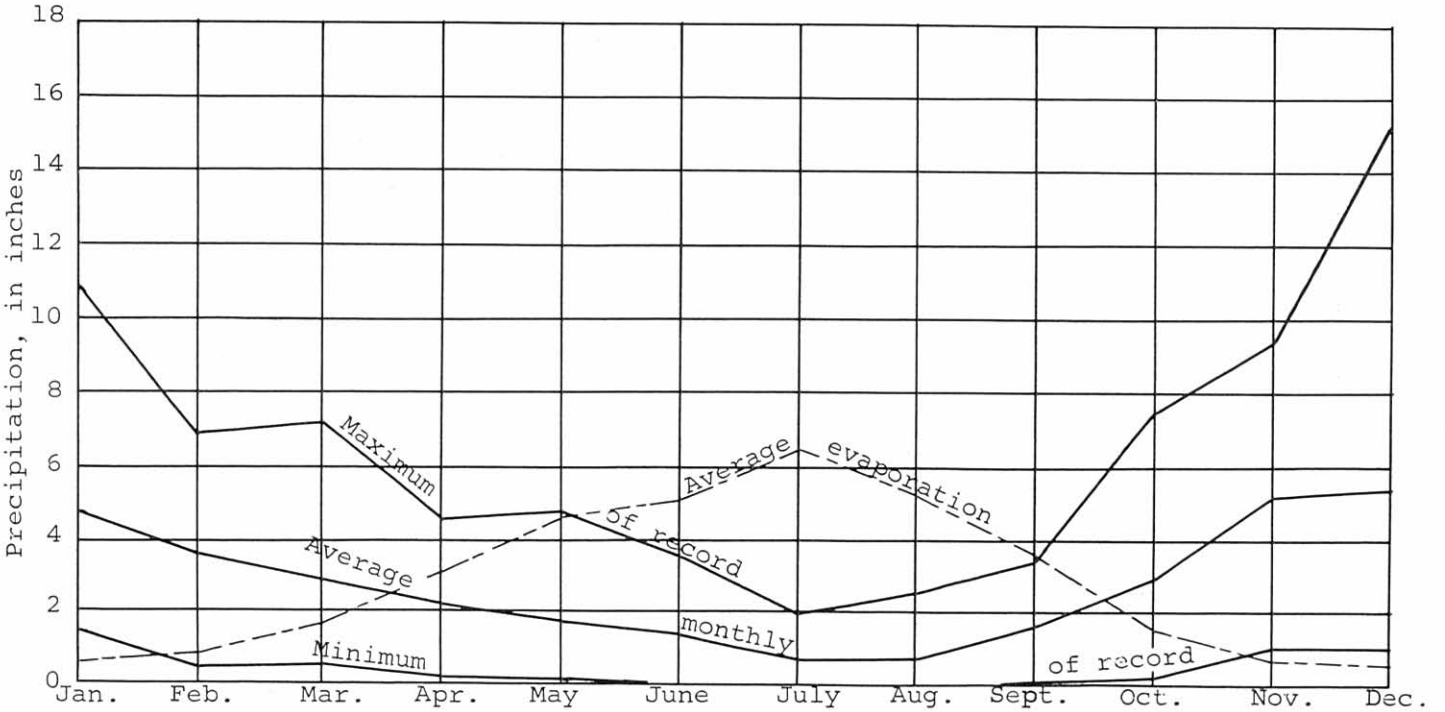
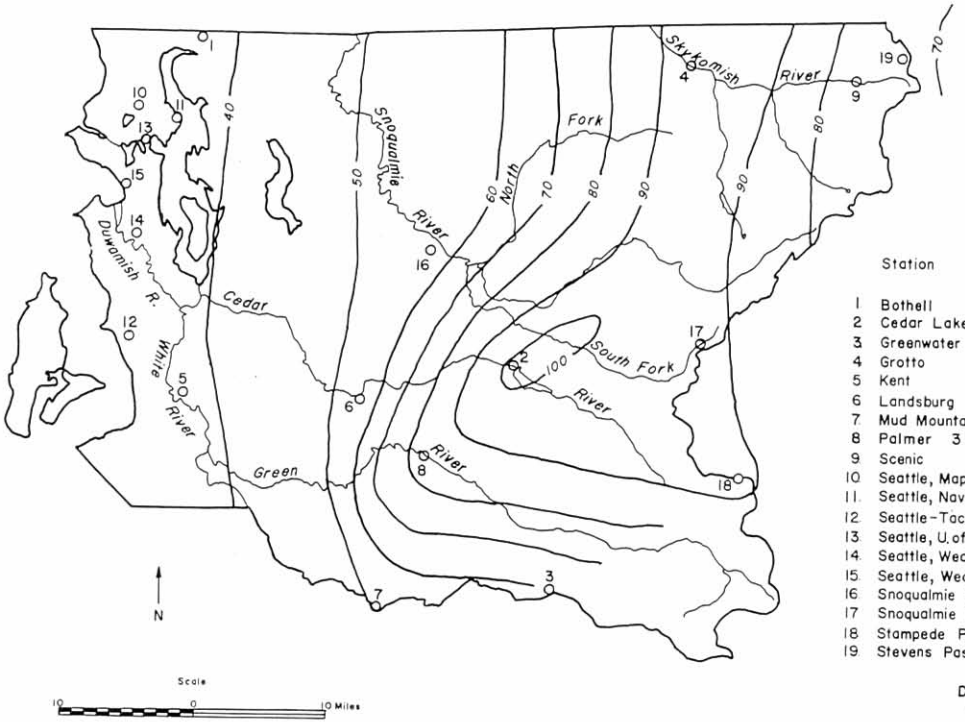


Figure 2.--Monthly precipitation at Seattle for the period of record, 1905-56 and average evaporation for the period 1941-53.



	Station	Altitude Feet	Average Annual Precipitation (Inches)
1	Bothell	105	38.10
2	Cedar Lake	1560	103.30
3	Greenwater	1708	59.00 est.
4	Grotto	849	96.00 est.
5	Kent	40	36.59
6	Landsburg	535	53.01
7	Mud Mountain Dam	1308	50.09
8	Palmer 3 SE	895	86.04
9	Scenic	2224	75.35
10	Seattle, Maple Leaf Res.	422	30.68
11	Seattle, Naval Air Station	21	30.87
12	Seattle-Tacoma, Weather Bur. Airport	386	33.93
13	Seattle, U. of Wash.	60	32.04
14	Seattle, Weather Bur. Airport	14	34.28
15	Seattle, Weather Bur. City	14	31.92
16	Snoqualmie Falls	440	55.19
17	Snoqualmie Pass	3020	94.74
18	Stampede Pass	3963	93.99
19	Stevens Pass	4085	72.52

Data from U.S. Weather Bureau

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Isohyetal lines based on precipitation records for the period from the establisment of each station through 1956. Interval 10 inches.

Figure 3 – Map of King County showing location of weather stations and the average annual precipitation.

Evaporation

The rate of evaporation from much of the project area doubtless is comparable to that at Seattle, where the evaporation at Maple Leaf Reservoir during the period from 1941 to 1953 was less than 1 inch in December and January and about 6 inches in July (fig. 2). Because the period of lowest evaporation coincides with the period of highest rainfall, much of the precipitation may be expected either to enter the ground and recharge the ground-water body or to leave the area as surface runoff.

Culture and Industry

Seattle, having a population estimated at about 557,000 in 1960, is the largest city in the State and dominates the northwest King County area.

The principal industries of Seattle include the manufacture of airplanes, food processing, fabrication of metal products, and lumber. Coal mining was formerly a very important industry in the Newcastle Hills, but is now mined only on a small scale. Sand and gravel are produced from several large pits in northwest King County, notably at Issaquah, in the Kenmore area, at Kirkland, in the Redmond area, and in South Seattle.

Farming is carried on in the Duwamish, Snoqualmie, and Sammamish River valleys. The soils in these valleys are predominantly silty clay to very fine sandy loam, and are particularly suitable for truck and dairy farming. In general, the stony soils of the drift plains are not as suitable for agriculture as are the soils in the major valleys.

Vegetation

Many years ago the native vegetation of northwest King County was dominated by conifers. Virtually all the native evergreen timber has been cut, and the areas logged have been taken over, in many places, by bigleaf maple, vine maple, red alder, and willow. In many of the low moist areas, alder and willow predominate.

Of the common plants of northwest King County, only the willow is known to obtain its water supply from the zone of saturation. Such a plant is known as a phreatophyte. However, black cottonwood is commonly associated with the willow and is probably also a phreatophyte. Locally at least, alder may be a phreatophyte. According to Robinson (1958, p. 62-64), willow grows principally where the depth to water is less than 15 feet, and cottonwoods probably do not grow where the depth is much more than 30 feet. The consumptive use of water by willows and cottonwoods in the project area is not known, but may be large locally. Owners of shallow wells and springs may find that, at least locally, yields can be increased substantially by removal of water-consuming vegetation adjacent to the wells or springs.

GEOLOGY

General Features

The rocks of northwest King County have been divided into two principal groups: (1) consolidated bedrock of Tertiary age, and (2) semiconsolidated to unconsolidated deposits of Pleistocene and Recent ages. In the eastern and south-central parts of the area (pl. 1) Tertiary rocks crop out at altitudes of several hundred feet above sea level; in the northwestern part of the area the Tertiary rocks are buried beneath several hundred feet of unconsolidated deposits. In the south-western part of the area, in Seattle, Tertiary rocks are exposed at altitudes ranging from a few to about 300 feet above sea level. Stratigraphic relations and structure are shown by the cross section on plate 2.

The Tertiary rocks were not studied in detail during this investigation because the work of Warren and others (1945) and of H. H. Waldron (written communication, 1959) were sufficient for the present study. The terminology and description of the Tertiary rocks are largely after Warren and others (1945), but the contacts between the bedrock and surficial units have been modified. The geology of the Tertiary rocks of the South Seattle and Duwamish Head quadrangles is after Waldron (written communication, 1959). Unconsolidated deposits, all of which are probably of Quaternary age, mantle much of northwest King County. These deposits occur at altitudes ranging from more than 1,000 feet above sea level to several hundred feet below sea level (pl. 2, sec. C-C').

Consolidated Rocks

The consolidated rocks of northwest King County range in age from Eocene to Miocene. These rocks consist chiefly of shale, graywacke, sandstone, conglomerate, and andesite. They are exposed only in the southern part of the project area. Only small supplies of ground water currently are developed from the consolidated rocks.

Eocene Continental and Marine Sedimentary Rocks

According to Warren and others (1945), the oldest rocks exposed in the mapped area are part of a sequence of over 2,000 feet of "continental and marine carbonaceous shale, fossiliferous graywacke, and conglomerate" of Eocene age. These rocks crop out in several places within a mile or so of Preston in the valleys of the East Fork of Issaquah Creek, the Raging River, and an unnamed creek west of Preston. The unit is exposed also in the Duwamish River valley near West Duwamish. Age determination of fossils from an exposure half a mile west of Preston suggests that these beds are of late Eocene age (Warren and others,1945). They may, however, be as old as middle Eocene on the basis of the age of fossils from exposures in the Duwamish River valley (Waldron, oral communication, 1959).

Eocene Volcanic Rocks

Several thousand feet of tuffaceous andesitic sandstone and volcanic breccia separate the Eocene continental and marine sedimentary rocks from the arkosic rocks of the Puget group. These volcanic rocks are extensively exposed in the Newcastle-Grand Ridge hills. Warren and others (1945) suggest that because their maximum thickness of 7,000 feet is in the vicinity of sec. 1, T. 23 N., R. 6 E., their source may be in that locality.

Puget Group

Interbedded sandstone, shale, and coal of the Puget group of probable late Eocene age (Warren and others, 1945) crop out in the southern part of the area. Bedding in the sandstone varies from thick to thin; thicker beds are commonly cross-bedded. Where mapped by Warren the Puget group is 3,000 to 3,200 feet thick.

Keechelus Andesitic Series

According to Warren and others (1945), the Puget group is overlain by the Keechelus andesitic series in the eastern part of the King County coal field and by marine sedimentary beds in the western part of the field. On the basis of faunal evidence, the marine sedimentary beds, discussed in the next section, are considered to be of middle Oligocene to early Miocene age. Because of the stratigraphic position of the Keechelus andesitic series with respect to the marine sedimentary beds, and because of the presence of tuff apparently derived from Keechelus volcanism in the marine sedimentary beds, Warren believed that the two are of the same age span.

Andesite flows west of Grand Ridge, in secs. 22 and 23, T. 24 N., R. 6 E., mapped as Keechelus by Warren and others (1945), lie at or near the base of the Oligocene and Miocene marine sedimentary beds. Locally, beyond the map area, a continental facies of the marine sedimentary beds is capped by a flow of the Keechelus.

The Keechelus andesitic series consists of tuffs and flows of basic andesite. In northwest King County the series is exposed in only a few small patches west of Grand Ridge. No tuffs were observed in this exposure. On plate 1 these volcanic rocks have been included with the older volcanic rocks (Eocene). Although Warren noted that east of R. 7 E. the Keechelus andesitic series probably is more than 10,000 feet thick, its thickness in the area of this investigation is not known.

Oligocene and Miocene Marine Sedimentary Rocks

Beds of marine sandstone, shale, and minor amounts of conglomerate of middle Oligocene and early Miocene age undifferentiated are exposed at scattered localities throughout northwestern King County (pl. 1). According to Warren and

others (1945) this unit may be as much as 8,000 feet thick in sec. 13, T. 24 N., R. 5 E., along U.S. Highway 10 northwest of Issaquah. Here, the rocks of this sequence are composed of thin strata of conglomerate and thicker beds of fossiliferous, tuffaceous sandstone and sandy shale. Warren and others (1945) state that, according to C. E. Weaver, fossils at this locality belong to the fauna of the Sooke formation, which Weaver (1937) considered to be of earliest Miocene age. Warren also found fossils of middle Oligocene age near the base of the series here.

The exposure of these Oligocene and Miocene sedimentary rocks on the Seattle drift plain just west of Bailey Peninsula is the largest in the project area. The stratigraphy and fauna of these rocks have been studied in detail by Weaver (1937, p. 152-154) and by Durham (1944, p. 130) and are being studied currently by Waldron of the Branch of Engineering Geology, U.S. Geological Survey.

According to Waldron (written communication, 1958), the beds of Oligocene age exposed in South Seattle and at Alki Point consist of sandstone, siltstone, shale, and minor amounts of conglomerate. The lowest beds composed chiefly of sandstone and siltstone are exposed at South Park, in secs. 32 and 33, T. 24 N., R. 4 E., and on the west flank of the Seattle drift plain near Georgetown. Some of the beds are pumiceous and contain carbonized fragments of plants. Overlying this sandstone and siltstone unit is a band of conglomerate, which crops out discontinuously from Bailey Peninsula to Georgetown. The measured thickness of this conglomerate is about 400 feet, according to Weaver (1937, p. 153). It is well exposed on the west side of Bailey Peninsula (Seward Park) and along 15th Avenue South near the S.E. cor., sec. 20, T. 24 N., R. 4 E. In general, the rock is massive, poorly sorted and moderately well compacted. The fragments are chiefly pebbles, though they range in size from very coarse sand to boulders. The pebbles are composed of a variety of rock types including andesite, basalt, quartzite, rhyolite, and chert; only rarely are granitic pebbles found.

Above the conglomerate lies a series of interbedded shale, siltstone, and very fine sandstone. Typical exposures of these beds occur along the east side of Duwamish River valley, in the SE¼SE¼ sec. 20, T. 24 N., R. 4 E. They are light gray to brown, highly fractured, and rather poorly bedded. The thickness of these beds is more than 1,000 feet (Waldron, written communication, 1959).

The beds that crop out at Alki Point (in secs. 10 and 15, T. 24 N., R. 3 E.) consist of 465 feet of siltstone (Weaver, 1937, p. 152-153) and minor amounts of very fine to coarse sandstone and some shale and mudstone. Most of the rocks are micaceous and some are tuffaceous; many contain fossils. On the basis of faunal and lithologic similarities, the beds of Oligocene age exposed at Alki Point and in South Seattle have been correlated with the type Blakeley formation of Weaver (1916, 1937) in Kitsap County to the west (Durham, 1944, p. 130).

Structure

The Tertiary rocks of the area have been folded and faulted. Some movement may have taken place while the Puget group was being deposited, but most of it occurred in Miocene time after the eruption of the Keechelus andesitic series had ceased and the Oligocene and Miocene sedimentary beds had been deposited (Warren and others, 1945).

The most pronounced fold in the area is the Newcastle Hills anticline described by Weaver (1937, p. 155). The axis of this anticline extends from near the south end of Lake Boren, in the NW¼NW¼ sec. 34, T. 24 N., R. 5 E., through sec. 35, to about 2 miles south of High Point, then southeast across T. 23 N., R. 7 E. The north limb of the Newcastle Hills anticline dips as steeply as 47°; the south limb, which also dips steeply, is overturned in sec. 2, T. 23 N., R. 5 E. (Warren and others, 1945). According to Weaver (1937, p. 198), the anticline extends to the west through South Seattle and across Puget Sound into central Kitsap County. In South Seattle several minor cross folds occur on both flanks of this major anticline. Those on the north flank plunge generally to the north and those on the south flank plunge generally to the south. At Alki Point the Oligocene sedimentary beds form the nose of a small steeply dipping anticline that plunges to the north.

Unconsolidated Rocks

The unconsolidated rocks in northwest King County consist chiefly of gravel, sand, silt, and clay, of Quaternary age. The maximum known thickness of the unconsolidated rocks here is 1,235 feet, at well 24/4-18B1. Water-bearing zones in the sequence of unconsolidated rocks yield virtually all the ground water developed for economic use in northwest King County.

Stratigraphic names were first applied to the unconsolidated deposits of the Puget Sound area by Willis (1898). He and Smith (Willis and Smith, 1899) mapped these deposits in the Tacoma 30-minute quadrangle, immediately south of the northwest King County area.

The unconsolidated deposits of northwest King County were mapped principally by Bruce Liesch in 1951-53, who made tentative correlations of these deposits with those mapped in the Tacoma quadrangle by Willis and Smith (1899). At the time this report was in preparation, criteria had not been found for establishing firm correlation between the formations and those of Willis and Smith in northwest King County. For that reason, except for deposits of the Vashon glaciation, informal names are used here. This procedure also was used by Newcomb (1952) when he investigated the unconsolidated deposits in the western part of Snohomish County in 1946. Because of the relatively great distance to the area mapped by Willis and Smith, Newcomb decided to set up local stratigraphic names rather than to attempt correlation.

For the northwest King County area, the sequence of unconsolidated units was determined from isolated exposures of the contacts, from well logs (table 7), and from a study of the surface features peculiar to certain types of deposits.

During the investigation an attempt was made to locate an exposure in which the relationship of several of the pre-Vashon unconsolidated deposits could be established. The best exposure found during the course of the investigation is the cut on the northwest side of Siler Road in the NW¼NE¼ and NE¼NW¼ sec. 17, T. 25 N., R. 6 E. However, the contacts between some of the units are disturbed by what is probably a slump feature; some beds are vertical, and their relationships are not clear.

The base of the unconsolidated deposits is impossible to recognize from many drillers' logs because the descriptions of the drill cuttings are very generalized. Drilling speed, which might give an indication of the type of material being drilled, generally was not recorded, so that in many wells, where the unconsolidated materials may have been completely penetrated, their exact thickness cannot be determined from the logs.

Older Unconsolidated Deposits

In northwest King County a sequence of interbedded sand, silt, and clay, containing minor amounts of gravel, till, and volcanic ash, overlies the Oligocene and Miocene marine sedimentary rocks. These unconsolidated deposits are called the older unconsolidated deposits in this report.

From interpretation of well logs it appears that the upper surface of the older unconsolidated deposits lies approximately at sea level beneath the east shore of Lake Washington. Eastward from Lake Washington the top of these deposits slopes upward to an altitude of more than 100 feet above sea level in R. 7 E. The older unconsolidated deposits were eroded prior to deposition of overlying deposits, and the surface is cut by valleys which subsequently have been partly or completely filled; Lake Sammamish probably occupies such a valley. West from Lake Washington, the surface of the older unconsolidated deposits slopes much more steeply downward, and in T. 25 N., R. 3 E., the top of these deposits appears to be several hundred feet below sea level. The maximum inferred thickness of these deposits is over 1,000 feet, at well 24/4-18B1. The only known outcrop is in the SW¼ sec. 12, T. 24 N., R. 5 E., where about 100 feet is exposed. There the older unconsolidated deposits are moderately compacted and consist of beds of silt, sand, tuff, and lapilli. The silt and sand is pale to dark yellowish gray, brown, or red and is massive to laminated. Commonly it has well-developed joints which are spaced less than 1 foot apart and have a dark-yellowish-orange (hydrous iron oxide?) staining. The sand is well sorted, medium grained, and composed of subrounded to angular clastic fragments, about half of which are white to light-gray crystalline material (probably quartz and feldspar) and about half are dark colored. Some beds, composed predominantly of sand, contain granules and pebbles as large as half an inch in diameter, and some beds also contain slightly altered tuff and grains of hypersthene.

The beds of tuff and lapilli are varicolored; yellowish-gray, medium- to very light-gray, pale- to dark-yellowish-orange, and pale-red-purple hues predominate. The individual volcanic ejecta are subrounded to subangular. Field examination indicates that some of the beds contain as much as 15 percent biotite, 5 percent transparent white crystals which are probably quartz and feldspar, 5 percent dark hard-rock fragments and 1 percent plant fragments. Commonly the larger lapilli have a thin coating of a dark-yellowish-orange material that may be hydrous iron oxide.

According to D. R. Mullineaux of the U.S. Geological Survey (oral communication, 1959) the Miocene deposits in the southeastern part of the Puget Sound lowland east of Tacoma do not contain large quantities of hypersthene. Therefore,

the sand beds cropping out in the SW¼ sec. 12, T. 24 N., R. 5 E., probably are no older than Pliocene, and because they are more indurated than any other post-Miocene sand beds in the area, they are believed to be correlative with the older unconsolidated deposits.

Lower Clay Unit

A unit about 50 feet thick, composed almost entirely of gray, blue, and brown clay and silt, overlies the older unconsolidated deposits and immediately underlies a gravel bed in the northwest King County area. This clay and silt unit is referred to in this report as the lower clay. It is thick bedded to laminated and was deposited in large part in standing water. Locally the clay is varved.

Some discontinuous beds of till are present in the lower clay unit and commonly these also contain a large percentage of clay and silt. At several places in Seattle where the lower clay is exposed it contains beds of woody peat. The most extensive exposures are along the west shore of Lake Washington, in secs. 27 and 34, T. 26 N., R. 4 E. Several beds of peat, up to 1 foot in thickness are interbedded with clay, silt, and fine pumiceous sand. The presence of beds of both glacial till and woody peat in the lower clay probably indicates deposition during both glacial and nonglacial times.

Locally, it was impossible to determine the position of the contact between the lower clay and the older unconsolidated deposits on the basis of drillers' logs. For that reason, these two are shown as undifferentiated in some parts of section B-B' on plate 2.

The lower clay unit may be correlative in part with the unit termed the Admiralty till and clay by Willis (1898). However, no reliable criteria are known upon which a correlation may be based. The units mapped as the Admiralty clay by Newcomb (1952) and Admiralty drift by Sceva (1957) probably are correlative with the older unconsolidated deposits and the lower clay unit of this report.

Unnamed Gravel

A sequence of cobble, pebble and granule gravel and sand, called the unnamed gravel in this report, disconformably overlies the lower clay unit. Where exposed, the gravel is weathered to a yellowish brown; pebbles of volcanic rocks commonly have alteration rinds and many pebbles of granitic rock have completely disintegrated. Where encountered in drilling, however, the gravel is typically gray and appears fresh and unaltered.

The unnamed gravel crops out along the sides of the uplands, and ranges in thickness from 0 to more than 200 feet; for example, it is exposed along the west shore of the north end of Lake Washington about 50 to 75 feet above lake level almost continuously for about 2 miles south of Sheridan Beach. Locally along Puget Sound the base of the unnamed gravel is below sea level. The gravel grades laterally from cobble, pebble, and granule gravel and sand in the eastern part of the project area to predominantly granule gravel and sand in the western part. In the vicinity of Seattle the unit grades vertically from granule gravel at the base to sand at the top.

The unnamed gravel probably is correlative with the lower member of the Orting gravel mapped by Sceva (1957) in Kitsap County. It may also be correlative with gravel and sand in the Admiralty clay of Newcomb (1952, p. 45) in Snohomish County.

Upper Clay Unit

Beds of finely laminated to massive gray, brown, and blue-gray silt and clay, locally more than 200 feet thick (pl. 2, sec. A-A'), overlie the unnamed gravel; these are referred to as the upper clay unit. Evidence showing that at least part of the upper clay was deposited during a nonglacial time is present in several exposures. One such exposure is in a cliff along the west shore of Lake Washington about 3 miles north of Sand Point, in the SE¼SW¼ sec. 15, T. 26 N., R. 4 E. There a bed of silty peat 2 inches thick is exposed in the upper clay unit about 50 feet above its contact with the unnamed gravel. Willow leaves and small fragments of wood identified as Salix, sp., by R. W. Brown, U.S. Geological Survey occur about 20 feet above the peat bed. In a sea cliff about 4 miles directly west of the outcrop just described, two beds of purple silty peat are interbedded with silt and sand of the upper clay at an altitude of about 50 feet and a few feet above the contact with the unnamed gravel.

A bed of fossiliferous massive silt 2 to 6 feet thick is exposed in the upper clay in a sea cliff along Puget Sound at West Point at an altitude of 30 feet. The bed dips gently to the southeast and passes below sea level on the south side of Magnolia Bluff about 2 miles southeast of West Point. Pelecypods collected by H. H. Waldron from this bed at West Point (NW¼NE¼ sec. 16, T. 25 N., R. 3 E.) have been identified as Anadonta cf. kennerlyi Sea by E. F. Trumbull, U.S. Geological Survey. Living species of Anodonta are found in several fresh water lakes in Washington today, and are restricted to depths of 0 to 20 feet.

The upper clay may be correlative with the Kitsap clay member (Sceva, 1957, p. 17-19) and the Pilchuck clay member of advance outwash of the Vashon drift (Newcomb, 1952, p. 18-19).

Unnamed Sand

A deposit of predominantly medium to coarse grained, slightly oxidized, stratified sand, which locally is as much as 220 feet thick (pl. 2, sec. C-C'), overlies the upper clay in the Seattle, West Seattle, and interlake drift plains. It is best exposed in the Seattle drift plain, where it consists chiefly of well-sorted medium-grained sand composed of quartz and rock fragments, and lenses of gravel, silt, and clay.

The unnamed sand is well exposed in the sea cliff at Fort Lawton near West Point, where its contact with the upper clay is at an altitude of about 100 feet. A few feet above the contact the sand is brown fine grained, and ripple marked. Higher in the section and extending to the top of the bluff, the sand is medium grained. The general character and distribution of the sand in the West Point area suggest that it was

deposited in a large lake. In other exposures, however, such as in a sand pit in the NW¼NE¼ sec. 4. T. 25 N., R. 4 E., the sand is coarser grained and crossbedded.

The sand probably is correlative with the lower part of the Esperance sand member of advance outwash of Vashon drift (Newcomb, 1952, p. 18-23), and with the Puyallup sand.

Vashon Drift

The latest glaciation of the Puget Sound lowland by northern ice was termed the Vashon glaciation by Willis (1898, p. 126). Gravel, sand, silt, clay, and boulders deposited by the Vashon glacier are widespread in northwest King County and in the aggregate are commonly over 150 feet thick. The rock fragments are subrounded to subangular in shape; apparently nearly all were stream worn before being incorporated into the glacier. Stones that have become flattened or striated by glacial action are rare. Boulders tend to be more angular than the pebbles and cobbles.

Although the Vashon glacier originated in British Columbia (Bretz, 1913, p. 17), central Cascade rock types (Crandell, Mullineaux, and Waldron, 1958, p. 385) are common in its deposits in northwest King County. Only among the large boulders do the northern rock types predominate. Commonly, only about 15 percent of the stones, (pink granite and metamorphic rocks), contained in Vashon till and outwash are of the type derived from the northern Cascades and the Coast Range of British Columbia. The remainder of the stones are principally volcanic and white granitic rocks derived from the central Cascades. The predominance of central Cascade rock types apparently is due to the glaciers incorporating in the drift large quantities of locally derived stream alluvium. On the Newcastle Hills and the neighboring hills to the east the drift also contains pebbles of sandstone and shale, derived locally from the Tertiary sedimentary beds.

In this report the term "glacial drift" or "drift" follows the usage of Flint (1957, p. 108): "*** the term 'glacial drift' embraces all rock material in transport by glacier ice, all deposits made by glacier ice, and all deposits predominantly of glacial origin made in the sea or in bodies of glacial meltwater ***" For the purpose of this study, drift of the Vashon glaciation has been subdivided into three major units. Drift that is unsorted and virtually unstratified is termed till. Sorted drift is termed stratified drift. Stratified drift that was deposited as the glacier advanced is called advance stratified drift, and that deposited as the glacier retreated is called recessional stratified drift.

Vashon till and recessional stratified drift commonly can be distinguished from pre-Vashon unconsolidated deposits by topographic form. Because the glaciation of Vashon age is the most recent in northwest King County, almost all areas characterized by ground-moraine or ice-contact topography are underlain by Vashon drift.

Vashon drift, where composed chiefly of sand and gravel, often may be distinguished from pre-Vashon deposits by its fresh appearance. The sand and gravel deposits of pre-Vashon age generally are oxidized to a darker color than deposits of Vashon age. Pre-Vashon clay and silt have not been noticeably altered and commonly cannot be distinguished from clay and silt of Vashon age.

The sand and gravel bodies of pre-Vashon age commonly contain a cream-colored, very sticky clay. Locally, the Vashon stratified drift also contains clay that is similar in appearance, although it is not sticky. In general, the Vashon drift is not as indurated as is the pre-Vashon material. This distinction is not evident, however, in some outcrops of fine-grained materials.

Lithologically, the Vashon advance stratified drift is indistinguishable from the recessional stratified drift in most exposures. In some areas, however, the recessional drift has been slightly stained by post-Vashon weathering and this stain aids in discriminating the two units. The topographic expression of the recessional drift is a very useful mapping criterion. In many areas, however, the stratigraphic position of the stratified drift in relation to the Vashon till is the only criterion by which it can be identified.

Advance stratified drift.--Vashon advance stratified drift was deposited almost entirely by glacial melt-water streams. Some of the advance stratified drift was therefore deposited beyond the limits of the glacier and some was deposited in immediate contact with the ice such as in ice-dammed lakes or in deposits built by streams flowing along the margins of the glacier. However, only a few exposures contain features that indicate where the glacial ice stood while the advance stratified drift was being deposited in a particular locality.

The appearance of the Vashon advance stratified drift is variable, ranging in grain size from silt to coarse gravel, and in degree of sorting from well sorted to unsorted. However, it consists principally of sand to cobble gravel, and locally contains thin beds of laminated fine-grained material.

Deltaic beds are exposed in a road cut about 3 miles west of Fall City and 0.4 mile southwest of the Aldarra Farms buildings in the NW$\frac{1}{4}$NE$\frac{1}{4}$ sec. 7, T. 24 N., R. 7 E., where a fine- to very fine-grained well-sorted sand shows ripple marks and compound foreset bedding. The individual foresets are about 2 inches high and the individual lamina are less than one-eighth inch thick. The sand is over 25 feet thick and contains numerous steeply dipping sand dikes up to half an inch thick and spaced about 1 foot apart. The delta apparently was formed by local drainage into a lake that occupied the Snoqualmie River valley. The surface of the lake probably was at an altitude of about 300 feet.

The advance stratified drift of this report is, in general, correlative with the upper part of the Esperance sand member (Newcomb, 1952, p. 18-23).

Till.--A virtually unsorted, unstratified compact mixture of boulders, cobbles, pebbles, sand, silt, and clay, as much as 150 feet thick (pl. 2), mantles most of northwest King County. Physically the mixture is similar to slightly rotten light-gray concrete and is appropriately called hardpan by well drillers.

Very little of the till is noticeably bedded although it commonly has a horizontal fissility. A shallow brown weakly podsolic soil is developed on much of the till of Vashon age (Poulson and others, 1952, p. 95). Impure iron oxide pellets, usually less than one-fourth inch in diameter, are abundant in this soil.

The Vashon till of Newcomb (1952, p. 23-25) and Sceva (1957, p. 20-23) is, in general, correlative with the Vashon till of this report; however, till-like materials mapped as Esperance sand member by Newcomb in southern

Figure 4.--Laminated clay of the Vashon drift, overlain by recessional stratified drift exposed along the south side of U.S. Highway 10, about 1 mile east of Issaquah.

Figure 5.--Vashon recessional stratified drift in a gravel pit about 1 mile north of Issaquah.

Snohomish County have been mapped as Vashon till by the authors of this report in northern King County.

Recessional stratified drift.-- Poorly sorted to well-sorted, light-gray, stratified gravel and sand containing minor amounts of silt and clay were deposited by the wasting Vashon glacier in isolated areas on the drift plains, on the Newcastle-Grand Ridge hills, and in nearly continuous sheets in the major valleys. The thickness of this material ranges from a featheredge to more than 100 feet (pl. 2).

Much of this recessional stratified drift was deposited in immediate contact with wasting ice, forming kame terraces, kames, and eskers. Kame terraces are present only above an altitude of 160 feet (Bretz, 1913, p. 166). One of the larger kames in King County is centered in the SW¼NW¼ sec. 12, T. 24 N., R. 6 E. The upper surface of the kame is interrupted by a large kettle.

The only eskers recognized in northwest King County are just north of this kame and are in secs. 1, 2, and 12, T. 24 N., R. 6 E. The largest of these eskers is parallel to a road in the eastern part of the SE¼SE¼ sec. 2, T. 24 N., R. 6 E., and extends southeast into secs. 1 and 12.

Recessional stratified drift laid down in front of the retreating glacier includes valley trains and lake deposits. Valley trains are present in many of the minor valleys, including those of Bear Creek northeast of Redmond, Bear Creek north of Woodinville, North Fork of Issaquah Creek, and Swamp Creek near Kenmore.

Extensive glacial-lake deposits occur in northwest King County. Large ice-dammed lakes that occupied the major valleys have been described in detail by Bretz (1913, 122-171). Silt and clay mantles the bottom and sides of these glacial-lake basins. In the NE¼ sec. 17, T. 24 N., R. 6 E., more than 10 feet of this recessional lacustrine silt is exposed on the south side of a paved road. In the SE¼SE¼ sec. 27, T. 24 N., R. 6 E., along the south side of U.S. Highway 10, about a mile east of Issaquah, clay and silt beds that have a moderate eastward dip (fig. 4) are exposed. These clay and silt beds may have been deposited on ice and when the ice melted were tipped to the east.

Streams emptying into these lakes laid down deltas of well-sorted gravel and sand. The larger deltas are shown on the geologic map (pl. 1). Gravel pits provide excellent exposures of the structure of the delta in sec. 27, T. 24 N., R. 6 E., near Issaquah (fig. 5). The Vashon recessional deposits to which Newcomb (1952, p. 26-28) applied formal names in Snohomish County do not extend into northwest King County.

Post-Vashon Deposits

In northwest King County post-Vashon deposits extensively underlie the Duwamish, Sammamish, and Snoqualmie River valley floors and a few isolated bodies of post-Vashon alluvium are associated with small streams on the uplands. The deposits, which consist of sand, silt, clay, and some gravel, commonly are over 50 feet thick and were laid down primarily by stream, lake, and marine processes. The greatest known thicknesses of these deposits in northwest King County are in the Snoqualmie River valley near the Snohomish County line and at the north end of

the Duwamish River valley. Of these two places the thickness is inferred to be greatest in the Snoqualmie River valley. According to the owner of well 26/7-6D1, the blue clay penetrated at 340 feet is identical to the blue clay at the surface. The entire 340 feet of material may be post-Vashon in age.

Post-Vashon lake deposits occur in places where closed depressions were left by the Vashon glacier, in lakes formed as a result of glacial damming of the rivers in the area, and in Sammamish Lake and Lake Washington. The lake deposits are predominantly clay, silt, sand, peat, and muck. Landscapes sculptured by glaciers contain many closed depressions which are conducive to peat deposition. Consequently the occurrence of peat is common in all the Quaternary nonglacial sediments that were deposited when the climate was relatively mild. Peat consists of the remains of plants that accumulated in water or in wet places. Most of the plants whose remains formed the peat grew where the peat now lies. According to Rigg (1958, p. 5), "The plants may have been large or small, varying from large trees to algae and fungi." The plant remains may have undergone very little change, or they may have become disintegrated and decomposed. When decomposition is so complete that recognition of plant remains is no longer possible, the material is known as muck instead of peat (Rigg, 1958, p. 10).

Moss peat (sphagnum), fibrous peat (mostly sedge), woody peat, and sedimentary peat were recognized in northwest King County and their general distribution was described by Rigg (1958, p. 69-95). Peat is at the surface of more than 2,000 acres in northwest King County. The largest peat bog is about half a mile southeast of Bellevue and covers 535 acres. Rigg found the peat in this bog to be at least 50 feet thick.

A 1- to 2-inch layer of pumicite is present in most of the peat deposits of the area, and presumably was deposited over all the area; except in protected areas, however, subsequent erosion has removed or modified the layer. According to Rigg and Gould (1957), this layer is a record of a violent eruption of Glacier Peak which occurred approximately 6,700 years ago. They believe (p. 354, 356-362) that the accumulation of peat commenced about 10,000 to 14,000 years ago.

Post-Vashon deposits of northwest King County include much slump block material along valley walls, particularly in areas where sand of great thickness overlies clay. Two of the larger blocks are in the SW¼NE¼ sec. 25, T. 25 N., R. 3 E., at the southeast end of Kinnear Park, and in the NE¼NW¼ sec. 22, T. 26 N., R. 4 E. The scope of this investigation precluded the delineation of slump blocks and none are included with the post-Vashon deposits shown on plate 1.

Geologic History

The conditions governing the occurrence of ground water can be accurately determined only if the nature of the rock materials lying at depths likely to be reached by wells is known. In a geologically complex area, such as northwest King County, study of rock exposures and well records will not yield sufficient information to permit predicting the lateral extent and nature of rock units at some distance from the places where they are exposed. It is therefore necessary to learn as much as possible

about the sequence of geologic events that have taken place in the area, and to relate the exposed rocks to these events. When the mode and sequence of deposition of the various rock units are known it is possible to understand and predict their occurrence and water-bearing character over a large area.

Pre-Quaternary History

The pre-Tertiary and part of the early Tertiary history of northwest King County have not been reconstructed as a part of this investigation because of inadequate information. For a generalized geologic history of the State of Washington, reference is made to Culver (1936), and Weaver (1937).

In late Eocene time over 12,000 feet of carbonaceous shale, dark and light-colored sandstone, coal beds, andesitic tuff, and volcanic breccia accumulated on a gradually sinking coastal plain in the present site of northwest King County (Warren and others, 1945).

During Oligocene and Miocene times the area was the site of a marine embayment in which about 8,000 feet of shale, sandstone, and conglomerate accumulated. Extrusion of the Keechelus andesitic series probably took place concurrently with the deposition of these sediments (Warren and others, 1945). Late in Miocene time northwest King County was uplifted and warped into northwest-trending folds. Newcastle Hills and the adjacent high buttes to the east are remnants of one of these folds. In Pliocene time the north-trending Cascade Mountains were uplifted. This movement continued into the Pleistocene epoch and present-day seismic activity indicates that it may be continuing. Shortly after the beginning of this uplift, erosion formed the major drainage of the Cascade Mountains. Physiographic expression of the earlier northwest-trending structure is found in the direction of flow of the upper reaches of many of the principal rivers that drain the northern and central Cascades.

Quaternary History

A change to a climate suitable for the development of glaciers occurred in Pleistocene time. Valley glaciers developed in the Cascade and Olympic Mountains (Bretz, 1913, p. 221-225); however, none of these alpine glaciers are known to have extended into the project area. Pleistocene deposition is represented in northwest King County by many hundreds of feet of unconsolidated clay, silt, sand, gravel, till, and peat. These beds are a complex succession of lacustrine, glacial, and marine deposits. According to Crandell, Mullineaux, and Waldron (1958, p. 384) at least four distinct major glaciers developed in Canada and moved into the Puget Sound lowland. Three glaciations were inferred from the reconnaissance mapping of northwest King County. One of these, the Vashon glaciation, was correlated with the Vashon of Crandell, Mullineaux, and Waldron in the southeastern part of the Puget Sound lowland. Neither of the other two could be correlated with any of their three pre-Vashon glaciations.

Interglacial erosional interval.--According to Bretz (1913, p. 195-220), the major valleys of the Puget Sound lowland were cut by streams consequent on a depositional plain during the nonglacial interval immediately preceding the Vashon glaciation. During this period, regional uplift elevated western Washington at least 1,000 feet above present altitudes (Bretz, 1913, p. 226), resulting in accelerated stream erosion and oxidation of the rock material.

Bretz (1913, p. 203) postulated that the King County area was drained late in pre-Vashon time by a master river flowing north through the main arm of Puget Sound. According to him, the Cedar River was then tributary to the Snoqualmie River, and together they cut the Snoqualmie River trough prior to Vashon glaciation.

Bretz attributed the origin of the troughs now occupied by Sammamish Lake and Lake Washington to a river that existed during the interglacial erosional interval and that headed in the south end of the present Sammamish Lake valley. The river flowed north through the Sammamish River valley, then west to the north end of Lake Washington through the valley near Bothell, then to the Puyallup River near Tacoma. The valleys formed during the interglacial erosional interval were greatly modified by the Vashon glacier.

Advance and maximum of the Vashon glacier.--The last glacier which extended into the southern Puget Sound lowland probably began advancing from its area of accumulation in British Columbia early in Wisconsin time, according to Waldron and others (1957). None of the contemporaneous valley glaciers in the Cascades or Olympics extended downvalley far enough to merge with the Vashon lobe at its maximum (Bretz, 1913, p. 221-225); instead, Vashon ice actually thrust up into some of these mountain valleys.

The advancing Vashon glacier dammed north-flowing streams in northwest King County and formed lakes. As the Vashon glacier moved over the northwest King County area, streams of meltwater flowing from the sediment-laden ice deposited stratified stream and lacustrine drift deposits. Till was plastered over much of the surface. The north-trending valleys, which were parallel to the direction of ice flow, were deepened (Bretz, 1913, p. 219) but in valleys lying transverse to the direction of ice flow, drift accumulated to a considerable thickness.

At its maximum, the ice reached a thickness of over 4,000 feet in the King County area (Bretz, 1913, p. 36) and extended about 15 miles south of Olympia, about 60 miles south of Seattle. The Vashon glaciation in the south and central parts of the Puget Sound lowland consisted of a single advance and retreat, with only one recognized minor oscillation (Bretz, 1913, p. 141). Extensive deposits of sand, gravel, and till were deposited by the heavily sediment laden ice.

Bretz stated (p. 227): "At the time of the maximum Vashon glaciation, the region stood at about its present altitude. The time of lowering from the interglacial higher altitudes may have preceded or been contemporaneous with the advance of the Vashon ice epoch; it was attained at least by the time outwash reached Grays Harbor at the mouth of the Chehalis."

Wasting of the Vashon glacier.-- About 14,000 years ago the front of the Vashon ice lobe began melting back (Rigg and Gould, 1957, p. 358). This recession was accompanied by heavy runoff from the wasting ice, and many streams established themselves upon the surface of the ice, depositing gravel along walls of the marginal drift plains.

The major valleys which drained to the north became sites of a series of ice-dammed lakes. The altitudes of the surface of the lakes were controlled by the altitude of the lowest available spillway on the rimming valley walls. Evidence of these lakes is afforded principally by shoreline features, channels cut across the uplands, silts mantling the valley walls, deltas composed of Vashon recessional gravels built out into the valleys, and other shoreline features. Bretz, in 1910 and again in 1913 (p. 109-171), described this complicated Vashon recessional lake history. The two drift plains separating the valleys occupied by Lake Washington, Sammamish Lake, and the Snoqualmie River slope generally to the north. Thus, as the southern terminus of the ice damming the mouths of the latter two valleys wasted back, the ponded melt water was able to escape through progressively lower routes across these uplands. As the Vashon ice mass was thinning, the ice became stagnant and kame terraces, kames, kettles, and eskers formed in contact with the glacier. The locations of some of these features are given on page 17.

In addition to the ice-controlled lakes which were largely restricted to the northwest King County area, a very extensive ice-dammed lake occupied much of the Puget Sound lowland south of the Strait of Juan de Fuca. This lake was recognized by Bretz (1910, p. 458), who named it Lake Russell. The water surface of Lake Russell ranged in altitude from 160 feet to 120 feet during most of its history, the higher altitude prevailing (Bretz, 1913, p. 109-171). The surface of Lake Russell constituted the base level in the area, and in referring to Puget Sound, Bretz comments (p. 166), "No kame terraces of the region are known below the 160-foot contour. Several well-developed terraces end at about this level, and the topography of the gravel becomes very subdued where the deposit is continued farther down the valley."

Post-Vashon Geologic History

Removal of the Vashon ice from the area left an uneven, pitted topography favorable for the accumulation of small lakes such as Cottage Lake in sec. 7, T. 26 N., R. 6 E., and Phantom Lake in sec. 2, T. 24 N., R. 5 E. In both these lakes, as well as in many other lakes in the area, tens of feet of peat accumulated. Most of these peat bogs, in common with many other peat bogs in Washington, contain a thin volcanic ash bed (described earlier, p. 18). The wind-blown volcanic ash probably settled over much of the State, but subsequent erosion and mixing has removed and obscured it except in deposits laid down in standing water. Pollen analysis of the peat reveals a nearly continuous change of climate, from a cool-moist period immediately after the Vashon retreat through a period of warming and drying, to another cooler and moister climate of the type that exists today (Hansen, 1947, p. 113-118).

The topography in the Puget Sound lowland area has been modified only slightly by erosion since the end of the Vashon glaciation. Outflow from springs and

runoff from the uplands have cut steep-sided canyons in the major valley walls and have transported the material to the major valleys where the lower gradient caused these small streams to drop part of their suspended load. Alluviation has developed flat floors in the major valleys. The Tolt River, which discharges into the Snoqualmie River valley southeast of Carnation, has built a fan across the valley, deflecting the Snoqualmie River to the west side of the valley. The combined lateral erosive action of the two rivers at their confluence has steepened a 400-foot cliff in the west slope of the valley. Slumping has steepened many of the slopes extending from the uplands to the main valleys, and waves have eroded many of the slopes overlooking Puget Sound.

Manmade Alterations

Regrade projects in Seattle have involved movement of millions of cubic yards of Pleistocene sediments, and have completely obliterated much preexisting topography. Bretz (1913, p. 174), in discussing the Denny Hill regrade project, states " *** it (Denny Hill) was removed by hydraulic methods from more than 20 city blocks, the maximum cut being 125 feet."

The Lake Washington canal was cut through between Lakes Washington and Union in 1916 and Lake Washington was lowered from 22 feet to 14 feet above sea level. Cedar River formerly flowed either into the south end of the lake or through the Black River into the Duwamish River, its course depending on the course of the delta distributary. The canal is now the outlet of the lake, and the Cedar River's entire discharge now enters the lake. The Black River channel was abandoned and is now a slough. The former Lake Washington beach extends around the lake as a terrace.

Summary of the Geologic History

Following is a chronologic summary of the salient events that have influenced the terrain of northwest King County and vicinity:

Tertiary:

A. Late in the Eocene epoch over 12,000 feet of carbonaceous shale, sandstone, coal beds, andesitic tuff, and volcanic breccia accumulated on a gradually sinking coastal plain.

B. During the Oligocene and Miocene epochs about 8,000 feet of marine shale, sandstone, and conglomerate were deposited, probably concurrently with the extrusion of andesitic flows of unknown thickness.

C. Commencing late in Miocene time, the area was deformed by folds trending approximately N. 70° W.

D. The north-trending Cascade and Olympic Mountains were uplifted in the Pliocene.

Quaternary:

E. The Puget Sound basin was partially filled by at least three periods of glaciation separated and followed by lacustrine, alluvial, and marine deposition of clay, silt, sand, gravel, and peat.

F. Relative uplift of the Puget Sound basin resulted in a period of canyon cutting. Much of the present depth and width of the Puget Trough, and the valleys occupied by Lake Washington, Sammamish Lake, and the Snoqualmie River may have been formed during this period.

G. Advance of the Vashon glacier in Wisconsin time deepened and widened north-trending valleys. Thick bodies of sand, gravel, and till were deposited over the area, particularly in valleys transverse to the direction of ice movement.

H. Retreat of the Vashon ice occurred at least 14,000 years ago. A series of ice-dammed finger-shaped lakes eroded spillways across the uplands. Ice-contact stratified drift was deposited over much of the area.

I. Period of alluvial valley filling and localized peat deposition, minor erosion, and soil development.

GROUND WATER

Water in Consolidated Rocks

Of the consolidated rocks of Tertiary age in northwest King County, only sedimentary rocks of Oligocene and Miocene ages are known to yield water to wells. Although the volcanic rocks, and particularly the sedimentary rocks of Eocene age, may yield appreciable quantities of water--as indicated from reports of water problems in coal mines producing from Eocene sedimentary rocks--these rocks have not been explored as possible sources of ground water. In those areas where considerable ground-water development has taken place, these rocks are overlain by Quaternary deposits that yield ground-water supplies adequate to meet the present demand.

In the Newcastle Hills where Quaternary materials are thin or absent (pl. 2, secs. A-A', C-C', pl. 1), water is obtained from sedimentary rocks of Oligocene and Miocene ages. Fieldwork in the Newcastle Hills showed that sandstone and conglomerate beds possibly as much as 1,000 to 2,000 feet thick crop out near the crest of the northeast flank. The outcrop area of these beds, which strike about N. 75° W. and dip about 45° NE., is the principal area of recharge for these deposits.

Wells drilled in the Newcastle Hills updip from the sandstone and conglomerate outcrops have not proved successful. Wells drilled on the flank of the hills far enough northeast of the outcrops to penetrate a substantial thickness of saturated sandstone and conglomerate yield economic quantities of water. Only two wells are known to have been drilled high on the northeast flank of Newcastle Hills updip from the sandstone outcrops. Of these, well 24/5-25B1 was drilled to a

The yields of wells in northwest King County that tap older unconsolidated deposits range from a few gallons per minute to more than 700 gpm. Large yields generally are obtained only where a substantial thickness of sand or gravel is encountered. For example, well 24/4-18B1, which taps about 120 feet of water-bearing sand and gravel in the older unconsolidated deposits between 165 and 1,030 feet below the land surface, yields about 100 gpm. Well 25/5-32N1 which produces from older unconsolidated deposits, chiefly sand, yields about 450 gpm with a drawdown of 65 feet, indicating a specific capacity of almost 7 gpm per foot of drawdown. The coefficient of transmissibility is about 15,000 gpd per foot. Because the occurrence of sand and gravel in the older unconsolidated deposits is unpredictable, considerable risk will be involved in any attempt to develop a large water supply from this unit.

The greatest concentration of wells tapping older unconsolidated deposits is in Tps. 24 and 25 N., Rs. 4 and 5 E. Probably as many as 40 wells in these townships tap older unconsolidated deposits, and 9 of them (table 5) flowed when drilled. Artesian conditions in the older unconsolidated deposits are not limited to these townships, however; flowing wells tapping these deposits have been reported in many other parts of the project area. Most such flowing wells are less than 100 feet above sea level.

Locally, at least, some wells tapping older unconsolidated deposits have produced water with an objectionably high chloride content (p. 47).

Lower Clay Unit

The lower clay unit yields little water to wells in northwest King County. It acts as an impermeable floor below the younger water-bearing units, and locally may cause perched water bodies in the overlying unnamed gravel. In other places, where sand or gravel deposits are at or near the top of the underlying older unconsolidated deposits, the lower clay may confine water under artesian conditions in them.

Unnamed Gravel

High permeability, thickness of as much as 200 feet, and wide areal extent of the unnamed gravel combine to make it one of the most productive aquifers in northwest King County. Because it occurs at relatively low topographic positions, the unnamed gravel commonly is saturated throughout most or all of its thickness. Discharge of large quantities of water at exposures is retarded by the relatively impermeable weathered exposures. The unnamed gravel is tapped by wells in practically all parts of northwest King County, except in the major valleys and in upland areas underlain at shallow depths by Tertiary rocks. The principal development of ground-water supplies from the unnamed gravel, however, has been in the east drift plain and the interlake drift plain. The average depth to water in wells tapping the unnamed gravel in these two areas is about 135 feet. Because of the variation in thickness of the unnamed gravel, these wells range in yield from a few to as much as several hundred gallons per minute. The average yield of wells tapping the unnamed gravel is about

150 gpm. Well 25/5-5R1 taps 102 feet of unnamed gravel and yields 390 gpm with 19 feet of drawdown. Well 25/5-5H1, which taps 68 feet of unnamed gravel, yields about 150 gpm with a drawdown of about 21 feet.

Upper Clay Unit

The upper clay unit is not a productive aquifer in northwest King County, and many wells have penetrated its entire thickness without encountering material capable of yielding appreciable quantities of water. For example, wells 24/5-7K1, 25/5-23F2, and 26/4-1E1 penetrated the entire thickness of the upper clay unit (140, 60, and 89 feet, respectively) without encountering sand or gravel. Only locally does this clay contain thin lenses of sand and gravel which may yield as much as a few tens of gallons of water per minute. Wells 25/5-14J1 and 26/5-17D1 are typical of those which yield water from the upper clay. Well 25/5-14J1 penetrates 192 feet of this material; the upper 66 feet is principally clay, the next 122 feet is mainly fine sand, and the lower 4 feet is gravel. The well yields 25 gpm with a drawdown of 2 feet. Well 26/5-17D1 penetrates at least 228 feet of upper clay; 218 feet of this is clay, fine sand, and silt. The well yields 25 gpm from a sand bed 10 feet thick at about 270 feet below the land surface.

Unnamed Sand

Where saturated, the unnamed sand provides adequate supplies of water for domestic use. Spring discharge and evapotranspiration commonly drain the sand along the margins of the uplands; therefore, the greatest thickness of saturated unnamed sand commonly is beneath the central area of the uplands. Well 26/5-11K2, about 1 mile east of Woodinville on the west side of the east drift plain, penetrates 150 feet of Vashon till, 167 feet of unnamed sand, and 10 feet of the upper clay unit. The upper 160 feet of the unnamed sand is unsaturated. Well 26/5-19L2, about 1 mile east of the west margin of the interlake drift plain and about $1\frac{1}{2}$ miles northwest of Juanita, penetrates 140 feet of Vashon till, 210 feet of sand and gravel--the bulk of which may be Vashon advance stratified drift--and 44 feet of lower clay. The upper 165 feet of the sand and gravel is unsaturated.

Although the wells that tap the unnamed sand range widely in yield, it is common for them to yield at least enough water for domestic use or for small public supply. The yields of wells 25/5-21Q1, 26/4-13G1, and 26/4-30J1 are typical. The U.S. Geological Survey made an aquifer test at well 25/5-21Q1, which is 100 feet deep and penetrates the upper 20 feet of a bed that is probably the unnamed sand; the casing is perforated from 90 to 100 feet below the land surface. At 50 gpm the drawdown was 24 feet and the coefficient of transmissibility was computed to be 6,600 gpd per ft. Well 26/4-13G1 is 62 feet deep and penetrates the unnamed sand from 18 to 62 feet below the land surface. Although only the lower 2 feet of sand is saturated, the well yields a supply ample for domestic use. Well 26/4-30J1, 238 feet deep, penetrates 72 feet of unnamed sand. The well has a drawdown of 160 feet when pumped at the rate of 190 gpm. Fine sand

in troublesome quantities occasionally is carried into the casings of wells tapping the unnamed sand. This difficulty usually can be eliminated, or at least minimized, by careful selection of well-screen slot size.

Vashon Drift

Advance stratified drift

The advance stratified drift generally yields large supplies of water to relatively shallow wells; however, its distribution is erratic and its occurrence can seldom be predicted with accuracy. Where it is deeply eroded, as along the margins of the drift plains, the advance stratified drift may be largely unsaturated owing to discharge by springs. A typical spring discharging from advance stratified drift is 25/6-17N1s (table 6) which yields 25 gpm.

Hydrologic data for four wells tapping the advance stratified drift are listed in table 1. Of the four, well 24/6-27D2 is the most productive in the project area. The data indicate a wide range in water-bearing character of the zones tapped.

Till

In most places the upper part of the Vashon till is more permeable than the compact lower part. Where this situation exists the upper part may contain a perched or semiperched water body that will yield small quantities of water to shallow wells. The lower portion retards the downward percolation of water. Examples of shallow wells that tap water in the upper part of the Vashon till are 25/5-26J1 and 26/4-24A1. Both are less than 50 feet deep and yield sufficient water for domestic use.

Nearly all the wells that produce from till are for domestic use. Many of these are reported to yield inadequate quantities of water, particularly during summer and fall. This seasonal failure to obtain water from till may be due to dewatering, by pumping of isolated lenses of sand and gravel having low rates of recharge, or it may be due to discharge of water from shallow, perched ground-water bodies by evaporation and transpiration. Because water occurs usually at a relatively shallow depth in the till, small supplies can be developed cheaply; however, the aquifer is very susceptible to contamination.

Recessional stratified drift

Water can be obtained almost everywhere in northwest King County from the recessional stratified drift. Large yields are obtained where a considerable thickness of coarse-grained material occurs within the zone of saturation. Well 24/4-12M1, on the north end of Mercer Island, which taps terraced recessional stratified drift, penetrated 62 feet of sand and gravel before encountering hardpan. Although only the lower 26 feet of material is saturated, the well yields 600 gpm with a drawdown of only 5 feet. Some of the wells in the lower end of Bear Creek

Table 1.--Selected wells that tap only Vashon stratified drift

Well	Inferred thickness of Vashon stratified drift penetrated (feet)	Screened or perforated interval (feet)	Pumping rate (gallons per minute)	Elapsed pumping time (hours)	Drawdown (feet)	Specific capacity (gallons per minute per foot of drawdown)	Transmissibility (gallons per day per foot)
24/6-27D2	16	11	730	---	0.6	1,200	--------
24/7-10C1	27	24	150	0.3	3	50	--------
25/5-12C1	14.5	5	45	1	1	45	100,000
25/5-20C1	188	184	500	1	48	10	22,000

valley and in the Sammamish River valley at Redmond tap recessional stratified drift composed of well-sorted gravel which has a maximum thickness of more than 30 feet. All these wells have large yields. For example, dug well 25/6-6F1, 13 feet deep, yields 60 gpm and has a drawdown of less than 1 foot. The aquifer transmissibility as indicated by testing this well may be as great as 350,000 gpd per foot.

Yields sufficient for domestic use are obtained at many places on the uplands where the drift contains semiperched ground-water bodies. For example, wells 26/5-20C1, 21 feet deep, and 26/5-12A1, 17 feet deep, on the interlake and east drift plains both yield sufficient water for domestic needs throughout the year.

Post-Vashon Deposits

Many wells tap highly permeable gravel lenses in the upper 20 feet or so of alluvial deposits which underlie the floors of the major stream valleys. Most of the shallow wells that draw water from alluvium in the Snoqualmie and Sammamish River valleys were constructed for domestic and (or) stock use, and in general they yield ample quantities of water for this purpose. For example, well 26/5-27K1, which taps alluvium on the west side of the Sammamish River flood plain near York is only 15 feet deep but is reported to yield 200 gpm.

A comparatively inexpensive method of developing a water supply from alluvium is provided by several driven well points connected to a single pump. Six such points, designated well 23/4-4B1 in table 5, are driven into the alluvium to depths of 17 to 22 feet. The yield of this system is adequate for the operation of 12 irrigation sprinklers, and is used during the summer months to water commercially grown vegetables.

Recent slump blocks, marine and lacustrine sediments, and lacustrine peat and muck are not known as a source of ground water in northwest King County. Locally, peat and muck may have an adverse effect on water quality because they probably add humic acid to the ground water. The acid tends to cause the water to be corrosive, to have a marked color, and to promote the solution of iron and perhaps other undesirable constituents that are present in the rock materials through which the water percolates.

Water in the Drift Plains

The occurrence of ground water in the drift plains west of the Snoqualmie River is discussed in this section; the area east of the river, termed the "Cascade foothills" in this report, is not discussed. In this study the emphasis was placed on the area to the west; the foothills were not investigated intensively enough to allow a reliable evaluation of their ground-water features.

On the drift plains the wells of larger yield tap gravel beneath the Vashon till. Although small to moderate supplies of water for domestic use are obtained at many places from dug wells less than 50 feet deep that tap perched or semiperched water bodies in Vashon till or recessional stratified drift, the yields may become inadequate in summer. Where saturated, however, the recessional stratified drift commonly yields water adequate for domestic use throughout the year. Many of the

numerous springs along the edges of the drift plains have been developed for domestic and public supply.

West Seattle Drift Plain

Drillers' logs of wells that were drilled in the West Seattle drift plain a few miles south of the boundary of the project area indicate that moderate to large yields can be obtained from unconsolidated deposits that extend to or below sea level. In that part of the West Seattle drift plain within the northwest King County area (fig. 1), the greatest thickness of saturated sand and gravel probably is near the south boundary of the area and greater yields probably could be expected from wells in the southern part of the drift plain than in the northern part.

Well 23/4-5Q1, 55 feet deep, in the southern part of the drift plain--a quarter of a mile north of the south boundary of the area--is reported to yield 150 gpm. Wells 23/3-1P1, 65 feet deep, and 24/3-13F1, 472 feet deep, were drilled in the northern part of the drift plain. Well 23/3-1P1 did not yield water in economic quantity, and the yield of well 24/3-13F1 could not be determined. No longer used, the well was drilled for practically its entire depth into older unconsolidated deposits, and penetrated significant thicknesses of permeable material in only the bottom 46 feet. This well, at an altitude of 30 feet near Elliott Bay, is on the east edge of the drift plain. Wells drilled in the higher parts of this plain may penetrate water-yielding materials stratigraphically higher than those penetrated by this well (see pl. 2, sec. C-C').

Seattle Drift Plain

Practically all the development of ground water in that part of the Seattle drift plain north of Lake Washington Canal is north of T. 25 N. In this area, wells ranging in depth from about 10 to 50 feet yield small quantities of water from Vashon till. Locally along McAleer Creek valley, small yields are obtained from shallow wells tapping Vashon recessional stratified drift.

Most wells in this area obtain water from Vashon advance stratified drift and the unnamed sand, in substantial quantities. For example, well 26/4-30K1 yields 600 gpm, and is one of the largest yielding wells in this part of the Seattle drift plain. It is 260 feet deep and taps a 170-foot interval of Vashon advance stratified drift and unnamed sand. The average depth of wells tapping Vashon advance stratified drift in the northern part of the Seattle drift plain is about 90 feet.

Wells on or near the margins of the drift plain generally do not penetrate thick saturated zones of Vashon advance drift, and the yield from that aquifer is sometimes supplemented by drilling deeper to penetrate the unnamed sand or the unnamed gravel. The water-bearing capabilities of the unnamed gravel, however, are unpredictable; in the northern part of the Seattle drift plain it ranges in thickness from 0 to about 100 feet, and the grain size as well as the degree of compaction and cementation also is variable.

Several of the wells in the northern part of the Seattle drift plain are believed to tap the older unconsolidated deposits, which in this area lie at altitudes ranging from about 35 feet above sea level to about 50 feet below sea level. The amount of water obtained from them is not known.

The wells of highest yield in the southern part of the Seattle drift plain are located in the north-trending topographic trough between Interbay and Queen Anne hill. Well 25/3-14J1, the northernmost of these wells, taps gravel and sand between 376 and 502 feet below the land surface. This material may be part of the older unconsolidated deposits. The well yields 765 gpm, with a drawdown of 61 feet, indicating a specific capacity of about 13 gpm per foot of drawdown. Well 25/3-23Q1, about 1¼ miles south of well 25/3-14J1, taps two sand and gravel zones. The upper zone, 53 feet thick, was penetrated at 251 feet below the land surface; the lower zone, 112 feet thick, was penetrated at 635 feet. The upper zone is probably part of the unnamed gravel, and the lower zone is inferred to be part of the older unconsolidated deposits. This well yields 450 gpm, with a drawdown of 89 feet, indicating a specific capacity of about 5 gpm per foot.

The remainder of the wells in the southern part of the Seattle drift plain are within about a mile of Elliott Bay. Well 25/4-30R1 yields 150 gpm from the unnamed gravel in the interval 291 to 521 feet below the land surface.

The range in yield of five wells in the area is from 65 to 250 gpm. The well of lowest yield has a drawdown of 100 feet and a specific capacity of less than 1 gpm per foot. No yield data are available for other wells. No wells are known to have been drilled south of these in the Seattle drift plain and for that reason ground-water conditions to the south must be inferred solely from the rock materials exposed (pl. 1). Data are available from seven wells in sec. 31, T. 25 N., R. 4 E., all within a few hundred feet of Elliott Bay (pl. 3). Four of these are reported to yield water containing objectionable quantities of chloride, which may indicate local encroachment of sea water (p. 47).

Interlake Drift Plain

Adequate ground-water supply for domestic and small public needs can be developed in practically all parts of the interlake drift plain. Wells range in depth from less than 10 feet to more than 1,000 feet and average about 82 feet. The average depth to water in these wells is about 37 feet, and the average reported yield is about 75 gpm.

Small supplies of ground water are obtained locally from Vashon recessional stratified drift. The average depth of wells tapping this aquifer is about 22 feet, and the average depth to water is only about 8 feet. These yield about 6 gpm on the average. Vashon till is tapped by a large number of dug wells. However, many of them are reported to be inadequate for domestic use in the late summer and autumn.

In the interlake drift plain, the Vashon advance stratified drift or the unnamed sand occurs almost everywhere except in some of the deeper valleys and along the margins of the plain. Most wells on this drift plain tap aquifers in one or both deposits. However, the thickness and permeability of these aquifers varies

greatly from place to place, resulting in a great range in yield of the wells tapping them, from a few gallons per minute in well 25/5-26H1 to about 250 gpm in well 24/5-10C2. The average yield of wells tapping these deposits is 28 gpm, an amount well in excess of that required for domestic use. The average depth of wells tapping aquifers in the advance stratified drift or the unnamed sand is about 63 feet, and the average depth to water is about 38 feet, a situation that renders development of ground water for domestic use fairly economical in all places where the thickness of these aquifers is appreciable.

Small ground-water supplies are obtained locally from wells tapping sand in the upper clay unit. These wells average about 100 feet in depth and are located principally around the margins of the drift plain where the Vashon advance stratified drift is too thin to be an important aquifer.

The unnamed gravel is fairly continuous under the interlake drift plain, and is capable of yielding large amounts of water to wells. Wells tapping this aquifer average about 145 feet in depth, and the average depth to water is about 80 feet. The average reported yield of wells tapping the unnamed gravel in the interlake drift plain is about 200 gpm.

The older unconsolidated deposits are tapped by wells principally along the margins of the interlake drift plain where more water is needed than can be obtained from the younger deposits. The average depth of wells tapping the older unconsolidated deposits on the interlake drift plain is about 350 feet. Although the average yield of these wells is about 235 gpm, many of them also obtain some water from the overlying younger deposits, and the proportion obtained from the older deposits is not known. Because of artesian conditions in the older unconsolidated deposits, the average depth to water in wells tapping these deposits--about 45 feet--is less than the average depth to water in wells tapping the unnamed gravel or the upper clay.

Eastern Drift Plain

In the eastern drift plain little difficulty has been experienced in developing ground-water supplies because in most places one or more of the aquifers above the lower clay is present and is of sufficient thickness and permeability to yield water adequate to meet the small needs of the area. Wells in the eastern drift plain range in depth from less than 10 to 353 feet, and average about 80 feet. The average depth to water in these wells is about 45 feet, and their average reported yield is about 30 gpm.

On much of the drift plain, small quantities of water can be obtained from shallow wells tapping Vashon till. Most of these wells are large-diameter dug wells. Here, as elsewhere in northwest King County, many are reported to be inadequate for domestic needs in the summer and autumn when water levels are low.

Locally in the eastern drift plain, especially in the north half, yields of as much as 100 gpm are obtained from shallow wells tapping recessional stratified drift. The yield of such wells varies greatly, according to the permeability and thickness of saturated material penetrated. The average depth to water in wells tapping Vashon till or recessional stratified drift is about 15 feet.

More wells in the east drift plain obtain water from Vashon advance stratified drift than from any other aquifer. The unnamed sand was not recognized at the surface in the east drift plain, and all sand or gravel overlain by Vashon till and underlain by the upper clay or older units is considered to be Vashon advance stratified drift. The yield of wells tapping this advance stratified drift is usually adequate for domestic supplies throughout the entire year, and in most of the area the aquifer is tapped by only moderately deep, drilled wells--their average depth is about 110 feet.

In the eastern drift plain where the younger aquifers are not present or are unproductive, and where relatively large ground-water supplies are needed, wells are drilled deep enough to obtain water from the upper clay or the unnamed gravel. The average depth of wells tapping one or both of these aquifers is about 220 feet, the average depth to water is about 110 feet, and the average reported yield is about 30 gpm.

Several wells in the eastern drift plain are believed to tap older unconsolidated deposits. These wells range in depth from 183 to 353 feet; however, because of artesian conditions in the older unconsolidated deposits the average depth to water in these wells is less than that to water in wells tapping the upper clay or the unnamed gravel.

Water in the Major Valleys

The floors of the major river valleys range in altitude from sea level to slightly over 100 feet; the principal aquifers are in unconsolidated material of Vashon and Recent ages and they lie at depths of as much as 300 feet below the valley floors. The wells tapping these aquifers range in yield from a negligible amount to more than 500 gpm. Except in the Duwamish River valley, the quality of ground water is satisfactory for most uses; there the chloride content is high. Locally elsewhere, well owners report that the iron content of water from their wells is objectionably high.

Although much of the unconsolidated material penetrated by wells drilled in the major valley floors is clay, silt, and fine sand, sand and gravel bodies which yield small to large quantities of water to wells occur where large melt-water streams emptied into the major river valleys during Vashon time. The two sand and gravel bodies about which considerable geologic and hydrologic data are available are at the mouths of East and North Forks of Issaquah Creek near Issaquah, and at the mouths of Bear and Evans Creeks near Redmond. Issaquah Creek flows into the south end of Sammamish Lake and Evans Creek is a tributary of Sammamish River.

Areas in which melt-water stream deposits occur, but in which little evidence exists for sand and gravel bodies that are restricted to the tributary stream junctions, are the mouths of Raging River near Fall City, Tolt River near Carnation, and Cherry Creek near Duvall.

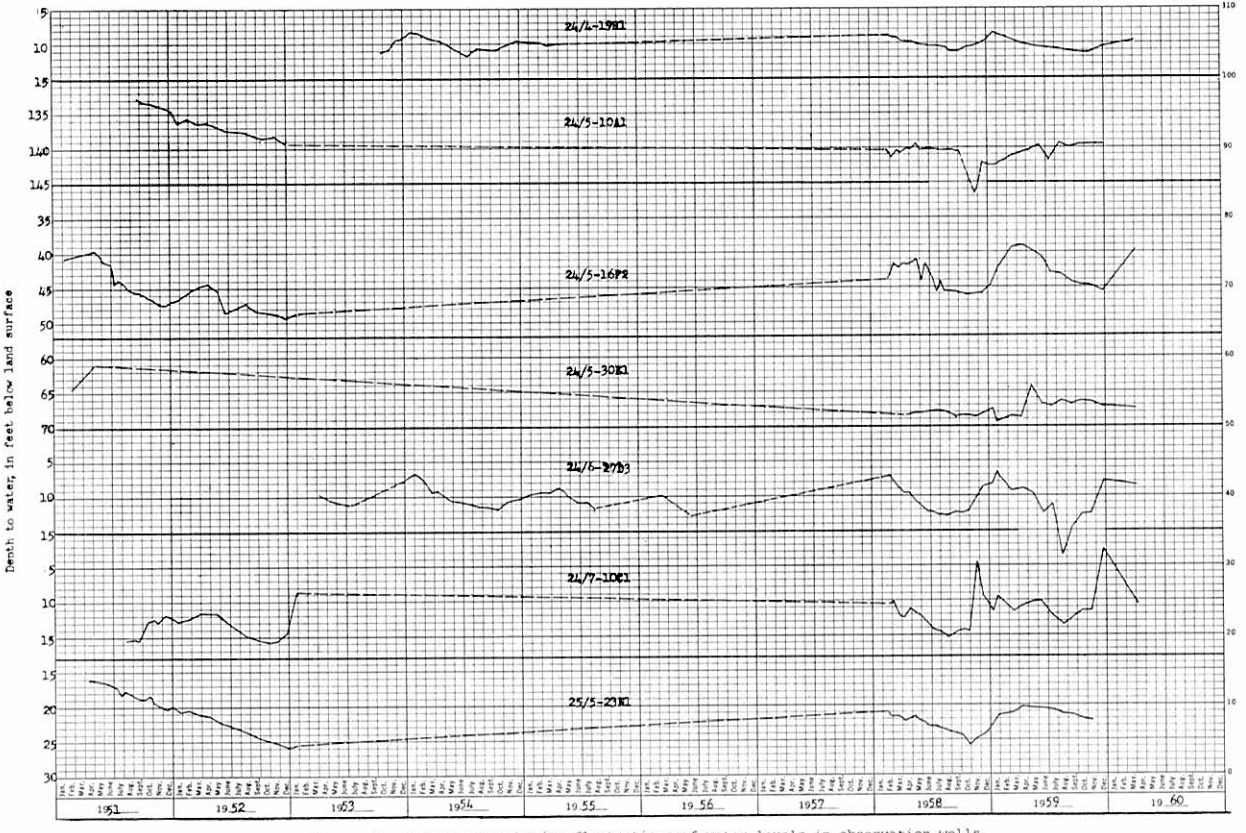

Figure 6.--Hydrographs showing fluctuations of water levels in observation wells.

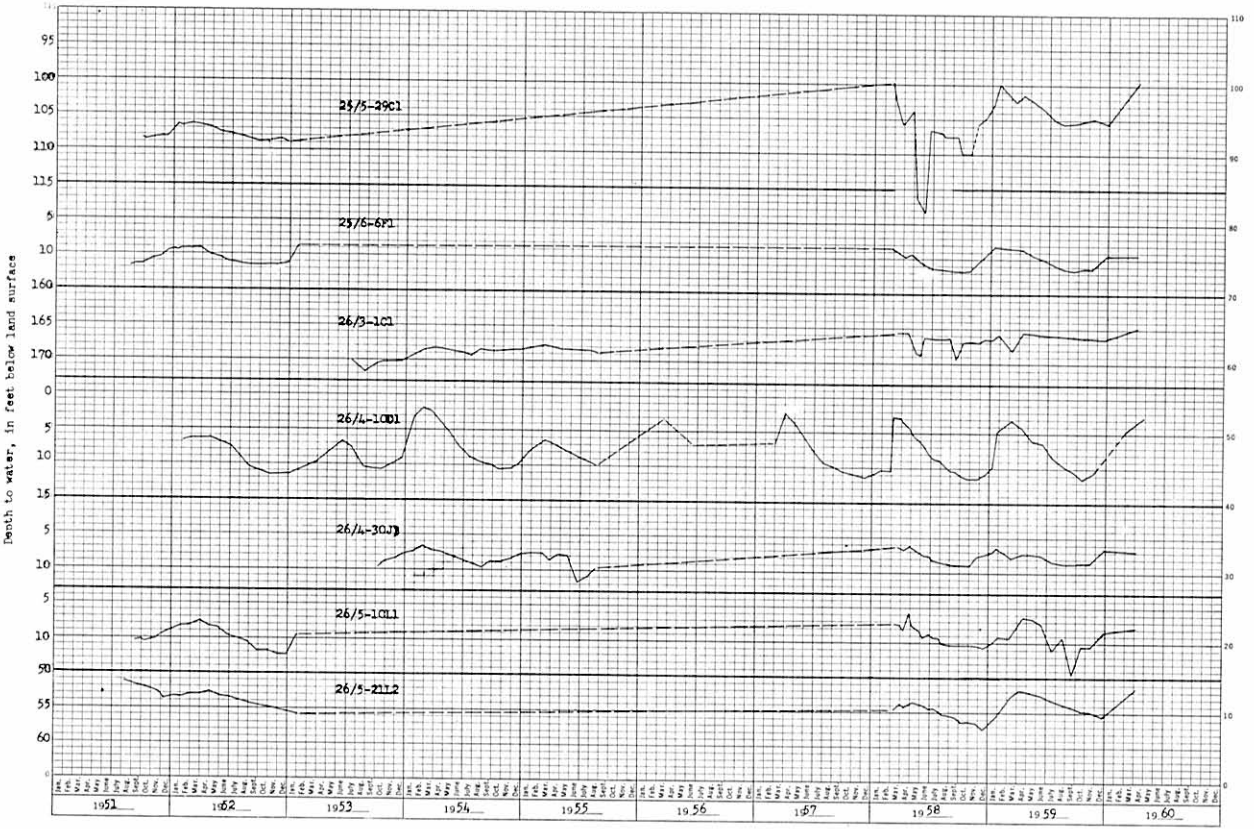

Figure 7.--Hydrographs showing fluctuations of water levels in observation wells.

Duwamish River Valley

The Duwamish River valley floor is here considered to be that portion of the valley that is less than 25 feet in altitude and that is south of Yesler Way and east of Duwamish Head. Wells on the valley floor obtain water from the valley alluvium or from aquifers in the older unconsolidated deposits beneath the alluvium.

Of the wells listed in table 5, only seven are on the Duwamish River valley floor. Well 23/4-4B1 is a system of driven sand points ranging in depth from 17 to 22 feet, and is used for irrigation. A sample of water from this system contained 83 ppm of chloride. The other six wells range in depth from 240 feet (24/4-7G1) to 1,550 feet (24/4-18B1). Well 24/4-18B1 had a drawdown of 170 feet when pumped at 100 gpm. This yield was not sufficient to meet the needs of the owner, the Elliott Bay Mill Co. Well 24/4-8D1 was drilled to 232 feet and, according to the driller, the only water-bearing material was a 1-foot-thick gravel bed at 215 feet. Well 24/4-5E1, the only well on the Duwamish River valley that is still in use, is reported to yield 42 gpm; no record of its depth or of the materials it penetrated is available.

Water from wells 23/4-4A1 and 24/4-19H1 contained 348 and 990 ppm of chloride, respectively. Water from well 24/4-7G1 was incrusting and contained flammable gas and hydrogen sulfide.

Sammamish River Valley

The two most productive aquifers beneath the Sammamish River valley floor (fig. 1) are in the neighborhood of the large Vashon recessional stratified drift deltas at Issaquah and Redmond. Both underlie hardpan and probably are bodies of Vashon advance stratified drift. Wells 24/6-27D1, -27D2, and -28J1, at Issaquah, range in depth from 46 to 58 feet and in yield from 400 to 730 gpm. Their range in specific capacity is from 19 to 1,200 gpm per foot. Wells 25/5-12C1, 25/6-6E1, and -6F1, at Redmond, range in depth from 13 to 56 feet and in yield from 60 to 200 gpm, with specific capacities of 100 to 200 gpm per foot.

Periodic water-level measurements in well 24/6-27D3 (fig. 6) in the aquifer at Issaquah, and in well 25/6-6F1 (fig. 7) in the aquifer at Redmond, indicate no decline in the period 1953-59. Because a large supply of surface water is in contact with the aquifers and available for induced recharge, it is safe to assume that pumpage from these aquifers could be greatly increased with virtually no chance of overdevelopment. These aquifers are among the most promising sources of water for the expanding population of Seattle and its suburbs.

Elsewhere in the Sammamish River valley, yields are much smaller, though quantities sufficient for domestic use may generally be obtained at depths of less than 75 feet.

Snoqualmie River Valley

Of the wells listed in table 5, 11 are in that portion of the Snoqualmie River valley that is south of the Tolt River. The yield of these wells ranges from

300 gpm from the southernmost (24/7-15F1) to a quantity inadequate for domestic use from the northernmost (25/7-29H1). These wells all tap post-Vashon stream deposits of varying thickness. Some of the difference in yield can be attributed to the type of construction of the individual wells; however, the difference is probably due in large part to the material becoming progressively finer grained northward from Fall City. No data are available concerning wells on the Snoqualmie River valley upstream (southeast) from Fall City. It is not known, therefore, whether the coarser material was deposited by the Snoqualmie River or by the Raging River, which joins the Snoqualmie at Fall City.

Records are available for only two wells, 25/7-15M1 and -6R1, on the Snoqualmie River valley between the mouth of the Tolt River and Duvall. Well 25/7-15M1, about half a mile north of the Tolt River, is 101 feet deep and yields 96 gpm with a drawdown of only 2 feet. This well penetrates much more permeable material than is commonly found in this part of the Snoqualmie River valley and may tap deltaic beds deposited by the Tolt River. Well 25/7-6R1 is 630 feet deep and flows about 280 gpm. Although on the valley floor, it is near the valley wall and probably penetrates only a few feet of post-Vashon stream deposits overlying older deposits.

Several test holes more than 200 feet deep are reported to have penetrated only fine-grained materials having very low yields.

Of the wells listed in table 5, six are in the Snoqualmie River valley between Duvall and the Snoqualmie County line. All penetrate only post-Vashon stream deposits. These wells, which range in depth from 206 feet near Duvall to 340 feet near the county line, penetrate principally blue clay, and obtain water from fine- to medium-grained gravel near the bottoms of the wells. Water levels in the six wells reportedly range from about 20 feet below the land surface to 13 feet above; all except 26/6-13D1 are reported to have flowed a few gpm when constructed. The water-bearing sand and gravel tapped by these wells probably extends south of Duvall also, but the southern limit is not known.

Water on Mercer Island

The conditions governing the occurrence of ground water on Mercer Island are complex. Except for recharge from Lake Washington to some of the older aquifers which lie below lake level, recharge is limited to that part of the precipitation on the island that infiltrates. If the rate of recharge to the aquifers above the level of Lake Washington is equivalent to 10 to 20 inches of precipitation, a recharge area of about 1 to 2 square miles would be required to furnish a continuous ground-water supply of 700 gpm, or 1 mgd (million gallons per day).

Well 24/4-12M1, near the top of a hill on the north end of Mercer Island, was drilled 62 feet into Vashon recessional stratified drift. The recessional drift here is very permeable, and during intermittent pumping the well reportedly yielded 600 gpm with 5 feet of drawdown. However, the sustained yield, which is limited chiefly to the natural recharge by precipitation on about one-fifth of a square mile, is probably between 75 and 150 gpm.

The unnamed sand and lenses of sand in the upper part of the upper clay are also above the level of Lake Washington and receive limited recharge. Wells tapping these aquifers on Mercer Island do not usually yield more than 15 to 20 gpm. Well

24/4-25B3, which extends about 67 feet below lake level and obtains water principally from the unnamed gravel, is pumped at a rate of only 25 gpm. At this rate, however, the drawdown was reported to be negligible after 40 minutes. Well 24/5-17D1 also extends below lake level (about 44 feet) and reportedly yields 42 gpm, probably from a sand lens in the upper clay. Pumpage of these two wells may induce recharge from the lake; thus they may not depend entirely on direct precipitation as the sole means of recharge. Locally, on the east side of Mercer Island, the unnamed gravel is absent or is above the level of Lake Washington and is unimportant as an aquifer. For example well 24/5-7J3 was drilled to a reported depth of 600 feet without encountering more than a small amount of water.

Water in the Newcastle-Grand Ridge Hills

Wells in the Newcastle-Grand Ridge hills obtain water both from bedrock and from unconsolidated deposits. The water-yielding characteristics of the bedrock have been discussed on pages 23 and 24. The Vashon drift probably is the source of water for many of the shallow dug wells. Two drilled wells in the hills, 24/6-28F1 and 24/7-21A1, tap unconsolidated deposits. Well 24/6-28F1, 197 feet deep, produces from a sand bed between 187 and 197 feet below the land surface and yields 20 gpm with 15 feet of drawdown. This sand bed is probably in the Vashon advance stratified drift.

Well 24/7-21A1 is 283 feet deep and yields 6 gpm from several pre-Vashon gravel beds penetrated between 184 and 257 feet below the land surface.

Use of Ground Water

Domestic Supplies

Most wells in the northwest King County area are used for individual domestic supplies. The average daily use is small, probably less than 500 gallons per well. The total number of such wells in the area is not known precisely; however, there probably are not more than 3,000, and their average total daily pumpage probably does not exceed 1½ million gallons.

Public Supplies

Most of the smaller public-supply systems in northwest King County obtain water from wells or springs. (See table 2.) Although data on the population served and the daily consumption could not be obtained for all systems, it is estimated that together they supply about 4 mgd to about 38,000 people.

The city of Seattle obtains its water supply from the Cedar River south of the northwest King County area. According to the Seattle Water Department's annual report for 1959, the city supply served an estimated population of 723,700 persons a total of 35 billion gallons of water during the year--an average of 133 gpd per person.

Table 2.--Use of ground water for public supply

Water-supply system	Source of supply	Storage capacity (gallons)	Population served	Number of customer connections	Consumption (gallons per day) Max.	Min.	Avg.
Baker Water System	24/5-18M1	5,000	--------	12	------	------	------
Benetho Beach Water Assoc.	24/5-31E1s	9,000	--------	17	------	------	------
City of Bothell	26/5-5E1 -5E2	105,000	1,775	600	------	------	165,000
Brewer Addition Water System	24/5-32J1	30,000	--------	13	------	------	------
City of Carnation	25/7-23P1s	-------	1,000	-----	------	------	------
City of Duvall	26/6-13D1	-------	290	100	------	------	------
Fall City Water Dept.	24/7-11L1s -15F1	220,000	--------	240	------	------	------
Hilltop Community, Inc.	24/5-23C1	-------	125	34	22,500	4,500	12,000
Horizon View Co., Inc.	24/5-23E1	-------	90	28	------	------	1,200
City of Issaquah	24/6-27Q1 -27Q1s	260,000	1,700	-----	------	------	275,000
King County Water Dist. 1, Yarrow Point	25/5-17F1	100,000	500	165	316,000	------	------
King County Water Dist. 22, Beaux Arts	24/5-8D1	30,000	340	99	64,000	19,000	------
King County Water Dist. 24, Richmond Beach	26/3-1M1 -1M2 -1M3 -1M4 -1M5	200,000	3,200	800	------	------	------

Table 2.--Use of ground water for public supply--Continued

Water-supply system	Source of supply	Storage capacity (gallons)	Population served	Number of customer connections	Consumption (gallons per day) Max.	Min.	Avg.
King County Water Dist. 72, Juanita	26/5-30G1	600,000	------	450	------	------	110,000
King County Water Dist. 82, Pine Lake	24/6-4N1 -4N2	130,000	------	136	------	------	15,000
King County Water Dist. 83, Lake Forest Park	26/4-3Q2 -3Q5 -9C2 -9C3	250,000	------	500	------	------	------
King County Water Dist. 97, Lake Hills	24/5-2D1 -2D2	------	------	900	------	------	150,000
City of Kirkland	25/5-17J1 -17Q1 -17Q2 -17R1 -17R2 -5H1 -5R1	------	13,300	3,600	------	------	930,000
Norwood Village Corp.	24/5-9C1	50,000	450	82	42,000	16,000	------
City of Redmond	25/5-1A1s -12C1	400,000	1,250	435	206,000	------	90,000

Table 2.--Use of ground water for public supply--Continued

Water-supply system	Source of supply	Storage capacity (gallons)	Population served	Number of customer connections	Consumption (gallons per day) Max.	Min.	Avg.
Washington Water Service Company	24/5-11N1 -11N2 -13M1 -23R2 -35A3 Sammamish Lake	------	6,000	------	------	------	75,000

Industrial Supplies

The supply of ground water used by industries in northwest King County is small; most of the industries are in Seattle and are furnished surface water from the municipal system. The small use of ground water undoubtedly is due in part to the concentration of industrial plants along Elliott Bay and the Duwamish River valley--areas in which ground-water supplies are difficult to obtain. Many wells in these areas have been unsatisfactory because of their low yields or the undesirable chemical quality of the water.

Ground water used by the Lakeside Gravel Co. near Issaquah accounts for more than half the ground water pumped by industries in the area. (See table 3.)

Irrigation Supplies

More than half the ground water pumped for irrigation in northwest King County is used for cemeteries and golf courses. The largest system is the consolidated one that serves Evergreen and Washelli Cemeteries. It has a capacity of 2,200 gpm and a 250,000-gallon storage reservoir. Data on this system and four others are presented in table 4. The average total yearly pumpage by the five systems listed in table 4 is estimated to be about 200 million gallons, from 10 wells. Table 5 lists more than 50 other wells, which are used partially or entirely for irrigation. These wells, which supply water for irrigation of greenhouse, nursery, and crops, probably have an average total yearly pumpage of less than 100 million gallons.

Fluctuations of Water Levels

The water table or the piezometric surface is not a static surface, but one that fluctuates in response to changes in the amounts of recharge and discharge, to changes in barometric pressure, and, near the coast, to tidal fluctuations. Fluctuations of ground-water levels that are more than a few tenths of a foot in amplitude are due usually to changes in the amounts of recharge and discharge.

Because of natural discharge and pumping from wells, water levels tend to decline except after those periods of precipitation when recharge exceeds discharge. The rapidity and magnitude of the recharge of ground water due to infiltration of precipitation depends largely upon the frequency, duration, intensity, and seasonal distribution of storms, the character of the vegetal cover, and the geologic and topographic environment. For a given rate of recharge the rate of decline of ground-water levels in an area is dependent upon the amount of pumpage, spring flow, underflow to nearby ground-water bodies, and evapotranspiration.

In order to determine the amount of fluctuation of water level in wells, periodic water-level measurements were made in 15 wells during the course of this investigation. The hydrographs of these wells (figs. 6-8) are arranged according to principal aquifers and to well-location numbers. A graph of the precipitation and the cumulative departure from normal precipitation at Seattle for the period 1951-59 appears in figure 8 for comparison.

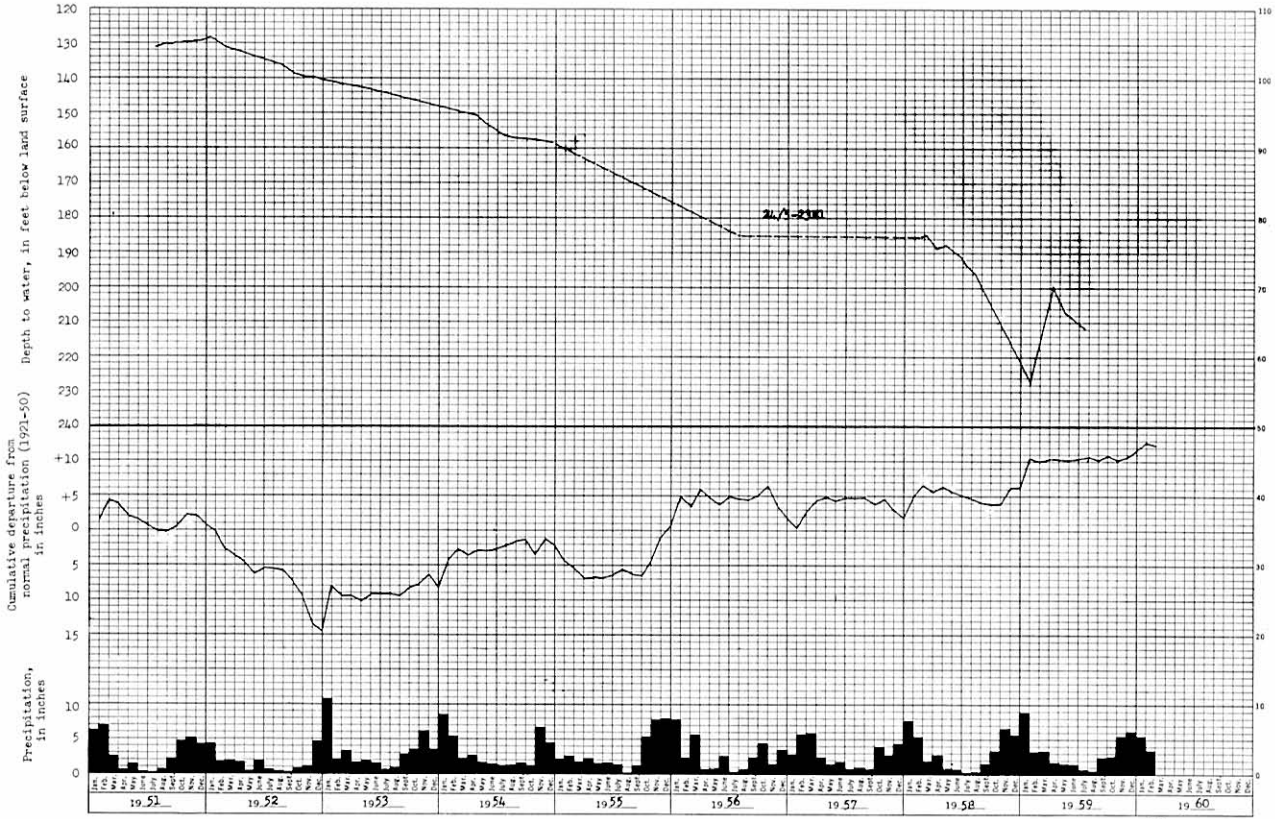

Figure 8.--Hydrograph showing fluctuations of water levels in well 24/5-23E1, monthly cumulative departure from normal precipitation, and monthly precipitation at the Federal Office Building, Seattle.

Table 3.--Use of ground water for industrial supply

Industry	Well(s)	System capacity (gpd)	Average consumption (gpd)	Remarks
Ballard Ice Skating Arena	25/3-11R1	--------	[a]40,000	
Booth Fisheries Corp.	25/4-31E1 -31E2	530,000	170,000+	Consumption is 170,000 gpd during winter, 530,000 gpd during summer.
Great Northern Ry. Co.	25/3-14J1	1,000,000(?)	[a]40,000	100,000-gallon storage tank.
Darigold Farms	24/6-28J1	700,000	400,000	10,000-gallon storage tank.
Lakeside Gravel Co.	24/6-27D1 -27D2 -27D3	1,900,000	1,000,000	
Pacific Fruit & Produce Co.	24/4-5E1	60,000	30,000	
Troy Laundry-Cleaners	25/4-30R1	--------	115,000	
University of Washington, Dept. of Fisheries	25/4-16D2	90,000	90,000	

[a] Estimated

Table 4.--Large ground-water supplies for irrigation

User	Well(s)	System capacity (gpm)	Acres irrigated	Maximum consumption (gpd)
Acacia Memorial Park Cemetery	26/4-16Q1	425	35	410,000
Evergreen and Washelli Cemeteries	-30C1	2,200	130	[a]1,500,000
	-30F1			
	-30J1			
	-30K1			
	-30K2			
Glen-Acres Golf Club	23/4-5Q1	150	50	[a]150,000
Holyrood Cemetery	26/4-5C1	350	25	80,000
	-5E1			
Sunset Hills Memorial Park	24/5-3G2	225	13½	1,100

[a] Estimated

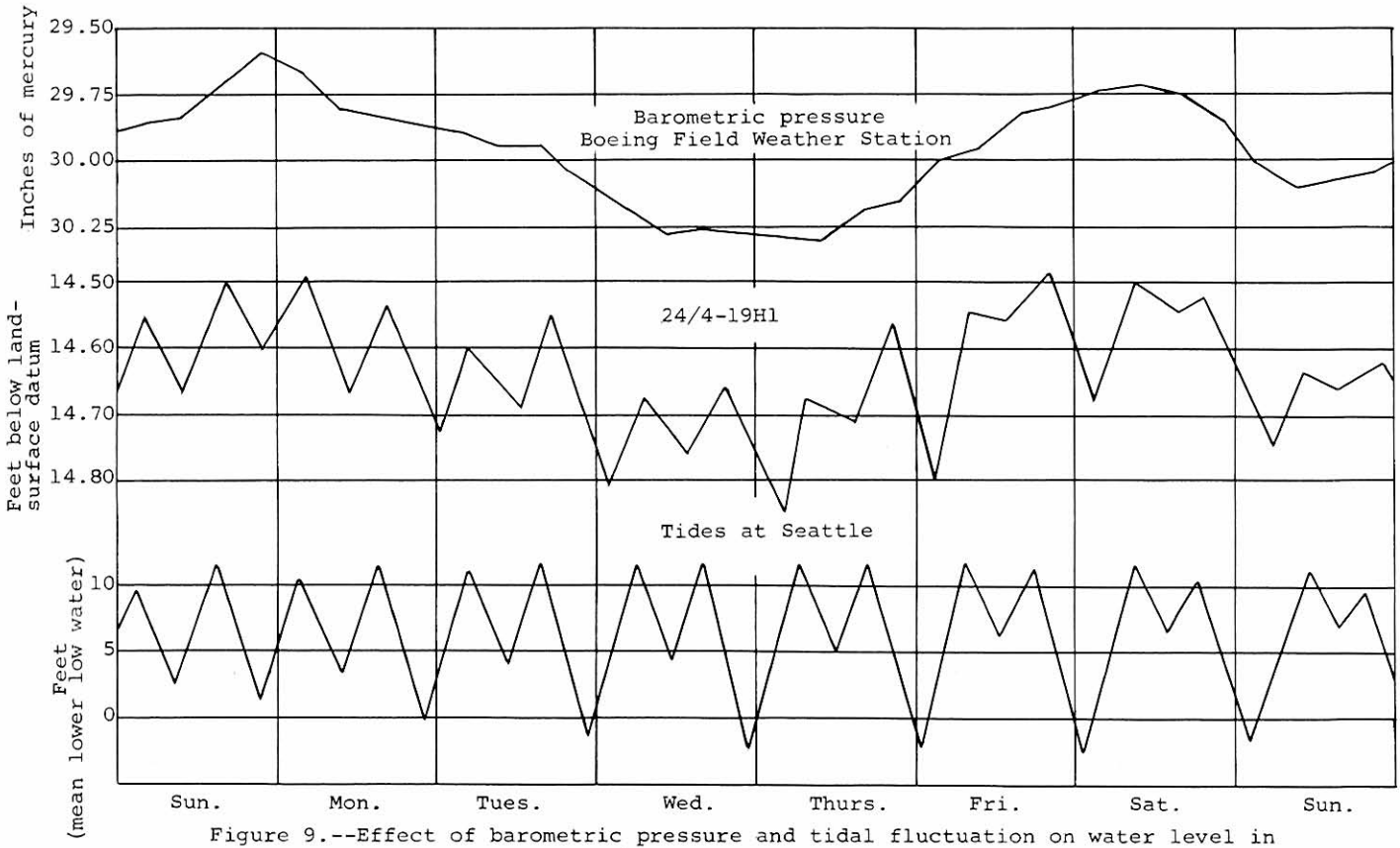

Figure 9.--Effect of barometric pressure and tidal fluctuation on water level in well 24/4-19H1, October 10-17, 1954.

Most of the hydrographs show a rise in water level within a few weeks or months after the rainy season begins. The period of low water level tends to occur in autumn and the period of high level tends to occur in spring or late winter. The effects of the below-normal precipitation in 1952-53 are evident in most of the hydrographs although they are most noticeable in the hydrographs of wells 24/5-10A1, -16F2, 25/5-23N1, and 26/5-21K1. The decline in water level in well 24/5-23E1 probably results from local overpumping from an aquifer of low permeability rather than from reduced precipitation; there is no pronounced rise in water level in this well in response to increased precipitation during the years following 1953.

The fluctuations of water levels in wells in shallow unconfined aquifers are probably due largely to changes in rates of recharge during times of relatively constant discharge, whereas the fluctuations of water levels in the wells that tap confined aquifers, such as those in the advance stratified drift, are probably due to variations in pumping rates of nearby wells tapping the same zones, during times of relatively constant recharge.

Minor water-level fluctuations that range in amplitude from several hundredths to several tenths of a foot are due chiefly to earthquakes, to changes in barometric pressure, or to loading and unloading of the area by moving loads, such as passing railroad trains or tides.

The influence of the barometric pressure and tide changes on the water level in well 24/4-19H1 is shown by data plotted on figure 9. A time lag between high and low tides and the corresponding high and low water levels in the well is evident. The well is at an altitude of about 15 feet and is a hundred feet east of the Duwamish waterway.

Wells tapping artesian aquifers commonly function as inverted barometers. That is, ground-water levels decline in response to increasing barometric pressure, and rise in response to reduced barometric pressure. The fact that water levels in well 24/4-19H1 respond in this manner suggests that this well taps artesian or semiartesian aquifers.

Earthquake shocks usually result in an abrupt but very brief change in water level, and they can usually be detected only by examination of the chart of a continuously recording water-level instrument. In the course of this investigation, such instruments were maintained only for short periods of time and no disturbance due to an earthquake was detected on any of the graphs recorded during these periods.

Quality of Water

The chemical character of ground water in northwest King County and its general suitability for agricultural and domestic uses are discussed in this section. The discussion is based on 144 chemical analyses of water from wells and springs (tables 8 and 9).

Expression of Results

In the chemical analyses listed in table 8 and 9 the constituents are reported in parts per million. A part per million is one unit of weight of a constituent

in a million unit weights of water. The results can be expressed in grains per U.S. gallon by dividing the results in parts per million by 17.12. When the chemical analyses of water are to be studied in detail, it is advantageous to report the results in equivalents per million. Equivalents per million for any constituent (or ion) can be obtained by dividing the concentration of the constituent in parts per million by the chemical equivalent weight of the constituent.

Hardness is expressed in this report as calcium carbonate. In table 8, hardness is computed; in table 9, hardness is obtained by chemical analysis. Although hardness is listed in the results of the chemical analyses, it is, strictly speaking not a chemical entity (Hem, 1959, p. 146). In general, however, because total hardness supposedly represents the effects of all substances which react with soap, hardness data are valuable to those who use water for household purposes.

Geochemistry of Ground Water

Precipitation is derived from the condensation of water vapor on particles in the air, and it usually contains small amounts of mineral matter. When water enters the ground it dissolves minerals in varying quantities. Among the most important of the factors which determine the character and concentration of mineral constituents in ground water are the mineral composition of the rocks through which the water passes and the length of contact time within them.

Ground water is primarily a solution of bicarbonates, chlorides, and sulfates of the alkaline earths, calcium and magnesium, and of the alkalies, sodium and potassium. Other constituents often present, but usually in much smaller quantities, are silica, iron, manganese, flouride, nitrate, phosphate, boron, heavy metals, hydrogen sulfide, and carbon dioxide.

The proportions of each ion present determine the chemical type or classification of a water. In northwest King County, on the basis of the comprehensive chemical analyses listed in table 8, most of the analyses represent water of the alkaline earth (calcium-magnesium and magnesium-calcium) bicarbonate type. A few deeper wells, however, yield water of the sodium chloride type.

Relation of Water Quality to Use

In determining whether the ground water in northwest King County is acceptable for all types of use, the analyses are referred to a set of standards for comparison. For drinking water the generally accepted standards of quality are those of the U.S. Public Health Service (1946). According to those standards, certain substances should not be present in excess of the concentrations shown as follows:

	ppm
Fluoride	1.5
Lead	.1
Arsenic	.05
Selenium	.05
Hexavalent chromium	.05

An excessive concentration of any of the above elements constitutes a basis for rejection of the supply. If the water is acceptable on the basis of constituents mentioned, it is evaluated according to the following less restrictive upper limits for other constituents:

	ppm
Copper	3.0
Iron and Manganese (together)	.3
Magnesium	125
Zinc	15
Chloride	250
Sulfate	250
Phenolic compounds (as phenol)	.005
Total dissolved solids	
Water of good quality	500
Where no better water is available	1000

Of the elements tabulated in the first of the foregoing two lists, only fluoride was determined for most of the samples whose analyses are shown in table 8. Of those in the second list, iron, magnesium, chloride, sulfate, and total dissolved solids were determined for most of the samples whose analyses are shown in tables 8 and 9. For the remaining constituents in both lists, no information is available.

Although a study of the areal occurrence of iron was not made during the course of this investigation, fragmentary information collected in the field suggests strongly that there may be a relation between the existence of objectionable quantities of iron in water from some wells and the proximity of these wells to peat deposits. Most of the peat of Recent age and probably at least some of the pre-Vashon peat is acidic. The circulation of ground water through peat materials is likely to render it acid, making it possible for the water to react with iron minerals. The reaction is usually of such type that the iron content of the water is thereby increased.

Iron in water in excess quantity is objectionable chiefly because a precipitate of ferric hydroxide, formed by oxidation of ferrous bicarbonate, produces a reddish or brown stain on porcelain, enameled ware, and clothing. A high iron content also imparts to the water an objectionable taste.

In northwest King County, the chloride content of water is low. Of the 144 samples analyzed, the chloride content is less than 20 ppm in all but 8. Only 5 contain chloride in excess of the acceptable limit of 250 ppm. For the area as a whole, chloride content is significant in that if it is above, say 25 ppm, it may indicate contamination, either by sea water, by deep-seated connate water, or by organic or inorganic wastes.

Water from only 6 wells contain more than 500 ppm of dissolved solids, the acceptable limit for water of good quality. For most of the waters the dissolved-solids content is below 200 ppm. Of the analyses listed in table 9, about 60 percent are for water in which dissolved-solids content is less than 100 ppm.

Nitrate determinations are included in 30 of the analyses listed in table 8. The nitrate content in all the waters tested for this constituent is well below the

acceptable limit. In the water from well 26/3-1D3, however, the nitrate content is sufficiently high as to suggest the possibility of contamination.

The hardness of water from 58 of the wells or springs whose analyses are reported in tables 8 and 9, is 50 ppm or less. The hardness of water from 13 wells, about 9 percent of the total for which hardness is reported, is more than 100 ppm. For the area as a whole, the water is acceptable from the standpoint of hardness.

The usefulness of a water for irrigation also is dependent on the chemical quality of the water. The standards of water quality are, however, much different for irrigation use than for household use. According to the U.S. Salinity Laboratory Staff (1954, p. 69-82), some of the important factors that determine whether a water can be used for irrigation without causing plant or soil damage are the dissolved-solids content, the proportion of sodium to the other cations, and the concentration of individual constituents in the water. The total concentration of salts should be less than that equivalent to a specific conductance of 2,250 micromhos (1,350 to 1,600 ppm); the sodium hazard is low if the sodium-adsorption ratio a/ is less than 10 for waters whose specific conductance is less than 250 micromhos; the boron

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a/ Sodium-adsorption ratio and residual sodium carbonate are determined by the following relations where ion concentrations are expressed in equivalents per million.

$$\text{Sodium-Adsorption ratio (SAR)} = Na^{+}\left(\frac{Ca^{++} + Mg^{++}}{2}\right)^{-\frac{1}{2}}$$

$$\text{Residual sodium carbonate} = (CO_3^{--} + HCO_3^{-}) - (Ca^{++} + Mg^{++})$$

---

content should be less than 1 to 2 ppm, depending on the type of plant to be irrigated. The U. S. Salinity Laboratory Staff (1954, p. 81) also reports that water with more than 2.5 equivalents per million of residual sodium carbonate a/ are not suitable for irrigation.

On the basis of the foregoing criteria 6 wells in northwest King County yield water of questionable quality for irrigation. These wells are listed below:

Well number	Reason for Questionable Quality
23/4-4A1	SAR, 35; dissolved solids, 872 ppm.
24/4-6A1	Analysis not adequate for evaluation; dissolved solids, 537 ppm.
24/4-19H1	Dissolved solids, 2,360 ppm.
24/5-4D1	SAR, 10; residual sodium carbonate, 5.4 epm; dissolved solids, 963 ppm.
25/4-31E1	Dissolved solids, 1,320 ppm.
25/4-31R1	Analysis not adequate for evaluation; dissolved solids, 1,055 ppm.

Of these 6 wells, only 1 is in an area currently being irrigated or of irrigation potential. Because the lateral extent of the water-bearing zones yielding water to this well is not known within close limits, the development of additional ground-water supplies for irrigation in this area should be accompanied by careful chemical analysis of the water prior to application.

Of all the water analyzed for boron, none contain more than the acceptable limit of 1 to 2 ppm.

Water of Inferior Quality

Water from a few wells in northwest King County contains enough dissolved solids as to be worthy of discussion. Water from each of the 8 wells in the following list contains more than 250 ppm of dissolved solids; all except 3 contain more than 250 ppm of chloride.

Well number	Depth (feet)	Dissolved solids (ppm)
23/4-4A1	686	872
23/4-4B1	17	[a]360
24/4-6A1	180	537
24/4-19H1	631	2360
24/5-4D1	600	963
25/4-31E1	785	1320
24/6-18E1	40	[a]430
25/4-31R1	145	1055

[a]Computed from specific conductance

Of the remaining two wells, a comprehensive water analysis is available only for the one near Bellevue. This well, 24/5-4D1, is unique because of its high content of both bicarbonate and chloride and its comparatively low sulfate content. This well is the deepest ever drilled in the Bellevue area for which a chemical analysis is available--the unusual chemical character may result from contact with a possible connate water existing at depth in this area. According to White (1957, p. 1,666) connate water is rich in silica and is low in sulfate and magnesium relative to sea water. The character of the water from this well conforms with these criteria rather closely. However, further study would be required to verify such a possibility.

The water from well 24/6-18E1, 40 feet deep, is unusual in that its bicarbonate content, 752 ppm, is the highest of any water tested in northwest King County. Only a partial analysis is available (table 8) and it is not possible to compare the chemical character of this water with any of the others for which comprehensive analyses are available. Its low hardness, 58 ppm, indicates that the water must be very rich in sodium, a feature known to exist in waters from deep zones. The geologic features of the immediate area suggests that the water from

well 18E1, in common with that from 24/5-4D1, may be a blend of meteoric and connate waters.

Future Development of Ground-Water Supplies

Tertiary rocks will probably always be of secondary importance as a source of ground water in northwest King County. In most parts of the area, as was pointed out earlier, the Tertiary rocks are too deeply buried to permit economical development of the relatively small supplies afforded by these rocks. Water-level measurements in well 24/5-23E1 (fig. 8) over a 9-year period indicate that locally on the Newcastle hills, where Tertiary rocks are the principal aquifers, the rate of ground-water withdrawal possibly has exceeded the rate of recharge.

Hydrographs of 14 wells for the 10-year period 1951-60 indicate that there has been no serious overdraft from aquifers in the unconsolidated deposits of northwest King County, and pumpage from these aquifers probably could be increased severalfold without seriously depleting the amount of water in storage. Although relatively large ground-water supplies may be developed locally from the older unconsolidated deposits, the unpredictability of the occurrence of permeable zones in this unit, and the presence, at least locally, of water of inferior quality probably will retard extensive development of ground water from these deposits. The unnamed gravel probably receives little direct recharge in northwest King County, and development of large ground-water supplies from this unit should be preceded by careful planning and testing to assure a continued dependable supply. The unnamed sand, Vashon advance stratified drift, and Vashon recessional stratified drift now discharge ground water at many exposures. By increasing the withdrawal from these aquifers the water level would be lowered and some of the natural discharge would be salvaged. These aquifers, where exposed at the surface over large areas, may now be rejecting recharge from precipitation during the winter. Greater development of the ground-water resources of these areas and the resultant lowering of the water table would permit the salvaging of recharge that is now being rejected. Additional ground-water development along the course of perennial streams that are now receiving ground-water discharge from permeable materials would result in reversal of the ground-water gradient, and the stream would then recharge the ground-water body.

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TABLE 5

Records of Representative Wells in Northwestern King County, Washington

Table 5.--Records of representative wells in northwest King County, Wash.
Locations of wells are shown on pl. 3

Altitude: Altitude of land-surface datum at well from spirit level traverses or interpolated from topographic maps.
Type of well: Bd, bored; Dg, dug; Dn, driven; Dr, drilled; J, jetted.
Water level: Measurements expressed in feet and decimal parts of feet were made by the Geological Survey; those in whole feet were reported by owner, tenant, or driller.
Type of pump: A, airlift; C, centrifugal; J, jet; N, none; P, piston; S, submersible; T, turbine.
Use of water: D, domestic; De, destroyed; Ind, industrial; Irr, irrigation; N, none; PS, public supply; S, stock.
Remarks: C, chemical analysis in table 8; Cp, partial chemical analysis in table 9; dd, drawdown; ft, foot or feet; gpm, gallons per minute; H, hydrograph in fig. 6, 7, or 8; Hr, hour(s); L, log in table 7; min, minute(s); temp, temperature. Information pertaining to adequacy or yield of well, materials penetrated, and quality of water were reported by well owner, user, or driller unless otherwise indicated.

Well No.	Owner or tenant	Altitude (feet)	Type of well	Depth of well (feet)	Diameter of well (inches)	Depth of casing (feet)	Character of water-bearing material	Water level		Pump		Use of water	Remarks
								Below land surface (feet)	Date	Type	Horsepower		
							T. 23 N., R. 3 E.						
1P1	Mrs. M. E. Anderson	240	Dg	65	42	6	----------	Dry	5-11-54	N	---	N	Till from 6 to 50 ft.
3A1	Washington State Toll Bridge Authority, test hole 2	-92	Dr	85	-----	-----	----------	------	---------	--	---	De	L.
							T. 23 N., R. 4 E.						
2A1	Seattle Eng. Dept., test hole 1	107	Dr	37	-----	-----	Sand	------	---------	--	---	De	L.
2A2	Do., test hole 13	80	Dr	45	-----	-----	----Do----	------	---------	--	---	De	L.

2A3	Seattle Eng. Dept., test hole 3	107	Dr	50	------	-----	Sand	------	---------	--	---	De	L.
2A4	Do., test hole 18	80	Dr	35	------	-----	Sand, black	------	---------	--	---	De	L.
2H1	Do., test hole 5	106	Dr	40	------	-----	Sand	------	---------	--	---	De	L.
2H2	Do., test hole 21	84	Dr	33	------	-----	----Do----	------	---------	--	---	De	L.
4A1	Boeing Airplane Co., formerly Acme Packing Co.	15	Dr	686	12-8	686	----Do----	Flowed	1947	--	---	De	Dd 80 ft after pumping at 180 gpm; flows 90 gpm; C, L.
4B1	Tony Deptaro	15	Dn	17-22	1½	17-22	----Do----	------	---------	C	3	Irr	Six closely spaced drive points with one pump.
5Q1	Glen Acres Public Golf Course	325	Dg, Dr	60	36	-----	----------	42.27 42.98	6-8-54 9-25-58	T	25	Irr	Yields 150 gpm.
							T. 23 N., R. 5 E.						
5C1	City of Renton	238	Dr	388	20-12	376	Gravel and sand	134.5	6-16-52	T	200	PS	Dd 28.5 ft after pumping at 470 gpm. L.
9C1	----Do-----	350	Dr	175	22-10	175	Gravel	72	11-?-52	--	---	----	Dd 43 ft after pumping 170 min at 150 gpm.
							T. 24 N., R. 3 E.						
13F1	Bethlehem Steel Co.	30	Dr	472	12-6	472	Sand and gravel	10	4-16-53	T	20	N	L.
13G1	Seattle Eng. Dept., test hole 1	108	Dr	40	-----	-----	Sand	-----	---------	--	---	De	L.
13G2	Do., test hole 12	80	Dr	26	-----	-----	---------	-----	---------	--	---	De	L.
13G3	Do., test hole 11	64	Dr	22	-----	-----	Sand and gravel	-----	---------	--	---	De	L.
13G4	Do., test hole 16	58	Dr	23	-----	-----	Sand	-----	---------	--	---	De	L.
13G5	Do., test hole 30	37	Dr	18	-----	-----	---------	-----	---------	--	---	De	L.
15F1	Do., test hole A	143	Dr	73	-----	-----	---------	-----	---------	--	---	De	L.
15F2	Do., test hole D	108	Dr	52	-----	-----	---------	-----	---------	--	---	De	L.
15F3	Do., test hole B	134	Dr	58	-----	-----	---------	-----	---------	--	---	De	L.
15F4	Do., test hole F	68	Dr	43	-----	-----	---------	-----	---------	--	---	De	L.
15G1	Do., test hold 15	111	Dr	39	-----	-----	---------	-----	---------	--	---	De	L.

Table 5. -- Records of wells. -- Continued

Well No.	Owner or tenant	Altitude (feet)	Type of well	Depth of well (feet)	Diameter of well (inches)	Depth of casing (feet)	Character of water-bearing material	Water level: Below land surface (feet)	Water level: Date	Pump: Type	Pump: Horsepower	Use of water	Remarks
							T. 24 N., R. 3 E. -- Continued						
15K1	Seattle Eng. Dept., test hole 1	51	Dr	50	-----	----	----------	------	--------	--	---	De	L.
15K2	Do., test hole 11	46	Dr	30	-----	----	----------	------	--------	--	---	De	L.
15K3	Do., test hole 4	91	Dr	45	-----	----	----------	------	--------	--	---	De	L.
15K4	Do., test hole 13	110	Dr	45	-----	----	----------	------	--------	--	---	De	L.
16A1	Washington State Toll Bridge Authority, test hole	-178	Dr	38	-----	----	----------	------	--------	--	---	De	L.
16A2	-----Do------	-226	Dr	24	-----	----	----------	------	--------	--	---	De	L.
22R1	Seattle Eng. Dept., test hole 14	97	Dr	48	-----	----	Sand and gravel	------	--------	--	---	De	L.
23N1	Do., test hole 2	163	Dr	70	-----	----	Sand	------	--------	--	---	De	L.
23N2	Do., test hole 23	25	Dr	35	-----	----	Sand and gravel	------	--------	--	---	De	L.
							T. 24 N., R. 4 E.						
2Q1	Joe Fiorito	20	Dr	254	6	----	Gravel	26	--------	N	---	De	Dd 75 ft at 40 gpm. Formerly domestic well.
5C1	Seattle Eng. Dept., test hole 28	194.8	Dr	75	-----	----	----------	------	--------	--	---	De	L.
5C2	Do., test hole 26	190.5	Dr	60	-----	----	----------	------	--------	--	---	De	L.

5C3	Seattle Eng. Dept., test hole 19	266	Dr	76	-----	----	----------	------	--------	--	---	De	L.
5C4	Do., test hole 17	107	Dr	31	-----	----	----------	------	--------	--	---	De	L.
5E1	Pacific Fruit & Produce Co.	10	Dr	----	3	----	----------	Flows	9-18-53	P	3	Ind	Yields 42 gpm. Top of casing is 15 ft below land surface.
5F1	Rainier Heat & Power Co.	25	Dr	350	10	----	----------	Flows	9-17-53	A	---	N	Yields 150 gpm. Top of casing is 20 ft below land surface.
5G1	Seattle Eng. Dept., test hole 33	136.5	Dr	40	-----	----	----------	------	--------	--	---	De	L.
5J1	Do., test hole 3A	207	Dr	141	-----	----	----------	------	--------	--	---	De	L.
5J2	Do., test hole 6A	137	Dr	69	-----	----	----------	------	--------	--	---	De	L.
5J3	Do., test hole 4C	201	Dr	131	-----	----	----------	------	--------	--	---	De	L.
5J4	Do., test hole 7C	111	Dr	45	-----	----	Sand	------	--------	--	---	De	L.
5J5	Do., test hole 3E	229	Dr	180	-----	----	----------	------	--------	--	---	De	L.
5K1	Do., test hole 6E	126	Dr	81	-----	----	----------	------	--------	--	---	De	L.
5Q1	Do., test hole 5F	127	Dr	90	-----	----	----------	------	--------	--	---	De	L.
5R1	Do., test hole 1	260	Dr	57	-----	----	----------	------	--------	--	---	De	L.
5R2	Do., test hole 2F	243	Dr	165	-----	----	----------	------	--------	--	---	De	L.
6A1	Seattle Steam Corp.	15	Dr	290	10-8	180	----------	------	--------	C	7½	De	Yielded 120 gpm; C.
7G1	San Juan Fish Packaging Co.	10	Dr	240	18-10	240	----------	10	9-16-53	P	7½	N	Contains sulphur and explosive gas.
8D1	Arden Farms	10	Dr	232	18-12	226	Gravel	------	--------	N	---	De	L.
11A1	A. R. Early	85	Dg, Dr	90	60-5	89	Sand	42.77	2-28-51	P	1	D	Adequate for 3 lawn sprinklers; L.
11J1	Fred Bekin	44	Dr	685	12-5	----	----------	17.19	1951	N	---	N	Methane gas; L.
12D1	H. W. Attlesey	135	Dr	31	8	31	Gravel	22.12	2-28-51	C	3/4	PS	Well and 2 springs supply 40 families; L.
12E1	Oswald Thanem	112	Dg	52	38-30	52	Silt	22.65	2-27-51	J	1	D	Aquifer is overlain by till.
12F1	Mercer Island Coop. Water Assoc.	250	Dg, Dr	28	36-16	28	Gravel	9	6-17-37	--	--	PS	
12F2	-----Do-----	250	Dr	256	-----	----	Sand	------	--------	N	---	N	L.
12G1	Earle Judd	80	Dg	21	72	----	Silt	9.77	7-23-51	C	½	D	
12H1	F. L. Moodie	220	Dg	55	36	----	----------	48	2-20-51	J	½	D	
12H2	M. P. Starr	227	Dg	64	30	----	----------	------	--------	J	3/4	D	

Table 5. -- Records of wells. -- Continued

Well No.	Owner or tenant	Altitude (feet)	Type of well	Depth of well (feet)	Diameter of well (inches)	Depth of casing (feet)	Character of water-bearing material	Water level: Below land surface (feet)	Water level: Date	Pump: Type	Pump: Horsepower	Use of water	Remarks
T. 24 N., R. 4 E. -- Continued													
12H4	--- Havlund	200	Dg	85	36	----	----------	36.46	2-20-51	J	3/4	N	
12H5	--- Soltero	225	Dg, Dr	200	36-6	200	Sand	125	2-20-51	--	---	De	Formerly domestic well.
12J1	D. L. Duckey	265	Dg	35	24	35	----Do----	26.56 29.52	2-20-51 9-10-51	J	3/4	D	Dd 7 ft after pumping 2½ hr at 15 gpm; L.
12M1	Mercer Island Coop. Water Assoc.	270	Dg	62	20	62	Sand and gravel	36	3-1-51	T	20	PS	Dd 5 ft pumping 600 gpm; C, L.
13B1	W. E. Varns	200	Dr	100	8	100	Sand	60	-------	T	2	N	Formerly supplied 12 families.
13B2	L. Voulis	200	Dr	70	6	65	----Do----	50	-------	--	---	D	L.
13H1	Carl Stroud	210	Dr	225	6	----	----------	195	-------	J	5	D	Aquifer overlain by clay and till. Yield inadequate.
13J1	Ivan Kearns	175	Dg	69	38	69	Silt	28.30	2-27-51	J	½	D	
17A1	Seattle Eng. Dept., test hole 5	238.1	Dr	75	-----	----	Sand	------	-------	--	---	De	L.
17C1	Washington State Highway Dept., test hole	15	Dn	91	-----	----	----------	------	-------	--	---	De	L.
17F1	Seattle Eng. Dept., test hole 14	12	Dr	68	-----	----	----------	------	-------	--	---	De	L.
17H1	Do., test hole 8	260.8	Dr	35	-----	----	----------	------	-------	--	---	De	L.
17J1	Do., test hole 10	254	Dr	92	-----	----	Sand	------	-------	--	---	De	L.

17L1	Seattle Eng. Dept., test hole 19	3	Dr	74	-----	----	----------	------	-------	--	---	De	L.
17M1	Do., test hole 7	6	Dr	74	-----	----	----------	------	-------	--	---	De	L.
17P1	Do., test hole 26	15	Dr	72	-----	----	----------	------	-------	--	---	De	L.
18B1	Elliott Bay Mill Co.	10	Dr	1,550	24-6	1,550	Sand and gravel	6	1951	T	20	N	Dd 170 ft after pumping 3 hr at 100 gpm; L.
18Q1	Seattle Eng. Dept., test hole 1	5	Dr	96	-----	----	----------	------	-------	--	---	De	L.
19H1	Liquid Carbonic Corp.	15	Dr	631	10-8	260	Sand	13.98 10.94	9-16-53 8-17-59	N	---	N	Dd 46 ft pumping 235 gpm; C, H, L.
20N1	Washington State Highway Dept., test hole 1	6	Dr	153	-----	----	----------	------	-------	--	---	De	L.
25B1	E. W. Rudow	80	Dr	130	6	----	Gravel	30	2-27-51	P	2	D	L.
25B2	H. W. McCurdy	50	Dr	114	6	113	Sand and gravel	21	2-27-51	--	---	D	Dd 50 ft pumping 10 gpm. L.
25B3	E. R. Hinton	75	Dr	128	6	128	----Do----	60	2-27-51	J	2	D	Slight dd after pumping 40 min at 25 gpm; L.
25K1	W. J. Galletly	265	Dr	45	6	45	----Do----	14.30	5-10-51	J	½	D	Aquifer overlain by till.
25K2	E. L. Colingham	265	Dr	40	6	40	----Do----	------	-------	J	½	D	------Do---------
25L1	H. Packard	115	Dg	22	36	----	Sand	6.76	3-2-51	P	½	D	
25L2	Keene Bettinger	200	Dg	147	36	----	Till	138.83	3-2-51	J	1	D	Penetrates 147 ft of till.
25Q1	H. L. Marshall	275	Dr	175	6	----	----------	------	-------	P	3/4	D	Supplies 2 houses.
25R1	Mercer Island School Dist. 400	350	Dr	154	6	154	----------	140	4-11-58	T	3	PS	Yields 40 gpm; C, L.
29D1	Washington State Highway Dept., test hole 6	2	Dr	216	-----	----	----------	------	-------	--	---	De	L.
30H1	Do., test hole 9	-26	Dr	190	-----	----	----------	------	-------	--	---	De	L.
30J1	Do., test hole 17	10	Dr	148	-----	----	----------	------	-------	--	---	De	L.
30J2	Do., test hole 15	7	Dr	121	-----	----	----------	------	-------	--	---	De	L.
36A1	J. W. Elkins	160	Dg	60	-----	----	----------	------	-------	--	---	D	
36A2	John Stenhouse	210	Dg	20	30	20	Sand	0.38	3-2-51	P	1/6	D	Yield inadequate in summer. High bacteria count.

Table 5. -- Records of wells. -- Continued

Well No.	Owner or tenant	Altitude (feet)	Type of well	Depth of well (feet)	Diameter of well (inches)	Depth of casing (feet)	Character of water-bearing material	Water level: Below land surface (feet)	Water level: Date	Pump: Type	Pump: Horsepower	Use of water	Remarks
							T. 24 N., R. 5 E.						
2D1	King County Water Dist. 97	300	Dr	160	12	130	Sand and gravel	101.67	6-6-56	--	---	PS	Dd 38 ft pumping 420 gpm. Iron content objectionable; Cp, L.
2D2	----Do-----	300	Dr	220	18-12	220	----Do----	101.47	6-6-56	T	---	PS	Dd 93 ft pumping 900 gpm; Cp, L.
2E1	D. D. Marshall	350	Dr	165	4-3	160	Sand	80	2-13-51	--	---	D	L.
2F1	Frank Moravec	290	Dg	7	72	----	----------	.5	9-10-49	C	6	Irr	Dd 3 ft after pumping 4 hr at 60 gpm.
2F2	Ed Arndt	320	Dg	10	48	10	Sand	6	--------	P	¼	D,S	Cp.
2G1	Harold Berndt	275	Dg	35	36	30	-----Do----	10.70	2-3-51	J	¼	D	Aquifer overlain by till.
2N1	Harry Riley	385	Dg	17	60	----	----------	2.4	2-8-51	J	1	D	
2N2	--- Conklin	380	Dg	21	36	----	----------	8.17	2-8-51	J	½	D	
2R1	J. A. Gibson	330	Dg	24	36	----	----------	11.5	2-8-51	J	1/3	D	
3B1	C. E. Ulbrickson	300	Dr	41	6	41	Sand and gravel	26.28	7-13-51	J	3/4	D	L.
3G1	L. L. Glaney	330	Dg	50	36	----	----------	44	1947	J	½	D	
3G2	Sunset Hills Memorial Park	325	Dr	189	8	189	Gravel	144	4-?-55	T	40	Irr	Dd 10 ft pumping 320 gpm. Has H_2S odor; Cp, L.
3K1	Bill Farnum	365	Dr	99	6	99	Sand and gravel	41.87	5-3-51	J	1	D	Aquifer overlain by till; Cp.
3L1	A. W. Philliber	325	Dg	102	60	100	Sand	100	2-13-51	P	¼	D,S	
3N1	J. W. Hayes	50	Dg	6	60	----	----------	1.00	2-13-51	P	1/3	D	
3N2	C. S. Curtis	50	Dg	3	60	----	----------	Flows	3-14-51	J	3/4	D,S	
3R1	C. A. Ladwig and A. L. Noll	400	Dg, Dn	119	-----	----	----------	------	-------	P	---	D	Supplies 4 families.
4D1	Water District 68	56	Dr	600	12-8	600	Sand and gravel	12.85 8.15	1-28-52 8-17-59	N	---	N	Pumped 700 gpm; C, H, L.

4E1	G. C. Gunderson	50	Dr	146	6	146	Sand and gravel	12	------	J	3/4	D	L.
4J1	--- Larson	75	Dg	45	36	41	Sand	42	------	P	4	D	
4R1	A. L. Passenter	75	Dg	55	42	----	----------	-----	------	J	3/4	D	Cp.
5B1	H. E. Simi	75	Dr	180	8	----	----------	113+	10-25-51	P	1½	D	
5D1	L. H. Black	275	Dr	500	8	500	Sand	180	------	P	3	De	Yield 150 gpm, formerly domestic well; L.
5F1	E. W. Oppliger	70	Dg, Dr	72	8	64	Sand and gravel	-----	------	P	½	D	L.
5Q1	A. R. Cook	125	Dg	122	36	----	Sand	119.04	10-19-51	P	½	D	Aquifer is overlain and underlain by till. Adequate for 6 families.
5Q2	R. A. Llewellyn	140	Dr	122	8	122	Sand and gravel	104.84	10-19-51	N	---	N	Pumped sand; L.
7J1	William Jacquett	45	Dr	52	6	52	----Do----	4.47	10-1-51	--	---	D	L.
7J2	C. E. Wilson	50	Dr	95	6	95	Sand	15.85	10-9-51	--	---	---	L.
7J3	Mercer Properties, Inc.	50	Dr	600	-----	----	----------	-----	-------	--	---	De	Well never used. Hard clay from 100 to 600 ft. No appreciable water below 100 ft.
7K1	Lyle Wickstrom	130	Dr	224	6	210	Sand	90	-------	P	½	D	Dd 70 ft bailing 20 gpm; L.
7P1	Mercer Crest Coop. Water Assoc.	275	Dg	77	54-36	77	----Do----	55.60	2-20-51	J	5	PS	Dd 11 ft after pumping 20 min at 75 gpm. Supplies 60 families; C, L.
8A1	Walter Smith	25	Dg	8	36	8	----Do----	2	2-14-51	P	¼	D	Cp.
8B2	Frank Riepl	45	Dg	15	36	----	----------	5.70	2-14-51	P	3/4	Irr	
8D1	Water Dist. 22	40	Dg	25	-----	----	----------	20	1944	P	---	PS	
8H1	Guy Kinley	40	Dg	8	36	8	Sand	8.00	2-14-51	J	¼	D	Yield insufficient for irrigation.
8J1	F. A. Mandell	50	Dg	16	36	16	----Do----	8	2-14-51	P	½	D	Aquifer overlain by till. Adequate for irrigation.
8K1	Roy Borgerson	25	Dr	45	6	45	Sand and gravel	-----	-------	J	3/4	D	L.
9A1	L. J. Peterson	70	Dg	29	30	----	----------	23.40	2-12-51	P	½	D	
9A2	S. K. Adams	80	Dg	48	36	----	----------	41.30	2-13-51	J	3/4	D	
9C1	Veteran's Mutual Bldg. Assoc.	160	Dr	148	10-8	148	Sand and gravel	100.96	3-2-51	T	15	PS	Dd 20 ft after pumping 4 hr at 140 gpm; C, L.
9E1	A. L. Durkee	30	Dg	13	30	----	----------	7.17	2-13-51	J	¼	D	Supplies 2 families.
9F1	Eva Rooney	50	Dg	20	60	20	Gravel	19	2-13-51	P	1/6	D	Cp.
9F2	M. H. Mercord	40	Dg	20	-----	----	----------	3.49	5-13-58	J	½	D	
9F3	-----Do-----	40	Dg	10	38	----	----------	2.27	5-13-58	C	¼	Irr	
9G1	Factoria School	150	Dg	137	48	----	----------	130.12 129.84	2-6-51 5-13-58	P	7	N	

Table 5. -- Records of wells. -- Continued

Well No.	Owner or tenant	Altitude (feet)	Type of well	Depth of well (feet)	Diameter of well (inches)	Depth of casing (feet)	Character of water-bearing material	Water level: Below land surface (feet)	Water level: Date	Pump: Type	Pump: Horsepower	Use of water	Remarks
							T. 24 N., R. 5 E.-- Continued						
9K1	Chellson & Chellson Market	110	Dg	44	36-30	44	Gravel	27.05	2-5-51	J	1	D	Aquifer overlain by till.
9K2	E. G. Kinsman	120	Dr	112	6	112	Sand	90	2-5-51	J	3	D	Yields 20 gpm; L.
9K3	Sterling Theatres, Inc.	115	Dr	190	6	190	----Do----	------	-------	T	---	PS	Yields 150 to 200 gpm; L.
9L1	Oakley, Morris, and Shoemaker	100	Dg	68	60	----	----------	62.29	2-5-51	P	1	D	Supplies 4 families.
9Q1	Sterling Theatres, Inc.	100	Dr	388	8	388	----------	55	2-13-51	T	3	PS	Penetrates clay. Yields 15 to 20 gpm. Iron content objectionable.
10A1	R. W. Diedrich	410	Dr	171	4	----	Sand	132.70 139.36	9-27-51 8-17-59	J	1	D	Dd 10 ft after pumping 15 min at 3 gpm; Cp, L.
10A2	B. M. Foutch	420	Dr	152	6	130	----------	------	-------	J	2½	D	Cp.
10C1	M. B. Stewert	110	Dg	13	48	13	Sand	5.00	2-13-51	P	½	D	Aquifer overlain by till.
10C2	Century Builders, Inc.	225	Dr	100	8	100	----Do----	40.3	6-27-55	N	---	N	Dd 52 ft pumping 260 gpm. L.
10D1	L. R. Capper	65	Dg	15	36	----	----Do----	Flows	2-12-51	J	½	D,S	
10D2	-----Do-----	65	Dr	72	6	70	----Do----	Flows	9-21-51	N	---	D	Flows 1½ gpm; L.
10J1	James Kane	325	Dr	142	6	----	----------	------	-------	J	1½	D	
10J2	H. E. McKinney	325	Dr	103	6	100	Sand	52	2-8-51	J	2	D	Slight dd after pumping 14 gpm for 7 days; L.
10K1	A. F. Andrell	325	Dr	71	6	71	Sand and gravel	10	4-27-53	T	3	N	Dd 19 ft after pumping 6 days at 50 gpm.

10K2	Harmes Pacific Transport Co.	325	Dr	43	6	----	----------	-----	-------	J	1	Ind	Pumps continuously.
10K3	Eastgate Shopping Center	325	Dr	480	12	93	Sand and gravel	75	5-13-54	--	---	---	Yields 60 gpm; L.
11A1	W. G. Cochran	340	Dg	64	48	----	----------	-----	-------	J	1/3	D	
11D1	E. L. Dempsey	400	Dg, Dr	190	36-6	----	----------	134.39	5-1-51	T	7½	D,S	Yields 50 gpm.
11L1	Puget Sound Air Service, Inc.	325	Dr	75	6	71	Sand and gravel	------	-------	T	2	Ind	Yields 35 gpm; L.
11M1	East Side Sportsman Club	350	Dg	36	36	36	---------	13	2-8-51	J	1	D	
11N1	Washington Water Service Co., Inc.	350	Dr	83	12	83	Sand and gravel	34	4-6-53	T	---	D	Dd 34 ft after pumping 72 hr at 110 gpm. Plugged back from 340-ft depth; Cp, L.
11N2	-----Do-----	360	Dr	105	12-8	103	Sand	51	2- -54	T	15	PS	Dd 45 ft pumping 120 gpm; Cp, L.
11Q1	Bill Lind	250	Dg	12	30	12	----Do----	2.55	2-5-51	J	1½	D	Supplies cafe and motel.
11Q2	-----Do-----	250	Dg	20	30	20	----------	6	3-7-45	--	---	---	Yields 10 gpm.
12C1	R. A. Wilcox	60	Bd	60	24	60	Sand	45	10-15-51	J	½	D	
12F1	J. J. Lewis	40	Dg	20	48	----	----------	11.28	10-15-51	P	1	D	
12F2	W. J. Lewis	45	Dg, Dr	80	6	----	Sand and gravel	------	-------	T	1	D	Aquifer overlain by till.
12L1	L. M. Curtin	50	Dg	10	-----	----	----------	2.12	10-18-51	C	½	D	Iron content objectionable.
12L2	-----Do-----	50	Dr	410	4	----	----------	------	-------	N	---	N	
13A1	Henry Isaacson	80	Dr	305	6	----	----------	1.53	3-4-44	N	---	N	L.
13C2	L. A. Clark	250	Dr	328	8	----	----------	40	2-12-51	P	3	D	Penetrates Tertiary sedimentary beds.
13D1	--- Tweeter	480	Dr	50	6	110	Sand and gravel	15.59	10-16-52	--	---	D	Plugged back from 200-ft depth; L.
13F1	Willow Ridge Community	300	Dr	180	6	----	----------	------	-------	J	7½	PS	Plugged back from 210-ft depth. Supplies 20 families; Cp.
13H1	L. C. Gibson	150	Dr	300	8	300	Gravel	Flows	8-9-51	J	½	D,S	Yields 3 to 4 gpm.
13M1	Washington Water Service Co., Inc.	675	Dr	320	6	40	----------	220	10- -54	P	7½	PS	Supplies 13 homes. Dd 5 ft pumping 20 gpm.
13N1	Ersel Lockridge	700	Dr	217	6	130	Sandstone	11.51	10-1-52	P	¼	D	L.
13N2	J. O. Fish	695	Dr	156	6	----	----------	34.10	10-1-52	P	3/4	D	
14B1	R. G. Sundburg	400	Dr	158	8	----	----------	80	2-6-51	P	2	D	Cp.
14H1	G. E. Hall	530	Dr	541	6	----	Sandstone	110	10-9-51	P	3	D	Dry after bailing 4 hr at 20 gpm; L.
14J1	Joseph Liebsack	680	Dr	337	6	42	----Do----	40	7-31-51	P	3/4	D	Dd 260 ft after bailing 10 gpm; L.

Table 5. -- Records of wells. -- Continued

Well No.	Owner or tenant	Altitude (feet)	Type of well	Depth of well (feet)	Diameter of well (inches)	Depth of casing (feet)	Character of water-bearing material	Water level: Below land surface (feet)	Water level: Date	Pump: Type	Pump: Horsepower	Use of water	Remarks
T. 24 N., R. 5 E. -- Continued													
14J2	D. W. Compton	650	Dr	80	6	----	Sandstone (?)	32.30	10-1-52	J	½	D	Dd 38 ft after pumping 70 min at 3 gpm.
14K1	Ruddy Nelson	675	Dr	96	6	----	----------	86.77	10-1-52	J	3/4	D	Supplies 2 families.
14L1	C. W. Latta	750	Dg, Dn	35	30-2	----	----------	------	--------	P	3/4	D	Will pump dry in 1 hr; Cp.
14R1	G. W. Bondo	700	Dr	123	6	60	Sandstone	Flows	2-6-51	C	½	D	Hydrostatic head, 0.1 ft above land surface; L.
15A1	Eugene Luks	360	Dg	16	30	----	Gravel	4.01	2-6-51	J	3/4	D	
15A2	Eastgate Homes, Inc.	360	Dr	255	12-8	176	"Hardpan"	------	-------	N	---	---	Yields less than 20 gpm; L.
15B1	D. J. Wyman	350	Dg	7	24	----	Gravel	3.38	2-6-51	J	½	D	Yields 35 to 40 gpm.
15B2	Washington Water Service Co., Inc.	430	Dr	175	8	135	Sand and gravel	81	12-2-54	S	10	N	Dd 45 ft pumping 135 gpm; L.
15C1	E. E. Stewart	325	Dg	30	30	----	----------	14.22	2-6-51	J	½	D	Penetrates till only.
16A1	D. J. Davis	125	Dg	17	40	17	Sand and gravel	8	2-6-51	P	1/3	D	
16B1	Paul Springer	125	Dg	14	36	14	Gravel and boulders	2.61	2-6-51	--	---	D	Temp 45.
16F1	S. W. Tucker	150	Dg	44	36	----	"Hardpan"	29.71	2-5-51	J	3/4	D,S	Aquifer overlain by till. Yields 6 gpm.
16F2	Rose Kibbler	160	Bd	53	24	53	Sand	40.67 43.19	2-5-51 8-17-59	J	½	D	Yields 10 gpm; Cp, H, L.
16F3	E. Mankin	160	Dr	64	6	64	Sand and gravel	42.14	4-13-51	J	½	D	Yields 8 gpm; L.

16H1	Ward Wilson	330	Dg	10	36	10	Sandstone	3.15	2-6-51	N	---	N	
16H2	J. C. Shepard	300	Dr	200	6-4	50	----Do----	.28	2-6-51	P	¼	N	Yields 3½ gpm.
16H3	John Hudack	230	Dr	88	6	86	Sand	Flows	9-24-58	C	---	D	Flows about 1 gpm. Odor of H_2S; L.
16J1	H. S. Karrasch	300	Dr	180	6	45	Siltstone	18	2-6-51	J	1½	D	Dd 95 ft bailing 12 gpm; L.
16M1	J. R. Cluck (Lake Heights well 1)	65	Dr	277	6	277	Sand and "shale"	Flows	1- -52	T	---	N	Dd 43 ft after pumping 1 hr at 2 gpm; C, L.
16N1	Do., (well 2)	225	Dr	170	6	150	Sand and gravel	131.5	9-24-52	T	5	N	Dd ½ ft after pumping 10 hr at 44 gpm; L.
17D1	Shore Ridge Water Assoc.	20	Dr	50	8	50	Sand	10.5	2-23-53	T	---	PS	Yields 42 gpm.
18B1	M. I. Stucky	305	Dg, Dr	270	48-6	60	----Do----	52.51	8-21-52	J	1	D	Yields 5 gpm; L.
18F1	R. A. Elliott	350	Dr	90	4	----	----------	------	------	J	3	D	Supplies 5 families.
18G1	M. E. Kristoferson	350	Dr	145	20	145	Sand and gravel	75	8-21-52	--	---	D	Dd 65 ft after pumping 18 hr at 100 gpm; L.
18L1	T. C. Bradshaw	360	Dg	112	30	112	Sand	------	-------	J	1	D	
18L2	W. E. Watson	380	Dg	79	48	----	----------	60.73	2-21-51	P	½	D	
18M1	L. M. Baker	340	Bd	47	6	47	Sand	37	2-21-51	J	1/3	PS	
18P1	Dan Davis	355	Dr	215	6	215	-----Do---	175	2-23-51	P	1	D	
19C1	I. C. Paul	355	Dr	152	6	152	-----Do---	107.79	2-23-51	P	1	D	Supplies 2 houses.
19C2	W. V. York	355	Dr	174	6	174	-----Do---	122.80 128.39	2-23-51 9-22-58	P	1	D	
19C3	A. Jacobsen	355	Dg	101	48	101	----Do----	------	-------	J	1	D	Aquifer overlain by till.
19C4	T. B. Leake	350	Dg	87	36	----	Silt	75	2-23-51	J	3/4	D	-------Do----------
19D1	L. P. Bonifaci	230	Dg	27	30	27	Sand and gravel	20.86 23.44	2-23-51 9-24-58	J	3/4	D	L.
19E1	E. R. Brown	355	Dg	130	48	130	----------	100	2-23-51	J	1	D	
19M1	Otto Risch	320	Dg	19	36	5	----------	4.64	2-23-51	P	1/3	D	Yield inadequate.
19N1	R. Campbell	305	Dg	30	36	----	Sand	16.67 25.74	2-26-51 9-23-58	J	½	D	Supplies 2 families.
19P1	Carl Alson	300	Dr	43	6	43	Sand and gravel	28	5-29-53	J	1	D	Yields 20 gpm; L.
19P2	-----Do-----	325	Dr	212	6	50	---------	80	5-29-53	N	---	N	L.
19Q1	D. W. Close	50	Dr	60	6	60	---------	------	-------	P	½	D	
20H1	Oscar Granfelt	220	Dr	180	6	180	Sand	139.28	9-27-51	P	½	D	Yields 15 gpm; L.
20Q1	G. H. Sheets	250	Dr	240	4	----	----------	------	-------	P	1½	D,S	Pumps fine sand.
23A1	Ralph Lowe	700	Dg	11	30	----	Till	8.52	7-31-51	J	½	D	

Table 5. -- Records of wells. -- Continued

Well No.	Owner or tenant	Altitude (feet)	Type of well	Depth of well (feet)	Diameter of well (inches)	Depth of casing (feet)	Character of water-bearing material	Water level: Below land surface (feet)	Water level: Date	Pump: Type	Pump: Horsepower	Use of water	Remarks
							T. 24 N., R. 5 E.--Continued						
23C1	Hill Top Community	840	Dr	312	12-8	65	Sandstone	7.83	7-26-51	C	---	PS	Dd 7 ft after pumping 1 hr at 50 gpm; Cp, L.
23C2	Horizon View Development Co.	950	Dr	-----	12	31	----Do----	------	--------	N	---	N	Public supply intended; C.
23E1	Horizon View Co., Inc.	980	Dr	385	12	12	----Do----	131.19 211.78	7-26-51 7-15-59	T	5	PS	Dd 40 ft after pumping 3½ hr at 30 gpm. Deepened from 353-ft depth, 10-28-58; C, L.
24N1	W. V. Baker	1,085	Dr	187	4	----	----------	65.30	10-1-52	P	½	D	
24N2	--- Paschal	1,085	Dr	550	6	----	Siltstone	76.70	12-1-52	N	---	N	Insufficient yield. L.
24P1	R. T. Leber	1,150	Dr	127	6	----	----------	113.14	10-22-52	P	3/4	D	
24Q1	R. Dowling	1,010	Dr	101	6	60	Sandstone	20	10-22-52	J	3/4	D	Yields 10 gpm; L.
24Q2	Bill Price	1,050	Dr	203	6	74	----Do----	50.16	10-22-52	P	3/4	D	Yields less than 10 gpm; L.
24R2	W. E. Russell	1,150	Dr	265	10-8	47	Sandstone, conglomerate	Flows	6- -58	N	---	N	Shut-in pressure 12 lbs., flows 450 gpm; L.
25B1	A. B. Clark	1,450	Dr	510	6	84	Sandstone	19.04	7-31-51	--	---	D	
25B2	M. Berge	1,375	Dr	250	6	190	----Do----	182.44	7-21-51	P	1½	D	
25D1	V. J. Carlson	1,050	Dg	12	60	12	----------	10.23	9-28-51	P	½	D	Cp.
28N1	James Kausky	350	Dg	8	30-24	8	Gravel and sand	4.39	6-22-51	P	½	D,S	Iron content objectionable.
28N2	Eylar Gardens	550	Dr	407	-----	----	----------	242	6-22-51	P	1	D,Irr	
29B1	H. O. Marshall	260	Dg	28	36	28	Sand and gravel	19.20	8-9-51	P	½	D	L.
30E1	Mercer Island School Dist. 400	330	Dg	76	36	----	----------	63.42 66.42	2-26-51 8-17-59	J	½	D	H.

30L1	W. H. MacCrossan	325	Dg	60	48	60	---------	-----	-------	P	---	D	
30L2	Girl Scout Camp	325	Dg	58	36	----	---------	38.30	2-26-51	P	½	D	
32B1	I. L. Shaw	50	Dg	72	6	72	Sand and gravel	Flows	8-2-51	N	---	D	Measured flow 9 gpm. H_2S odor; L.
32J1	A. A. Brewer	330	Dr	245	6	245	----Do----	-----	-------	P	1½	PS	L.
							T. 24 N., R. 6 E.						
1E1	Roy Sherman	440	Dg	17	20	17	Sand and gravel	-----	-------	P	---	D	Dry late in summer.
2P1	Beaver Lake Well Co.	420	Dr	110	10	----	---------	-----	-------	T	2	D	Supplies 6 families.
2P2	R. Case and W. E. De Water	420	Dr	100+	6	----	---------	-----	-------	J	1	D	Supplies 2 families; Cp.
3E1	Harry Winkler	560	Dr	176	6	176	Gravel	155	12-3-51	--	---	D	L.
3R1	E. T. Baker	390	Dg	12	30	----	Sand	9.32	11-27-51	P	1/6	D,S	
4A1	P. C. Goebel	540	Dg	47	48	----	---------	28.62	7-5-51	J	½	D	Yield inadequate.
4E1	Jim Harvey	375	Dr	186	6	186	Gravel	-----	-------	P	1	D	L.
4H1	G. Henrickson	545	Dg	24	40	4	Sand	14.51	7-5-51	P	¼	D	Aquifer overlain by till.
4H2	J. S. Judge	540	Dg	35	48	4	Gravel	20	7-5-51	P	¼	D,S	
4K1	J. P. Moushay	425	Dg	17	60	----	---------	11.08	7-5-51	P	¼	D,S	
4N1	King County Water Dist. 82	450	Dr	300	10-8	291	Gravel and sand	181.40	7-16-51	T	7½	PS	Dd 2 ft bailing 70 gpm; C, L.
4N2	-----Do-----	450	Dr	346	12-10	346	Sand and gravel	192	5-16-58	T	7½	PS	Dd 53 ft pumping 170 gpm. Plugged back to 326-ft depth; L.
5D1	J. B. Peck	125	Dg	7	30	7	Sand	2.75	10-23-51	P	¼	D,S	Dd 4 ft after pumping 2½ hr at 4 gpm.
5H1	--- Cochrane	350	Dr	153	6	153	Sand and gravel	120	1951	--	---	D	L.
6A1	M. A. Obermarck	40	Dr	94	6	----	Sand	Flows	10-23-51	J	½	D	
6A2	Tom Mason	40	Dr	103	6	103	----Do----	Flows	10-20-57	--	---	---	L.
6H1	Mint Grove Community	40	Dr	50	8	----	----Do----	Flows	10-23-51	J	1	D	Supplies 19 families.
6Q1	Sam Dunlap	75	Dr	265	6	----	Sand and gravel	-----	-------	P	½	D,S	Clay from 80 to 265 ft.
7A1	M. Mattila	135	Dr	76	6	----	----------	-----	-------	P	3/4	D	
8D1	H. F. Woods	407	Dr	337	6-4	334	Gravel	286.54	7-13-51	P	2	D	L.
8F1	Edwin Bond	380	Dr	342	6	342	----Do----	167.51	1-28-52	P	3/4	D	L.
8K1	Erickson & Sons Poultry Farm	415	Dr	172	32-12	172	Sand	156.42	7-20-51	P	1½	D,S	Yields 9 gpm; L.

Table 5. -- Records of wells. -- Continued

Well No.	Owner or tenant	Altitude (feet)	Type of well	Depth of well (feet)	Diameter of well (inches)	Depth of casing (feet)	Character of water-bearing material	Water level: Below land surface (feet)	Water level: Date	Pump: Type	Pump: Horsepower	Use of water	Remarks
							T. 24 N., R. 6 E.--Continued						
9A1	M. R. French	400	Dr	108	6	108	Gravel	93	7-5-51	P	½	D	Aquifer overlain by till.
9A3	Bill Hanson	395	Dr	96	6	----	----Do----	76	7-6-51	J	½	D	L.
9E1	C. Gustafson	395	Dr	162	6	----	----------	------	-------	P	½	D	
9G1	R. J. Swenson	400	Dr	111	6	111	Sand	83	7-6-51	J	1	D	L.
9H1	G. Peterson	400	Dr	101	6	101	Gravel and sand	77	7-6-51	J	3/4	D	L.
9J1	Providence Heights College	438	Dr	210	12	132	Sand and gravel	117	7-6-51	--	---	PS	Dd 3.2 ft pumping 160 gpm; L.
9M1	A. R. Barker	425	Dg	20	48	3	Gravel and sand	19.01	6-29-51	P	---	D	
9M2	A. C. Forbes	430	Dg	65	36	10	----------	61	7-20-51	P	3/4	D	Pumps dry in 1 hr.
10B1	Clayton Holsten	375	Dg	20	30	20	Sand and gravel	11.17	11-7-51	P	1/3	D	Aquifer underlain by till.
10E1	A. M. Braydon	430	Dr	144	6	144	Gravel	119	6-29-51	J	---	D	L.
10L1	A. R. Tucker	370	Dr	60	6	----	----------	------	-------	J	½	D	
10P1	Phillip Frink	350	Dr	59	6	59	Sand and gravel	41	10-30-52	--	---	D	L.
10Q1	H. Shultz	390	Dr	51	6	51	----Do----	25	7-6-51	P	---	D	L.
11B1	G. L. Bartells	410	Dr	92	6	----	Gravel	75	11-27-51	J	1	D	Iron content objectionable.
14P1	J. H. Mills	425	Dr	101	6	101	Sand and gravel	------	-------	--	---	D	Yields 25 gpm; L.
15B1	Marvel Scoville	400	Dr	57	4	57	----------	48	7-10-51	P	¼	D	
15B2	P. J. Hobbs	420	Dr	60	4	60	Gravel and sand	47	1951	J	½	D	L.
16E1	R. G. Haldeman	100	Dr	227	6	196	Sand	53.62	10-30-52	S	3/4	D	Dd 85 ft bailing 15 gpm; L.
16E2	-----Do-----	60	Dg	8	48	8	Sand and gravel	4.68	6-29-51	P	¼	D	
16L1	R. A. Maugan	60	Dn	72	2	72	----------	Flows	10-19-51	P	¼	D	Flows less than 1 gpm; Cp.
18E1	A. J. Peters, Jr.	120	Dg	40	48	40	Sand	30.80	10-28-52	P	2	D	Cp, L.

19L1	A. Perrow	740	Dg	67	48	67	----------	46.50	10-16-52	N	---	N	Yield inadequate; L.
19P1	Edgehill Water Assoc.	755	Dr	255	8	65	Sandstone	Flows	1-29-53	P	3	PS	Dd 230 ft after pumping 2½ hr at 30 gpm; L.
19Q1	U.S. Army, Corps of Engineers	708	Dr	327	10-8	327	----Do----	5.0	2- -54	P	5	PS	Dd 1 ft after pumping 1 hr at 25 gpm; Cp, L.
19R1	W. F. Tiemeyer	710	Dg	27	36	27	Sand and gravel	23.66	10-22-52	J	½	D	
21J1	Al Peters	50	Dr	150	6	----	----Do----	Flows	2-27-58	--	---	D	Dd 125 ft pumping 290 gpm. L.
21N1	Pickering Bros.	51	Dr	76	6	71	----Do----	Flows	6-15-57	J	3	D	Flows 8 gpm; L.
21R1	Irving Tibbetts	50	Dn	60	1½	60	----------	Flows	10-19-51	P	¼	D	H_2S odor. Flows 1½ gpm. Iron content objectionable.
21R2	-----Do-----	70	Dn	70	1½	70	----------	Flows	10-19-51	P	½	N	Flows 3½ gpm.
22A1	Overdale Water Assoc.	442	Dr	510	12	18	Sandstone	101	8-22-58	S	7½	PS	Dd 216 ft pumping 60 gpm.
22H1	G. W. Sherrell	430	Dg	54	48	12	Sand and gravel	45.17	11-20-51	J	3/4	D,S	Yields 6 gpm. Iron content objectionable; L.
22L1	Gasper Pinter	340	Dg	8	72	5	Sandstone	4.71	4-2-51	P	1/3	D	
22L2	Bert Keleman	390	Dr	138	6	----	----Do----	20	10-9-51	J	3/4	D	L.
22N1	Frank Kramer	100	Dr	42	6	42	Sand and gravel	3.25	7-10-51	J	3/4	D	Yields 60 gpm.
23D1	E. W. Plum	480	Dg	32	60-6	32	Sand	27.59	11-20-51	P	¼	D	
27D1	Lakeside Gravel Co.	75	Dr	58	12	58	Gravel and sand	16.35	5-4-51	T	50	Ind	Dd 31 ft after pumping 10 min at 600 gpm; L.
27D2	-----Do-----	80	Dr	46	12	42	Gravel	21.10	6-16-52	T	125	Ind	Dd 0.6 ft pumping 730 gpm; L.
27D3	-----Do-----	75	Dr	62	12	62	Sand and gravel	10.28	6-11-53	J	3/4	Ind	Yields 250 gpm; H, L.
27Q1	City of Issaquah	250	Dr	45	8	45	---------	Flows	8-20-51	T	7½	PS	Yields 80 gpm; C.
27Q2	-----Do-----	250	Dr	300	8	300	---------	-----	------	--	---	---	L.
28F1	Roy Pickering	210	Dr	197	6	197	Sand	125	10- -54	S	1½	D	Dd 15 ft pumping 20 gpm. L.
28J1	Darigold Farms	80	Dr	54	12	54	Gravel and sand	10	6-26-51	T	30	Ind	Dd 10 ft after pumping 10 hr at 400 gpm; C, L.
33L1	Mountain Park Estates	570	Dr	265	8	57	Sandstone	30	8-1-55	--	---	PS	Dd 200 ft pumping 20 gpm; L.
							T. 24 N., R. 7 E.						
4M1	Gordon Ransom	85	Dg	24	24	23	Gravel	15.43	11-27-51	P	¼	D,S	Iron content objectionable; Cp, L.
6G1	Floyd Eddy	125	Dg	17	48	----	Sand	10	11-19-51	J	½	D,S	Cp.
8G1	D. M. Price	85	Dg	8	30	8	Gravel	7.17	11-19-51	J	½	D	Cp.

Table 5. -- Records of wells. -- Continued

Well No.	Owner or tenant	Altitude (feet)	Type of well	Depth of well (feet)	Diameter of well (inches)	Depth of casing (feet)	Character of water-bearing material	Water level: Below land surface (feet)	Water level: Date	Pump: Type	Pump: Horsepower	Use of water	Remarks
							T. 24 N., R. 7 E.-- Continued						
8J1	W. E. Boeing	100	Dr	104	6	104	Sand	47	10- -52	--	---	D	L.
8J2	-----Do-----	100	Dg	24	36	----	----------	9.82	11-19-51	N	---	N	Iron content objectionable.
9D1	Albert Hanson	100	Dg	25	30	25	----------	19.65	11-27-51	C	½	D,S	
9E1	Frank Crittenden	80	Dr	65	6	65	Sand	13	1946	J	3/4	D,S	L.
9P1	A. M. Peabody	125	Dr	198	6	----	----------	58	10-21-52	J	½	N	
9R1	I. J. Smith	80	Dn	21	1½	21	----------	------	-------	P	---	D	
10C1	C. F. Alexander	79	Dr	52	8	52	Gravel	13.83 13.56	1-28-52 8-17-59	C	10	Irr	Dd 3 ft after pumping 20 min at 150 gpm; C, H, L.
15F1	Fall City Water Co	110	Dr	207	16-18	191	Sand and gravel	26	6-6-59	S	15	PS	Dd 76 ft after pumping 1 week at 300 gpm; L.
21A1	Grace Johnson	400	Dr	283	6-4	283	Gravel	222.70 211.59	8-20-51 11-5-51	P	1½	D,S	Yields 6 gpm; L.
							T. 25 N., R. 3 E.						
11K1	Stimson Mill Co.	15	Dr	1,030	16-12	1,030	Gravel and sand	------	-------	N	---	N	Yield inadequate; L.
11R1	Ballard Ice Skating Arena	25	Dr	250	12	----	----------	------	-------	T	5	Ind	Used for condenser cooling.
14J1	Great Northern Ry. Co.	15	Dr	545	16-8	512	Gravel and sand	9.2	12-18-33	T	20	Ind	Dd 61 ft after pumping 16 hr at 765 gpm; C, L.
23Q1	U.S. Navy, Pier 91	18.69	Dr	1,084	15-10	1,050	Sand and gravel	3	9-9-53	T	25	N	Dd 89 ft after pumping 54½ hr at 450 gpm; C, L.

							T. 25 N., R. 4 E.						
3E1	R. Spoor	305	Dg	18	72-48	----	Sand	5.30	9-3-53	N	---	De	Formerly domestic; L.
3F1	J. Lucker	330	Dg	12	36	12	----------	9	9-3-53	J	½	Irr	Can be pumped dry in 2 hr. Iron content objectionable.
4B1	Don Pollock	350	Dr	100	8	100	----------	80	9-3-53	P	2	PS	
10M1	Joseph Corbett	150	Dr	60	6	60	Sand and gravel	45	9-11-57	J	1	D	Dd 6 to 7 ft after pumping 4 hr at 15 gpm. Heat pump installation; L.
11A1	Washington State Toll Bridge Authority, test hole 4	-39.4	Dr	74	-----	----	----------	-----	-------	--	---	De	L.
12C1	Do., test hole 5	-158	Dr	40	-----	----	----------	-----	-------	--	---	De	L.
16D1	University of Washington, Dept of Fisheries, test hole	190	Dr	180	8	----	Sand and gravel	84.0	3-16-53	N	---	De	L.
16D2	------Do------	190	Dr	157	12	148	----Do----	84.0	3-16-53	T	---	Ind	Dd 47 ft after pumping 5½ hr at 270 gpm; L.
16N1	------Do-------	50	Dr	160	-----	----	----Do----	22.0	12-17-52	N	---	De	L.
17K1	Washington State Highway Dept., test hole	17.17	Dr	78.4	7-4	----	----------	7.7	7-23-52	N	---	De	L.
17K2	-----Do-----	10.34	Dr	75.5	5-4	----	----------	3.7	7-23-52	N	---	De	L.
18P1	Do., test hole 2	-30.7	Dr	120	-----	----	----------	-----	-------	--	---	De	L.
18P2	Do., test hole 118	-32.0	Dr	158	-----	----	----------	-----	-------	--	---	De	L.
18P3	Do., test hole 109	15	Dr	100	-----	----	----------	-----	-------	--	---	De	L.
19C1	Do., test hole 116	-33.0	Dr	137	-----	----	----------	-----	-------	--	---	De	L.
19C2	Do., test hole 105	19	Dr	180	-----	----	----------	-----	-------	--	---	De	L.
19C3	Do., test hole 104	40	Dr	138	-----	----	----------	-----	-------	--	---	De	L.
20H1	Washington State Toll Bridge Authority, test hole	19	Dr	59	-----	----	----------	-----	-------	--	---	De	L.
21A1	-----Do-----	14	Dr	51	-----	----	----------	-----	-------	--	---	De	L.

Table 5. -- Records of wells. -- Continued

Well No.	Owner or tenant	Altitude (feet)	Type of well	Depth of well (feet)	Diameter of well (inches)	Depth of casing (feet)	Character of water-bearing material	Water level: Below land surface (feet)	Water level: Date	Pump: Type	Pump: Horsepower	Use of water	Remarks
T. 25 N., R. 4 E.-- Continued													
21A2	Washington State Toll Bridge Authority, test hole	17	Dr	98	-----	----	----------	------	-------	--	---	De	L.
21E1	-----Do-----	19	Dr	84	-----	----	----------	------	-------	--	---	De	L.
22C1	-----Do-----	17	Dr	56	-----	----	----------	------	-------	--	---	De	L.
22C2	-----Do-----	17	Dr	80	-----	----	----------	------	-------	--	---	De	L.
22C3	-----Do-----	14	Dr	64	-----	----	----------	------	-------	--	---	De	L.
22D1	-----Do-----	17	Dr	55	-----	----	----------	------	-------	--	---	De	L.
22D2	-----Do-----	18.5	Dr	60	-----	----	----------	------	-------	--	---	De	L.
22D3	-----Do-----	18	Dr	105	-----	----	----------	------	-------	--	---	De	L.
22G1	Do., test hole 6	13.5	Dr	32	-----	----	----------	------	-------	--	---	De	L.
22G2	Do., test hole 3	-9	Dr	101	-----	----	----------	------	-------	--	---	De	L.
22Q1	Do., test hole 2	-18	Dr	74	-----	----	----------	------	-------	--	---	De	L.
25G1	R. Reid	167	Dr	561	10-8	555	Gravel and sand	150	3-6-44	T	30	S,Irr	Yields 244 gpm; L.
27K1	Washington State Toll Bridge Authority, test hole 1	-76	Dr	27	-----	----	----------	------	-------	--	---	De	L.
30Q1	Seattle Eng. Dept., test hole 1	104	Dr	39	-----	----	----------	------	-------	--	---	De	L.
30R1	Troy Laundry	90	Dr	555	8	----	Gravel	78	7- -38	T	20	Ind	Yields 150 gpm; L.

31B1	Seattle Eng. Dept., test hole 5	110	Dr	41	-----	----	----------	------	-------	--	---	De	L.
31B2	Do., test hole 10	116	Dr	41	-----	----	----------	------	-------	--	---	De	L.
31C1	Do., test hole 15	111	Dr	42	-----	----	----------	------	-------	--	---	De	L.
31E1	Booth Fisheries Corp.	10	Dr	785	12	785	----------	Flows	9-11-53	T	15	Ind	Yields 120 gpm; C.
31E2	-----Do-----	10	Dr	120	7	110	----------	Flows	9-11-53	T	5	Ind	Yields 250 gpm, chloride content objectionable.
31F1	Port of Seattle, Pier 66	0	Dr	732	12-8	732	----------	Flows 8	1933 9-11-53	T	7½	N	Dd 100 ft pumping 65 gpm; L.
31F2	Seattle Eng. Dept., test hole 18	105	Dr	41	-----	----	----------	-----	-------	--	---	De	L.
31K1	Washington Ice & Cold Storage Co	20	Dr	218	8	130	Sand and gravel	15	11-10-45	T	5	N	Yields 70 gpm. Chloride 500 ppm; L.
31Q1	Diamond Ice Co.	6	Dr	479	8-5	479	----Do----	8	9-11-53	A	---	N	Yields 110 gpm. Chloride 110 ppm.
31R1	Seattle Steam Corp.	20	Dr	145	10-6	145	----------	-----	-------	N	---	De	Formerly industrial. C.
31R2	Olympic Warehouse & Cold Storage Co.	10	Dr	190	8	----	Sand and gravel	Flows	9-11-53	T	3	N	L.
32L1	Seattle Eng. Dept., test hole 35	236.3	Dr	60	-----	----	---------	-----	-------	--	---	De	L.
32M1	Do., test hole 38	179.4	Dr	50	-----	----	---------	-----	-------	--	---	De	L.
32P1	Do., test hole 1	264	Dr	81	-----	----	---------	-----	-------	--	---	De	L.
32P2	Do., test hole 2	237	Dr	44	-----	----	---------	-----	-------	--	---	De	L.
36A1	C. A. Glass	60	Dr	294	8	----	Sand	-----	-------	--	---	D	Yields 13 gpm; L.
							T. 25 N., R 5 E.						
1C1	A. U. Chapman	300	Dg	49	40	----	Gravel	45.16	5-8-51	J	---	D	Cp, L.
1E1	R. S. Bedbury	260	Dg	33	40	20	Sand	24.20	5-8-51	J	1	D	Iron content objectionable.
1F1	Roy Markee	330	Dg	23	48	20	----Do----	21.55	5-8-51	N	---	N	Sometimes dry in December; L.
1F2	E. L. Lindgreen	370	Dg	50	40	27	----Do----	43.44	5-8-51	N	---	De	Formerly domestic well.
1R1	J. G. Anderson	45	Dr	45	6	45	Sand and gravel	15	8-13-51	P	1/3	D	H_2S odor. Iron content objectionable; L.

Table 5. -- Records of wells. -- Continued

Well No.	Owner or tenant	Altitude (feet)	Type of well	Depth of well (feet)	Diameter of well (inches)	Depth of casing (feet)	Character of water-bearing material	Water level: Below land surface (feet)	Water level: Date	Pump: Type	Pump: Horsepower	Use of water	Remarks
T. 25 N., R. 5 E.-- Continued													
2E1	R. J. Ness	35	Dg	13	36	7	Sand	8.53	4-13-51	J	¼	D,S	Yield inadequate. Aquifer overlain by clay.
2N1	L. L. Jones	135	Dr	-----	6	----	----------	Flows	4-11-51	J	3/4	D,S	Flows 2 gpm.
2N2	A. Gubser	90	Dg	17	48	17	Till, sandy	6.61	4-13-51	P	3/4	D	Yield inadequate.
3B1	R. Hartman	75	Dg	18	24	15	Gravel	5	9-21-51	P	½	D,S	
3C1	F. A. Newton	275	Dg	58	48	----	----------	------	-------	J	¼	D,S	Iron content objectionable.
3D1	H. L. Swapp	285	Dg	46	48	----	Gravel and sand	24	4-24-51	--	---		
3N1	F. J. Norris	425	Dg	30	44	26	Sand and gravel	14.45	4-10-51	J	1/3	D	Can be pumped continuously for 14 hr.
3N2	W. Gugeler	390	Dg	21	60	4	Gravel	4.05	4-10-51	N	---	De	Formerly domestic well.
3P1	C. Remmen	330	Dg	45	48	8	Sand	34	4-10-51	J	½	D,S	
4F1	A. Bashor	255	Dg	39	36	----	----------	31.18	5-25-51	J	¼	D	
4J1	R. E. Bancroft	380	Dg	24	36	12	----------	17.02	4-23-51	P	¼	D,S	Commonly dry from October to December.
5H1	City of Kirkland, well 6	242.6	Dr	200	12-7	200	Sand and gravel	82.65	8-21-52	T	---	PS	Test hole drilled to 213 ft at same location; C, L.
5R1	Do., well 7	220	Dr	204	12-7	204	----Do----	70.54	5-29-53	T	---	PS	Test hole drilled to 273 ft at same location; C, L.
8A1	W. N. Goldston	325	Dg	55	36	----	----------	49.79	5-24-51	P	---	N	
8J1	H. W. Lindquist	380	Dg	16	30	16	Sand	8	4-16-51	P	¼	D	Penetrates sand only.
8P1	M. D. Howland	245	Dr, Dn	70	4	70	----Do----	50	2-9-44	P	1	N	Iron content objectionable; L.
9D1	F. W. Allen	375	Dg	22	36	22	----Do----	9.69	5-24-51	N	---	N	

9H1	A. L. Tharaldson	460	Dg	67	40	67	----------	------	------	J	1	D	
9H2	O. Gustafson	480	Dg	90	40	10	----------	73.71	4-17-51	P	½	D	Yield inadequate.
9J1	R. J. Wills	470	Dg	90	30	72	Sand	75	4-4-51	J	3/4	D	
9M1	C. J. Rosin	415	Dg	22	36	17	----------	16.23	4-16-51	C	¼	D	
9N1	H. F. Jahn	430	Dg	46	30	46	Sand	28.17	4-16-51	J	½	D	Aquifer overlain by sandy clay.
9R1	Pacific Farms, Inc	500	Dr	200+	16	200	----Do----	120 84	2-9-44 1946	P	5	S	Original depth 800 ft; backfilled to about 200 ft. Yields 7 gpm.
10B1	R. K. Kuehn	320	Dg	12	72	12	----Do----	4.69	4-10-51	P	¼	D	
10C1	L. L. Pope	320	Dg	28	36	28	----------	8.44	4-10-51	--	1/3	D	
10H1	H. H. Galt	270	Dg	35	40	35	----------	------	-------	P	¼	D	Flows intermittently.
10K1	H. Schmidt	375	Bd	28	30	28	Sand	------	-------	J	---	D	Aquifer overlain by clay.
10K2	I. F. Fladmark	360	Dr	64	6	64	Gravel and sand	35	8-13-51	J	½	D	L.
11A1	J. D. Graham	45	Dg	15	60	15	----Do----	7.14 7.45	5-16-51 3-13-58	C	20	Irr	Iron content objectionable. Yields 250 gpm.
11B1	R. L. Flowers	40	Dn	27	2	27	Sand and gravel	11.33	9-10-51	P	3/4	PS	
11D1	J. L. Johnson	230	Dg	17	36	17	Sand	10.84	4-11-51	P	¼	D,S	Penetrates sand and till intercalated
11E1	D. Sell	270	Dg	23	36	23	----------	11.62	4-11-51	P	¼	D	
11F1	T. Stephens	125	Dg	60	36	4	Till	3.46	4-6-51	N	---	N	Penetrates till only. Yield inadequate.
11L1	C. Hall	275	Dg	85	40	85	----------	------	-------	P	3/4	D	Cp.
11L2	W. S. Stopyra	235	Dg	54	36	54	Sand	47	4-6-51	J	¼	N	
11M1	C. E. Smith	330	Dr	55	6	55	----------	------	-------	J	¼	D	
11M2	Fred Brown	295	Dr	110	6	----	Gravel	41.68	7-3-51	J	3/4	D	Dd 2 ft after pumping 1 hr at 10 gpm; L.
11Q1	M. Domingo	205	Dg	59	36	59	Sand	57.35	4-6-51	P	3/4	N	
12A1	W. Peterson	40	Dg	11	30	11	----------	6.04	5-22-51	C	1	S	
12C1	City of Redmond	47	Dg, Dr	56	48-10	56	Gravel and sand	15.08	1-7-52	T	15	PS	Dd 2 ft after pumping 6 hr at 200 gpm; L.
12G1	Frank Verral	35	Dr	31	6	31	Sand and gravel	7	5-4-51	C	½	D,S	Iron content objectionable; Cp, L.
12H1	R. Gilbert	35	Dr	29	6	29	----Do----	------	--------	C	---	D	Yields 20 gpm; Cp, L.
12J1	W. A. Hampton	45	Dg	19	36	19	Sand, coarse	14.41 12.46	5-22-51 3-14-58	C	½	PS	Yields 15 gpm; Cp.
12J2	C. A. Morey	35	Dg	9	36	9	----------	7.02 5.22	5-28-51 3-14-58	C	2	PS	Supplies 21 families; Cp.
13L1	Lee Nichols	50	Dg	39	40	----	Gravel	35	3-29-51	P	¼	D	Dd 4 ft after pumping 4 hr at 20 gpm. Iron content objectionable; Cp.

Table 5. -- Records of wells. -- Continued

Well No.	Owner or tenant	Altitude (feet)	Type of well	Depth of well (feet)	Diameter of well (inches)	Depth of casing (feet)	Character of water-bearing material	Water level: Below land surface (feet)	Water level: Date	Pump: Type	Pump: Horsepower	Use of water	Remarks
							T. 25 N., R. 5 E.--Continued						
13N1	Irwin Lindquist	100	Dg	20	60	7	Sand	10.16 7.30	4-13-51 3-14-58	P	½	D,S	Cp.
13P1	F. T. Vinje	150	Dg	42	36	42	----Do----	29.19 23.62	7-20-51 3-14-58	J	3/4	D	Cp.
13P2	-----Do-----	150	Dg	42	30	42	----------	------	--------	J	1	D	
13Q1	J. F. Bowser	100	Dg	40	36	40	----------	10	3-29-51	J	½	D	
13Q2	C. Untiedt	50	Dg	40	36	----	----------	Dry	3-29-51	--	---	----	
14D1	Morelli Bros. Poultry Farm	355	Dr	75+	6	75	Gravel	70	4-5-51	P	5	D,S	Drilled to 975 ft, backfilled to about 75 ft.
14E1	G. M. Edwards	320	Dg	19	48	19	----Do----	------	--------	P	½	D	
14F1	A. T. Fleming	335	Dr	140	6	55	Sand and gravel	------	--------	P	½	D	L.
14G1	A. Ingerson	275	Dr	115	6	115	Sand	45	--------	J	½	D	Aquifer overlain by clay.
14H1	M. Corcoran	215	Dg	26	40	26	----Do----	8	8- -50	J	½	D	L.
14J1	Gil Chandler	230	Dr	192	6	192	Gravel	------	--------	J	1	D	Dd 2 ft bailing 25 gpm; Cp, L.
14P1	W. H. Hanson	345	Dr	96	6	96	Sand and gravel	59.58	10-25-51	J	1	D	Dd 3 ft after pumping 3 hr at 15 gpm. Iron content objectionable; L.
14R1	W. A. Freeborn	305	Dg	26	30	26	----Do----	20	4-5-51	J	---	D	
15A1	V. A. Jennings	350	Dg	25	42	5	Till	20	4-11-51	P	¼	D	
15D1	E. R. Payne	480	Dr	108	6	----	Sand	30	4-10-51	P	3/4	D,S	
15E1	James Scott	500	Dg	36	48	----	----Do----	24.25	4-3-51	B	---	D	
15H1	W. H. Scott	340	Dr	54	6	----	----Do----	45	4-5-51	J	1	D	
15H2	-----Do-----	350	Dg	60	36	----	----Do----	45	2-9-44	P	---	----	L.

15K2	H. F. Barnes	330	Dg	20	36	20	----------	------	--------	--	---	D	
15Q1	M. Halverson	330	Dg	28	36	28	Sand	12	4-4-51	J	½	D	
15R1	A. R. Berkey	385	Dg	64	30	64	----Do----	58	4-5-51	J	½	D	Yields 10 gpm.
15R2	D. H. Moe	380	Dg	34	-----	----	----------	28	4-5-51	P	---	D,S	Cp.
16B1	C. W. Knutson	520	Dg	53	36	53	----------	15	4-4-51	P	½	D,S	
16B2	George Thomas	520	Dr	119	6	119	Sand and gravel	60	11-2-51	P	1	D	Yields 5 gpm; L.
16M1	R. M. Ezzel	365	Dg	23	36	10	Gravel and sand	13.17	4-23-51	J	½	D,S	High bacteria count.
17A1	F. L. Meskowski	430	Dg	17	60	8	Gravel	5.41	4-16-51	P	¼	D	
17C1	Dora Ewing	255	Dr	47	6	47	Sand	-----	--------	--	---	De	Iron content objectionable; L.
17C2	----Do----	255	Dg	33	30	23	----Do----	27.88	6-17-51	J	1/3	D,S	Water corrosive.
17C3	Lake Washington Shipyard	245	Dr	115	10-8	115	Gravel and sand	39	2-28-44	T	15	Ind	Dd 17 ft pumping 225 gpm; L.
17C4	-----Do-----	230	Dr	102	10	----	----------	-----	--------	N	---	N	Pumped 325 gpm.
17F1	King County Water Dist. 1	200	Dg, J	13-38	38-4	13-38	Sand	13-21	8-30-50	N	---	PS	Seven closely spaced siphon wells.
17H1	E. M. Riendeau	430	Dr	46	10	46	----Do----	35	4-17-51	P	½	D	Iron content objectionable.
17H2	D. Mason	400	Dr	60	6	60	----Do----	30	4-17-51	J	¼	D	
17J1	City of Kirkland, well 5	380	Dr	200	12	200	Sand and gravel	70	10-21-54	T	30	PS	Dd 70 ft after 1½ hr pumping 200 gpm; L.
17Q1	Do., well 1	230.1	Dr	108	8-6	108	Gravel	66	5-18-51	T	7½	PS	Yields 168 gpm; C, L.
17Q2	Do., well 4	270	Dr	131	10	131	----Do----	------	--------	T	20	PS	Yields 350 gpm; L.
17Q3	Do.	260	Dr	50	4	----	----------	------	--------	--	---	PS	One of 33 city siphon wells; yield of all wells 200-400 gpm.
17R1	Do.	257.3	Dr	148	8-6	148	Gravel and sand	103	5-18-51	T	7½	PS	Dd 25 ft pumping 200 gpm. Iron content objectionable.
17R2	Do.	218	Dr	134	8	134	Gravel	88	5-18-51	T	10	PS	Yields 350 gpm.
19N1	Water Dist. 68, Bellevue, test hole	70	Dr	500	10-8	500	---------	------	--------	N	---	De	L.
19Q1	Henry Holland	345	Dr	144	6	144	Sand	------	--------	P	---	N	Yield inadequate; L.
20C1	Water Dist. 68, Bellevue, well 3	45	Dr	244	12	244	Sand and gravel	37	7-20-51	T	15	N	Dd 48 ft after pumping 1 hr at 500 gpm. Has H_2S odor; C, L.
20F1	R. H. Grocock	75	Dg	27	72-38	27	----Do----	18	9-6-54	J	½	D	Dd 7 ft pumping 5 gpm; Cp.
20K1	L. R. Scheaffer	150	Bd	18	24	18	Gravel	9.90	9-27-51	J	1½	D,S	
20Q1	-----Do-----	150	Dr	65	8	65	Sand and gravel	29.97	5-26-53	T	7	PS	Dd 2 ft after pumping 4 hr at 110 gpm; L.

Table 5. -- Records of wells. -- Continued

Well No.	Owner or tenant	Altitude (feet)	Type of well	Depth of well (feet)	Diameter of well (inches)	Depth of casing (feet)	Character of water-bearing material	Water level: Below land surface (feet)	Water level: Date	Pump: Type	Pump: Horsepower	Use of water	Remarks
T. 25 N., R. 5 E.-- Continued													
20R1	J. K. Brisky	180	Dg	54	48	54	Gravel	42.25	4-16-51	J	1/3	D	
20R2	Christine Ripple	140	Dg	22	40	10	Sand	16.90	4-16-51	C	½	D,Irr	
21E1	Lars Nelson	250	Dr	90	6	90	Gravel	62	4-4-51	T	3/4	D,S	Yields 12 gpm; L.
21F1	T. R. Pike	475	Bd	40	24	40	Sand and gravel	10.50	3-4-52	--	---	D	Dd 3.3 ft after pumping ½ hr at 30 gpm; L.
21J1	C. Hall	380	Dg	15	30	15	Sand	------	--------	J	1/3	D	
21L1	T. R. Pike	375	Dr	135	6	135	----------	------	--------	J	2	D	
21L2	H. J. Brown	375	Dr	145	6	145	Sand and gravel	117	--------	J	1½	D	Yields 10 gpm; L.
21M1	R. V. Holland	225	Dr	68	6	68	Gravel	16.72	4-19-51	J	½	D	L.
21M2	W. B. Killeen	260	Dg	26	30	26	----------	.85	4-19-51	J	¼	D	
21N1	E. H. Everett	185	Dg	21	36	6	Gravel	7.33	4-16-51	J	1/3	D	Aquifer overlain by sand.
21N2	V. P. Jeremiah	165	Dg	8	48	----	----Do----	1.77	4-16-51	P	¼	D	
21Q1	M. G. Clark	425	Dr	100	6	100	Sand	67.05	5-3-51	T	5	Irr	Dd 24 ft after pumping ½ hr at 50 gpm; C, L.
22A1	E. Meisner	385	Dg	30	30	30	----------	------	--------	J	¼	D	
22C1	N. J. Wannacott	300	Dg	24	36	24	Sand	7.58	4-4-51	J	½	D	
22D1	G. A. Long	470	Dg	17	36	----	----Do----	4.66	4-3-51	P	¼	N	
22D2	R. C. Storey	455	Dr	100	6	100	Sand and gravel	------	--------	J	2	D,Irr	Yields 20 gpm; Cp.
22J1	V. P. Chambers	365	Dg	23	48	23	Sand	4.56	4-5-51	J	1	D	
22M1	W. W. Ellis	455	Dg	55	-----	55	----Do----	52	4-3-51	J	¼	D,S	Cp.
22N1	F. E. Miller	355	Dg	54	36	30	Sand and gravel	38	4-3-51	N	---	N	
22N2	B. Ford	415	Dg	60	36	60	Sand	38.36	4-3-51	J	3/4	D	

22P1	D. B. Pieon	260	Dg	34	36	15	Till	26	4-5-51	P	1/6	D	Yield inadequate.
22Q1	J. Eppig	210	Dg	24	36	24	----------	1.5	4-5-51	P	¼	D	-----Do-----
23C1	Gus Mackie	370	Dg	75	30	----	----------	62.35	8-13-51	J	½	D	Cp.
23C2	C. L. Nichols	375	Dr	80	6	80	Sand and gravel	53	8-13-51	J	1/3	D,S	L.
23C3	--- Forrester	370	Dr	88	6	----	----Do----	61.74	11-1-51	J	1½	D	Dd 3 ft after bailing 2 hr at 20 gpm; C, L.
23E1	E. D. Macon	385	Dg	45	48	4	Sand	36.13	4-5-51	P	---	D	
23F1	J. Parks	365	Dg	22	-----	----	----Do----	7.80	4-6-51	J	¼	D	
23J1	J. F. Long	380	Dr	94	6	----	----------	15	3-29-51	P	3/4	D,S	
23J2	D. A. Becker	375	Dr	81	6	81	Gravel	65	10-4-51	J	1	D	L.
23K1	P. M. Lee	410	Dr	108	8	108	----------	45	8-13-51	P	1½	D,Irr	Yields 10 gpm; Cp.
23L1	A. Daniels	380	Dg	93	36	87	Sand	79	4-6-51	J	½	D	Aquifer overlain by till.
23N1	--- Hayes	320	Bd	27	28	----	----------	15.12	4-23-51	J	½	D	Cp, H.
								21.44	8-17-59				
23N2	A. Crawford	310	Dg	16	30	14	----------	4.01	4-23-51	J	½	D	
23Q1	--- Pepper	405	Dr	103	-----	----	Sand	63	5-8-51	P	3/4	D,S	Cp.
23Q2	R. J. Smith	405	Dr	100	6	100	Gravel	87.74	11-5-51	J	3/4	D	Cp, L.
23Q4	P. Abon	380	Dr	103	6	103	----Do----	87	9- -52	--	---	----	Dd 4 ft bailing 10 gpm; L.
23R1	G. Sualeng	390	Dg	88	36	74	----------	74.35	3-29-51	P	3/4	De	Formerly domestic and stock.
23R2	Washington Water Service Co.	390	Dr	138	8	138	Sand and gravel	------	--------	--	---	PS	Dd 32 ft pumping 150 gpm; Cp.
24C1	E. W. Wiese	150	Dr	132	6	132	----------	40	1944	J	1	D	
24D1	J. Siepman	240	Dg	22	36	12	Sand	7.28	4-13-51	P	¼	D	
24G1	--- Milne	100	Dr	350	6-4	----	----------	------	--------	N	---	N	L.
24G2	--- Breedman	125	Dg	10	-----	----	----------	2.28	3-21-58	P	¼	D	Cp.
24H1	R. J. Englebry	125	Dg	29	48	5	----------	4.82	3-29-51	J	½	D	Yield inadequate.
24L1	W. Gragg	290	Dg	8	36	8	----------	Flows	3-29-51	--	---	D	
24M1	A. C. Pfunder	360	Dr	94	4	94	Gravel	59.70	9-22-52	J	1	D	Iron content objectionable; L.
24M2	Frieda Marwood	355	Dg	28	32	----	----------	20.54	7-20-51	J	½	D	
24R1	--- Justham	160	Dr	75	6	75	Sand	57	10-16-51	J	½	D	C, L.
25B1	A. Coleman	350	Dg	16	40	3	----Do----	10	3-28-51	P	¼	D	
25B2	R. L. Bloch	360	Bd	35	24	35	----Do----	13.25	8-13-51	P	¼	D,S	
25G1	--- Steiner	360	Dg	21	60	3	----Do----	2.30	3-28-51	P	¼	D	
25L1	J. R. Shearer	410	Dg	68	36	56	Gravel	63.72	3-28-51	J	3/4	D	
26C1	T. Nelson	360	Dg	65	48	60	----------	51.14	4-23-51	P	1½	D,S	
26E1	Highland School	315	Dg	27	48	----	----------	15	11-1-51	J	1	PS	

Table 5. -- Records of wells. -- Continued

Well No.	Owner or tenant	Altitude (feet)	Type of well	Depth of well (feet)	Diameter of well (inches)	Depth of casing (feet)	Character of water-bearing material	Water level: Below land surface (feet)	Water level: Date	Pump: Type	Pump: Horsepower	Use of water	Remarks
T. 25 N., R. 5 E.--Continued													
26F1	L. J. Peterson	365	Dg	88	36	85	Sand	76	--------	J	1½	D	
26H1	E. H. Andrews	430	Dr	240	6	240	----Do----	------	--------	P	1	D,S	Yields 15 gpm; L.
26J1	J. A. Nelson	425	Dg	36	40	15	Till	4.38	3-27-51	J	1/3	D	
26J2	I. E. Poberejnik	425	Dr	135	6	135	----------	------	--------	P	---	D	
26N1	W. H. Duncan	290	Dg	16	30	16	----------	9.49	3-27-51	P	---	D	
27B1	W. W. Chamberlin	225	Dg	20	36	----	----------	1.53	4-5-51	N	---	N	Yield inadequate.
27H1	S. W. Des Marais	300	Dg	28	36	----	----------	18	3-28-51	J	½	D	
27L1	Richard Johnson	180	Dg	36	36	----	Gravel and sand	27	3-27-51	J	¼	D	
27N1	E. S. Garretson	170	Dg	11	48	4	Gravel	2.54	3-22-51	N	---	N	
27N2	-----Do-----	160	Dg	11	36	11	----Do----	6.24	3-22-51	P	---	N	
27Q1	A. Clark	275	Dg	41	40	10	Sand and gravel	7.00	3-27-51	J	1	D	
28A1	C. A. Elford	295	Dg	15	-----	----	----------	------	--------	C	---	D,S	Yields 5 gpm.
28B1	Harold Becker	330	Dr	90	6	90	Gravel	72	1-28-52	P	1	D	Dd 7 ft bailing 10 gpm; L.
28C1	W. M. Hibbard	195	Dr	213	6	213	----------	152	1945	T	2	D	Yields 10 gpm. Iron content objectionable.
28D1	W. Condway	160	Dg	36	48	36	Gravel	25	4-17-51	P	¼	D	
28J1	B. Rassmassen	190	Dg	13	36	13	Sand	11	4-2-51	P	¼	D	
28L1	T. Suguro	180	Dg	11	40	----	----------	6.11	6-11-51	P	¼	D	
28M1	M. Shimoyama	180	Dr	68	6	68	Gravel	41.55	3-18-52	J	½	D	Dd 5 ft after pumping 25 min at 6 gpm; L.
28P1	C. C. Burnell	205	Dr	115	6	115	----Do----	70.15	3-19-51	P	---	D	
28Q1	John Weyand	180	Dr	117	6	117	Sand and gravel	40.00	3-21-51	J	1	D	Dd 3 ft after pumping 1 hr at 7 gpm; L.

28R1	Charles McComas	130	Dg	11	36	11	Sand	3.08	3-22-51	J	1/3	D	
28R2	R. Kothie	130	Bd	35	28	35	Gravel	16.87	3-22-51	--	---	D	
29A1	J. Seibert	230	Dg	18	48	----	Sand	5.31	4-17-51	P	¼	D	
29C1	W. E. Lewis	225	Dg	118	30	----	----------	108.30 105.48	9-27-51 8-17-59	N	---	N	H.
29H1	D. R. Magin	225	Dg	35	40	30	Sand	23.45	4-17-51	P	½	D	Yield inadequate.
29J1	R. Matsuzawa	190	Dg	43	30	----	Gravel	40	4-17-51	J	3/4	D	-----Do------
29P1	Water Dist. 68, Bellevue	170	Dr	1,125	24-12	1,125	Sand and gravel	120 114.67	8-2-46 5-15-58	T	50	N	Dd 230 ft after pumping ½ hour at 300 gpm; L.
29R1	R. N. Wright	150	Dg	28	40	----	----------	16.17	4-17-51	J	¼	D	
32M1	Water Dist. 68, Bellevue, test hole	75	Dr	565	10-8	494	----------	37	1-2-51	N	---	N	L.
32N1	Do., well 2	25	Dr	1,055	12	1,055	Gravel and sand	5	9-6-50	T	15	PS	Dd 65 ft after pumping 2 hr at 450 gpm. Plugged back to 485-ft depth; C, L.
32R1	E. G. Shepherd	25	Dg	28	-----	----	----------	4.26 6.30	3-14-51 5-13-58	J	¼	D	Cp.
32R2	Paul Medgard	30	Dg	30	60	6	Sand	24	3-14-51	P	¼	D	
33A1	R. P. Bakan	150	Dg	14	36	14	----------	2.94	3-21-51	P	¼	D	
33A2	J. B. Pratt	125	Dg	16	36	16	Gravel	9.63	3-22-51	P	1/3	D,S	
33B1	P. Van Kleek	175	Dg	37	32	37	----Do----	30.08	3-20-51	J	1/3	D	L.
33C1	Jacob Carlson	210	Dr	117	6	117	Sand and gravel	------	--------	P	3/4	D	
33D1	Emil David	150	Dr	62	6	----	----------	13.58 7.30	3-14-51 5-13-58	J	½	D	Cp.
33D2	George Nicholas	120	Dr	80	6	----	----------	------	--------	J	3/4	D,Irr	
33E1	J. C. Lamping	175	Dg	75	36	----	----------	71	3-21-51	N	---	N	
33F1	A. H. Flynn	210	Dg, Dr	104	36-6	104	Gravel	80	3-20-51	J	1½	D	
33F2	R. Johnson	220	Dg	85	66	85	----Do----	80	3-21-51	J	½	D	L.
33G1	W. Van Kleeck	230	Dr	110	5	107	----Do----	100.00	3-19-51	J	1	D	L.
33L1	J. Kodani	190	Dg	19	36	----	----------	1.64	3-20-51	N	---	S	Yield inadequate in summer.
33L2	-----Do-----	190	Dg	39	36	6	----------	Dry	3-20-51	N	---	N	
33M1	R. W. Copeland	200	Dg	71	36-32	----	Gravel	64.46	3-21-51	P	1	D,S	
33M2	J. W. Stevens	175	Dg	76	36-32	68	Sand and gravel	68.05	3-22-51	P	½	N	
34C1	H. J. Bister	260	Dg	21	48	4	----Do----	6.87	3-22-51	N	---	D	

Table 5. -- Records of wells. -- Continued

Well No.	Owner or tenant	Altitude (feet)	Type of well	Depth of well (feet)	Diameter of well (inches)	Depth of casing (feet)	Character of water-bearing material	Water level: Below land surface (feet)	Water level: Date	Pump: Type	Pump: Horsepower	Use of water	Remarks
							T. 25 N., R. 5 E.--Continued						
34G1	Bud Stringfellow	280	Dr	46	6	46	Sand	22.02	9-20-51	J	1	D	Dd 10 ft pumping 10 gpm; L.
34G2	-----Do-----	280	Dr	63	6	60	----Do----	25.31	9-28-51	--	---	D	L.
34H1	Roy Krontz	275	Dg	22	30	22	----------	9.40	3-27-51	J	½	D	
34J1	C. E. Allen	275	Dg	26	36	26	Sand	15	3- -51	J	1	D,S	Aquifer overlain by till. Iron content objectionable.
34P1	L. Jackson	290	Dg	50	36	50	----Do----	38	1947	J	½	D	L.
34P2	R. K. Maus	300	Dr	160	6	----	----------	------	--------	J	1	D	Iron content objectionable.
34R1	E. D. Orians	290	Dr	38	6	38	Sand and gravel	16	1952	--	---	D	Cp, L.
35A1	G. S. Nelson	440	Dg	86	36	86	Sand	------	--------	J	1	D	
35A3	Washington Water Service Co.	435	Dr	183	8	----	Gravel and sand	155	3-28-51	T	---	PS	L.
35C1	G. M. Revecich	325	Dg	45	40	----	Sand	43	3-28-51	P	---	D,Irr	
35D1	D. Naubauer	250	Dg	7	36	7	----Do----	0.50	3-27-51	P	½	D	
35J1	U.S. Army, Corps of Engineers	395	Dr	319	6	317	Gravel and sand	210	8-15-52	--	---	PS	Dd 40 ft pumping 30 gpm.
35M1	L. Aries	280	Dg	22	48	22	Sand	5.36	3-27-51	J	2½	D	Supplies 7 families.
35M2	-----Do-----	280	Dr	56	6	50	----------	5.05	3-27-51	N	---	N	
							T. 25 N., R. 6 E.						
5K1	I. W. Mason	380	Dr	47	6	47	Till	3	10-10-52	J	½	D	Penetrates till only.
5K2	-----Do-----	380	Dg	23	36	----	----------	10.45	10-10-52	N	---	N	
5N1	Archie McSparron	70	Dr	36	6	36	Gravel	17	2-26-58	J	1	D	Dd 18 ft pumping 40 gpm.

5Q1	F. J. Nielsen	375	Dr	339	6	----	----------	205.07	10-10-52	P	1	D	Penetrates 80 ft of till.
6E1	R. Windsor	70	Dg	21	36	21	Sand and cobbles	19.07 16.15	9-23-52 2-26-58	C	1	D	Dd ½ ft after pumping 15 min at 100 gpm.
6F1	Tom Brown	59	Dg	13	36	13	Sand and gravel	11.80 11.38	8-23-51 8-17-59	C	1	D,S	Dd 0.35 ft after pumping 1 hr at 60 gpm; Cp, H.
6G1	L. Rosford	60	Bd	6	4	6	----------	------	--------	P	¼	D	Cp.
6H1	Gunnar Benson	75	Dg	20	42	20	----------	4.25	3-10-58	--	1	D	Dd 8 ft after pumping 16 hr at 36 gpm; L.
7D1	Dan Conley	50	Dg	9	36	9	----------	4.95	5-22-51	P	½	D	
7H1	John Landwater	100	Dr	287	6	287	Gravel	100	8-2-51	P	1½	D,S	L.
7N1	E. M. Iverson	35	Dg	13	60-24	12	----------	10.09	5-22-51	J	¼	D,S	
8G1	L. C. Oman	350	Dg	131	48	----	Sand	125.57	12-17-51	P	3/4	D	Cp.
8Q1	M. O. Kallin	325	Dg	130	32	130	----Do----	123.83	11-9-51	P	3/4	D	L.
9F1	J. F. Blashet	460	Dr	260	4	260	Gravel and sand	------	--------	P	1	D,S	Cp, L.
9J1	J. W. Hall	480	Dg	10	40	10	----------	6.94	10-10-52	P	¼	D	
9J2	J. V. Patterson	480	Dg	12	36	12	----------	9.60	10-10-52	--	---	D	
15L1	Bill Burger	200	Dn	18	2	18	----------	------	--------	P	---	D	
16L1	M. Y. Carlson	115	Dg	16	40	16	Gravel and sand	14.51	11-20-51	C	¼	D	Supplies 2 families; L.
16Q1	Carl Larson	150	Dg	55	36	55	----Do----	51	11-20-51	J	¼	D	L.
18K1	W. Quackenbush	75	Dr	286	4	----	----------	Flows	5-22-51	C	¼	D	Flows 7 gpm. Has H_2S odor; Cp.
19A2	Weber Point Community	40	Dr	200	6	200	Sand	Flows	5-22-51	C	1	D	Dd 15 ft pumping 40 gpm. Flows 10 gpm; C.
19H1	J. W. Carlson	50	Dg	40	36	----	----------	------	--------	J	½	D	Cp.
19H2	W. L. Grange	50	Dr	108	6	108	Sand	68	11-13-51	J	½	D	Yields 20 gpm; L.
19L1	A. D. Loreman	50	Dg	34	30	----	----------	15.71	7-17-51	J	1/3	D	Cp.
19N1	G. Sieptman	150	Dg	42	48	----	----------	8.31	3-29-51	P	¼	D	
22C1	T. Hopkins	125	Dg, Dr	145	10	----	Gravel	9 5.97	3- -44 3-11-58	J	1	D,S Irr	Yields 200 gpm; Cp, L.
23E1	Mary Trunkhill	150	Dg	16	36	----	Sand and gravel	10.84	11-20-51	P	¼	D	
23M1	R. L. Vance	275	Dg	37	36	----	Sand	30	11-28-51	P	---	D	
26A1	Harold Haakenson	120	Dg	9	36	9	Sand and gravel	1	11-20-51	P	¼	D	
27R1	A. R. Wilson	415	Dr	137	6	----	Gravel	------	--------	P	1	D	Penetrates 80 ft of till; yields 10 gpm.
28L1	Leo Hill	500	Dg	20	36	8	Sand and gravel	14	8- -51	P	¼	D	
30B1	R. A. Strout	150	Dr	88	6	88	----Do----	63	7-12-51	J	3/4	D	Slight dd bailing 35 gpm; Cp, L.
30C1	H. G. Wheeler	180	Dr	170	6	150	Gravel	60	3-28-51	J	3/4	D	Cp, L.

Table 5. -- Records of wells. -- Continued

Well No.	Owner or tenant	Altitude (feet)	Type of well	Depth of well (feet)	Diameter of well (inches)	Depth of casing (feet)	Character of water-bearing material	Water level: Below land surface (feet)	Water level: Date	Pump: Type	Pump: Horsepower	Use of water	Remarks
							T. 25 N., R. 6 E.--Continued						
32F1	James Hart	60	Dr	96	6	----	Sand	Flows	7-5-51	J	½	D	Estimated flow, 2 gpm.
32L1	H. C. Holo	70	Dr	55	8	55	----Do----	5	10-23-51	C	---	D	
32R1	C. Johnson	380	Dg	37	30	----	----------	------	---------	J	¼	D,S	
32R2	Harry Paul	390	Dg, Dr	188	6	188	Sand and gravel	156	8-11-51	--	---	D	Dd 12 ft bailing 15 gpm; L.
33B1	B. L. Peterson	325	Dg	30	30	----	Gravel	1.17	12-3-51	J	½	D,S	Aquifer overlain by till.
33E1	Jake Pawlaczyk	500	Dg	28	50	----	Sand	10	7-10-51	J	1/3	D	Penetrates till only.
33H1	Pearl Churchwell	340	Dg	18	48	2	Sand and gravel	2.25	11-28-51	P	---	D	Aquifer overlain by till.
33J1	Pine Lake Water Co.	430	Dr	315	6	292	Gravel	250	7-10-51	T	7½	D,S	Dd 5 ft pumping 30 gpm; supplies 12 families; L.
33N1	P. C. Clemmons	375	Dg	152	60	8	----Do----	142	7-5-51	P	1	D	Aquifer overlain by till.
33N2	K. O. McCaskey	400	Dg, Bd	19	48	----	Sand and gravel	7.30	7-10-51	P	¼	D	Yield inadequate.
34C1	John Marinsic	370	Dg	11	48	----	Till	6.00	11-27-51	P	---	D	
							T. 25 N., R. 7 E.						
6R1	Carnation Farm	63	Dr	630	16-8	630	Gravel and sand	Flows	8-10-51	N	---	D,S	Hydrostatic head 14 ft above land surface; flows 284 gpm; L.
15M1	J. A. Hull	85	Dr	101	10	101	Sand and gravel	26	6-1-54	C	5	D,Irr	Dd 21 ft after pumping 5 hr at 96 gpm; L.
18C1	J. W. Guthrie	190	Dr	101	6	101	Gravel	20	10-21-52	P	---	D	Dd 15 ft after pumping ½ hr at 20 gpm; L.

20N1	Elmer Harper	450	Dg	45	48	45	Gravel	42	12-3-51	N	---	N	L.
22G1	Girl Scout Camp	100	Dg, Dr	60	-----	----	----------	40	11-20-52	J	1½	D	Cp.
22G2	-----Do-----	100	Dr	60	8	----	----------	20	2-26-58	J	3½	D	
27M1	Weyerhaeuser Timber Co.	140	Dr	128	18-8	128	Sand	15	5-14-52	T	7½	D	Yields 40 gpm; used for swimming pool.
28Q1	Ralph Scheidegger	85	Dg	25	36	----	----------	------	--------	P	1/3	D	
29H1	Peter Angerer	70	Dr	190	6	----	Sand	3.78	12-18-51	C	½	N	Yield inadequate; reported to have "sanded up."
31E1	Stan Little	105	Dg	12	72	----	----------	1.73	11-19-51	P	¼	D,S	
31P1	C. B. Faith	115	Dg	12	36	----	----------	------	--------	J	¼	D	
32B1	Peter Angerer	70	Dg	18	48	18	----------	8	1941	C	1/3	D,S	
32J1	Harry Peterson	75	Dg	20	36-30	20	----------	14.02	11-28-51	J	½	D,S	
32R1	W. N. Crable	75	Dn	25	1½	25	Sand and gravel	------	--------	P	½	D,S	Yields 10 gpm; Cp.
33G1	Ray Robertson	80	Dg	21	30	21	----------	1.67	12-3-51	J	½	D	
							T. 26 N., R. 3 E.						
1A1	D. N. Horton	475	Dg	14	48-42	----	----------	7.62	7-13-53	N	---	N	
1A2	Dale Brown	480	Dg	13.7	36	----	----------	8.60	7-13-53	J	¼	D	Dry in summer of 1952.
1B1	F. H. Eggers	460	Dg	201	36	----	Sand	198	1922	N	---	N	
1C1	W. S. Smuck	440	Dr	188	9	----	----------	170.01 165.99	7-14-53 8-17-59	N	---	N	H.
1D1	J. W. Gardner	290	Dg	18	24	18	Sand	19.90	7-9-53	P	½	D	
1D2	R. E. Hall	280	Dg	20	30	----	----------	17.8	7-9-53	J	½	D	
1D3	James Phillips	315	Dr	94	6	----	----------	------	--------	P	½	D	C.
1D4	-----Do-----	280	Dg	13	36	10	----------	10.25	7-10-53	N	---	Irr	Temp 53°F.
1E1	R. L. Rapp	270	Dg	36	42	6	----------	11.25	7-10-53	J	¼	----	Temp 52°F.
1F1	David Stimson	290	Dr	240	10	240	----------	14	7-14-53	P	2½	Irr	Yields 25 gpm.
1G1	J. S. Hart	445	Dg	16	48	2	----------	5.98	7-14-53	P	---	S	Dry in summer.
1H1	J. W. King	475	Dg	19	48	----	----------	14.00	7-13-53	P	¼	Irr	Temp 49°F.
1H2	R. C. Robinson	460	Dg	201	48	201	Sand	189	7-14-53	N	---	De	L.
1K1	D. A. Lyons	440	Dg	148	36	4	----------	Dry	7-14-53	N	---	N	
1K2	Karl Kirch	430	Dg	48	96-36	5	----------	9.48	7-14-53	P	---	N	Temp 51.5°F.
1M1	King County Water Dist. 24	235	Dr	-----	10	----	----------	15.5	6-18-51	T	5	PS	Dd 17½ ft after pumping 5¼ hr at 33 gpm.

Table 5. -- Records of wells. -- Continued

Well No.	Owner or tenant	Altitude (feet)	Type of well	Depth of well (feet)	Diameter of well (inches)	Depth of casing (feet)	Character of water-bearing material	Water level: Below land surface (feet)	Water level: Date	Pump: Type	Pump: Horsepower	Use of water	Remarks
T. 26 N., R. 3 E.-- Continued													
1M2	King County Water Dist. 24	230	Dr	80	10	80	Sand and gravel	19.3	6-18-51	T	3	PS	Dd 20 ft after pumping 4 hr at 65 gpm; L.
1M3	-----Do-----	240	Dr	-----	10	----	----------	24.30	6-18-51	T	5	PS	Temp 49°F.
1M4	-----Do-----	250	Dr	82	12	----	Sand and gravel	12	6-24-50	T	7½	PS	Dd 30 ft after pumping 4 hr at 40 gpm; L.
1M5	-----Do-----	230-250	Dr	81	12-8	81	----Do----	15	12-16-59	T, J	5-7½	PS	Four closely spaced wells.
1Q1	Richmond Nursery	435	Dg, Dr	225	42-(?)	----	----------	200	1940	N	---	De	Formerly used for irrigation.
1R1	Foster Payne	440	Dg	15	72	3	----------	4.41	7-13-53	C	½	D	Penetrates till only.
1R2	-----Do-----	440	Dg	30	60	----	----------	21.24	7-13-53	P	---	N	Temp 53.5°F.
2A1	G. V. Clark	310	Dg	72	48	6	----------	66.11	7-10-53	N	---	N	Temp 50°F.
2B1	D. W. Heizman	230	Dg	36	36	----	----------	7.87	7-9-53	N	---	N	
2C1	R. P. Kelly	110	Dr	101	6	----	----------	58.22	7-22-53	J	3/4	D	C.
2C2	J. R. Campbell	50	Dr	124	6	----	----------	64.43	7-9-53	P	1	N	Yields 10 gpm. Iron content objectionable.
2C3	Torrey Smith	110	Dg	66	36	----	----------	55.05	7-9-53	J	½	D	
2C4	Paul Weller	120	Dg	25	42	4	----------	18.22	7-9-53	J	½	D	Penetrates till only.
2C5	P. L. Balise	160	Dg	22	42	----	----------	15.56	7-9-53	N	---	N	
2F1	Puget Sound Power & Light Co.	25	Dr	90	6	72	----------	25	11- -30	T	10	Ind	Dd 20 ft after pumping 4 hr at 80 gpm.
12A1	R. L. Campbell	455	Dg	20	48	5	----------	5.16	7-20-53	P	¼	N	Temp 54.5°F.

12B1	John Lewis	440	Dg	180	36	----	Sand	------	-------	N	---	N	L.
12B2	Albert Day	425	Dg	25	36	----	----------	6.16	7-21-53	N	---	N	
12F1	Prescott Oakes	430	Dg	31	42	----	----------	20.02	7-15-53	N	---	N	
12G1	T. R. Blaylock	350	Dg	34	30	24	Sand and gravel	30.42	7-21-53	J	½	D	L.
12G2	O. O. Pardee	330	Dg	96	56-42	96	----------	94.77	7-23-53	N	---	N	
12G3	The Highlands, Inc.	320	Dr	320	10	295	Gravel	------	-------	T	---	PS	Yields 400 gpm; L.
12H1	C. S. King	440	Dg	31	42	----	----------	9.67	7-20-53	N	---	N	
12H2	M. J. Taylor	460	Dg	31	48	6	----------	21.35	7-21-53	P	½	D	Yield inadequate in summer.
12J1	Ernest Firth	315	Dg	10	91	8	----------	8.20	7-20-53	P	¼	D	Iron content objectionable.
12J2	A. G. Graves	330	Dg	30	52-48	----	----------	25.03	7-21-53	P	½	D	Temp 51°F.
12J3	Andrew Nicholson	390	Dg	72	42	4	----------	68.21	7-21-53	P	1/3	D	
							T. 26 N., R. 4 E.						
1B1	K. W. Jennings	165	Dg	7	36-30	7	Sand	0.99	6-8-51	N	---	D	
1C1	F. R. Tucker	165	Dg	16	36-30	16	----Do----	4.39	6-8-51	P	¼	D	
1C2	J. P. Skinner	130	Dg	11	32	11	----Do----	3.98	6-8-51	P	¼	D	Aquifer overlain by till.
1D1	D. R. Docksteader	95	Dg	12	30	12	Sand and gravel	8.19	6-8-51	C	¼	D,S	Aquifer underlain by till.
1E1	Henry LaFond	100	Dr	119	6	119	Gravel and sand	Flows	6-7-51	P	¼	D	Estimated to flow less than 1 gpm; L.
1F1	J. M. Kastler	75	Dg	18	30	18	----------	9.23	6-8-51	P	¼	D	
1G1	L. M. Lewis	65	Dg	12	36	12	Sand	2.91	7-2-51	P	¼	D	Aquifer overlain by till.
1H1	E. W. Ramsey	225	Dg	18	72	----	Till	------	-------	N	---	D	Has H_2S odor. Iron content objectionable.
1K1	L. L. Dungan	50	Dr	43	6	43	----------	0.82	6-8-51	P	1/3	D	Flows intermittently.
1L1	I. McComas	40	Dn	14	2	14	----------	4.55	6-8-51	P	¼	D,S	
1M1	J. F. Cofer	100	Dg	23	30	----	----------	16.13	6-7-51	P	¼	D	
1P1	W. J. Hood	40	Dn	-----	2	----	----------	------	-------	C	1/3	D,S	
2A1	W. K. Lee	100	Dg	25	30	25	----------	20	6-7-51	C	½	D	
2B1	N. J. Nicholas	125	Dg	58	60	5	----------	25.89	7-6-51	J	---	D	
2D1	George Batterson	300	Dr	80	6	80	----------	------	-------	J	¼	D	Aquifer overlain by till.
2E1	R. Nurell	290	Dg	16	30	----	----------	9.18	6-5-51	P	¼	N	
2E2	George Senty	260	Dr	232	6	232	Gravel	104	6-7-51	P	3	De	Formerly domestic; L.
2F1	J. M. Yeamen	225	Dg	11	28	10	----------	2.35	6-7-51	P	¼	D	Yield inadequate. Iron content objectionable.

Table 5. -- Records of wells. -- Continued

Well No.	Owner or tenant	Altitude (feet)	Type of well	Depth of well (feet)	Diameter of well (inches)	Depth of casing (feet)	Character of water-bearing material	Water level: Below land surface (feet)	Water level: Date	Pump: Type	Pump: Horsepower	Use of water	Remarks
							T. 26 N., R. 4 E.-- Continued						
2F2	C. Kleba	180	Dg	11	30	11	Sand	3.64	6-7-51	P	¼	D,S	Penetrates interbedded sand and clay
2J1	H. H. Woods	125	Dg	9	36	----	----------	1.71	6-7-51	N	---	N	
2M1	C. H. Snow	210	Dg	16	60	----	----------	4.90	6-7-51	P	¼	D	Yield inadequate.
2M2	Clayton East	240	Dg	15	30	15	----------	7.85	8-12-53	P	¼	N	
2M3	-----Do-----	250	Dg	18	36	----	----------	9.85	8-12-53	C	¼	D	
2Q2	Squire Investment Co.	180	Dr	108	-----	----	Sand	54	7-7-58	N	---	N	Dd 4 ft pumping 20 gpm; L.
3A1	Loren Pickell	320	Dr	85	6	----	----------	31.08	8-12-53	P	½	D,S	
3A2	Henry Prestrud	330	Dr	86	6	86	----------	24.82	8-12-53	J	1/3	S	
3A3	C. O. Linvus	350	Dg	12	30	----	----------	6	8-12-53	N	---	N	
3B1	U.S. Army, Corps of Engineers	528	Dr	334	8-6	334	Sand and gravel	238	4-11-56	T	1½	N	Dd 22 ft after pumping 12 hr at 25 gpm; L.
3C1	M. A. Halvorson	495	Dg	27	48	1	----------	24.35	8-5-53	P	---	N	Penetrates till.
3D1	A. C. Sutter	285	Dg	10	48	10	----------	9.15	8-13-53	N	---	N	
3E1	George Tuerk	260	Dg	18	36	18	----------	9	-------	N	---	D	Temp 51°F.
3E2	R. E. Anderson	335	Dg	80	36	----	----------	62.78	8-21-53	P	½	D	
3F1	T. A. Mindt	335	Dg	90	36	90	----------	26	8-12-53	P	½	D	Iron content objectionable.
3F2	Earl Klamm	330	Dg	25	36	25	Sand and gravel	23.48	8-13-53	P	¼	D	Penetrates sand and gravel for entire depth. Yields 6 gpm.
3G1	R. C. Keith	540	Dg	12	48	12	----------	4.09	8-5-53	J	¼	D	
3G2	-----Do-----	550	Dr	200	8	----	----------	------	-------	P	5	D	Supplies 3 families.
3H1	Arney Anderson	390	Dg	66	30	----	----------	60.58	8-12-53	P	3/4	D	Has supplied 4 families.

3H2	C. F. Blomgren	315	Dg	10	30	10	----------	3.88	8-12-53	P	¼	Irr	
3H3	A. Kvarnstrom	325	Dg	8	30	8	----------	.20	8-12-53	N	---	D	
3H4	F. Newcomb	280	Dg	14	30	14	----------	6.11	8-13-53	N	---	N	
3H5	E. H. Dann	285	Dg	15	30	15	Sand and gravel	9.39	8-13-53	P	¼	D	
3J1	P. E. Proctor	280	Dr	84	6	----	Sand	Flows	6-7-51	J	½	D	Supplies 3 families.
3J2	-----Do-----	280	Dg	12	30	12	Gravel	4.90	8-11-53	N	---	N	
3J3	Henry Peterson	330	Dg	9	30	9	----------	1.45	8-12-53	N	---	N	Penetrates till only.
3J4	F. W. Morton	340	Dg	9	30	9	----------	1.94	8-12-53	C	¼	Irr	Pumps dry in "several" hours.
3K1	Carl McKinney	505	Dr	205	6	----	Sand	202	7- -44	P	½	D	Penetrates 111 ft of till. Slight dd pumping 10 gpm.
3K2	Otto Miller	470	Dr	172	6	----	----Do----	145	1948	P	3/4	D	L.
3L1	I. B. Rossiter	320	Dg	21	60-42	8	----------	17.78	8-18-53	P	½	D	Iron content objectionable.
3L2	W. M. Wilber	300	Dg	7	30	7	Sand	.76	8-18-53	P	¼	D,Irr	
3L3	J. B. Lienard	295	Dg	9	48	9	----Do----	3.45	8-18-53	P	¼	D	
3L4	Wilbur Weir	320	Dg	21	48	16	----------	17.81	8-21-53	C	¼	D	Yield inadequate during summer.
3P1	C. P. Lavelle	280	Dr	31	6	----	----------	6	1950	J	½	D	
3P2	L. C. Pope	315	Dg	20	30	20	----------	17.68	8-18-53	P	¼	D	
3P3	-----Do-----	305	Dg	13	48	----	----------	9.27	8-18-53	N	---	N	
3Q1	King County Water Dist. 83	280	Dr	172	6	----	Gravel	4	3-8-44	T	3	N	
3Q2	-----Do-----	270-290	J	22-27	4-8	22-27	Sand and gravel	16-19	8-17-53	--	---	PS	Seven closely spaced siphon wells.
3Q5	-----Do-----	280	Dr	186	8	176	----Do----	Flows	12-16-59	T	15	PS	Dd 65 ft after pumping 4 hr at 500 gpm.
3Q6	William Holt	410	Dr	146	10	----	Sand	126	8-13-53	P	½	N	Penetrated 34 ft of till.
3Q8	R. T. Gaulke	370	Dg	26	42	6	----------	17.81	8-18-53	N	---	N	
4A1	Mildred Porter	300	Dg	12	60	----	----------	5.39	8-4-53	P	¼	D	
4A2	-----Do-----	305	Dg	23	30	----	----------	6.79	8-4-53	P	½	S	
4A3	E. H. Owens	280	Dg	16	54	15	----------	3.84	8-4-53	C	½	D,S	
4A4	J. L. Monnin	330	Dg	6	36	6	Gravel	3.65	8-4-53	N	---	N	
4B1	Harold Barry	300	Dg	26	36	26	----------	23.21	8-18-53	P	¼	D	Aquifer overlain by till.
4C1	James Wall	270	Dg	9	36	9	----------	5.70	8-4-53	N	---	N	Temp 59°F.
4F1	A. S. May	235	Dr	28	6	28	----------	2.74	8-3-53	J	½	D	Penetrates till only.
4F3	A. A. Rutledge	285	Dr	36	6	36	----------	26	5- -53	J	¼	D	Penetrates sand only.
4F4	Al Johnson	230	Dg	18	36	9	----------	7.89	8-4-53	P	¼	D	
4G1	A. S. May	250	Dg	20	36	20	Gravel and sand	7.69	8-3-53	J	½	D	

Table 5. -- Records of wells. -- Continued

Well No.	Owner or tenant	Altitude (feet)	Type of well	Depth of well (feet)	Diameter of well (inches)	Depth of casing (feet)	Character of water-bearing material	Water level: Below land surface (feet)	Water level: Date	Pump: Type	Pump: Horsepower	Use of water	Remarks
							T. 26 N., R. 4 E.--Continued						
4G2	R. F. Redford	285	Dg	26	36	7	----------	20.90	8-4-53	J	¼	D, Irr	
4H1	T. W. Rouse	215	Dg	18	30	----	----------	6.90	8-18-53	J	1	D	
4H2	R. W. Putnam	190	Dg	9	36	9	----------	5.06	8-18-53	P	¼	D	
4H3	O. A. Shanahan	200	Dg, Dr	72	48-6	----	----------	11.39	8-18-53	J	1	D, Irr	Adequate for irrigating about 2 acres of nursery.
5A1	Gerald Inglehart	300	Dg	16	24	16	Sand	15.62	7-28-53	C	¼	D	
5A2	G. W. Salty	260	Dg	7	36	7	----------	1.82	7-28-53	P	½	D	
5A3	Peter Oakland	275	Dg	16	36	16	----------	12.55	7-28-53	J	¼	D	
5C1	Holyrood Cemetery	300	Dr	369	12-6	369	Sand and gravel	175	2-14-58	T	---	Irr	Dd 55 ft pumping 225 gpm; temp 51°F; L.
5E1	-----Do-----	430	Dr	565	10-8	520	Gravel	165	10-27-54	T	20	D, Irr	Dd 155 ft after pumping 24 hr at 150 gpm; C, L.
5H1	G. W. Benson	300	Dg	16	24	15	Sand	14.07	7-28-53	C	¼	D	
5H2	W. O. McLean	280	Dg	4	30	4	----------	1.05	7-28-53	N	---	N	
5H3	W. J. Rother	275	Dg	7	36	----	----------	5.19	7-28-53	P	---	N	
5J1	C. H. Love	290	Dg	7	36	7	Sand	2.43	7-28-53	P	¼	D, Irr	
5N1	G. A. Brown	440	Dg	8	36	----	----------	2.98	7-23-53	N	---	N	
5N2	Minnie Anderson	435	Dg	22	48	----	Till	10	7-23-53	N	---	De	Formerly domestic.
5N3	Andrew Nicholson	440	Dg	22	42	----	----Do----	10	7-23-53	N	---	N	
6G1	Echo Lake Mutual Water Co.	420	Dr	275	8	----	Sand	112.00	7-23-53	N	---	N	Formerly supplied 40 families. Yields 165 gpm; L.
6H1	Carol Hendron	435	Dg, Bd	160	36	----	----------	135	7-27-53	P	1	D	

6M1	Seattle Water Dept.	505	Dr	224	12	----	----------	215.40	7-13-53	T	30	N	
6M2	-----Do-----	505	Dr	443	8	----	----------	218	6- -53	N	---	N	
6P1	T. Bjornstad	420	Dr	300	7	----	----------	118.50	7-23-53	N	---	N	
6R1	R. H. Van Dyke	440	Dg	16	54-48	14	----------	8	7-23-53	N	---	De	Formerly domestic.
7E1	E. B. Derricott	370	Dg	81	42	3	----------	77.08	7-15-53	P	5	D	
7E2	D. D. Graham	390	Dg, Dr	102	60-6	102	----------	82.30	7-15-53	P	3/4	D	
7E3	Arthur Jacobsen	385	Dg	108	42	3	----------	106.00	7-20-53	P	1	D, Irr	
7E4	Lewis Schloredt	360	Dg	52	36	----	----------	49.63	7-20-53	J	½	D	
7E5	Pete Ramstead	360	Dg	58	42	----	----------	56.25	7-22-53	P	½	D	
7H2	Jack Marckx	425	Dg	43	36	----	----------	40.21	7-30-53	N	---	N	Temp 49°F.
7H3	J. D. Francis	425	Dg	59	48-36	59	----------	-----	--------	N	---	De	Penetrates till only. Abandoned because of inadequate yield.
7H4	C. J. Wilbur	380	Dg	17	32	17	Sand	16.42	7-30-53	J	½	N	
7H5	D. V. Foreman	470	Dg	10	24	9	----------	7.04	7-30-53	P	½	D	Iron content objectionable.
7J1	Dora Patton	400	Dg	40	42-36	----	----------	35.91	7-29-53	J	¼	D	
7J2	Ruth Cole	410	Dg	25	48	6	----------	18.45	7-30-53	N	---	N	
7J4	E. D. Corkrey	425	Dg	49	48-42	----	Till	45.73	7-30-53	P	2	D	Penetrates till only.
7J5	F. J. McAvoy	375	Dg	12	36	12	----------	7.11	7-30-53	J	¼	D	
7J6	R. C. Rich	420	Dg	16	48	----	Gravel and sand	11	8-21-53	P	¼	N	
7K1	Don Westover	480	Dg, Dr	212	54-6	----	----------	165.70	7-30-53	P	2	N	
7K2	Vera Geffe	460	Dg	30	72	6	----------	21.21	7-29-53	N	---	N	
7M1	Robert Pine	380	Dg	40	6	40	----------	30	7-21-53	J	½	D	
7Q1	Elizabeth Mac-Donald	450	Dg	141	42	141	----------	134.43	7-29-53	N	---	N	Iron content objectionable.
7R1	Cassius Clark	380	Dg	40	48	8	Sand	45	7-29-53	N	---	De	Formerly domestic.
7R2	Ben Howard	370	Dg	45	60	----	----Do----	41.60	7-29-53	N	---	N	Aquifer overlain by till.
7R3	A. L. Fyhn	380	Dg	13	48	12	----Do----	8.04	7-29-53	J	½	S	
8E1	S. H. Cone	370	Dg	50	36	50	----------	43.75	8-21-53	J	1	D	Slight dd after pumping 1 week continuously at 18 gpm.
8M1	H. R. Fuller	380	Dg	23	48	22	Sand	19.19	7-29-53	J	¼	D	
8N1	W. A. Weaver	385	Dg	50	-----	----	----Do----	40	7-29-53	--	---	N	
9A1	Carl Stafford	180	Dg	32	42	32	Sand and peat	9	4- -53	N	---	De	Well never used.
9B1	K. M. Willman	220	Dg	10	30	----	----------	7.89	8-25-53	P	¼	D	Yields 1 gpm.

Table 5. -- Records of wells. -- Continued

Well No.	Owner or tenant	Altitude (feet)	Type of well	Depth of well (feet)	Diameter of well (Inches)	Depth of casing (feet)	Character of water-bearing material	Water level: Below land surface (feet)	Water level: Date	Pump: Type	Pump: Horsepower	Use of water	Remarks
							T. 26 N., R. 4 E.-- Continued						
9C1	Walter Hottinger	250	Dr	121	6	115	----------	------	--------	N	---	De	Yield inadequate; formerly domestic.
9C2	King County Water Dist 83	230-240	J	20-25	4-6	20-25	Sand	10-15	8-26-53	--	---	PS	Five closely spaced siphon wells; total yield is about 100 gpm.
9C3	-----Do-----	270	Dr	37	6	37	----------	18.71	8-26-53	--	---	PS	
9G1	R. G. Dobson	230	Dg	4	30	4	----------	3	8-27-53	J	½	D	
9G2	R. G. Cosman	215	Dg	13	30	----	----------	8.88	8-27-53	N	---	N	
9G3	D. F. McChesney	255	Dr	385	-----	----	----------	------	--------	N	---	N	Penetrates 13 ft of sand, underlain by 372 ft of blue clay.
10A1	Chester Adwin	320	Dg	25	30	24	----------	10.74	8-13-53	N	---	N	
10A3	North End Brokers	325	Dg	31	36	31	----------	29.99	8-18-53	J	½	D	
10A4	H. C. Hunt	315	Dg	20	30	20	----------	16.55	8-18-53	P	¼	D, Irr	
10A5	-----Do-----	340	Dg	23	48	20	----------	20.13	8-18-53	P	1/6	Irr	Used for small garden.
10B1	R. A. Anderson	290	Dg	18	36	18	----------	15.50	8-27-53	P	¼	D	
10C1	G. L. Butler	265	Dr	155	6	----	----------	80	8-27-53	J	1	D	Supplies 2 families.
10D1	U.S. Geological Survey observation well	100	Dn	13	1.5	13	Sand and gravel	3.57 9.48	4-19-54 8-17-59	N	---	N	H.
10E1	M. B. Hartzell	100	Dr	113	6	113	Gravel	32	8-13-53	C	1	D	
10F1	W. L. Steele	90	Dr	88	6	----	Sand	25	1940	N	---	De	Yield inadequate in summer. Formerly domestic
10J1	Oscar Hoganson	20	Dr	65	6	----	Sand and gravel	Flows	10-14-53	N	---	N	L.
12D1	F. H. Ellis	45	Dn	31	1½	31	Sand	26	6-8-51	P	1/3	D	Iron content objectionable. Penetrates sand and gravel only.

12F1	P. Swenson	35	Dr	32	6	----	----------	------	--------	J	1	D	Supplies 3 families, cafe, and tavern.
12J1	E. M. Jones	20	Dr	40	6	40	Sand and gravel	1	9- -52	C	¼	D	Dd 10 ft pumping 15 gpm; L.
12M1	State Flower Nursery	20	Dg	12	96	----	----------	5.44	6-4-51	C	25	D,Irr	Supplied 78 families; L.
12Q1	E. V. Cooper	180	Dg	30	48	30	----------	23	6-4-51	J	½	D	Yield inadequate.
13A1	C. O. Wintermute	250	Dg	15	30	1	----------	8.07	6-4-51	P	¼	D	-----Do------
13A2	R. Underwood	230	Dg	15	30	15	Till	------	--------	P	¼	De	Formerly domestic.
13F1	I. K. Schlamp	395	Dr	299	6	----	Gravel	------	--------	P	3/4	D	
13G1	R. M. Metheny	430	Dg	62	30	62	Sand	60	6-1-51	P	1/3	D	L.
13J1	H. Gagne	485	Dg	62	30	58	----------	56.53	5-31-51	P	---	D	
13J2	F. Watkins	480	Dg	50	32	50	Sand and gravel	38	6-1-51	J	½	D	
13L1	F. L. Gochanour	400	Dg, Bd	31	30	15	Sand	Flows	1958	J	½	N	Penetrates clay and sand; temp 50°F; Cp.
13M1	M. Augustine	335	Dg	49	40	6	Gravel	34.44	5-31-51	J	---	D	Supplies 1 family, cafe, and grocery. Penetrates 51 ft of clay.
13Q1	C. Dod	430	Bd	26	30	26	----------	9.37	6-1-51	J	½	D,Irr	Supplies 2 families.
13R1	P. W. Rough	480	Dg	22	34	21	Gravel	6.71	5-31-51	J	¼	D,S	-------Do-------- Penetrates till above aquifer.
16Q1	Acacia Memorial Park	250	Dr	287	10	287	Sand and gravel	Flows	3-12-44	T	25	Irr	Dd 88 ft pumping 350 gpm; C, L.
17E1	Carl Woods	345	Dg	30	30	30	----------	20	8-28-53	J	½	D	
17H1	Dewey Stutsman	375	Dg	20	42	20	Sand and gravel	12.85	8-27-53	P	¼	D	Aquifer overlain by till.
17H2	Kay Hutchinson	355	Dg	18	48	----	----------	14	8-28-53	P	---	N	
17M1	E. E. Koppen	315	Dg	14	30	14	----------	8	1947	J	¼	D	
18J1	-----Do-----	320	Dg	12	30	----	----------	5.31	8-27-53	P	¼	D,S	
18J2	John Carlson	325	Dg	12	48	----	----------	8	8-27-53	C	¼	D	
18N1	--- Salo	510	Dg	60	36	----	----------	39	5-13-53	P	---	N	Penetrates till only.
24A1	C. A. Palmer	430	Dg	14	48	----	Till	5	5-31-51	P	¼	D	
24A2	E. H. Good	445	Dg	11	48	----	----Do----	4.79	5-31-51	J	½	D	
24B1	E. Snyder	420	Dr	101	----	----	----------	------	--------	J	3/4	D	Supplies 2 families.
24C1	A. J. Menard	450	Dr	91	6	90	Sand	------	--------	P	1½	D	Yields 16 gpm; L.
24G1	H. Lister	405	Dg	70	36-30	70	Gravel and sand	62.97	6-1-51	J	½	D,S	L.
24H1	W. Beckman	395	Dr	118	5	118	Sand	105	6-1-51	P	1/3	D	L.
24M1	L. B. Walls	420	Dg	69	30	69	----------	60.72	5-29-51	J	1	D	Supplies 2 families; temp 52°F; Cp.
24Q1	G. R. Dempsey	330	Dg	15	72-60	8	Till	5.15	5-29-51	P	1/3	D,S	Inadequate in late summer.

Table 5. -- Records of wells. -- Continued

Well No.	Owner or tenant	Altitude (feet)	Type of well	Depth of well (feet)	Diameter of well (inches)	Depth of casing (feet)	Character of water-bearing material	Water level: Below land surface (feet)	Water level: Date	Pump: Type	Pump: Horsepower	Use of water	Remarks
T. 26 N., R. 4 E.-- Continued													
24Q2	C. R. Burnside	350	Dg	11	36	11	Till	9.73	10-26-51	P	¼	D	
25H1	E. R. Bertram	380	Dg	40	40	40	Gravel and sand	34	4-30-51	J	1/3	D	L.
25K1	A. Hammar	280	Dg	19	48	7	Gravel	7.15	5-29-51	P	1/3	Irr	Aquifer overlain by till.
25K2	H. McEvers	325	Dg	17	40	----	----------	5.20	5-29-51	N	---	N	
28D1	Charmed Land Dairy	350	Dg	40	40	----	----------	31.03	9-4-53	J	1½	N	
30C1	Evergreen Cemetery	395	Dr	188	10	188	Sand	82	11-31-47	T	40	Irr	Dd 140 ft after pumping 4 hr at 350 gpm; L.
30F1	-----Do-----	365	Dr	185	18-10	185	----------	55.35	2-28-58	T	40	Irr	Dd 49 ft pumping 340 gpm; L.
30J1	Washelli Cemetery	310	Dr	238	12-7	238	Sand	9.24	9-4-53	T	15	Irr	Dd 160 ft after pumping 4 hr at 190 gpm; L.
30J2	-----Do-----	360	Dr	785	-----	----	----------	------	--------	N	---	N	L.
30J3	-----Do-----	310	Dr	-----	-----	----	----------	8.02 8.59	4-19-54 8-17-59	N	---	N	H.
30K1	-----Do-----	330	Dr	260	12	----	----------	24	1951	T	20	Irr	Dd 75 ft after pumping ½ hr at 600 gpm; C, L.
30K2	-----Do-----	360	Dg	63	48	50	----------	55.84	9-4-53	T	3	Irr	Adequate for 14 sprinklers running constantly during summer.
34E1	D. M. Mingst	200	Dg	23	36	----	----------	17	2-17-53	C	¼	D	
36C1	Water Dist. 40	80	Dr	73	6	73	Sand	Flows	7-12-51	N	---	N	Static water level 0.60 ft above land-surface datum 7-12-51; L.

							T. 26 N., R. 5 E.						
1L1	E. H. Jones	370	Dr	82	6	82	Gravel and sand	67	11-16-51	J	½	D	L.
1P1	E. A. Mack	325	Dg	40	36	----	----------	34	10-2-52	P	½	D	
1Q1	J. H. Dittemore	300	Dg	12	60	----	----------	8	10-2-52	P	¼	D	
1R1	A. S. Haggard	260	Dg	11	36	----	----------	5.64	10-2-52	P	¼	D	
1R2	S. C. Calkins	260	Dr	97	6	----	----------	Flows	10-7-52	C	¼	D	
3L1	L. F. Duvall	100	Dn	30	1½	----	----------	------	--------	P	¼	D	Iron content objectionable.
3N1	E. H. Waugh	120	Dg	60	36	----	Sand and gravel	41.56	9-14-51	P	3/4	D	
3P1	G. Cassissa	90	Dg	8	30	8	----------	5.04	9-14-51	P	¼	D	
3R1	C. L. Wight	230	Dg	35	36	33	Sand and gravel	30.13	9-14-51	--	---	D	
4R1	W. W. Updike	135	Dg	30	36	30	----------	25.04	9-14-51	J	¼	D	
5B1	R. E. Montagne	90	Dg	6	72	3	Sand	3.60	8-31-51	P	¼	D	
5E1	Bothell Water District	245	Dr	224	8	224	Sand and gravel	120 180	2-15-44 5-15-51	T	20	PS	Dd 17½ ft after pumping 15 min at 200 gpm; C, L.
5E2	-----Do-----	245	Dr	230	8	227	----Do----	180	5-15-51	T	20	PS	L.
5K1	J. A. Herseth	180	Dr	127	6	100	----Do----	86.99	8-31-51	--	---	D	Dd 13 ft after pumping 1 hr at 5 gpm; L.
6C1	C. L. Johnson	150	Dr	100	6	100	Sand	16	8-30-51	J	½	D	L.
6E1	L. N. Rindspach	260	Dg	8	30	----	Sand and gravel	3.82	7-24-51	P	¼	D,S	
6F1	M. E.Whisennand	260	Dg	13	40	----	----------	4.55	7-24-51	P	1/3	D	
6J1	C. O. Swanson	100	Dg	20	30	16	Sand	13.10	8-30-51	P	¼	D	
6K1	O. J. Cornwall	205	Dg	25	40	25	Till	16.18	8-28-51	C	¼	D	Yield inadequate.
6N1	Guy Williams	230	Dg	10	36-30	10	Sand	4.49	7-24-51	P	¼	D	Aquifer overlain by till.
6P1	V. L. Barnes	215	Dr	57	6	57	Gravel	5	8-30-51	J	---	D	L.
6Q1	Marlin & Marlin	110	Dr	139	6	139	Sand	12.33	8-31-51	--	---	D	L.
7C1	R. W. Laird	215	Dr	97	4	97	----------	20	8-31-51	J	3/4	D	
7D1	L. Gualtieri	235	Dr	280	6	280	Sand	180	7-24-51	T	7½	D,S	
7F1	D. J. Dempsey	205	Dr	65	6	65	Sand and gravel	35	7-30-51	J	½	D	Dd 4 ft after pumping 2 hr at 10 gpm; L.
7F2	D. K. Graham	200	Dg	6	48	6	----------	Flows	7-30-51	P	¼	D	
7G1	Bothell Water Dist.	150	Dr	462	6	462	Gravel	-----	--------	N	---	De	Yields 10 gpm; L.
7J1	K. T. Lynch	60	Dg	8	30	----	Sand and gravel	2.40	7-30-51	P	½	D	
7J2	M. E. Haller	40	Dr	84	6	84	Sand	Flows	7-30-51	J	½	D	Iron content objectionable; H_2S odor. Dd 14 ft after pumping 4 hr at 10 gpm; L.

Table 5. -- Records of wells. -- Continued

Well No.	Owner or tenant	Altitude (feet)	Type of well	Depth of well (feet)	Diameter of well (inches)	Depth of casing (feet)	Character of water-bearing material	Water level: Below land surface (feet)	Water level: Date	Pump: Type	Pump: Horsepower	Use of water	Remarks
T. 26 N., R. 5 E.--Continued													
8E1	Bothell Water Dist.	35	Dg	36	36	25	Sand	9.31	6-22-51	T	10	N	Yields 40 gpm.
8E2	Do., test hole	35	Dr	160	-----	----	----------	------	--------	N	---	De	L.
8E3	Bothell Water Dist.	50	Dr	56	8	56	Sand and gravel	Flows	6-22-51	N	---	N	Yields 40 gpm; L.
8K1	H. A. Newman	20	Dg	40	48-24	----	Sand	6.15	6-22-51	P	---	D	
8P1	--- Bustad	365	Dg	22	30	----	----------	7.08	5-10-51	P	½	N	
8P2	--- Switzler	415	Dg	8	28	----	----------	3.44	5-10-51	P	¼	D	Yield inadequate; Cp.
9F1	North Creek Oil & Gas Co.	25	Dr	1,208	12-5	----	Sand and gravel	Flows	8-29-51	N	---	----	Oil test; flows 10 gpm; L.
9F2	Jim Delvecchio	30	Dg	35	36	30	Gravel	25.60	9-3-51	J	3/4	D	
9F4	Lloyd McKee	60	Dr	157	6	----	----------	40	9-3-51	J	3/4	D	
9K1	R. Nicholl	50	Dg	68	36	----	Gravel and sand	32	2-7-44	--	---	D	Yields ½ gpm.
9K2	John DeYoung	50	Dr	94	-----	----	----------	------	--------	J	½	D	
9L1	Floyd Grater	190	Dg	15	30	13	Sand	11.95	6-18-51	P	¼	D,S	L.
9N1	Roy Downs	240	Dg	26	30	20	----Do----	12.03	6-18-51	P	¼	D	L.
9R1	Buster Brown	50	Dr	332	6	330	Sand and gravel	45	3-11-44	P	¼	D,S	Water has H_2S odor; Cp, L.
10B1	Scott E. Bird	100	Dg	7	30	----	----Do----	4.43	9-11-51	C	½	D	
10D1	E. Langley	115	Dg	56	36	56	----Do----	48	9-14-51	P	½	D	
10E1	E. Des Marteau	50	Dg	17	36	17	Gravel	8.59	9-14-51	J	½	D	
10F1	Lowell DeYoung	90	Dr	----	-----	----	----------	------	--------	J	2	D	
10F2	F. J. Cass	75	Dg	23	30	----	Sand	17.58	9-11-51	P	½	D	

10L1	Molbak Green-house	56	Dg	12	36	----	Sand	9.75 9.27	9-11-51 8-17-59	P	1	D,Irr	Cp, H.
10L2	Flora Brown	60	Dg	24	36	24	----------	------	--------	P	½	D,S	Supplies 2 families.
10Q1	Vince Kaelin	50	Dg	22	30	22	Sand	18.29	9-18-51	C	½	D,S	Till underlies aquifer.
11A1	J. S. Simonsen	340	Dg	18	30	18	----Do----	14.37	11-13-51	P	½	D	
11C1	C. E. Patterson	490	Dg	35	48	----	----------	18.41	10-11-51	P	3/4	D	Penetrates till only.
11G1	Paul Garret	550	Dr	285	-----	----	----------	------	--------	P	1	D	Supplies 2 families.
11J1	W. E. Searight	555	Dg	33	30	----	----------	24.88	11-6-51	P	½	D,S	
11K2	W. E. Napper	540	Dr	317	6	317	Gravel	310	11-9-51	P	1	D,S	L.
11M1	Robert Edelbrock	340	Dg	90	36	65	----------	79.99	9-11-51	P	½	D	
11Q1	L. M. Rowan	450	Dg	180	30	180	Sand and gravel	177	11-6-51	P	2	D	Cp, L.
12A1	L. Casper	250	Dg	17	36	----	Sand	7.22	10-2-52	P	½	D	
12A2	Chester Vert	265	Dr	34	6	34	----------	Flows	10-7-52	C	½	D	Flowed 9 gpm with 7 ft of head when drilled.
12C1	M. J. Rojers	320	Dg	20	40	----	Sand and gravel	16.36	11-9-51	P	½	D	
12D1	G. L. Larson	385	Dr	112	4	----	----------	------	--------	P	3/4	D	
12D2	E. N. Van Noy	340	Dr	65	4	65	Gravel	32	11-13-51	J	½	D	Water contaminated.
12K1	W. H. Meisen-heimer	300	Dg	22	48	----	Sand	15.66	11-16-51	J	½	D	
12L1	Frank Zelinka	400	Dg	20	40	15	----Do----	16.19	11-9-51	J	½	D	
12Q1	D. C. Rees	320	Dg	22	30	----	----Do----	20	11-9-51	N	---	N	
13M1	G. B. Peterson	530	Dr	274	4	274	----Do----	224	11-2-51	P	1	D,S	L.
13N1	Frank Beaty	450	Dr	230	8-6	215	----Do----	190	11-6-51	P	1	D	Dd 4½ ft pumping 7½ gpm; L.
13P1	A. H. Landry	525	Dg, Dr	225	6	----	----------	------	--------	P	2	D,S	
13P3	Sam Dykstra	530	Dr	232	8	232	Sand and gravel	150	4-16-52	T	5	D,S, Irr	Dd 5 ft after pumping 4 hr at 34 gpm; Cp, L.
14A1	A. and M. Rund-quist	540	Dr	309	6-5	303	Sand	279.57	11-9-51	T	3	D	Cp, L.
14G1	E. E. Lindstrom	440	Dr	209	6	----	----------	------	--------	J	3	D	Supplies 4 families; Cp.
14G2	L. E. Page	440	Dg	218	60-36	----	----------	------	--------	P	1	D	
14H1	E. F. Davis	475	Dr	230	6	224	Gravel and sand	205.83	11-1-51	P	1	D	Penetrates 185 ft of till.
14K1	John Campbell	425	Dg	90	36	----	Till	72	10-25-51	J	3/4	D	Yield inadequate; Cp.
14K3	-----Do-----	425	Dr	196	8	----	----------	------	--------	J	3	D	
14L1	--- Eaton	330	Dg	109	36	----	Gravel	104	11-1-51	--	---	D	Penetrates gravel only; Cp.
14L2	Chris Lawty	340	Dg	24	36	16	----Do----	16.21	11-1-51	P	½	D	

Table 5. -- Records of wells. -- Continued

Well No.	Owner or tenant	Altitude (feet)	Type of well	Depth of well (feet)	Diameter of well (inches)	Depth of casing (feet)	Character of water-bearing material	Water level: Below land surface (feet)	Water level: Date	Pump: Type	Pump: Horsepower	Use of water	Remarks
T. 26 N., R. 5 E.-- Continued													
15D1	--- Patzer	30	Dg	14	48	14	Sand	12.73	9-11-51	P	½	N	Cp.
								3.16	3-20-58				
15J1	Gus Peterson	35	Dn	16	1½	16	----------	14	9-18-51	C	¼	D	
15L1	Elmer W. Carlberg	65	Dg	12	30	12	Gravel	6.58	9-11-51	P	½	D	Aquifer overlain by clay.
15Q1	M. W. Schenk	50	Dn	-----	1½	----	----------	------	--------	P	½	D	
15R1	G. R. Howard	60	Dr	65	6	65	Sand and gravel	------	--------	J	½	D	Cp, L.
16B1	G. W. Anderson	335	Dg	13	30-24	8	Clay	7.59	5-24-51	N	---	N	Yield inadequate.
16C1	L. S. Wren	335	Dg	22	36	22	Gravel	5.63	5-24-51	J	¼	D	Aquifer underlain by till.
16D1	R. L. Downing	315	Dg	85	36	----	----------	74.15	5-21-51	P	3/4	D	
16E1	--- Ayers	285	Dg	53	72	6	Sand	35.70	6-18-51	J	½	D,Irr	Cp, L.
16G1	--- Clemence	355	Dg	28	30	----	Gravel	9.97	6-19-51	--	---	D	Cp.
16L1	O. Marrier	300	Dg	43	60	6	Till	28.99	6-19-51	J	½	N	Cp.
								49.29	3-13-58				
16R1	S. L. Banister	370	Dg	15	60	----	----Do----	12.36	6-12-51	P	¼	D	Yield inadequate.
17A1	S. W. Griffen	230	Dg	41	40	4	----------	13.61	6-18-51	J	½	D	Penetrates till only; Cp.
17A2	W. M. Knutsen	255	Dg	32	36	----	Till	28.29	6- -58	P	¼	D	-------Do----------
17D1	E. Horn	470	Dr	310	8	280	Sand	255	9-9-51	T	5	D	Yields 25 gpm; L.
17G1	E. Eveleth	250	Dg	27	40	4	----Do----	10.02	6-18-51	C	¼	D	Aquifer overlain by till.
17H1	H. K. English	250	Dg	16	48	4	----Do----	8.65	5-21-51	P	½	D	Yield inadequate.
17M1	Hopkins Nursery	170	Dr	240	6	----	----------	------	--------	--	---	----	Penetrates 240 ft of clay.
17N1	Ensio Saline	185	Dg	22	30	22	Sand	------	--------	P	¼	D	Aquifer overlain by till.
17N2	I. R. Remlinger	170	Dr	150	3	----	----------	------	--------	P	½	D,S	
18A1	C. W. Ostrom	175	Dr	115	6	115	Gravel	Flows	8-28-51	J	2	D	Aquifer overlain by clay.

18A2	D. A. Maydole	75	Dr	101	6	101	Sand	1.36	8-28-51	J	1	D	Temp 53°F, Cp, L.
18E1	--- Nielson	400	Dr	105	6	67	----Do----	28	11-2-51	J	½	D	Dd ½ ft after pumping 2 hr at 8½ gpm; L.
18J1	F. J. Watsen	135	Dg	9	36	9	Gravel	3.06	8-28-51	C	½	D,Irr	
18L1	J. Henderson	455	Dg	18	54	3	Sand	9.28	6-5-51	P	¼	D	
18M1	D. K. Lance	405	Dr	18	6	----	----------	13.98	6-5-51	P	¼	D	
18P1	C. E. Orr	390	Dg	15	36	8	Sand	5.48	6-5-51	P	¼	D	
18P2	H. Wivart	430	Dg	27	36	----	----------	21.11	6-5-51	J	3/4	D	Yield inadequate.
19A1	G. C. Lanphere	230	Dr	176	6	146	Sand	102.94	6-5-51	P	3/4	D	Supplies 2 families; L.
19E1	L. E. Lawrence	400	Dg	28	30	28	----Do----	9.67	5-25-51	J	½	D	
19F1	C. Pyykko	430	Dg	33	30	33	Gravel	19.03	6-4-51	J	½	D,S	
19J1	C. E. Goff	195	Dr	100	6	----	----------	95	2-9-44	--	---	D	Yield inadequate in summer; Cp.
19L1	A. C. Johnson	450	Dg	52	30	3	----------	45.13	6-4-51	J	½	S,Irr	
19L2	William Tormanen	425	Dr	394	6	350	Sand	305	1-29-52	--	---	D	L.
19M1	Mrs. McDermott	350	Dg	29	40	7	Till	14.55 9.29	4-30-51 3-25-58	P	½	D	Yield inadequate; Cp.
19P1	S. K. Thomson	405	Dg	15	60	6	----------	5.15	6-1-51	P	¼	D	--------Do--------
20B1	L. Hesse	180	Dg	11	60	11	Sand	2.17	5-21-51	J	3/4	D	
20C1	R. G. Guttormson	180	Dg	21	38	20	----Do----	13.54	6-11-51	J	½	D	
20C2	Nile Thread	180	Dg	18	48	18	----Do----	9.94	5-21-51	P	1/3	D	
20G1	M. Fuhrer	160	Dg	37	30	37	----Do----	30	7- -50	J	1	D,S	
20J1	Francis Faulkner	275	Dr	68	5	68	Sand and gravel	38	5-4-51	P	3/4	D,Irr	L.
20K1	J. E. Moulton	140	Dg	8	36	8	Sand	2	5-1-51	P	---	D	Iron content objectionable; Cp.
20L1	J. D. Saling	125	Dr	99	6	99	----------	12	5-4-51	J	3/4	D	----------Do----------
20L2	G. G. Gaidos	180	Dr	75	6	75	Sand and gravel	53	10-17-51	J	½	D	L.
20M1	C. O. Myers	140	Dr	60	3	----	----------	------	--------	J	½	D	Iron content objectionable.
20M2	Dave Steiner	145	Dr	91	4	91	Sand and gravel	40	10-9-51	J	½	D	L.
20N1	Bruce Anderson	135	Dr	95	6	----	Sand	------	--------	J	3/4	D,Irr	Penetrates 95 ft of sand.
20N2	G. C. Hamilton	130	Dr	86	6	86	Sand and gravel	------	--------	P	3/4	D	L.
20N3	George Robbins	95	Dr	73	3	73	Gravel	60	2-7-44	P	---	D	L.
20P1	E. A. Sharp	120	Dg	33	36	----	Sand	2.56	5-1-51	J	1	D	L.
21K1	E. R. Diesen	280	Dg	75	48	----	Gravel	53.18 53.70	8-30-51 8-17-59	J	3/4	D	Yields 10 gpm; Cp, H, L.
21L1	Joe Kranak	305	Dg	63	36	----	----------	53.38	6-19-51	P	1	D,S	Iron content objectionable.
21M1	Charles Dougherty	300	Dg	66	-----	----	Gravel	57.62	5-4-51	P	3/4	D,S	Aquifer overlain by till.
21N1	C. B. Ballard	230	Dg	22	34	6	----------	9.39	5-24-51	P	¼	D	Yield inadequate.

Table 5. -- Records of wells. -- Continued

Well No.	Owner or tenant	Altitude (feet)	Type of well	Depth of well (feet)	Diameter of well (inches)	Depth of casing (feet)	Character of water-bearing material	Water level: Below land surface (feet)	Water level: Date	Pump: Type	Pump: Horsepower	Use of water	Remarks
							T. 26 N., R. 5 E.-- Continued						
21Q1	Peter Turtiainen	300	Dg	100	48	80	Gravel	10.16	6-12-51	P	½	D	Sand caving below casing; L.
22A1	George Nelson	50	Dr	190	6	160	Sand and gravel	5	9-18-51	P	½	D	L.
22M1	A. & M. Rabbit Farm	370	Dr	172	6	----	----------	148	7-12-51	P	---	D,S	
22N1	G. M. Danenbauer	360	Dr	148	48	148	Sand	143	2-7-44	P	½	D	Cp, L.
22N3	H. Butler	340	Dg	110	48	110	Sand and gravel	104.64	2-25-58	P	3/4	D,S	Supplies 2 families.
22P1	L. J. Lang	310	Dg	60	40	----	----------	56.10	6-21-51	P	1/3	D	Yield inadequate.
23A1	H. N. Thomas	400	Dr	323	6	220	Sand	160	11-6-51	P	½	D	Cp, L.
23B1	Hollywood Poultry Farms, Inc.	360	Dr	260	-----	----	----------	------	--------	T	5	D,S	
23D1	George Campi	45	Dr	45	8	45	Sand	Flows	8-3-51	P	½	D	Water has H_2S odor; Cp.
23J1	H. Bustad	300	Dr	67	6	----	Gravel	38.67	11-16-51	P	½	D	Cp.
23L1	Church of Latter Day Saints	50	Dr	237	6	237	Sand and gravel	Flows	7-30-51 3-11-58	P	1½	D,S Irr	Water has H_2S odor; pumps sand; Cp.
23P1	Bert Meyers	45	Dr	50	6	50	----------	Flows	8-3-51	J	¼	D	
23P2	K. Abe	100	Dr	82	6	82	Sand	Flows	9-21-51	J	½	D	L.
24C1	C. Anderson	480	Dr	283	-----	----	Sand(?)	------	--------	P	---	D	
24E1	J. Deacon	450	Dr	186	6	----	Gravel and sand	169	11-6-51	P	---	D	Penetrates 50 ft of till.
25D1	Martin Fredrickson	280	Dg	23	48	----	Till	18	10-23-51	P	---	D	Yield inadequate.
25K1	George Birge	320	Dg, Dn	85	-----	85	----------	------	--------	P	½	D,S	Adequate for 2 families.
25M1	Fred Miller	300	Dr	112	6	100	Gravel	74	10-23-51	J	1	D,S	Cp, L.

25M2	H. B. Lake	275	Dr	104	6	104	Gravel	90	11-17-53	J	2	D,Irr	Slight dd after pumping 4 hr at 133 gpm.
25P1	A. Peterson	300	Dg	75	36	70	Sand	56.68	10-11-51	J	½	D	Cp, L.
25R1	H. W. Crosby	180	Dg	32	36	----	----------	18.32	10-18-51	J	½	D,S	
26H1	Frank Denny	90	Dg	17	40	17	Sand and gravel	7.07	10-23-51	C	½	D	Aquifer underlain by till.
26H2	A. H. Kemp	100	Dr	225	6	----	Silt	Flows	10-22-52	N	---	D	Dd 10 ft pumping 20 gpm. Flows 2 gpm; L.
26K1	C. L. Theno	80	Dg	58	30	58	----------	50	10-23-51	J	1½	D,S	Yields 10 gpm.
26K2	W. A. Donahue	60	Dg	27	30	27	Sand	10.80	10-23-51	C	½	D	Aquifer overlain by till.
26L1	Louis Ulrich	50	Dr	218	6	----	----------	Flows	9-21-51	P	3/4	D,S	
27C1	G. Ogilvie	305	Dg	48	60	----	Till	42.05	6-21-51	P	---	D	Yield inadequate.
27D1	O. Mock	300	Dg	80	-----	----	----------	69.15	6-21-51	N	---	N	
27D2	J. C. Walker	265	Dg	83	40	47	----------	63.08	6-21-51	P	1/3	D,S	Aquifer overlain by till.
27K1	Bob Muller	45	J	15	30	----	----------	4	11-7-49	C	15	Irr	Dd 7 ft pumping 200 gpm; Cp.
27L1	B. Rusch	100	Dg	17	36	16	Sand	3.08	4-26-51	P	¼	D,S	L.
28B1	H. A. Baer	280	Dg	55	36	----	----------	46.07	5-24-51	P	½	D,Irr	
28D1	C. Arnold	170	Dr	54	6	----	Gravel	10	6-12-51	J	½	D,Irr	Dd 10 ft bailing 30 gpm; L.
28D2	C. J. Sabastian	180	Dg	15	48-40	----	----------	8.83	6-12-51	P	¼	D,S	Cp.
28E1	W. C. Pellett	175	Dr	42	8	----	----------	------	--------	T	1	D,S	Iron content objectionable.
28J1	Ruby Smith	165	Dg	11	36	----	----------	4.21	4-26-51	P	¼	D,S	
28J2	J. J. Yeyna	225	Dg	34	36	----	Sand	19	4-26-51	J	3/4	D	L.
28K1	G. A. Smith	165	Bd	61	3	----	----------	14	4-26-51	P	½	D,S	
28M1	L. Eastham	150	Dr	162	6	158	Gravel and sand	40	11-6-51	T	1	D,S	Dd 40 ft pumping 10 gpm; L.
28N1	E. B. Payne	170	Dr	143	3	143	----------	40	4-24-51	P	½	D,S	Penetrates till and clay.
28N2	Al Johns	180	Dr	120	6	120	Sand	55	11-6-51	P	3/4	D	L.
28N3	E. Cronhagen	165	Dg	15	36	14	----Do----	4.73	4-27-51	J	½	D	L.
28R1	G. Hathaway	345	Dg	11	-----	----	----------	2.11	4-24-51	P	¼	D	Yield inadequate.
29B1	G. W. Tyler	180	Dg	22	36	----	Sand and gravel	19.51	5-4-51	P	¼	D	
29D1	A. Ihlenfeldt	90	Dn	18	2	18	Sand	------	--------	J	¼	D	
29E1	W. E. Ferguson	110	Dr	75	6	75	----Do----	27.32	4-30-51	J	3/4	D	L.
29G1	A. Wigren	150	Dr	35	-----	----	----Do----	------	--------	P	½	D	Supplies 2 families.
29H1	L. P. Conover	125	Dg	125	48	115	----------	15.42	6-12-51	J	¼	D	Aquifer overlain by till.
29J1	C. M. Anderson	160	Dr	40	6	----	----------	------	--------	J	¼	D	Iron content objectionable.
29L1	B. B. Reynolds	160	Dg	16	30	16	Sand	9.23	4-30-51	C	½	D,S	L.
29L2	--- McLean	210	Dr	139	6	139	Gravel	117	11-2-51	P	½	D,S	Dd 7 ft bailing 10 gpm; L.
29P1	T. Carlen	260	Dg	65	40-36	----	Sand	53.27	4-26-51	--	---	D	

Table 5. -- Records of wells. -- Continued

Well No.	Owner or tenant	Altitude (feet)	Type of well	Depth of well (feet)	Diameter of well (inches)	Depth of casing (feet)	Character of water-bearing material	Water level: Below land surface (feet)	Water level: Date	Pump: Type	Pump: Horsepower	Use of water	Remarks
T. 26 N., R. 5 E.-- Continued													
29P2	R. M. Baughman	230	Dr	175	6	110	Gravel	72.55	4-27-51	P	½	D	Yields 20 gpm; L.
29Q1	E. H. Ramin	250	Bd	53	24	----	Clay	14.27	4-27-51	J	½	D	Yield inadequate; L.
29Q2	L. F. Supple	260	Dg	34	36	34	Sand	12.72	4-27-51	J	1/3	D	
29R1	O. A. Lee	170	Dg	13	30	8	Gravel	5	4-30-51	P	¼	D,S	Yield inadequate in summer. Iron content objectionable.
30A1	Juanita School	130	Dr	150	3	----	----------	------	--------	P	1½	N	Yields 10 gpm.
30A2	E. Buddin	115	Dr	132	6	132	Sand	50	6-25-53	--	1	Irr	Dd 70 ft at 20 gpm; L.
30D1	W. Kangas	410	Dg	26	48	----	----------	10.33	6-1-51	P	¼	D,S	
30E1	C. A. Fortman	450	Dg	64	-----	----	Till	55.60	4-30-51	P	½	D	Yield inadequate.
30G1	King County Water Dist. 72	120	Dr	547	18-10	184	Sand	57	5-17-51	T	15	PS	Dd 108 ft pumping 225 gpm. Back-filled to 184-ft depth; C, L.
30G2	F. E. Wubbena	135	Dg	14	48	12	Sand and gravel	------	--------	P	1	D,Irr	
30G3	E. J. Bouchard	120	Dr	46	6	46	Sand	------	--------	P	1	D	L.
30H1	--- Brown	70	Dg	27	36	10	----Do----	22.45	5-1-51	P	¼	D	
30J1	B. P. Judy	70	Dg	15	36	14	Sand	11.43	5-25-51	P	3/4	D,Irr	
30M1	--- Miller	415	Dr	380	6	----	Sand and gravel	------	--------	P	2	D	L.
30N1	D. Reine	335	Dg	50	48	50	Sand	45	4-30-51	J	1	D,S	L.
30Q1	J. Tolme	20	Dr	30	-----	----	----------	------	--------	P	3/4	D	
30R1	L. Dunmire	20	Dr	190	6	----	----------	8.87	5-29-51	P	½	D	Supplies 20 cabins. H_2S odor.
31K1	Stephen Thein	20	Dr	38	6	----	----------	------	--------	--	---	De	L.
32B1	L. Anderson	225	Dg	20	-----	----	----------	6.69	4-26-51	P	¼	D	Yield inadequate. Penetrates 5 ft of sand at surface.
32B2	D. F . Garrison	245	Dg	35	-----	----	----------	4.30	4-27-51	P	¼	D	Yield inadequate.

32C1	D. J. MacDonald	235	Dg	70	30	----	----------	22.83	4-26-51	J	3/4	D	
32F1	O. L. Blau	155	Dg	20	36	19	----------	4.52	4-26-51	J	½	D	Aquifer overlain by till.
32F2	K. M. Pederson	60	Dg	21	36	20	Sand	17.68	4-26-51	P	½	D,S	
32R1	City of Kirkland, well 8	325	Dr	309	7-12	299	Sand and gravel	178.4	1-7-53	T	---	PS	Dd 50 ft after pumping 4½ hr at 400 gpm; C, L.
33A1	W. J. Nicholson	350	Dg	57	48	3	Gravel and sand	48.17	4-24-51	P	½	D	L.
33J1	W. Pioleck	345	Dg	-----	30	----	----------	------	--------	J	½	D,S	
33Q1	N. Downie	250	Dg	13	36	13	Sand	6.48	5-25-51	C	½	Irr	Yields 5 gpm.
34E1	O. Staley	235	Dg	39	36	38	----Do----	32.67	4-24-51	J	½	D,Irr	L.
34K1	W. G. Garnier	45	Bd	21	28	----	Gravel	15.91	9-21-51	P	¼	D	Aquifer underlain by clay.
34M1	D. E. Sprint	330	Dg	65	48	----	----------	------	--------	P	1/3	D,Irr	Supplies 2 families.
34N1	G. Mathias	295	Dg	35	-----	----	----------	6.45	4-24-51	J	1/3	D	Iron content objectionable.
34N2	G. E. Lovelance	325	Dg	74	40-36	70	Sand	66.57	4-24-51	P	3/4	D	
34P1	W. A. Linn	295	Dg	25	36	5	----------	8.39	4-24-51	J	1/3	D	Yield inadequate.
34Q1	Aries Gardens	40	Bd	20	30	20	Sand and gravel	7	9-13-52	C	10	Irr	Temp 52°F; Cp.
34Q2	-----Do-----	40	Bd	24	30	24	----Do----	7	9-13-52	C	10	Irr	Dd 11.5 ft after pumping 5 hr at 800 gpm.
35A1	J. J. Smith	260	Dg	26	40	----	----------	19.89	10-11-51	J	¼	D,S	
35B1	A. B. Galloway	230	Dg	81	-----	----	----------	44.80	10-11-51	J	½	D,S	
35C1	F. W. Dunham	110	Dg	25	30	----	----------	17.30	9-21-51	J	1	D	
35F1	W. B. Harrison	100	Dr	37	6	----	----------	------	--------	J	½	D,S	Penetrates till only.
35F2	Tony Harder	155	Dr	66	6	66	Sand	15	9-21-51	J	1	D,S	Dd 30 ft bailing 30 gpm. Iron content objectionable.
36C1	C. B. Streeter	315	Dg	69	36	----	----Do----	64.29	10-11-51	J	3/4	D	L.
36P1	J. E. Johnson	360	Dg	22	36	----	Sand and gravel	7	5-8-51	P	¼	D	
							T. 26 N., R. 6 E.						
5H1	W. A. McMahon	300	Dr	238	6	----	----------	26.79	10-8-52	J	3/4	D	
5Q1	B. A. Paulson	295	Dg	21	48	----	----------	16.09	10-8-52	P	¼	D	
7C1	W. F. Cottrell	245	Dg	8	30	----	----------	5.75	10-7-52	C	¼	D	Yield inadequate.
7C2	C. Hedberg	280	Dr	63	4	63	Sand and gravel	------	--------	J	½	D	Penetrates 39 ft of till.
7D1	E. Lustig	280	Dg	25	48	25	----Do----	23.64	10-7-52	P	¼	D	
7E1	W. H. Munn	260	Dg	17	24	----	----------	13.71	10-7-52	P	¼	D,S	
7G1	Norm Fragner	255	Dr	44	6	44	Sand	Flows	11-9-51	C	---	D	
7J1	R. L. Cunningham	265	Dg, Dn	24	48-(?)	24	Sand and gravel	18.47	10-2-52	P	¼	D	

Table 5. -- Records of wells. -- Continued

Well No.	Owner or tenant	Altitude (feet)	Type of well	Depth of well (feet)	Diameter of well (inches)	Depth of casing (feet)	Character of water-bearing material	Water level: Below land surface (feet)	Water level: Date	Pump: Type	Pump: Horsepower	Use of water	Remarks
							T. 26 N., R. 6 E.-- Continued						
7L1	Bob Sandberg	240	Dg	18	48	----	----------	17.70	10-7-52	P	---	D	
7L2	F. E. Johnson	240	Dg	20	36	----	Sand and gravel	16.40	10-7-52	P	½	D	Aquifer overlain by till.
7L3	R. Collinge	245	Dg	9	48	----	----------	7.90	10-7-52	P	¼	D	Cp.
7Q1	J. L. Davis	245	Dg	12	18	12	Sand and gravel	10	10-2-52	P	¼	D	
7R1	L. Lewis	240	Dg	12	30	----	----------	11.02	10-2-52	P	¼	D	Iron content objectionable.
8C1	F. C. Hermansen	300	Dg	15	30	15	Gravel	13.55	10-8-52	C	½	D	
8G1	C. W. Allender	290	Dg	48	30	48	----------	39.95	10-8-52	P	3/4	D	
8H1	J. P. Smith	255	Dg	32	30	32	----------	22.49	10-8-52	J	1/3	D	
8J1	A. N. Lipes	245	Dg	41	48	41	----------	16.34 5.40	10-8-52 2-26-58	J	½	D	Cp.
8L1	O. E. Kelting	270	Dg	44	44	44	Gravel	19.51	10-8-52	P	3/4	D	L.
9A1	W. A. Barnes	445	Dg	37	24	37	Sand and gravel	25.59	10-8-52	J	½	D	L.
9B1	Alex Mezo	440	Dg	17	48	----	----------	15.50	10-8-52	C	½	D	Penetrates till only. Yield inadequate.
9G1	G. M. Brown	400	Dg	24	30	----	Sand	16.03	10-8-52	--	---	D	Dd 7 ft after bailing 6 hr at 5 gpm; L.
9L1	L. E. Hall	450	Dg	31	48	----	Sand and gravel	28.72	10-8-52	J	1/3	D	L.
10N1	E. Peterson	565	Dg	14	72	----	Till	12.22	10-15-52	--	---	D	
10N2	A. Engebrigtsen	555	Dg	48	48	----	Gravel	43.02	10-15-52	--	---	D	L.
12C1	Elsie Chapman	40	J	290	6	----	----------	Flows	11-20-52	J	1½	D	
12E1	James Wallace	35	Dr	305	6	----	Sand	Flows	11-20-52	J	1	D,S	Dd 75 ft pumping 30 gpm; L.
13D1	Town of Duvall	45	Dr	215	6	215	Sand and gravel	2.38	5-15-51	T	2	PS	L.
13D2	Art Herman	45	Dr	206	6	----	----------	Flows	11-20-52	J	3/4	D,S	

13N1	Elmer Pazer	107	Dr	238	6	238	Sand	38.75 36.25	6-30-41 12-17-51	J	1	D,S	L.
15L1	S. E. Seims	530	Dg	18	36	----	Gravel	16.27	10-15-52	J	¼	D	L.
15P1	C. W. Larson	560	Dg	56	24	----	----------	54.32	10-15-52	J	¼	D	
18H1	Mark Fruhling	230	Dg	37	36-72	37	----------	15	4-10-58	T	5	D	Supplies 16 families. Yields 300 gpm.
18J1	C. Ralls	210	Dg	15	24	----	----------	12.14	9-24-52	C	1/3	D	
18J2	John Fruhling	225	Dg	8	30	----	Gravel	6.60	10-2-52	C	¼	D	
18R1	Neal Tourtellotte	205	Dg	17	48	17	Sand	11.86	9-24-52	J	¼	D	
19A1	O. T. Dean	200	Dg	31	30	31	----------	20.40	9-24-52	P	¼	D	
19B1	R. O. Mason	275	Dg	36	48	----	Sand	30.67	9-24-52	--	---	D	
19J1	J. Taylor	160	Dn	25	1¼	----	----------	------	--------	P	½	D	
19L1	M. S. Slettebo	390	Dr	236	8	236	Sand and gravel	190.16	9-25-52	P	1	D	Yields 5 gpm; L.
19Q1	E. M. Lisman	120	Dg	8	30	8	----------	6.42	9-23-52	C	½	D	Iron content objectionable. Temp 51°F; Cp.
19Q2	A. C. Rubens	125	Dg, Bd	51	30-2	51	Sand	Flows	9-25-52	J	½	D	Flows 20 gpm. Penetrates 51 ft of clay above aquifer; 20 ft of head when drilled.
20D1	J. H. Weiss	180	Dg	27	24	27	Sand and gravel	18.63	9-24-52	P	---	De	Formerly domestic and stock.
20D2	-----Do-----	175	Dg	20	24	20	----Do----	18	9-24-52	P	¼	D,S	
20E1	C. A. Philbrick	180	Dr	41	8	41	Sand	29.00	9-24-52	J	1/3	D,S	
20M1	C. M. Welch	140	Dr	65	6	65	----Do----	Flows	9-24-52	P	¼	D,S	Flows 3 gpm; L.
20M2	C. H. Fordney	145	Dr	72	6	72	----Do----	Flows	9-24-52	--	---	D	L.
20N1	Ralph Rigby	130	Dr	47	6	47	Sand and gravel	7.72	9-24-52	P	¼	D	L.
20Q1	James Madden	190	Dr	267	6	53	----Do----	18	9-24-52	J	½	D	L.
20Q2	A. Sather	200	Dr	65	6	65	----Do----	------	--------	--	---	De	Formerly domestic; Cp, L.
20R1	Bill Hieb	310	Dr	78	6	78	Sand	34	9-23-52	--	---	D	Yields 30 gpm; L.
21P1	Ivan Scheel	470	Dr	109	6	99	Sand and gravel	30	9-20-52	P	3/4	D	Cp; L.
21P2	E. A. Richards	435	Dr	220	8	220	----Do----	165	9-23-52	J	2	D	Slight dd after bailing ½ hr at 20 gpm; L.
24D1	O. E. Thayer	130	Dr	251	6	----	Sand	------	--------	P	1	D,S	Cp; L.
25C1	A. P. Winkelman	80	Dr	200	6	45	----Do----	------	--------	J	½	D,S	Backfilled to 68-ft depth; L.
25F1	Vern Pickering	100	Dr	58	6	58	Gravel and sand	10.78	11-5-52	J	½	D	Flows during winter; L.
25G1	Jack Mills	240	Dr	62	6	----	----------	23.79	11-20-52	P	---	D	
25J1	M. E. Boshaw	260	Dr	88	6	----	----------	27	1948	P	½	D	Yields 80 gpm.
30F1	I. Brown	95	Dr	183	6	162	"Shale"	40	2-12-44	N	---	N	Iron content objectionable; L.

Table 5. -- Records of wells. -- Continued

Well No.	Owner or tenant	Altitude (feet)	Type of well	Depth of well (feet)	Diameter of well (inches)	Depth of casing (feet)	Character of water-bearing material	Water level: Below land surface (feet)	Water level: Date	Pump: Type	Pump: Horsepower	Use of water	Remarks
							T. 26 N., R. 6 E.-- Continued						
30F2	I. Brown	95	Dr	55	6	38	Sand	6.60	10-8-52	C	¼	D	Dd 16 ft after pumping 24 hr at 10 gpm. Iron content objectionable; L.
30G1	F. B. Sahlstrom	100	Dg, Bd	50	27-6	50	----Do----	9.14	8-31-51	C	½	D	L.
30N1	V. A. Binger	175	Dg	21	30-24	21	----------	19.05 15.42	10-18-51 2-26-58	C	½	D,S	Iron content objectionable; Cp.
30Q1	Ed Bower	95	Dr	53	6	52	Gravel	8	9-23-52	P	1	D	Supplies 2 families; L.
31A1	Helen Turcotte	125	Dg	99	30	99	----------	50-36	9-23-52	P	½	D,S	
31L1	Stanley Robstad	100	Dr	353	6	----	Gravel	------	---------	J	3/4	D	Cp, L.
32P1	Earl Diller	280	Dg	58	30-24	58	----------	46.54	10-21-52	J	1/3	D	
32R1	R. F. McInnes	385	Dg	27	30	27	Sand	8.75	10-10-52	J	½	D	Aquifer overlain by till.
							T. 26 N., R. 7 E.						
5F1	Warren Hoyle	800	Dr	201	4	----	----------	112.92	12-4-57	N	---	N	Bottom of well in rock.
5R1	John Dahlquist	700	Dg	12	48	12	Till	1	12-4-57	P	¼	D	
6D1	William Roetcisonder	30	Dr	340	6	----	Sand	Flows	12-30-59	J	1½	D,S	Well penetrated blue clay to 308 ft, sand to 311 ft, blue clay to 340 ft.
6F1	H. J. Roetcisonder	25	J	338	6	338	----------	19.56	11-20-52	J	1½	D,S	Iron content objectionable.
21N1	W. Berry	540	Dr	134	6	----	Gravel	100	12-4-57	J	1	D,S	Yields 6 gpm.
28R1	W. Madden	380	Dg	35	18	----	----Do----	Dry	12-4-57	N	---	N	
34D1	M. P. Hos	365	Dg	9.5	28	28	----Do----	7.63	12-4-57	J	¼	D	Supplies 4 families.

Table 6 -- Records of selected springs in northwest King County, Wash.
Locations of springs are shown on pl. 3

Altitude: Altitude of land-surface datum at spring from spirit level traverses or interpolated from topographic maps. Use: D, domestic; Irr, irrigation; N, none; S, stock; PS, public supply.

Spring	Owner or tenant	Altitude (feet above sea level)	Water-bearing material	Occurrence	Yield		Use	Temperature (°F)	Remarks
					GPM	Date			
T. 24 N., R. 4 E.									
11D1s	H. W. Attlesey	150	Sand	Discharge at contact with clay	-----	-------	D	49	Spring and well supplied 40 families.
12M1s	Mercer Island Coop. Water Assoc.	175	-----Do-----	Drain from stratified drift	-----	-------	N	48	
12R1s	A. M. Lesueua	250	Silt	Drain from subtill beds	-----	-------	D,Irr	50	Supplies 5 families.
13A1s	C. Lillioms	270	-----Do-----	-------Do---------	10	2-20-51	D	48	
T. 24 N., R. 5 E.									
7E1s	E. L. Brant	100	Sand	-------Do---------	20	2-20-51	D	49	
18B1s	Ackerson Estate	230	-----Do-----	-------Do---------	10-15	3-2-51	D	47	
18K1s	Charles Jenner	230	-----Do-----	-------Do---------	3	2-21-51	D	47	Supplies 2 families.
18K2s	M. H. Anthony	210	-----Do-----	Discharge at contact with clay	40	2-21-51	PS	48	Supplied 28 families.
20K1s	J. A. Cluck	100	-----Do-----	-------Do---------	5	2-8-51	D	48	
30K1s	John Wilhite	250	-----Do-----	----------	25	2-16-51	PS	47	Supplies 20 families.
31E1s	Benotho Beach Water Assoc.	175	-----Do-----	----------	6	12-7-59	PS	---	Supplies 16 families.
T. 24 N., R. 6 E.									
21H1s	L. J. Bailey	90	-----Do-----	Drain from till	20	4-3-51	D	51	
27Q1s	City of Issaquah	225	Sand and gravel	Drain from stratified drift	150	6-15-51	PS	48	Seven springs discharge into reservoir.

Table 6 -- Records of selected springs in northwest King County, Wash.--Continued

Spring	Owner or tenant	Altitude (feet above sea level)	Water-bearing material	Occurrence	Yield GPM	Yield Date	Use	Temperature (°F)	Remarks
T. 24 N., R. 7 E.									
6P1s	W. E. Boeing	250	Sand and gravel	Drain from till	80	11-20-51	D,S	---	
11L1s	Fall City Water Co.	330	----------	----------	50	5-15-51	PS	---	
17A1s	C. W. Ekdahl	160	Sand	Drain from stratified drift	----	--------	D,S	---	
T. 25 N., R. 5 E.									
1A1s	City of Redmond	230	-----Do-----	Discharge at contact with clay	180	5-15-51	PS	---	Chemical analysis in table 8.
1Q1s	Mrs. Allen Saunders	125	-----Do-----	-------Do-------	30	5-8-51	D,S	---	
17A1s	K. D. Simpson	350	-----Do-----	Seepage from till	2	5-21-51	D	49	Supplies 2 families.
20J1s	R. L. Burns	140	Sand and gravel	Seepage from sand	----	--------	D	---	
21D1s	A. L. Neilson	375	Sand	------Do--------	----	--------	D,S, Irr	48	
21M1s	W. B. Killeen	325	-----Do-----	Drain from subtill beds	10	4-19-51	D,S	48	
28E1s	Leroy Olson	200	-----Do-----	Seepage from sand	3	4-3-51	D	49	
T. 25 N., R. 6 E.									
17N1s	C. B. Ewoldsen	340	-----Do-----	Discharge at contact with clay	25	6-17-52	D	48	Supplies 4 families.
32K1s	A. B. Hendricks	250	Gravel	Drain from stratified drift	500	7-20-51	D	---	
T. 25 N., R. 7 E.									
23P1s	City of Carnation	340	----------	----------	500	12-30-59	PS	--	

T. 26 N., R. 4 E.									
3D1s	Ken Bartlett	320	Sand	Seepage from sand	2	8-4-53	D	51	
3D2s	H. F. Capell	320	-----Do-----	--------Do--------	1	8-4-53	D	---	
3D3s	Jack Duranceau	320	-----Do-----	--------Do--------	1	8-4-53	D	---	
4J1s	F. I. Nystrom	210	----------	----------	10	8-3-53	Irr	---	
9C1s	J. G. Whittaker	270	----------	----------	3	8-27-53	D	---	
10A1s	Hansel York	290	----------	----------	----	---------	D	---	
T. 26 N., R. 5 E.									
8K1s	A. C. Roughton	150	Sand	Seepage from sand	1	5-10-51	D	49	
8M1s	Stanley Duffy	125	-----Do-----	---------Do---------	----	---------	D	---	
11H1s	E. S. Hocomb	375	-----Do-----	Seepage from stratified drift	----	---------	D	---	
12J1s	C. J. Boudreau	250	-----Do-----	Drain from stratified drift	1½	11-9-51	D,S	49	
14N1s	W. C. Gatton	90	Gravel	Seepage from stratified drift	3	9-18-51	D,S	---	Iron content objectionable.
17J1s	George Devenpeck	220	Sand and gravel	Seepage from till	1	6-18-51	D,S	50	
19R1s	R. B. Littell	160	Sand	Discharge at contact with till	10-15	5-10-51	D,S	50	
28B1s	Kathryn McCurry	250	-----Do-----	Drain from till	17	5-4-51	D,S	51	
T. 26 N., R. 6 E.									
7A1s	M. H. Fruhling	335	Gravel	---------Do---------	12	10-8-52	D,S	50	

Table 7.--Drillers' logs of wells in northwest King County, Wash.

Material	Thickness (feet)	Depth (feet)
Well 23/3-3A1		
Washington Toll Bridge Authority, test hole 2. About 600 ft S. and 250 ft W. of NE cor. Altitude about -92 ft. Drilled by L. R. Gaudio, 1952.		
"Mud"	15	15
Sand and gravel	32	47
Sand, fine (trace of clay)	10	57
Clay, blue, and sand	8	65
Sand, fine	9	74
Clay, blue, with some sand	11	85
Clay, blue	----	----
Well 23/4-2A1		
Seattle Engineering Dept., test hole 1. About 10 ft E. of center of intersection of Arrowsmith Ave. and Norfolk St. Altitude about 107 ft. Drilled, 1920.		
Sand and clay	14	14
Sand, water-bearing	7	21
Clay, blue	7	28
Sand, black, water-bearing	7	35
Clay, blue	2	37
Well 23/4-2A2		
Seattle Engineering Dept., test hole 13. About 160 ft N. and 40 ft E. of center of intersection of Arrowsmith Ave. and Norfolk St. Altitude about 80 ft. Drilled, 1920.		
"Hardpan," broken	20	20
Sand, black, water-bearing	2	22
Clay, blue	23	45
Well 23/4-2A3		
Seattle Engineering Dept., test hole 3. About 250 ft S. and 240 ft. E. of center of intersection of Arrowsmith Ave. and Norfolk St. Altitude about 107 ft. Drilled, 1920.		
Sand	5	5
Sand, water-bearing	1	6
Clay, blue	9	15
Sand, water-bearing	5	20
Clay, blue	3	23
Sand, water-bearing	6	29
Clay, blue	1	30
Sand, water-bearing	4	34
Clay, blue	1	35
Sand, water-bearing	5	40
Clay, blue	10	50

Table 7.--Drillers' logs of wells in northwest King County, Wash.--Continued

Material	Thickness (feet)	Depth (feet)
Well 23/4-2A4		
Seattle Engineering Dept., test hole 18. About 160 ft S. and 310 ft E. of center of intersection of Arrowsmith Ave. and Norfolk St. Altitude about 80 ft. Drilled, 1920.		
Sand and clay	15	15
Sand, black, water-bearing	7	22
Clay, blue	13	35
Well 23/4-2H1		
Seattle Engineering Dept., test hole 5. About 30 ft N. and 30 ft W. of center of intersection of Arrowsmith Ave. and Cooper St. Altitude about 106 ft. Drilled, 1920.		
"Hardpan"	15	15
Sand, water-bearing	3	18
Clay, blue	3	21
Sand, water-bearing	5	26
Clay, blue	4	30
Sand, water-bearing	5	35
Clay, blue	5	40
Well 23/4-2H2		
Seattle Engineering Dept., test hole 21. About 70 ft N. and 70 ft E. of center of intersection of Arrowsmith Ave. and Cooper St. Altitude about 84 ft. Drilled, 1920.		
"Rocks" and clay	5	5
Sand, black	2	7
Clay, blue	3	10
Sand, water-bearing	2	12
Clay, blue	20	32
"Hardpan," blue	1	33
Well 23/4-4A1		
Boeing Airplane Co. About 1,350 ft S. and 2,300 ft W. of NE cor. Altitude about 15 ft. Drilled by N. C. Jannsen Drilling Co.		
Sand	5	5
Clay	7	12
Sand and gravel	16	28
"Mud"	48	76
Gravel and clam shells	29	105
"Mud"	32	137
Gravel	3	140
"Mud"	19	159
Gravel	5	164
"Mud"	19	183
Sand, cemented	18	201

Table 7.--Drillers' logs of wells in northwest King County, Wash.--Continued

Material	Thickness (feet)	Depth (feet)
Well 23/4-4A1--Continued		
Clay, blue	149	350
Clay, sandy	12	362
Clay, blue	60	422
Sand	13	435
Clay, blue, and sand	61	496
Sand	99	595
Clay, sandy	55	650
Sand	36	686

Casing: 12-inch to 185 ft, 8-inch from 146 to 686 ft; perforated 500 ft to 590 ft.

Well 23/5-5C1

City of Renton. On the NW cor. of intersection of 108th Ave. and 100th St. Altitude about 238 ft. Drilled by L. R. Gaudio, 1952.

Surface	2	2
Clay, sandy, brown; with pebbles	20	22
Clay, gray	22	44
Clay, gray, with pebbles	4	48
Sand and gravel, cemented	18	66
Clay, silty	34	100
Sand, fine, and clay	10	110
Clay, sandy, and wood	8	118
Sand, fine	8	126
Sand, fine, with clay	9	135
Clay	18	153
Sand, medium, streaks of clay	11	164
Sand, coarse	3	167
Sand, fine to medium; some clay and wood	18	185
Sand, coarse, and fine gravel	5	190
Sand, medium to coarse; some clay	8	198
Clay and wood	2	200
Sand, coarse, and fine gravel; clay and wood	6	206
Sand, medium, and some clay	4	210
Sand, fine, and streaks of clay	5	215
Sand, coarse, and wood	3	218
Sand, fine, and clay	7	225
Sand, coarse, and clay	13	238
Sand, coarse, and fine gravel	8	246
Sand, medium, and streaks of clay	6	252
Sand, coarse, and gravel	3	255
Sand, fine, and clay and pebbles	15	270
Gravel, sand, and boulders	5	275
Gravel and sand, cemented	9	284
Gravel and sand	1	285
Gravel and sand, cemented	3	288
Clay, blue	1	289
Gravel, sand, boulders, and clay	48	337

Table 7.--Drillers' logs of wells in northwest King County, Wash.--Continued

Material	Thickness (feet)	Depth (feet)
Well 23/5-5C1--Continued		
Clay, silty	1	338
Clay, sandy	2	340
Sand, medium to coarse; streaks of clay	3	343
Sand, gravel, and clay	2	345
Sand, coarse, and gravel	3	348
Sand, gravel, and clay	11	359
Sand, fine	6	365
Sand, coarse, and gravel	11	376
Sand and gravel, cemented	12	388

Casing: 20-inch to 287 ft, 12-inch 247 to 376 ft, 100 screen from 318 to 338 ft and from 366 to 376 ft.

Well 23/5-9C1

City of Renton. About 100 ft S. and 2,050 ft E. of NW cor. Altitude about 350 ft. Drilled by N. C. Jannsen Drilling Co.

Gravel and sand	68	68
Gravel, water-bearing	16	84
Clay and cemented gravel	14	98
Shale	12	110
Gravel, water-bearing	8	118
Gravel, cemented	10	128
Gravel, water-bearing	6	134
Sand and gravel	18	152
"Hardpan"	6	158
Clay	6	164
Gravel, water-bearing	4	168
Clay	7	175

Casing: 22-inch to 75 ft, 10-inch from 0 to 175 ft; perforated from 92 to 175 ft.

Well 24/3-13F1

Bethelehem Steel Co. About 2,400 ft S. and 1,700 ft E. of NW cor. Altitude about 30 ft. Drilled by N. C. Jannsen, 1924.

Fill	3	3
Sand and gravel	4	7
Clay, blue, and some gravel	43	50
Clay, blue	25	75
Sand, water-bearing	1	76
Clay and silt	21	97
Sand, water-bearing, and wood	5	102
Clay, blue, hard	10	112
Clay, blue, and some gravel	19	131
Clay with gravel and stones	5	136
Silt and sand	24	160

Table 7.--Drillers' logs of wells in northwest King County, Wash.--Continued

Material	Thickness (feet)	Depth (feet)
Well 24/3-13F1--Continued		
Clay with gravel	7	167
Silt and sand	23	190
Clay, blue	8	198
Sand and water	2	200
Clay, blue	42	242
Clay and gravel, water-bearing	2	244
Clay, soft, blue	26	270
Silt, sand, and clay	34	304
Clay, hard, shaly	60	364
Clay, hard, and sand	4	368
Clay, hard, shaly	56	424
Sand, silty	2	426
Gravel and boulders	7	433
Sand, silty	29	462
Gravel, water-bearing	10	472

Casing: 12-inch to 350 ft, 10-inch from 294 to 424 ft, 8-inch from 408 to 462 ft, 6-inch from 414 to 472 ft; perforated from 462 ft to 472 ft.

Well 24/3-13G1

Seattle Engineering Dept., test hole 1. About 150 ft S. and 800 ft E. of center ¼ cor. Altitude about 108 ft.

Soil, clayey, yellow	5	5
"Quicksand," yellow, water-bearing	2	7
Clay, hard, blue	33	40

Well 24/3-13G2

Seattle Engineering Dept., test hole 12. About 800 ft E. of center ¼ cor. Altitude about 80 ft.

Clay, hard, yellow	18	18
Sand, yellow, and clay	2	20
Clay, hard, blue	6	26

Well 24/3-13G3

Seattle Engineering Dept., test hole 11. About 150 ft N. and 800 ft E. of center ¼ cor. Altitude about 64 ft.

Soil, clayey, yellow	8	8
Sand and gravel, water-bearing	2	10
Clay, hard, yellow	8	18
Clay, hard, blue	4	22

Well 24/3-13G4

Seattle Engineering Dept., test hole 16. About 300 ft N. and 750 ft E. of center ¼ cor. Altitude about 58 ft.

Soil, clayey, yellow	6	6
Clay, hard, yellow	13	19
"Muck" and sand, water-bearing	2	21
Clay, hard, blue	2	23

Table 7.--Drillers' logs of wells in northwest King County, Wash.--Continued

Material	Thickness (feet)	Depth (feet)
Well 24/3-13G5		
Seattle Engineering Dept., test hole 30. About 700 ft N. and 750 ft E. of center ¼ cor. Altitude about 37 ft.		
Soil, clayey, yellow	7	7
Clay, hard, yellow	9	16
Clay, hard, blue	2	18
Well 24/3-15F1		
Seattle Engineering Dept., test hole A. About 1,450 ft S. of N¼ cor. Altitude about 143 ft.		
Loam, sandy	2	2
Loam, sandy to clayey, water-bearing	1	3
Clay, dark-brown	4	7
Clay, hard, blue	3	10
Clay, blue, and fine sand	4	14
Clay, hard, blue, water-bearing	33	47
Sand, fine, and hard blue clay	5	52
Sand, fine, and blue clay	8	60
Sand, medium-fine, brown	1	61
Sand, fine, and brown clay	10	71
Sand, fine, bluish-brown, and clay	2	73
Well 24/3-15F2		
Seattle Engineering Dept., test hole D. About 1,750 ft S. of N¼ cor. Altitude about 108 ft.		
Sand, dark	18	18
Clay, soft, blue, and sand	3	21
Clay, hard, blue	19	40
Sand, fine, blue, and clay	3	43
Clay, hard, blue	2	45
Sand, fine, blue, and clay	2	47
Sand, fine, brown	5	52
Well 24/3-15F3		
Seattle Engineering Dept., test hole B. About 1,600 ft S. of N¼ cor. Altitude about 134 ft.		
Clay, yellow	8	8
Sand, fine, and yellow clay	2	10
Clay, bluish-yellow, water-bearing	1	11
Clay, hard, blue	2	13
Sand, very fine, and blue clay	4	17
Clay, blue	6	23
Clay, blue, and fine sand	5	28
Clay, hard, blue	6	34
Clay, blue	16	50
Clay, blue, and very fine sand	6	56
Sand, fine, brown	2	58

Table 7.--Drillers' logs of wells in northwest King County, Wash.--Continued

Material	Thickness (feet)	Depth (feet)
Well 24/3-15F4		
Seattle Engineering Dept., test hole F. About 1,900 ft S. of N¼ cor. Altitude about 68 ft.		
Sand, brown, and soil	3	3
Sand, fine, blue	4	7
Sand, fine, blue, and blue clay	3	10
Clay, blue, and sand	2	12
Clay, hard, blue	11	23
Clay, hard, blue, and sand	5	28
Sand, blue, and clay	1	29
Clay, hard, blue	2	31
Sand, brown	2	33
Clay, brown, and sand	1	34
Sand	9	43
Well 24/3-15G1		
Seattle Engineering Dept., test hole 15. About 2,500 ft S. and 200 ft E. of N¼ cor. Altitude about 111 ft.		
Sand, coarse, gray	12	12
Clay, blue	1	13
Clay, crumbly, blue	10	23
Sand, fine, brown	1	24
Clay, yellow	2	26
Sand, coarse, brown	1	27
Sand, fine, brown	12	39
Well 24/3-15K1		
Seattle Engineering Dept., test hole 1. About 3,550 ft S. and 350 ft E. of N¼ cor. Altitude about 51 ft.		
Clay, yellow	2	2
Clay, yellow, and blue	2	4
Sand, coarse, brown	3	7
Sand and clay, yellow	12	19
Clay and gravel, hard	5	24
Sand, reddish	2	26
Sand and gravel, coarse	6	32
Gravel	2	34
Clay, light-blue	1	35
Sand and clay, blue	1	36
Sand, reddish	1	37
Sand, coarse, gray	1	38
Sand and gravel	1	39
Gravel	2	41
Sand, coarse, gray	5	46
Clay, hard, light-blue	1	47
Sand and gravel	1	48
"Rocks," gravel, and sand	1	49
"Rock"	1	50

Table 7.--Drillers' logs of wells in northwest King County, Wash.--Continued

Material	Thickness (feet)	Depth (feet)
Well 24/3-15K2		
Seattle Engineering Dept., test hole 11. About 3,150 ft S. and 150 ft E. of N¼ cor. Altitude about 46 ft.		
Sand, brown	3	3
Sand, blue	2	5
Clay, crumbly, blue	9	14
Clay, yellow	1	15
Sand, brown	2	17
Sand, gray	2	19
Sand, coarse, brown	5	24
Sand and gravel	1	25
Sand, coarse, blue	1	26
Sand, coarse, and gravel	2	28
"Rocks"	2	30
Well 24/3-15K3		
Seattle Engineering Dept., test hole 4. About 3,400 ft S. and 200 ft E. of N¼ cor. Altitude about 91 ft.		
Topsoil	1	1
"Muck"	3	4
Gravel and sand	4	8
Sand, fine, blue	3	11
Clay, blue	1	12
Clay, hard, blue	2	14
Sand, fine, blue	1	15
Clay, blue	1	16
Clay, hard, blue	7	23
Clay, blue and yellow	1	24
Sand, fine, yellow	2	26
Sand, coarse, yellow	4	30
Clay, yellow	1	31
Clay, hard, cemented, blue	3	34
Sand, fine, brown	4	38
Clay, hard, cemented, blue	2	40
Sand, coarse, brown	5	45
Well 24/3-15K4		
Seattle Engineering Dept., test hole 13. About 2,950 ft S. and 150 ft E. of N¼ cor. Altitude about 110 ft.		
Sand, coarse, brown	9	9
Sand, gray	11	20
Clay, blue	1	21
Clay, crumbly, blue	8	29
Sand, fine, blue	1	30
Clay, hard, blue	6	36
Clay, yellow, blue	3	39
Sand, coarse, gray	1	40
Clay, hard, light-blue	1	41
Sand, coarse, brown	4	45

Table 7.--Drillers' logs of wells in northwest King County, Wash.--Continued

Material	Thickness (feet)	Depth (feet)
Well 24/3-16A1		
Washington Toll Bridge Authority, test hole. About 100 ft S. and 1,300 ft W. of NE cor. Altitude -177.8 ft.		
Shale, with some sand and clay seams	13	13
Shale, sand in varying amounts, increasing to bottom of hole	25	38
Well 24/3-16A2		
Washington Toll Bridge Authority, test hole. About 700 ft S. and 1,000 ft W. of NE cor. Altitude -226.3 ft.		
Sand	4	4
Gravel, shale, pebble, weathered	6	10
Shale with fine sand	14	24
Well 24/3-22R1		
Seattle Engineering Dept., test hole 14. About 100 ft N. of SE cor. Altitude about 97 ft.		
Sand and gravel	20	20
Clay, broken, blue, water-bearing	10	30
Clay, solid, blue	18	48
Well 24/3-23N1		
Seattle Engineering Dept., test hole 2. About 1,200 ft N. and 400 ft E. of SW cor. Altitude about 163 ft.		
Sand and gravel	40	40
Sand, fine	8	48
Sand, black, water-bearing	15	63
Clay, blue	7	70
Well 24/3-23N2		
Seattle Engineering Dept., test hole 23. About 700 ft N. and 100 ft E. of SW cor. Altitude about 25 ft.		
Sand and gravel	10	10
Sand and gravel, water-bearing	6	16
Clay, blue	5	21
Clay, broken, water-bearing	2	23
Clay, blue	12	35
Well 24/4-2Q1		
Joe Fiorito. About 950 ft N. and 850 ft W. of SE cor. Altitude about 20 ft. Drilled by N. C. Jannsen Drilling Co., 1941.		
Clay, brown	15	15
Clay, blue	10	25
Gravel	2	27
Clay, blue	33	60

Table 7.--Drillers' logs of wells in northwest King County, Wash.--Continued

Material	Thickness (feet)	Depth (feet)
Well 24/4-2Q1--Continued		
Sand and gravel	1	61
Clay, blue	14	75
Clay and sand	30	105
Sand, fine	7	112
Clay, blue	23	135
Silt	23	158
Clay	47	205
Gravel, medium, water-bearing	15	220
Clay, sandy	20	240
Silt	12	252
Clay	2	254

Casing: 6-inch; perforated 70 to 82 ft, 205 to 212 ft.

Well 24/4-5C1

Seattle Engineering Dept., test hole 28. About 1,450 ft S. and 2,600 ft E. of NW cor. Altitude 194.8 ft.

Sand and gravel, loose, brown	16	16
Sand and gravel, clayey	2	18
Clay, light-blue	18	36
Clay, light-blue, hard, fine sand seams	28	64
Clay, blue, very hard, some sand and gravel	5	69
Sand and gravel, coarse to fine, very compact	6	75

Well 24/4-5C2

Seattle Engineering Dept., test hole 26. About 850 ft S. and 1,950 ft E. of NW cor. Altitude 190.5 ft.

Sand, brown, clayey	2	2
Clay, blue, some fine sand seams	16	18
Clay, stratified, blue, and clayey silt	20	38
Clay, hard, sandy, blue	6	44
Clay, hard, stratified, silty, blue, some sand and gravel	16	60

Well 24/4-5C3

Seattle Engineering Dept., test hole 19. About 400 ft S. and 2,300 ft E. of NW cor. Altitude 266 ft.

Sand, gravelly, clayey, brown (till)	27	27
Clay, silty, blue	41	68
Sand, silty, fine, and clean sand	8	76
Boulder	----	----

Table 7.--Drillers' logs of wells in northwest King County, Wash.--Continued

Material	Thickness (feet)	Depth (feet)
Well 24/4-5C4		
Seattle Engineering Dept., test hole 17. About 300 ft S. and 1,700 ft E. of NW cor. Altitude about 107 ft.		
Gravel, sandy, clayey	2	2
Clay, silty, blue	9	11
Sand, gravelly, clayey, blue	11	22
Gravel, sandy, clayey, gray	6	28
Sand, coarse, clean, gray	3	31
Well 24/4-5G1		
Seattle Engineering Dept., test hole 33. About 1,450 ft S. and 2,900 ft E. of NW cor. Altitude 136.5 ft.		
Clay, soft, silty, gray	11	11
Clay, hard, silty, blue; layers of pure clay	17	28
Clay, silty, blue, with sand seams	4	32
Sand, compact, coarse to fine, blue-gray	8	40
Well 24/4-5J1		
Seattle Engineering Dept., test hole 3A. About 187 ft N. and 620 ft E. of center of intersection of Norman St. projected and 12th Ave. S. Altitude about 207 ft. Drilled, 1948.		
Sand, medium, brown, and fine gravel	10	10
Sand, medium, gray, wet	25	35
Clay, sandy, medium-hard, blue	8	43
Clay, medium-hard, blue	98	141
Well 24/4-5J2		
Seattle Engineering Dept., test hole 6A. About 95 ft N. of center line of Charles St. and 987 ft E. of center line of 12th Ave. S. Altitude about 137 ft. Drilled, 1948.		
Fill	6	6
Clay, sandy, medium-hard, brown	12	18
Sand, coarse, and fine to coarse, brown, gravel	9	27
Clay, sandy, medium-hard, brown	20	47
Sand, fine, compact, blue	20	67
Clay, medium-hard, blue	2	69
Well 24/4-5J3		
Seattle Engineering Dept., test hole 4C. 444 ft N. and 300 ft E. of center of intersection of Norman St. projected and 12th Ave. S. Altitude about 201 ft. Drilled 1948.		
Clay, medium-hard, brown	5	5
Clay, sandy, medium-hard, blue	4	9
Clay, sandy, medium-hard, blue	25	34
Clay, medium-hard, blue	97	131

Table 7.--Drillers' logs of wells in northwest King County, Wash.--Continued

Material	Thickness (feet)	Depth (feet)
Well 24/4-5J4		
Seattle Engineering Dept., test hole 7C. 871 ft N. and 300 ft E. of center of intersection of Norman St. projected and 12th Ave. S. Altitude about 111 ft. Drilled, 1948.		
Sand, medium, brown, water-bearing	11	11
Gravel, fine to coarse	1	12
Clay, medium-hard, blue	33	45
Well 24/4-5J5		
Seattle Engineering Dept., test hole 3E. About 160 ft N. and 23 ft E. of center of intersection of Norman St. projected and 12th Ave. S. Altitude about 229 ft. Drilled,1948.		
Fill	4	4
Sand, medium, brown	10	14
Clay, sandy, medium-hard, blue	28	42
Clay, medium-hard, blue	23	65
Clay, medium-hard, stratified, blue	15	80
Clay, medium-hard, blue	100	180
Well 24/4-5K1		
Seattle Engineering Dept., test hole 6E. About 385 ft N. and 365 ft W. of center of intersection of Norman St. projected and 12th Ave. S. Altitude about 126 ft. Drilled, 1948.		
Clay, medium-hard, blue	49	49
Clay, sandy, medium-hard, blue	10	59
Clay, medium-hard, blue	7	66
Clay, sandy, medium-hard, blue	7	73
Clay, sandy, hard, blue	3	76
Sand and gravel, clayey, compact, blue	5	81
Well 24/4-5Q1		
Seattle Engineering Dept., test hole 5F. 427 ft W. of center of intersection of Norman St. projected and 12th Ave. S. Altitude about 127 ft. Drilled, 1948.		
Clay, medium-hard, blue	28	28
Clay, hard, blue	50	78
Clay, sandy, very hard	12	90
Well 24/4-5R1		
Seattle Engineering Dept., test hole 1. About 300 ft E. of center of intersection of Norman St. projected and 12th Ave. S. Altitude about 260 ft. Drilled, 1948.		
Fill	2	2
Sand, medium, brown, and coarse gravel	12	14
Sand, clayey, compact, gray-brown	4	18
Gravel, fine to coarse	2	20
Sand, compact, and fine gravel	3	23

Table 7.--Drillers' logs of wells in northwest King County, Wash.--Continued

Material	Thickness (feet)	Depth (feet)
Well 24/4-5R1--Continued		
Gravel, fine to coarse	2	25
Sand, fine, compact, and fine gravel	4	29
"Rock"	1	30
Sand, medium, compact, brown	5	35
Sand, fine, compact, gray	4	39
Clay, hard, sandy, blue	18	57
Well 24/4-5R2		
Seattle Engineering Dept., test hole 2F. 23 ft E. of center of intersection of Norman St. projected and 12th Ave. S. Altitude about 243 ft. Drilled, 1948.		
Sand, medium-fine, and fine gravel	3	3
Sand, medium, gray-brown, and fine gravel	10	13
Sand, fine, compact, gray-brown, and fine to coarse gravel	3	16
Sand, fine, compact, gray-brown	5	21
Gravel, fine to coarse	2	23
Sand, fine, compact, blue	10	33
Sand, clayey, fine, blue	5	38
Clay, sandy, hard, blue	15	53
Clay, hard, blue	85	138
Clay, hard, blue, with hard, brittle "shale"	4	142
Clay, hard, blue	23	165
Well 24/4-8D1		
Arden Farms. About 400 ft N. and 250 ft W. of center of intersection of Massachusetts St. and Highway 99. Altitude about 10 ft. Drilled by N.C. Jannsen Drilling Co., 1926.		
Fill	14	14
Clay, blue	44	58
Gravel, cemented, hard and dry	10	68
Clay, blue	16	84
Gravel, cemented	4	88
Clay, blue	68	156
No record	2	158
Clay, blue	6	164
Clay, hard, blue	8	172
Clay, blue	28	200
No record	15	215
Gravel, water-bearing	1	216
Gravel	10	226
Gravel, cemented	6	232
Casing: 18-inch to 215 ft, 12-inch from 180 to 226 ft; perforated, 180 to 226 ft.		
Well 24/4-11A1		
A. R. Early. About 850 ft S. and 700 ft W. of NE cor. Altitude about 85 ft. Dug by Adams, 1932.		
Gravel and "hardpan"	10	10
Clay, blue, sand lenses	25	35

Table 7.--Drillers' logs of wells in northwest King County, Wash.--Continued

Material	Thickness (feet)	Depth (feet)
Well 24/4-11A1--Continued		
Clay, blue	54	89
Sand, magnetic, black	----	----

Casing: 60-inch to 45 ft, 5-inch from 45 to 89 ft.

Well 24/4-11J1

Fred Bekin. About 2,800 ft S. and 650 ft W. of NE cor. Altitude about 44 ft. Drilled by N. C. Jannsen Drilling Co., 1932.

Soil	2	2
Clay, sand	4	6
Gravel, cemented, hard	11	17
Clay, blue	43	60
Clay, blue, and "boulders," water-bearing at 110 ft	52	112
Clay, blue, and gravel	13	125
Gravel, loose	4	129
Gravel, cemented	19	148
Clay, sandy	18	166
"Boulders"	3	169
Gravel, cemented	66	235
"Hardpan" and gravel	11	246
"Boulders," loose	2	248
"Hardpan," gray	37	285
"Hardpan"	87	372
"Shale" (silt?), hard	203	575
Gravel and clay, some sand	38	613
Clay, hard, and "boulders"	45	658
"Soft spot"	9	667
Clay, sand, and "boulders"	18	685

Casing: 12-inch

Well 24/4-12D1

H. W. Attlesey. About 1,300 ft S. and 150 ft E. of NW cor. Altitude about 135 ft. Drilled by N. C. Jannsen Drilling Co., 1945.

Sand	22	22
Gravel, pea, and sand	9	31
Clay	----	----

Casing: 8-inch to 31 ft.

Well 24/4-12F2

Mercer Island Cooperative Water Association, test hole. About 1,800 ft S. and 2,050 ft E. of NW cor. Altitude about 250 ft. Drilled by N. C. Jannsen Drilling Co.

Sand	4	4
Gravel in "hardpan"	8	12
Gravel, loose	8	20
Clay, blue, with sandy clay	82	102

Table 7.--Drillers' logs of wells in northwest King County, Wash.--Continued

Material	Thickness (feet)	Depth (feet)
Well 24/4-12F2--Continued		
Clay, blue	53	155
Sand, water-bearing	5	160
Clay, blue	20	180
Sand, water-bearing	9	189
Clay, blue	51	240
Clay, sandy	10	250
Clay, blue	6	256
Well 24/4-12J1		
D. L. Duckey. About 2,200 ft N. and 500 ft W. of SE cor. Altitude about 265 ft. Dug by A. Pinkston.		
Sand, medium-grained	30	30
Sand, fine	5	35
Casing: 24-inch to 35 ft.		
Well 24/4-12M1		
Mercer Island Cooperative Water Association. About 0.03 mile S. and 0.02 mile W. of intersection of 72nd St. SE and SE 32nd St. Altitude 270.5 ft. Drilled by St. Peter, 1950.		
Topsoil	7	7
Sand, compressed	33	40
Sand	12	52
Gravel, coarse	10	62
"Hardpan"	----	----
Casing: 20-inch to 62 ft; perforated from 32 ft to 62 ft.		
Well 24/4-13B2		
L. Voulis. About 50 ft S. of SE 40th St. and 170 ft E. of 78th Ave. SE. Altitude about 200 ft. Drilled by H. O. Meyer, 1951.		
Loam, clayey	3	3
Clay, yellow	19	22
Clay, sandy, blue	28	50
Clay, very sandy, blue	10	60
Sand, water-bearing	10	70
Clay	1	71
Casing: 6-inch to 65 ft; screen, 14-slot, from 65 to 70 ft.		
Well 24/4-17A1		
Seattle Engineering Dept., test hole 5. About 1,300 ft S. and 1,000 ft W. of NE cor. Altitude 238.1 ft.		
Sand and gravel	27	27
Sand, water-bearing	8	35

Table 7.--Drillers' logs of wells in northwest King County, Wash.--Continued

Material	Thickness (feet)	Depth (feet)
Well 24/4-17A1--Continued		
Clay, blue	20	55
Sand, water-bearing	1	56
Clay, blue	19	75
Well 24/4-17C1		
Washington Highway Dept., test hole. About 1,150 ft S. and 3,600 ft W. of NE cor. Altitude about 15 ft. Driven by Raymond Concrete Pile Co., 1953.		
Sand, medium, black	18	18
Sand and organic silt, some wood	9	27
Sand, medium to fine, black, some gravel, thin silt seams, and wood	46	73
Sand, medium to fine, and stratified sandy silt	18	91
Well 24/4-17F1		
Seattle Engineering Dept., test hole 14. About 1,750 ft S. and 3,200 ft W. of NE cor. Altitude about 12 ft.		
Sand and gravel, fill	14	14
Clay, soft	10	24
Sand, medium to coarse, clean	20	44
Sand, medium to fine, trace of silt	24	68
Well 24/4-17H1		
Seattle Engineering Dept., test hole 8. About 2,150 ft S. and 950 ft W. of NE cor. Altitude 260.8 ft.		
Sand	20	20
"Hardpan"	7	27
Sand and "rock"	6	33
Clay, blue	2	35
Well 24/4-17J1		
Seattle Engineering Dept., test hole 10. About 2,350 ft N. and 900 ft W. of SE cor. Altitude about 254 ft.		
Sand and "rock"	20	20
Sand, water-bearing	7	27
Clay, dry, blue	50	77
Sand, fine, water-bearing	10	87
Clay, dry,blue	5	92

Table 7.--Drillers' logs of wells in northwest King County, Wash.--Continued

Material	Thickness (feet)	Depth (feet)
Well 24/4-17L1		
Seattle Engineering Dept., test hole 19. About 2,300 ft N. and 2,900 ft W. of SE cor. Altitude about 3 ft.		
Sand, medium to coarse, traces of silt	40	40
Sand, medium to coarse, clay lenses	5	45
Sand, medium to fine, clay lenses	7	52
Sand, clayey	6	58
Clay, fine sand, and gravel	7	65
Clay, blue, coarse sand, and gravel	3	68
Sand, coarse, and gravel	3	71
Clay, blue	3	74
Well 24/4-17M1		
Seattle Engineering Dept., test hole 7. About 1,300 ft N. and 5,100 ft W. of SE cor. Altitude about 6 ft.		
Sand, medium to coarse	11	11
Clay and silt	2	13
Clay, soft	1	14
Sand, fine	5	19
Sand, coarse	15	34
Sand, medium to fine	2	36
Sand, coarse, and wood	10	46
Sand, medium to coarse	17	63
Sand, medium to fine	11	74
Well 24/4-17P1		
Seattle Engineering Dept., test hole 26. About 350 ft N. and 2,850 ft W. of SE cor. Altitude about 15 ft.		
Sand, coarse	36	36
Clay, blue-gray	6	42
Sand, clayey	7	49
Clay, sand, and gravel	5	54
Sand, coarse, and gravel	15	69
Clay, sand, medium gravel	3	72
Well 24/4-18B1		
Elliott Bay Mill Co. About 1,300 ft S. and 2,850 ft E. of NW cor. Altitude about 10 ft.		
Sand	165	165
Gravel, cemented	95	260
Clay, blue	70	330
Clay and gravel	105	435
Gravel	23	458
Clay	12	470
Gravel	30	500
Gravel, cemented	45	545
Gravel	17	562
Boulders, bedded in clay	213	775

Table 7.--Drillers' logs of wells in northwest King County, Wash.--Continued

Material	Thickness (feet)	Depth (feet)
Well 24/4-18B1--Continued		
Sand	20	795
Clay with boulders	145	940
Clay, sandy	60	1,000
Sand, coarse	30	1,030
Clay and hard shale	197	1,227
Clay, soft	8	1,235
Shale, hard	80	1,315
Sand, coarse	31	1,346
Shale and boulders	69	1,415
Sand, coarse	104	1,519
Sand, hard	19	1,538
Gravel, cemented	12	1,550

Casing: 24-inch to 53 ft, 20-inch to 170 ft, 10-inch from 165 to 510 ft, 8-inch from 500 to 1,020 ft, 6-inch from 1,010 to 1,550 ft; perforated 410 to 510 ft, 980 to 1,020 ft, 1,350 to 1,550 ft.

Well 24/4-18Q1

Seattle Engineering Dept., test hole 1. About 450 ft N. and 3,500 ft E. of SW cor. Altitude about 5 ft.

Gravel and coarse sand	8	8
Sand, coarse	5	13
Sand, fine to medium	32	45
Sand, fine, trace of silt	12	57
Sand, medium to fine	39	96

Well 24/4-19H1

Liquid Carbonic Corp. About 140 ft S. and 140 ft W. of center of intersection of Hudson St. and Colorado Ave. Altitude about 15 ft. Drilled by N. C. Jannsen Drilling Co., 1941.

Sand	250	250
Clay	62	312
Shale	319	631

Casing: 10-inch to 76 ft, 8-inch from 0 to 260 ft; perforations from 40 ft to 250(?) ft.

Well 24/4-20N1

Washington Highway Dept., test hole 1. About 350 ft N. and 50 ft E. of SW cor. Altitude about 6 ft.

Sand, medium, brown	9	9
Sand, medium, black, some gravel	7	16
Sand, medium to coarse, black, some gravel	17	33
Sand, medium to fine, black, some silt	39	72
Silt, gray	4	76
Sand, fine, black, silt layers	10	86
Sand, medium to fine, and sandy silt	16	102
Sand, medium to fine	18	120
Sand, fine, silty	33	153

Table 7.--Drillers' logs of wells in northwest King County, Wash.--Continued

Material	Thickness (feet)	Depth (feet)
Well 24/4-25B1		
E. W. Rudow. About 400 ft S. and 2,000 ft W. of NE cor. Altitude about 80 ft. Drilled by Ralph Peterson.		
"Hardpan"	60	60
Clay, blue	50	110
Gravel	20	130
Casing: 6-inch.		
Well 24/4-25B2		
H. W. McCurdy. About 900 ft S. and 2,250 ft W. of NE cor. Altitude about 50 ft. Drilled by N.C. Jannsen Drilling Co., 1941.		
"Hardpan"	50	50
Sand and gravel	14	64
Clay	10	74
Clay, sandy	30	104
Sand and gravel, water-bearing	9	113
Clay	1	114
Casing: 6-inch to 113 ft; perforated from 104 to 113 ft.		
Well 24/4-25B3		
E. R. Hinton. About 600 ft S. and 2,050 ft W. of NE cor. Altitude about 75 ft. Drilled by H. O. Meyer, 1948.		
Topsoil and gravel	6	6
"Hardpan" and sand	34	40
Clay, some sand	20	60
Sand and gravel, water-bearing	5	65
Clay, blue	44	109
Sand and clay, water-bearing	10	119
Sand, gravel, silt, and loose clay, water-bearing	5	124
Gravel and sand, water-bearing	4	128
Casing: 6-inch to 128 ft.		
Well 24/4-25R1		
Mercer Island School Dist. 400. About 0.48 mile S. and 0.14 mile W. of center of intersection of 84th Ave. SE and SE 72nd St. Altitude about 350 ft. Drilled by N. C. Jannsen Drilling Co., 1953.		
Clay, yellow	20	20
Sand	20	40
Clay	2	42
Gravel and sand	28	70
Clay and gravel	40	110

Table 7.--Drillers' logs of wells in northwest King County, Wash.--Continued

Material	Thickness (feet)	Depth (feet)
Well 24/4-25R1--Continued		
Silt	1	111
Clay, blue	1	112
Clay and gravel	11	123
Sand	5	128
Clay and gravel	14	142
Clay	6	148
Gravel	6	154

Casing: 6-inch to 154 ft.

Well 24/4-29D1

Washington Highway Dept., test hole 6. About 850 ft S. and 250 ft E. of NW cor. Altitude about 2 ft.

Sand, medium to fine, some wood	25	25
Sand, medium to fine, silty, black	18	43
Silt, fine, sandy, some wood	11	54
Sand, fine, black, and silt	35	89
Sand, medium to fine, compact, some organic material	41	130
Silt, soft, and wood	8	138
Sand, fine, black	10	148
Silt, gray, and soft blue clay	45	193
Clay, greenish-blue, with shells	23	216

Well 24/4-30H1

Washington Highway Dept., test hole 9. About 2,200 ft S. and 50 ft W. of NE cor. Altitude -26 ft.

Sand, fine, black	13	13
Sand, fine, gray	7	20
Sand, fine, silty, black, some wood	13	33
Sand, medium to fine, silty, black	27	60
Sand, fine, silty, black	18	78
Sand, medium to fine, silty	9	87
Sand, compact, black	2	89
Sand, silty, medium to fine	13	102
Sand, fine, silty	18	120
Silt, sandy, clayey, greenish-blue, with shells	60	180
Sand, gravelly, medium, compact, blue-gray	10	190

Well 24/4-30J1

Washington Highway Dept., test hole 17. About 2,350 ft N. and 450 ft W. of SE cor. Altitude about 10 ft.

Sand, coarse to fine, brown	14	14
Sand, black, some peat	4	18
Silt, soft, gray, some peat	3	21
Sand, medium, and gray silt	15	36
Sand, medium, and some wood	25	61
Sand, medium to fine	13	74

Table 7.--Drillers' logs of wells in northwest King County, Wash.--Continued

Material	Thickness (feet)	Depth (feet)
Well 24/4-30J1--Continued		
Sand, medium, black, with layers of silt	28	102
Sand, fine, stratified, loose	22	124
Sand, fine, silt, some gravel	16	140
Sand, medium to fine, clayey, gravelly	8	148
Well 24/4-30J2		
Washington Highway Dept., test hole 15. About 1,600 ft N. and 150 ft W. of SE cor. Altitude about 7 ft.		
Gravel, sandy	6	6
Clay, sandy, blue, and wood	9	15
Sand, fine to coarse, some wood	52	67
Silt, sandy, fine	5	72
Sand, medium to fine	6	78
Sand, clayey, gravelly, blue, with shells	8	86
Silt, sandy, clayey, blue	10	96
Silt, sandy, clayey, blue, with layers of blue sandy gravel	17	113
Sand, fine, silty, gray	8	121
Well 24/5-2D1		
King County Water Dist. 97. About 0.10 mile S. of intersection of Lake Hills Blvd. and 150th Pl. SE and 40 ft E. of 150th Pl. SE. About 20 ft N. of 24/4-2D2. Altitude about 300 ft. Drilled by H. T. Harstad and Assoc., 1955.		
"Hardpan"	20	20
Sand, coarse, water-bearing	22	42
Clay, blue	42	84
Sand, fine, water-bearing	3	87
Clay, impervious	26	113
Gravel, coarse, and "rocks," water-bearing	22	135
Sand, coarse, gravel and "rocks," water-bearing	19	154
Clay, compact	2	156
Sand, coarse, and gravel, water-bearing	4	160
Casing: 12-inch to 130 ft; screen, 130 to 160 ft.		
Well 24/5-2D2		
King County Water Dist. 97. About 0.10 mile S. of intersection of Lake Hills Blvd. and 150th Pl. SE and 40 ft E. of 150th Pl. SE. About 20 ft S. of 24/5-2D1. Altitude about 300 ft. Drilled by H. T. Harstad and Assoc., 1956.		
Sand and clay	38	38
Sand, water-bearing	5	43
Silt and clay	25	68
Clay	16	84
Silt and clay	28	112
"Hardpan"	8	120
Silt and gravel	30	150
Sand and gravel	9	159

Table 7.--Drillers' logs of wells in northwest King County, Wash.--Continued

Material	Thickness (feet)	Depth (feet)
Well 24/5-2D2--Continued		
"Hardpan"	16	175
Sand, coarse to fine, water-bearing	48	223
Silt and clay	6	229

Casing: 18-inch to 187 ft, 12-inch from 0 to 220 ft; screen from 195 to 220 ft.

Well 24/5-2E1

D. D. Marshall. About 2,100 ft S. and 550 ft E. of NW cor. Altitude about 350 ft. Drilled by St. Peter, 1951.

"Hardpan"	80	80
Sand, yellow	55	135
Sand, black	30	165

Casing: 4-inch to 90 ft, 3-inch from 90 to 160 ft.

Well 24/5-3B1

C. E. Ulbrickson. About 100 ft S. and 2,200 ft W. of NE cor. Altitude about 300 ft. Drilled by H. O. Meyer, 1950.

Topsoil	2	2
Sand and clay	14	16
Clay, gray	2	18
Sand, clay, and gravel	10	28
Sand, water-bearing	2	30
Sand and clay	4	34
Sand and gravel	7	41
Clay	----	----

Casing: 6-inch to 41 ft.

Well 24/5-3G2

Sunset Hills Memorial Park. About 2,500 ft S. and 2,100 ft W. of NE cor. Altitude about 325 ft. Drilled by H. O. Meyer, 1955.

Topsoil	2	2
"Hardpan"	54	56
Sand, water-bearing	1	57
Sand, fine, and water-bearing	8	65
Sand, coarse, and gravel, water-bearing	20	85
Sand, coarse, less gravel	20	105
Clay, blue	20	125
Silt with clay	3	128
Silt, clay, water-bearing	4	132
Silt, hard	12	144
Gravel, coarse, and fine sand	10	154
Gravel, very coarse, and sand, water-bearing	35	189

Casing: 8-inch to 174 ft; screen from 174 to 189 ft.

Table 7.--Drillers' logs of wells in northwest King County, Washington.--Continued

Material	Thickness (feet)	Depth (feet)
Well 24/5-4D1		
King County Water Dist. 68. About 100 ft S. and 300 ft E. of NW cor. Altitude about 56 ft. Drilled by N. C. Jannsen Drilling Co., 1940.		
Clay	5	5
Clay, sandy	2	7
"Rocks"	28	35
Sand, gravel, and "rocks"	17	52
"Rocks"	13	65
Clay, blue	20	85
"Shale"	5	90
Clay, blue	42	132
Gravel, cemented	63	195
Gravel, loose, water-bearing	25	220
"Shale," hard	55	275
"Sandstone"	15	290
Clay, blue	20	310
Clay, blue, and "rocks"	55	365
Clay, blue	25	390
Sand, brown, water-bearing	5	395
Gravel and sand, with clay	140	535
Sand and gravel, water-bearing	55	590
Gravel, cemented	10	600
Casing: 12-inch to 127 ft, 10-inch from 40 to 120 ft, 8-inch from 127 to 600 ft; perforated from 195 to 220 ft and from 535 to 590 ft.		
Well 24/5-4E1		
G. C. Gunderson. About 2,300 ft S. and 850 ft E. of NW cor. Altitude about 50 ft. Drilled by H. O. Meyer, 1951.		
Clay, yellow	9	9
Clay, blue	6	15
"Hardpan"	5	20
Clay, blue, and gravel, water-bearing	70	90
Clay, sandy, fine	3	93
Clay	3	96
Clay, sandy, fine	39	135
Sand, and trace of clay	7	142
Sand and gravel	4	146
Casing: 6-inch to 141 ft; screen from 141 to 146 ft.		
Well 24/5-5D1		
L. H. Black. About 250 ft S. and 350 ft E. of NW cor. Altitude about 275 ft. Drilled by J. J. Bell, 1941.		
Topsoil	1	1
Clay, sticky, brown	15	16
Clay, blue	24	40
Silt, gray, water-bearing	2	42
Clay, sandy, blue	10	52

Table 7.--Drillers' logs of wells in northwest King County, Wash.--Continued

Material	Thickness (feet)	Depth (feet)
Well 24/5-5D1--Continued		
Clay, blue	63	115
Sand, gravel, and clay, blue	5	120
Sand, gravel, and clay, brown	35	155
Clay, blue	1	156
Sand, hard, and gravel, with brown clay	6	162
Gravel, cemented, gray	42	204
Clay, brown	6	210
Clay, sandy, brown	20	230
Clay, sandy, gray-blue	20	250
Silt, gray	15	265
"Sandstone," gray	18	283
Clay, blue	12	295
Sand, gray, water-bearing	39	334
Clay, brown, and wood	3	337
Sand, fine, gray, water-bearing	23	360
"Rocks," small, few showing	1	361
"Semi-hardpan," "rocks"	34	395
Sand, gray, water-bearing	21	416
"Semi-hardpan"	28	444
Sand, "rocks," dirty, water-bearing	8	452
Sand, water-bearing	48	500

Casing: 8-inch to 480 ft; screen from 480 to 500 ft.

Well 24/5-5F1

E. W. Oppliger. About 2,000 ft S. and 2,450 ft E. of NW cor. Altitude about 70 ft. Drilled by N. C. Jannsen Drilling Co., 1935.

Dug hole, no record	52	52
Sand and gravel	4	56
Clay, yellow, and gravel	3	59
Clay, blue	13	72

Casing: 8-inch to 64 ft; perforated from 54 to 64 ft.

Well 24/5-5Q2

R. A. Llewellyn. About 600 ft N. and 2,550 ft W. of SE cor. Altitude about 140 ft. Drilled by N. C. Jannsen Drilling Co., 1935.

No record	50	50
"Hardpan"	23	73
Sand, dry	35	108
Sand, water-bearing	9	117
Sand, small gravel, water-bearing	5	122

Casing: 8-inch to 122 ft.

Table 7.--Drillers' logs of wells in northwest King County, Wash.--Continued

Material	Thickness (feet)	Depth (feet)
Well 24/5-7J1		
William Jacquett. About 2,200 ft N. and 1,050 ft W. of SE cor. Altitude about 45 ft. Drilled by Van Arsdale, 1951.		
Clay, blue	45	45
Sand, coarse, and fine gravel	7	52
Casing: 6-inch to 52 ft; perforated from 42 to 52 ft.		
Well 24/5-7J2		
C. E. Wilson. About 1,950 ft N. and 1,200 ft W. of SE cor. Altitude about 50 ft. Drilled by Van Arsdale, 1951.		
Clay, blue	82	82
Sand	2	84
"Hardpan" (cemented gravel?)	11	95
Casing: 6-inch to 95 ft; perforated from 85 to 95 ft.		
Well 24/5-7K1		
Lyle Wickstrom. About 1,400 ft N. and 2,100 ft W. of SE cor. Altitude about 130 ft. Drilled by H. O. Meyer.		
"Hardpan," sandy	50	50
Clay	30	80
Silt	30	110
Clay	80	190
Sand, water-bearing	20	210
Sand and gravel, hard-packed	14	224
Casing: 6-inch to 210 ft.		
Well 24/5-7P1		
Mercer Crest Cooperative Water Assoc. About 1,050 ft N. and 1,350 ft E. of SW cor. Altitude about 275 ft. Dug by L. Bretz.		
Soil	2	2
"Hardpan"	26	28
Sand	2	30
Gravel	8	38
"Hardpan"	10	48
Sand, fine, water-bearing	29	77
Casing: 54-inch to 7 ft, 48-inch from 7 to 74 ft, 36-inch from 62 to 77 ft.		

Table 7.--Drillers' logs of wells in northwest King County, Wash.--Continued

Material	Thickness (feet)	Depth (feet)
Well 24/5-8K1		
Roy Bergerson. About 1,400 ft N. and 1,350 ft W. of SE cor. Altitude about 25 ft. Drilled by H. O. Meyer, 1951.		
Gravel	11	11
"Hardpan"	17	28
Gravel, water-bearing	3	31
Sand and gravel	2	33
"Hardpan"	3	36
Sand and gravel	9	45
Casing: 6-inch to 45 ft.		
Well 24/5-9C1		
Veterans' Mutual Bldg. Assoc. About 450 ft S. and 1,200 ft W. of N¼ cor. Altitude about 160 ft. Drilled by N. C. Jannsen Drilling Co., 1950.		
Topsoil	2	2
Sand, red	33	35
"Shale," blue	15	50
Sand, gray	15	65
Gravel	45	110
Gravel, water-bearing	30	140
Sand, blue	8	148
Casing: 10-inch to 98 ft, 8-inch from 63 to 148 ft; perforated from 100 to 140 ft.		
Well 24/5-9K2		
E. G. Kinsman. About 2,450 ft N. and 450 ft E. of SW cor. Altitude about 120 ft. Drilled by E. F. Axelson, 1947.		
Sand, hard	78	78
Clay, blue	34	112
Casing: 6-inch to 107 ft; screen from 107 to 112 ft.		
Well 24/5-9K3		
Sterling Theatres, Inc. About 1,950 ft N. and 2,050 ft W. of SE cor. Altitude about 115 ft. Drilled by Safely, 1951.		
"Hardpan"	30	30
Clay	116	146
Gravel	4	150
Sand, medium	20	170
Sand, coarse	20	190
Casing: 6-inch to 180 ft; screen from 180 to 190 ft.		

Table 7.--Drillers' logs of wells in northwest King County, Wash.--Continued

Material	Thickness (feet)	Depth (feet)
Well 24/5-10A1		
R. W. Diedrich. About 1,300 ft S. and 450 ft W. of NE cor. Altitude about 410 ft. Drilled by Lewis, 1943.		
Topsoil	5	5
"Hardpan"	60	65
Sand, blue-gray, little clay	70	135
"Quicksand," water-bearing	21	156
Sand, coarse	15	171
Casing: 4-inch.		
Well 24/5-10C2		
Century Builders, Inc. About 350 ft S. and 1,750 ft E. of NW cor. Altitude about 225 ft. Drilled by H. O. Meyer, 1955.		
"Hardpan"	40	40
Sand, some clay	10	50
Sand, clayey, water-bearing	5	55
Sand, water-bearing	45	100
Casing: 8-inch to 95 ft; screen, 8-inch, from 95 to 100 ft.		
Well 24/5-10D2		
L. R. Capper. About 850 ft S. and 1,450 ft E. of NW cor. Altitude about 65 ft. Drilled by H. O. Meyer, 1951.		
Topsoil	2	2
"Hardpan"	10	12
Clay, water-bearing	1	13
"Hardpan"	6	19
Clay, sandy, blue, with gravel	7	26
Sand, water-bearing	2	28
"Hardpan," blue	10	38
Clay, blue	5	43
"Hardpan"	3	46
Clay, blue, gravel, imbedded	9	55
"Hardpan," water-bearing	10	65
Sand and gravel, water-bearing	7	72
"Hardpan"	----	----
Casing: 6-inch to 70 ft.		
Well 24/5-10J2		
H. E. McKinney. About 1,850 ft N. and 350 ft W. of SE cor. Altitude about 325 ft. Drilled by St. Peter.		
Gravel and sand, water-bearing	35	35
"Hardpan"	35	70
Sand, yellow	20	90
Sand, black, water-bearing	13	103
Casing: 6-inch to 100 ft.		

Table 7.--Drillers' logs of wells in northwest King County, Wash.--Continued

Material	Thickness (feet)	Depth (feet)
Well 24/5-10K3		
Eastgate Shopping Center. About 2,200 ft N. and 2,100 ft W. of SE cor. About 450 ft N. of Frontage Road. Altitude about 325 ft. Drilled by L. R. Gaudio.		
"Hardpan" and cemented gravel	25	25
"Hardpan"	42	67
Gravel and sticky clay, water-bearing 55 to 60 ft	15	82
"Hardpan," with chunks of sandstone	11	93
Sandstone	72	165
Sandstone and clay	5	170
Sandstone, hard, blue	28	198
Sandstone, gray	17	215
Clay, gravel, and sand, water-bearing	15	230
Sandstone, gray	17	247
Sandstone, with sand and gravel	53	300
Sandstone	4	304
Sand and gravel, tight, and sandstone	23	327
Clay, sand, and gravel	23	350
Sandstone, with little clay	30	380
Sandstone	100	480
Casing: 12-inch to 93 ft.		
Well 24/5-11L1		
Puget Sound Air Service, Inc. About 1,700 ft N. and 2,150 ft E. of SW cor. Altitude about 325 ft. Drilled by Ralph Bennett, 1945.		
"Hardpan"	61	61
Sand and gravel	4	65
Sand and gravel, water-bearing	10	75
Casing: 6-inch to 66 ft; screen from 66 to 71 ft.		
Well 24/5-11N1		
Washington Water Service Co., Inc. About 600 ft N. and 750 ft E. of SW cor. Altitude about 350 ft. Drilled by H. O. Meyer, 1952.		
"Hardpan"	5	5
"Hardpan" and gravel, water-bearing at 8 ft	13	18
Sand, clay, and gravel	5	23
Gravel and clay, water-bearing	9	32
Clay, yellow, sand, and gravel	7	39
Gravel, medium, and sand, water-bearing	2	41
Sand and gravel	2	43
"Hardpan," water-bearing	3	46
"Hardpan," blue	1	47
Gravel, coarse, and sand	3	50
Gravel, fine, some sand	2	52
"Hardpan"	1	53
Gravel, medium, and coarse sand	4	57
Gravel, coarse, "hardpan"	2	59

Table 7.--Drillers' logs of wells in northwest King County, Wash.--Continued

Material	Thickness (feet)	Depth (feet)
Well 24/5-11N1--Continued		
Gravel, coarse	2	61
Gravel, coarse, sand, and thin layer of "hardpan"	10	71
Gravel, medium, thin layer of "hardpan"	3	74
Sand, gravel, coarse, and medium sand	5	79
Hard layer, water-bearing	1	80
Gravel and sand	2	82
Silt	28	110
Sand	2	112
Clay	10	122
Sand, coarse	1	123
Sand, silt, and clay	4	127
Sand, gray	2	129
Sand, silt, and clay	13	142
"Hardpan"	9	151
Clay, blue, or shale	89	240
Sand, gray	8	248
Clay, blue	25	273
Sandstone, lavender	67	340

Casing: 12-inch to 78 ft; screen from 78 to 83 ft.

Well 24/5-11N2

Washington Water Service Co., Inc. About 1,150 ft N. and 150 ft E. of SW cor. Altitude about 360 ft. Drilled, 1954.

"Hardpan"	10	10
"Hardpan" and gravel, sand	20	30
"Hardpan" and coarse gravel	6	36
Gravel, "hardpan," and sand	4	40
Sand, loose, and gravel	10	50
Gravel, coarse, in "hardpan"	8	58
Gravel, coarse, water-bearing	4	62
"Hardpan" and coarse gravel	4	66
Gravel and sand	6	72
Sand, coarse, "hardpan"	4	76
Sand, medium	3	79
Sand, medium, some gravel	10	89
Sand, coarse	13	102
Clay, blue	3	105

Casing: 12-inch to 86 ft, 8-inch from 0 to 93 ft; screen from 93 to 103 ft.

Table 7.--Drillers' logs of wells in northwest King County, Wash.--Continued

Material	Thickness (feet)	Depth (feet)
Well 24/5-13A1		
Henry Isaacson. About 4,300 ft N. and 300 ft W. of SE cor. Altitude about 80 ft. Drilled by N. C. Jannsen, 1933.		
Clay	6	6
Sand and "mud"	19	25
Clay, hard, blue	80	105
"Boulders," water-bearing	9	114
Sand, soft	43	157
Sand, black	94	251
Clay, sandy	54	305
Casing: 6-inch.		
Well 24/5-13D1		
--- Tweeter. About 1,100 ft S. and 150 ft E. of NW cor. Altitude about 480 ft. Drilled by Clyde Dorsten, 1952.		
"Hardpan" and boulders	45	45
Sand and gravel, water-bearing	5	50
"Hardpan" and boulders	60	110
Siltstone, gray	90	200
Casing: 6-inch to 110 ft. Backfilled to 50 ft and hole blown in casing at that point.		
Well 24/5-13N1		
Ersel Lockridge. About 350 ft N. and 200 ft E. of SW cor. Altitude about 700 ft. Drilled by H. O. Meyer.		
No record	24	24
Clay, sandy, blue	33	57
Clay, brown	6	63
Sand and gravel, pieces of wood	3	66
Clay, firm, green	23	89
Clay, brown, wood chips	11	100
Clay, green, and gravel	12	112
Clay, cream-colored	8	120
Clay, brown	6	126
Clay, green, and gravel	14	140
Clay, green	25	165
"Sandstone," dark-green, water-bearing	52	217
Casing: 6-inch to 130 ft.		

Table 7.--Drillers' logs of wells in northwest King County, Wash.--Continued

Material	Thickness (feet)	Depth (feet)
Well 24/5-14H1		
G. E. Hall. About 2,400 ft S. and 200 ft W. of NE cor. Altitude about 530 ft. Drilled by H. O. Meyer.		
No record	280	280
"Soft"	7	287
"Hard"	3	290
"Schist" and clay, (shale?)	5	295
"Hard"	5	300
"Soft"	28	328
"Hard"	5	333
Clay (shale?)	17	350
"Soft"	8	358
"Schist," hard	7	365
Clay (shale?)	10	375
"Hard"	10	385
Sand, hard (sandstone?)	25	410
Clay, gray (shale?)	4	414
Clay, gray, with a few hard spots (shale?)	21	435
Clay, sandy, soft, gray, (shale?)	7	442
Clay (shale?)	8	450
Sand (sandstone?)	15	465
Clay (shale?)	20	485
Clay, hard, and laminated sandstone	15	500
Clay, solidified (shale?)	10	510
Clay (shale?)	10	520
"Quartz," crystalline, brown	1	521
Clay (shale?)	5	526
Loose sloughings	1	527
"Shale like"	3	530
Shale and clay	8	538
Sandstone, gray-blue, water-bearing	2	540
Sandstone, gray-purple, water-bearing	1	541
Casing: 6-inch.		
Well 24/5-14J1		
Joseph Liebsack. About 2,100 ft N. and 50 ft W. of SE cor. Altitude about 680 ft. Drilled by H. O. Meyer, 1950.		
Topsoil	3	3
Gravel	7	10
Gravel, sand, and clay	15	25
Clay	10	35
Clay, sand, and gravel, fine	10	45
Sandstone, water-bearing	292	337
Casing: 6-inch to 42 ft.		

Table 7.--Drillers' logs of wells in northwest King County, Wash.--Continued

Material	Thickness (feet)	Depth (feet)
Well 24/5-14R1		
G. W. Bondo. About 600 ft N. and 150 ft W. of SE cor. Altitude about 700 ft. Drilled by H. O. Meyer, 1952.		
Gravel and boulders	20	20
Sandstone, loose	40	60
Sandstone, tight	40	100
Sandstone, loose, water-bearing	23	123
Casing: 6-inch to 60 ft.		
Well 24/5-15A2		
Eastgate Homes, Inc. About 800 ft S. and 600 ft W. of NE cor. Altitude about 360 ft. Drilled by H. O. Meyer, 1954.		
Topsoil	3	3
"Hardpan" and loose gravel	5	8
"Hardpan" and brown clay	12	20
"Hardpan," gray	14	34
"Hardpan," brown, some clay	16	50
Gravel, coarse, and sand; water-bearing	3	53
Clay, yellow, and "hardpan"	4	57
Gravel, coarse, and sand; water-bearing	4	61
"Hardpan"	13	74
"Hardpan," water-bearing	4	78
"Hardpan," yellow, and coarse gravel	3	81
"Hardpan," gray, and coarse gravel	2	83
"Hardpan," gray	7	90
"Hardpan," gray, and clay	5	95
"Hardpan," gray, and clay with thin layers of gravel	22	117
"Hardpan," and coarse gravel	18	135
"Hardpan"	3	138
Gravel, very coarse, up to 6 inches in diam	8	146
Gravel, very coarse, boulder at 147 ft	10	156
"Hardpan," yellow, and clay	10	166
Gravel, water-bearing	1	167
Sandstone, very hard, gray	30	197
"Muck," blue	28	225
Clay, sandy, brown	20	245
Sand, brown; no record	15	260?
Casing: 12-inch to 149 ft, 8-inch from 0 to 176 ft.		
Well 24/5-15B2		
Washington Water Service Co., Inc. About 600 ft S. and 2,450 ft W. of NE cor. Altitude about 430 ft. Drilled by H. O. Meyer, 1954.		
Topsoil	3	3
Sand and clay, boulders at 8 ft	10	13
Sand and clay, some gravel	13	26
"Hardpan," several layers of interbedded sand and gravel	80	106

Table 7.--Drillers' logs of wells in northwest King County, Wash.--Continued

Material	Thickness (feet)	Depth (feet)
Well 24/5-15B2--Continued		
"Hardpan" - Top of water 116 ft	10	116
Sand, coarse, and small gravel	14	130
Sand, coarser, and small gravel	4	134
Sand, very coarse, and "egg size" gravel	1	135
"Hardpan"	1	136
Gravel, sandy	6	142
"Hardpan," water-bearing at 147 ft	6	148
"Hardpan"	12	160
Clay, brown, some sand	15	175

Casing: 8-inch to 135 ft. Screen from 129 to 134.

Well 24/5-16F2

Rose S. Kibbler. About 1,700 ft S. and 1,550 ft E. of NW cor. Altitude about 160 ft. Bored by T. Killian, 1951.

Sand	8	8
"Hardpan"	22	30
Sand	24	54

Casing: 24-inch, concrete tile, to 53.5 ft.

Well 24/5-16F3

E. Mankin. About 1,450 ft S. and 1,600 ft E. of NW cor. Altitude about 160 ft. Drilled by J. C. Maxwell, 1951.

Sand	10	10
Clay, yellow, sand and gravel	2	12
"Hardpan," sandy	28	40
Sand, "mucky"	15	55
Sand and gravel	8	63
Gravel, water-bearing	1	64

Casing: 6-inch to 64 ft.

Well 24/5-16H3

John Hudack. About 2,450 ft S. and 1,000 ft W. of NE cor. Altitude about 230 ft. Drilled by R. A. Lueck, 1951.

Topsoil	16	16
Clay	68	84
Sand, water-bearing	2	86
Shale	2	88

Casing: 6-inch to 86 ft.

Table 7.--Drillers' logs of wells in northwest King County, Wash.--Continued

Material	Thickness (feet)	Depth (feet)
Well 24/5-16J1		
H. S. Karrasch. About 2,400 ft N. and 400 ft W. of SE cor. Altitude about 300 ft. Drilled by H. O. Meyer, 1951.		
Siltstone	180	180
Casing: 6-inch to 45 ft.		
Well 24/5-16M1		
J. R. Cluck. Lake Heights well 1. About 400 ft S. and 50 ft W. of NE cor. NW¼, SW¼. Altitude about 65 ft. Drilled by J. J. Bell, 1951.		
Soil, sandy	7	7
Gravel, sand, and clay	2	9
Clay, brown, and gravel	10	19
Clay, blue, and gravel	17	36
"Shale," blue	4	40
Clay, blue	45	85
Clay, blue, sand and gravel, very hard	20	105
Clay, "fat," blue	169	274
Sand and "shale," intercalated, blue	3	277
Casing: 6-inch to 277 ft.		
Well 24/5-16N1		
J. R. Cluck. Lake Heights well 2. About 150 ft N. and 850 ft E. of SW cor. Altitude about 225 ft. Drilled by H. O. Meyer, 1952.		
Sand	7	7
Clay	23	30
Clay and "hardpan"	80	110
Gravel and "hardpan"	20	130
Gravel	15	145
Peat	1	146
Gravel and sand, coarse	4	150
"Hardpan," and silt	20	170
Casing: 6-inch to 140 ft; screen from 140 to 150 ft.		
Well 24/5-18B1		
M. I. Stucky. About 100 ft S. and 2,450 ft W. of NE cor. Altitude about 305 ft. Drilled by Leo Bretz.		
Silt, brown, sand, and clay	60	60
Sand, fine	5	65
Clay, blue	205	270
Casing: 48-inch to 60 ft. Test hole drilled from 65 to 270 ft.		

Table 7.--Drillers' logs of wells in northwest King County, Wash.--Continued

Material	Thickness (feet)	Depth (feet)
Well 24/5-18G1		
M. E. Kristoferson. About 2,500 ft S. and 2,700 ft E. of NW cor. Altitude about 350 ft. Drilled by St. Peter, 1951.		
"Hardpan"	75	75
Sand and gravel	70	145
Casing: 20-inch to 145 ft; perforated from 125 to 145 ft.		
Well 24/5-19D1		
L. P. Bonifaci. About 1,050 ft S. and 650 ft E. of NW cor. Altitude about 230 ft. Dug by owner, 1949.		
Sand	8	8
"Hardpan"	2	10
Sand and gravel	17	27
Casing: 30-inch, concrete tile, to 27 ft.		
Well 24/5-19P1		
Carl Alson. About 400 ft N. and 1,400 ft E. of SW cor. Altitude about 300 ft. Drilled by Clyde Dorsten, 1953.		
"Hardpan"	25	25
Sand, coarse, and fine gravel	6	31
Sand, coarse	2	33
Sand, medium	4	37
Sand, coarse	2	39
Sand, medium	4	43
Casing: 6-inch to 43 ft. Perforated.		
Well 24/5-19P2		
Carl Alson. About 1,000 ft N. and 2,200 ft E. of SW cor. Altitude about 325 ft. Drilled by Clyde Dorsten, 1953.		
"Hardpan"	50	50
Sand, fine	20	70
Clay, silty	40	110
Clay, silty, interbedded with silt	102	212
Casing: 6-inch, pulled back to 50 ft.		
Well 24/5-20H1		
Oscar Granfelt. About 2,350 ft S. and 1,050 ft W. of NE cor. Altitude about 220 ft. Drilled by H. O. Meyer, 1951.		
"Hardpan," porous	100	100
Sand	80	180
Casing: 6-inch, to 175 ft; screen from 174 to 180 ft.		

Table 7.--Drillers' logs of wells in northwest King County, Wash.--Continued

Material	Thickness (feet)	Depth (feet)
Well 24/5-23C1		
Hill Top Community. About 170 ft N. and 260 ft E. of intersection of SE 50th St. and 151 Ave. SE. Altitude about 840 ft. Drilled by N. C. Jannsen, 1948.		
Clay, hard, and roots	1	1
"Liquid mud"	12	13
"Clay hardpan" and gravel	11	24
Gravel, loose, and mud	28	52
Sandstone, with streaks of clay (shale?), water-bearing	260	312
Casing: 12-inch to 21 ft, 8-inch from 0 to 65 ft.		
Well 24/5-23E1		
Horizon View Co., Inc. About 190 ft S. and 60 ft E. of center of intersection of 151 Ave.SE and 152Pl. SE. Altitude about 980 ft. Drilled by H. O. Meyer, 1950.		
Loose formation	5	5
Sandstone, compact	20	25
Shale, soft, small amount of clay	10	35
Sandstone and shale, in alternate layers	95	130
Sandstone, decomposed, water-bearing	75	205
Shale, dark	15	220
Sand, gray	7	227
Shale, sandy	10	237
Sandstone, hard	10	247
Sand, coarse	11	258
Basaltlike material, gray	4	262
Sandstone, gray	32	294
Sandstone, hard, gray	59	353
No record	32	385
Casing: 12-inch to 12 ft.		
Well 24/5-24N2		
--- Paschal. About 550 ft N. and 1,250 ft E. of SW cor. Altitude about 1,085 ft. Drilled by H. O. Meyer, 1952.		
Loose material, brownish	7	7
Sandstone	23	30
Hard layer	2	32
Sandstone	13	45
Clay, gray, some sand, very hard at 68 ft	23	68
Shale, gray	343	411
Sandstone, coarse	6	417
Shale, gray, siltstone in layers, water-bearing	43	460
Shale, gray	90	550

Table 7.--Drillers' logs of wells in northwest King County, Wash.--Continued

Material	Thickness (feet)	Depth (feet)
Well 24/5-24Q1		
R. Dowling. About 1,350 ft N. and 1,250 ft W. of SE cor. Altitude about 1,010 ft. Drilled by H. O. Meyer, 1951.		
"Hardpan" and boulders	40	40
Shale	30	70
Sandstone, water-bearing	31	101
Casing: 6-inch to 60 ft.		
Well 24/5-24Q2		
Bill Price. About 1,000 ft N. and 1,400 ft W. of SE cor. Altitude about 1,050 ft. Drilled by H. O. Meyer, 1952.		
Topsoil and boulders	15	15
Sand and gravel	3	18
Gravel and boulders	7	25
Sand, brown	22	47
Gravel and sand, water-bearing	4	51
Clay	2	53
Shale	11	64
"Black rock"	21	85
Sandstone, brown	5	90
Sandstone, black, water-bearing	70	160
Sandstone, gray	40	200
Sandstone, purple	3	203
Casing: 6-inch to 74 ft.		
Well 24/5-24R2		
W. E. Russell. About 400 ft N. and 350 ft W. of SE cor. Altitude about 1,150 ft. Drilled by H. O. Meyer, 1958.		
Fill	4	4
Sandstone, yellow, and clay	12	16
Sandstone, yellow, and clay with fissure and water-bearing	8	24
Sandstone, blue, and clay	20	44
Sandstone and clay	51	95
Sandstone, blue-green, soft clay	5	100
Sandstone, hard, blue-green	4	104
Sandstone, soft, blue-green	4	108
Sandstone, hard, blue-green	10	118
Sandstone, hard, blue-green, water-bearing	20	138
Sandstone, broken, hard, blue	15	153
Sandstone, gravel, particles	10	163
Sandstone and loose sand	7	170
Gravel, fine, and sandstone	24	194
Sandstone, blue, and gravel	16	210
Sandstone, black	25	235
Sandstone, dark, with metallike particles	30	265
Casing: 10-inch to 19 ft, 8-inch to 47 ft.		

Table 7.--Drillers' logs of wells in northwest King County, Wash.--Continued

Material	Thickness (feet)	Depth (feet)
Well 24/5-29B1		
H. O. Marshall. About 600 ft S. and 1,400 ft W. of NE cor. Altitude about 260 ft. Dug.		
"Hardpan"	24	24
Sand and gravel	4	28
Casing: 36-inch to 28 ft.		
Well 24/5-32B1		
I. L. Shaw. About 300 ft N. and 2,300 ft W. of SE cor. Altitude about 50 ft. Drilled by J. J. Bell.		
Clay	70	70
Sand and gravel, water-bearing	2	72
Casing: 6-inch to 72 ft.		
Well 24/5-32J1		
A. A. Brewer. About 2,300 ft N. and 300 ft W. of SE cor. Altitude about 330 ft. Drilled by J. J. Bell.		
"Hardpan" and clay	81	81
Sand and gravel, dry	42	123
Sand, hard, brown, and clay	30	153
"Hardpan," blue	15	168
Clay, sandy, brown	32	200
Sand and gravel, brown, water-bearing	16	216
Sand, blue, water-bearing	29	245
Sand, brown, dirty, water-bearing	----	----
Casing: 6-inch to 240 ft; screen from 240 to 245 ft.		
Well 24/6-3E1		
Harry Winkler. About 2,000 ft S. and 300 ft E. of NW cor. Altitude about 560 ft. Drilled by H. O. Meyer, 1951.		
Clay, loose, sand and gravel	3	3
Sand, clay, and boulders	11	14
Clay, gravel, hard	13	27
Clay, soft, blue	8	35
Sand and gravel, loose	5	40
Sand, blue, layer of clay	10	50
Gravel, loose	5	55
Gravel, clay, and sand	7	62
Clay, blue, "rocks"	4	66
Clay, blue	26	92
Clay, blue, and gravel, water-bearing	25	117
Clay, blue, and gravel	14	131
"Hardpan"	32	163
Gravel, water-bearing	13	176
Casing: 6-inch to 176 ft; perforated from 171 to 176 ft.		

Table 7.--Drillers' logs of wells in northwest King County, Wash.--Continued

Material	Thickness (feet)	Depth (feet)
Well 24/6-4E1		
Jim Harvey. About 1,550 ft S. and 150 ft E. of NW cor. Altitude about 375 ft. Drilled by H. O. Meyer, 1945.		
"Hardpan"	160	160
Gravel, loose	26	186
Casing: 6-inch to 186 ft; perforated from 176 to 186 ft.		
Well 24/6-4N1		
King County Water Dist. 82. About 700 ft N. and 1,250 ft E. of SW cor. About 85 ft E. of 24/6-4N2. Altitude about 450 ft. Drilled by H. O. Meyer, 1952.		
Sand and gravel	2	2
Gravel, coarse	4	6
"Hardpan"	14	20
Sand and "hardpan"	4	24
Sand, water-bearing	4	28
"Hardpan"	22	50
Gravel, dry	6	56
"Hardpan"	9	65
Gravel, coarse, and sand	23	88
Clay and sand	3	91
Sand and clay	2	93
Gravel, medium, and yellow sand	31	124
Gravel, coarse	2	126
Gravel, fine, and sand	7	133
Sand and clay	5	138
Gravel and sand	1	139
Gravel, coarse	3	142
Sand and gravel	3	145
"Hardpan," and fine gravel	3	148
Gravel, coarse	4	152
Gravel, sand, and clay	3	155
Sand, coarse to fine	11	166
Sand, fine	18	184
Sand, brown	7	191
Sand, gray, water-bearing	6	197
Sand, fine, gray	10	207
Clay, gray	15	222
"Hardpan," coarse, gray	8	230
"Hardpan," coarse, gravel, and clay	4	234
Clay, sand, and gravel	2	236
Gravel, coarse, water-bearing	2	238
"Hardpan"	2	240
Gravel, coarse, water-bearing	7	247
"Hardpan"	1	248
Gravel	6	254
Clay and sand	7	261
Gravel	2	263
Clay and gravel	3	266

Table 7.--Drillers' logs of wells in northwest King County, Wash.--Continued

Material	Thickness (feet)	Depth (feet)
Well 24/6-4N1--Continued		
Clay, blue, and sand	4	270
Gravel, water-bearing	2	272
"Hardpan," clay, and sand	1	273
Gravel and sand, coarse	6	279
"Hardpan," clay, and sand	1	280
Gravel and sand, coarse	5	285
Sand, coarse, and fine gravel	6	291
Clay, hard, gray	9	300

Casing: 10-inch to 261 ft, 8-inch, from 250 to 291 ft; perforated, from 273 to 288 ft.

Well 24/6-4N2

King County Water Dist. 82. About 700 ft N. and 1,150 ft E. of SW cor. About 85 ft W. of 24/6-4N1. Altitude about 450 ft. Drilled by Western Drilling and Equipment Co.

Clay, brown, and topsoil	2	2
"Hardpan"	29	31
Gravel, loose	2	33
"Hardpan" with boulders	58	91
Sand, loose, and gravel	2	93
"Hardpan"	11	104
Sand, loose, fine, and gravel	29	133
Sand, coarse, gravel, and small boulders	18	151
Silt, sandy, and clay	41	192
Sand, fine, blue, with clay	48	240
Gravel, medium	3	243
Sand, fine	7	250
"Hardpan"	10	260
Sand and gravel, water-bearing	4	264
"Hardpan"	7	271
Sand, fine	4	275
"Hardpan"	6	281
Sand, fine, and clay	4	285
Clay and fine sand	13	298
Sand, fine, water-bearing	3	301
Clay and gravel	2	303
Gravel, water-bearing	5	308
Sand, water-bearing	1	309
"Hardpan"	4	313
Gravel, water-bearing	3	316
Sand, water-bearing	10	326
Clay, some peat	14	340
Gravel and sand, fine	6	346

Casing: 12-inch to 68.5 ft, 10-inch from 0 to 246 ft; perforated from 260 to 265 ft, and 303 to 317 ft.

Table 7.--Drillers' logs of wells in northwest King County, Wash.--Continued

Material	Thickness (feet)	Depth (feet)
Well 24/6-5H1		
--- Cochrane. About 1,900 ft S. and 100 ft W. of NE cor. Altitude about 350 ft. Drilled by H. O. Meyer.		
Gravel and "hardpan"	50	50
Clay	80	130
Sand	20	150
Gravel	3	153
Casing: 6-inch to 153 ft.		
Well 24/6-6A2		
Tom Mason. About 250 ft S. and 550 ft W. of NE cor. Altitude about 40 ft. Drilled by John Malcolm.		
Clay	34	34
"Hardpan"	34	68
Sand, varying coarse and fine	35	103
"Bedrock"	----	----
Casing: 6-inch to 103 ft; perforations at about 68 ft.		
Well 24/6-8D1		
H. F. Woods. About 700 ft S. and 1,200 ft E. of NW cor. Altitude about 407 ft. Drilled by H. O. Meyer, 1951.		
Topsoil	4	4
"Hardpan" and gravel	16	20
"Hardpan" and sand	20	40
Sand and clay	16	56
Gravel	4	60
"Hardpan" and gravel	20	80
Sand and gravel, fine, water-bearing	5	85
Gravel, fine, and sand	12	97
Sand and clay	13	110
Clay	10	120
"Hardpan" and gravel	8	128
Gravel	4	132
Clay, blue, sand, and gravel, water-bearing	8	140
Sand and gravel, water-bearing	8	148
Clay, blue	3	151
Sand and clay, brown	11	162
"Hardpan" and gravel	6	168
Gravel, coarse	7	175
"Hardpan" and clay	4	179
Clay, water-bearing	2	181
Gravel, coarse	9	190
"Boulders"	1	191

Table 7.--Drillers' logs of wells in northwest King County, Wash.--Continued

Material	Thickness (feet)	Depth (feet)
Well 24/6-8D1--Continued		
Sand, gravel, and clay	8	199
Gravel	1	200
Clay and sand	12	212
Clay, brown, and sand	43	255
Clay, blue	10	265
Clay, blue, sand, and gravel	72	337

Casing: 6-inch to 300 ft, 4-inch from 275 to 334 ft.

Well 24/6-8F1

Edwin Bond. About 2,200 ft S. and 2,050 ft E. of NW cor. Altitude about 380 ft. Drilled by H. O. Meyer, 1950.

Topsoil	2	2
"Hardpan"	26	28
"Hardpan" and coarse gravel	22	50
Sand	5	55
Sand and clay	17	72
"Hardpan," "rock," large, and coarse gravel	28	100
Clay	8	108
"Hardpan"	12	120
Clay and "hardpan"	20	140
Gravel, loose, water-bearing	6	146
"Hardpan" and gravel	6	152
Clay and sand	21	173
Gravel, water-bearing	15	188
Sand, clay, water-bearing	5	193
Silt, water-bearing	5	198
Clay, laminated	22	220
Clay, hard	70	290
Silt	28	318
Clay, laminated, blue	12	330
Clay, soft, gray	6	336
Gravel	6	342

Casing: 6-inch to 342 ft; perforated for 18 inches at about 340 ft.

Well 24/6-8K1

Erickson & Sons Poultry Farm. About 2,300 ft N. and 1,650 ft W. of SE cor. Altitude about 415 ft. Dug by Erickson, 1931.

Topsoil	2	2
"Hardpan"	60	62
Gravel, coarse, and sand	50	112
Sand	48	160
Sand, cemented	2	162
Sand, fine	10	172
Clay, blue	----	----

Casing: 32-inch to 160 ft, 12-inch from 160 to 172 ft.

Table 7.--Drillers' logs of wells in northwest King County, Wash.--Continued

Material	Thickness (feet)	Depth (feet)
Well 24/6-9A3		
Bill Hanson. About 850 ft S. and 900 ft W. of NE cor. Altitude about 395 ft. Drilled by H. O. Meyer, 1950.		
Gravel	18	18
"Hardpan" and coarse gravel	17	35
"Hardpan"	15	50
Gravel and "hardpan"	15	65
Sand and gravel	5	70
Gravel, water-bearing	18	88
Gravel, clean, water-bearing	8	96
Casing: 6-inch.		
Well 24/6-9G1		
R. J. Swenson. About 1,450 ft S. and 2,250 ft W. of NE cor. Altitude about 400 ft. Drilled by H. O. Meyer.		
"Hardpan"	85	85
Sand	26	111
Casing: 6-inch to 105 ft; screen from 105 to 111 ft.		
Well 24/6-9H1		
G. Peterson. About 1,750 ft S. and 1,300 ft W. of NE cor. Altitude about 400 ft. Drilled by H. O. Meyer, 1950.		
"Hardpan"	80	80
Gravel, coarse, and sand	21	101
Casing: 6-inch to 101 ft.		
Well 24/6-9J1		
Providence Heights College. About 2,085 ft N. and 100 ft W. of SE cor. Altitude about 438 ft. Drilled by L. R. Gaudio, 1958.		
Topsoil	2	2
"Hardpan," sandy	5	7
"Hardpan"	34	41
Sand and gravel, coarse	54	95
Sand and gravel, with boulders	21	116
Sand and gravel, coarse, water-bearing	14	130
"Hardpan"	12	142
Clay, blue	60	202
Clay or shale, hard, blue	8	210
Casing: 12-inch to 128 ft; screen from 128 to 132 ft.		

Table 7.--Drillers' logs of wells in northwest King County, Wash.--Continued

Material	Thickness (feet)	Depth (feet)
Well 24/6-10E1		
A. M. Braydon. About 1,600 ft S. and 150 ft E. of NW cor. Altitude about 430 ft. Drilled by H. O. Meyer, 1947.		
Topsoil	3	3
Gravel	7	10
Clay and sand	6	16
Gravel, water-bearing	8	24
Gravel and sand	20	44
Clay and sand	16	60
Gravel	84	144
Casing: 6-inch to 144 ft.		
Well 24/6-10P1		
Phillip Frink. About 200 ft N. and 1,650 ft E. of SW cor. Altitude about 350 ft. Drilled by H. O. Meyer, 1952.		
Gravel	6	6
"Hardpan"	12	18
"Hardpan" and gravel	12	30
"Hardpan," soft, water-bearing	1	31
"Hardpan" and gravel	18	49
Sand, water-bearing	5	54
Gravel, water-bearing	5	59
Casing: 6-inch to 59 ft.		
Well 24/6-10Q1		
H. Shultz. About 100 ft N. and 1,550 ft W. of SE cor. Altitude about 390 ft. Drilled by H. O. Meyer.		
Topsoil	4	4
"Hardpan"	27	31
Sand and gravel, water-bearing	20	51
Casing: 6-inch to 51 ft.		
Well 24/6-14P1		
J. H. Mills. About 950 ft N. and 1,700 ft E. of SW cor. Altitude about 425 ft. Drilled by H. O. Meyer, 1952.		
"Hardpan"	10	10
Gravel	1	11
"Hardpan"	51	62
Sand, fine, brown, and gravel; water-bearing	13	75
Sand, medium, and fine gravel	20	95
Sand, coarse, and fine gravel	6	101
Casing: 6-inch to 101 ft.		

Table 7.--Drillers' logs of wells in northwest King County, Wash.--Continued

Material	Thickness (feet)	Depth (feet)
Well 24/6-15B2		
P. J. Hobbs. About 800 ft S. and 1,950 ft W. of NE cor. Altitude about 420 ft. Drilled by H. O. Meyer, 1949.		
Topsoil	3	3
"Hardpan"	5	8
Sand and gravel	12	20
Gravel	5	25
Sand, clay, and fine gravel	22	47
Sand, gravel, and clay; water-bearing	4	51
Sand and gravel, water-bearing	9	60
Casing: 4-inch to 60 ft.		
Well 24/6-16E1		
R. G. Haldeman. About 1,750 ft S. and 750 ft E. of NW cor. Altitude about 100 ft. Drilled by H. O. Meyer, 1952.		
Clay, yellow	22	22
Clay, blue	13	35
Sand	1	36
Clay, blue	10	46
Sand	1	47
Clay, blue	53	100
Clay, blue, and sand	50	150
Silt and sand	34	184
Sand, coarse, water-bearing	16	200
Silt and clay	27	227
Casing: 6-inch to 191 ft; screen from 191 to 196 ft.		
Well 24/6-18E1		
A. J. Peters, Jr. About 3,450 ft N. and 750 ft E. of SW cor. Altitude about 120 ft. Dug by owner, 1952.		
Clay	6	6
"Hardpan"	18	24
Gravel, dry	6	30
Sand, gravel, and "hardpan"	5	35
"Hardpan" and sand, interbedded	5	40
Well 24/6-19L1		
A. Perrow. About 1,450 ft N. and 2,450 ft E. of SW cor. Altitude about 740 ft.		
"Hardpan"	66	66
Shale	1	67
Casing: 48-inch to 67 ft.		

Table 7.--Drillers' logs of wells in northwest King County, Wash.--Continued

Material	Thickness (feet)	Depth (feet)
Well 24/6-19P1		
Edgehill Water Assoc. About 900 ft N. and 2,450 ft E. of SW cor. Altitude about 775 ft. Drilled by J. J. Bell, 1953.		
Topsoil	2	2
Clay, brown, sand, and pebbles	20	22
Shale, vari-colored	48	70
Sandstone, laminated, blue, water-bearing	75	145
Silt, hard, blue	105	250
Silt, hard, blue, and sand	5	255
Casing: 8-inch to 65 ft.		
Well 24/6-19Q1		
U.S. Army Corps of Engineers. About 1,100 ft N. and 2,200 ft W. of SE cor. Altitude 708.1 ft. Drilled by Service Hardware, 1954.		
Topsoil	2	2
Clay, soft, "rock fragments"	4	6
Sand, silty, dark gray	31	37
Sand, silty, gravelly	31	68
Gravel, sandy	3	71
Sandstone, fine to medium-grained	19	90
Sandstone, fine-grained, gray-green	237	327
Casing: 10-inch to 71 ft, 8-inch from 66 to 327 ft; perforated from 120 to 130 ft and from 230 to 250 ft.		
Well 24/6-21J1		
Al Peters. About 2,400 ft N. and 1,100 ft W. of SE cor. Altitude about 50 ft. Drilled by H. O. Meyer.		
Topsoil	2	2
Clay, soft, and peat	9	11
Sand, gravel, and clay	24	35
"Hardpan"	35	70
Sand, dirty, and gravel	30	100
Sand, fine, and some small gravel; water-bearing	20	120
Sand and small gravel	20	140
"Hardpan"	10	150
Casing: 6-inch.		
Well 24/6-21N1		
Pickering Bros. About 600 ft N. and 500 ft E. of SW cor. Altitude about 51 ft. Drilled by H. O. Meyer, 1955.		
"Muck" and clay	57	57
Clay and silt	13	70
Silt and sand	1	71
Sand and gravel	5	76
Casing: 6-inch to 71 ft; screen from 71 to 76 ft.		

Table 7.--Drillers' logs of wells in northwest King County, Wash.--Continued

Material	Thickness (feet)	Depth (feet)
Well 24/6-22H1		
G. W. Sherrell. About 1,500 ft S. and 1,100 ft W. of NE cor. Altitude about 430 ft. Drilled by Charles Olson.		
Sand and gravel	12	12
"Hardpan"	39	51
Sand and gravel	3	54
Casing: 48-inch, concrete tile, to 12 ft.		
Well 24/6-22L2		
Bert Keleman. About 2,000 ft N. and 2,200 ft E. of SW cor. Altitude about 390 ft. Drilled by H. O. Meyer, 1950.		
Topsoil	3	3
"Boulders" and gravel	12	15
Sandstone, shale, and clay, in alternate layers	105	120
Gravel, loose, water-bearing	7	127
Sandstone	11	138
Casing: 6-inch.		
Well 24/6-27D1		
Lakeside Gravel Co. About 700 ft S. and 1,125 ft E. of NW cor. Altitude about 75 ft. Drilled by Safely.		
Sand and gravel	11	11
"Hardpan"	9	20
Gravel, coarse, water-bearing	2	22
"Hardpan"	19	41
Gravel, coarse, water-bearing	7	48
Gravel, medium, water-bearing	10	58
Casing: 12-inch to 58 ft; perforated from 48 to 57 ft.		
Well 24/6-27D2		
Lakeside Gravel Co. About 700 ft S. and 1,125 ft E. of NW cor. Altitude about 80 ft. Drilled by L. R. Gaudio.		
Sand and gravel	16	16
Sand, brown, clay, and gravel	14	30
Gravel, coarse, clean, brown	12	42
Gravel, coarse, black, muddy	4	46
Casing: 12-inch to 33 ft; screen from 31 to 42 ft.		

Table 7.--Drillers' logs of wells in northwest King County, Wash.--Continued

Material	Thickness (feet)	Depth (feet)
Well 24/6-27D3		
Lakeside Gravel Co. About 700 ft S. and 900 ft E. of NW cor. Altitude about 75 ft. Drilled by L. R. Gaudio.		
"Hardpan"	30	30
Clay, yellow	1	31
Sand	21	52
Gravel and sand, tight, water-bearing	10	62
Casing: 12-inch to 52 ft; screen from 52 to 62 ft.		
Well 24/6-27Q2		
City of Issaquah. About 350 ft N. and 1,450 ft W. of SE cor. Altitude about 250 ft. Drilled by A. A. Day, 1948.		
"Boulder slide"	32	32
Clay, blue	80	112
Sandstone and shale	78	190
Sand and gravel (conglomerate)	110	300
Casing: 8-inch to 280 ft; screen from 280 to 300 ft.		
Well 24/6-28F1		
Roy Pickering. About 2,450 ft S. and 1,400 ft E. of NW cor. Altitude about 210 ft. Drilled by H. O. Meyer, 1954.		
"Muck" and clay	16	16
"Hardpan" and boulders	24	40
"Hardpan"	40	80
Clay and silt	40	120
Silt and sand, with clay streaks; water-bearing at 140 ft	57	177
Sand and clay, water-bearing	20	197
Casing: 6-inch to 187 ft, screen from 187 to 197 ft.		
Well 24/6-28J1		
Darigold Farms. About 2,050 ft N. and 100 ft W. of SE cor. Altitude about 80 ft. Drilled by R. P. Safely, 1949.		
Topsoil	3	3
"Hardpan" and "rocks"	5	8
"Hardpan," yellow	17	25
Gravel, water-bearing	5	30
"Hardpan," yellow clay, and gravel	2	32
Gravel, fine, and sand	10	42
Gravel, fine, brown sand, and "basalt," water-bearing	12	54
Casing: 12-inch to 54 ft; perforated from 40 to 50 ft.		

Table 7.--Drillers' logs of wells in northwest King County, Wash.--Continued

Material	Thickness (feet)	Depth (feet)
Well 24/6-33L1		
Mount Park Estates. About 2,400 ft N. and 1,400 ft E. of SW cor. Altitude about 570 ft. Drilled by H. O. Meyer, 1955.		
Topsoil	2	2
"Hardpan"	31	33
Gravel, coarse, and some boulders	10½	43½
Sandstone, brown	5½	49
Sandstone, gray	31	80
Sandstone, purple	5	85
Sandstone, gray	20	105
Shale and coal	5	110
Sandstone, brown	18	128
Coal	6	134
Sandstone, white, water-bearing	86	220
Coal and shale	10	230
Sandstone, water-bearing	10	240
Sandstone, soft	15	255
Coal, water-bearing	5	260
Clay, white	5	265
Casing: 8-inch to 57 ft.		
Well 24/7-4M1		
Gordon Ransom. About 1,500 ft N. and 1,300 ft E. of SW cor. Altitude about 85 ft. Dug, 1930.		
Soil	11	11
Sand	8	19
Gravel	5	24
"Quicksand"	----	----
Casing: 24-inch, tile, to 23 ft.		
Well 24/7-8J1		
W. E. Boeing. About 1,500 ft N. and 150 ft W. of SE cor. Altitude about 100 ft. Drilled by H. O. Meyer, 1952.		
Gravel	15	15
Clay, yellow	15	30
Sand, water-bearing	33	63
Clay and silt	35	98
Sand, fine	6	104
Silt, rocks, and clay	16	120
Clay	10	130
Casing: 6-inch to 98 ft; screen, from 98 to 104 ft.		

Table 7.--Drillers' logs of wells in northwest King County, Wash.--Continued

Material	Thickness (feet)	Depth (feet)
Well 24/7-9E1		
F. Crittenden. About 2,100 ft S. and 200 ft E. of NW cor. Altitude about 80 ft. Drilled by H. O. Meyer, 1946.		
"Hardpan," loose	35	35
Clay and sand	15	50
Sand, coarse, sharp	15	65
Casing: 6-inch to 59 ft; screen, from 59 to 65 ft.		
Well 24/7-10C1		
C. F. Alexander. About 950 ft S. and 2,100 ft E. of NW cor. Altitude about 79 ft. Drilled by H. O. Meyer, 1951.		
Topsoil	3	3
"Hardpan"	22	25
Gravel	27	52
Clay, blue	----	----
Casing: 8-inch to 52 ft; perforated from 25 to 49 ft.		
Well 24/7-15F1		
Fall City Water Co. About 70 ft S. of the cen. of the W. end of 3rd St. Drilled by H. O. Meyer, 1959.		
Topsoil, sandy	6	6
Gravel, very coarse	20	26
Gravel with sand	6	32
Gravel, loose	3	35
Gravel, some sand	26	61
Gravel, sand, some clay	26	87
Gravel and sand	11	98
Gravel and sand (water, 50 gpm)	5	103
Clay, blue, and fine sand	19	122
Sand, gray, some clay	16	138
Clay	6	144
Gravel, gray sand	7	151
Sand, fine, and gravel	19	170
Gravel, sand, water-bearing	6	176
Sand, silt, and gravel	4	180
Sand and gravel	7	187
Sand, coarse, and gravel	10	197
Sand, very clean, and gravel	9	206
Clay	1	207
Casing: 16-inch to 20 ft; 8-inch to 206 ft; screen from 191 to 206 ft.		

Table 7.--Drillers' logs of wells in northwest King County, Wash.--Continued

Material	Thickness (feet)	Depth (feet)
Well 24/7-21A1		
Grace Johnson. About 150 ft S. and 1,250 ft W. of NE cor. Altitude about 400 ft. Drilled by H. O. Meyer, 1951.		
Topsoil	3	3
Sand, brown, and clay	15	18
Clay, blue, and sand	72	90
Sand	1	91
Clay, blue-gray	9	100
Clay, gray, and sand	50	150
Clay, brown	10	160
Clay, soft, and sand	24	184
Gravel, fine	1	185
Clay and sand	3	188
Gravel and clay, water-bearing	12	200
Gravel, water-bearing	1	201
Clay, water-bearing	44	245
Gravel, coarse, water-bearing	12	257
Clay, gray	14	271
Sand	12	283
Casing: 6-inch to 250 ft, 4-inch from 240 to 283 ft.		
Well 25/3-11K1		
Stimson Mill Co. About 50 ft N. and 300 ft W. of intersection of Shilshole Ave. and 22nd Ave. NW. Altitude about 15 ft. Drilled by N. C. Jannsen Drilling Co., 1939.		
Gravel	36	36
Gravel, and some clay in layers	87	123
Clay	11	134
Gravel, cemented	23	157
Clay, hard, sticky, blue	108	265
Gravel, hard	10	275
Clay, sticky	27	302
Gravel	23	325
Clay, and cemented gravel	20	345
Gravel and sand	5	350
Clay	16	366
Gravel	46	412
Clay	18	430
Gravel	33	463
Clay, sticky	49	512
Gravel	8	520
Clay	22	542
Sand and clay	18	560
Sand	10	570
Shale, gray	460	1,030
Casing: 16-inch to 100 ft, 12-inch to 1,030 ft; perforated from 111 to 123 ft, 137 to 160 ft, 260 to 275 ft, 302 to 325 ft, 335 to 350 ft,366 to 412 ft, 430 to 463 ft, and 484 to 550 ft.		

Table 7.--Drillers' logs of wells in northwest King County, Wash.--Continued

Material	Thickness (feet)	Depth (feet)
Well 25/3-14J1		
Great Northern Ry. Co. About 50 ft S. and 650 ft E. of intersection of Ruffner St. and 21st Ave. W. Altitude about 15 ft. Drilled by N. C. Jannsen Drilling Co., 1933.		
Sand fill	14	14
Clay	6	20
Sand and gravel	25	45
Sand	10	55
Gravel, cemented	23	78
Clay	17	95
Sand and gravel	25	120
Clay	5	125
Gravel	10	135
Clay and boulders	20	155
Clay, sticky, blue	40	195
Clay	125	320
Gravel, cemented	6	326
Clay	16	342
Sand, fine	4	346
Clay	25	371
Clay, sandy	5	376
Gravel, water-bearing	2	378
Clay	32	410
Gravel, hard	15	425
Gravel, loose, water-bearing	5	430
Gravel, cemented	10	440
Gravel, loose, water-bearing	3	443
Gravel, cemented	5	448
Boulders, water-bearing	2	450
Gravel, cemented	8	458
Gravel and sand, water-bearing	8	466
Clay	3	469
Sand	2	471
Gravel, cemented	4	475
Boulders, water-bearing	2	477
Gravel	8	485
Clay	3	488
Gravel, water-bearing	14	502
Clay	18	520
Gravel, water-bearing	5	525
Clay, sandy	20	545
Casing: 16-inch to 74 ft, 8-inch from 69 to 512 ft; perforated from 371 to 502 ft.		
Well 25/3-23Q1		
U.S. Navy, Pier 91. About 400 ft N. and 1,550 ft W. of intersection of W. Garfield St. and 15th Ave. W. 40 ft N. and 60 ft E. of NW cor.of cold storage Bldg. Altitude 18.69 ft. Drilled by A. A. Durand and Son, 1943.		
Gravel and sand	53	53
Clay and sand	21	74
Clay, blue	25	99
Sand, gray (some clay)	29	128
Clay, blue	52	180
Clay, blue, and sand	42	222

Table 7.--Drillers' logs of wells in northwest King County, Wash.--Continued

Material	Thickness (feet)	Depth (feet)
Well 25/3-23Q1--Continued		
Sand and gravel	58	280
Sand	2	282
Sand and gravel	76	358
Sand and blue clay	22	380
Sand and gravel	34	414
Sand	46	460
Clay, blue	8	468
Clay, blue, and fine sand	35	503
Sand	12	515
Sand and clay	8	523
Clay, blue	34	557
Sand	13	570
Clay, blue	50	620
Clay and sand	10	630
Sand, black	5	635
Gravel	17	652
Sand, fine, black	25	677
Sand	60	737
Gravel and clay	10	747
Sand, gray	11	758
Clay and sand	19	777
Clay, blue	5	782
Clay and gravel	3	785
Sand, fine	2	787
Clay and sand	8	795
Clay, blue, and fine sand	100	895
Clay, blue, and fine sand, and blue sandy shale	65	960
Clay, blue	124	1,084

Casing: 15-inch to about 222 ft, 12-inch from 0 to about 626 ft, 10-inch from about 614 to about 1,050 ft. Perforated from 251 to 304 ft and from 635 to 747 ft.

Well 25/4-3E1

R. Spoor. About 1,850 ft S. and 600 ft E. of NW cor. Altitude about 305 ft. Dug by owner.

Topsoil	3	3
"Hardpan"	4	7
Clay, blue, some sand	11	18

Well 25/4-10M1

Joseph Corbett. About 150 ft S. and 800 ft E. of W¼ cor. Altitude about 150 ft. Drilled by E. F. Axelsen, 1947.

Soil	2	2
Clay, brown, sand, and gravel	8	10
Clay, blue	39	49
Sand and gravel, water-bearing	11	60

Casing: 6-inch to 60 ft.

Table 7.--Drillers' logs of wells in northwest King County, Wash.--Continued

Material	Thickness (feet)	Depth (feet)
Well 25/4-11A1		
Washington Toll Bridge Authority, test hole 4. About 500 ft N. and 1,950 ft E. of intersection of E. 60th St. and 65th Ave. NE, 600 ft E. of Shore Line. Altitude -39.4 ft. Drilled, 1953.		
Gravel, fine	5	5
"Hardpan"	32	37
Clay, blue	37	74
Well 25/4-12C1		
Washington Toll Bridge Authority, test hole 5. About 800 ft N. and 4,650 ft E. of intersection of E. 60th St. and 65th Ave. NE, 3,000 ft E. of Shore Line. Altitude -158.4 ft. Drilled, 1953.		
"Mud" and silt	21	21
"Hardpan"	19	40
Well 24/5-16D1		
University of Washington Dept. of Fisheries, test hole. About 900 ft S. and 700 ft E. of NW cor. Altitude about 190 ft. Drilled by L. R. Gaudio, 1953.		
"Hardpan," gray	22	22
Gravel, with "hardpan"	33	55
"Hardpan," blue	25	80
Sand, medium	25	105
Sand and gravel	1	106
Sand, muddy, little gravel	36	142
Sand and gravel	13	155
Clay and gravel	9	164
Clay, blue	16	180
Casing: 8-inch. Perforated from 144 to 150 ft.		
Well 25/4-16D2		
University of Washington, Dept. of Fisheries. About 900 ft S. and 700 ft E. of NW cor. Altitude about 190 ft. Drilled by L. R. Gaudio, 1953.		
Tunnel	65	65
Sand, silty	39	104
Sand, and some fine gravel	23	127
"Hardpan"	2	129
Sand	1	130
Sand and gravel, hard packed	8	138
Sand and gravel	6	144
Sand and some gravel	6	150
Sand, very little gravel	7	157
Casing: 12-inch to 133 ft; screen from 133 to 148 ft.		

Table 7.--Drillers' logs of wells in northwest King County, Wash.--Continued

Material	Thickness (feet)	Depth (feet)
Well 25/4-16N1		
University of Washington, Dept. of Fisheries. About 100 ft N. and 1,150 ft W. of intersection of E. Pacific St. and Montlake Blvd. Altitude about 50 ft. Drilled by N. C. Jannsen, 1952.		
"Hardpan"	48	48
Sand and gravel	2	50
Gravel, cemented	8	58
Sand and gravel	1	59
Sand and gravel, dirty	26	85
Clay, blue	12	97
Sand, dirty, and fine gravel	8	105
Clay, sandy, blue, few small pebbles	11	116
Clay, blue	44	160
Well 25/4-17K1		
Washington Highway Dept., test hole. About 550 ft S. and 900 ft W. of intersection of E. Pacific St. and Fairview Ave. N. Altitude 17.17 ft. Drilled 1952.		
Sand, fine, and gravel	13	13
Sand, coarse, and large and small gravel	7	20
Sand and gravel, compact	9	29
Sand and gravel, compact, gray	8	37
Sand, medium to fine, silty	26	63
Sand, fine, silty, and some clean	9	72
Sand, clayey, some silt	6	78
Well 25/4-17K2		
Washington Highway Dept., test hole. About 250 ft N. and 200 ft W . of intersection of Fuhrman Ave. and Fairview Ave. Altitude 10.34 ft. Drilled, 1952.		
Gravel and sand, brown	1½	1½
Gravel and sand, some blue clay	6	7½
Gravel and sand, hard, brown	2½	10
Gravel and sand, very compact	18	28
Sand, silty, and clay	4	32
Sand, compact, and coarse to fine gravel	18	50
Sand, compact, fine, silty, some coarse	25	75
Well 25/4-18P1		
Washington Highway Dept., test hole 2. About 550 ft S. of intersection of N. 34th St. and Aurora Ave. Altitude -30.7 ft. Drilled, 1929.		
"Mud" and sand, fine	27	27
Sand and gravel, fine	8	35
Sand, fine	4	39
Gravel, fine	1	40
Sand, fine, and gravel	13	53
Sand, fine to coarse, and clay	4	57

Table 7.--Drillers' logs of wells in northwest King County, Wash.--Continued

Material	Thickness (feet)	Depth (feet)
Well 25/4-18P1--Continued		
Sand, fine, and clay	3	60
Clay, with sand	7	67
Clay, sandy	5	72
Clay, medium soft	16	88
Clay, harder	15	103
Clay, hard	17	120
Well 25/4-18P2		
Washington Highway Dept., test hole 118. About 750 ft S. of intersection of N. 34th St. and Aurora Ave. Altitude -32 ft. Drilled, 1929.		
Silt	38	38
Sand and gravel	20	58
Sand and some gravel	39	97
Clay	61	158
Well 25/4-18P3		
Washington Highway Dept., test hole 109. About 250 ft S. of intersection of N. 34th St. and Aurora Ave. Altitude 15.0 ft. Drilled, 1929.		
"Chips"	5	5
Sand and gravel	13	18
Wood	2	20
Gravel	5	25
Sand and gravel	5	30
Sand and gravel, loose	5	35
Gravel, pea size, and clay	10	45
Clay	55	100
Well 25/4-19C1		
Washington Highway Dept., test hole 116. About 1,300 ft S. of intersection of N. 34th St. and Aurora Ave. Altitude 4.0 ft. Drilled, 1929.		
Silt	17	17
Clay, soft, and silt	10	27
Sand and gravel, fine	10	37
Sand	10	47
Gravel, fine	10	57
Gravel and clay	10	67
Gravel, fine	10	77
Sand, fine, and clay	30	107
Clay, blue	30	137

Table 7.--Drillers' logs of wells in northwest King County, Wash.--Continued

Material	Thickness (feet)	Depth (feet)
Well 25/4-19C2		
Washington Highway Dept., test hole 105. About 1,500 ft S. of intersection of N. 34th St. and Aurora Ave. Altitude 19.0 ft. Drilled, 1929.		
Sand, gravel, and yellow clay	10	10
Sand, gravel, and blue clay, thin layers of "hard material"	10	20
Sand, coarse, and gravel	10	30
Sand, gravel, and a little clay	10	40
Sand	10	50
Clay and gravel	10	60
Sand and gravel, soft	17	77
Clay and gravel, pea size	3	80
Sand, clay, and gravel	20	100
Sand, fine, and strata of clay	10	110
Clay, fine sand, and gravel, interbedded	20	130
Sand, fine, and gravel	4	134
Clay and pea size gravel	6	140
Sand and gravel	10	150
Clay, tough, small amount of sand and gravel	20	170
Clay and gravel	10	180
Well 25/4-19C3		
Washington Highway Dept., test hole 104. About 1,700 ft S. of intersection of N. 34th St. and Aurora Ave. Altitude 40.0 ft.		
Clay, blue, and shale	10	10
Sand	10	20
Clay, some gravel	7	27
"Hardpan," well cemented	8	35
"Hardpan," very sandy	3	38
Sand, packed, water-bearing	2	40
"Hardpan," boulders at 49 ft	10	50
Gravel, pea size, and sand	10	60
Sand, coarse	5	65
"Hardpan layers," water-bearing	15	80
Sand, medium, "granite color"	10	90
Sand and gravel	40	130
Sand	8	138
Well 25/4-20H1		
Washington Toll Bridge Authority, test hole. About 100 ft S. and 1,100 ft E. of intersection of Roanoke St. and 11th Ave. N. Altitude about 19 ft. Drilled, 1954.		
Peat and silt	27	27
Sand	12	39
Sand, gravel, and clay	18	57
Sand and clay	2	59

Table 7.--Drillers' logs of wells in northwest King County, Wash.--Continued

Material	Thickness (feet)	Depth (feet)
Well 25/4-21A1		
Washington Toll Bridge Authority, test hole. About 100 ft N. and 1,500 ft E. of intersection of Roanoke St. and 25th Ave. N. Altitude about 14 ft. Drilled, 1954.		
Peat	35	35
Clay, sand, and gravel	8	43
Sand and clay, silty	8	51
Well 25/4-21A2		
Washington Toll Bridge Authority, test hole. About 650 ft N. and 1,500 ft E. of intersection of Roanoke St. and 25th Ave. N. Altitude about 17 ft. Drilled, 1954.		
Peat	51	51
Clay	20	71
Sand and gravel	5	76
Gravel	2	78
Clay, sand, and gravel	20	98
Well 25/4-21E1		
Washington Toll Bridge Authority, test hole. About 600 ft N. and 50 ft W. of intersection of Calhoun St. and 16th Ave. N. Altitude about 19 ft. Drilled, 1954.		
Peat	18	18
Clay, silty	20	38
Clay	6	44
Clay and sand	16	60
Sand, clayey	11	71
Clay, silty	5	76
Sand, clayey	6	82
Sand, fine	2	84
Well 25/4-22C1		
Washington Toll Bridge Authority, test hole. About 900 ft N. and 1,650 ft W. of intersection of McGilvra St. and 43rd Ave. N. Altitude about 17 ft. Drilled, 1954.		
Peat	29	29
Sand and clay	4	33
Gravel	4	37
Sand and gravel	7	44
Clay	2	46
Clay and silt	4	50
Silt and gravel	4	54
Clay, silt, and gravel	2	56

Table 7.--Drillers' logs of wells in northwest King County, Wash.--Continued

Material	Thickness (feet)	Depth (feet)
Well 25/4-22C2		
Washington Toll Bridge Authority, test hole. About 1,200 ft N. and 1,600 ft W. of intersection of McGilvra St. and 43rd Ave. N. Altitude about 17 ft. Drilled, 1954.		
Peat	36	36
Clay	7	43
Sand and gravel (clay at 63 ft)	24	67
Sand	13	80
Well 25/4-22C3		
Washington Toll Bridge Authority, test hole. About 900 ft N. and 950 ft W. of intersection of McGilvra St. and 43rd Ave. N. Altitude about 14 ft. Drilled, 1954.		
Peat	8	8
Clay	4	12
Sand and clay	5	17
Clay	5	22
Sand	6	28
Sand and clay	3	31
Sand	4	35
Sand and clay	22	57
"Granite, decomposed"	4	61
Clay	3	64
Well 25/4-22D1		
Washington Toll Bridge Authority, test hole. About 850 ft N. and 2,950 ft W. of intersection of McGilvra St. and 43rd Ave. N. Altitude about 17 ft. Drilled, 1954.		
Peat	38	38
Clay	5	43
Clay and sand	7	50
Clay, sand, and gravel	5	55
Well 25/4-22D2		
Washington Toll Bridge Authority, test hole. About 1,500 ft N. and 2,600 ft W. of intersection of McGilvra St. and 43rd Ave. N. Altitude 18.5 ft. Drilled, 1954.		
Peat	41	41
Clay	11	52
Clay, sand, and gravel	4	56
Gravel and rock	4	60

Table 7.--Drillers' logs of wells in northwest King County, Wash.--Continued

Material	Thickness (feet)	Depth (feet)
Well 25/4-22D3		
Washington Toll Bridge Authority, test hole. About 1,350 ft N. and 2,050 ft W. of intersection of McGilvra St. and 43rd Ave. N. Altitude about 18 ft. Drilled, 1954.		
Peat	53	53
Clay	26	79
Clay and sand	4	83
Sand	8	91
Sand and clay	11	102
Sand	3	105
Well 25/4-22G1		
Washington Toll Bridge Authority, test hole 6. About 850 ft N. and 350 ft W. of intersection of McGilvra St. and 43rd Ave. N. on center line of McGilvra Blvd. extended. Altitude 13.5 ft. Drilled, 1953.		
Clay, blue, and sand	32	32
Well 25/4-22G2		
Washington Toll Bridge Authority, test hole 3. About 750 ft N. and 150 ft E. of intersection of McGilvra St. and 43rd Ave. N. 1,576 ft E. of 25/4-22G1. Altitude -9 ft. Drilled, 1953.		
Sand and gravel	10	10
Clay, coarse, brown	33	43
Sand, small amounts of clay	3	46
"Hardpan" and clay	5	51
Clay, coarse, blue	1	52
Sand	22	74
Sand and gravel	26	100
"Soil," brown	1	101
"Soil," gray	----	----
Well 25/4-22Q1		
Washington Toll Bridge Authority, test hole 2. On E. Garfield St. extended, 205 ft E. of Shore Line. Altitude -18 ft. Drilled, 1953.		
Sand and gravel	6	6
Sand, gravel, and coarse clay	14	20
Clay, brown	4	24
Gravel, coarse	36	60
Clay, blue	10	70
Sand	4	74
Clay, blue	----	----

Table 7.--Drillers' logs of wells in northwest King County, Wash.--Continued

Material	Thickness (feet)	Depth (feet)
Well 25/4-25G1		
R. Reid. About 2,550 ft S. and 2,300 ft W. of NE cor. Altitude about 167 ft. Drilled by C. D. Marks, 1938.		
Topsoil	3	3
"Hardpan"	22	25
"Shot clay," blue	7	32
Clay, blue	20	52
Clay, hard, slippery, blue	8	60
Clay, blue, and sand, water-bearing	12	72
Clay, blue, sticky	8	80
"Shot clay," blue	2	82
Clay, sandy, blue	8	90
Clay, blue, and sandy layers	27	117
Clay, blue	11	128
Clay, sticky, blue	5	133
Clay, blue	1	134
Clay, sandy, hard, blue	11	145
Clay, sticky, blue	8	153
Clay, sandy, blue	10	163
Clay, sticky, blue	5	168
Clay, dry, "chippy"	7	175
Clay, sticky, blue	13	188
Clay, hard, blue	3	191
Clay, soft, blue	11	202
Clay, blue	4	206
Clay, sticky, blue	10	216
"Shale," blue, and hard sand	8	224
Silt, very fine	3	227
Clay, blue	3	230
Clay, sticky, soapy, blue	1	231
Clay, sticky, blue	4	235
"Clay shale," blue	10	245
Clay, sticky, blue	12	257
"Shale," cavey, blue	4	261
"Shale," hard, blue	14	275
"Clay shale," sticky, blue	19	294
"Shale," "chippy," blue	7	301
"Shale," sticky, cavey, blue	4	305
"Shale," sticky, blue	25	330
"Shale," hard, blue	16	346
"Shale," soft, blue	158	504
"Shot clay," and gravel, water-bearing	7	511
"Shale," hard blue	19	530
Sand, fine	7	537
Sand, medium, rotten wood	5	542
Sand and gravel, coarse	2	544
Sand, fine, and gravel	7	551
Sand, fine, blue	5	556
Gravel, coarse	1	557
Sand, coarse, and gravel	5	562
Gravel and clay	1	563

Casing: 10-inch to 300 ft, 8-inch from 300 to 535 ft; screen from 535 to 555 ft.

Table 7.--Drillers' logs of wells in northwest King County, Wash.--Continued

Material	Thickness (feet)	Depth (feet)
Well 25/4-27K1		
Washington Toll Bridge Authority, test hole 1. On Harrison St. extended, 670 ft E. of Shore Line. Altitude -76 ft. Drilled, 1953.		
Sand and gravel	19	19
Clay	1	20
Sand and gravel	6	26
Sand, fine, and clay	1	27
Clay, blue	----	----
Well 25/4-30Q1		
Seattle Engineering Dept., test hole 1. On Highway U.S. 99 about 150 ft N. of Denny Way. Altitude about 104 ft. Drilled, 1948.		
Clay and gravel, hard, sandy	28	28
Wood	4	32
Sand, medium, light brown	7	39
Well 25/4-30R1		
Troy Laundry. About 200 ft N. and 100 ft W. of intersection of Thomas St. and Fairview Ave. N. Altitude about 90 ft. Drilled by N. C. Jannsen Drilling Co.		
Sand and gravel	27	27
Gravel and blue clay	63	90
Gravel and sand	60	150
Clay, sandy	25	175
Gravel, medium	10	185
Gravel	30	215
Clay, brown	35	250
Gravel, cemented	41	291
Gravel	17	308
Gravel and clay	15	323
Gravel, cemented	5	328
Sand and gravel	24	352
Sand	5	357
Gravel and clay	13	370
Sand	3	373
Clay and sand	23	396
Gravel	29	425
Gravel and sand	10	435
Gravel	18	453
Sand	22	475
Clay	12	487
Sand	10	497
Clay	13	510
Sand and gravel	11	521
Gravel, cemented	14	535
Clay	20	555

Casing: 8-inch; perforated from 297 to 308 ft, and from 357 to 521 ft.

Table 7.--Drillers' logs of wells in northwest King County, Wash.--Continued

Material	Thickness (feet)	Depth (feet)
Well 25/4-31B1		
Seattle Engineering Dept., test hole 5. About 100 ft N. of intersection of 6th Ave. and Battery St. Altitude about 110 ft. Drilled, 1948.		
Clay, blue	41	41
Well 25/4-31B2		
Seattle Engineering Dept., test hole 10. About 100 ft N. and 100 ft E. of intersection of 4th Ave. and Battery St. Altitude about 116 ft. Drilled, 1948.		
Sand and clay, medium-brown	8	8
Sand and silt, blue	5	13
Sand, fine, blue, some layers of coarse sand	5	18
Sand, fine, blue (silt?)	5	23
Sand, fine, wet	5	28
Clay, sandy, blue, "miscellaneous" gravel	5	33
Clay, sandy, blue	5	38
Clay, brown, "miscellaneous" gravel, and bits of wood	3	41
Well 25/4-31C1		
Seattle Engineering Dept., test hole 15. About 100 ft N. and 100 ft E. of intersection of 2nd Ave. and Battery St. Altitude about 111 ft. Drilled, 1948.		
"Miscellaneous" fill material	12	12
Clay and gravel, sandy, yellow	7	19
Clay, sandy, blue, and small gravel	10	29
Sand, blue	6	35
Clay, sandy, blue	7	42
Well 25/4-31F1		
Port of Seattle, Pier 66. About 400 ft S. and 400 ft W. of intersection of Elliott Ave. and Bell St. Altitude about 0 ft. Drilled by N. C. Jannsen Drilling Co., 1953.		
Fill	21	21
Clay, blue	31	52
Gravel	7	59
Gravel, black	3	62
Clay, yellow	9	71
Sand, blue	39	110
Gravel, water-bearing	6	116
Clay, sandy, blue	26	142
Gravel	3	145
Sand, blue	28	173
Gravel	44	217
Clay, red	8	225
Sand and gravel, packed	18	243
Sand, fine, blue	28	271
"Shale," brown	4	275

Table 7.--Drillers' logs of wells in northwest King County, Wash.--Continued

Material	Thickness (feet)	Depth (feet)
Well 25/4-31F1--Continued		
Clay, blue	20	295
Sand, "quick"	8	303
Clay, blue	10	313
Sand, water-bearing	4	317
Clay, blue	19	336
Sand, blue, water-bearing	2	338
Clay, blue	11	349
Clay, brown	2	351
Clay, blue	36	387
Clay, brown	4	391
"Hardpan"	31	422
Gravel, water-bearing	12	434
"Hardpan"	28	462
Sand, blue	238	700
Sand, blue, and clay and brown shale	26	726
Sand, coarse, water-bearing, and fine gravel	6	732

Casing: 12-inch to 400 ft, 8-inch from 332 to 732 ft.

Well 25/4-31F2

Seattle Engineering Dept., test hole 18. At intersection of Battery St. and 1st Ave. Altitude about 105 ft. Drilled, 1948.

Clay, mixed, yellow or green, and fine sand	8	8
Clay, sandy, yellow, and small gravel	10	18
Sand, fine, blue	10	28
Clay, coarse, blue, some blue sand	5	33
Sand, fine, very dry, brown	4	37
Sand, hard packed, yellow clay, and gravel	4	41

Well 25/4-31K1

Washington Ice and Cold Storage Co. About 300 ft S. and 300 ft W. of intersection of Virginia St. and Western Ave. Altitude about 20 ft. Drilled by Bell, 1941.

Sand and gravel	6	6
"Till," black	19	25
Sand, silty, brown	3	28
"Till," brown	8	36
"Till," gray	14	50
Sand, silty	5	55
Clay and rocks	7	62
Clay, brown, and sand	8	70
Sand, hard, blue, and shale	26	96
"Till," blue	16	112
Sand and gravel	18	130
Sandstone, laminated, and hard	13	143
Sand, blue, and pebbles	14	157
Sand, hard	3	160
Sand, hard, silty, and pebbles	20	180
Sand, coarse, and gravel, water-bearing	6	186
"Semi-hardpan," much gravel	32	218

Casing: 8-inch to 130 ft.

Table 7.--Drillers' logs of wells in northwest King County, Wash.--Continued

Material	Thickness (feet)	Depth (feet)
Well 25/4-31R2		
Olympic Warehouse and Cold Storage Co. Near intersection of University St. and Alaskan Way. Drilled by Bell and Sons.		
Clay	30	30
Clay and sand	20	50
"Till"	8	58
Gravel	12	70
Clay	15	85
Clay and sand	5	90
Clay, blue	70	160
Sand, dirty	5	165
Sand, coarse, water-bearing, and gravel	25	190
Casing: 8-inch.		
Well 25/4-32L1		
Seattle Engineering Dept., test hole 35. About 50 ft S. and 100 ft E. of intersection of Madison St. and 7th Ave. Altitude 236.3 ft. Drilled, 1952.		
Sand and gravel, compact, silty	11	11
Sand and gravel, compact, clean, brown	30	41
Silt, compact, blue, and clay, and gray sand	19	60
Well 25/4-32M1		
Seattle Engineering Dept., test hole 38. About 150 ft W. of intersection of 8th Ave. and Seneca St. Altitude 179.4 ft. Drilled, 1952?		
Clay, sand, and brown gravel	11½	11½
Clay, blue	6½	18
Clay, medium to hard, alternating with layers of fine, silty sand	32	50
Well 25/4-32P1		
Seattle Engineering Dept., test hole 1. About 100 ft N. of intersection of Jefferson St. and 7th Ave. Altitude about 264 ft. Drilled, 1952?		
Gravel, sandy, clayey, brown	18	18
Sand, fine to medium, gray-brown	14	32
Sand, gravelly, silty, brown	15	47
Sand	5	52
Clay, silty, varved, blue	7	59
Clay, sandy, gravelly, blue-gray	22	81

Table 7.--Drillers' logs of wells in northwest King County, Wash.--Continued

Material	Thickness (feet)	Depth (feet)
Well 25/4-32P2		
Seattle Engineering Dept., test hole 2. About 100 ft W. of intersection of Jefferson St. and 7th Ave. Altitude about 237 ft. Drilled, 1952?		
Gravel, sandy, clayey, brown	24	24
Clay, silty, blue	9	33
Gravel	3	36
Sand, gravelly, clayey, gray	6	42
Clay, sandy, blue	2	44
Gravel	----	----
Well 25/4-36A1		
C. A. Glass. About 200 ft S. and 250 ft W. of NE cor. Altitude about 60 ft. Drilled by N. C. Jannsen, 1935.		
Soil	10	10
Sand	2	12
Clay, blue	91	103
"Shale," blue	43	146
"Slate"	1	147
Sand, hard, muddy	5	152
"Shale," blue	10	162
Clay, blue	10	172
"Shale," blue	43	215
No record	30	245
"Shale"	7	252
"Shale," blue	32	284
"Quicksand"	1	285
"Quicksand" and clay, water-bearing	9	294
Well 25/5-1C1		
A. U. Chapman. About 650 ft S. and 1,400 ft E. of NW cor. Altitude about 300 ft. Dug by owner.		
Topsoil	6	6
"Hardpan"	3	9
Sand	10	19
Gravel	30	49
Casing: 40-inch.		
Well 25/5-1F1		
Roy Markee. About 1,450 ft S. and 1,550 ft E. of NW cor. Altitude about 330 ft. Dug by owner.		
Topsoil	4	4
"Hardpan"	1	5
Sand and gravel	7	12
"Hardpan"	1	13
Sand	10	23
"Hardpan"	----	----
Casing: 48-inch to 20 ft.		

Table 7.--Drillers' logs of wells in northwest King County, Wash.--Continued

Material	Thickness (feet)	Depth (feet)
Well 25/5-1R1		
J. G. Anderson. About 550 ft N. and 250 ft W. of SE cor. Altitude about 45 ft. Drilled by H. O. Meyer.		
"Hardpan"	20	20
"Hardpan," clayey	15	35
Sand and gravel	10	45
Casing: 6-inch to 45 ft; perforated, 18 inches near bottom of casing.		
Well 25/5-5H1		
City of Kirkland, well 6. About 2,100 ft S. and 700 ft W. of NE cor. Altitude 242.6 ft. Drilled by L. R. Gaudio, 1952.		
Soil	2	2
Sand and some gravel, hard packed, brown	18	20
Sand, fine, blue, water-bearing	7	27
Clay, sandy, blue	69	96
"Hardpan" and clay	19	115
Clay	4	119
Sand and gravel, dry	4	123
Clay, dark brown	17	140
Sand, much wood, water-bearing	8	148
Sand and gravel, water-bearing	7	155
Sand, fine, dirty	10	165
Sand, fine, and gravel, fine	5	170
Sand and gravel	10	180
Sand and gravel, fine	10	190
Gravel and sand	18	208
"Hardpan"	6	214
Casing: 12-inch to 175 ft, 7-inch from 157 to 173½ ft; screen from 173½ to 200 ft.		
Well 25/5-5R1		
City of Kirkland, well 7. About 800 ft N. and 550 ft W. of SE cor. Altitude about 220 ft. Drilled by L. R. Gaudio, 1952.		
Sand and gravel, cemented	40	40
Sand, loose, dirty, gray	15	55
Clay, brown, and sand	5	60
Sand, fine, dirty, gray	35	95
Clay, gray	10	105
Sand, and some gray dirty gravel	11	116
Sand, and some gravel, wood	12	128
Sand and gravel, loose, gray	14	142
Sand, fine, little gravel, "hardpan," thin layer at 148 ft	11	153
Sand and gravel, "rocks" up to 3 inches, loose	13	166
Sand and some gravel	3	169
Clay	5	174
Sand and gravel, hard-packed	16	190
Sand and gravel, coarse	10	200

Table 7.--Drillers' logs of wells in northwest King County, Wash.--Continued

Material	Thickness (feet)	Depth (feet)
Well 25/5-5R1--Continued		
Sand and gravel, pebble size	7	207
Clay, gray	8	215
Silt, gray	10	225
Sand, medium, gray	19	244
Silt, with pebbles, gray	11	255
Sand, medium, gray	18	273

Casing: 12-inch to 158 ft, 7-inch from 139 to 155 ft, 7-inch from 160½ to 183½ ft; screen, from 155 to 160½ ft, and from 183½ to 204 ft.

Well 25/5-8P1

M. D. Howland. About 100 ft N. and 2,750 ft W. of SE cor. Altitude about 245 ft. Drilled.

"Hardpan," clayey	30	30
Clay and gravel	20	50
Sand, black	20	70

Casing: 4-inch.

Well 25/5-10K2

I. A. Fladmark. About 2,150 ft N. and 2,000 ft W. of SE cor. Altitude about 360 ft. Drilled by H. O. Meyer, 1951.

Sand	12	12
Sand, coarse	7	19
Sand and clay	6	25
Sand, coarse	22	47
Gravel	9	56
Sand	8	64

Casing: 6-inch to 64 ft.

Well 25/5-11M2

Fred Brown. About 2,400 ft N. and 250 ft E. of SE cor. Altitude about 295 ft. Drilled by H. O. Meyer, 1951.

Clay, blue	98	98
Gravel	1	99
Clay	11	110

Casing: 6-inch.

Well 25/5-12C1

City of Redmond. About 600 ft S. and 1,600 ft E. of NW cor. Altitude about 47 ft. Drilled by H. O. Meyer.

Gravel, coarse, and sand	18	18
"Hardpan"	6	24
Gravel and sand, water-bearing	1	25

Table 7.--Drillers' logs of wells in northwest King County, Wash.--Continued

Material	Thickness (feet)	Depth (feet)
Well 25/5-12C1--Continued		
"Hardpan"	5	30
Gravel, coarse, and sand, water-bearing	2	32
"Hardpan"	4	36
Gravel, clean, and sand, water-bearing	4	40
"Hardpan," and coarse gravel	1	41
Gravel and sand, medium to coarse	5	46
Gravel and sand, coarse	10	56

Casing: 48-inch to 18 ft, 18-inch from 0 to 46 ft, 10-inch from 0 to 50 ft; screen, from 50 to 56 ft. Gravel pack.

Well 25/5-12G1

Frank Verral. About 2,050 ft S. and 1,550 ft W. of NE cor. Altitude about 35 ft. Drilled by H. O. Meyer, 1950.

Sand and gravel, dry	7	7
Gravel, water-bearing	5	12
Gravel and sand, dry	10	22
Gravel, coarse, and sand, water-bearing	3	25
Gravel and sand, loose, water-bearing	6	31

Casing: 6-inch to 31 ft.

Well 25/5-12H1

R. Gilbert. About 2,250 ft S. and 1,150 ft W. of NE cor. Altitude about 35 ft. Drilled by H. O. Meyer, 1950.

Sand and gravel, dry	7	7
Gravel, water-bearing	5	12
Gravel and sand, dry	10	22
Gravel, coarse, and sand, water-bearing	3	25
Gravel and sand, loose, water-bearing	4	29

Casing: 6-inch to 29 ft.

Well 25/5-14F1

A. T. Fleming. About 2,650 ft S. and 1,900 ft E. of NW cor. Altitude about 335 ft. Drilled by H. O. Meyer, 1947.

Topsoil	1½	1½
"Hardpan"	22½	24
"Hardpan," sand and gravel, water-bearing	23	47
Sand and gravel	11	58
Clay, gray	21	79
Silt, water-bearing	18	97
Clay, gray	23	120
Silt, water-bearing	20	140

Casing: 6-inch to 55 ft.

Table 7.--Drillers' logs of wells in northwest King County, Wash.--Continued

Material	Thickness (feet)	Depth (feet)
Well 25/5-14H1		
M. Corcoran. About 2,200 ft S. and 1,050 ft W. of NE cor. Altitude about 215 ft. Dug by owner.		
Topsoil	3	3
"Hardpan"	23	26
Sand, black	----	----
Casing: 40-inch to 26 ft.		
Well 25/5-14J1		
G. Chandler. About 1,450 ft N. and 100 ft W. of SE cor. Altitude about 230 ft. Drilled by H. O. Meyer, 1951.		
Clay, yellow	12	12
Clay, blue	41	53
Clay, blue, sandy, water-bearing	3	56
Clay, blue	10	66
Sand, fine, and clay	122	188
Gravel, water-bearing	4	192
Casing: 6-inch to 192 ft.		
Well 25/5-14P1		
W. H. Hanson. About 100 ft N. and 2,250 ft E. of SW cor. Altitude about 345 ft. Drilled by J. J. Bell, 1949.		
Topsoil	3	3
"Hardpan," brown	16	19
Sand and clay, brown	24	43
Sand and gravel, brown	16	59
Sand and gravel, brown, water-bearing	37	96
Casing: 6-inch to 96 ft.		
Well 25/5-15H2		
W. H. Scott. About 2,150 ft S. and 100 ft W. of NE cor. Altitude about 350 ft. Dug.		
Topsoil	3	3
"Hardpan"	20	23
Clay	35	58
Sand, blue	2	60
Casing: 36-inch.		

Table 7.--Drillers' logs of wells in northwest King County, Wash.--Continued

Material	Thickness (feet)	Depth (feet)
Well 25/5-16B2		
George Thomas. About 150 ft S. and 1,900 ft W. of NE cor. Altitude about 520 ft. Drilled by H. O. Meyer, 1948.		
Topsoil	8	8
"Hardpan"	52	60
Sand	40	100
Sand and gravel, water-bearing	19	119
Casing: 6-inch to 113 ft; screen from 113 to 119 ft.		
Well 25/5-17C1		
Dora Ewing. About 350 ft S. and 2,650 ft W. of NE cor. Altitude about 255 ft. Drilled by N. C. Jannsen, 1930.		
"Hardpan"	22	22
Sand and gravel	23	45
Sand, water-bearing	2	47
Casing: 6-inch to 41 ft; screen, 6-inch, from 41 to 47 ft.		
Well 25/5-17C3		
Lake Washington Shipyard. About 600 ft S. and 3,200 ft W. of NE cor. Altitude about 245 ft. Drilled by J. J. Bell.		
Sand, yellow	25	25
Sand and gravel, gray, water-bearing	10	35
Sand, fine	30	65
Peat and silt	2	67
Clay, sandy, laminated	5	72
Sand, blue, water-bearing	2	74
Clay, blue, silty	20	94
Clay, brown	2	96
Sand and gravel, cemented, water-bearing	2	98
Gravel, coarse, water-bearing	6	104
Sand and gravel, loose	4	108
Sand and gravel, hard	7	115
Casing: 10-inch to 90 ft, 8-inch from 76 to 105 ft; screen from 105 to 115 ft.		
Well 25/5-17J1		
City of Kirkland, well 5. About 2,250 ft N. and 250 ft W. of SE cor. Altitude about 380 ft. Drilled by H. O. Meyer, 1949.		
Sand and "hardpan"	12	12
"Quicksand"	28	40
Clay and sand	8	48
"Hardpan" and sand	4	52
Clay, water-bearing	4	56
Clay and sand	17	73

Table 7.--Drillers' logs of wells in northwest King County, Wash.--Continued

Material	Thickness (feet)	Depth (feet)
Well 25/5-17J1--Continued		
Sand	18	91
Clay	2	93
Sand	3	96
Sand and clay	10	106
Sand and clay, water-bearing	11	117
Sand, water-bearing	2	119
Clay	4	123
Sand, fine	3	126
Sand, coarser, water-bearing	3	129
Sand and clay	4	133
"Hardpan" and clay	10	143
Sand, water-bearing	2	145
Sand and clay	4	149
Clay	6	155
Sand, water-bearing	10	165
Sand and clay	10	175
"Hardpan," gray, sand, and clay	3	178
Gravel	22	200

Casing: 12-inch to 180 ft; screen from 180 to 200 ft.

Well 25/5-17Q1

City of Kirkland, well 1. About 700 ft N. and 1,350 ft W. of SE cor. Altitude 230.1 ft. Drilled by W. E. Peterson, 1943.

Topsoil	10	10
Clay	10	20
Gravel and sand	10	30
Sand	5	35
Gravel, water-bearing	5	40
Sand	20	60
Clay	8	68
Sand, fine	12	80
Sand	20	100
Gravel, water-bearing	8	108

Casing: 8-inch to 68 ft, 6-inch from 57 to 96 ft; screen from 96 to 108 ft.

Well 25/5-1702

City of Kirkland, well 4. About 500 ft N. and 1,600 ft W. of SE cor. Altitude about 270 ft. Drilled by Ralph Bennett, 1944.

Sand	25	25
Sand, coarse	13	38
Gravel, water-bearing	15	53
Sand, fine	3	56
Clay, blue	7	63
Sand	10	73

Table 7.--Drillers' logs of wells in northwest King County, Wash.--Continued

Material	Thickness (feet)	Depth (feet)
Well 25/5-17Q2--Continued		
Clay	5	78
Sand	5	83
"Quicksand"	3	86
Clay	4	90
Gravel, sand, and "rock"	18	108
Gravel, water-bearing	23	131

Casing: 10-inch to 111 ft; screen 9-inch, 20 slot, from 111 to 131 ft.

Well 25/5-17R1

City of Kirkland, well 2. About 800 ft N. and 1,100 ft W. of SE cor. Altitude 257.3 ft. Drilled by W. E. Peterson.

Topsoil	10	10
Clay, brown	20	30
Sand, brown	30	60
Gravel and sand, water-bearing	10	70
Clay, gray, sandy	40	110
Sand	25	135
"Hardpan"	2	137
Gravel, water-bearing	11	148

Casing: 8-inch to 125 ft; screen, 6-inch, from 126 to 148 ft.

Well 25/5-19N1

King County Water Dist. 68. About 400 ft N. and 150 ft E. of SW cor. Altitude about 70 ft. Drilled by L. R. Gaudio, 1950.

Soil	2	2
Clay	13	15
Clay and sand	7	22
"Hardpan"	10	32
Clay and sand, water-bearing	61	93
Sand and clay	6	99
Sand with clay	5	104
Sand and clay	76	180
Clay and sand, trace of fine gravel	48	228
Sand	3	231
Clay with fine gravel	10	241
Clay with sand	3	244
Clay with fine gravel	22	266
Clay, gray	30	296
Clay, sand, and fine gravel	37	333
Sand and gravel, clean	4	337
Clay, sand, and fine gravel	11	348
Sand and fine gravel	4	352
Clay, sand, and fine gravel	2	354

Table 7.--Drillers' logs of wells in northwest King County, Wash.--Continued

Material	Thickness (feet)	Depth (feet)
Well 25/5-19N1--Continued		
Sand, gravel, and clay	24	378
Sand	17	395
Clay	5	400
Sand	5	405
Clay	3	408
Sand and gravel, hard-packed	27	435
Clay	65	500

Test hole.

Well 25/5-19Q1

Henry Holland. About 150 ft N. and 1,400 ft W. of SE cor. Altitude about 345 ft. Drilled by N. C. Jannsen, 1933.

Sand and "rock"	17	17
Sand, brown, and gravel	14	31
Sand, gray, and "boulders"	14	45
Sand	22	67
Sand, gray	59	126
Sand	18	144

Casing: 6-inch to 144 ft.

Well 25/5-20C1

King County Water Dist. 68, well 3. About 1,250 ft S. and 1,600 ft E. of NW cor. Altitude about 45 ft. Drilled by N. C. Jannsen, 1947.

Clay	5	5
Sand	10	15
Sand, coarse	17	32
Clay	8	40
Sand	10	50
Sand and gravel	15	65
Gravel	20	85
Sand, coarse	46	131
Sand, coarse, and gravel	45	176
Gravel	52	228
Clay	16	244

Casing: 12-inch to 244 ft; perforated from 60 to 244 ft.

Well 25/5-20Q1

L. R . Shaeffer. About 950 ft N. and 1,600 ft W. of SE cor. Altitude about 150 ft. Drilled by H. O. Meyer, 1952.

Clay, yellow	10	10
Clay, blue	15	25
"Hardpan"	7	32
Sand and clay, water-bearing	3	35

Table 7.--Drillers' logs of wells in northwest King County, Wash.--Continued

Material	Thickness (feet)	Depth (feet)
Well 25/5-20Q1--Continued		
Sand and gravel, coarse, water-bearing	5	40
Clay	1	41
Gravel and sand, coarse, water-bearing	5	46
Clay, soft	1	47
Sand and gravel, coarse	9	56
Clay, brown	1	57
Sand and gravel, coarse	8	65

Casing: 8-inch to 55 ft; screen, 100 slot, from 55 to 65 ft.

Well 25/5-21E1

Lars Nelson. About 2,200 ft S. and 250 ft E. of NW cor. Altitude about 250 ft. Drilled by Ralph Bennett, 1947.

Topsoil	4	4
"Hardpan"	40	44
Clay and sand	36	80
Gravel	10	90

Casing: 6-inch to 84 ft; screen from 84 to 90 ft.

Well 25/5-21F1

T. R. Pike. About 1,700 ft S. and 2,400 ft E. of NW cor. Altitude about 475 ft. Bored by Tom Killian, 1951.

Sand	38	38
Sand and gravel	2	40

Casing: 24-inch to 40 ft.

Well 25/5-21L2

H. J. Brown. About 2,050 ft N. and 1,650 ft E. of SW cor. Altitude about 375 ft. Drilled by H. O. Meyer, 1950.

Topsoil	2	2
Sand, clay, and "hardpan"	16	18
Gravel, coarse	2	20
"Hardpan" and sand	30	50
Clay and sand, water-bearing	6	56
Clay, sand, and gravel	4	60
Gravel	2	62
Clay, sand, and "hardpan"	12	74
Clay and sand	9	83
Sand and "hardpan," water-bearing	2	85
Clay	3	88
"Hardpan," water-bearing	10	98
Sand	7	105
Sand, water-bearing	3	108

Table 7.--Drillers' logs of wells in northwest King County, Wash.--Continued

Material	Thickness (feet)	Depth (feet)
Well 25/5-21L2--Continued		
Clay	4	112
Sand, silty, water-bearing	3	115
Clay, blue	4	119
Gravel and sand, brown	4	123
Sand, brown	4	127
Sand, brown, and fine gravel, water-bearing	10	137
Sand, gray, and fine gravel, water-bearing	8	145
"Mud"	----	----

Casing: 6-inch to 145 ft.

Well 25/5-21M1

R. V. Holland. About 1,600 ft N. and 650 ft E. of SW cor. Altitude about 225 ft. Drilled by H. O. Meyer, 1951.

Topsoil	4	4
"Hardpan" and gravel	12	16
Sand, clay, and fine gravel	19	35
Sand, water-bearing	2	37
Sand and clay, intercalated	23	60
"Hardpan," water-bearing	4	64
Gravel, coarse, water-bearing	4	68
Clay	----	----

Casing: 6-inch to 68 ft.

Well 25/5-21Q1

M. G. Clark. About 900 ft N. and 1,950 ft W. of SE cor. Altitude about 425 ft. Drilled by Clyde Dorsten, 1951.

Topsoil	3	3
"Hardpan," gray	77	80
Sand	20	100

Casing: 6-inch to 100 ft; perforated from 90 to 100 ft.

Well 25/5-23C2

C. L. Nichols. About 900 ft S. and 2,100 ft E. of NW cor. Altitude about 375 ft. Drilled by H. O. Meyer, 1951.

"Hardpan" and gravel	65	65
Sand, coarse, and fine gravel; water-bearing	15	80

Casing: 6-inch to 80 ft.

Table 7,--Drillers' logs of wells in northwest King County, Wash.--Continued

Material	Thickness (feet)	Depth (feet)
Well 25/5-23C3		
--- Forrester. About 600 ft S. and 1,900 ft E. of NW cor. Altitude about 370 ft. Drilled by L. R. Gaudio.		
No record	20	20
"Hardpan"	25	45
Sand, dry	14	59
Gravel, loose, dry	10	69
Clay, brown, and sand	9	78
Sand and gravel, coarse	10	88
Casing: 6-inch.		
Well 25/5-23J2		
Donald A. Becker. About 2,050 ft N. and 1,000 ft W. of SE cor. Altitude about 375 ft. Drilled by H. O Meyer, 1950.		
Topsoil	2	2
Gravel, loose, and "dirt"	5	7
"Hardpan" and gravel	10	17
Clay and sand	28	45
"Hardpan" and gravel	15	60
Gravel and sand, water-bearing	5	65
Sand, clay, and gravel	4	69
Gravel, coarse, and sand, water-bearing	12	81
Casing: 6-inch to 81 ft.		
Well 25/5-23Q2		
R. J. Smith. About 1,200 ft N. and 2,700 ft E. of SW cor. Altitude about 405 ft. Drilled by H. O. Meyer, 1951.		
Topsoil	2	2
Sand and clay	7	9
"Hardpan," gravel, and clay	9	18
"Hardpan," gravel, clay, and sand	10	28
"Hardpan"	46	74
Gravel, loose, dry	7	81
Clay, yellow, and gravel	15	96
Gravel, loose, water-bearing	4	100
Casing: 6-inch to 100 ft.		
Well 25/5-23Q4		
P. Abon. About 500 ft N. and 30 ft E. of S¼ cor. Altitude about 380 ft. Drilled by H. O. Meyer, 1951.		
Topsoil and gravel	3	3
Clay, gravel, and "hardpan"	37	40

Table 7.--Drillers' logs of wells in northwest King County, Wash.--Continued

Material	Thickness (feet)	Depth (feet)
Well 25/5-23Q4--Continued		
Clay and sand	15	55
Gravel, dry, washed	40	95
Gravel, water-bearing	8	103

Casing: 6-inch to 103 ft.

Well 25/5-24G1

--- Milne. About 1,550 ft S. and 3,850 ft E. of NW cor. Altitude about 100 ft. Drilled by Bryant and Billingsley, 1947.

Silt, clayey	30	30
Sand, blue	10	40
Clay, blue	300	340
Till and wood	10	350

Could not be drilled deeper because of hard material reported as bedrock. Abandoned.

Well 25/5-24M1

A. C. Pfunder. About 1,850 ft N. and 150 ft E. of SW cor. Altitude about 360 ft. Drilled by H. O. Meyer, 1948.

Topsoil	5	5
"Hardpan"	45	50
Gravel and "hardpan"	10	60
Gravel, coarse, water-bearing	10	70
Sand and clay	10	80
Clay, blue	4	84
Gravel, water-bearing	10	94

Casing: 4-inch to 94 ft.

Well 25/5-24R1

--- Justham. About 300 ft N. and 400 ft W. of SE cor. Altitude about 160 ft. Drilled by H. O. Meyer, 1950.

Topsoil	3	3
Sand, gravel, and clay	27	30
Sand and clay, water-bearing	14	44
"Hardpan"	18	62
Sand, dirty, red, water-bearing	8	70
Sand, fine, gray	5	75

Casing: 6-inch to 70 ft; screen from 70 to 75 ft.

Table 7.--Drillers' logs of wells in northwest King County, Wash.--Continued

Material	Thickness (feet)	Depth (feet)
Well 25/5-26H1		
E. H. Andrews. About 2,200 ft S. and 150 ft W. of NE cor. Altitude about 430 ft. Drilled by J. J. Bell, 1941.		
Topsoil	2	2
"Hardpan," brown	10	12
"Hardpan," gray	48	60
Sand, gray-brown, and gravel	50	110
Gravel, cemented, brown	27	137
Sand, brown, and clay	19	156
Sand, silty, brown, clay, "rocks"; water-bearing	51	207
Sand, coarse, dirty	33	240
Casing: 6-inch to 232 ft; screen, 4-inch, from 232 to 240 ft.		
Well 25/5-28B1		
Harold Lee Becker. About 300 ft S. and 1,400 ft W. of NE cor. Altitude about 330 ft. Drilled by H. O. Meyer, 1951.		
Sand and gravel	46	46
"Rock"	2	48
Gravel, dry	4	52
Sand and gravel, water-bearing	16	68
Clay and coarse gravel	7	75
Sand and gravel, water-bearing	11	86
Clay and gravel	3	89
Gravel, water-bearing	1	90
Casing: 6-inch to 90 ft.		
Well 25/5-28M1		
M. Shimoyama. About 1,450 ft N. and 150 ft E. of SW cor. Altitude about 180 ft. Drilled by H. O. Meyer, 1949.		
Soil	2	2
Sand and clay	14	16
Sand, brown, and clay	14	30
Sand, gray	5	35
Clay	5	40
Gravel and sand	10	50
Gravel, water-bearing	18	68
Casing: 6-inch to 68 ft.		
Well 25/5-28Q1		
John Weyand. About 1,150 ft N. and 2,500 ft W. of SE cor. Altitude about 180 ft. Drilled by H. O. Meyer, 1951.		
Topsoil	1	1
"Hardpan," water-bearing	24	25
Clay, yellow	2	27
"Hardpan"	14	41

Table 7.--Drillers' logs of wells in northwest King County, Wash.--Continued

Material	Thickness (feet)	Depth (feet)
Well 25/5-28Q1--Continued		
Clay, water-bearing	4	45
"Hardpan"	32	77
Gravel, water-bearing	13	90
"Hardpan," sandy	3	93
Sand and gravel, water-bearing	24	117

Casing: 6-inch to 117 ft.

Well 25/5-29P1

City of Bellevue, well 1. About 800 ft N. and 1,900 ft E. of SW cor. Altitude about 170 ft. Drilled by N. C. Jannsen, 1946.

Sand	20	20
Sand, and large "boulders"	10	30
Sand and gravel, fine	30	60
Sand and gravel, hardpacked	10	70
Gravel, hard, and "rock"	13	83
Sand and gravel	15	98
Clay, sandy	24	122
Sand	48	170
Gravel, hardpacked	9	179
Gravel	8	187
Clay	60	247
Gravel, fine	15	262
Clay, sandy	16	278
Sand	13	291
Clay	59	350
Clay, sandy	60	410
Sand	40	450
Clay	10	460
Clay, sandy	80	540
Sand	10	550
Gravel, loose	6	556
"Sandstone," hard	18	574
Gravel	10	584
Clay	12	596
Gravel	25	621
Clay	19	640
Sand	10	650
Sand, hard, and gravel	10	660
Clay	30	690
Sand, fine, and gravel	20	710
Clay	216	926
Clay, sandy	49	975
Clay, sticky	19	994
Sand and "shale," interbedded	26	1,020
Sand, fine gravel, and "shale," interbedded	95	1,115
Clay, sandy	10	1,125

Casing: 24-inch to 170 ft, 18-inch to 641 ft, 12-inch from 641 to 1,125 ft; perforated from 247 to 370 ft, from 530 to 621 ft, and from 974 to 1,115 ft.

Table 7.--Drillers' logs of wells in northwest King County, Wash.--Continued

Material	Thickness (feet)	Depth (feet)
Well 25/5-32M1		
King County Water Dist. 68. About 2,450 ft N. and 1,100 ft E. of SW cor. Altitude about 75 ft. Drilled by L. R. Gaudio, 1950.		
Clay, brown	5	5
Clay and gravel	25	30
Sand and gravel	7	37
Clay	12	49
Clay, sandy	31	80
Sand, heaving	18	98
Sand, fine	44	142
Sand, coarse	8	150
Sand, fine	40	190
Sand and gravel	5	195
Sand, fine, and clay	30	225
Sand, hardpacked, and clay	22	247
Sand, hardpacked, and gravel	9	256
Sand, fine, and clay	3	259
Sand, fine	18	277
Sand, fine, loose	5	282
Sand, hardpacked	12	294
Sand, fine	24	318
Sand and gravel	2	320
Sand, loose	5	325
Sand, hardpacked, and clay	34	359
Clay, gravel, and sand	8	367
Clay and gravel	18	385
Clay, blue	40	425
Sand, hardpacked, and clay	20	445
Sand, hardpacked	2	447
Clay, blue	3	450
Sand, hardpacked	15	465
Sand, hardpacked, and clay	15	480
Clay and gravel	8	488
Clay, blue	77	565
Casing: 10-inch to 294 ft, 8-inch from 294 to 494 ft. Test hole.		
Well 25/5-32N1		
City of Bellevue, well 2. About 750 ft N. and 900 ft E. of SW cor. Altitude about 25 ft. Drilled by N. C. Jannsen, 1947.		
Soil	10	10
Clay, sandy	10	20
"Hardpan," with streaks of gravel	60	80
Sand	70	150
Sand, coarse	20	170
Sand, fine	80	250
Sand, coarse	10	260
Sand, medium	30	290
Sand	10	300

Table 7.--Drillers' logs of wells in northwest King County, Wash.--Continued

Material	Thickness (feet)	Depth (feet)
Well 25/5-32N1--Continued		
Sand, coarse	10	310
Sand	10	320
Sand and clay	10	330
Sand and gravel	10	340
Gravel, coarse	25	365
Clay, blue	13	378
Sand and gravel	80	458
Sand, coarse	5	463
Sand, hardpacked	59	522
Sand and clay, dry	533	1,055

Casing: 12-inch to 1,055 ft, sealed below 485 ft; perforated from 270 to 475 ft.

Well 25/5-33B1

P. Van Kleeck. About 150 ft S. and 2,500 ft W. of NE cor. Altitude about 175 ft. Dug by owner.

Topsoil	4	4
"Hardpan"	18	22
Gravel, unsorted, clean	15	37

Casing: 32-inch, concrete tile, to 37 ft.

Well 25/5-33F2

R. Johnson. About 2,450 ft S. and 1,700 ft E. of NW cor. Altitude about 220 ft. Dug by owner.

Topsoil	2	2
Clay, blue	58	60
Gravel	25	85

Casing: 66-inch, concrete.

Well 25/5-33G1

W. Van Kleeck. About 1,550 ft S. and 2,150 ft W. of NE cor. Altitude about 230 ft. Drilled by H. O. Meyer, 1951.

Topsoil and clay, yellow and blue	18	18
Gravel, water-bearing	2	20
Clay, blue, water-bearing	60	80
"Hardpan" and gravel	6	86
Gravel	14	100
"Hardpan"	2	102
Gravel, loose, water-bearing	4	106
Clay	1	107
"Hardpan"	1	108
Gravel, unsorted, coarse, water-bearing	2	110
Clay	----	----

Casing: 6-inch to 107 ft.

Table 7.--Drillers' logs of wells in northwest King County, Wash.--Continued

Material	Thickness (feet)	Depth (feet)
Well 25/5-34G1		
Bud Stringfellow. About 1,750 ft S. and 2,300 ft W. of NE cor. Altitude about 280 ft. Drilled by Clyde Dorsten, 1951.		
Topsoil	10	10
Clay, blue	28	38
Sand and gravel, water-bearing	8	46
Casing: 6-inch to 46 ft; perforated from 24 to 46 ft.		
Well 25/5-34G2		
Bud Stringfellow. About 1,750 ft S. and 2,300 ft W. of NE cor. Altitude about 280 ft. Drilled by Clyde Dorsten, 1951.		
Topsoil	10	10
Clay, blue	30	40
Sand and gravel, water-bearing	20	60
Clay, blue	3	63
Casing: 6-inch to 60 ft; perforated from 40 to 60 ft.		
Well 25/5-34P1		
L. Jackson. About 550 ft N. and 2,350 ft E. of SW cor. Altitude about 290 ft. Dug by Elmer Miller, 1947.		
Topsoil	6	6
"Hardpan"	24	30
Sand	20	50
Casing: 36-inch, concrete tile, to 50 ft.		
Well 25/5-34R1		
E. D. Orians. About 150 ft N. and 1,250 ft W. of SE cor. Altitude about 290 ft. Drilled by J. C. Maxwell, 1952.		
Clay, sandy	31	31
Gravel, dirty	----	----
Sand and gravel, clean	----	38
Casing: 6-inch to 38 ft.		
Well 25/5-35A3		
Washington Water Service Co., Inc. About 900 ft S. and 550 ft W. of NE cor. Altitude about 435 ft. Drilled by E. F. Axelson.		
Soil	5	5
"Hardpan"	65	70
Gravel and sand, with clay	85	155
Gravel and sand, water-bearing	15	170
Sand, water-bearing	13	183
Casing: 8-inch.		

Table 7.--Drillers' logs of wells in northwest King County, Wash.--Continued

Material	Thickness (feet)	Depth (feet)
Well 25/6-7H1		
John Landwater. About 2,450 ft S. and 650 ft W. of NE cor. Altitude about 100 ft. Drilled by H. O. Meyer, 1948.		
Gravel	35	35
Clay, sand, and gravel	15	50
Clay and sand, intercalated	170	220
Sand and gravel	10	230
Clay	30	260
Clay and gravel, intercalated	27	287
Casing: 6-inch to 281 ft; screen, 14 slot, 6-inch from 281 to 287 ft.		
Well 25/6-8Q1		
M. O. Kallin. About 900 ft N. and 1,500 ft W. of SE cor. Altitude about 325 ft. Dug by Elmer Miller.		
Sand, powdery	11	11
"Hardpan"	40	51
Gravel, cemented with clay	15	66
Sand, medium, red	4	70
Gravel, cemented with clay	2	72
Sand, medium, red	4	76
Gravel, cemented with clay	32	108
Sand, medium, compact, brown	22	130
Casing: 32-inch, concrete, to 130 ft.		
Well 25/6-9F1		
J. F. Blashet. About 2,550 ft S. and 1,950 ft E. of NW cor. Altitude about 460 ft. Drilled by W. J. Bryant.		
Topsoil	2	2
"Hardpan" and clay	246	248
Gravel and sand	12	260
Casing: 4-inch to 260 ft; perforated from 250 to 260 ft.		
Well 25/6-16L1		
M. V. Carlson. About 2,400 ft N. and 2,200 ft E. of SW cor. Altitude about 115 ft. Dug by owner.		
Sand, hard	12	12
Gravel, medium, and coarse sand	4	16
Casing: 40-inch to 16 ft.		

Table 7.--Drillers' logs of wells in northwest King County, Wash.--Continued

Material	Thickness (feet)	Depth (feet)
Well 25/6-16Q1		
Carl Larson. About 350 ft N. and 1,550 ft W. of SE cor. Altitude about 150 ft. Dug by Elmer Miller.		
Gravel	20	20
Clay, blue	10	30
Gravel and sand, cemented	25	55
Casing: 36-inch to 55 ft.		
Well 25/6-19H2		
W. L. Grange. About 1,600 ft S. and 200 ft W. of NE cor. Altitude about 50 ft. Drilled by E. F. Axelson, 1950.		
Clay, brown	30	30
"Hardpan"	5	35
Clay, blue, and "rocks"	68	103
Sand and gravel	2	105
Sand, fine	3	108
Casing: 6-inch to 102 ft; screen, 6-inch, from 102 to 108 ft.		
Well 25/6-22C1		
T. Hopkins. About 700 ft S. and 1,800 ft E. of NW cor. Altitude about 125 ft. Drilled by N. C. Jannsen.		
No record	37	37
Gravel, cemented	31	68
Clay	6	74
"Rocks"	2	76
Gravel, coarse, and sand	4	80
Clay and sand	38	118
Sand and gravel	11	129
Gravel and "rocks"	11	140
Gravel	5	145
Casing: 10-inch.		
Well 25/6-30B1		
R. A. Strout. About 100 ft S. and 2,850 ft E. of NW cor. Altitude about 150 ft. Drilled by H. O. Meyer, 1948.		
Topsoil	7	7
"Hardpan," tight	38	45
Gravel and "rocks"	7	52
"Hardpan" and clay	8	60
Clay and sand	12	72
Sand and clay, water-bearing	8	80
Sand and gravel, cemented with clay	4	84
Sand and gravel, cemented	4	88
Casing: 6-inch to 88 ft.		

Table 7.--Drillers' logs of wells in northwest King County, Wash.--Continued

Material	Thickness (feet)	Depth (feet)
Well 25/6-30C1		
H. G. Wheeler. About 150 ft S. and 1,700 ft E. of NW cor. Altitude about 180 ft. Drilled by H. O. Meyer, 1950.		
No record	80	80
Clay and sand	35	115
Gravel, wood, stumps, and dirt, water-bearing	2	117
Gravel, cemented with silt, water-bearing	33	150
"Hardpan"	20	170
Casing: 6-inch to 150 ft.		
Well 25/6-32R2		
Harry Paul. About 250 ft N. and 400 ft W. of SE cor. Altitude about 390 ft. Drilled by H. O. Meyer, 1951.		
No record	30	30
"Hardpan"	36	66
Sand and clay	4	70
Sand and gravel, water-bearing	25	95
"Hardpan"	8	103
Gravel and sand	85	188
Casing: 6-inch to 188 ft.		
Well 25/6-33J1		
Pine Lake Water Co. About 1,700 ft N. and 450 ft W. of SE cor. Altitude about 430 ft. Drilled by J. J. Bell, 1944.		
"Hardpan"	65	65
"Semi-hardpan," brown, "rocks," boulders	150	215
Gravel, cemented, brown, water-bearing	3	218
"Semi-hardpan," brown	54	272
Gravel, cemented, brown, water-bearing	8	280
Sand and "hardpan"	35	315
Casing: 6-inch to 292 ft; perforated from 215 to 218 ft, and from 272 to 280 ft.		
Well 25/7-6R1		
Carnation Farms. About 950 ft N. and 550 ft W. of SE cor. Altitude about 63 ft. Drilled by A. A. Durand.		
Topsoil and gravel, fine	5	5
Clay, gray, and gravel	28	33
Clay, gray, sand, and gravel	52	85
Sand	20	105
Clay, blue, gumbo	50	155
Clay, blue, gumbo, and sand	40	195
Clay, heaving, gray	45	240
Clay, gray, and heaving sand	5	245

Table 7.--Drillers' logs of wells in northwest King County, Wash.--Continued

Material	Thickness (feet)	Depth (feet)
Well 25/7-6R1--Continued		
Sand, hardpacked	6	251
Clay, sandy	34	285
Clay, sticky	33	318
Clay, sandy	82	400
Sand, fine, heaving, gray	85	485
Clay, sticky, gray	65	550
Clay, sandy, gray	20	570
Sand, fine to coarse, clay, shells, water-bearing	10	580
Clay, sand, gravel, and cobbles, water-bearing	10	590
Gravel, medium to coarse, and sand	32	622
Sand, compact	8	630

Casing: 16-inch to 29 ft, 12-inch to 351 ft, 10-inch from 537 to 561 ft, 8-inch from 532 to 630 ft; perforated from 595 to 618 ft.

Well 25/7-15M1

J. A. Hull. About 1,850 ft N. and 250 ft E. of SW cor. Altitude about 85 ft. Drilled by H. O. Meyer, 1954.

Sand, coarse, and boulders	30	30
Gravel and sand	8	38
Gravel, sand, and silt	13½	51½
"Hardpan," brown	19½	71
Clay, layered, and sand	1	72
"Hardpan"	20	92
Gravel	1	93
Sand	½	93½
Sand and gravel, some thin layers of clay	7½	101

Casing: 10-inch, set to 101 ft.

Well 25/7-18C1

J. W. Guthrie. About 900 ft S. and 1,450 ft E. of NW cor. Altitude about 190 ft. Drilled by H. O. Meyer, 1952.

Gravel	24	24
Sand, water-bearing	71	95
Sand and gravel, water-bearing	6	101

Casing: 6-inch to 101 ft.

Well 25/7-20N1

Elmer Harper. About 500 ft N. and 750 ft E. of SW cor. Altitude about 450 ft. Dug by owner, 1951.

"Hardpan"	24	24
Sand, clay, and gravel	16	40
Gravel, coarse	5	45

Casing: 48-inch to 45 ft.

Table 7.--Drillers' logs of wells in northwest King County, Wash.--Continued

Material	Thickness (feet)	Depth (feet)
Well 26/3-1H2		
R. C. Robinson. About 50 ft N. and 1,200 ft W. of E½ cor. Altitude about 460 ft. Dug by Ed Frost.		
Soil	3	3
"Hardpan"	40	43
Sand, fine	146	189
Sand, fine, water-bearing	12	201
Casing: 48-inch, set to 201 ft.		
Well 26/3-1M2		
Richmond Beach Water Co. About 2,300 ft N. and 1,750 ft W. of S¼ cor. Altitude about 230 ft. Drilled by H. O. Meyer, 1950.		
Topsoil	2	2
Gravel and sand	6	8
Gravel and sand, silty	36	44
Sand, brown, water-bearing	12	56
Sand, very loose, blue-gray	24	80
Casing: 10-inch to 80 ft; perforated from 50 to 80 ft.		
Well 26/3-1M4		
Richmond Beach Water Co. About 2,550 ft N. and 1,550 ft W. of S¼ cor. Altitude about 250 ft. Drilled by H. O. Meyer, 1950.		
Topsoil	2	2
Gravel, sand, and "hardpan"	36	38
Sand and clay	8	46
Sand, small gravel, water-bearing	20	66
Sand, fine, water-bearing	6	72
Clay, some sand, little water	10	82
Casing: 12-inch to 82 ft; perforated from 45 to 75 ft.		
Well 26/3-12B1		
John Lewis. About 1,150 ft S. and 200 ft E. of N¼ cor. Altitude about 440 ft. Dug by S. L. Gilman.		
Topsoil	3	3
"Till"	80	83
Sand, coarse on top to fine at bottom, yellow	97	180
Casing: 36-inch to 180 ft.		
Well 26/3-12G1		
T. R. Blaylock. About 2,150 ft S. and 2,100 ft W. of NE cor. Altitude about 350 ft. Dug by owner.		
Topsoil, sand, and coarse gravel	6	6
Sand and gravel, medium	8	14

Table 7.--Drillers' logs of wells in northwest King County, Wash.--Continued

Material	Thickness (feet)	Depth (feet)
Well 26/3-12G1--Continued		
Sand, water-bearing	3	17
Clay, interbedded with sand	1½	18½
Gravel, coarse	5½	24
Sand, fine	10	34

Casing: 24-inch to 24 ft.

Well 26/3-12G3

The Highlands, Inc. About 2,450 ft S. and 2,150 ft W. of NE cor. Altitude about 320 ft. Drilled by N. C. Jannsen, 1930.

Gravel	10	10
Sand and gravel	30	40
Gravel, hard	8	48
Sand and gravel	17	65
Gravel, water-bearing	11	76
Sand, dry	16	92
Sand, loose, water-bearing	12	104
Sand, fine, loose	12	116
Sand and gravel, water-bearing	16	132
Clay	12	144
Gravel and sand	7	151
Clay	17	168
Clay and thin layers of sand, water-bearing at 225 ft	64	232
Clay	23	255
Gravel and sand, water-bearing	20	275
Clay and small strings of gravel, water-bearing	25	300
Clay	16	316
Log	1	317
Gravel, cemented very hard	3	320

Casing: 10-inch to 304 ft; perforated from 75 to 94 ft, 110 to 133 ft, 153 to 170 ft, 190 to 205 ft, 229 to 240 ft, and from 265 to 292 ft.

Well 26/4-1E1

Henry LaFond. About 1,900 ft S. and 50 ft E. of NW cor. Altitude about 100 ft. Drilled by H. O. Meyer, 1949.

Gravel and "hardpan"	16	16
"Hardpan"	8	24
Clay, blue	89	113
Gravel and sand	6	119

Casing: 6-inch to 119 ft.

Table 7.--Drillers' logs of wells in northwest King County, Wash.--Continued

Material	Thickness (feet)	Depth (feet)
Well 26/4-2E2		
George Senty. About 2,400 ft S. and 300 ft E. of NW cor. Altitude about 260 ft. Drilled by E. F. Axelson.		
Topsoil	18	18
Clay, blue	212	230
Gravel	2	232
Casing: 6-inch to 232 ft.		
Well 26/4-2Q2		
Squire Investment Co. About 50 ft N. and 2,600 ft E. of SW cor. Altitude about 180 ft. Drilled by E. F. Axelson, 1950.		
Surface soil	5	5
Sand, clay, and gravel	45	50
Sand, water-bearing	10	60
Clay, blue	36	96
Sand, water-bearing	12	108
Well 26/4-3B1		
U.S. Army Corps of Engineers. About 1,200 ft S. and 1,800 ft W. of NE cor. Altitude about 528 ft. Drilled by N. C. Jannsen, 1954.		
Soil	3	3
"Hardpan"	3	6
Clay	34	40
Gravel, cemented	10	50
Clay, blue	32	82
Gravel	8	90
Sand and clay	164	254
Clay with gravel	55	309
Sand and gravel	25	334
Casing: 8-inch to 263 ft, 6-inch from 9 to 334 ft.		
Well 26/4-3K2		
Otto Miller. About 2,300 ft N. and 1,650 ft W. of SE cor. Altitude about 470 ft. Drilled by E. F. Axelson, 1948.		
"Hardpan"	20	20
Sand	151	171
Clay, blue	----	----
Casing: 6-inch.		

Table 7.--Drillers' logs of wells in northwest King County, Wash.--Continued

Material	Thickness (feet)	Depth (feet)
Well 26/4-5C1		
Holyrood Cemetery. About 100 ft S. and 1,400 ft E. of NW cor. Altitude about 300 ft. Drilled by L. R. Gaudio, 1958.		
Clay, "hardpan"	35	35
Sand	17	52
Clay, blue	66	118
"Hardpan," blue, gravelly	10	128
Sand, and gravel, water-bearing	4	132
Clay, gravelly, blue	16	148
Sand, muddy	16	164
Clay, hard, gravelly, blue	66	230
Sand	8	238
Sand and gravel, water-bearing	15	253
Sand, fine, muddy	11	264
Clay, blue	41	305
Sand	2	307
"Hardpan," blue	4	311
Sand and gravel, water-bearing	3	314
Gravel, cemented	6	320
Sand and gravel, water-bearing	3	323
Clay and sand	12	335
Sand, cemented, and gravel	8	343
Sand and gravel, with layers of "hardpan"	17	360
Sand and gravel, cemented	9	369
Casing: 12-inch to 306 ft, 6-inch from 287 to 369 ft.		
Well 26/4-5E1		
Holyrood Cemetery. About 100 ft S. and 1,150 ft E. of W½ cor. Altitude about 430 ft. Drilled by N. C. Jannsen, 1953.		
Boulders and gravel	42	42
Boulders	10	52
Sand and boulders	13	65
Sand	14	79
Gravel, cemented	21	100
Clay	40	140
Gravel, cemented, and boulders	28	168
Sand, firm	44	212
Gravel, cemented, and sand	48	260
Clay	15	275
Gravel, cemented, and boulders	30	305
Sand and small amount of blue clay	41	346
Boulders	16	362
Gravel and clay	24	386
Clay	22	408
Sand, firm, and clay	62	470
Boulders	25	495
Gravel	42	537
Sand, firm	8	545
Clay	20	565
Casing: 10-inch to 475 ft, 8-inch from 460 to 520 ft; screen from 480 to 490 ft, and from 500 to 515 ft.		

Table 7.-- Drillers' logs of wells in northwest King County, Wash.--Continued

Material	Thickness (feet)	Depth (feet)
Well 26/4-6G1		
Echo Lake Mutual Water Co. About 1,800 ft S. and 2,700 ft E. of NW cor. Altitude about 420 ft. Drilled by N. C. Jannsen, 1926.		
Gravel, cemented, water-bearing at 122	122	122
Sand, coarse, and gravel	38	160
Sand, fine	23	183
Clay, blue	6	189
Sand	23	212
Clay, blue	8	220
Sand, firm	6	226
Sand, coarse	16	242
Sand	33	275
Casing: 8-inch.		
Well 26/4-10J1		
Oscar Hoganson. About 3,300 ft S. and 1,100 ft W. of NE cor. Altitude about 20 ft. Drilled by E. F. Axelson.		
Sand	12	12
Sand and gravel	11	23
Clay, brown	10	33
"Till"	11	44
Sand, water-bearing	11	55
Clay, blue	10	65
Casing: 6-inch.		
Well 26/4-12J1		
E. M. Jones. About 3,100 ft S. and 300 ft W. of NE cor. Altitude about 20 ft. Drilled by H. O. Meyer, 1949.		
Peat	12	12
Sand and "hardpan"	18	30
Sand, coarse	5	35
Sand, coarse, and gravel	5	40
Casing: 6-inch to 40 ft.		
Well 26/4-12M1		
State Flower Nursery, Inc. About 3,500 ft S. and 400 ft E. of NW cor. Altitude about 20 ft.		
Peat	4	4
Gravel	4	8
Sand and gravel	4	12
Casing: 96-inch.		

Table 7.--Drillers' logs of wells in northwest King County, Wash.--Continued

Material	Thickness (feet)	Depth (feet)
Well 26/4-13G1		
R. M. Metheny. About 2,550 ft S. and 1,700 ft W. of NE cor. Altitude about 430 ft. Dug by J. Cain.		
Topsoil	2	2
"Hardpan"	18	20
Sand	42	62
Casing: 30-inch, concrete tile, to 62 ft.		
Well 26/4-16Q1		
Acacia Memorial Park. About 1,250 ft N. and 1,350 ft W. of SE cor. Altitude about 250 ft. Drilled by N. C. Jannsen, 1940.		
Topsoil	2	2
"Hardpan" and "rocks"	19	21
Boulder	6	27
Clay	13	40
Sand and gravel, water-bearing	4	44
Clay, boulders, and "rocks"	48	92
Gravel, water-bearing	18	110
Sand	15	125
Sand and gravel	24	149
Sand	15	164
Sand, coarse	20	184
Clay and sand	12	196
"Hardpan"	3	199
Sand	20	219
Sand and "rocks"	3	222
Sand and gravel	8	230
Sand, coarse, and gravel	35	265
Sand and gravel	10	275
Sand, clay, and "rocks"	12	287
Casing: 10-inch to 287 ft; perforated 125 to 184 ft, and from 199 to 275 ft.		
Well 26/4-24C1		
A. J. Menard. About 800 ft S. and 1,500 ft E. of NW cor. Altitude about 450 ft. Drilled by E. F. Axelson.		
No record	60	60
Sand	30	90
Clay, blue	1	91
Casing: 6-inch to 90 ft.		

Table 7.--Drillers' logs of wells in northwest King County, Wash.--Continued

Material	Thickness (feet)	Depth (feet)
Well 26/4-24G1		
H. Lister. About 1,850 ft S. and 1,450 ft W. of NE cor. Altitude about 405 ft.		
Topsoil	2	2
"Hardpan"	62	64
Gravel and sand	6	70
Casing: 36-inch to 55 ft, 30-inch, concrete tile, from 55 to 70 ft.		
Well 26/4-24H1		
W. Beckman. About 1,750 ft S. and 700 ft W. of NE cor. Altitude about 395 ft. Drilled by W. Peterson, 1924.		
Topsoil	3	3
"Hardpan"	13	16
Sand	56	72
"Hardpan" and gravel	46	118
Casing: 5-inch to 118 ft.		
Well 26/4-25H1		
E. R. Bertram. About 2,500 ft S. and 950 ft W. of NE cor. Altitude about 380 ft. Dug by F. Young.		
Topsoil	2	2
"Hardpan"	35	37
Gravel and sand	3	40
Casing: 40-inch to 40 ft.		
Well 26/4-30C1		
Evergreen Cemetery. About 1,200 ft S. and 1,850 ft E. of NW cor. Altitude about 395 ft. Drilled by C. D. Marks & Sons, 1947.		
"Hardpan"	90	90
Sand, yellow, water-bearing	70	160
Clay, blue	5	165
Sand, blue, water-bearing	20	185
Clay, seamy, blue	3	188
Clay, blue	112	300
Casing: 10-inch to 155 ft; screen from 155 to 188 ft.		
Well 26/4-30F1		
Evergreen Cemetery. About 100 ft N. and 150 ft W. of Center ¼ cor. Altitude about 365 ft. Drilled by Layne-Pacific, Inc., 1955.		
Clay, sandy, and gravel	58	58
Sand and gravel	12	70
Sand, fine	18	88
Clay, sandy, and gravel	5	93

Table 7.--Drillers' logs of wells in northwest King County, Wash.--Continued

Material	Thickness (feet)	Depth (feet)
Well 26/4-30F1--Continued		
Sand, coarse, and gravel	2	95
Clay, sandy	2	97
Sand, coarse, and large gravel	7	104
Clay, gray	2	106
Clay, sandy, and gravel	4	110
Sand, fine, heaving	5	115
Sand, fine	1	116
Clay, very sandy	23	139
Clay, very sandy, blue	4	143
Clay, blue	7	150
Clay, blue, and sandy, blue clay	12	162
Sand, gravel, and cemented gravel layers	9	171
Sand, gravel, and cemented gravel (no cemented gravel below 173 ft)	12	183
Sand, fine	2	185

Casing: 18-inch to 42 ft, 12-inch from 0 to 165 ft, 10-inch from 155 to 165 ft; screen from 165 to 185 ft.

Well 26/4-30J1

Washelli Cemetery. About 1,250 ft S. and 250 ft W. of E¼ cor. Altitude about 310 ft. Drilled by C. D. Marks and Sons, 1950.

"Hardpan"	37	37
Sand, fine, water-bearing	72	109
Clay	129	238

Casing: 12-inch to 37 ft, 10-inch from 0 to 109 ft, and 7-inch from 100 to 238 ft.

Well 26/4-30J2

Washelli Cemetery. About 700 ft S. and 1,250 ft W. of E¼ cor. Altitude about 360 ft. Drilled by N. C. Jannsen, 1952.

"Till" and boulders	22	22
Gravel and boulders	53	75
Clay	225	300
Clay and boulders	48	348
Clay, brown, sand, and wood	10	358
Sand	7	365
Sand, coarse, and small gravel	30	395
Sand, fine, and clay	14	409
Clay	281	690
Sand, fine, and clay	10	700
Clay and boulders	22	722
Clay, blue	63	785

Table 7.--Drillers' logs of wells in northwest King County, Wash.--Continued

Material	Thickness (feet)	Depth (feet)
Well 26/4-30K1		
Washelli Cemetery. About 1,200 ft S. and 200 ft E. of Center ¼ cor. Altitude about 330 ft. Drilled by C. E. Miller, 1927.		
Sand	30	30
Sand and gravel, coarse	10	40
Gravel, fine	10	50
Gravel, medium to coarse, angular	10	60
Sand and fine gravel	10	70
Gravel and sand, medium	10	80
Sand, coarse	60	140
Sand, medium	10	150
Sand, medium, and clay	30	180
Gravel, medium, and sand	20	200
Clay	20	220
Sand, fine, and clay	20	240
Clay and sand, fine	20	260
Casing: 12- to 10-inch.		
Well 26/4-36C1		
King County Water Dist. 40. About 400 ft S. and 3,100 ft W. of NE cor. Altitude about 80 ft. Drilled by J. J. Bell.		
Topsoil	1	1
Clay, yellow	4	5
Clay, blue	7	12
Clay, sandy	6	18
Clay, blue	12	30
Clay, sandy, laminated	20	50
Sand, blue, water-bearing	23	73
Casing: 6-inch to 68 ft; screen from 68 to 73 ft.		
Well 26/5-1L1		
E. H. Jones. About 2,100 ft N. and 1,500 ft E. of SW cor. Altitude about 370 ft. Drilled by E. F. Axelson.		
Topsoil	5	5
"Hardpan"	25	30
Gravel and sand	52	82
Casing: 6-inch to 82 ft.		
Well 26/5-5E1		
Bothell Water Dist, well 4. About 1,500 ft S. and 150 ft E. of NW cor. Altitude about 245 ft. Drilled by J. J. Bell, 1941.		
Topsoil	1½	1½
"Hardpan"	28½	30
Sand and gravel, water-bearing	5	35

Table 7.--Drillers' logs of wells in northwest King County, Wash.--Continued

Material	Thickness (feet)	Depth (feet)
Well 26/5-5E1--Continued		
"Hardpan"	25	60
Clay, hard, blue	83	143
Sand, hard, blue, and clay	17	160
Sand, hard	22	182
Gravel, cemented, water-bearing	7	189
Sand and gravel, loose	11	200
Gravel, hard	3	203
Sand and gravel, loose	17	220
Clay, sticky, blue	4	224

Casing: 8-inch to 224 ft; perforated from 198 to 217 ft.

Well 26/5-5E2

Bothell Water Dist, well 5. About 1,500 ft S. and 150 ft E. of NW cor. Altitude about 245 ft. Drilled by J. J. Bell, 1946.

Topsoil	2	2
"Hardpan"	33	35
Sand, silty, fine, gray, water-bearing	23	58
Clay, blue	90	148
Sand, hard, blue, and gravel	42	190
Gravel, cemented	11	201
Sand and gravel, loose	18	219
Gravel, cemented, water-bearing	8	227
Clay, blue	3	230

Casing: 8-inch to 227 ft; perforated from 211 to 226 ft.

Well 26/5-5K1

J. A. Herseth. About 1,800 ft N. and 2,350 ft W. of SE cor. Altitude about 180 ft. Drilled by Kjorsvik and Anderson, 1951.

Topsoil	2	2
"Hardpan"	94	96
Sand and gravel	8	104
Clay, blue	23	127

Casing: 6-inch to 100 ft.

Well 26/5-6C1

C. L. Johnson. About 550 ft S. and 2,400 ft E. of NW cor. Altitude about 150 ft. Drilled by Kjorsvik and Anderson, 1949.

Clay, blue	98	98
Sand	2	100

Casing: 6-inch to 100 ft.

Table 7.--Drillers' logs of wells in northwest King County, Wash.--Continued

Material	Thickness (feet)	Depth (feet)
Well 26/5-6P1		
V. L. Barnes. About 800 ft N. and 2,400 ft E. of SW cor. Altitude about 215 ft. Drilled by E. F. Axelson.		
"Hardpan," blue	57	57
Gravel, coarse	----	----
Casing: 6-inch to 57 ft.		
Well 26/5-6Q1		
Marlin and Marlin. About 200 ft N. and 1,450 ft W. of SE cor. Altitude about 100 ft. Drilled by E. F. Axelson.		
Sand	40	40
"Hardpan"	60	100
Clay, blue	30	130
Sand	9	139
Casing: 6-inch to 139 ft.		
Well 26/5-7F1		
D. J. Dempsey. About 2,000 ft S. and 2,300 ft E. of NW cor. Altitude about 205 ft. Drilled by Kjorsvik and Anderson.		
"Hardpan"	61	61
Sand and gravel	4	65
Casing: 6-inch to 65 ft.		
Well 26/5-7G1		
Bothell Water Dist. About 1,500 ft S. and 2,100 ft W. of NE cor. Altitude about 150 ft. Drilled by J. J. Bell.		
Sand and gravel, loose	18	18
"Hardpan," brown	6	24
"Hardpan," gray	44	68
Gravel, cemented, dry, gray	11	79
Gravel, water-bearing	1	80
Sand, silty, and "rocks"	15	95
Clay, blue	10	105
Gravel and sand, hard	2	107
Clay, blue, "rocks," and sand	76	183
Gravel, cemented, water-bearing	34	217
Clay, blue	140	357
"Shale," hard, blue	44	401
Sand, gravel, and wood, dry	4	405
"Shale," blue	33	438
Sand, clay, and hard "rocks"	24	462
Clay, blue	3	465

Table 7.--Drillers' logs of wells in northwest King County, Wash.--Continued

Material	Thickness (feet)	Depth (feet)
Well 26/5-7J2		
M. E. Haller. About 3,500 ft S. and 900 ft W. of NE cor. Altitude about 40 ft. Drilled by Kjorsvik and Anderson, 1947.		
Clay, blue	84	84
Sand, fine	----	----
Casing: 6-inch to 84 ft.		
Well 26/5-8E2		
Bothell Water Dist. About 1,700 ft S. and 700 ft E. of NW cor. Altitude about 35 ft. Drilled by J. J. Bell.		
Topsoil	1	1
Clay, yellow	11	12
Clay, blue	27	39
Gravel	1	40
"Clay-shale," hard, blue	65	105
Sand, hard, and fine silt	12	117
"Shale"	18	135
Sand, fine, water-bearing	1	136
"Sandstone," hard	24	160
Well 26/5-8E3		
Bothell Water Dist. About 2,100 ft S. and 800 ft E. of NW cor. Altitude about 50 ft. Drilled by J. J. Bell, 1937.		
Topsoil	1	1
Clay, brown	13	14
Clay, silty, blue	33	47
"Rocks," and sand, clean	3	50
Sand and gravel	3	53
Clay, blue	3	56
Casing: 8-inch to 56 ft; perforated from 48 to 54 ft.		
Well 26/5-9F1		
North Creek Oil and Gas Co. About 1,500 ft S. and 2,650 ft E. of NW cor. Altitude about 25 ft. Drilled by C. E. Miller, 1935.		
Sand and logs	100	100
"Hardpan" and gravel, tight	332	432
Sand and gravel, gas, water-bearing	218	650
Clay and shale, dry	500	1,150
Sand, intercalated with a hard compact line	58	1,208
Casing: 12-inch to 100 ft, 10-inch to 432 ft, 8-inch to 650 ft, 6-inch to 1,090 ft, 5-inch to 1,148 ft.		

Table 7.--Drillers' logs of wells in northwest King County, Wash.--Continued

Material	Thickness (feet)	Depth (feet)
Well 26/5-9L1		
Floyd Grater. About 3,150 ft S. and 2,050 ft E. of NW cor. Altitude about 190 ft. Dug by owner.		
Soil	1	1
"Hardpan"	2	3
Clay, blue	10	13
Sand	2	15
"Hardpan"	----	----
Casing: 30-inch to 13 ft.		
Well 26/5-9N1		
Roy Downs. About 4,050 ft S. and 1,350 ft E. of NW cor. Altitude about 240 ft.		
"Hardpan"	21	21
Sand	5	26
Casing: 30-inch to 20 ft.		
Well 26/5-9R1		
Buster Brown. About 700 ft N. and 900 ft W. of SE cor. Altitude about 50 ft. Drilled by N. C. Jannsen, 1931.		
No record	30	30
Gravel, cemented, and small boulders	21	51
Sand and gravel	7	58
Sand, gravel, and small "rocks"	4	62
Sand and gravel	21	83
Clay	11	94
Clay, blue	6	100
Sand, fine, and sandy clay	8	108
Sand	24	132
Clay, sticky	153	285
Clay and "shale"	2	287
Sand, "shale," and gravel	15	302
Gravel, cemented sand, and "rock"	6	308
Sand and gravel, cemented	12	320
Clay, blue	5	325
Sand	7	332
Casing: 6-inch to 330 ft.		
Well 26/5-11K2		
W. E. Napper. About 2,850 ft S. and 3,050 ft E. of NW cor. Altitude about 540 ft. Drilled by Kjorsvik and Anderson.		
"Hardpan"	150	150
Sand	160	310
Gravel	7	317
Swamp deposit	10	327
Casing: 6-inch from 0 to 317 ft.		

Table 7.--Drillers' logs of wells in northwest King County, Wash.--Continued

Material	Thickness (feet)	Depth (feet)
Well 26/5-11Q1		
L. M. Rowan. About 600 ft N. and 3,000 ft E. of SW cor. Altitude about 450 ft. Dug by A. C. Early, 1949.		
Sand	20	20
Sand and gravel	160	180
Casing: 30-inch to 180 ft.		
Well 26/5-13M1		
Gus B. Peterson. About 2,400 ft N. and 1,200 ft E. of SW cor. Altitude about 530 ft. Drilled by Kjorsvik and Anderson, 1951.		
Topsoil	3	3
"Hardpan"	90	93
Sand, fine, water-bearing	25	118
Clay, blue	----	----
"Hardpan"	----	250
Sand, fine, water-bearing	24	274
Casing: 4-inch to 270 ft; screen, 4-inch, from 268 to 274 ft.		
Well 26/5-13N1		
Frank Beaty. About 250 ft N. and 100 ft E. of SW cor. Altitude about 450 ft. Drilled by C. E. Miller, 1940.		
Topsoil	3	3
"Hardpan"	82	85
Sand, loose, dry	15	100
Sand and cemented gravel	99	199
Sand, water-bearing	16½	215½
Casing: 8-inch to 85 ft, 6-inch from 85 to 211 ft; screen from 211 to 215 ft.		
Well 26/5-13P3		
Sam Dykstra. About 1,200 ft N. and 2,400 ft E. of SW cor. Altitude about 530 ft. Drilled by Ed Evans, 1952.		
Topsoil	3	3
"Hardpan"	27	30
Sand and gravel, water-bearing	12	42
"Hardpan"	53	95
Sand, yellow (no water)	23	118
Sand, blue, water-bearing	93	211
Clay, blue	2	213
Sand and gravel, water-bearing	19	232
Clay, blue	----	----
Casing: 8-inch to 232 ft.		

Table 7.--Drillers' logs of wells in northwest King County, Wash.--Continued

Material	Thickness (feet)	Depth (feet)
Well 26/5-14A1		
A. and M. Rundquist. About 200 ft S. and 700 ft W. of NE cor. Altitude about 540 ft. Drilled by H. O. Meyer, 1951.		
No record	170	170
Gravel, dry, clean	15	185
"Boulders," "quartz"	1	186
Gravel	4	190
"Hardpan"	2	192
Gravel and sand, "hardpan"	4	196
Gravel and sand, dry	24	220
Clay and "hardpan"	2	222
Gravel, dry	2	224
"Hardpan" and gravel	10	234
Sand, fine	10	244
"Hardpan"	2	246
Gravel and sand	3	249
Clay, sand, and gravel	3	252
Gravel and sand, coarse, water-bearing	6	258
Gravel, coarse, sand, and silt	6	264
"Hardpan," sand, and gravel	4	268
Gravel, dry	2	270
"Hardpan," sand, and gravel	4	274
Gravel and sand, loose	4	278
"Hardpan"	1	279
Sand, fine to coarse	24	303
Silt	6	309
Casing: 6-inch to 165 ft, 5-inch to 297 ft; screen 14 slot, from 297 to 303 ft.		
Well 26/5-15R1		
G. R. Howard. About 100 ft N. and 100 ft W. of SE cor. Altitude about 60 ft. Drilled by Kjorsvik and Anderson.		
Topsoil	3	3
Sand and gravel, coarse	62	65
Casing: 6-inch to 65 ft.		
Well 26/5-16E1		
--- Ayers. About 2,400 ft S. and 100 ft E. of NW cor. Altitude about 285 ft. Dug by C. J. Grossman.		
Topsoil	4	4
"Hardpan"	47	51
Sand, water-bearing	3	54
Casing: 72-inch to 6 ft.		

Table 7.--Drillers' logs of wells in northwest King County, Wash.--Continued

Material	Thickness (feet)	Depth (feet)
Well 26/5-17D1		
E. Horn. About 250 ft S. and 1,250 ft E. of NW cor. Altitude about 470 ft. Drilled by J. J. Bell, 1946.		
No record	82	82
Clay, blue	125	207
Sand, fine, silty, water-bearing	63	270
Sand	10	280
Clay, blue	30	310
Casing: 8-inch to 270 ft; screen, 10 slot, from 270 to 280 ft.		
Well 26/5-18A2		
D. A. Maydole. About 950 ft S. and 1,000 ft W. of NE cor. Altitude about 75 ft. Drilled by H. O. Meyer, 1951.		
Clay, blue	92	92
Sand, coarse	9	101
Casing: 6-inch to 101 ft.		
Well 26/5-18E1		
--- Nielson. About 2,150 ft S. and 550 ft E. of NW cor. Altitude about 400 ft. Drilled by H. O. Meyer, 1951.		
Topsoil	3	3
Clay, sandy	39	42
Sand, water-bearing	5	47
Sand, silty	20	67
Clay	38	105
Casing: 6-inch to 62 ft; screen, 10 slot, from 62 to 67 ft.		
Well 26/5-19A1		
G. C. Lanphere. About 550 ft S. and 1,200 ft W. of NE cor. Altitude about 230 ft. Drilled by W. B. Gemmil.		
Sand	146	146
"Quicksand"	30	176
Casing: 6-inch to 146 ft.		
Well 26/5-19L2		
William Tormanen. About 1,700 ft N. and 1,850 ft E. of SW cor. Altitude about 425 ft. Drilled by H. O. Meyer, 1951.		
No record	60	60
"Hardpan"	34	94
Gravel	2	96

Table 7.--Drillers' logs of wells in northwest King County, Wash.--Continued

Material	Thickness (feet)	Depth (feet)
Well 26/5-19L2--Continued		
"Hardpan," and blue clay	44	140
Sand and gravel, with a few layers of "hardpan"	170	310
Sand, water-bearing	40	350
Clay	20	370
Clay, silty, water-bearing	24	394

Casing: 6-inch.

Well 26/5-20J1

Francis Faulkner. About 2,550 ft N. and 100 ft W. of SE cor. Altitude about 275 ft. Drilled by D. K. Schilling.

Topsoil	4	4
"Hardpan"	4	8
Sand and gravel	60	68

Casing: 5-inch to 68 ft.

Well 26/5-20L2

G. G. Gaidos. About 2,500 ft N. and 2,050 ft E. of SW cor. Altitude about 180 ft. Drilled by H. O. Meyer, 1949.

Sand, brown	20	20
Sand, gray	9	29
Gravel, dry	3	32
Sand and clay, brown	23	55
Clay	3	58
Clay and sand, water-bearing	4	62
Gravel, coarse, water-bearing	2	64
Gravel and sand, intercalated, water-bearing	10	74
Sand, coarse	1	75

Casing: 6-inch to 75 ft.

Well 26/5-20M2

Dave Steiner. About 1,450 ft N. and 500 ft E. of SE cor. Altitude about 145 ft. Drilled by H. O. Meyer, 1949.

Topsoil	2	2
"Hardpan" and gravel	8	10
Sand and gravel, fine	25	35
Sand and clay	10	45
Sand and gravel, water-bearing	25	70
Clay, blue	11	81
Sand, fine, water-bearing	3	84
Sand and gravel, fine, water-bearing	7	91

Casing: 4-inch to 85 ft; screen, 14 slot, from 85 to 91 ft.

Table 7.--Drillers' logs of wells in northwest King County, Wash.--Continued

Material	Thickness (feet)	Depth (feet)
Well 26/5-20N2		
G. C. Hamilton. About 1,000 ft N. and 800 ft E. of SW cor. Altitude about 130 ft. Drilled by N. C. Jannsen, 1934.		
Sand and gravel, water-bearing	62	62
Sand	19	81
Clay	5	86
Casing: 6-inch to 86 ft; perforated from 73 to 79 ft.		
Well 26/5-20N3		
George Robbins. About 200 ft N. and 500 ft E. of SW cor. Altitude about 95 ft. Drilled by Pratt(?).		
Sand	10	10
Clay	62	72
Gravel, cemented	1	73
Sand, gray	----	----
Casing: 3-inch to 73 ft.		
Well 26/5-20P1		
E. A. Sharp. About 900 ft N. and 2,300 ft E. of SW cor. Altitude about 120 ft. Dug by owner.		
Sand	12	12
"Hardpan"	4	16
Sand	17	33
Casing: 36-inch.		
Well 26/5-21K1		
E. R. Diesen. About 2,400 ft N. and 2,600 ft W. of SE cor. Altitude about 280 ft. Dug.		
Topsoil	4	4
"Hardpan"	20	24
Clay, blue, and sand	30	54
Gravel	21	75
Casing: 48-inch, concrete tile, to 65 ft.		
Well 26/5-21Q1		
Peter Turtianen. About 1,150 ft N. and 1,450 ft W. of SE cor. Altitude about 300 ft. Dug by owner.		
"Hardpan"	30	30
Sand	60	90
Gravel	10	100
Casing: 48-inch to 80 ft.		

Table 7.--Drillers' logs of wells in northwest King County, Wash.--Continued

Material	Thickness (feet)	Depth (feet)
Well 26/5-22A1		
George Nelson. About 850 ft S. and 100 ft W. of NE cor. Altitude about 50 ft. Drilled by N. C. Jannsen, 1931.		
Sand, gravel, and "rocks"	3	3
Sand and gravel	33	36
Sand	9	45
Clay, sandy	10	55
Clay, blue	100	155
Sand and gravel	2	157
Sand, coarse, and gravel	3	160
Sand and gravel	20	180
Gravel and sand	5	185
Gravel	2	187
Gravel, coarse	3	190
Casing: 6-inch to 160 ft.		
Well 26/5-22N1		
G. M. Danenbauer. About 1,200 ft N. and 250 ft E. of SW cor. Altitude about 360 ft. Dug by Thorpe.		
"Hardpan," sand, and gravel	130	130
Sand, water-bearing	18	148
Casing: 48-inch to 148 ft.		
Well 26/5-23A1		
H. N. Thomas. About 1,150 ft S. and 300 ft W. of NE cor. Altitude about 400 ft. Drilled by Kjorsvik and Anderson, 1944.		
"Hardpan"	50	50
Sand, water-bearing	170	220
Clay	3	223
Sand, dry	100	323
Casing: 6-inch to 220 ft. (Owner's memory log)		
Well 26/5-23P2		
K. Abe. About 450 ft N. and 2,250 ft E. of SW cor. Altitude about 100 ft. Drilled by E. F. Axelson.		
"Hardpan"	75	75
Sand	7	82
Casing: 6-inch to 82 ft.		

Table 7.--Drillers' logs of wells in northwest King County, Wash.--Continued

Material	Thickness (feet)	Depth (feet)
Well 26/5-25M1		
Fred Miller. About 1,750 ft N. and 800 ft E. of SW cor. Altitude about 300 ft. Drilled by Wilson, 1939.		
"Hardpan"	6	6
Sand, water-bearing	90	96
Gravel, water-bearing	16	112
Casing: 6-inch to 100 ft.		
Well 26/5-25P1		
A. Peterson. About 150 ft N. and 1,450 ft E. of SW cor. Altitude about 300 ft. Dug by T. Newbom, 1950.		
"Hardpan"	68	68
Sand	7	75
Casing: 36-inch to 70 ft.		
Well 26/5-26H2		
A. H. Kemp. About 1,950 ft S. and 300 ft W. of NE cor. Altitude about 100 ft. Drilled by H. O. Meyer, 1952.		
Clay	150	150
Silt, coarse	10	160
Clay	20	180
Clay and silt	45	225
Casing: 6-inch.		
Well 26/5-27L1		
B. Rusch. About 2,700 ft S. and 2,000 ft E. of NW cor. Altitude about 100 ft. Dug by owner.		
Clay, brown	11	11
Clay, blue	5	16
Sand, water-bearing	1	17
Casing: 36-inch to 16 ft.		
Well 26/5-28D1		
C. Arnold. About 500 ft S. and 150 ft E. of NW cor. Altitude about 170 ft. Drilled by H. O. Meyer.		
"Hardpan" and gravel	40	40
Gravel and sand	11	51
Gravel, coarse	3	54
Casing: 6-inch.		

Table 7.--Drillers' logs of wells in northwest King County, Wash.--Continued

Material	Thickness (feet)	Depth (feet)
Well 26/5-28J2		
J. J. Yeyna. About 3,300 ft S. and 1,000 ft W. of NE cor. Altitude about 225 ft.		
Sand and gravel	17	17
"Hardpan"	2	19
Sand and gravel	12	31
Sand, water-bearing	3	34
Casing: 36-inch.		
Well 26/5-28M1		
L. Eastham. About 3,150 ft S. and 1,250 ft E. of NW cor. Altitude about 150 ft. Drilled by H. O. Meyer.		
Topsoil	6	6
"Hardpan"	30	36
Clay, sandy, water-bearing	4	40
Clay	88	128
Gravel and sand, water-bearing	2	130
Clay	18	148
Gravel, water-bearing	2	150
"Hardpan"	4	154
Clay	4	158
Sand and gravel, water-bearing	4	162
Clay	----	----
Casing: 6-inch to 158 ft.		
Well 26/5-28N2		
Al Johns. About 400 ft N. and 1,150 ft E. of SW cor. Altitude about 180 ft. Drilled by H. O. Meyer.		
Sand	7	7
"Hardpan"	38	45
Gravel, coarse, water-bearing	5	50
Clay	50	100
Silty and sand, water-bearing	10	110
Sand, coarse, water-bearing	10	120
Casing: 6-inch to 120 ft.		
Well 26/5-28N3		
E. Cronhagen. About 200 ft N. and 1,450 ft E. of SW cor. Altitude about 165 ft. Dug by owner.		
"Hardpan"	10	10
Clay	2	12
Sand, water-bearing	3	15
Casing: 36-inch to 14 ft.		

Table 7.--Drillers' logs of wells in northwest King County, Wash.--Continued

Material	Thickness (feet)	Depth (feet)
Well 26/5-29E1		
W. E. Ferguson. About 2,500 ft S. and 750 ft E. of NW cor. Altitude about 110 ft. Drilled by H. O. Meyer, 1947.		
Topsoil	8	8
Sand and clay	9	17
"Hardpan"	11	28
"Boulders" and gravel	3	31
Sand and gravel	7	38
"Hardpan," gray	10	48
Gravel, water-bearing	2	50
Clay	4	54
Sand and clay	6	60
Clay and peat	6	66
Sand, water-bearing	4	70
Clay	1	71
Sand, coarse, water-bearing	4	75
Casing: 6-inch to 70 ft; screen, 14 slot, from 70 to 75 ft.		
Well 26/5-29L1		
B. B. Reynolds. About 2,800 ft S. and 2,150 ft E. of NW cor. Altitude about 160 ft. Dug by owner.		
Topsoil	4	4
"Hardpan"	9	13
Sand	3	16
Casing: 30-inch to 16 ft.		
Well 26/5-29L2		
McLean. About 3,350 ft S. and 2,500 ft E. of NW cor. Altitude about 210 ft. Drilled by H. O. Meyer.		
Topsoil	6	6
"Hardpan"	6	12
Sand and gravel	14	26
Sand and clay	40	66
Sand and gravel	4	70
Clay and sand, gray	10	80
Sand	5	85
Sand, brown, water-bearing	5	90
Sand, gray, and clay, water-bearing	5	95
Clay and sand, compact	37	132
Clay and sand, water-bearing	2	134
Gravel, coarse, water-bearing	5	139
Casing: 6-inch to 139 ft.		

Table 7.--Drillers' logs of wells in northwest King County, Wash.--Continued

Material	Thickness (feet)	Depth (feet)
Well 26/5-29P2		
R. M. Baughman. About 950 ft N. and 2,400 ft E. of SW cor. Altitude about 230 ft. Drilled by H. O. Meyer.		
"Hardpan" and clay	60	60
Sand, red, water-bearing	38	98
Clay	26	124
Sand	1	125
Clay	3	128
Sand and gravel, water-bearing	1	129
Clay	11	140
Sand and gravel, water-bearing	5	145
Clay	30	175
Casing: 6-inch to 110 ft.		
Well 26/5-29Q1		
E. H. Ramin. About 250 ft N. and 1,500 ft W. of SE cor. Altitude about 250 ft. Dug by Newton Veeder.		
Topsoil	1	1
"Hardpan"	3	4
Clay, sandy	49	53
Casing: 24-inch.		
Well 26/5-30A2		
E. Buddin. About 100 ft S. and 250 ft W. of NE cor. Altitude about 115 ft. Drilled by James Bell, 1953.		
Topsoil	2	2
Sand and clay	13	15
Sand, some gravel and clay	50	65
Clay, blue	38	103
Silt, clay, wood, and sand	27	130
Sand, dirty, blue, water-bearing	2	132
Casing: 16-inch to 132 ft.		
Well 26/5-30G1		
King County Water Dist. 72. About 2,350 ft S. and 3,000 ft E. of NW cor. Altitude about 120 ft. Drilled by R. J. Strasser, 1948.		
Topsoil	8	8
Gravel, loose	12	20
"Sandstone," yellow	11	31
"Boulders"	4	35

Table 7.--Drillers' logs of wells in northwest King County, Wash.--Continued

Material	Thickness (feet)	Depth (feet)
Well 26/5-30G1--Continued		
"Conglomerate," brown, and scattered gravel	43	78
Clay, hard, gray	40	118
Sand, runny, gray	7	125
Clay, hard, brown	16	141
Sand, coarse, gray	9	150
Clay, hard, brown	15	165
Sand, fine, gray, water-bearing	12	177
"Sandstone," gray	29	206
Silt, soft, gray	19	225
Clay, sticky, gray	19	244
Clay, gray	230	474
Gravel, cemented	26	500
Clay, sticky, gray	20	520
Gravel, cemented	15	535
Clay, sticky, gray	12	547

Casing: 18-inch to 160 ft, 10-inch from 160 to 184 ft; perforated from 164 to 184 ft; gravel pack, 16 yards at perforation.

Well 26/5-30G3

E. J. Bouchard. About 2,400 ft S. and 2,900 ft E. of NW cor. Altitude about 120 ft. Drilled by N. C. Jannsen, 1929.

Sand	14	14
Sand and gravel	8	22
Clay, sandy	15	37
Clay	5	42
Sand, water-bearing	4	46

Casing: 6-inch to 46 ft.

Well 26/5-30M1

--- Miller. About 1,700 ft N. and 400 ft E. of SW cor. Altitude about 415 ft. Drilled by D. K. Schilling.

"Hardpan"	60	60
Sand, gravel at 180 ft	120	180
Clay or silt, blue	170	350
Sand and gravel, water-bearing	4	354
No record	26	380

Casing: 6-inch.

Well 26/5-30N1

D. Reine. About 750 ft N. and 900 ft E. of SW cor. Altitude about 335 ft. Dug by owner.

Sand, with clay lenses	50	50

Casing: 48-inch, concrete tile, to 50 ft.

Table 7.--Drillers' logs of wells in northwest King County, Wash.--Continued

Material	Thickness (feet)	Depth (feet)
Well 26/5-31K1		
Stephen Thein. About 2,000 ft N. and 2,050 ft W. of SE cor. Altitude about 20 ft. Drilled by H. O. Meyer, 1949.		
Topsoil	7	7
Sand, water-bearing	2	9
Gravel and sand	12	21
Clay	2	23
Peat, brown	10	33
Sand, compact	5	38
Well 26/5-32R1		
City of Kirkland, well 8. About 550 ft N. and 850 ft W. of SE cor. Altitude about 325 ft. Drilled by L. R. Gaudio, 1952.		
Sand, fine to medium, brown	69	69
Clay, blue	21	90
Sand, fine, gray	16	106
Clay, blue	29	135
Clay, sand, and gray gravel	32	167
Clay, blue-gray	12	179
Sand, coarse, gray	5	184
Clay, light brown to green	15	199
Sand, gray	7	206
Clay, gray	13	219
"Hardpan," gray	37	256
Sand, muddy, and gray gravel	5	261
Gravel, cemented	1	262
Sand and gravel, coarse	3	265
"Hardpan"	1	266
Sand and gravel, coarse	7	273
Sand, fine, and coarse gravel	10	283
"Hardpan"	3	286
Sand and gravel	18	304
Sand, fine, and blue clay	5	309
Casing: 12-inch to 263 ft, 7-inch from 243 to 263 ft; screen from 263 to 299 ft.		
Well 26/5-33A1		
W. J. Nicholson. About 900 ft S. and 150 ft W. of NE cor. Altitude about 350 ft. Dug by owner.		
Topsoil	2	2
"Hardpan"	7	9
Sand, stratified	38	47
Sand, compact, tight	3	50
Gravel, water-bearing	1	51
Sand, stratified	6	57
Casing: 48-inch, concrete, to 3 ft.		

Table 7.--Drillers' logs of wells in northwest King County, Wash.--Continued

Material	Thickness (feet)	Depth (feet)
Well 26/5-34E1		
O. Staley. About 2,400 ft S. and 150 ft E. of NW cor. Altitude about 235 ft. Dug by Elmer Miller.		
Sand	6	6
"Hardpan"	22	28
Sand, dry	9	37
Sand, water-bearing	2	39
"Hardpan"	----	----
Casing: 36-inch, concrete tile, to 38 ft.		
Well 26/5-36C1		
C. B. Streeter. About 150 ft S. and 1,800 ft E. of NW cor. Altitude about 315 ft. Dug by Early.		
"Hardpan"	56	56
Sand	13	69
Clay	----	----
Casing: 36-inch.		
Well 26/6-8L1		
O. E. Kelting. About 150 ft S. and 3,050 ft W. of E¼ cor. Altitude about 270 ft. Dug by John Bloom.		
"Hardpan"	41	41
Gravel	4	45
Casing: 44-inch to 44 ft.		
Well 26/6-9A1		
W. A. Barnes. About 200 ft S. and 900 ft W. of NE cor. Altitude about 445 ft.		
"Hardpan"	33	33
Sand and gravel	4	37
Casing: 24-inch to 37 ft.		
Well 26/6-9G1		
G. M. Brown. About 2,600 ft S. and 1,500 ft W. of NE cor. Altitude about 400 ft. Dug by owner.		
Sand	5	5
"Hardpan"	14	19
Sand, fine	5	24

Table 7.--Drillers' logs of wells in northwest King County, Wash.--Continued

Material	Thickness (feet)	Depth (feet)
Well 26/6-9L1		
L. E. Hall. About 2,850 ft S. and 1,500 ft E. of NW cor. Altitude about 450 ft. Dug by L. E. Hall.		
Topsoil	4	4
"Hardpan"	21	25
Sand and gravel	6	31
Casing: 48-inch.		
Well 26/6-10N2		
A. Engebrigtsen. About 1,500 ft S. and 1,000 ft E. of W¼ cor. Altitude about 555 ft. Dug by owner.		
"Hardpan"	45	45
Gravel	3	48
Casing: 48-inch.		
Well 26/6-12E1		
James Wallace. About 2,400 ft S. and 750 ft E. of NW cor. Altitude about 35 ft. Drilled by C. D. Marks.		
Silt	35	35
Clay, blue	30	65
Sand, water-bearing	2	67
"Muck," sandy	45	112
Clay, blue	43	155
Clay, sticky, blue	132	287
Clay, sandy	14	301
Sand, gritty, sharp, water-bearing	4	305
Casing: 6-inch.		
Well 26/6-13D1		
City of Duvall. About 850 ft S. and 1,300 ft E. of NW cor. Altitude about 45 ft. Drilled by C. D. Marks, 1940.		
Silt and clay	21	21
"Hardpan"	76	97
Clay, blue, "shot clay"	34	131
Clay, blue	71	202
Sand and gravel	13	215
Casing: 6-inch to 215 ft.		

Table 7.--Drillers' logs of wells in northwest King County, Wash.--Continued

Material	Thickness (feet)	Depth (feet)
Well 26/6-13N1		
Elmer Pazer. About 1,250 ft N. and 1,350 ft E. of SW cor. Altitude about 107 ft. Drilled by C. D. Marks, 1932.		
Clay, yellow	10	10
Clay and pebbles	2	12
Clay, blue	62	74
Clay, sandy, blue	34	108
Clay, sticky, blue	29	137
Clay, sandy, hard	18	155
Sand and gravel, coarse, hard	28	183
Clay, blue, and sand	2	185
Sand and gravel, fine	36	221
Clay, blue	2	223
"Sandstone"	4	227
Sand and gravel	6	233
Clay	1	234
Sand, blue, water-bearing	4	238
Casing: 6-inch to 238 ft.		
Well 26/6-15L1		
S. E. Seims. About 2,050 ft N. and 1,350 ft E. of SW cor. Altitude about 530 ft. Dug by owner.		
"Hardpan"	14	14
Gravel, coarse	4	18
Casing: 36-inch.		
Well 26/6-19L1		
M. S. Slettebo. About 2,200 ft N. and 1,900 ft E. of SW cor. Altitude about 390 ft. Drilled by Kjorsvik and Anderson.		
"Hardpan"	100	100
Clay	30	130
Sand and gravel, intercalated with clay	106	236
Casing: 8-inch to 224 ft; screen, 20 slot, from 224 to 236 ft.		
Well 26/6-20M1		
C. M. Welch. About 2,850 ft N. and 1,250 ft E. of SW cor. Altitude about 140 ft. Drilled by Kjorsvik and Anderson.		
Clay and silt	65	65
Sand	----	----
Casing: 6-inch to 65 ft.		

Table 7.--Drillers' logs of wells in northwest King County, Wash.--Continued

Material	Thickness (feet)	Depth (feet)
Well 26/6-20M2		
C. H. Fordney. About 2,850 ft N. and 1,350 ft E. of SW cor. Altitude about 145 ft. Drilled by Kjorsvik and Anderson.		
Clay and silt	72	72
Sand	----	----
Casing: 6-inch to 72 ft.		
Well 26/6-20N1		
Ralph Rigby. About 950 ft N. and 350 ft E. of SW cor. Altitude about 130 ft. Drilled by W. E. Peterson.		
Sand	43	43
"Hardpan"	2	45
Sand and gravel, coarse	2	47
Casing: 6-inch to 47 ft.		
Well 26/6-20Q1		
James Madden. About 350 ft N. and 2,000 ft W. of SE cor. Altitude about 190 ft. Drilled by W. B. Gemmil, 1946.		
"Hardpan"	29	29
Silt, buff	24	53
Sand and gravel	2	55
Silt, buff	107	162
Wood	1	163
Silt, buff	104	267
Casing: 6-inch to 267 ft. Driller blew casing at 53 ft with dynamite.		
Well 26/6-20Q2		
A. Sather. About 300 ft N. and 1,700 ft W. of SE cor. Altitude about 200 ft. Drilled by Kjorsvik and Anderson.		
"Hardpan"	16	16
Sand and gravel	2	18
"Hardpan"	35	53
Sand and gravel	12	65
Clay, blue	----	----
Casing: 6-inch to 60 ft; screen, 14 slot, from 60 to 65 ft.		

Table 7.--Drillers' logs of wells in northwest King County, Wash.--Continued

Material	Thickness (feet)	Depth (feet)
Well 26/6-20R1		
Bill Hieb. About 1,100 ft N. and 300 ft W. of SE cor. Altitude about 310 ft. Drilled by J. C. Maxwell, 1952.		
"Hardpan"	70	70
Sand	8	78
Casing: 6-inch to 78 ft.		
Well 26/6-21P1		
Ivan Scheel. About 350 ft N. and 2,550 ft E. of SW cor. Altitude about 470 ft. Drilled by John Malcolm, 1952.		
Sand	12	12
"Hardpan"	22	34
Sand and gravel	3	37
"Hardpan"	25	62
Sand and gravel	33	95
Clay, blue	14	109
Casing: 6-inch to 99 ft; perforated from 74 to 99 ft.		
Well 26/6-21P2		
E. A. Richards. About 300 ft N. and 1,500 ft E. of SW cor. Altitude about 435 ft. Drilled by John Malcolm, 1952.		
"Hardpan"	66	66
Gravel, water-bearing	2	68
Clay, yellow	97	165
Sand and gravel	15	180
Sand, fine	40	220
Casing: 8-inch to 220 ft; perforated from 165 to 180 ft.		
Well 26/6-24D1		
O. E. Thayer. About 1,300 ft S. and 1,300 ft E. of NW cor. Altitude about 130 ft. Drilled by C. D. Marks, 1932.		
Clay, yellow	10	10
"Hardpan"	12	22
Gravel	2	24
Clay, shot, blue	20	44
Clay, blue	3	47
Clay, blue, and "boulders"	28	75
Clay, shot, blue	79	154
Clay, sandy, blue	3	157
"Boulders"	5	162
Clay, blue	33	195

Table 7.--Drillers' logs of wells in northwest King County, Wash.--Continued

Material	Thickness (feet)	Depth (feet)
Well 26/6-24D1--Continued		
Clay, shot	17	212
Gravel	1	213
Clay, blue	10	223
Sand	1	224
Clay, blue	1	225
Gravel, fine	1	226
Clay, blue	21	247
Sand, fine	4	251

Casing: 6-inch.

Well 26/6-25C1

A. P. Winkelman. About 1,100 ft S. and 2,000 ft E. of NW cor. Altitude about 100 ft. Drilled by H. O. Meyer.

Clay	9	9
"Hardpan" and gravel	5	14
Gravel	1	15
Clay	20	35
Sand, water-bearing	10	45
Clay	20	65
Sand	3	68
Clay, blue	132	200

Casing: 6-inch to 45 ft.

Well 26/6-25F1

Vern Pickering. About 1,850 ft S. and 2,050 ft E. of NW cor. Altitude about 100 ft. Drilled by H. O. Meyer, 1950.

Topsoil	1	1
Clay, yellow	2	3
"Hardpan" and gravel	6	9
"Hardpan"	9	18
Boulders	2	20
Gravel, water-bearing	2	22
"Hardpan," water-bearing	20	42
Gravel and sand, water-bearing	2	44
"Hardpan," soft caves	4	48
"Hardpan," compact	10	58

Casing: 6-inch to 58 ft; perforated from 42 to 48 ft.

Well 26/6-30F1

I. Brown. About 2,000 ft S. and 2,100 ft E. of NW cor. Altitude about 95 ft. Drilled by N. C. Jannsen, 1932.

Clay, yellow	6	6
Clay, blue	34	40
"Quicksand"	3	43

Table 7.--Drillers' logs of wells in northwest King County, Wash.--Continued

Material	Thickness (feet)	Depth (feet)
Well 26/6-30F1--Continued		
Clay, blue	15	58
Boulders	1	59
Clay, tough, blue	13	72
Clay, blue	83	155
"Shale," water-bearing	7	162
Clay, blue	21	183

Casing: 6-inch to 162 ft.

Well 26/6-30F2

I. Brown. About 2,000 ft S. and 2,100 ft E. of NW cor. Altitude about 95 ft. Drilled by H. O. Meyer, 1951.

Topsoil	2	2
Clay, yellow	10	12
Clay, sandy, blue	28	40
Sand, water-bearing	4	44
Silt, sandy	8	52
Sand, fine, and silt	3	55

Casing: 6-inch to 38 ft.

Well 26/6-30G1

F. B. Sahlstrom. About 2,050 ft S. and 2,500 ft W. of NE cor. Altitude about 100 ft. Dug by owner.

Topsoil	8	8
Clay, blue	42	50
Sand, fine	----	----

Casing: 27-inch to 22 ft, 6-inch from 22 to 50 ft.

Well 26/6-30Q1

Ed Bower. About 250 ft N. and 2,100 ft W. of SE cor. Altitude about 95 ft. Drilled by N. C. Jannsen, 1946.

Topsoil	5	5
Clay, blue	28	33
Sand, water-bearing	19	52
Gravel, medium, water-bearing	1	53

Casing: 6-inch to 52 ft.

Table 7.--Drillers' logs of wells in northwest King County, Wash.--Continued

Material	Thickness (feet)	Depth (feet)
Well 26/6-31L1		
Stanley Robstad. About 2,200 ft N. and 1,400 ft E. of SW cor. Altitude about 100 ft. Drilled by John Malcolm.		
Topsoil	8	8
"Hardpan"	3	11
Clay, blue	289	300
Sand, fine, silty	48	348
Gravel	5	353

Casing: 6-inch.

Table 8.--Selected comprehensive chemical analyses

Analyst: BCL, Bennett's Chemical Laboratory, Inc.; Testing Laboratories, Inc.; NL, Northwest Labora- U.S. Navy.

Well	Depth (feet)	Date of collection	Analyzed by	Temperature (°F)	Silica (SiO_2)	Iron (Fe)	Manganese (Mn)	Calcium (Ca)	Magnesium (Mg)
						Parts per million			
23/4-4A1	686	4-19-54	USGS	56	25	0.14	---	16	19
24/4-6A1	180	1922	?	----	82	2.0	---	35	19
-12M1	62	1-24-51	NL	----	27	.05	---	12	12
-19H1	631	3-31-49	LTL	----	55	10	---	84	20
-25R1	154	4-11-58	USGS	62	23	.41	0.00	10	10
24/5-4D1	600	11-2-50	NL	52	65	.3	---	25	19
-7P1	77	1-24-52	BCL	----	28	1.0	---	----	----
-9C1	148	5-17-50	NL	----	38	<.1	<.1	15	11
-16M1	277	7-6-48	NL	----	48	<.1	---	3.4	1.4
-23C2	---	8- -55	NL	----	65	.26	.02	16	6.6
-23E1	385	4-11-58	USGS	----	48	.06	.70	32	6.3
24/6-4N1	300	4-3-58	USGS	48.5	34	1.0	.00	10	4.6
-27Q1	40	8-20-51	USGS	50	17	.07	.00	22	3.5
-28J1	54	8-20-51	USGS	----	22	.01	.00	10	3.3
24/7-10C1	52	8-24-51	USGS	----	19	15	.00	12	4.3
-11L1	---	8-20-51	USGS	----	47	1.6	.00	20	6.8
25/3-14J1	545	9-25-53	GNRy	----	42	-----	---	19	5.3
-23Q1	1,050	3-12-52	USN	----	41	.40	.0	12	4.4
25/4-31E1	785	4-3-47	LTL	----	41	-----	---	73	59
-31R1	145	1923	?	----	49	6.2	---	127	73
25/5-1A1s	Spring	4-24-51	NL	----	30	.07	---	6.6	6.5
-5H1	200	8-26-52	NL	----	58	2.2	---	12	6.4
-5R1	204	9-5-52	NL	----	49	2.0	<.05	11	6.4
-17Q1	108	11-20-43	NL	----	29	-----	---	18	7.5
-20C1	244	11-2-50	?	----	38	<.1	---	13	9.6
-21Q1	100	8-24-51	USGS	----	33	.02	.00	6.3	6.2
-23C3	88	4-16-58	USGS	51	24	.09	---	6.4	4.9
-24R1	75	4-9-58	USGS	54	19	5.8	.00	8.8	6.8
-32N1	1,055	1-26-50	NL	----	44	<.1	---	16	10
25/6-19A2	200	4-9-58	USGS	54	18	.78	.00	18	3.4
26/3-1D3	94	2-25-54	USGS	49	31	.00	---	13	13
-2C1	101	2-25-54	USGS	54	48	.11	---	18	5.9
26/4-5E1	565	5-14-54	USGS	50	40	.02	.05	21	13
-16Q1	287	2-23-54	USGS	50	34	.00	---	18	1.5
-30K1	240	2-25-54	USGS	50	36	.00	---	19	2.0
26/5-5E1	230	8-24-51	USGS	----	47	.03	.00	21	8.4
-30G1	184	4-30-48	NL	----	57	2.3	.10	12	11
-32R1	304	1-12-53	NL	----	63	.25	---	14	8.7

[a] Computed.

of ground water in northwest King County, Wash.

GN Ry, Great Northern Railway; LTL, Laucks
tories; USGS, U.S. Geological Survey; USN,

Parts per million												
Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Carbonate (CO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids	Hardness as $CaCO_3$ a/	Specific conductance (micromhos at 25°C)	pH
314	8.4	284	----	1.9	348	0.1	1.0	0.68	[a]876	118	1,600	7.9
82		[a]254	----	4.6	93	---	---	----	537	165	----	---
5.0		75	----	18	7.7	---	.4	----	137	75	----	7.4
551		478	----	119	990	---	---	----	2,360	702	----	7.2
6.0	4.2	82	0	12	2.5	.0	.1	.14	104	66	156	7.7
304		501	----	1.0	278	.4	.0	----	963	142	----	8.2
---	---	123	0	.0	3.7	---	---	----	141	109	----	8.1
8.8		112	----	5.9	2.5	---	.13	----	135	82	----	7.7
57		155	----	.5	8.9	---	Tr.	----	205	14	----	8.0
14		56	----	37	8.9	.0	.0	----	173	67	----	6.7
18	9.6	171	0	16	3.0	.1	.0	----	196	106	307	8.0
4.2	3.3	59	0	.5	1.8	.0	3.3	.09	[a]91	44	106	7.2
7.4	1.8	94	----	8.6	2.4	.1	.1	----	[a]109	69	162	8.0
5.4	1.6	47	----	6.3	3.4	.2	3.5	----	79	38	105	7.0
6.3	2.4	69	----	1.0	4.8	.2	2.5	----	102	48	120	7.2
6.6	3.4	104	----	5.4	2.5	.2	.2	----	[a]145	78	175	7.7
16		---	29	3.4	24	---	---	----	260	70	----	---
39		134	----	.1	16	---	---	----	211	48	----	7.4
259		196	1.5	36	554	---	---	----	1,320	----	----	7.9
87		[a]180	----	35	441	---	---	----	1,055	617	----	---
4.7		50	----	4.8	5.5	.0	.09	----	75	43	----	7.1
17		101	----	1.3	6.8	.0	.0	----	151	57	----	7.3
18		98	----	1.5	6.8	.0	.0	----	121	53	----	7.2
3.4		---	----	2.5	5.2	---	.0	----	120	76	----	7.4
15		105	----	2.5	10	.4	.0	----	[a]141	71	----	7.8
3.8	1.4	49	----	6.3	4.3	.2	.9	----	86	41	102	7.2
3.9	1.9	45	0	4.7	2.0	---	.5	.07	72	36	90	7.4
5.7	2.1	61	0	7.7	4.0	.0	.4	.10	82	50	126	7.3
22		137	----	.2	13	---	.0	----	[a]174	88	----	7.8
22	3.1	124	0	1.4	3.0	.0	1.8	.11	131	59	202	8.0
7.8	2.7	74	----	20	10	.2	13	.03	157	86	222	7.4
7.3	2.5	92	----	4.1	4.5	.2	1.9	.18	124	69	172	7.5
19	5.4	170	0	3.7	3.8	.2	4.7	.09	187	106	285	7.8
6.1	2.2	60	----	9.9	3.5	.2	1.2	.06	104	51	137	7.5
6.2	2.2	71	----	6.2	4.0	.2	1.8	.01	114	56	145	7.2
8.6	4.0	128	----	1.7	2.9	.3	.7	----	[a]158	87	201	7.2
.9		95	----	<.1	1.4	---	---	----	141	72	----	7.2
12		110	----	1.2	4.4	.0	.0	----	135	71	----	7.0

Table 9.--Selected partial chemical analyses of ground water in northwest King County, Wash.

Analyses by U.S. Geological Survey

Well	Depth (feet)	Date of collection	Parts per million			
			Bicarbonate (HCO_3)	Chloride (Cl)	Hardness as $CaCO_3$	Specific conductance (micromhos at 25°C)
23/4-4B1	17-22	3-9-55	46	83	152	599
24/5-2D1	160	5-6-58	89	3.7	59	140
-2D2	220	5-6-58	98	3.9	62	150
-2F2	10	5-6-58	44	4.7	32	85
-3G2	189	5-8-58	80	3.1	46	108
-3K1	99	5-8-58	56	4.1	37	103
-4R1	55	5-8-58	90	5.8	68	157
-8A1	8	5-8-58	60	5.6	55	127
-9F1	20	5-8-58	61	9.5	100	255
-10A1	171	2-25-58	49	6.0	32	88
-10A2	152	2-25-58	62	4.8	43	112
-11N1	83	4- -58	----	7.2	40	----
-11N2	105	5-9-58	61	5.6	48	117
-13F1	180	5-20-58	98	7.2	44	176
-14B1	158	5-8-58	45	5.6	35	99
-14L1	35	5-9-58	67	5.0	45	128
-16F2	53	2-25-58	64	7.0	65	153
-23C1	312	2-24-58	122	5.6	114	275
-25D1	12	5-9-58	31	7.0	18	99
24/6-2P2	100+	5-27-58	90	11	60	151
-16L1	72	5-16-58	176	5.0	81	260
-18E1	40	5-27-58	752	19	58	717
-19Q1	327	5-20-58	111	6.2	95	229

24/7-4M1	24	4-16-58	81	9.5	67	168
-6G1	17	4-16-58	78	7.2	47	136
-8G1	8	4-16-58	78	6.0	55	141
25/5-1C1	49	3-11-58	51	4.4	31	97
-11L1	85	3-27-58	141	6.6	34	141
-12G1	31	3-10-58	65	6.7	43	----
-12H1	29	3-10-58	64	6.2	43	135
-12J1	19	3-10-58	41	6.5	42	128
-12J2	9	3-10-58	47	5.8	39	106
-13L1	39	3-14-58	112	4.9	75	147
-13N1	20	3-14-58	61	6.9	60	164
-13P1	42	3-14-58	98	6.9	71	182
-14J1	192	3-21-58	95	1.3	52	132
-15R2	34	4-2-58	22	5.8	34	97
-17A1s	spring	4-8-58	51	8.7	43	139
-20F1	27	4-8-58	77	7.8	56	158
-20J1s	spring	4-11-58	93	6.4	72	181
-21D1s	spring	4-8-58	73	5.0	4.1	113
-22D2	100	4-8-58	52	4.9	28	84
-22M1	55	4-2-58	69	11	82	213
-23C1	75	4-16-58	51	5.0	32	95
-23K1	108	4-2-58	51	4.9	41	106
-23N1	27	2-25-58	25	4.5	21	54
-23Q1	103	4-2-58	44	4.9	30	80
-23Q2	100	4-2-58	50	3.1	31	89
-23R2	138	4- -58	33	7.5	27	----
-24G2	10	3-21-58	59	2.9	44	112
-32R1	28	5-13-58	85	11	75	199
-33D1	62	5-13-58	44	7.0	52	151
-34R1	38	5-13-58	78	5.5	51	139
25/6-6F1	13	5-7-58	44	5.5	32	96
-6G1	6	2-26-58	214	5.6	33	96
-8G1	131	3-11-58	109	2.3	83	197

Table 9.--Selected partial analyses of ground water in northwest King County, Wash.--Continued

Well	Depth (feet)	Date of collection	Parts per million			
			Bicarbonate (HCO_3)	Chloride (Cl)	Hardness as $CaCO_3$	Specific conductance (micromhos at 25°C)
25/6-9F1	260	3-11-58	83	1.4	52	130
-18K1	286	3-11-58	159	9.4	64	237
-19H1	40	3-11-58	127	2.9	55	198
-19L1	34	3-21-58	109	3.9	84	199
-22C1	145	3-11-58	83	4.9	57	144
-30B1	88	3-21-58	122	3.1	82	170
-30C1	170	3-21-58	159	2.5	82	211
25/7-22G1	60	2-26-58	21	2.7	14	43
-32R1	25	4-17-58	68	1.7	43	109
26/4-13L1	31	3-25-58	71	2.9	62	142
-24M1	69	3-25-58	47	4.5	48	93
26/5-8P2	8	3-25-58	84	4.8	121	145
-9R1	332	3-20-58	231	4.9	138	333
-10L1	12	3-10-58	37	5.2	31	89
-11Q1	180	3-12-58	51	6.8	37	95
-13P3	232	3-11-58	53	2.9	33	91
-14A1	309	2-12-58	57	6.7	37	95
-14G1	209	3-12-58	41	4.8	26	73
-14K1	90	3-12-58	36	4.8	32	83
-14L1	109	3-12-58	34	6.5	26	86
-15D1	14	3-20-58	51	3.1	42	107
-15R1	65	3-12-58	58	7.4	55	96
-16E1	53	4-3-58	86	2.3	64	160
-16G1	28	3-13-58	73	9.2	88	237

26/5-16L1	43	3-13-58	61	5.8	52	134
-17A1	41	3-20-58	61	8.6	51	168
-17A2	32	3-25-58	44	18	118	185
-18A2	101	3-27-58	283	11	70	423
-19J1	100	3-10-58	37	8.1	43	120
-19M1	29	3-25-58	65	9.3	61	163
-20K1	8	3-13-58	90	4.6	58	143
-21K1	75	3-10-58	53	8.0	49	141
-22N1	148	2-26-58	95	19	96	260
-23A1	323	2-12-58	52	4.8	36	121
-23D1	45	3-11-58	129	5.0	58	210
-23J1	67	2-12-58	93	4.8	55	137
-23L1	237	3-11-58	161	3.8	43	241
-25M1	112	2-12-58	80	5.6	51	121
-25P1	75	2-12-58	44	12	37	116
-27K1	15	4-3-58	121	8.2	88	204
-28D2	15	3-13-58	51	7.3	54	146
-34Q1, 2	20-24	3-27-58	49	4.8	65	121
26/6-7L3	9	2-26-58	50	13	66	211
-8J1	41	2-26-58	67	6.0	31	99
-19Q1	8	2-12-58	33	5.8	27	36
-20Q2	65	3-20-58	110	2.7	68	169
-21P1	99	3-20-58	100	11	84	205
-24D1	251	2-26-58	183	9.6	54	293
-30N1	21	2-26-58	28	4.8	11	52
-31L1	353	3-21-58	129	2.5	65	185