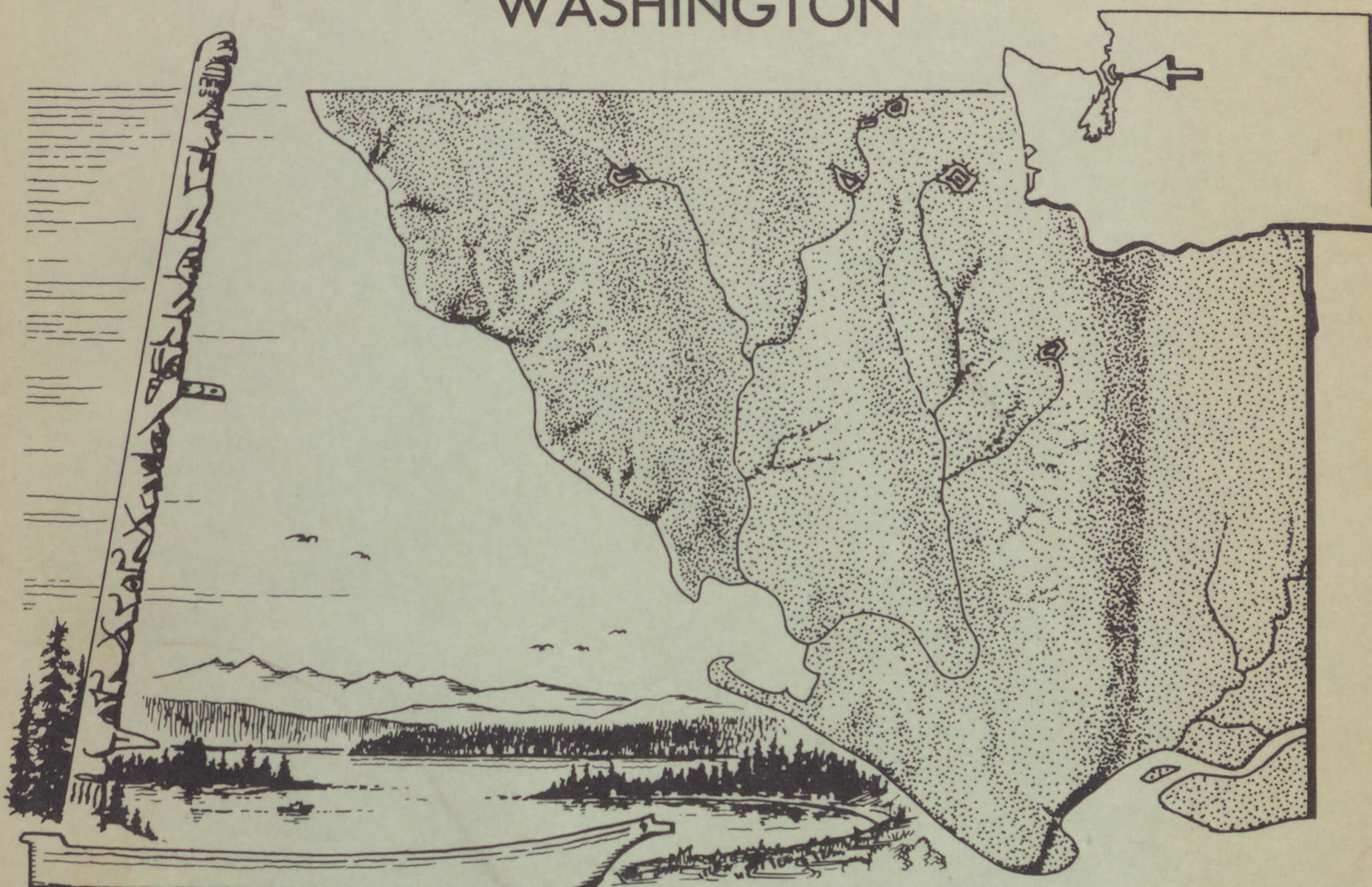
PRELIMINARY ASSESSMENT OF THE WATER RESOURCES OF THE TULALIP INDIAN RESERVATION WASHINGTON



U.S. GEOLOGICAL SURVEY

Open-File Report 76-493

Prepared in Cooperation With

Tulalip Tribal Board of Directors

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

PRELIMINARY ASSESSMENT OF THE WATER RESOURCES OF THE TULALIP INDIAN RESERVATION, WASHINGTON

By B. W. Drost

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Tacoma, Washington
1977

For further information on this investigation and on other water-resources studies in Washington carried out by the U.S. Geological Survey, contact the U.S. Geological Survey, Water Resources Division, 1201 Pacific Avenue, Suite 600, Tacoma, Washington 98402.

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The following factors are provided for conversion of English values used in this report to metric values:

Multiply	By	To obtain
Inches----------------------------	25.4	millimetres (mm)
	2.54	centimetres (cm)
	.0254	metres (m)
Feet------------------------------	.3048	metres (m)
Miles-----------------------------	1.609	kilometres (km)
Square miles (mi^2)---------------	2.590	square kilometres (km^2)
Acres-----------------------------	4047.	square metres (m^2)
Acre-feet (acre-ft)---------------	1233.	cubic metres (m^3)
Cubic feet per second (ft^3/s)----	28.32	litres per second (l/s)
	.02832	cubic metres per second (m^3/s)
Gallons per minute (gal/min)------	.06309	litres per second (l/s)
Cubic feet per second per square mile [$(ft^3/s)/mi^2$]------------	.01093	cubic metres per second per square kilometre [$(m^3/s)/km^2$]
Degrees Fahrenheit (°F)-----------	Subtract 32, multiply remainder by 0.5556	degrees Celsius (°C)

PRELIMINARY ASSESSMENT OF THE WATER RESOURCES OF THE TULALIP INDIAN RESERVATION, WASHINGTON

By B. W. Drost

ABSTRACT

In 1974 about 30 percent of the nearly 600 acre-feet of water used on the Tulalip Indian Reservation was obtained from a surface-water reservoir, while nearly 70 percent was obtained from ground-water sources. Domestic use accounted for about 93 percent of total water use. Nutrient (phosphorus) concentrations measured in most surface-water samples were less than the maximum limit recommended by the U.S. Environmental Protection Agency, whereas the recommended maximum limit for total coliform bacteria was never exceeded. Ground water is withdrawn from aquifers in unconsolidated deposits. Shallow aquifers, which provide about 45 percent of the total ground-water supply, are tapped by about 250 wells and yield 5 to 20 gallons per minute to 30- to 42-inch diameter dug wells. Deeper aquifers yield about 55 percent of the ground-water supply to about 125 wells that are mostly between 100 and 150 feet deep. Yields are generally at least 20 gallons per minute to 6- to 8-inch wells, and several wells have yields exceeding 300 gallons per minute. Water in the shallow aquifers generally had an excessive concentration of dissolved iron, often exceeding the recommended maximum limit of 0.30 milligram per litre, and total coliform bacteria in water from six wells exceeded 1 colony per 100 millilitres of water. Some wells in the deeper aquifers yield water with dissolved iron and (or) manganese concentrations exceeding the recommended maximum limit of 0.30 and 0.05 milligram per litre, respectively. Although many deep coastal wells bottom far below sea level, only two wells indicated local saltwater intrusion. An aquifer underlying the central plateau and an artesian aquifer in the northeastern part of the reservation appear to offer the best potential for development of additional ground-water supplies.

INTRODUCTION

Purpose and Scope

The purpose of this investigation and proposed series of reports is to assess the water resources of the Tulalip Indian Reservation. The data obtained should provide information required for long-range planning, current management decisions, and protection and conservation of vital water resources.

Different parts of the reservation were reported to have different problems, including (1) inadequate ground-water supply, (2) saltwater intrusion, and (3) excessive iron or bacteria content in the ground water. These problem areas have been outlined for study, and analyses have been made to evaluate the possibilities of improving utilization of the existing resources.

The Tulalip Tribe's interest in developing a ground-water supply for a reservationwide water system requires information on the areal distribution of water-bearing zones capable of high yields. Of specific interest is the area surrounding Spee-Bi-Dah and a proposed industrial site near Ebey Slough (pl. 1). Also required are data on the availability and quality of surface water, for a possible expansion of the tribe's fisheries-resources development.

Several lakes on the reservation face possible environmental damage from planned, or presently occurring, logging operations and recreational development. Information concerning the potentially detrimental effects of these activities upon the environmental values of these lakes and their outflows is of immediate concern to the tribe. An analysis of the data obtained from these lakes will be contained in a future report.

To supply the desired information, data on the use, availability, and quality of water have been and will continue to be collected. Streamflows have been measured at 19 key points, information from more than 340 wells has been obtained, an observation-well network has been established for monthly measurements of water levels, and 152 ground- and surface-water samples have been collected and analyzed for chemical quality. Existing information on climate, population distribution, and land use has been compiled. A general geologic reconnaissance has been conducted and the relationships between surface and ground waters have been investigated.

This report summarizes the data and information collected through April 1975 and presents a preliminary analysis of the hydrologic situation on the reservation. It also contains suggested or planned data-collection activities and analysis needed to provide definitive answers to the questions facing the planners and water managers.

Description of the Area

The Tulalip Indian Reservation is in west-central Snohomish County, Wash., north of Everett and west of Marysville (fig. 1). The area of the reservation is about 35 mi^2 (square miles) and is bordered on the west and south by Port Susan and Possession Sound. The northern boundary is on the northern limit of township 30, and its eastern boundary coincides with the eastern right-of-way of Interstate Highway 5.

As of the end of 1974, the total year-round population of the reservation was about 3,450 (N. Dobos, Public Information Officer, Snohomish County Planning Department, oral commun., 1975), or about double the population of the reservation in 1960 (fig. 2). In addition, the reservation has an influx of about 1,600 residents each summer. Most of the population is along the shoreline and along the eastern margin of the reservation. About 550 members of the Tulalip Tribe live on the reservation.

About 30 percent of the land within the reservation boundaries is owned by the Tulalip Tribe, about 10 percent is owned by individual tribal members, and about 60 percent is controlled by non-tribal members, of which two large tracts are controlled by industrial interests. The only existing industrial development is the Boeing Test Center (fig.1 and pl. 1), which is on tribal land. Potential industrial sites on non-tribal land include the Glacier Park Co. property in the northeastern part of the reservation, proposed for a railroad yard, and Union Oil Co. land in the west-central part, proposed for a refinery site. The tribe-owned Ebey Slough area also is considered for industrial development. Agricultural activities on the reservation are confined basically to its eastern lowland margin and consist primarily of small herds (less than 20 head) of beef and dairy cattle.

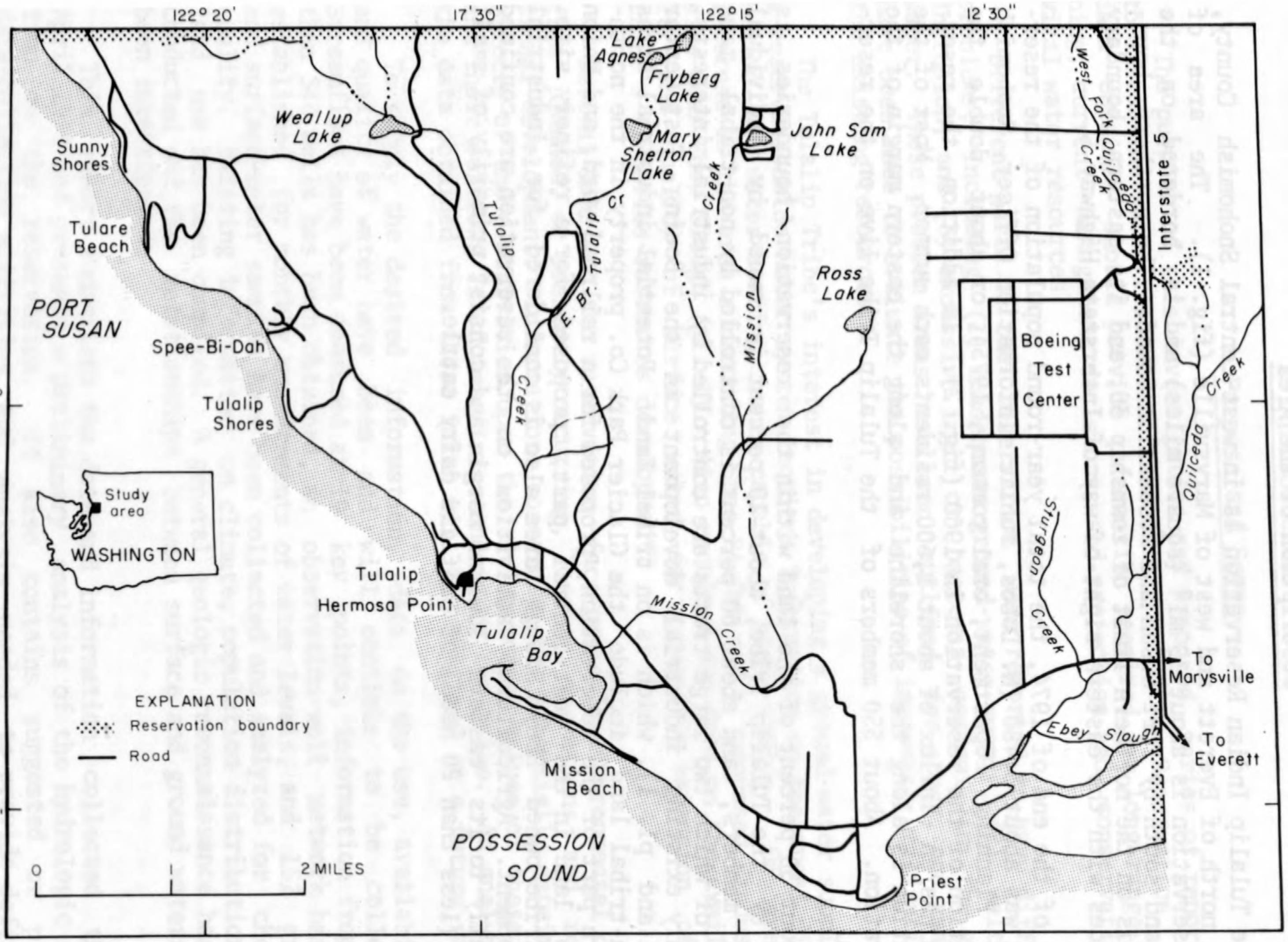


FIGURE 1.--Tulalip Indian Reservation, showing roads, communities, streams, and lakes.

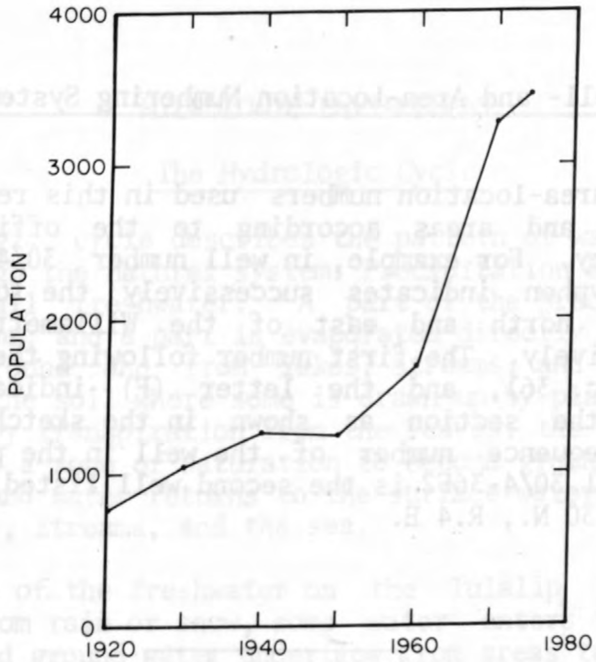


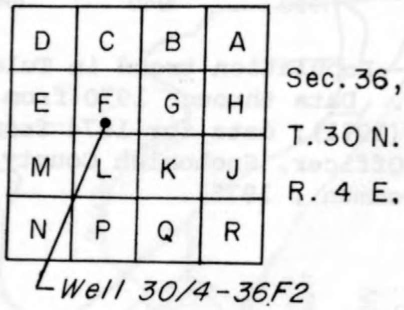
FIGURE 2.--Population trend in Tulalip Indian Reservation, 1920-74. Data through 1970 from U.S. Bureau of the Census (1971); data for 1974 from N. Dobos, Public Information Officer, Snohomish County Planning Department (oral commun., 1975).

Acknowledgments

This study was conducted in cooperation with the Tulalip Board of Directors of the Tulalip Indian Reservation. The Bureau of Indian Affairs participated in the planning of the study, and individual members of the Tulalip Tribe and other residents of the reservation were helpful in many ways during the field investigations. Well drillers Henry E. Deckmann and Robert E. Freeman provided numerous drillers' logs and other pertinent data. Representatives of the Indian Health Service provided information on the newly installed tribal well field. The consulting firm of Hammond, Collier, and Wade-Livingstone Associates, Inc., provided data on several test wells.

Well- and Area-Location Numbering System

The well and area-location numbers used in this report give the location of wells and areas according to the official rectangular public-land survey. For example, in well number 30/4-36F2, the part preceding the hyphen indicates successively the township and range (T.30 N., R.4 E.) north and east of the Willamette base line and meridian, respectively. The first number following the hyphen indicates the section (sec. 36), and the letter (F) indicates the 40-acre subdivision of the section as shown in the sketch below. The last number is the sequence number of the well in the particular 40-acre tract. Thus, well 30/4-36F2 is the second well listed in the SE¼ of the NW¼ of sec.36, T.30 N., R.4 E.



In computer-printout tables the same well is given the 11-digit number 30N04E36F02.

Area-location numbers include only the township, range, and section numbers.

HYDROLOGIC ENVIRONMENT

The Hydrologic Cycle

The hydrologic cycle describes the pattern of water movement as it circulates through the natural system. Precipitation as rain and snow is the source of all freshwater. A part of the precipitation runs off rapidly to streams, and a part is evaporated directly back to the atmosphere from the ground and from lakes, streams, and plant surfaces. A part soaks into the soil where some is drawn up by plants and returns to the atmosphere by transpiration from the leaves; the remainder percolates downward to a zone of saturation to become ground water. In turn, most of the ground water returns to the surface-water system by seepage to springs, lakes, streams, and the sea.

Although most of the freshwater on the Tulalip Indian Reservation comes directly from rain or snow, some water enters the reservation as surface runoff and ground-water underflow from areas to the north. The hydrologic cycle on the reservation is diagrammatically illustrated in figure 3.

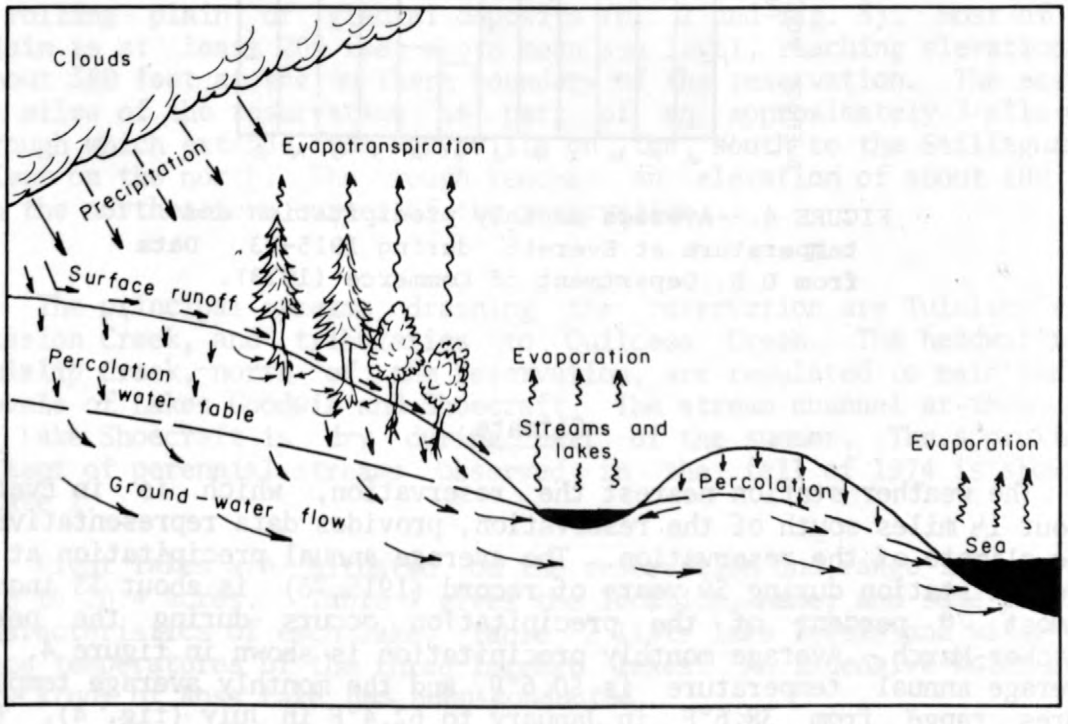


FIGURE 3.--Diagrammatic sketch of the hydrologic cycle.

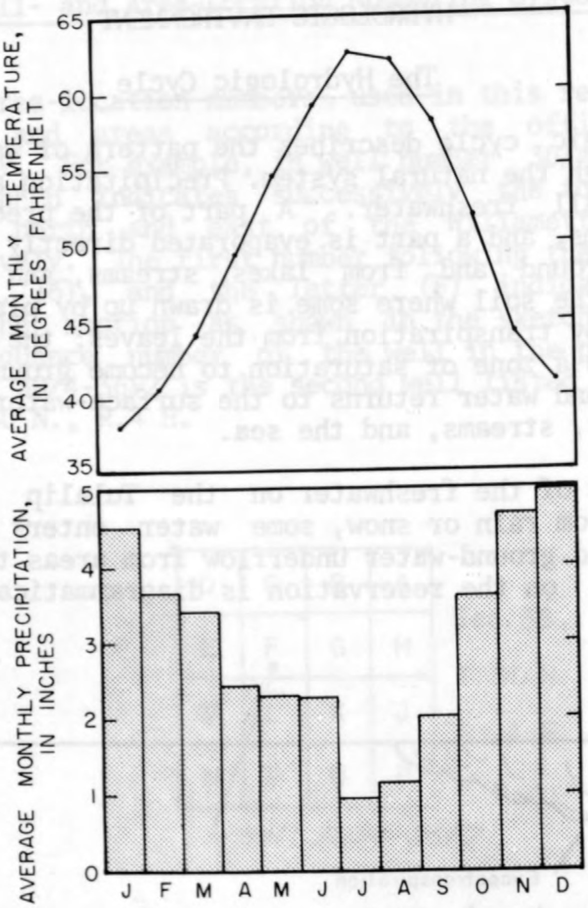


FIGURE 4.--Average monthly precipitation and temperature at Everett, during 1915-73. Data from U.S. Department of Commerce (1973).

Climate

The weather station nearest the reservation, which is in Everett about 1½ miles south of the reservation, provides data representative of the climate of the reservation. The average annual precipitation at the Everett station during 59 years of record (1915-73) is about 35 inches. Almost 70 percent of the precipitation occurs during the period October-March. Average monthly precipitation is shown in figure 4. The average annual temperature is 50.6°F, and the monthly average temperatures range from 38.6°F in January to 62.4°F in July (fig. 4). (All climatic data is from the U.S. Department of Commerce, 1973.)

TABLE 1.--Some physical data on lakes

[Data from Wolcott, 1973]

Name	Location	Elevation (ft)	Area (acres)	Maximum depth (ft)
John Sam Lake------	30/4-1M/N	506	15.3	40
Lake Agnes---------	30/4-2B/C	456	11.1	35
Fryberg Lake-------	30/4-2C	450	4.0	shallow
Mary Shelton Lake--	30/4-2L/M	368	12.4	--
Weallup Lake-------	30/4-4L/M	213	20.4	12
Ross Lake----------	30/4-13A	375	19.7	30
Unnamed------------	30/4-24B/C	270	1.3	--
Unnamed------------	30/5-29H	15	1.3	--

Physiography

All but about the eastern 1½ miles of the reservation is situated on a rolling plain of glacial deposits (pl. 1 and fig. 5). Most of this plain is at least 200 feet above mean sea level, reaching elevations of about 580 feet at the northern boundary of the reservation. The eastern 1½ miles of the reservation is part of an approximately 3-mile-wide trough which extends from Marysville on the south to the Stillaguamish River on the north. The trough reaches an elevation of about 100 feet in the northeastern corner of the reservation.

The principal streams draining the reservation are Tulalip Creek, Mission Creek, and tributaries to Quilceda Creek. The headwaters of Tulalip Creek, north of the reservation, are regulated to maintain the levels of Lakes Goodwin and Shoecraft. The stream channel at the outlet of Lake Shoecraft is dry during part of the summer. The approximate extent of perennial streams observed in the fall of 1974 is shown in plate 1.

Eight lakes are situated on the reservation and range in area from 1.3 to 20.4 acres. Table 1 gives the location, name, and some physical characteristics of each lake. Table 2 lists lake levels and water-surface temperatures of the three largest lakes. An intensive water-quality study of Ross Lake has been conducted.

The land within the reservation is largely undeveloped. As determined from aerial photographs and topographic maps, 81 percent is forest, 7 percent is residential, 6 percent is agricultural, 3 percent is swamps and lakes, and 3 percent is tidal marsh.

TABLE 2.--Gage heights and water temperatures of three lakes

[Gages installed at arbitrary datum and temperatures measured within 1 foot of lake surface]

Date		John Sam Lake[1]		Ross Lake[2]		Weallup Lake[3]	
		Gage height (ft)	Water temperature (°C)	Gage height (ft)	Water temperature (°C)	Gage height (ft)	Water temperature (°C)
1974							
Sept.	17	14.5	--	--	--	--	--
	27	14.3	--	15.2	--	--	--
	30	--	--	--	--	15.2	--
Oct.	8	14.2	16.1	--	--	--	--
	15	14.2	15.0	15.1	15.6	15.1	--
Nov.	8	14.2	9.4	--	--	--	--
	14	14.2	11.1	15.2	10.6	15.1	11.1
Dec.	5	14.4	6.7	15.4	7.8	15.3	8.9
	12	14.5	5.6	--	--	--	--
1975							
Jan.	7	--	--	16.0	5.1	15.8	4.6
	15	15.4	2.8	--	--	--	--
Feb.	4	--	--	16.2	3.0	--	--
	5	15.7	3.3	--	--	16.8	1.0
	11	15.8	--	--	--	--	--
Mar.	4	--	--	16.6	5.9	17.3	7.0
	14	15.8	--	--	--	--	--
Apr.	9	15.8	--	16.3	9.6	--	--
	10	--	--	--	--	16.7	9.0
	16	15.7	11.1	--	--	--	--

[1] John Sam Lake.--Enamel staff gage on Ralph Berring dock approximately 200 ft northeast of the concrete outlet. Top of dock is at 17.60 ft and top of concrete culvert outlet is at 17.26 ft gage height.

[2] Ross Lake.--Enamel staff gage on alder tree 150 ft north of access road at southeast side of lake. Reference mark is top of a square spike in alder tree 30 ft east of the gage and at 19.28 ft gage height.

[3] Weallup Lake.--Enamel staff gage about 100 ft south of acess road at east end of lake. Reference mark is top of spike in cedar tree 10 ft east of gage and at 19.36 ft gage height.

Geology

Figure 5 presents a generalized geologic map of the reservation, and figure 6 shows a west-to-east geologic section across the area.

The major part of the reservation is situated on remnants of a glacial drift plain with most of its surface covered by till (or "hardpan"). As noted by Newcomb (1952) and field observations, this glacially deposited material is a gray, concretelike mixture of clay- to gravel-size sediment, and generally underlies the drift-plain surface to a depth of 30 to 50 feet. The upper 10 to 20 feet of the till is generally weathered and does not exhibit the degree of cementation found at greater depths. Small areas of the drift plain are covered by thin patches of sand and gravel or clay and silt.

Locally exposed in the sea cliffs along the margins of the reservation is a sequence of sand and gravel as much as 200 feet thick. These materials are in places beneath the till and contain discontinuous layers of silt and clay. A clay and silt sequence that extends well below sea level normally underlies the sand and gravel.

The eastern 1½ miles of the reservation is the Quilceda Creek lowland which is part of the Marysville trough. In this area, approximately 10 to 40 feet of sediments, mostly sand, overlies till, gravel, and clay. The amount of gravel in the sand increases northward and decreases southward, where silt, clay, and peat are found in increasing amounts toward the tidal marshes along Quilceda Creek.

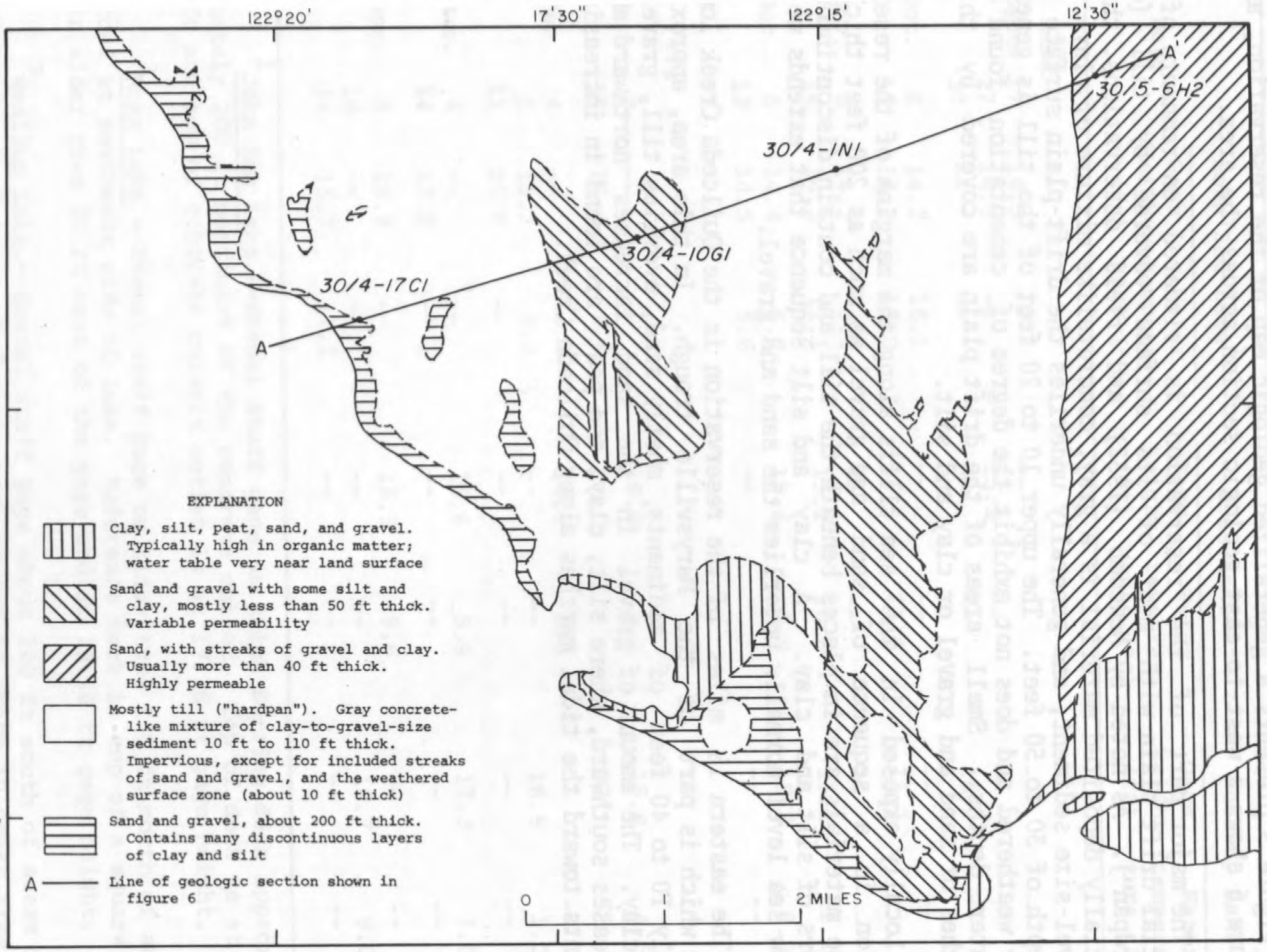
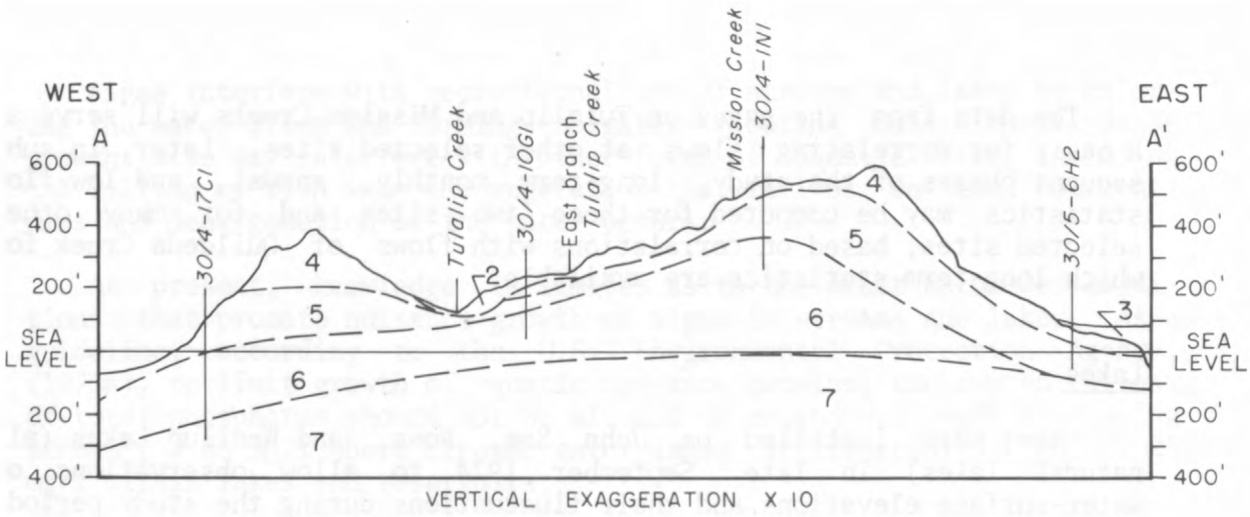


FIGURE 5.--Generalized geology of the Tulalip Indian Reservation. Modified from Newcomb (1952).



EXPLANATION

2 Sand and gravel with some silt and clay.
3 Sand, with streaks of clay and gravel near base.
4 Mostly till, with streaks of sand and gravel. Surface usually weathered to a depth of 10 feet or more.
5 Sand and gravel, with many discontinuous layers of clay and silt.
6 Sand and clay, with discontinuous layers of sand and gravel.
7 Clay and silt, with some sand layers.

FIGURE 6.--Schematic geologic section along line A-A' of figure 5.

WATER RESOURCES

Surface Water

During this initial phase of the study, the duration of streamflow data collection had not yet spanned an entire year, covering only the period October 1964-April 1975, and therefore no evaluation was made of the annual patterns of streamflow. Below is summarized the types of data collected at various selected sites, with some results discussed where analyses were made.

Data Collection

Streamflow

To provide a basis for appraisal of the streamflow during this study, continuous-record gaging stations were installed near the mouths of Tulalip and Mission Creeks (pl. 1). They allow calculation of daily and annual flows from these drainage areas of 15.4 and 7.92 mi^2, respectively. Daily streamflows and water temperatures at these two sites are given in tables 4 and 5 at end of report. In addition, monthly streamflow measurements were made--and are continuing to be made--at 16 selected sites (pl. 1) to obtain information on the amount and distribution of surface-water flow along the main stream channels and their tributaries. These periodic measurements are listed in table 6 (at end of report) which also includes the available streamflow measurements and water temperatures collected during the period September 1974-April 1975. One of the selected measuring sites, that on Quilceda Creek, was formerly operated as a continuous-record gage during 1946-69.

The data from the gages on Tulalip and Mission Creeks will serve as a basis for correlating flows at other selected sites. Later, in subsequent phases of the study, long-term monthly, annual, and low-flow statistics may be computed for these two sites and for many other selected sites, based on correlations with flows of Quilceda Creek for which long-term statistics are available.

Lakes

Gages were installed on John Sam, Ross, and Weallup Lakes (all natural lakes) in late September 1974 to allow observations of water-surface elevations and their fluctuations during the study period. The gage heights observed during the period September 17, 1974-April 16, 1975, along with water temperatures recorded during that period, are presented in table 2.

Surface drainage from Ross and Weallup Lakes is by overflow into natural stream channels, whereas the outlet of John Sam Lake has been altered by a deposit of fill and the installation of a 2-foot diameter, concrete culvert. Additional regulation of the level of John Sam Lake is accomplished by partial blocking of the culvert with a removable wooden plate.

Water Quality

The quality of water in several streams was monitored at nine sites (table 7 at end of report). At three of the sites (site 12 on Mission Creek, site 20 on Tulalip Creek, and site 17 on the east branch of Tulalip Creek) samples were collected on a monthly basis beginning in November 1974. Site 17 was included because it is at the point of inflow to the two surface-water reservoirs that until August 1975 provided the water supply for the town of Tulalip. Some of the other sites were sampled every 3 months and some less frequently. Table 8 (end of report) presents criteria of water quality for various uses.

Water at all nine sites was tested for total coliform bacteria and for nutrient content--by determining the concentrations of phosphorus. Water samples collected at the Tulalip Creek gage (site 20), Mission Creek gage (site 12), and site 10A (at the inflow to the reservation from Lake Shoecraft) were also tested for various other constituents (table 7).

The phosphorus analyses were made because, as noted by Hem (1970), aquatic vegetation of the free-floating types, such as algae, depend on nitrogen and phosphorus compounds for their nutrient supply. Growth of these plant forms may also be influenced by availability of other required elements, such as light penetration, water circulation, current velocity, and sediment composition. Dense, rapidly multiplying algal growth or blooms sometimes occur in water bodies that periodically experience increased concentrations of nitrogen and phosphorus.

Algae interfere with recreational use of streams and lakes by coloring the water green and forming unsightly floating mats. These dense growths also may interfere with other forms of aquatic life, including the killing of fish when the vegetation that thrives on the nutrients dies and deoxygenation of the water occurs.

At present, knowledge is limited as to the exact nature of conditions that promote nuisance growth of algae in streams and lakes. As a guideline, according to the U.S. Environmental Protection Agency; (1973a), to limit growth of aquatic nuisance growths, the concentrations of total phosphorus should not be allowed to exceed 0.10 mg/l in flowing streams, 0.05 mg/l where streams enter lakes or reservoirs, or 0.025 mg/l within lakes and reservoirs.

Total phosphorus concentrations were determined for samples from eight sites in November 1974 and for nine sites in February 1975 (table 7). All sites are on flowing streams and the criterion of less than 0.10 mg/l total phosphorus should be applied, except for water at site 13 (which flows to Weallup Lake) and site 17 (which flows into the reservoir on the east branch of Tulalip Creek). Water at sites 13 and 17 should meet the criterion of less than 0.05 mg/l total phosphorus. No samples had concentrations which exceeded 0.10 mg/l. Water collected at site 17 in November 1974 had a total phosphorus concentration equal to the suggested limit of 0.05 mg/l. In February 1975 water sampled at this site had a concentration of 0.04 mg/l.

The bacterial content of the water is evaluated by estimating the number of colonies of total coliform bacteria per 100 millilitres of water. Total coliform bacteria is a type of bacteria which suggests contamination by the fecal discharges of humans and other animals (table 8). According to the U.S. Environmental Protection Agency (1973a), the maximum permissible concentration in raw (untreated) surface water is 20,000 col/100 ml (colonies per 100 millilitres) of total coliform, and the desirable concentration (U.S. Environmental Protection Agency, 1968) is less than 100 col/100 ml. The recommended maximum total coliform-bacteria concentration in water after treatment (or for water which is not treated before use) is 1 col/100 ml (U.S. Environmental Protection Agency, 1973a) and the desirable concentration is <1 col/100 ml (U.S. Environmental Protection Agency, 1968). None of the 29 samples taken from nine different stream sites exceeded the permissible limit of total coliform bacteria. Seven of the sites exceeded the desirable concentration at least once, with the highest coliform count (2,300 col/100 ml) being recorded at site 2 on the West Fork of Quilceda Creek. The highest counts were typically obtained in January and February, which is probably because increased overland flow introduced more coliform bacteria to the creeks from adjacent farms, pastures, and forest lands.

Existing Surface-Water Development

During 1974, surface-water sources supplied approximately 30 percent of the water used on the reservation (table 3 on p.). A reservoir system operated by the Tulalip Tribe is the only surface-water system on the reservation, although minor amounts of surface water are withdrawn by individuals for livestock and irrigation, or to supply individual households.

The tribe's reservoir system, which impounds water in the east fork of Tulalip Creek in 30/4-10, was replaced in 1975 by a ground-water-supply system. This transition considerably reduced the quantity of surface water used on the reservation.

Ground Water

Data Collection

Ground-water data collected during the study are presented in tables 9-16 (at end of report) as follows: Table 9, chemical quality; table 10, ground-water temperatures; table 11, iron concentrations in the water; table 12, coliform-bacteria counts; table 13, community-supply wells; table 14, records of wells; table 15, drillers' logs of wells; and table 16, water levels in wells. Chemical-quality data collected during 1947, 1960, 1961, and 1967 are reported in previous reports (Newcomb, 1952; Van Denburgh and Santos, 1965; Walters, 1971).

Aquifers

From the data collected, eight aquifers (layers of water-yielding rock materials) are identified within the reservation (fig. 7). Some of these aquifers probably are interconnected, but the lack of well data in large areas precludes drawing conclusions about broader areal extensions and (or) connections of the aquifers at the present time. For this reason the aquifers are herein partly defined on a geographic basis.

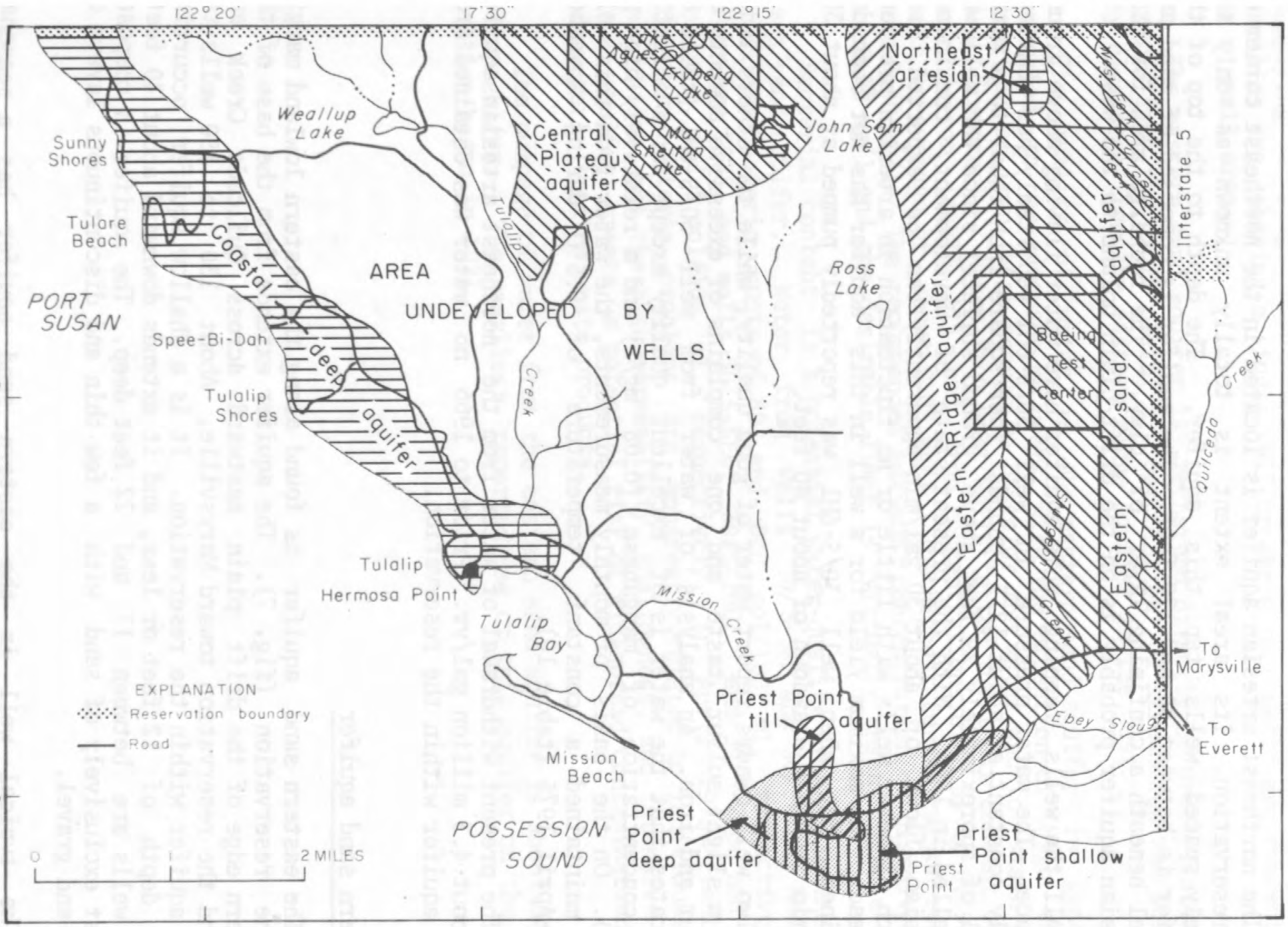


FIGURE 7.--Principal aquifers tapped by wells in the Tulalip Indian Reservation.

Northeast artesian aquifer

The northeast artesian aquifer is located in the northeast corner of the reservation. Its areal extent is totally unknown as only six closely spaced wells tap this aquifer. The depth to the top of the aquifer is between 80 and 120 feet. The aquifer is composed of sand and gravel beneath a confining layer of clay. The recharge area for this artesian aquifer probably is on the drift-plain upland to the west.

All the wells tapping this aquifer have water flowing above ground surface. The water pressure in well 30/5-6H1 reportedly has remained nearly constant at about 12.5 pounds (per square inch equal to a water level of approximately 29 feet above ground surface) since the well was installed in 1966. With the present state of development, continuous artesian flows of about 30 gal/min apparently can be expected from 6-inch diameter wells with little or no fluctuation in artesian pressure or head. The maximum yield for a well in this aquifer has not been determined, but when well 30/5-6H1 was reportedly pumped at about 300 gal/min it had a drawdown of about 40 feet.

Two well owners report water of good quality, while two others indicate a slight sulfur taste and one complains of excessive amounts of sulfur and iron. An analysis of water from well 30/5-6H1 (table 9) indicates that the water is of excellent quality except for a slightly high concentration of manganese (0.08 mg/l) and a relatively high pH (8.3). On the basis of monthly measurements, the water from this well has maintained a constant temperature of 9.5°C during November 1974-April 1975 (table 10).

The present withdrawal of water from the northeast artesian aquifer is about 4.3 million gal/yr. Prior to 1966 no water was obtained from this aquifer within the reservation.

Eastern sand aquifer

The eastern sand aquifer is found along the eastern lowland margin of the reservation (fig. 7). The aquifer extends from the base of the eastern edge of the drift plain eastward across Quilceda Creek and beyond the reservation toward Marysville. About 130 to 150 wells tap this aquifer within the reservation. It is a shallow aquifer, occurring at a depth of 12 feet or less, and it extends downward about 40 feet. Most wells are between 17 and 22 feet deep. The aquifer is composed almost exclusively of sand with a few thin and discontinuous layers of clay and gravel.

The typical well in the eastern sand aquifer has a seasonal water-level fluctuation from about 10 to 15 feet below land surface in November (low water-level period) to about 2 to 5 feet below land surface in March or April. Most wells will yield about 20 gal/min for short periods of pumping and have an average drawdown of about 5 feet.

Most wells tapping this aquifer reportedly have sufficient yields for supplying a single household, but shortages occur when two or more families are sharing a single well or where many wells are concentrated in a small area.

The eastern sand aquifer is recharged directly by precipitation, by runoff from the drift plain, by percolation of streamflow and possibly by discharge from the eastern ridge aquifer to the west.

The quality of water in the eastern sand aquifer is generally reported to be adequate by users, with the exception of high concentrations of iron (high enough to discolor the water and to stain plumbing fixtures). Water from most wells tested for their content of dissolved iron (table 11) had iron concentrations of 0.01 to 0.09 mg/l, with an average of about 0.05 mg/l. The highest concentration recorded was 9.40 mg/l. The recommended maximum concentration of dissolved iron is 0.30 mg/l and the desirable limit is "virtually absent" (table 8).

Bacterial content is a potential water-quality problem in the eastern sand aquifer. Water from wells 30/5-5M3 and 30/5-20K1 had total coliform-bacteria counts of 80 and 800 col/100 ml, respectively, in February 1975, and wells 30/5-5E6, 30/5-20G1, and 30/5-29G6 had counts of 1, 1, and 5 col/100 ml, respectively, in April 1975 (table 12). Coliform-bacteria problems are apparently related to individual well sanitation, but the high permeability, shallowness, and intensive use of the aquifer create a potential risk of widespread contamination from improperly treated waste products.

The pumpage of water from the eastern sand aquifer is about 34 million gal/yr. The earliest reported use of this aquifer on the reservation began in 1921.

Eastern ridge aquifer

The eastern ridge aquifer, which is located along the eastern slope of the drift plain (fig.7), is tapped by approximately 60 wells (pl. 1). Although there are no wells in the central part of the ridge, the aquifer is believed to be continuous from the northern boundary of the reservation to the southern limit of the drift plain. The wells on the ridge penetrate as much as 180 feet of sand, gravel, and till. The water-bearing zones are thin and discontinuous and occur at widely varying depths. Most wells are between 15 and 65 feet deep, but a few are as little as 3 feet or as much as 180 feet deep.

The wells tapping the eastern ridge aquifer are of limited yield, most producing only 5 to 15 gal/min. Many of the shallower wells have insufficient supplies in late summer. Recharge to the aquifer is from direct precipitation and runoff from higher areas of the drift plain to the west and northwest.

Owners of wells tapping the eastern ridge aquifer report large concentrations of iron in the water. Analyses conducted on water samples from five wells showed concentrations of 0.03 to 0.36 mg/l of dissolved iron. All but one of these were less than the recommended limit of 0.30 mg/l. Occasionally, bad taste and (or) odor are reported for water from several wells in the southern part of the aquifer. An analysis of a water sample from well 30/5-30G2 (table 9) indicates no serious problems other than a slightly high iron content (0.36 mg/l). A total-coliform-bacteria count of less than 1 col/100 ml was recorded for well 30/5-30B1 in February 1975, and counts of less than 1 and 9 were recorded for water from wells 30/5-31G3 and 30/5-7G2, respectively, in April 1975 (table 12).

Presently, approximately 11 million gal/yr of water is pumped from this aquifer. The earliest reported use of this aquifer began in 1925.

Priest Point shallow aquifer

The Priest Point shallow aquifer underlies the area of Priest Point (fig.7). The aquifer, tapped by about 30 wells (pl. 1), is composed primarily of sand and gravel with some silt and clay layers. The wells are from 6 to 35 feet deep, with an average depth of about 20 feet.

Water levels are generally from 5 to 15 feet below land surface. Many well owners report inadequate supplies in late summer and early fall. Measured yields average about 5 gal/min. Recharge to the aquifer is primarily from direct precipitation and runoff from higher areas to the north, but is possibly supplemented by discharge from the Priest Point till aquifer to the north.

The quality of the water generally is reported as good, although several well owners complain of high iron concentration and a slightly bad taste. Water from one well (30/4-36Q3), which had an appearance of a high concentration of iron was sampled and the analysis indicated only 0.10 mg/l of dissolved iron. The undesirable aspects of the water from this well may have been a result of a high concentration of total iron.

Approximately 4.8 million gal/yr of water is presently being pumped from the aquifer. The earliest known well tapping the aquifer was dug in 1928.

Priest Point till aquifer

The Priest Point till aquifer is of very limited extent, being located in the central part of 30/4-36 (fig.7). Although about 20 wells tap this aquifer, no drillers' logs are available for the wells. Apparently, it is an isolated mound of till with water-bearing streaks of sand and gravel. The upper 20 feet of the till is sufficiently weathered to be included as a shallow water-bearing zone. Most wells are between 20 and 35 feet deep, with the shallowest 12 feet deep and the deepest 45 feet.

Data on well yields are not available for this aquifer, but yields are estimated to be less than 10 gal/min. Most wells are sufficient for one or two households, although some are dry or nearly so in late summer and early fall. Recharge to this aquifer is probably entirely from direct precipitation.

Several well owners report excessive amounts of iron, but most owners indicate the water to be of good to excellent quality. Water from one of the wells (30/4-36F4), with an appearance of being high in iron was sampled and a concentration of only 0.04 mg/l was recorded; the undesirable aspects may be due to a high total iron concentration. Well 30/4-36P3 was also tested and its water had a dissolved iron concentration of 0.10 mg/l.

The earliest known use of the Priest Point till aquifer was in 1944. The present rate of use is approximately 4 million gal/yr.

Priest Point deep aquifer

The Priest Point deep aquifer underlies Priest Point and extends for at least a mile both northeast and northwest along the coast (fig. 7). This aquifer may be part of one system with the coastal deep aquifer and (or) the central plateau aquifer both of which are discussed below. The aquifer, tapped by about 50 wells (pl. 1), underlies the Priest Point till and shallow aquifers, and is separated from them by an intervening layer of clay and (or) till. The aquifer consists of a sequence of more than 150 feet of alternating units of sand, sand and gravel, and sand and clay. The most productive parts of the aquifer are typically at depths of 120 to 150 feet below land surface--or at elevations of near sea level to about 30 feet below sea level. Some of the wells tap only the upper parts of the aquifer, particularly those wells in 30/5-31 and 30/4-36. Several wells (30/4-36D2,3, 4, and 5) tap this aquifer at the base of the sea cliff on the western end of Priest Point; they are merely shallow holes dug into a spring zone along the cliff where the aquifer intersects the cliff face.

Measured water levels in the deeper wells are typically from 120 to 130 feet below land surface (or at altitudes of 5 ft above to 5 ft below sea level) while the level in shallower wells is usually between 70 and 100 feet below the surface (or at altitudes of 25 to 55 ft above sea level). It should be noted that water-level values below sea level probably result from inaccuracies in obtaining from topographic maps the elevations of land surface at the well sites. Water supplies from all wells except 30/5-31E1 and F2 are reported to be good to excellent. Both of these wells are drilled only into the upper part of the aquifer, with 31E1 supplying about five households. Measured yields are from 7 to 50 gal/min, with an average of about 25 gal/min. In most cases, drawdowns are from less than 1 to 5 feet. The deeper wells tend to have the greater yields. This aquifer probably extends inland and its recharge area is probably the drift plain to the north.

The Priest Point deep aquifer has two major water-quality problems. Well owners report high iron concentration and extreme hardness. In 1960, analyses of samples taken from wells 29/4-1A1 and 30/4-35R1 showed iron concentrations of 0.31 and 0.89 mg/l, respectively. A sample taken from well 30/4-35R2 in November 1974 had an iron concentration of 1.00 mg/l. Measured hardnesses (as $CaCO_3$) of the water were from 75 to 132 mg/l--moderately hard to hard.

Saltwater intrusion is a potential water-quality problem because most wells in this coastal area bottom 20 to 50 feet below sea level. (See section on quality of ground water (p.28) for an explanation of saltwater intrusion and chloride concentrations.) Chloride concentrations of 230 and 210 mg/l were measured in water from well 29/4-1A1 in 1960 and 1961, respectively. (The recommended limit is 250 mg/l; table 8.) Wells 29/4-1A2 and 3 were drilled to replace well 29/4-1A1 and were drilled 28 feet shallower. Water collected in 1967 from these replacement wells had chloride concentrations of 22 and 11 mg/l, respectively.

Water from well 29/4-1B2 had a chloride concentration of 120 mg/l in April 1967 and 110 mg/l in February 1975.

An additional problem--that of coliform bacteria--was reported in wells 30/4-35R1 and R2 in 1974, but a water sample taken in February 1975 from well 35R2 had less than 1 col/100 ml of total coliform bacteria.

The Priest Point deep aquifer presently produces approximately 32 million gallons per year to wells. The earliest recorded use of this aquifer was in 1936.

Coastal deep aquifer

The coastal deep aquifer is located along the western coast of the reservation and is tapped by about 45 wells between the northwest corner of the reservation and Hermosa Point (fig. 7). Although these wells penetrate a number of water-bearing zones, the zones are discussed here as one aquifer because of the limited data available and the complexity of the geologic formations. This aquifer apparently continues northwestward and southeastward along the coast and inland under the plateau. It probably is related to an aquifer system that includes the Priest Point deep aquifer and the central plateau aquifer.

Depths of wells tapping the aquifer range from 45 to 518 feet, depending primarily on land-surface altitude. The principal water-bearing zones are (1) from slightly above sea level to about 40 feet below sea level, (2) from about 95 to 115 feet below sea level, and (3) in a 100-foot zone centered at about 250 feet below sea level; many of the wells tap more than one of these zones. The producing zones are composed mostly of sand or sand and gravel, with an apparent gradation to the southeast of sand to an even mixture of sand and gravel. The producing zones are irregularly distributed and discontinuous and commonly alternate with layers of clay.

Measured water levels range generally between 10 and 50 feet above sea level, although several are below sea level. Those levels measured as being below sea level were probably not static levels but result from pumping and slow water-level recovery. Seasonal fluctuation of water level is a few feet or less in most wells. Measured yields from the aquifer are from 5 to 60 gal/min with an average of about 30 gal/min. Supply from all wells was reported as good except from the three wells having the greatest use, where water supply was termed as adequate. Recharge to the aquifer is apparently from ground-water flow toward the coast from the higher interior parts of the drift plain.

The quality of water from this aquifer is reported as good by most well owners. Two cases of slight amounts of iron (wells 30/4-6Q1 and 21J1) and one case of a slight sulfur taste (well 30/4-5N1) were reported. When tested in October 1960 and February 1975 well 30/4-17C1 had water with iron concentrations of 0.98 and 1.30 mg/1. A high manganese concentration, 0.15 mg/1 (above recommended level of 0.05 mg/1), and high hardness, 132 mg/1 (as $CaCO_3$), were also noted in water from this well in 1975. Because the bottoms of most of the wells that tap this aquifer are below sea level, there is a potential problem of saltwater intrusion. However, five wells have been tested (table 9) and their waters have chloride concentrations ranging only from 5.0 to 11 mg/1. Some of these wells were tested for chloride concentrations in 1960 and (or) 1967 in addition to 1974 and (or) 1975 and showed no pattern of increased chloride concentrations with time (as would be the case with gradual saltwater intrusion).

Approximately 23 million gal/yr of water is presently being pumped from this aquifer. The first well known to tap the aquifer was drilled in 1935.

Central plateau aquifer

The central plateau aquifer underlies the north-central part of the reservation in 30/4-1,3, and 10 and is tapped by about 25 wells, including 7 wells in the Tulalip Tribe's well field. This aquifer probably extends under most of the plateau and probably connects with the coastal deep aquifer and the Priest Point deep aquifer. Depth from the ground surface to the top of the aquifer is from 88 to 243 feet (between 278 and 321 ft above sea level), with most wells reaching the aquifer at 100 to 145 ft (282 to 302 ft above sea level). In the tribal well field (30/4-10), the aquifer is closer to the surface, 48 to 64 feet deep (148 to 166 ft above sea level). The aquifer is composed predominantly of coarse sand and may contain some clay or gravel, or both. The material overlying the aquifer is typically alternating layers of till, gravel, and clay but varies greatly from place to place.

Water levels in the central plateau aquifer range from 80 to 207 feet below land surface, except for the tribal well field which has water levels of 10 feet above to 23 feet below the surface. The altitude of water levels is quite consistent between wells, being between 297 and 315 feet above sea level. Measured yields of 8 to 57 gal/min have been obtained from wells outside the tribal well field, averaging about 20 gal/min. In the well field, yields of as much as 341 gal/min for periods of nearly 20 hours have been attained. Three of the wells in the well field have artesian flows of about 30 gal/min.

The recharge area for the central plateau aquifer probably is the higher part of the drift plain to the north. In this area are Lake Godwin (which has a water-surface elevation approximately 25 feet higher than water levels in wells in 30/4-3), Crabapple Lake, and possibly Lake Loma. Little or no recharge can be expected from direct infiltration as most of the available drillers' logs indicate thick layers of poorly permeable till and (or) clay overlying the aquifer.

Water from the central plateau aquifer is reportedly of good quality. The owner of well 30/4-3H1 complained of small amounts of iron and the owner of well 30/4-3A2 reports "cloudy" water. In the tribal well field, well 30/4-10L4 had water with iron concentrations of 1.5 and 2.3 mg/l in July 1974 and February 1975, respectively, well 30/4-10G1 was abandoned because of excessive sulfur. Well 30/4-10L1 also has water with a slight sulfur taste. The analysis of water from well 30/4-10L4 in February 1975 indicated high concentrations of manganese (0.07 mg/l) and moderate hardness (119 mg/l as $CaCO_3$) in addition to a high iron content. In April 1975 total-coliform-bacteria counts of less than 1 col/100 ml were recorded for wells 30/4-10L1 and 10L4.

The present withdrawal of water from this aquifer, not including that from the tribal well field, is approximately 6.5 million gal/yr. The well field is now in operation and should result in an additional withdrawal of about 40 million gal/yr. The earliest known withdrawal from this aquifer was by a well drilled in 1965.

Miscellaneous aquifers

Data are available from several wells which do not draw water from any of the above discussed aquifers. A number of shallow wells (mostly 3-10 ft deep) apparently tap either the weathered surface of the till covering the drift plain or small, localized deposits of unconsolidated sediments overlying the till. These wells have yields of only 1 to 5 gal/min and typically go dry or nearly so in late summer. Because they are shallow they are subject to contamination from surface sources. These wells are suitable only for single-unit household supplies.

Existing Ground-Water Development

In early 1975, approximately 375 wells were in use on the reservation. Water for 18 community-supply systems (table 13) comes from 21 wells and one spring. Most of the remaining wells are privately owned and serve individual homes.

Ground-water sources provided approximately 70 percent of the water used on the reservation during 1974 (table 3). Of the approximately 130 million gal/yr of ground water supplied, about 120 million gallons, or more than 90 percent, was used for domestic purposes.

TABLE 3.--Calculated water use in 1974[1]

Type of use	Total quantity of water used: Millions of gallons per year	Acre-feet per year	Gallons per minute	Percent of total use	Water use by tribal members: Millions of gallons per year	Percent of total use
Ground water:						
Domestic----------	118	362	224	62	12	6
Stock-------------	3	9	6	2	--	--
Irrigation--------	7	21	13	4	1	1
Other[2] ------------	3	9	6	2	--	--
Total-------	131	[3]402	249	70	13	7
Surface water:						
Domestic only[4] ----	60	184	114	30	14	7
Total water-	191	586	363	100	27	14

[1]Method of calculation is given on page 27. The values in the table are as calculated by this method and are rounded to the nearest whole number. The number of significant figures does not represent the precision of the estimates. All estimates are probably within 50 percent of actual values.

[2]Estimated water use for bait farm, fish-rearing ponds, swimming pools, and manmade pond (at 30/5-6H1).

[3]Does not balance owing to rounding.

[4]Data on surface-water use is restricted to domestic supplies. Stock and irrigation uses are assumed to be negligible.

In mid-1975 the Tulalip Tribe developed the well field which has replaced the existing surface-water-supply system. With this transition, virtually all water supplies on the reservation are now derived from ground water.

The quantities of ground-water use on the reservation were calculated as follows:

1. The year-round population served by ground water was estimated to be 3,200. This is 250 less than the estimate supplied by the Snohomish County Planning Department (N. Dobos, oral commun., 1975), to correct for those residents of the "Marysville West" development and other residents who are supplied by the Marysville water system. Summer residents were estimated to be 1,600.

2. The following assumptions and estimates were made:

   a. The average rate of domestic use is 131 gal/day per person, based on calculation for 1970 by Parker (1971).

   b. The average rate of stock use is 12 gal/day per horse and 35 gal/day per cow, based on calculation by The F.E. Meyers and Brothers Co. (1950).

   c. Summer and vacation residents use water at one-third the average annual rate, or 25 million gal/yr.

   d. Each of four swimming pools uses an average of 50,000 gal/yr, or 200,000 gal/yr total.

   e. Fish-rearing pools use approximately 250,000 gal/yr from well 30/4-36Q2.

   f. Bait farm uses approximately 250,000 gal/yr from well 30/4-36P6.

   g. Approximately 10.5 acres on the reservation were reported as extensively irrigated. Based on 1970 calculations for Snohomish County by Parker (1971), it was assumed that each acre receives an average 2.0 acre-ft/yr of irrigation water, for a total of 21 acre-ft/yr.

Water Quality

Data on the quality of ground water on the reservation are available from analyses of 123 water samples from 69 wells. Of this total, 101 samples from 56 wells were collected specifically for this study, between November 1974 and April 1975. Tables 9, 10, 11, and 12 (at end of report) list the data on chemical quality, temperature, iron concentration, and coliform-bacteria counts, respectively, for waters sampled.

Two major water-quality problems encountered on the reservation are excess iron and bacteria, while minor or potential problems include excessive concentrations of manganese, chloride, sodium, nitrate and nitrite, sulfate, and total dissolved solids. The criteria used to evaluate water quality, the permissible and desirable limits of constituents, and the detrimental effects which may result from exceeding these limits are summarized in table 8.

Excessive concentrations of iron in the water is the most widespread water-quality problem on the reservation. Problems of discolored water, stained fixtures, and accumulations of iron in pipes were reported for 96 wells. To determine the extent of these problems, 72 samples were collected from 51 wells and analyzed for their content of dissolved and (or) total iron. Nine additional analyses from six wells were available from earlier studies of broader areas which included the Tulalip Indian Reservation (Newcomb, 1952; Van Denburgh and Santos, 1965; Walters, 1971) and from other sources. The recommended concentration of dissolved iron (0.3 mg/l) was exceeded in 18 samples from 12 wells. Water from eight wells tested for total iron exceeded the desirable limit of 0.1 mg/l and water from six of these wells exceeded 1.0 mg/l. In the eastern sand aquifer water from six wells exceeded these limits. Five of these wells had water with concentrations of dissolved iron 7 to 31 times the limit. Table 11 contains the data from the iron analyses.

High concentrations of coliform bacteria are a potential problem. Water samples from 18 wells were tested for total coliform bacteria. Water samples from six wells--five in the eastern sand aquifer and one in the eastern ridge aquifer--had total-coliform-bacteria counts ranging from 1 to 800 col/100 ml (table 12).

The recommended limit of 0.05 mg/l of dissolved manganese was exceeded in water from three of the seven wells tested. Concentrations of 0.07 mg/l (well 30/4-10L4), 0.08 mg/l (well 30/5-6H1), and 0.15 mg/l (well 30/4-17C1) all exceeded the recommended limit, but the potential detrimental effects, including bad taste and staining of fixtures, have not been reported for these wells.

High concentrations of dissolved chloride give an unpleasant taste to water, but more importantly, in the study area they can indicate intrusion of saltwater into an aquifer. As most of the wells in the coastal deep aquifer and Priest Point deep aquifer are drilled to depths below sea level, they are susceptible to saltwater intrusion. The chloride concentrations of 30 samples from 22 wells are included in table 9. The only two wells that yielded water which exceeded the desirable concentration of 250 mg/l of dissolved chloride were wells 29/4-1A1 and 29/4-1B2 which tap the Priest Point deep aquifer. Pumping of well 29/4-1A1 was discontinued about 10 years ago owing to the water's high chloride content of 210-230 mg/l. The water from the well also exceeded the desirable limit of 50 mg/l of dissolved sulfate (U.S. Environmental Protection Agency, 1968) and had high concentrations of dissolved sodium and total dissolved solids.

Total nitrite plus nitrate concentrations were analyzed in water from eight wells. Although none exceeded the recommended limits of 10 mg/l nitrate (as N) and 1 mg/l nitrite (as N), one well warrants close attention because of the highly toxic effects of these constituents on children. This well yields water with a total nitrite plus nitrate concentration that is of some concern and should be closely monitored (30/5-30G2 with 6.4 mg/l).

Possibilities of Further Development of Known Aquifers

None of the shallow aquifers of the reservation appear suitable as sources for a community water supply. Their yields are much too low, they are prone to contamination from septic tanks, stock, and fertilizers, and the water has excessive iron concentrations.

The Priest Point deep aquifer is capable of high yields and the water is of fair quality. This aquifer is possibly subject to saltwater intrusion, and an additional high-yield well might accelerate the inflow of saltwater. In order to obtain large yields, wells would have to be drilled to depths of about 40 feet below sea level. Shallower wells would probably have lower yields and deeper wells might encounter water of increasing salt content.

The local characteristics of the coastal deep aquifer are quite difficult to predict. High yields have been obtained from some wells, but yield, depth, and water quality are highly variable. Most high-yield wells tap parts of the aquifer well below sea level. Although the chloride concentrations are low, the depths of these wells suggest the possibility of saltwater intrusion.

The central plateau aquifer is largely undeveloped. High yields have been obtained at depths of 120 to 180 feet (260 to 290 ft above sea level) with water of varying quality. The major problem with developing additional community-supply wells in this aquifer is its relative remoteness from those areas of greatest need on the reservation.

The northeast artesian aquifer has a high yield potential, with high artesian heads obtainable from shallow wells (ranging in depth from 11 ft above to 33 ft below sea level). However, the areal extent of this aquifer is unknown and only a very short historic record of water use and quality exists, the aquifer being first tapped in 1966. Although the chemical analysis indicated water of satisfactory quality, some well owners have reported excessive amounts of iron and (or) sulfur.

Proposed Test-Drilling Sites

The Tulalip Tribe has expressed interest in developing large ground-water supplies (250,000 gal/day or more) for use (1) in the proposed industrial site at Ebey Slough; (2) in the Spee-Bi-Dah area, for development of a small community; and (3) along the eastern margin of the reservation, to replace the existing inadequate shallow wells and their poor-quality water.

Few data exist for the Ebey Slough area. The closest deep well is approximately 1½ miles to the south in Everett--a dry well drilled to a depth of 1,545 feet. Determination of the potential for a large ground-water supply at Ebey Slough will require exploratory drilling.

Any well drilled in the Spee-Bi-Dah area or immediate vicinity probably should be at least 300 feet deep to obtain a sufficient supply for a small community. The yield from the coastal deep aquifer is highly unpredictable and the danger of saltwater intrusion is always present. Also, any well drilled as a community supply should not be situated near existing wells.

The northeast artesian aquifer is a possible source of community water supply for the eastern part of the reservation. If the aquifer extends southward and maintains its excellent yield, it should be a suitable source for the water-short southeastern part of the reservation. The tribal lands in sections 30/5-8,17, and 20 (now leased by Boeing Co.) would be a promising place for a test well. If the aquifer extends beneath that area, it probably is between 80 and 110 feet below land surface (20 to 50 ft below sea level).

An alternative aquifer to supply the eastern part of the reservation might be found beneath the Mission Creek drainage basin. The central plateau aquifer probably underlies most or all of the upper part of this basin. High yields might be obtained from wells 100 to 250 feet deep (with well bottoms 190 to 340 ft above sea level) beneath tribal lands in the northern part of the area (30/4-13). As with the presently developed areas overlying the central plateau aquifer, this area also is remote from the areas needing the water supply.

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TABLE 4.--Discharge measurements of Mission and Tulalip Creeks during period October 16, 1974-April 14, 1975

[All values in cubic feet per second]

EXPLANATION

Gage heights (water level) at continuous-recording gages were automatically recorded once every hour. Manual discharge measurements were made once a month. The daily discharges were calculated by calibrating the recorded gage heights with the measured discharges.

Site 12 (pl. 1). Mission Creek near Tulalip, station 12157250 (7.920 mi^2).

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR
1		4.8	3.0	6.9	5.1	15	6.7
2		4.0	3.4	6.7	5.0	32	7.3
3		3.1	3.6	6.6	5.0	26	7.9
4		2.6	6.5	11	4.9	19	9.3
5		2.5	6.4	14	4.5	15	9.0
6		2.4	5.3	14	4.3	12	8.2
7		4.5	4.9	13	9.2	11	7.3
8		5.8	4.4	14	14	10	6.7
9		4.3	4.5	13	11	17	5.4
10		3.5	5.9	11	9.5	16	5.7
11		3.5	6.2	9.4	11	12	5.7
12		3.3	5.0	9.5	20	10	5.7
13		2.6	4.7	11	24	11	5.1
14		2.1	4.3	12	25	10	5.4
15		2.0	4.7	11	19	9.2	
16	1.8	2.2	6.1	9.5	17	15	
17	1.6	2.8	12	19	14	19	
18	1.5	4.9	10	30	13	19	
19	1.5	5.2	9.1	20	17	17	
20	2.4	11	8.9	16	36	13	
21	3.1	13	22	13	24	11	
22	2.9	7.7	17	11	18	13	
23	2.4	5.4	10	11	16	12	
24	2.0	4.3	7.5	11	17	12	
25	1.9	6.0	6.7	8.8	14	10	
26	2.0	6.6	7.2	7.4	12	9.7	
27	2.2	4.3	17	6.7	10	8.6	
28	2.9	3.6	15	6.4	9.3	7.6	
29	3.5	3.2	9.9	6.0	------	7.3	
30	3.3	3.0	7.9	5.7	------	7.3	
31	3.9	------	7.0	5.4	------	7.0	------
TOTAL		134.2	246.1	350.0	388.8	413.7	
MEAN		4.47	7.94	11.3	13.9	13.3	
MAX		13	22	30	36	32	
MIN		2.0	3.0	5.4	4.3	7.0	
CFSM		.56	1.00	1.43	1.76	1.68	
IN.		.63	1.16	1.64	1.83	1.94	
AC-FT		266	488	694	771	821	

CFSM - cubic feet per second per square mile [(ft^3/s)/mi^2] of basin area.
In. - inches of water if spread evenly over the entire basin.
AC-FT - acre-feet of water.

Site 20 (pl. 1). Tulalip Creek at Tulalip, station 12158040 (15.400 mi^2).

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR
1		8.0	10	13	15	33	13
2		6.5	11	12	15	48	13
3		6.4	12	12	15	37	14
4		6.2	18	23	14	30	16
5		6.3	14	21	14	24	16
6		6.2	13	18	14	22	15
7		8.4	12	16	24	20	13
8		7.7	11	18	22	19	12
9		7.5	12	15	19	29	12
10		8.5	15	13	18	26	13
11		8.0	14	12	22	22	13
12		7.8	12	14	34	19	13
13		8.7	12	17	31	20	13
14		8.2	12	16	34	19	12
15		8.2	12	14	27	17	
16	5.2	8.0	15	13	28	26	
17	5.2	9.8	22	27	25	32	
18	5.2	14	16	31	23	31	
19	5.4	13	14	24	30	29	
20	6.9	25	14	27	48	23	
21	6.2	22	28	25	38	20	
22	5.6	14	16	24	33	23	
23	5.5	12	13	24	31	22	
24	5.5	12	12	23	34	21	
25	5.5	15	12	21	29	19	
26	5.6	13	13	20	27	18	
27	6.1	11	25	19	26	16	
28	6.9	11	18	19	25	15	
29	7.1	11	13	18	------	14	
30	6.5	10	12	18	------	14	
31	8.0	------	12	16	------	13	------
TOTAL		313.4	445	583	715	721	
MEAN		10.4	14.4	18.8	25.5	23.3	
MAX		25	28	31	48	48	
MIN		6.2	10	12	14	13	
CFSM		.68	.94	1.22	1.66	1.51	
IN.		.76	1.07	1.41	1.73	1.74	
AC-FT		622	883	1,160	1,420	1,430	

TABLE 5.--Monthly maximum and minimum water temperatures at Tulalip and Mission Creek gaging stations during period October 16, 1974-April 8, 1975

[All values in degrees Celsius]

Site 12. Mission Creek near Tulalip (station 12157250)

DAY	OCTORER MAX	OCTORER MIN	NOVEMBER MAX	NOVEMBER MIN	DECEMBER MAX	DECEMBER MIN	JANUARY MAX	JANUARY MIN
1	---	---	8.5	8.5	---	---	4.0	3.0
2	---	---	8.5	6.5	6.0	5.0	4.0	3.5
3	---	---	6.5	6.5	6.5	6.0	4.5	4.0
4	---	---	8.0	6.5	7.0	6.5	5.0	4.5
5	---	---	8.5	8.0	8.0	7.0	5.0	4.0
6	---	---	9.0	8.5	7.0	6.5	4.5	4.5
7	---	---	---	---	6.5	6.5	4.5	4.0
8	---	---	---	---	6.5	6.0	4.5	3.5
9	---	---	---	---	7.0	6.5	3.5	2.0
10	---	---	---	---	7.0	6.5	2.0	2.0
11	---	---	---	---	7.0	6.0	2.0	1.0
12	---	---	---	---	6.0	5.5	3.5	1.0
13	---	---	---	---	5.5	5.0	3.5	3.5
14	---	---	---	---	5.5	5.5	3.5	3.5
15	---	---	---	---	6.0	5.5	4.0	3.5
16	9.0	8.0	---	---	8.0	6.0	5.0	4.0
17	9.0	8.0	---	---	8.0	6.5	6.5	5.0
18	9.0	8.0	---	---	6.5	6.0	6.5	6.5
19	9.0	8.0	---	---	6.5	6.0	6.5	6.0
20	9.5	9.0	---	---	8.0	6.5	6.0	5.0
21	9.0	8.0	---	---	8.5	6.0	5.0	4.0
22	8.0	7.0	---	---	6.0	4.5	5.0	4.5
23	7.0	6.5	---	---	4.5	3.0	6.5	4.5
24	7.0	6.5	---	---	3.5	3.0	6.5	5.5
25	6.5	6.0	---	---	4.5	3.5	6.0	5.5
26	8.5	6.5	---	---	4.5	4.0	5.5	3.5
27	9.0	8.5	---	---	4.5	3.5	3.5	2.0
28	9.0	8.5	---	---	3.5	3.0	3.0	2.0
29	9.0	8.0	---	---	4.0	3.5	2.0	1.5
30	8.0	8.0	---	---	4.0	3.5	2.0	2.0
31	9.0	8.0	---	---	4.0	2.0	2.0	1.5
MONTH	---	---	---	---	8.5	2.0	6.5	1.0

DAY	FEBRUARY MAX	FEBRUARY MIN	MARCH MAX	MARCH MIN	APRIL MAX	APRIL MIN
1	2.0	1.0	8.0	6.5	9.0	5.5
2	3.0	2.0	8.5	8.0	8.0	6.5
3	3.5	3.0	---	---	8.5	5.5
4	3.5	3.0	---	---	8.0	6.0
5	3.0	2.0	---	---	8.5	5.5
6	3.0	1.5	5.5	4.0	10.0	5.0
7	3.5	3.0	6.5	3.5	10.0	6.0
8	3.5	2.0	8.0	5.5	11.0	6.0
9	4.5	3.0	8.0	6.0	11.0	8.0
10	4.5	4.5	6.5	5.5	12.0	7.0
11	4.5	3.5	6.5	4.5	13.0	5.0
12	6.5	3.5	6.0	5.5	11.5	8.5
13	6.0	5.0	6.5	5.5	10.0	9.0
14	5.0	3.5	6.0	5.5	10.5	7.0
15	3.5	3.0	6.5	5.5	11.0	8.5
16	4.0	3.0	7.0	5.5	10.5	10.0
17	4.5	3.5	6.5	6.0	10.5	9.0
18	5.5	4.5	6.5	6.0	10.5	9.5
19	5.5	5.0	8.0	6.0	10.0	9.0
20	5.5	3.5	8.0	6.5	11.0	8.0
21	3.5	2.0	6.5	6.5	12.0	7.0
22	5.5	3.5	7.0	5.5	10.5	9.0
23	6.0	4.5	8.0	6.5	11.0	9.0
24	6.5	5.0	8.0	5.5	10.0	9.0
25	5.5	3.5	8.0	4.5	9.5	8.5
26	5.5	4.0	7.0	5.0	9.5	8.0
27	5.5	4.5	6.5	4.0	10.5	8.0
28	6.5	5.5	8.0	4.5	12.0	8.5
29	---	---	8.0	5.5	13.5	8.5
30	---	---	9.0	6.5	14.0	9.0
31	---	---	9.5	6.0	---	---
MONTH	6.5	1.0	9.5	3.5	14.0	5.0

Site 20. Mission Creek near Tulalip (station 12157250)

DAY	OCTOBER MAX	OCTOBER MIN	NOVEMBER MAX	NOVEMBER MIN	DECEMBER MAX	DECEMBER MIN	JANUARY MAX	JANUARY MIN
1	---	---	9.0	8.5	6.0	4.5	5.0	4.5
2	---	---	9.5	7.0	7.5	6.0	5.0	4.5
3	---	---	7.0	6.5	7.5	6.0	5.0	4.5
4	---	---	8.0	7.0	8.0	7.5	4.5	4.0
5	---	---	9.5	8.0	8.5	7.0	---	---
6	---	---	10.0	9.5	7.0	6.0	---	---
7	---	---	10.0	9.0	7.5	6.0	---	---
8	---	---	9.0	8.0	7.5	6.0	---	---
9	---	---	9.5	8.5	6.0	5.5	3.0	2.5
10	---	---	9.0	8.0	5.5	5.0	2.5	2.0
11	---	---	8.5	8.0	5.5	5.0	2.0	2.0
12	---	---	10.0	8.5	7.0	5.5	3.0	2.0
13	---	---	10.5	9.0	6.0	7.0	3.5	3.0
14	---	---	9.0	8.5	7.5	6.5	4.0	3.5
15	---	---	9.0	8.5	6.5	6.5	4.0	3.0
16	9.5	---	9.0	8.0	7.0	6.5	5.5	4.0
17	9.0	7.5	8.0	7.5	8.5	7.0	7.0	5.5
18	9.0	8.0	8.5	7.5	8.0	5.5	7.5	7.0
19	9.5	8.0	8.0	8.0	5.5	2.5	7.0	6.0
20	10.5	9.5	9.5	8.0	3.0	2.5	6.5	5.0
21	10.0	9.0	9.5	8.0	3.5	2.5	5.0	3.5
22	9.0	7.5	8.0	7.0	5.0	3.5	4.5	4.5
23	8.0	7.0	8.0	7.0	4.5	3.0	7.0	4.5
24	7.5	6.5	9.0	7.5	3.5	3.0	6.0	6.0
25	7.5	6.5	9.0	6.5	3.0	3.0	6.0	5.0
26	8.5	7.0	6.5	5.5	3.5	3.0	5.0	3.0
27	9.5	8.0	6.5	5.0	4.5	3.0	3.0	1.5
28	9.5	9.0	5.0	3.5	3.0	2.5	2.5	2.0
29	9.0	8.5	9.5	3.5	4.0	2.5	3.0	1.5
30	8.5	7.5	5.0	3.0	4.5	4.0	2.5	2.5
31	9.0	8.5	---	---	5.0	4.0	2.5	2.0
MONTH	---	---	10.5	3.0	8.5	2.5	7.5	1.5

DAY	FEBRUARY MAX	FEBRUARY MIN	MARCH MAX	MARCH MIN	APRIL MAX	APRIL MIN
1	2.5	1.5	8.5	7.0	10.5	6.0
2	3.5	2.5	9.5	7.5	9.5	8.0
3	4.5	3.5	9.0	5.5	8.5	6.0
4	4.0	3.0	7.5	3.5	8.5	7.0
5	3.0	2.0	7.5	3.0	10.5	6.0
6	3.0	1.5	7.0	2.5	12.0	6.0
7	3.5	3.0	8.0	3.0	13.0	7.0
8	3.5	2.0	9.5	7.0	11.5	7.0
9	5.0	3.0	9.0	7.0	12.5	9.0
10	4.5	3.5	7.0	4.5	14.0	7.0
11	3.5	2.5	8.5	3.5	14.5	7.5
12	7.0	3.5	6.5	5.5	13.0	8.5
13	6.5	5.0	8.5	5.0	11.0	9.0
14	5.0	3.0	7.5	6.0	11.0	6.5
15	3.0	2.5	7.0	6.0	12.0	8.0
16	4.5	3.0	7.5	5.5	11.0	9.0
17	4.5	3.5	7.5	5.5	11.0	8.5
18	5.0	4.5	7.5	6.5	11.0	9.0
19	5.5	5.0	8.5	6.5	10.5	9.0
20	5.0	3.0	8.5	6.5	12.5	7.0
21	4.5	1.5	7.5	6.0	14.0	6.5
22	6.5	3.0	9.0	5.0	12.0	8.0
23	6.5	4.5	8.5	6.5	12.5	8.5
24	6.5	4.0	8.0	5.5	10.5	9.0
25	5.5	2.5	8.5	4.5	10.5	8.0
26	5.5	4.0	9.0	5.5	10.5	7.0
27	6.0	5.0	9.0	4.0	12.0	7.5
28	7.5	6.0	10.5	5.0	14.5	8.5
29	---	---	10.5	7.0	15.5	7.5
30	---	---	12.5	8.0	16.5	8.5
31	---	---	12.5	6.5	---	---
MONTH	7.5	1.5	12.5	2.5	16.5	6.0

TABLE 6.--Discharges and water temperatures at periodic-measurement sites

Site number (on pl. 1), stream, and drainage area	Date	Discharge (ft^3/s)	Water temperature (°C)
1. Quilceda Creek,	Oct. 8,1974	4.96	8.9
15.4 mi^2	Nov. 6	6.08	9.6
	Dec. 5	12.2	8.2
	Jan. 7,1975	63.5	5.2
	Feb. 4	18.2	4.7
	Mar. 4	63.3	5.6
	Apr. 9	17.8	6.9
2. West Fork	Oct. 8,1974	1.79	11.1
Quilceda Creek,	Nov. 6	1.97	10.1
9.41 mi^2	Dec. 5	5.27	8.8
	Jan. 7,1975	30.3	5.2
	Feb. 4	12.6	5.5
	Mar. 4	35.9	6.4
	Apr. 9	11.9	8.0
3. Tributary to	Oct. 8,1974	.65	9.4
Quilceda Creek,	Nov. 6	1.18	9.0
2.88 mi^2	Dec. 5	1.21	8.0
	Jan. 7,1975	5.63	4.6
	Feb. 5	1.87	3.2
	Mar. 4	6.30	5.2
	Apr. 9	2.90	8.4
4. Sturgeon Creek,	Oct. 16,1974	.75	12.2
1.87 mi^2	Apr. 9,1975	1.65	10.3
5. Mission Creek,	Sept. 17,1974	0	--
0.33 mi^2	Oct. 8	0	--
	Nov. 6	0	--
	Dec. 6	0	--
	Jan. 7,1975	0	--
	Feb. 5	e .01	2.9
	Mar. 4	1.06	6.8
	Apr. 9	.14	10.3
6. Mission Creek,	Nov. 7,1974	1.07	9.0
1.34 mi^2	Dec. 6	.70	7.7
	Jan. 8,1975	1.24	4.3
	Feb. 4	.66	4.5
	Mar. 5	3.06	4.5
	Apr. 10	1.63	11.9
7. Tributary to	Nov. 7,1974	.01	8.8
Mission Creek,	Dec. 6	.34	7.3
1.33 mi^2	Jan. 8,1975	1.67	4.1
	Feb. 4	.54	4.0
	Mar. 5	1.68	3.6
	Apr. 10	.48	9.0
8. Tributary to	Sept. 24,1974	0	--
Mission Creek,	Oct. 9	0	--
0.74 mi^2	Nov. 6	0	--
	Dec. 5	0	--
	Jan. 7,1975	T	4.0
	Feb. 4	.07	2.0
	Mar. 4	1.30	4.2
	Apr. 9	.12	6.0
9. Tributary to	Oct. 8,1974	.32	10.0
Mission Creek,	Nov. 7	1.28	8.8
1.57 mi^2	Dec. 6	.62	7.9
	Jan. 8,1975	.68	5.0
	Feb. 4	.68	5.0
	Mar. 5	2.24	4.0
	Apr. 10	.55	10.0
10. Tributary to Mission Creek (drainage area not known)	Oct. 8,1974	.20	8.9
11. Mission Creek,	Oct. 16,1974	1.99	9.1
6.58 mi^2	Nov. 6	2.52	8.5
	Dec. 5	5.08	7.4
	Jan. 8,1975	9.11	4.5
	Feb. 4	4.43	3.5
	Mar. 5	14.1	--
	Apr. 9	4.58	9.4
13. Tulalip Creek,	Sept. 24,1974	0	--
6.12 mi^2	Oct. 8	0	--
	Nov. 6	0	--
	Dec. 6	e .01	7.5
	Jan. 7,1975	.02	4.2
	Feb. 5	3.20	2.5
	Mar. 4	11.0	6.0
	Apr. 9	3.88	9.8
14. Tulalip Creek,	Sept. 24,1974	0	--
2.19 mi^2	Oct. 9	T	9.4
	Nov. 7	.01	9.1
	Dec. 5	.01	8.0
	Jan. 7,1975	.09	4.6
	Feb. 5	4.02	3.0
	Mar. 4	14.8	6.6
	Apr. 10	4.19	9.9
15. Tulalip Creek,	Oct. 9,1974	4.52	9.4
9.74 mi^2	Nov. 7	7.14	9.1
	Dec. 5	4.89	8.4
	Jan. 7,1975	5.33	5.0
	Feb. 5	9.52	3.2
	Mar. 4	20.5	7.2
	Apr. 9	8.00	11.0
16. East Branch	Sept. 17,1974	0	--
Tulalip Creek,	Oct. 8	0	--
0.80 mi^2	Nov. 6	0	--
	Dec. 6	0	--
	Jan. 7,1975	.01	5.0
	Feb. 5	.03	2.0
	Mar. 4	1.98	6.2
	Apr. 9	.21	8.0
17. East Branch	Oct. 8,1974	1.30	9.5
Tulalip Creek,	Nov. 6	1.25	9.0
1.50 mi^2	Dec. 6	1.66	8.8
	Jan. 8,1975	1.69	6.5
	Feb. 4	1.65	6.5
	Mar. 5	3.64	5.4
	Apr. 10	1.76	8.3
18. East Branch	Oct. 8,1974	1.67	10.0
Tulalip Creek,	Nov. 6	1.73	9.5
1.75 mi^2	Dec. 6	2.12	7.9
	Jan. 8,1975	2.86	5.5
	Feb. 4	2.12	5.4
	Mar. 5	4.55	4.8
	Apr. 10	2.38	7.0
19. Tributary to Tulalip Creek (drainage area not known)	Oct. 8,1974	.13	10.0
	Nov. 6	.12	9.5

e - estimated.

T - less than 0.005 ft^3/s.

TABLE 7.--Chemical analyses of water from selected streams

[Sites as numbered on plate 1]

Date of collection	Stream discharge (ft^3/s)	Milligrams per litre: Dis- solved calcium (Ca)	Dis- solved magnes- ium (Mg)	Dis- solved sodium (Na)	Dis- solved potas- sium (K)	Bicar- bonate (HCO_3)	Alka- linity as $CaCO_3$	Dis- solved sulfate (SO_4)	Dis- solved chloride (Cl)	Dis- solved fluoride (F)	Total nitrate (N)	Total nitrite (N)
Site 20. Tulalip Creek at Tulalip. USGS station 12158040.												
11- 6-74	--	7.8	6.7	6.2	1.8	58	48	4.8	5.5	--	0.24	0.01
12- 6-74	--	--	--	--	--	--	--	--	--	--	--	--
1- 8-75	--	--	--	--	--	--	--	--	--	--	--	--
2- 5-75	--	12	5.2	5.2	1.0	41	34	10	6.9	0.0	.59	.01
3- 5-75	--	--	--	--	--	--	--	--	--	--	--	--
4-10-75	--	--	--	--	--	--	--	--	--	--	--	--
Site 12. Mission Creek near Tulalip. USGS station 12157250.												
11- 6-74	--	10	5.7	5.9	1.1	45	37	5.1	6.4	--	.03	.01
12- 6-74	--	--	--	--	--	--	--	--	--	--	--	--
1- 8-75	--	--	--	--	--	--	--	--	--	--	--	--
2- 5-75	--	5.2	4.2	4.6	.8	29	24	7.8	6.1	.0	.76	.01
3- 5-75	--	--	--	--	--	--	--	--	--	--	--	--
4-10-75	--	--	--	--	--	--	--	--	--	--	--	--
Site 2. West Fork Quilceda Creek.												
11- 6-74	2.0	--	--	--	--	--	--	--	--	--	.25	.01
2- 4-75	13	--	--	--	--	--	--	--	--	--	1.2	.02
Site 6. Mission Creek.												
11- 7-74	1.1	--	--	--	--	--	--	--	--	--	.69	.01
2- 4-75	.66	--	--	--	--	--	--	--	--	--	1.9	.01
Site 7. Tributary to Mission Creek.												
11- 7-74	.01	--	--	--	--	--	--	--	--	--	.37	.01
2- 4-75	.54	--	--	--	--	--	--	--	--	--	2.1	.01
Site 9. Tributary to Mission Creek.												
11- 7-74	1.3	--	--	--	--	--	--	--	--	--	.79	.01
2- 4-75	.68	--	--	--	--	--	--	--	--	--	2.0	.01
Site 10. Mission Creek.												
11- 6-74	2.5	--	--	--	--	--	--	--	--	--	.01	.01
2- 4-75	4.4	--	--	--	--	--	--	--	--	--	.87	.01
Site 13. Tulalip Creek.												
2- 5-75	3.2	6.0	3.1	2.2	1.0	24	20	6.3	6.4	.0	.12	.01
Site 17. East branch Tulalip Creek.												
11- 6-74	1.2	--	--	--	--	--	--	--	--	--	.98	.00
12- 6-74	1.7	--	--	--	--	--	--	--	--	--	--	--
1- 8-75	1.7	--	--	--	--	--	--	--	--	--	--	--
2- 4-75	1.6	--	--	--	--	--	--	--	--	--	1.2	.01
3- 5-75	3.6	--	--	--	--	--	--	--	--	--	--	--
4-10-75	1.8	--	--	--	--	--	--	--	--	--	--	--

Milligrams per litre											
Total ammonia (N)	Total Kjeldahl nitrogen (N)	Total phos-phorus (P)	Dissolved orthophos-phorus (P)	Hard-ness (Ca,Mg)	Non-carbonate hardness	Percent sodium	Sodium adsorp-tion ratio	Specific conduc-tance (micromhos)	Water temper-ature (°C)	Turbidity (NTU)	Total coliform (col. per 100 ml)
0.07	0.29	0.04	0.03	47	0	21	0.4	106	9.5	1	48
--	--	--	--	--	--	--	--	--	7.0	--	85
--	--	--	--	--	--	--	--	--	4.2	--	830
.10	.43	.05	.03	51	18	18	.3	99	3.0	1	320
--	--	--	--	--	--	--	--	--	4.0	--	75
--	--	--	--	--	--	--	--	--	9.9	--	40
.11	.60	.03	.02	48	12	20	.4	110	9.0	1	56
--	--	--	--	--	--	--	--	--	6.9	--	35
--	--	--	--	--	--	--	--	--	3.6	--	710
.10	.50	.02	.01	30	6	24	.4	88	2.1	1	170
--	--	--	--	--	--	--	--	--	4.7	--	31
--	--	--	--	--	--	--	--	--	9.0	--	90
.03	.28	.07	.05	--	--	--	---	142	10.1	5	220
.17	.50	.06	.02	--	--	--	--	150	5.5	2	2,300
.06	.28	.02	.02	--	--	--	--	107	9.0	1	69
.04	.32	.02	.02	--	--	--	--	105	4.5	0	220
.05	.28	.01	.01	--	--	--	--	115	8.8	1	31
.05	.51	.01	.01	--	--	--	--	80	4.0	0	97
.05	.27	.20	.01	--	--	--	--	112	8.8	1	180
.05	.42	.04	.01	--	--	--	--	108	5.0	1	170
.14	.43	.02	.01	--	--	--	--	110	8.5	0	480
.07	.43	.02	.01	--	--	--	--	95	3.5	0	360
.06	.35	.01	.01	28	8	14	.2	72	2.5	0	14
.04	.18	.05	.04	--	--	--	--	101	9.0	0	7
--	--	--	--	--	--	--	--	--	8.8	--	27
--	--	--	--	--	--	--	--	--	6.5	--	270
.04	.20	.04	.04	--	--	--	--	117	6.5	0	370
--	--	--	--	--	--	--	--	--	5.4	--	21
--	--	--	--	--	--	--	--	--	8.3	--	25

TABLE 8.--Water-quality criteria for public water supplies

Constituent or characteristic	Recommended maximum[1]	Desirable criteria[2]	Detrimental effects of exceeding recommended limits, and other remarks
Physical:			
Color---------------	75 platinum-cobalt units	<10 platinum-cobalt units	Esthetically undesirable to consumer; economically undesirable to some industries.
Temperature---------	no recommendation	--	High temperatures may stimulate growth of taste- and odor-producing organisms.
Turbidity-----------	--do-------------	--	Can reduce the effectiveness of chlorination by physically protecting microorganisms from direct contact with the disinfectant.
Microbiological:			
Coliform (total)[3]---	1 col/100 ml	<1 col/100 ml	Coliform content is an indication of the sanitary quality of the water (high content = unsanitary).
Coliform (total)[4]---	20,000 col/100 ml	<100 col/100 ml	Do.
Inorganic chemicals:			
Alkalinity----------	no recommendation	--	High concentrations result in unpleasant taste; low concentrations may lead to highly acidic water.
Ammonia-------------	0.5 mg/l	<0.01 mg/l	May indicate pollution; may interfere with chlorination; is sometimes corrosive to copper and copper alloys.
Chloride------------	250 mg/l	<25 mg/l	Salty taste; may indicate saltwater intrusion. The recommended maximum is based on taste preferences, not on toxic considerations.
Fluoride------------	2.0 mg/l	--	May cause dental fluorosis. The recommended maximum is dependent upon air temperature. The value of 2.0 mg/l is for a range of annual average maximum daily air temperature of 59°F to 64°F.
Hardness------------	no recommendation	--	High levels (usually in excess of 200 mg/l) have undesirable taste and may result in increased soap and detergent use; low levels may be corrosive.
Iron (dissolved)----	0.3 mg/l	virtually absent	Bad taste; stains fixtures and laundry; accumulates in pipes.
Iron (total)--------	1.0 mg/l	0.1 mg/l	Do.
Manganese-----------	0.05 mg/l	--	Do.
Nitrate (as N)------	10 mg/l	virtually absent	Highly toxic to some infants.
Nitrite (as N)------	1 mg/l	--	Highly toxic (more so than nitrate).
pH (range)----------	5.0-9.0	--	Water may be corrosive where pH is less than 5.0.
Phosphate-----------	no recommendation	--	High concentrations lead to objectionable plant growth.
Sodium--------------	--do-------------	--	High concentrations may indicate presence of sewage or industrial effluents; concentrations exceeding 20 mg/l may adversely affect individuals on restricted sodium intakes.
Sulfate-------------	250 mg/l	<50 mg/l	Possible bad taste; possible laxative effect.
Total dissolved solids.	[2]500	<200 mg/l	Possible bad taste; possible laxative effect; possibly corrosive.

[1]U.S. Environmental Protection Agency (1973a), except for total iron, for which recommended maximum set by World Health Organization (1971).

[2]U.S. Environmental Protection Agency (1968).

[3]These values are for water after treatment or for water which will not be treated before use.

[4]These values are for raw water (before treatment).

TABLE 9.--Chemical quality of ground water from selected wells

[All samples analyzed by U.S. Geological Survey, except from well 30/4-36R1 which was analyzed by Washington Health Department Water Supply and Waste Section]

Well number	Depth (ft)	Date sample collected	Milligrams per litre										
			Dis-solved silica (SiO_2)	Dis-solved iron (Fe)	Dis-solved mangan-ese (Mn)	Dis-solved calcium (Ca)	Dis-solved magnes-ium (Mg)	Dis-solved sodium (Na)	Dis-solved potas-sium (K)	Bicar-bonate (HCO_3)	Alka-linity as $CaCO_3$	Dis-solved sulfate (SO_4)	Dis-solved chloride (Cl)
29/4-1A1	174	10-12-60	31	0.31	--	19	20	151	7.6	101	--	53	230
		4-19-61	30	[a]15	--	22	19	137	7.4	104	--	53	210
-1A2	146	4-19-67	--	--	--	--	--	--	--	--	--	--	22
-1B1	106	4-19-67	--	--	--	--	--	--	--	--	--	--	11
-1B2	160	4-19-67	--	--	--	--	--	--	--	--	--	--	120
		2-27-75	--	--	--	--	--	--	--	--	--	--	110
-1C1	165	4-19-67	--	--	--	--	--	--	--	--	--	--	11
-1D1	120	4-20-67	--	--	--	--	--	--	--	--	--	--	7
-1G2	132	4-19-67	--	--	--	--	--	--	--	--	--	--	[b]18
-1G3	130	4-19-47	--	--	--	--	--	--	--	--	--	--	9
		4-19-67	--	--	--	--	--	--	--	--	--	--	11
30/4-6L1	230	4- 7-67	--	--	--	--	--	--	--	--	--	--	8.5
-7G2	45	4- 7-67	--	--	--	--	--	--	--	--	--	--	10
		11-14-74	--	--	--	--	--	--	--	--	--	--	11
-10L4	96	2-27-75	42	2.3	0.07	9.1	6.3	6.4	1.9	61	50	7.8	3.6
-17C1	377	10-12-60	39	.98	--	12	11	7.9	2.2	100	--	4.2	6
		4-24-61	--	--	--	--	--	--	--	97	--	--	--
		11-14-74	--	--	--	--	--	--	--	--	--	--	5.8
		2-27-75	40	1.30	.15	13	12	8.2	2.4	100	80	5.8	6.6
-17K1	518	4-18-67	--	--	--	--	--	--	--	--	--	--	8
		11-14-74	--	--	--	--	--	--	--	--	--	--	5.0
-28A1	163	4-18-67	--	--	--	--	--	--	--	--	--	--	6.5
-35R1	172	10- 5-60	40	.89	--	36	19	11	3.4	224	--	1.2	6.0
		5-24-61	--	--	--	--	--	--	--	228	--	--	--
		4-20-67	--	--	--	--	--	--	--	--	--	--	7.5
-36R1	154	6-28-72	13	0	.02	32.8	--	8.1	1.8	--	--	--	10.5
30/5-5M3	14	2-27-75	16	.06	.00	12	2.0	3.1	1.0	37	30	4.9	2.8
-6H1	85	2-27-75	34	.05	.08	18	9.0	6.3	2.0	106	87	5.2	2.4
-29B8	21	2-27-75	14	.04	.01	8.0	3.7	5.9	2.4	24	20	11	5.2
-30G2	66	2-27-75	18	.36	.01	11	4.2	5.3	.8	23	49	8.2	4.2
-31B1	26	4-20-67	--	--	--	--	--	--	--	--	--	--	8.5
-31F1	85	4-20-67	--	--	--	--	--	--	--	--	--	--	6.5

[a]Total iron. [b]Average of two samples.

Dis-solved fluoride (F)	Total nitrite plus ni-trate (N)	Total phos-phorus (P)	Dissolved solids (residue at 180°C)	Hard-ness (Ca,Mg)	Noncar-bonate hard-ness	Sodium adsorp-tion ratio	Specific conduc-tance (micromhos)	pH (units)	Color (platinum-cobalt units)	Temper-ature (°C)
Milligrams per litre										
0.2	1.2	0.26	572	132	--	--	1,050	7.7	0	10.5
.3	.8	.17	552	--	--	--	954	7.9	--	10.0
--	--	--	--	--	--	--	302	--	--	--
--	--	--	--	--	--	--	216	--	--	--
--	--	--	--	--	--	--	567	--	--	--
--	--	--	--	--	--	--	--	--	--	9.5
--	--	--	--	--	--	--	312	--	--	--
--	--	--	--	--	--	--	170	--	--	--
--	--	--	--	75	--	--	269	--	--	--
--	--	--	--	105	--	--	--	--	--	--
--	--	--	--	--	--	--	218	--	--	--
--	--	--	--	--	--	--	223	--	--	--
--	--	--	--	--	--	--	275	--	--	--
--	--	--	--	--	--	--	275	--	--	9.5
.1	.09	--	119	49	0	0.4	126	7.7	20	7.0
.1	.1	.15	130	75	--	--	182	7.7	15	11.0
--	--	--	--	75	--	--	178	7.7	--	10.0
--	--	--	--	--	--	--	188	--	--	9.5
.1	.00	--	132	82	0	.4	189	7.8	10	9.5
--	--	--	--	--	--	--	184	--	--	--
--	--	--	--	--	--	--	182	--	--	--
--	--	--	--	--	--	--	167	--	--	--
.2	2.0	.43	229	170	--	--	364	7.4	5	9.5
--	--	--	--	171	--	--	369	7.7	--	10.0
--	--	--	--	--	--	--	355	--	--	--
--	--	--	--	--	--	--	174	7.6	0	--
.0	.38	--	67	38	8	.2	86	7.1	5	7.5
.1	.00	--	129	82	0	.3	186	8.3	3	9.5
.0	2.7	--	78	35	16	.4	110	6.7	0	8.5
.0	6.4	--	104	45	26	.3	128	7.1	3	8.0
--	--	--	--	--	--	--	236	--	--	--
--	--	--	--	--	--	--	157	--	--	--

TABLE 10.--Temperatures of ground water from selected wells

Well number	Well depth (ft)	Date	Tempera- ture (°C)	Well number	Well depth (ft)	Date	Tempera- ature (°C)	Well number	Well depth (ft)	Date	Tempera- ture (°C)
29/4-1A1	174	10-12-60	10.5	30/5-5E2	16	10-18-74	11.0	30/5-8M7	8	1-15-75	8.0
		4-19-61	10.0			11-14-74	10.0			3- 7-75	8.5
-1B2	160	2-27-75	9.5			1-15-75	8.0	-20F1	28	1-14-75	9.5
30/4-3B2	--	10- 2-74	9.5			3-19-75	7.5			3- 7-75	9.5
-3H1	105	10- 2-74	10.0			4-24-75	8.0			4-24-75	9.5
		12-12-74	9.0	-5E3	17	10-18-74	10.5	-20G1	12	11-14-74	11.0
		1-15-75	9.0			11-14-74	10.0			11-22-74	10.5
		3-14-75	9.0			12-12-74	9.5			12-12-74	10.5
		4-16-75	8.5			1-15-75	8.5			1-14-75	10.5
-5N1	350	10- 1-74	9.0			3-19-75	7.5			3-14-75	8.5
-7G2	60	12-12-74	8.5			4-24-75	8.0			4-16-75	8.5
		1-15-75	9.0	-5E6	10	11- 5-74	11.0			4-24-75	8.5
		3-14-75	9.0			11-20-74	10.5	-20K1	22	1-14-75	9.5
		4-16-75	9.0			4-24-75	8.0			2-27-75	9.0
-7G3	45	11-14-75	9.5	-5J1	20	1-15-75	9.0	-20K2	30	3- 7-75	8.5
		12-12-74	9.0			3- 7-75	9.0	-20L1	28	1-14-75	9.5
		1-15-75	9.0			4-24-75	9.0			3- 7-75	9.5
		3-14-75	9.0	-5J2	26	11- 5-74	11.5	-20Q2	--	3- 7-75	9.0
		4-16-75	9.0			11-20-74	11.0	-29B3	22	1-14-75	9.0
-10L1	80	1-14-75	6.0			1-15-75	9.0	-29B4	20	3- 7-75	9.5
		3-14-75	6.5			3- 7-75	9.0	-29B5	30	3- 7-75	10.5
		4-16-75	8.0	-5K3	13	1-15-75	8.5			4-24-75	10.0
		4-24-75	8.5			3- 7-75	8.0	-29B8	21	2-27-75	8.5
-10L4	96	2-27-75	7.0	-5L1	11	10-29-74	11.5	-29F3	26	7- -74	7.0
		3-14-75	7.0			11-20-74	11.5	-29F5	18	3- 7-75	9.0
		4-16-75	8.0	-5M3	14	11- 1-74	12.0	-29G3	29	3- 7-75	8.5
		4-24-75	8.5			1-15-75	7.5			4-24-75	9.0
-10L5	103	1-14-75	8.5			2-27-75	7.5	-29G6	36	1-14-75	9.5
		3-14-75	6.5	-5N1	26	10-29-74	11.5			4-24-75	9.0
		4-16-75	8.0	-6A3	11	11- 5-74	11.5	-29G7	18	11-14-74	10.0
-17C1	377	10-12-60	11.0	-6B1	16	11- 1-74	11.5			12-12-74	8.0
		4-24-61	10.0			1-15-75	9.5			1-14-75	8.5
		11-14-74	9.5			3-19-75	8.5			3-14-75	8.0
		12-12-74	9.0			4-24-75	8.5			4-16-75	8.5
		1-15-75	9.0	-6H1	85	11-26-74	9.5	-29G8	17	3- 7c75	9.0
		2-27-75	9.5			12-12-74	9.5	-30B1	33	2-27-75	9.5
		3- 5-75	9.0			1-15-75	9.5	-30B2	23	1-14-75	9.0
		3-14-75	9.0			2-27-75	9.5	-30G2	66	1-14-75	9.5
		4-16-75	9.0			3-19-75	9.5			3-14-75	8.0
-22L1	107	5- -74	10.0			4-16-75	9.5			4-16-75	8.5
-35R1	172	10- 5-60	9.5	-6H2	111	8- -74	10.0	-30H1	8	1-14-75	7.0
		5-24-61	10.0	-6J2	10	11- 1-74	11.0			3- 7-75	9.0
-35R2	167	2-27-75	9.5	-6R1	14	10-29-74	11.5			4-24-75	8.0
-36F4	36	11-26-74	10.5	-7G2	26	1-15-75	7.5	-30R1	13	11-26-74	10.5
-36F11	23	11- 8-74	11.0			3-19-75	6.5	-30R8	17	3- 7-75	8.5
-36J7	8	1-14-75	8.0			4-24-75	8.0	-31F4	41	11- 8-74	10.0
-36P3	36	11- 8-74	11.5	-8E2	11	10-29-74	12.0			2-27-75	8.0
		12-12-74	11.0			1-15-75	8.5	-31G2	37	10-18-74	10.0
		1-15-75	9.5	-8F2	8	10-29-74	12.0			11-14-74	10.0
		3-14-75	9.0	-8F4	11	10-29-74	11.5			12-12-74	9.5
		4-16-75	9.0	-8L1	12	11-14-74	12.0			1-14-75	7.5
-36Q3	30	11-26-74	9.5			12-12-74	11.0			3-14-75	7.5
30/5-5D2	24	11- 5-74	11.0			1-15-75	9.0			4-16-75	7.0
-5D3	23	11- 5-74	10.5	-8M1	13	1-15-75	9.5	-31G3	30	4-24-75	7.5
											9.0

TABLE 11.--Concentrations of iron in ground water from selected wells

Well number	Well depth (ft)	Altitude of well bottom (ft)	Date sample collected	Dissolved iron (mg/l)	Total iron (mg/l)
29/4-1A1	174	-54	10-12-60	0.31	--
			4-19-61	--	15
30/4-10L4	96	94	6- -74	1.5	--
			2-27-75	2.30	--
-17C1	377	-267	10-12-60	.98	--
			2-27-75	1.30	--
-35R1	172	-42	10- 5-60	.89	--
-35R2	167	-52	11-26-74	1.00	--
-36F4	36	174	11-26-74	.04	--
-36J7	8	127	1-14-75	.04	--
-36P3	36	104	1-15-75	.10	--
-36Q3	30	100	11-26-74	.10	--
-36R1	154	-19	6-28-72	0	--
30/5-5D2	24	74	11-20-74	.07	--
-5E6	10	85	11-20-74	.04	--
-5J1	20	61	1-15-75	3.00	--
			3- 7-75	.46	4.30
-5J2	26	54	11-20-74	.01	--
			1-15-75	.04	--
			3- 7-75	.07	.83
-5K3	10	67	1-15-75	1.30	--
			3- 7-75	.05	2.40
-5L1	11	74	11-20-74	.04	--
-5M3	14	78	1-15-75	.04	--
			2-27-75	.06	--
-6B1	16	192	11-20-74	.04	--
-6H1	85	11	2-27-75	.05	--
-6R1	14	76	11-20-74	.03	--
-7G2	26	114	11-20-74	.13	--
			1-15-75	.03	--
-8E2	11	65	1-15-75	.03	--
-8F4	11	64	11-20-74	.06	--
-8J1	27	36	11-20-74	.02	--
-8L1	12	63	11-20-74	.07	--
-8M1	13	62	1-15-75	.02	--
-8M7	8	70	11-20-74	2.90	--
			1-15-75	.19	--
			3- 7-75	.27	6.20
-20F1	28	15	11-22-74	.76	--
			1-14-75	3.90	--
			3- 7-75	9.40	17.00
-20G1	12	33	11-22-74	.06	--
-20K1	22	21	1-14-75	.03	--
-20L1	28	15	1-14-75	3.20	--
			3- 7-75	.81	4.80
-20Q1	20	5	11-22-74	.04	--
-20Q2	--	--	3- 7-75	.00	--

TABLE 11.--Concentrations of iron in ground water from selected wells--Con.

Well number	Well depth (ft)	Altitude of well bottom (ft)	Date sample collected	Dissolved iron (mg/l)	Total iron (mg/l)
30/5-29B3	22	4	1-14-75	0.03	--
-29B4	20	5	3- 7-75	.03	--
-29B5	30	-5	3- 7-75	.04	--
-29B8	21	7	2-27-75	.04	--
-29C3	11	26	11-22-74	.05	--
-29F1	19	3	11-22-74	.05	--
-29F5	18	4	3- 7-75	.01	--
-29G2	29	-9	11-22-74	.01	--
-29G3	29	-8	3- 7-75	.02	--
-29G6	36	-15	1-14-75	.04	--
-29G8	17	4	3- 7-75	.01	--
-29L5	10	2	11-26-74	.01	--
-29N1	15	-1	11-26-74	.04	--
-30B1	33	112	11-22-74	.09	--
-30B2	23	117	1-14-75	.07	--
-30G2	66	94	11-22-74	.03	--
			2-27-75	.36	--
-30H1	8	18	11-22-74	2.20	--
			1-14-75	.18	--
			3- 7-75	.15	0.35
-30H8	15	18	11-22-74	.07	--
-30R1	13	9	11-26-74	.03	--
-30R8	17	5	3- 7-75	.02	--
-31G3	30	27	11-22-74	.03	--
-31G4	21	-7	11-22-74	.09	--
-31M1	16	104	11-22-74	.02	--

TABLE 12.--Total coliform-bacteria counts in ground water from selected wells

Well number	Depth (ft)	Date sampled in 1975	Tempera- ture (°C)	Coliform bacteria (col/100 ml)
30/4-10L1	80	Apr. 24	8.5	<1
-10L4	96	--do---	8.5	<1
-35R2	167	Feb. 27	9.5	<1
30/5-5E6	10	Apr. 24	8.0	1
-5J1	20	--do---	9.0	<1
-5M3	14	Feb. 27	7.5	80
-6B1	16	Apr. 24	8.5	<1
-7G2	26	--do---	8.0	9
-20F1	28	--do---	9.5	<1
-20G1	12	--do---	8.5	1
-20K1	22	Feb. 27	9.0	800
-29B5	30	Apr. 24	10.0	<1
-29B8	21	Feb. 27	8.5	<1
-29F5	18	Apr. 24	9.0	<1
-29G6	36	--do---	9.0	5
-30B1	33	Feb. 27	9.5	<1
-30H1	8	Apr. 24	8.0	<1
-31G3	30	--do---	9.0	<1

TABLE 13.--Data from community-supply wells

Local well no.	Owner or area supplied	Number of households supplied[a]	Pump test: Measured yield (gal/min)	Pump test: Draw-down (ft)	Pump test: Time (hrs)	Pump test: Date	Remarks[b]
Priest Point Deep Aquifer							
29/4-1A2	Priest Point Water Co.	46 and 10S	30	3	1	Apr. 1964	Good quality and good supply. Chloride concentration of 22 mg/l (Apr. 1967) near recommended maximum.
-1A3			--	--	--	--	
29/4-1B2	Meridian Water Supply	18 and 7A	50	5½	4	Apr. 1967	Good quality and good supply. Chloride concentration of 102 mg/l (Apr. 1967) exceeds recommended maximum.
29/4-1B3	Chealco Community Association	13 and 12S	--	--	--	--	Good quality and good supply. Newer well on same site has reported hardness problem.
29/4-1C1	Gays Water District	30	30	--	--	--	Good supply. Reportedly hard. Chloride concentration of 11 mg/l well below recommended maximum.
30/4-35R1	Potlatch Beach	8 and 4S	10	<1	--	Sept. 1945	Good supply. Has experienced high coliform counts. Iron concentration of 0.89 mg/l (Oct. 1960) exceeds recommended maximum.
30/4-36R1	Snug Harbor Mobile Home Park	31	--	--	--	--	Good quality and good supply. Chloride concentration of 10.5 mg/l (June 1972) well below recommended maximum.
-36R2			--	--	--	--	
30/5-31E1	S. Jones Sr.	5	--	--	--	--	Good quality, but with some excess iron. Inadequate supply in summer.
Coastal Deep Aquifer							
30/4-6P1	Sunny Shores	5 and 13S	--	--	--	--	Good quality and good supply.
30/4-7G1	Tulare Beach Association	18 and 28S	--	--	--	--	Good supply. Reportedly hard. Chloride concentrations in well 7G2 of 10 mg/l (Apr. 1967) and 11 mg/l (Nov. 1974) were well below recommended maximum.
-7G2			--	--	--	--	
-7K1			--	--	--	--	
30/4-17C1	Spee-Bi-Dah Water Co.	50 and 20S	50	4	8	1946	Good supply and good quality. Chloride concentrations of 6 mg/l (Oct. 1960) and 5.8 mg/l (Nov. 1974) well below desirable limit. Iron concentration of 0.98 mg/l (Oct. 1960) exceeds recommended maximum.
30/4-17K1	Tulalip Shores	6 and 29S	12	--	--	--	Good quality and adequate supply. Chloride concencentrations of 8 mg/l (Apr. 1967) and 5.0 mg/l (Nov. 1974) well below recommended maximum.
30/4-21G1	Arcadia Water Dist.	8 and 1S	30	30	2½	Oct. 1969	Good quality and adequate supply.
30/4-21J1	Upper Tulalip Heights	8	--	--	--	--	Good supply. Good quality, but with a little iron.
30/4-21K1s	Tulalip Heights, Inc.	1 and 11S	10	--	--	Oct. 1974	Good quality and quantity.
30/4-28A1	Hermosa Point Water Co.	13 and 15S	60	50	--	1966	Good quality and adequate supply. Chloride concentration of 6.5 mg/l (Apr. 1967) well below recommended maximum.
Central Plateau Aquifer							
30/4-1M1	Lands and Water, Inc.	20-25 and 5S	--	--	--	--	Good quality and quantity.
30/4-1N1	---do---------------	[c]3	57	6	½	Feb. 1970	Good quality and quantity.
30/4-3C1	Kathann Estates	[d]17	--	--	--	--	Good quality and quantity.

[a] S, summer supply only; A, apartments.

[b] Quality and supply are as reported by owner or tenant.

[c] Will expand to a maximum of 93.

[d] 13 other homes on system but not occupied.

TABLE 14.-Records of selected wells in and adjacent to the Tulalip Indian Reservation

EXPLANATION

Local well number: Numbered by township, range, section, and 40-acre subdivision, as described on page 6.

Owner: Name of owner or tenant.

Use of water: H, domestic supply; I, irrigation; P, public supply, U, unusued; Z, other.

Altitude of LSD (ft): Altitude of land-surface datum, in feet, with reference to mean sea level.

Well depth and water level (ft): As measured, in feet below LSD, by Geological Survey personnel or other agencies or as reported by well drillers or owners.

Water-bearing material of major aquifer: Material that contributes the greatest quantity of water to the well.

Water level (ft): Measured water level of well, in feet above or below LSD; F, flows, with head unknown; +12, flows, head 12 ft.

Date water level measured: Month and (or) year of measurement, usually during well inventory.

Yield (gpm): Pumping discharge of well, in gallons per minute, as generally reported by drillers; values are not necessarily the maximum obtainable from well.

Drawdown (ft): Distance, in feet, that water level was lowered by pumping at stated yield rate. Length of pumping period may vary from less than 1 hour to several days.

Log available: D, driller's log in table 15.

QW type: Type of chemical analysis: C, complete analysis; J, chloride and specific conductance; M, multiple or at least one complete analysis and one or more partial analysis; P, partial analysis. Water quality data available in tables 9-12.

TABLE 14.--Records of selected wells in and adjacent to the Tulalip Indian Reservation--Continued

LOCAL WELL NUMBER	OWNER	USE OF WATER	ALTITUDE OF LSD (FT)	WELL DEPTH (FT)	CASING DIAMETER (IN)	DEPTH TO TOP OF AQUIFER (FEET)
--		--	100	166	8	--
29N04E01A01	PRIEST PT WTR C	U	120	174	6	164
29N04E01A02	PRIEST PT WTR C	P	120	146	8	140
29N04E01A03	PRIEST PT WTR C	P	120	146	8	140
29N04E01A04	JACK DENGINEN	H	125	146	6	124
29N04E01B01	NG KLEISATH	H	95	106	6	100
29N04E01B02	MERIDIAN WTR SU	P	100	160	6	145
29N04E01B03	CHEALCO CMTY AS	P	122	172	6	160
29N04E01B04	HC HOLSCHER	--	120	130	6	98
29N04E01B05		H	102	128	6	104
29N04E01C01	GAYS WATER DIST	P	122	165	6	146
29N04E01C02	SKOKIA WTR CO	H	125	160	6	148
29N04E01D01	EW GEDDES	H	85	120	6	--
29N04E01D02	FOSTER STANTON	H	10	4	96	0
29N04E01D03	AM VANDERSTAAY	H	10	6	72	0
29N04E01D04	JAMES NOWAK	H	40	25	42	--
29N04E01D05	M BROWN	H	10	--	42	--
29N04E01G01	LB MARQUISS MD	H	60	11	54	8
29N04E01G02	EARL EDGAR	H	85	132	6	--
29N04E01G03	JE WEEKS	H	85	130	6	--
29N04E01G04	SIM WILSON	H	80	127	6	117
29N04E01G05	RALPH SMITH	U	80	32	32	--
29N04E01G06	RONNINIGEN	H	45	71	6	67
29N05E08R01	WEYERHAUSER CO	U	10	1545	12	--
30N04E01C01	US DEPT COMMERC	U	590	125	6	35
30N04E01M01	SAM LAKE IMPROV	P	--	--	--	424
30N04E01N01	LANDS WATER INC	P	525	257	8	243
30N04E03A01	SL MEYER	H	450	168	6	144
30N04E03A02	JE JOHNSON	H	430	168	6	135
30N04E03A03	M ANDERSEN	H	448	151	6	127
30N04E03A04	GEORGE ROLPH	H	425	136	6	131
30N04E03B01	ROWE	H	410	156	6	120
30N04E03B02		H	415	--	6	--
30N04E03B03	OD BURRIGHT	H	412	137	6	110
30N04E03C01	KATHANN ESTATES	P	440	179	6	154
30N04E03D01	JF DOLESHEL	H	455	170	6	149
30N04E03G01	GRUBB	H	402	128	6	119
30N04E03H01	D FALKNER	H	395	105	8	--
30N04E03H02	DL LARSON	H	395	120	6	98
30N04E03H03	DOUD	H	390	107	6	90
30N04E03H04	RAVENDER	H	394	143	6	120
30N04E03H05	TUCKER	H	390	101	6	88
30N04E05N01	ADAMS	H	415	350	6	--
30N04E05N02		H	420	--	42	--
30N04E06L01	WL PAPE	H	200	231	6	210
30N04E06P01	SUNNY SHORES	P	85	200	6	165
30N04E06Q01	G GREYERBIEHL	H	411	405	6	--
30N04E06Q02	P WINTERS	H	400	437	6	--
30N04E06R01	LE BATH	H	425	7	42	--
30N04E07G01	TULARE BEACH AS	U	30	325	6	23
30N04E07G02	TULARE BCH ASSC	P	30	60	8	54
30N04E07G03	TULARE BEACH AS	P	30	45	42	--
30N04E07H01	TULARE ADDITION	U	450	431	--	--
30N04E07K01	TULARE BCH ASSC	P	30	62	--	--
30N04E08D01	DC DABBS	H	395	23	42	--

WATER-BEARING MATERIAL OF MAJOR AQUIFER	WATER LEVEL (FT)	DATE WATER LEVEL MEASURED	YIELD (GPM)	DRAW DOWN (FT)	LOG AVAIL-ABLE	QW TYPE
--	--	--	--	--	--	--
SAND AND GRAVEL	121	4-41	50	2	D	M
COARSE GRAINED SAND	121	4-67	20	1	D	J
COARSE GRAINED SAND	118	4-67	30	3	--	--
SAND	--	--	20	1	D	--
SAND AND GRAVEL	94	4-67	--	--	--	J
COARSE GRAINED SAND AND GRAVEL	105	4-65	40	1	D	J
GRAVELLY SAND	--	--	--	--	D	--
COARSE GRAINED SAND	--	--	25	1	D	--
SAND	--	--	20	2	D	--
SAND AND GRAVEL	124	11-74	30	--	D	J
COARSE GRAINED SAND	120	6-71	17	1	D	--
SAND AND GRAVEL	85	4-47	--	--	--	J
SAND	2	10-74	--	--	--	--
SAND	2	10-74	--	--	--	--
--	--	--	--	--	--	--
SAND-	--	--	--	--	--	--
GRAVELLY SAND	7	11-74	--	--	--	--
SAND AND GRAVEL	96	-64	--	--	--	J
SAND AND GRAVEL	85	-40	--	--	--	J
SAND AND GRAVEL	87	12-63	40	--	D	--
--	29	3-75	--	--	--	--
COARSE GRAINED SAND	45	6-71	30	3	D	--
--	1545	2-35	--	--	D	--
SAND	10	10-74	--	--	D	--
SAND AND GRAVEL	--	--	--	--	D	--
SAND AND GRAVEL	207	2-70	57	6	D	--
SAND	135	8-70	20	2	D	--
SAND	133	9-70	17	7	D	--
COARSE GRAINED SAND	128	4-70	--	--	D	--
MEDIUM GRAINED SAND	110	2-70	20	1	D	--
SAND	107	10-74	8	15	D	--
--	123	10-74	--	--	--	--
CLAYEY SAND	110	1-69	20	2	D	--
GRAVELLY SAND	137	9-69	--	--	D	--
COARSE GRAINED SAND	142	7-73	28	3	D	--
COARSE GRAINED SAND	101	9-68	20	1	D	--
--	84	10-74	--	--	--	--
SAND	98	1-70	20	2	D	--
CLAYEY SAND	--	--	15	--	D	--
SAND	118	3-70	20	--	D	--
MEDIUM GRAINED SAND	80	10-69	23	2	D	--
--	--	--	--	--	--	--
--	--	--	--	--	--	--
SAND	203	4-67	--	--	D	J
FINE GRAINED SAND	80	5-55	20	10	D	--
--	385	11-74	--	--	--	--
--	380	11-74	--	--	--	--
--	7	9-74	--	--	--	--
SAND AND GRAVEL	22	12-46	--	--	D	--
COARSE GRAINED SAND AND GRAVEL	27	4-67	20	--	D	J
--	19	10-74	--	--	--	--
--	--	--	--	--	D	--
--	--	--	--	--	--	--
--	23	9-74	--	--	--	--

TABLE 14.--Records of selected wells in and adjacent to the Tulalip Indian Reservation--Continued

LOCAL WELL NUMBER	OWNER	USE OF WATER	ALTI- TUDE- OF LSD (FT)	WELL DEPTH (FT)	CASING DIAM- ETER (IN)	DEPTH TO TOP OF AQUIFER (FEET)
30N04E08P01	BODEEN AND LOHR	H	140	302	6	297
30N04E08Q01		H	140	143	6	138
30N04E10F01	TULALIP TRIBE	U	235	98	8	--
30N04E10G01	TULALIP TRIBE	U	230	170	--	64
30N04E10L01	TULALIP TRIBE	P	224	80	8	59
30N04E10L02	TULALIP TRIBE	P	230	95	8	--
30N04E10L03	TULALIP TRIBE	P	214	118	8	48
30N04E10L04	TULALIP TRIBE	P	190	96	8	--
30N04E10L05	TULALIP TRIBE	P	202	103	8	54
30N04E14J01	RH GUERTIN	H	210	--	42	--
30N04E17B01	J KOONS	H	70	45	2	--
30N04E17B02	OCHS BROTHERS	H	135	142	6	125
30N04E17B03	D SENTER	H	125	128	6	115
30N04E17B04	ERNIE SANTI	H	125	119	--	114
30N04E17B05	AW NYLANDER	H	110	112	6	80
30N04E17B06	C FAIRCHILD	H	110	95	6	90
30N04E17B07	SPEE-BI-DAH 8	P	65	44	32	--
30N04E17B08	LG GREYERHIEHL	H	50	18	2	--
30N04E17B09	CLYDE LASHUA	H	85	150	--	100
30N04E17B10	BELL	H	30	--	6	--
30N04E17B11	WALDO WICKSTROM	H	112	55	6	48
30N04E17B12	L HANSON	H	100	143	6	--
30N04E17B13	FAHLSTROM	H	100	186	6	180
30N04E17B14	VEENHUIZEN	H	110	110	6	100
30N04E17B15	DISHNOW	H	70	151	6	146
30N04E17B16	GARVEY	H	100	120	6	89
30N04E17B17	ANDERSON	H	80	127	6	110
30N04E17C01	SPEEBIDAH WTR C	P	110	377	6	362
30N04E17K01	TG MORTLAND	P	170	518	6	500
30N04E21G01	ARCADIA WATER D	P	158	375	6	353
30N04E21J01	UPR TULALIP HGT	P	160	163	6	155
30N04E21J02	WHITE	U	182	241	6	228
30N04E22L01	PAUL HESBY	H	100	107	6	105
30N04E25K01	MARYSVILLE NO 4	U	180	344	12	
30N04E26N01	TULALIP TRIB IN	U	--	--	--	--
30N04E28A01	HRMSA PT WTR CO	P	60	163	6	155
30N04E35R01	POTLATCH BEACH	P	130	172	6	149
30N04E35R02	CLAYTON OLSON	H	115	167	6	147
30N04E36A01	VICTOR MOSES	H	180	190	6	
30N04E36B01	DAVID SPENCER	H	160	--	6	--
30N04E36F01	PALMER	H	225	45	36	--
30N04E36F02	G RYALS	H	215	16	36	--
30N04E36F03	R RASMUSSEN	H	230	12	42	--
30N04E36F04	AJ FISHER	H	210	36	42	--
30N04E36F05	F WITCHEY	H	220	34	--	--
30N04E36F06	JR KELLY	H	210	155	6	--
30N04E36F07	F HULET	H	190	148	6	--
30N04E36F08	F HULET	H	205	172	6	--
30N04E36F09	JR KELLY	U	210	25	42	--
30N04E36F10	JR KELLY	U	210	65	42	--
30N04E36F11	RL FRASER	H	220	23	42	--
30N04E36H01	GILBERT MOSES	H	165	192	--	--
30N04E36J01	H MENCKE	U	136	12	30	--
30N04E36J02	W COLFELT	H	135	--	6	--
30N04E36J03	JI PAUL	H	145	70	10	--

WATER-BEARING MATERIAL OF MAJOR AQUIFER	WATER LEVEL (FT)	DATE WATER LEVEL MEASURED	YIELD (GPM)	DRAW DOWN (FT)	LOG AVAIL- ABLE	QW TYPE
SAND	--	--	17	50	D	--
SAND	88	9-53	17	30	D	--
--	--	--	--	--	D	--
MEDIUM GRAINED SAND	--	--	--	--	D	--
CLAYEY SAND	+7	12-74	35	--	D	P
SAND AND GRAVEL	23	5-74	--	--	D	--
SAND	9	7-74	341	55	D	--
SAND	+10	7-74	--	--	D	M
SAND AND GRAVEL	+10	12-74	340	65	D	--
--	3	12-74	--	--	--	--
--	--	--	--	--	--	--
CLAYEY SAND	79	3-75	12	32	D	--
SAND	72	3-75	17	40	D	--
SAND AND GRAVEL	--	--	23	30	D	--
SAND	--	--	10	--	D	--
SAND	--	--	20	--	D	--
--	34	3-75	--	--	--	--
SAND AND GRAVEL	13	3-75	--	--	--	--
SAND AND GRAVEL	40	2-69	7	--	D	--
--	--	--	--	--	--	--
SAND	--	--	5	--	D	--
--	48	3-75	20	40	D	--
CLAYEY SAND	90	8-65	17	70	D	--
SAND	--	--	--	--	D	--
FINE GRAINED SAND	65	9-65	15	62	D	--
SAND	--	--	22	10	D	--
GRAVELLY SAND	--	--	--	--	D	--
COARSE GRAINED SAND AND GRAVEL	64	9-46	30	4	D	M
--	286	4-67	12	--	D	J
SAND	180	10-69	30	30	D	--
MEDIUM GRAINED SAND	40	--	60	17	D	--
FINE GRAINED SAND	165	10-67	35	40	D	--
SAND AND GRAVEL	60	5-74	10	20	D	--
--	--	--	--	--	D	--
--	--	--	--	--	D	--
MEDIUM GRAINED SAND AND GRAVEL	45	4-67	60	50	D	J
COARSE GRAINED SAND	124	4-67	10	1	D	M
FINE GRAINED SAND	113	11-74	25	10	D	P
--	--	--	--	--	--	--
--	65	9-74	--	--	--	--
--	--	--	--	--	--	--
--	10	9-74	--	--	--	--
--	7	9-74	--	--	--	--
--	16	9-74	--	--	--	P
--	--	--	--	--	--	--
--	--	--	--	--	--	--
--	75	-70	--	--	--	--
--	97	-70	--	--	--	--
--	25	9-74	--	--	--	--
--	--	--	--	--	--	--
--	10	11-74	--	--	--	--
--	--	--	--	--	--	--
--	4	8-44	4	--	--	--
--	123	9-74	--	--	--	--
--	--	--	30	--	--	--

TABLE 14.--Records of selected wells in and adjacent to the Tulalip Indian Reservation--Continued

LOCAL WELL NUMBER	OWNER	USE OF WATER	ALTI-TUDE-OF LSD (FT)	WELL DEPTH (FT)	CASING DIAM-ETER (IN)	DEPTH TO TOP OF AQUIFER (FEET)
30N04E36J04	J BYNAM	H	140	70	10	--
30N04E36J05	A PORTER	H	145	35	42	--
30N04E36J06		--	135	--	6	--
30N04E36J07	BUELL MULKEY	H	135	8	42	--
30N04E36J08	AMER INDIAN MIS	U	140	--	42	--
30N04E36J09	W WHITLINGER	H	140	165	6	--
30N04E36J10	H MENCKE	H	135	14	36	--
30N04E36J11	PRIEST PT GRCRY	U	135	163	4	153
30N04E36K01	L JAMES	H	155	--	--	--
30N04E36K02	M HUTCHINSON	H	140	--	42	--
30N04E36L01	G DEGROOT	H	200	15	36	--
30N04E36L02	F SMATHERS	H	190	60	42	--
30N04E36L03	F OSBURN	H	160	--	--	--
30N04E36L04	WL FLOCH	H	195	38	48	--
30N04E36N01	HE BAUER	H	95	133	6	105
30N04E36N02	BEN WILLIAMS SR	H	110	12	36	--
30N04E36N03	DELBERT MORDEN	H	92	125	6	95
30N04E36P01	ME VANDERPOL	H	118	152	6	130
30N04E36P02	E MYERS	H	155	35	42	--
30N04E36P03	PRIEST PT GRNGE	H	140	36	44	--
30N04E36P04	W CRAWFORD	H	115	143	6	131
30N04E36P05	ADELINE JOHNSON	H	130	25	42	--
30N04E36P06	GRANT HALL	H	125	148	6	--
30N04E36P07	GRANT HALL	U	125	17	36	--
30N04E36P08	ANGLIN	H	120	--	42	--
30N04E36P09	KARL A LAMBERT	H	115	15	42	--
30N04E36P10	E MYERS	I	155	20	42	--
30N04E36P11	ANGLIN	U	120	--	42	--
30N04E36P12	JOHNASON	H	118	172	6	166
30N04E36Q01	M HUTCHINSON	H	140	32	42	--
30N04E36Q02	R KLUIN	H	135	8	36	--
30N04E36Q03	T WINCHELL	H	130	30	46	--
30N04E36R01	CHADWICK	P	135	154	10	126
30N04E36R02	CHADWICK	P	135	155	10	136
30N05E03D01	MRYSVL SCH D 25	P	90	263	8	260
30N05E05C01	H JOHNSON	U	92	8	--	--
30N05E05C02		U	89	22	42	--
30N05E05D01	E BURRAN	H	98	22	42	--
30N05E05D02	B BURNS	H	98	24	42	--
30N05E05D03		H	103	23	42	--
30N05E05E01	ROBERT DABNEY	H	94	9	23	--
30N05E05E02	JT MORE	U	93	16	36	8
30N05E05E03	JT MORE	U	93	17	42	--
30N05E05E04	F CAMPBELL	H	94	123	6	--
30N05E05E05	M YANDLE	U	95	15	--	--
30N05E05E06	A SEARLES	H	95	10	39	--
30N05E05J01	R CAMPBELL	H	81	20	42	--
30N05E05J02	E VANWINKLE	H	80	26	42	--
30N05E05J03	F SCHUELLER	H	75	6	42	--
30N05E05K02	DOREMUS	H	74	--	--	--
30N05E05K03	A TORIE	H	77	10	36	--
30N05E05L01	LN LOUDENBURG	H	85	11	24	--
30N05E05M01	LM LESTER	H	75	12	--	--
30N05E05M02	LN LOUDENBURG	H	86	10	24	--
30N05E05M03	DR CRAIG	H	92	14	42	--

WATER-BEARING MATERIAL OF MAJOR AQUIFER	WATER LEVEL (FT)	DATE WATER LEVEL MEASURED	YIELD (GPM)	DRAW DOWN (FT)	LOG AVAIL-ABLE	QW TYPE
--	--	--	--	--	--	--
--	--	--	--	--	--	--
--	135	9-74	--	--	--	--
--	2	1-75	--	--	--	P
--	--	--	--	--	--	--
--	--	--	--	--	--	--
--	12	11-74	--	--	--	--
SAND AND GRAVEL	--	--	9	--	D	--
--	--	--	--	--	--	--
--	--	--	--	--	--	--
--	2	9-74	--	--	--	--
--	--	--	--	--	--	--
--	--	--	--	--	--	--
--	--	--	--	--	--	--
SAND AND GRAVEL	105	10-73	15	10	D	--
--	8	10-74	--	--	--	--
SAND	95	10-74	20	5	D	--
VERY COARSE GRAINED SAND AND GRAVE	115	8-45	7	1	D	--
--	--	--	--	--	--	--
--	14	11-74	--	--	--	P
SAND	116	9-74	20	--	D	--
--	--	--	--	--	--	--
--	125	9-74	--	--	--	--
--	8	9-74	--	--	--	--
--	--	--	--	--	--	--
--	12	7-74	--	--	--	--
--	--	--	--	--	--	--
--	--	--	--	--	--	--
CLAYEY SAND	130	1-49	20	--	D	--
SANDY CLAY	8	8-44	4	--	--	--
--	0	12-73	--	--	--	--
--	19	9-74	--	--	--	P
MEDIUM GRAINED SAND	126	3-70	--	--	D	P
SAND	131	9-74	--	--	D	--
GRAVEL	+3	2-64	8	250	D	--
--	--	--	--	--	--	--
--	5	11-74	--	--	--	--
--	--	--	--	--	--	--
--	12	11-74	--	--	--	P
--	15	11-74	--	--	--	--
GRAVELLY SAND	4	7-44	5	--	--	--
SAND	6	10-74	56	8	D	--
--	6	10-74	--	--	--	--
--	--	--	--	--	--	--
--	--	--	--	--	--	--
--	8	11-74	--	--	--	P
--	5	11-74	--	--	--	P
--	6	11-74	--	--	--	P
SAND	3	7-44	--	--	--	--
--	--	--	--	--	--	--
--	3	10-74	--	--	--	P
--	7	10-74	--	--	--	P
SAND	--	--	--	--	--	--
--	--	--	--	--	--	--
--	7	11-74	--	--	--	M

TABLE 14.--Records of selected wells in and adjacent to the Tulalip Indian Reservation--Continued

LOCAL WELL NUMBER	OWNER	USE OF WATER	ALTI-TUDE OF LSD (FT)	WELL DEPTH (FT)	CASING DIAM-ETER (IN)	DEPTH TO TOP OF AQUIFER (FEET)
30N05E05M04	DR CRAIG	U	93	11	42	--
30N05E05M05	R PORTER	H	93	120	6	--
30N05E05N01	LN LOUDENBURG	U	84	26	42	--
30N05E05P01	AR CURNUTT III	H	83	--	42	--
30N05E05P02	D LINGEL	H	85	12	36	--
30N05E05R01	H HENSLEY	H	78	--	42	--
30N05E05R02	PARGAS	H	78	18	42	--
30N05E06A01	R JENNINGS	H	128	17	42	--
30N05E06A02	K STAVERT	H	98	12	30	--
30N05E06A03	A MILLER	H	97	11	32	--
30N05E06B01	W HILDE	H	208	16	42	--
30N05E06B02	R BURGEN	H	192	3	42	--
30N05E06F01	OH OTTO	H	200	60	8	--
30N05E06F02	V TODD	H	210	20	42	--
30N05E06H01	HC YANDLE	H	96	85	6	--
30N05E06H02	J CARTER	H	96	111	6	--
30N05E06H03	K ALEXANDER	H	96	129	6	111
30N05E06J01	SHUHART	H	91	--	30	--
30N05E06J02	BG HADWIN	H	92	10	42	--
30N05E06J03	F JOHNSON	H	94	7	36	--
30N05E06J04	G GESME	H	95	107	6	105
30N05E06J05		H	95	20	42	--
30N05E06P01	JF GROW	H	215	82	4	--
30N05E06P02	JF GROW	H	235	7	42	--
30N05E06P03	JF GROW	H	235	7	42	--
30N05E06Q01	PAUL WATSON	H	225	112	6	105
30N05E06Q02	JEAN RAYMOND	H	225	105	6	100
30N05E06R01	E FLICK	H	90	14	42	--
30N05E07F01	AD NEAL	H	275	180	6	170
30N05E07F02	RALPH PETERSON	H	270	179	6	170
30N05E07G01	CE MACQUARRY	H	160	26	42	--
30N05E07G02	GOEN	H	140	26	42	--
30N05E07G03	G FELGAR	H	150	23	42	--
30N05E07G04	FRED MOE	H	125	9	42	--
30N05E07G05	N DESROSIERS	U	240	135	6	128
30N05E07H01	DALE BANTAM	H	105	19	42	--
30N05E07K01	J CLEVENGER	H	160	60	42	--
30N05E07K02	G BARTHOLOMEW	H	120	68	6	--
30N05E07K03	H WILKENS	H	130	20	36	--
30N05E08E01	J CHRISMAN	H	76	--	--	--
30N05E08E02	R HARTMAN	H	76	11	42	--
30N05E08E03		U	77	--	--	--
30N05E08E04	D OLSON	H	77	--	42	--
30N05E08F01	CHARLES ANABEL	H	73	15	--	--
30N05E08F02	DW HALL	U	74	8	42	--
30N05E08F03	DW HALL	H	74	19	42	--
30N05E08F04	J WOMACK	H	75	11	42	--
30N05E08J01	RICHARD SNAPPS	H	63	27	42	--
30N05E08L01	BM HARRISON	H	75	12	28	6
30N05E08L02	P FLOOD	H	74	16	42	--
30N05E08L03	S HODGSON	H	74	14	42	--
30N05E08M01	E BERG	H	75	13	42	--
30N05E08M02	M JOHNSON	H	76	15	42	--
30N05E08M03	R LAGERWEY	H	76	16	42	--
30N05E08M04	R STORDAL	H	76	10	42	--

WATER-BEARING MATERIAL OF MAJOR AQUIFER	WATER LEVEL (FT)	DATE WATER LEVEL MEASURED	YIELD (GPM)	DRAW DOWN (FT)	LOG AVAIL-ABLE	QW TYPE
--	6	11-74	--	--	--	--
--	--	--	--	--	--	--
--	6	10-74	--	--	--	--
--	--	--	--	--	--	--
--	4	3-74	--	--	--	--
--	--	--	--	--	--	--
--	--	--	--	--	--	--
--	1	11-74	--	--	--	--
--	--	--	--	--	--	--
--	9	11-74	--	--	--	--
--	11	11-74	--	--	--	P
--	2	11-74	--	--	--	--
--	--	--	--	--	--	--
--	--	--	--	--	--	--
--	+31	11-74	300	40	--	C
--	+30	11-74	30	--	D	--
SAND AND GRAVEL	+51	8-69	150	3	D	--
--	--	--	--	--	--	--
--	7	11-74	--	--	--	--
--	2	11-74	--	--	--	--
GRAVEL	F	--	--	--	D	--
--	6	11-74	--	--	--	--
--	58	11-74	--	--	--	--
--	4	11-74	--	--	--	--
--	4	11-74	--	--	--	--
SAND AND GRAVEL	75	5-69	20	1	D	--
CLAYEY SAND	74	4-71	20	1	D	--
--	7	10-74	--	--	--	P
SAND AND GRAVEL	154	10-74	40	--	D	--
GRAVELLY SAND	145	11-66	40	--	D	--
--	20	10-74	--	--	--	--
--	22	10-74	--	--	--	P
--	20	10-74	--	--	--	--
--	7	10-74	--	--	--	--
SANDY GRAVEL	103	3-75	15	5	D	--
--	8	10-74	--	--	--	--
--	55	10-74	--	--	--	--
--	23	9-70	--	--	--	--
--	6	10-74	--	--	--	--
--	--	--	--	--	--	--
--	7	10-74	--	--	--	P
--	--	--	--	--	--	--
--	--	--	--	--	--	--
--	--	--	--	--	--	--
--	7	10-74	--	--	--	--
--	13	10-74	--	--	--	--
--	7	10-74	--	--	--	P
--	16	10-74	--	--	--	P
SAND	6	9-43	--	--	--	P
--	6	10-74	--	--	--	--
--	--	--	--	--	--	--
--	5	10-74	--	--	--	P
--	6	10-74	--	--	--	--
--	5	10-74	--	--	--	--
--	2	10-74	--	--	--	--

TABLE 14.--Records of selected wells in and adjacent to the Tulalip Indian Reservation--Continued

LOCAL WELL NUMBER	OWNER	USE OF WATER	ALTI-TUDE- OF LSD (FT)	WELL DEPTH (FT)	CASING DIAM-ETER (IN)	DEPTH TO TOP OF AQUIFER (FEET)
30N05E08M05	R STORDAL	H	76	10	42	--
30N05E08M06	R HARTMAN	H	77	9	42	--
30N05E08M07	EC SMITH SR	H	78	8	42	--
30N05E10Q01	AG ZIEBELL	H	105	237	6	--
30N05E19M01	MARYSVILLE NO 1	U	510	482	6	--
30N05E20B01	TULALIP TRIBE	U	45	40	6	17
30N05E20F01	RL HARRISON	H	43	28	36	--
30N05E20G01	SHELDON	H	45	12	24	--
30N05E20G02	E WILLIAMS	H	44	22	42	--
30N05E20G03	E WILLIAMS	U	44	--	42	--
30N05E20K01	G WILLIAMS	H	43	22	36	--
30N05E20K02	E CHIOSI	H	38	30	42	--
30N05E20L01	CD ANDERSON	H	43	28	36	--
30N05E20L02	H TRYON	H	41	23	42	--
30N05E20Q01	R BURRI	H	25	20	42	--
30N05E20Q02	R BURRI	H	33	--	42	--
30N05E26D01	MARYSVILLE	P	110	657	6	636
30N05E29B01	CA EMORY	H	19	19	42	--
30N05E29B02	JIM BRADY	H	24	24	42	--
30N05E29B03	R MOSES	H	26	22	42	--
30N05E29B04	B GOBIN	H	25	20	36	--
30N05E29B05	A HATCH	H	25	30	42	--
30N05E29B06	QUIL CEDA KENNL	H	18	--	42	--
30N05E29B07	QUIL CEDA KENNL	H	24	--	--	--
30N05E29B08	A CHEER	H	28	21	42	2
30N05E29B09	VIOLA TOPASH	H	28	22	42	--
30N05E29C01	F SHELDON	H	29	17	48	14
30N05E29C02	DT SHERLOCK	H	28	40	36	3
30N05E29C03	CW MOEN	H	37	11	42	--
30N05E29C04	D LADDUSAW	H	26	19	42	--
30N05E29C05	D BRODERSON	H	30	19	36	--
30N05E29C06	H TURNER	H	29	40	42	--
30N05E29C07	C PHILLIPS	H	26	--	42	--
30N05E29C08	H YOCKEY	H	28	--	42	--
30N05E29F01	S DORSEY	H	22	19	42	--
30N05E29F02	LE WILKINS	H	22	26	42	--
30N05E29F03	G GREGG	H	21	26	42	--
30N05E29F04		Z	10	--	--	--
30N05E29F05	M WILLIAMS	H	22	18	42	--
30N05E29F06	CL DAVIS	H	21	--	--	--
30N05E29G01	R GRENTER	H	12	16	42	--
30N05E29G02	M MOSES	H	20	29	42	--
30N05E29G03	M MOSES	H	21	29	42	--
30N05E29G04		U	21	--	42	--
30N05E29G05	M SHELDON	H	19	17	42	--
30N05E29G06	L HATCH	H	21	36	42	13
30N05E29G07		U	22	18	42	--
30N05E29G08	GWEN HATCH	H	21	17	36	--
30N05E29H01	T LEHN	H	22	--	42	--
30N05E29H02	J KING	H	22	18	42	--
30N05E29J01	J KING	H	23	--	15	--
30N05E29K01	R SPENCER	H	17	32	42	--
30N05E29K02	J BRECKWALD	H	9	--	--	--
30N05E29K03	GOEDEL	H	9	--	--	--
30N05E29K04		H	10	--	42	--

WATER-BEARING MATERIAL OF MAJOR AQUIFER	WATER LEVEL (FT)	DATE WATER LEVEL MEASURED	YIELD (GPM)	DRAW DOWN (FT)	LOG AVAIL-ABLE	QW TYPE
--	2	10-74	--	--	--	--
--	8	10-74	--	--	--	--
--	6	10-74	--	--	--	P
--	20	11-56	--	--	D	
--	--	--	--	--	D	
SAND	8	10-74	60	--	D	--
SAND	10	9-74	--	--		P
--	10	9-74	--	--	--	P
SAND	10	9-74	--	--	--	
--	--	--	--	--	--	
--	13	9-74	--	--	--	P
--	16	3-75	--	--	--	
--	12	9-74	--	--	--	P
--	12	3-75	--	--	--	
--	15	9-74	--	--	--	P
--	18	3-75	--	--	--	P
COARSE GRAINED SAND	30	1-55	57	265	D	
--	12	9-74	--	--	--	
--	10	9-74	--	--	--	
SAND	10	9-74	20	2	D	P
--	11	9-74	--	--	--	P
--	15	9-74	--	--	--	P
--	6	9-74	--	--	--	
--	--	--	--	--	--	
SAND	8	9-74	--	--	D	M
--	8	3-75	--	--	--	--
SAND	14	7-44	9	--	--	
SAND	12	6-62	24	11	D	
--	9	11-74	--	--	--	P
--	--	--	--	--	--	
--	10	9-74	--	--	--	--
SAND	20	9-74	--	--	--	
--	--	--	--	--	--	
--	--	--	--	--	--	
--	7	11-74	--	--	--	P
--	10	9-74	--	--	--	--
--	12	7-74	15	7	D	
--	--	--	--	--	--	
--	11	3-75	--	--	--	P
--	--	--	--	--	--	
--	10	9-74	--	--	--	--
SAND	16	9-74	15	6	D	P
--	17	9-74	--	--	--	P
--	--	--	--	--	--	
--	12	9-74	--	--	--	
SAND	11	6-63	11	--	D	P
--	10	9-74	--	--	--	
--	10	3-75	--	--	--	P
--	13	9-74	--	--	--	
--	11	9-74	--	--	--	
--	--	--	--	--	--	--
SAND	11	9-74	20	4	D	--
--	--	--	--	--	--	
--	--	--	--	--	--	
--	12	9-74	--	--	--	

TABLE 14.--Records of selected wells in and adjacent to the Tulalip Indian Reservation--Continued

LOCAL WELL NUMBER	OWNER	USE OF WATER	ALTI-TUDE-OF LSD (FT)	WELL DEPTH (FT)	CASING DIAM-ETER (IN)	DEPTH TO TOP OF AQUIFER (FEET)
30N05E29K05		H	13	--	42	--
30N05E29L01	G STEVENSON	H	14	--	42	--
30N05E29L02	E THOMPSON	H	13	17	42	--
30N05E29L03	RD MORGAN	H	12	16	42	--
30N05E29L04	RD MORGAN	H	17	14	42	--
30N05E29L05	HC HEGNES	H	12	10	43	--
30N05E29L06	ELLA CORSE	H	12	13	36	--
30N05E29L07	T JACKLIN	H	13	11	42	--
30N05E29L08	J BRECKWELL	H	16	12	44	--
30N05E29L09	LJ CHRISTIANSEN	H	11	10	42	--
30N05E29M01		U	16	--	42	--
30N05E29N01	E BALAM	H	14	15	42	--
30N05E29P01	ACE J WESTER	H	10	24	42	--
30N05E29P02	AJ WESTER	H	5	14	42	--
30N05E29P03	C HART	H	11	--	42	--
30N05E30B01	PETE DILLON	H	145	33	42	--
30N05E30B02	N DILLON	H	140	23	42	--
30N05E30B03	R KONA	H	120	15	42	--
30N05E30B04	DALLAS TAYLOR	H	115	19	42	--
30N05E30G01	R KONA	H	112	17	42	--
30N05E30G02	LOUISE LEDFORD	H	160	66	42	53
30N05E30G03	BERNICE PARKS	H	160	64	42	46
30N05E30H01	H MCALL	H	26	8	42	--
30N05E30H02	GREGORY	H	27	--	42	--
30N05E30H03	PONCIANO	H	29	18	42	--
30N05E30H06	JM DAWSON	H	31	22	42	--
30N05E30H07		H	32	--	42	--
30N05E30H08	H TURK	H	33	15	42	--
30N05E30H09	H MCALL	I	26	6	42	--
30N05E30J01	VAN DYKE	H	21	--	42	--
30N05E30J02	CAL SLATER	H	23	6	42	--
30N05E30J03	LR DAMISH	H	21	18	42	--
30N05E30Q01	M BARTLETT	H	35	38	42	--
30N05E30R01	L JENSEN	H	22	13	36	4
30N05E30R02	GA ERICKSON	H	23	14	42	--
30N05E30R03	GA ERICKSON	H	20	18	42	--
30N05E30R04	F SOLOMEN	H	20	18	42	--
30N05E30R05	A MOE	H	22	11	--	--
30N05E30R06	WR WICKSTROM	H	23	22	42	--
30N05E30R07	E MEIER	H	26	25	40	--
30N05E30R08	GARY STANTON	H	22	17	42	--
30N05E31A01	S PHILIPP	H	12	26	42	--
30N05E31A02	LR SORENSON	H	14	--	42	--
30N05E31B01	DEAN SHAFFER	H	15	26	--	--
30N05E31B02	WC MORGAN	H	19	19	--	--
30N05E31B03	G HUMPHREY	H	19	11	40	--
30N05E31B04	FRED SAUNDERS	H	55	54	36	48
30N05E31B05	FRED SAUNDERS	I	55	56	36	48
30N05E31B06	EM JOHNSON	U	18	57	6	--
30N05E31B07	WC MORGAN	U	19	62	6	55
30N05E31B08	EM JOHNSON	H	18	55	6	50
30N05E31E01	S JONES SR.	P	125	136	6	130
30N05E31F01	D JONES	H	80	85	6	65
30N05E31F02	CARL JONES	H	90	92	6	76
30N05E31F03	GE CARPENTER	H	100	99	42	--

WATER-BEARING MATERIAL OF MAJOR AQUIFER	WATER LEVEL (FT)	DATE WATER LEVEL MEASURED	YIELD (GPM)	DRAW DOWN (FT)	LOG AVAIL- ABLE	QW TYPE
--	--	--	--	--	--	--
--	--	--	--	--	--	--
SAND	--	--	--	--	--	--
--	8	9-74	--	--	--	--
--	8	9-74	--	--	--	--
--	6	11-74	--	--	--	P
--	5	9-74	--	--	--	--
--	8	9-74	--	--	--	--
--	8	9-74	--	--	--	--
--	5	3-75	--	--	--	--
--	9	12-74	--	--	--	--
--	7	11-74	--	--	--	P
--	6	9-74	--	--	--	--
--	--	--	--	--	--	--
--	--	--	--	--	--	--
--	12	7-63	0.9	--	D	P
--	10	9-74	13	--	D	P
--	--	--	--	--	--	--
GRAVEL	12	8-63	10	--	D	--
--	10	9-74	5	--	D	--
GRAVEL	55	8-63	13	--	D	M
GRAVEL	56	7-63	8	--	D	--
--	5	9-74	--	--	--	P
--	--	--	--	--	--	--
--	--	--	--	--	--	--
SAND	--	--	--	--	--	--
--	--	--	--	--	--	--
--	6	11-74	--	--	--	P
--	--	--	--	--	--	--
--	--	--	--	--	--	--
--	3	9-74	--	--	--	--
--	--	--	--	--	--	--
--	18	9-74	--	--	--	--
SAND	6	11-74	--	--	--	P
--	4	9-74	--	--	--	--
--	4	9-74	--	--	--	--
--	--	--	--	--	--	--
--	--	--	--	--	--	--
--	8	--	--	--	--	--
--	14	9-74	--	--	--	--
--	2	3-75	--	--	--	P
SAND	8	9-74	--	--	--	--
--	--	--	--	--	--	--
--	1	9-63	--	--	--	J
TILL	11	9-74	--	--	--	--
--	8	9-74	--	--	--	--
SAND	46	3-75	--	--	--	--
SAND	46	3-75	--	--	--	--
--	22	8-57	25	3	D	--
SAND	--	--	20	10	D	--
SAND	--	--	25	--	D	--
MEDIUM GRAINED SAND	100	9-74	18	1	D	--
SAND AND GRAVEL	64	2-64	40	2	D	J
GRAVELLY SAND	65	2-64	20	--	D	--
SAND AND GRAVEL	90	9-74	25	--	D	--

TABLE 14.--Records of selected wells in and adjacent to the Tulalip Indian Reservation--Continued

LOCAL WELL NUMBER	OWNER	USE OF WATER	ALTI-TUDE OF LSD (FT)	WELL DEPTH (FT)	CASING DIAM-ETER (IN)	DEPTH TO TOP OF AQUIFER (FEET)
30N05E31F04	TULALIP JESUS H	U	95	41	42	--
30N05E31F05	LENA HARRISON	U	80	17	42	3
30N05E31F06	CARL JONES	U	90	21	42	14
30N05E31G01	LD CLADOOSBY	H	14	20	42	--
30N05E31G02	GLEN PARKS	U	38	37	42	--
30N05E31G03	W PATRICK	H	57	30	42	--
30N05E31G04	BUCKNER	H	14	21	42	--
30N05E31G05	LD CLADOOSBY	U	17	21	42	--
30N05E31G06	JL CRAWLEY	H	11	29	42	--
30N05E31M01	E PRICE	H	120	16	42	--
30N05E31M02	E PARKS	H	100	6	--	--
30N05E31M03	G PARKS	H	130	25	42	--
30N05E31M04		H	130	--	42	--
30N05E31M05		H	130	--	42	--
30N05E31M06	RAY PRICE	H	122	19	42	4
30N05E31M07	CHARLES HILL	H	118	19	42	--
31N03E36R01	MCKEES BCH WTR	P	10	96	6	85
31N04E22P02	MARYSVILLE	P	422	452	16	440
31N04E26B01	VERNON LINTH	H	480	216	6	205
31N04E33C02	CT FAIRCLOUGH	H	360	300	6	293
31N05E29K01	SNOH CO PRK DPT	--	111	225	6	215
31N05E32L03	RE FREEMAN	H	98	143	6	128

WATER-BEARING MATERIAL OF MAJOR AQUIFER	WATER LEVEL (FT)	DATE WATER LEVEL MEASURED	YIELD (GPM)	DRAW DOWN (FT)	LOG AVAIL-ABLE	QW TYPE
--	35	11-74	--	--	--	--
SAND	12	7-63	5	--	D	--
GRAVEL	16	7-63	33	--	D	--
--	7	9-74	--	--	--	--
TILL	15	9-74	8	--	D	--
TILL	13	9-74	0.4	--	D	P
--	9	11-74	--	--	--	P
--	10	6-63	13	--	D	--
--	1	3-75	--	--	--	--
--	8	9-74	2	--	D	P
--	--	--	--	--	--	--
--	21	9-74	--	--	--	--
--	--	--	--	--	--	--
--	--	--	--	--	--	--
SAND	12	6-63	7	--	D	--
--	3	3-75	--	--	--	--
GRAVEL	7	4-67	--	--	--	--
SAND AND GRAVEL	133	7-68	850	--	D	--
SAND AND GRAVEL	193	8-58	700	--	D	--
CLAYEY SAND	260	1-74	12	12	D	--
SAND	2	4-74	30	18	D	--
CLAYEY SAND AND GRAVEL	+14	5-72	150	18	D	--

TABLE 15.--Drillers' logs of selected wells in and adjacent to the Tulalip Indian Reservation

Material	Thickness (feet)	Depth (feet)
29/4-1A1. Priest Point Water Co. Altitude 120 ft. Drilled by C. E Miller, 1941. Casing: 8-inch to 58 ft; 6-inch to 166 ft. Screen: 166-174 ft.		
Soil	2	2
Sand, dry	30	32
Clay, blue	10	42
Till	6	48
Sand	4	52
Till and clay	23	75
Sand and gravel, dry	15	90
Sand, tight	40	130
Sand, fine, silty, some water	15	145
Sand, clay, and wood	12	157
Sand, coarse, water-bearing	6	163
Clay	1	164
Sand, coarse, with 10 percent pea gravel and 5 percent heavy gravel, water-bearing	8	172
Sand, fine, and clay	2	174
29/4-1A2. Priest Point Water Co. Altitude 120 ft. Drilled by H. E. Deckmann, April 1964. Casing: 8-inch to 141 ft. Screen: 141-146 ft.		
Sand, gravel, and clay	20	20
Sand and clay	80	100
Gravel and clay	24	124
Sand, gravel, and clay, water-bearing	16	140
Sand, coarse, water-bearing	6	146
29/4-1A4. Jack Denginen. Altitude 125 ft. Drilled by H. E. Deckmann. Casing: 6 inch. Screened.		
Sand and gravel	20	20
Clay, blue	20	40
Sand	60	100
Sand and gravel, hard-packed	20	120
Sand, dry	4	124
Sand, water-bearing	22	146
29/4-1B2. Meridian Water Supply, Inc. Altitude 100 ft. Drilled by H. E. Deckmann, September 1965. Casing: 8-inch to 40 ft, 6-inch to 150 ft. Screen: 150-160 ft.		
Sand, gravel, and clay	15	15
Sand and gravel, water-bearing	10	25
Sand and gravel, hard, dry	5	30
Sand, gravel, and clay, hard, dry	20	50
Sand and clay, dry	25	75
Sand, coarse, gravel, and clay	31	106
Clay and sand, some water	14	120
Sand, medium, water-bearing	7	127
Sand, gravel, and clay, little water	18	145
Sand, coarse, and fine gravel	15	160
29/4-1B3. Chealco Community Association, Inc. Altitude 122 ft. Drilled by C. E. Miller, July 1947. Casing: 6-inch. Screened.		
Sand and gravel	85	85
Sand and gravel, dry, tight	40	125
Sand, some water	17	142
Sand, medium	18	160
Sand, coarse, with 10 percent fine gravel, water-bearing	10	170
Sand, tight	2	172
29/4-1B4. H. C. Holscher. Altitude 120 ft. Drilled by H. E. Deckmann, June 1967. Casing: 6-inch to 130 ft; perforated 124-130 ft.		
Sand and clay, with gravel streams	98	98
Sand, coarse, with some gravel, water-bearing	15	113
Clay and sand	2	115
Sand, coarse, with some gravel, water-bearing	15	130

TABLE 15.--Drillers' logs of selected wells in and adjacent to the Tulalip Indian Reservation--Continued

Material	Thickness (feet)	Depth (feet)
29/4-1B5. Unknown. Altitude 102 ft. Drilled by H. E. Deckmann, August 1963. Casing: 6-inch to 123 ft. Screen: 123-128 ft.		
Sand and gravel, loose	60	60
Sand, gravel, and clay, hard-packed, some water	15	75
Sand, gravel, and clay, hard-packed, dry	29	104
Sand, water-bearing	24	128
29/4-1C1. Gays Water District. Altitude 122 ft. Drilled by C. E. Miller, December 1958. Casing: 6-inch to 155 ft; perforated 155-165 ft.		
Unknown	--	--
Till	--	70
Sand and gravel, dry	66	136
Sand, medium, some water	10	146
Sand, with 10 percent fine gravel, water-bearing	5	151
Sand, coarse, with 10 percent fine gravel	13	164
Clay, blue	1	165
29/4-1C2. Skokia Water Co. Altitude 122 ft. Drilled by H. E. Deckmann, 1970. Casing: 6-inch. Screened.		
Sand, gravel, and clay	20	20
Sand and clay, dry	30	50
Sand, hard	25	75
Sand, gravel, and clay	25	100
Sand and clay, dry	20	120
Sand and clay, water-bearing	28	148
Sand, coarse, water-bearing	12	160
29/4-1G4. Sim Wilson and Ralph Smith. Altitude 80 ft. Drilled by R. E. Freeman, December 1963. Casing: 6-inch to 120 ft. Screen: 120-125 ft.		
Soil, sandy	4	4
Sand, fine	31	35
29/4-1G4.--Continued		
Sand, fine, with clay streaks	10	45
Sand and gravel, tight, cemented	50	95
Sand, medium to coarse, loose, water-bearing	3	98
Sand, fine, with silt	19	117
Sand and gravel, loose, water-bearing	10	127
29/4-1G6. Ranninigen. Altitude 45 ft. Drilled by H. E. Deckmann, June 1971. Casing: 6-inch to 66 ft. Screen: 66-71 ft.		
Sand and clay, firm	6	6
Sand and clay, water-bearing	1	7
Sand and clay, firm	3	10
Sand, with some clay, wet	2	12
Sand, gravel, and clay, firm, dry	18	30
Sand, gravel, and clay, hard-packed, dry	15	45
Sand and gravel, water-bearing	5	50
Sand, fine, with thin, clay streaks, water-bearing	17	67
Sand, coarse, water-bearing	4	71
29/5-8R1. Weyerhauser Co. Altitude 10 ft. Drilled by N. C. Jannsen Drilling Co., November 1929. Casing: 12-inch to 1,545 ft; dry hole.		
Clay	5	5
Sand, with logs	13	18
Sand, with wood	14	32
Sand, clay, and wood	14	46
Sand, clay, and gravel	11	57
Sand	25	82
Clay, sand, and gravel	50	132
Sand and boulders	22	154
Boulders, sand, gravel, and clay	149	303
Sand and clay	22	325
Clay, blue	3	328
Sand	34	362
Clay	8	370
Sand, gravel, and clay	20	390
Clay	219	609

(continued)

TABLE 15.--Drillers' logs of selected wells in and adjacent to the Tulalip Indian Reservation--Continued

Material	Thickness (feet)	Depth (feet)
29/5-8R1.--Continued		
Sand and gravel	2	611
Clay, black	67	678
Clay	57	735
Coal	3	738
Clay, blue	62	800
Clay	395	1,195
Clay and sand	61	1,256
Boulders	2	1,258
Clay	248	1,506
Clay, black	39	1,545
30/4-1C1. U.S. Department of Commerce. Altitude 590 ft. Drilled by C. D. Marks, 1940. Casing: 6-inch.		
Soil	2	2
Till, gray	38	40
Till, blue, with boulders	68	108
Unknown	17	125
30/4-1M1. Sam Lake Improvement, Inc. Altitude 525 ft. Drilled by R. E. Freeman, 1965. Casing: 6-inch to 424 ft. Screen: 424-429 ft.		
Soil, sandy	3	3
Till	44	47
Gravel, tight, dry	13	60
Gravel, coarse, loose, dry	42	102
Sand, coarse, dry	18	120
Sand, medium, dry	30	150
Gravel and sand, coarse	30	180
Sand, with silt, dry	30	210
Sand, with silt, wet	25	235
Clay, yellow, with sand and silt layers	5	240
Sand, fine to medium	5	245
Clay, blue, with silt layers	21	266
Sand, crusty, with clay layers	8	274
Clay, blue	14	288
Clay, blue, with sand and silt layers	8	296
30/4-1M1--Continued		
Till	74	370
Unknown	3	373
Sand	50	423
Clay, blue	1	424
Sand, coarse, and fine gravel, water-bearing	4	428
Clay or shale, blue, hard	30	458
30/4-1N1. Lands and Water, Inc. Altitude 525 ft. Drilled by G. L. Calvin, February 1970. Casing: 8-inch to 247 ft. Screen: 247-257 ft.		
Gravel	10	10
Gravel, compact, and boulders	10	20
Clay, brown, and gravel	15	35
Clay, blue, and gravel	37	72
Sand	46	118
Sand and gravel	38	156
Sand	12	168
Sand and silt	32	200
Sand and gravel	18	218
Sand and clay	4	222
Sand and gravel, water-bearing	6	228
Sand, and brown clay	3	231
Sand, and blue clay	3	234
Sand, clay, and silt, blue	9	243
Sand and gravel, water-bearing	14	257
30/4-3A1. S. L. Meyer. Altitude 450 ft. Drilled by H. E. Deckmann, August 1970. Casing: 6-inch to 163 ft. Screen: 163-168 ft.		
Soil	2	2
Clay, firm, with some gravel	6	8
Till	42	50
Clay, firm, with some sand and gravel	45	95
Sand, medium to fine, and clay, dry	35	130
Sand, fine, and clay, wet	14	144
Sand, water-bearing	24	168

(continued)

TABLE 15.--Drillers' logs of selected wells in and adjacent to the Tulalip Indian Reservation--Continued

Material	Thickness (feet)	Depth (feet)
30/4-3A2. J. E. Johnson. Altitude 430 ft. Drilled by H. E. Deckmann, August 1970. Casing: 6-inch to 163 ft. Screen: 163-168 ft.		
Soil, clayey	10	10
Till	40	50
Clay, hard-packed, with some sand and gravel	25	75
Clay, with some sand, dry	60	135
Sand, water-bearing	33	168
30/4-3A3. Martin Anderson. Altitude 448 ft. Drilled by H. E. Deckmann, April 1970. Casing: 6-inch tc 146 ft. Screen: 146-151 ft.		
Clay and sand, firm	15	15
Till	25	40
Clay, firm, with coarse sand and fine gravel	35	75
Clay and sand, dry	52	127
Clay and sand, with water-bearing streaks	13	140
Sand, coarse, water-bearing	11	151
30/4-3A4. George Rolph. Altitude 425 ft. Drilled by H E. Leckmann, February 1970. Casing: 6-inch to 131 ft. Screen: 131-136 ft.		
Clay, firm	10	10
Till	40	50
Clay, sand, and gravel, hard	20	70
Sand, with some clay, and gravel streaks, dry	40	110
Sand, with some clay, wet	21	131
Sand, medium, water-bearing	5	136
30/4-3B1. Rowe. Altitude 410 ft. Drilled by H. E. Deckmann, April 1968. Casing: 6-inch to 156 ft; perforated 118-135 ft.		
Till(?)	50	50
Sand, gravel, and clay, firm, dry	60	110
Sand, gravel, and clay, firm, wet	10	120
Sand, water-bearing	36	156
30/4-3B3. O. D. Burright. Altitude 412 ft. Drilled by H. E. Deckmann, December 1968. Casing: 6-inch to 132 ft. Screen: 132-137 ft.		
Clay, sand, and gravel, hard	50	50
Clay, sand, and gravel, softer	50	100
Clay, sand, and gravel	10	110
Sand and clay, wet	15	125
Sand, coarse, and clay, water-bearing	12	137
30/4-3C1. Kathann Estates. Altitude 440 ft. Drilled by H. E. Deckmann, 1969. Casing: 6-inch to 168 ft. Screen: 168-179 ft.		
Clay, sandy	20	20
Till	30	50
Clay, blue, with some sand and gravel	25	75
Clay, yellow-brown, dry	55	130
Clay, firm, with a little water	20	150
Sand, with a little clay, water-bearing	4	154
Sand, with some clay and gravel, water-bearing	25	179
30/4-3D1. J. F. Doleshel. Altitude 455 ft. Drilled by J & S Drilling Co., July 1973. Casing: 10-inch to 18 ft; 6-inch to 165 ft. Screen: 165-170 ft.		
Soil	2	2
Clay	19	21
Till, gray	31	52
Till, brown	45	97
Silt and clay	7	104
Silt, tan	40	144
Silt and clay, brown	5	149
Sand, coarse, with some clay, water-bearing	21	170

TABLE 15.--Drillers' logs of selected wells in and adjacent to the Tulalip Indian Reservation--Continued

Material	Thick-ness (feet)	Depth (feet)
30/4-3G1. Grubb. Altitude 402 ft. Drilled by H. E. Deckmann, September 1968. Casing: 6-inch to 123 ft. Screen: 123-128 ft.		
Sand, gravel, and clay, hard-packed	50	50
Sand and clay, firm, dry	55	105
Clay and sand, with thin, water-bearing streaks	14	119
Sand, coarse, with some gravel, water-bearing	9	128
30/4-3H2. D. L. Larson. Altitude 395 ft. Drilled by H. E. Deckmann, January 1970. Casing: 6-inch to 115 ft. Screen: 115-120 ft.		
Clay, firm	15	15
Sand, gravel, and clay, hard-packed	35	50
Clay and sand, firm	48	98
Sand, with some clay, wet	17	115
Sand, medium, water-bearing	5	120
30/4-3H3. Doud. Altitude 390 ft. Drilled by H. E. Deckmann, August 1966. Casing: 6-inch to 102 ft. Screen: 102-107 ft.		
Soil	3	3
Sand, gravel, and clay, hard-packed	8	11
Sand and gravel, with a little clay, dry	49	60
Sand, fine, with a little clay	30	90
Sand and clay, with water-bearing streaks	10	100
Sand and clay, water-bearing	7	107
30/4-3H4 Ravender. Altitude 398 ft. Drilled by H. E. Deckmann, March 1970. Casing: 6-inch to 138 ft. Screen: 138-143 ft.		
Clay, sandy	10	10
Till	30	40
Sand and clay, with a few, thin,gravel streaks	80	120
Sand, water-bearing	23	143
30/4-3H5. Tucker. Altitude 390 ft. Drilled by H. E. Deckmann, September 1969. Casing: 6-inch to 96 ft. Screen: 96-101 ft.		
Clay	10	10
Clay, hard, and gravel	45	55
Clay and sand, firm	30	85
Clay and sand, firm, with thin, water-bearing streaks	3	88
Sand, medium, with streaks of fine sand, water-bearing	4	92
Sand, medium, with thin gravel streaks, water-bearing	9	101
30/4-6L1. W. L. Pape. Altitude 200 ft. Drilled by H. E. Deckmann, August 1957. Casing: 6-inch to 226 ft. Screen: 226-231 ft.		
Gravel, hard	26	26
Gravel, sand, and clay, soft, with some water	2	28
Gravel, hard-packed with a little clay	2	30
Clay, hard, with sand and gravel	10	40
Sand, fine, and clay	20	60
Clay and sand, firm	10	70
Clay, hard, with sand and gravel	20	90
Till	14	104
Clay, blue-gray	66	170
Sand and clay	40	210
Sand, water-bearing	21	231
30/4-6P1. Sunny Shores. Altitude 85 ft. Drilled by H. E. Deckmann, May 1955. Casing: 6-inch to 180 ft. Screen: 180-190 ft.		
Sand and gravel, loose	20	20
Gravel and brown clay, hard	40	60
Clay, blue-gray	65	125
Sand, fine, with some water	1	126
Clay	39	165
Sand, fine, firm, water-bearing	18	183
Sand, fine, loose, water-bearing	10	193
Sand, finer, hard-packed	7	200

TABLE 15.--Drillers' logs of selected wells in and adjacent to the Tulalip Indian Reservation--Continued

Material	Thickness (feet)	Depth (feet)
30/4-7G1. Tulare Beach Association. Altitude 30 ft. Drilled by C. D. Marks and Son, December 1946. Casing: 6-inch to 325 ft; perforated 44-67 ft.		
Sand, fine, with some clay	36	36
Clay, blue	8	44
Gravel and sand, water-bearing	23	67
Silt and clay	24	91
Clay, blue	30	121
Clay, with some gravel	55	176
Clay, sandy	34	210
Sand, silty	37	247
Sand, blue, very fine, hard	13	260
Sand, blue, fine, water-bearing	61	321
Clay, blue, hard	4	325
30/4-7G2. Tulare Beach Association. Altitude 30 ft. Drilled by H. E. Deckmann, July 1956. Casing: 8-inch to 55 ft. Screen: 55-60 ft.		
Sand	50	50
Clay, blue, and gravel, hard, wet	4	54
Sand, coarse, and gravel, water-bearing	6	60
Clay and gravel, dry	12	72
Clay and fine sand	18	90
30/4-7H1. Tulare Beach Association. Altitude 450 ft. Drilled by C. D. Marks & Son, 1946. Casing pulled.		
Soil	2	2
Till	83	85
Gravel	1	86
Clay, yellow	7	93
Sand, fine, with some clay	7	100
Sand, with gravel streaks	35	135
Sand, yellow	183	318
Clay, yellow	28	346
Sand, yellow, fine, dry	34	380
(continued)		
30/4-7H1.--Continued		
Clay, yellow	3	383
Clay, with fine sand	17	400
Sand, fine, clayey	31	431
30/4-8P1. Bodeen and Lohr. Altitude 140 ft. Drilled by H. E. Deckmann, April 1967. Casing: 6-inch to 297 ft; perforated 297-302 ft.		
Sand, gravel, and clay	9	9
Sand, medium, and clay	21	30
Sand, fine, and clay, dry	70	100
Sand, fine, with water-bearing seams	90	190
Clay and sand, with streaks of heavy, blue clay	74	264
Sand, fine, and clay, water-bearing	16	280
Sand and clay, with very little water	17	297
Sand, medium, with thin, clay streaks, water-bearing	5	302
Sand, fine, and clay	28	330
30/4-8Q1. Unknown. Altitude 140 ft. Drilled by H. E. Deckmann, August 1953. Casing: 6-inch to 138 ft. Screen: 138-143 ft.		
Sand	55	55
Sand, wet	35	90
Sand and gravel, hard-packed	22	112
Sand and gravel, some water	1	113
Sand and gravel, hard-packed	10	123
Sand and silt(?), with some water	15	138
Sand, water-bearing	5	143
30/4-10F1. Tulalip Tribe. Altitude 235 ft. Drilled by Dahlman Pump and Drilling, 1974. Casing: 8-inch to 98 ft.		
Soil	4	4
Clay and gravel	16	20
Clay, brown, and gravel	11	31
Clay, sandy	3	34
(continued)		

TABLE 15.--Drillers' logs of selected wells in and adjacent to the Tulalip Indian Reservation--Continued

Material	Thickness (feet)	Depth (feet)
30/4-10F1.--Continued		
Sand, fine, and clay	11	45
Sand, brown, fine to medium	5	50
Sand, brown, medium	15	65
Sand, medium to coarse	2	67
Clay, brown	3	70
Clay, blue	1	71
Sand, coarse	1	72
Clay, brown	1	73
Sand, fine to medium	13	86
Clay, gray	12	98
30/4-10G1. Tulalip Tribe. Altitude 230 ft. Drilled by Dahlman Pump and Drilling, 1974. Casing pulled.		
Clay, sandy	5	5
Sand and gravel	15	20
Clay, brown, and sand	10	30
Sand, fine, and some silt	15	45
Sand, fine to medium	9	54
Clay, gray	9	63
Clay, sand, and wood	1	64
Sand, medium, artesian flow	11	75
Clay, brown, silty	50	125
Clay, brown, some gravel	45	170
30/4-10L1. Tulalip Tribe. Altitude 224 ft. Drilled by Dahlman Pump and Drilling, 1974. Casing: 8-inch to 80 ft; perforated 60-65 ft.		
Clay and gravel	14	14
Clay and sand	19	33
Sand, fine-medium, some water	9	42
Sand, coarse, and fine gravel, some water	15	57
Clay, silty, and gray sand	2	59
Sand, gray, and blue clay, artesian flow	7	66
Clay, brown, and wood	2	68
Clay, gray	12	80
30/4-10L2. Tulalip Tribe. Altitude 230 ft. Drilled by Dahlman Pump and Drilling, 1974. Casing: 8-inch to 84 ft. Screen: 84-94 ft.		
Clay, brown, and gravel	28	28
Clay and sand	19	47
Sand, medium	12	59
Sand and gravel	9	68
Sand and gravel, medium-coarse	22	90
Clay, brown	5	95
30/4-10L3. Tulalip Tribe. Altitude 214 ft. Drilled by Dahlman Pump and Drilling, 1974. Casing: 8-inch to 118 ft; perforated 80-95 ft.		
Sand and gravel	25	25
Sand, silty, and clay	20	45
Sand, brown	3	48
Sand, medium to coarse	6	54
Sand, coarse	11	65
Sand, medium	6	71
Sand, coarse	4	75
Sand, medium to coarse	7	82
Sand, fine to medium	3	85
Sand, medium to coarse	13	98
Sand, fine to medium	18	116
Sand, fine to medium, and some gravel	1	117
Clay, brown	1	118
30/4-10L4. Tulalip Tribe. Altitude 190 ft. Drilled by Dahlman Pump and Drilling, 1974. Casing: 8-inch to 96 ft; perforated 88-95 ft.		
Sand and gravel	30	30
Sand, silty, and clay	5	35
Sand, brown	12	47
Sand, coarse, and gravel	17	64
Sand, fine to medium	17	81
Sand, fine, artesian flow	6	87
Sand, medium to coarse, artesian flow	8	95
Clay	1	96

TABLE 15.--Drillers' logs of selected wells in and adjacent to the Tulalip Indian Reservation--Continued

Material	Thickness (feet)	Depth (feet)
30/4-10L5. Tulalip Tribe. Altitude 202 ft. Drilled by Dahlmar Pump and Drilling, September 1974. Casing: 8-inch to 86 ft. Screen: 86-101 ft.		
Clay and gravel, with some sand	20	20
Clay, blue, sand and gravel	8	28
Sand and gravel	7	35
Unknown	7	42
Sand and gravel	12	54
Sand and gravel, fine to medium	48	102
Clay	1	103
30/4-17B2. Ochs Brothers. Altitude 135 ft. Drilled by H. E. Deckmann, February 1968. Casing: 6-inch to 127 ft. Screen: 127-142 ft.		
Sand, gravel, and clay	50	50
Sand, gravel, and clay, with water-bearing streaks	10	60
Sand, gravel, and clay, firm, dry	20	80
Sand and clay	45	125
Sand, medium, and clay, water-bearing	10	135
Sand, fine, and clay, water-bearing	7	142
30/4-17B3. Don Senter. Altitude 125 ft. Drilled by H. E. Deckmann, June 1960. Casing: 6-inch to 123 ft. Screen: 123-128 ft.		
Sand and gravel	115	115
Sand, with clay streaks, water-bearing	8	123
Sand, medium, water-bearing	5	128
30/4-17B4. Ernie Santi. Altitude 125 ft. Drilled by H. E. Deckmann, August 1955. Casing: 6-inch to 114 ft; perforated 70-73 ft. Screen: 114-119 ft.		
Sand and clay	64	64
Sand, coarse, loose	10	74
Sand and gravel, hard-packed	11	85
Sand and gravel, loose, water-bearing	34	119
30/4-17B5. A. W. Nylander. Altitude 110 ft. Drilled by H. E. Deckmann, May 1949. Casing: 6-inch to 112 ft; perforated 100-105 ft.		
Sand and gravel	12	12
Till	4	16
Sand and gravel, with thin water streaks	14	30
Sand, hard, dry	50	80
Sand, water-bearing	25	105
Sand, with clay, hard	7	112
30/4-17B6. C. Fairchild. Altitude 110 ft. Drilled by H. E. Deckmann, July 1953. Casing: 6-inch to 90 ft. Screen 90-95 ft.		
Sand and gravel, loose	8	8
Unknown	16	24
Gravel and clay, cemented	16	40
Sand and silt, dry	35	75
Sand, water-bearing	20	95
30/4-17B9. Clyde Lashua. Altitude 85 ft. Drilled by H. E. Deckmann, February 1969. Casing: 6-inch to 178 ft; perforated 89-90, 100-103 ft.		
Sand, gravel, and clay	20	20
Sand, gravel, and clay, with thin water streaks	70	90
Sand, gravel, and clay, hard-packed, little water	10	100
Sand and gravel, water-bearing	3	103
Sand, fine, and clay	75	178
30/4-17B11. Waldo Wickstrom. Altitude 112 ft. Drilled by H. E. Deckmann, April 1960. Casing: 6-inch to 49 ft. Screen: 49-54 ft.		
Clay, sand, and gravel, hard-packed	10	10
Clay, sand, and gravel, soft	15	25
Sand and clay, wet	23	48
Sand, water-bearing	3	51
Sand, fine, clay and gravel	4	55

TABLE 15.--Drillers' logs of selected wells in and adjacent to the Tulalip Indian Reservation--Continued

Material	Thick-ness (feet)	Depth (feet)
30/4-17B12. L. Hansen. Altitude 110 ft. Drilled by H. E. Deckmann, February 1968. Casing: 6-inch to 143 ft; perforated 125-135 ft.		
Sand, gravel, and clay	44	44
Sand, fine, and clay, water-bearing	11	55
Sand, gravel, and clay, dry	25	80
Sand, gravel, and clay, water-bearing	7	87
Sand, gravel, and clay, dry	10	97
Sand, gravel, and clay, water-bearing	4	101
Sand, gravel, and clay, thin water streaks	24	125
Sand, gravel, and clay, water-bearing	10	135
Unknown	8	143
30/4-17B13. Fahlstrom. Altitude 100 ft. Drilled by H. E. Deckmann, July 1965. Casing: 6-inch to 181 ft. Screen: 181-186 ft.		
Soil, sandy	6	6
Clay, sandy, and gravel	52	58
Clay, and water-bearing sand and gravel streaks	10	68
Sand, coarse, and clay, water-bearing	5	73
Clay, sandy, and gravel, hard, dry	39	112
Clay, sand, and some gravel, dry	23	135
Sand and clay, wet	45	180
Sand, medium to coarse, and clay, water-bearing	6	186
30/4-17B14. Veenhuizen. Altitude 110 ft. Drilled by H. E. Deckmann, April 1962. Casing: 6-inch to 105 ft. Screen 105-110 ft.		
Gravel	30	30
Sand, fine, and clay,soft	25	55
Clay, gray, with little gravel	15	70
Clay, brown sand, and gravel	15	85
Clay, brown, with water-bearing sand streaks	15	100
Sand, water-bearing	10	110
30/4-17B15. Dishnow. Altitude 70 ft. Drilled by H. E. Deckmann, September 1965. Casing: 6-inch to 146 ft. Screen: 146-151 ft.		
Sand and gravel	28	28
Sand and gravel, some water	2	30
Sand and clay	8	38
Sand and clay, little water	2	40
Sand, fine, and clay	49	89
Sand, fine, water-bearing	3	92
Sand, fine, and clay	54	146
Sand, fine, water-bearing	5	151
30/4-17B16. Garvey. Altitude 100 ft. Drilled by H. E. Deckmann. Casing: 6-inch to 115 ft. Screen: 115-120 ft.		
Sand and silt	80	80
Sand, silt, and some gravel, hard-packed	9	89
Sand, silt, and gravel, water-bearing	31	120
30/4-17B17. Anderson. Altitude 80 ft. Drilled by H. E. Deckmann, July 1954. Casing: 6-inch to 127 ft. Screen: 122-127 ft.		
Gravel and coarse sand, hard	70	70
Sand, wet	20	90
Sand, coarse, with gravel streaks, water-bearing	20	110
Sand with gravel streaks, loose, water-bearing	17	127
30/4-17C1. Spee-Bi-Dah Community Water Co. Altitude 110 ft. Drilled by C. E. Miller, 1946. Casing: 6-inch to 377 ft; perforated 360-364 ft.		
Sand and gravel, dry	102	102
Sand, fine, with some clay	2	104
Gravel, fine	2	106

(continued)

TABLE 15.--Drillers' logs of selected wells in and adjacent to the Tulalip Indian Reservation--Continued

Material	Thickness (feet)	Depth (feet)
30/4-17C1.--Continued		
Clay, yellow, sandy	3	109
Sand, silty, a little water	5	114
Clay, gray	5	119
Clay, blue	13	132
Clay, sandy	17	149
Sand, gray, some water	4	153
Clay, gray	6	159
Sand, dark gray, fine, water-bearing	101	260
Sand, hard	9	269
Sand, fine	21	290
Sand, hard, some water	4	294
Sand, fine to medium	4	298
Clay and fine sand	7	305
Sand, fine	9	314
Sand, fine, with clay layers	29	343
Sand, partially consolidated	1	344
Sand, medium, with 15 percent fine gravel	9	353
Sand, medium	5	358
Sand, partially consolidated	4	362
Sand, coarse, with fine gravel	5	367
Gravel, coarse, and coarse sand	5	372
Unknown	5	377
30/4-17K1. Tulalip Shores, Inc. Altitude 170 ft. Drilled by C. E. Miller, December 1946. Casing: 8-inch to 300 ft, 6-inch to 518 ft; perforated 497-504 ft.		
Soil, sand, and gravel	10	10
Till	5	15
Sand, dry	50	65
Sand and gravel	20	85
Sand, tight	42	127
Sand, fine, a little water	5	132
Sand, yellow and gray, tight	9	141
Clay, sandy	9	150
Sand, gray, fine	5	155
Clay, sandy	2	157
Clay, blue	47	204

(continued)

Material	Thickness (feet)	Depth (feet)
30/4-17K1.--Continued		
Sand, black, with fine gravel, a little water	2	206
Sand, gray, with some clay	3	209
Sand, fine, and fine gravel	9	218
Sand, with some clay	2	220
Sand, fine, and wood	5	225
Sand, soft, clayey	5	230
Sand, fine, with some water	70	300
Sand, gray	20	320
Sand, fine, silty	43	363
Sand, tight, with clay layers	62	425
Sand, fine, tight	20	445
Sand, tight, with clay layers	30	475
Sand, fine	7	482
Clay	1	483
Sand, gray, coarse, with 25 percent fine gravel, water-bearing	17	500
Sand, coarse, and gravel	6	506
Unknown	12	518
30/4-21G1. Arcadia Water District. Altitude 158 ft. Drilled by Williams Well Drilling, Inc., October 1969. Casing: 6-inch to 365 ft. Screen: 365-375 ft.		
Sand and gravel	93	93
Clay	90	183
Sand and silt	170	353
Sand, water-bearing	22	375
30/4-21J1. Upper Tulalip Heights. Altitude 160 ft. Drilled by R. Freeman, 1970. Casing: 6-inch to 158 ft. Screen: 158-163 ft.		
Till	55	55
Clay, silt, and wood chips	97	152
Sand, fine, loose	3	155
Sand, medium to coarse, with some fine gravel, water-bearing	8	163

TABLE 15.--Drillers' logs of selected wells in and adjacent to the Tulalip Indian Reservation--Continued

Material	Thick-ness (feet)	Depth (feet)
30/4-21J2. White. Altitude 182 ft. Drilled by H. E. Deckmann, September 1967. Casing: 6-inch to 231 ft. Screen: 231-241 ft.		
Sand, gravel, and clay, hard-packed	120	120
Clay, with some gravel, hard	10	130
Clay, gravel, and sand	5	135
Sand and clay	25	160
Clay, blue-gray	20	180
Clay and gravel, hard, with thin water-bearing streaks	8	188
Clay	7	195
Clay, with thin water-bearing streaks	17	212
Sand, water-bearing	4	216
Sand, silt, and wood chips, water-bearing	4	220
Sand, fine, and clay, soft	8	228
Sand, fine, with some clay, water-bearing	13	241
30/4-22L1. Paul Hesby. Altitude 100 ft. Drilled by Ace Drilling and Pump Service, May 1974. Casing: 6-inch to 106 ft; open end.		
Soil, sandy	3	3
Gravel, coarse, cemented	87	90
Gravel, coarse, loosely cemented	12	102
Clay, blue	3	105
Sand and gravel, loose, water-bearing	2	107
30/4-25K1. Marysville Test Hole No. 4. Altitude 180 ft. Drilled by Northwest Pump and Drilling Co., February 1969. Casing pulled(?).		
Soil	4	4
Sand, brown, with silt and coarse gravel	20	24
Till, brown	3	27
Silt, blue, with sand and gravel, and layers of brown silt	49	76
Silt, brown, with thin lenses of water-bearing sand and gravel and some organic matter	15	91

(continued)

Material	Thick-ness (feet)	Depth (feet)
30/4-25K1.--Continued		
Silt, blue, with thin lenses of water-bearing sand and gravel, and some organic matter	29	120
Sand, blue, fine, and silt	25	145
Clay, blue	40	185
Sand, blue, fine, and silt, water-bearing	103	288
Clay, blue, with compacted layers	55	343
Sand, fine, and silt, water-bearing	1	344
30/4-26N1. Tulalip Tribe. Altitude 100 ft. Drilled by C. E. Miller. Casing: 10-inch to 67 ft, 8-inch to 166 ft; never developed.		
Clay, yellow, soft	15	15
Clay, blue	20	35
Clay, sandy	25	60
Clay, blue, tight	50	110
Sand, tight	7	117
Sand, loose, a little water	3	120
Sand, gray, tight, dry	4	124
Clay, blue	8	132
Clay, sandy, and peat, in alternating layers	34	166
30/4-28A1. Hermosa Point Dock and Water Association. Altitude 60 ft. Drilled by R. E. Freeman, 1966. Casing: 6-inch to 159 ft. Screen: 159-163 ft.		
Till	55	55
Clay, silt, and wood	97	152
Sand, fine	3	155
Sand, medium to coarse, and gravel	8	163
30/4-35R1. Potlatch Beach Water District. Altitude 130 ft. Drilled by C. E. Miller, September 1945. Casing: 6-inch to 155 ft. Screen: 155-171 ft.		
Till	40	40
Sand and gravel, tight	20	60

(continued)

TABLE 15.--Drillers' logs of selected wells in and adjacent to the Tulalip Indian Reservation--Continued

Material	Thick-ness (feet)	Depth (feet)
30/4-35R1.--Continued		
Clay, tight sand, and gravel	20	80
Sand and gravel, dry	60	140
Sand, some water	15	155
Sand, medium, water-bearing	17	172
Clay and fine sand	--	--
30/4-35R2. Clayton Olson. Altitude 115 ft. Drilled by R. E. Freeman, October 1963. Casing: 6-inch to 156 ft. Screen: 156-161 ft.		
Soil	3	3
Sand and gravel, cemented	29	32
Sand, tight, dry	15	47
Silt, with clay streaks	13	60
Sand and gravel, tight, dry	74	134
Sand, brown, medium, and loose, wet	8	142
Sand, brown, medium, with clay streaks	5	147
Sand, gray, fine to medium	10	157
Sand, fine, water-bearing	10	167
30/4-36J11. Priest Point Grocery. Altitude 135 ft. Drilled by H. E. Deckmann, August 1949. Casing: 4-inch to 152 ft. Screen: 152-162 ft.		
Sand and gravel, hard	30	30
Sand, fine, and silt	40	70
Sand and fine gravel, hard-packed	20	90
Sand	50	140
Sand, wet	13	153
Sand, coarse, with some gravel, silt, and fine sand, water-bearing	10	163
30/4-36N1. H. E. Bauer. Altitude 95 ft. Drilled by R. E. Freeman. Casing: 6-inch to 128 ft. Screen: 128-133 ft.		
Soil	2	2
Sand, with clay layers	20	22

(continued)

Material	Thick-ness (feet)	Depth (feet)
30/4-36N1.--Continued		
Gravel, coarse, tightly cemented	7	29
Sand and gravel, tight	76	105
Sand and gravel, water-bearing	28	133
30/4-36N3. Delbert Morden. Altitude 92 ft. Drilled by R. E. Freeman, October 1974. Casing: 6 inch to 20 ft. Screen: 120-125 ft.		
Soil, sandy	3	3
Clay, blue	23	26
Sand and gravel, cemented, dry	69	95
Sand, loose, water-bearing	30	125
30/4-36P1. M. E. Vander Pol. Altitude 115 ft. Drilled by C. E. Miller, 1936. Casing: 6-inch to 152 ft.		
Clay and sand	132	132
Sand and gravel, water-bearing	20	152
30/4-36P4. W. Crawford. Altitude 115 ft. Drilled by H. E. Deckmann, February 1953. Casing: 6-inch to 143 ft. Screened.		
Sand and silt	118	118
Sand, wet	13	131
Sand, water-bearing	15	146
30/4-36P12. Johnason. Altitude 118 ft. Drilled by H. E. Deckmann, November 1948. Casing: 6-inch to 167 ft. Screen: 167-172 ft.		
Till, with sand and gravel streaks	50	50
Sand, with some silt	10	60
Gravel, hard-packed, and some till	10	70
Sand, with some silt	65	135
Sand, fine	31	166
Sand, blue, water-bearing	6	172

TABLE 15.--Drillers' logs of selected wells in and adjacent to the Tulalip Indian Reservation--Continued

30/4-36R1. Snug Harbor Mobile Home Park. Altitude 135 ft. Drilled by H. E. Deckmann, February 1970. Casing: 10-inch to 154 ft.

Material	Thickness (feet)	Depth (feet)
Clay and sand, brown	17	17
Clay, blue	17	34
Clay and sand	4	38
Clay, with sand layers	32	70
Clay, hard, and gravel	19	89
Sand and gravel, tight	31	120
Sand	34	154

30/4-36R2. Chadwick. Altitude 135 ft. Drilled by H. E. Deckmann, May 1967. Casing: 10-inch to 138 ft. Screen: 138-155 ft.

Material	Thickness (feet)	Depth (feet)
Clay, blue	30	30
Clay, blue, with some sand	56	86
Clay and gravel, hard-packed	29	115
Sand and clay, dry	21	136
Sand, water-bearing	19	155

30/5-5E2. J. T. More. Altitude 93 ft. Dug by G. Lorie, September 1951. Casing: 36-inch to 27 ft; perforated 22-27 ft.

Material	Thickness (feet)	Depth (feet)
Soil	3	3
Sand, gray, dry	5	8
Sand, gray, water-bearing	19	27

30/5-3D1. Marysville School District. No. 25. Altitude 90 ft. Drilled by H. O. Meyer Drilling Co., February 1964. Casing: 8-inch to 258 ft. Screen: 258-263 ft.

Material	Thickness (feet)	Depth (feet)
Topsoil	2	2
Sand, brown, with some clay, water-bearing	33	35
Sand, gray, with some silt, little water	10	45
Sand, gray, with silt and wood	10	55

(continued)

30/5-3D1.--Continued

Material	Thickness (feet)	Depth (feet)
Silt, gray	85	140
Clay, gray, with some silt	112	252
Clay, gray, with water-bearing gravel layers	4	256
Sand and gravel, little clay, very tight	4	260
Gravel, water-bearing, artesian flow	3	263
Clay and gravel, dry	3	266

30/5-6H2. Jerry Carter. Altitude 96 ft. Drilled by Ace Drilling and Pump Service, August 1974. Casing: 8-inch to 22 ft, 6-inch to 109 ft; open end.

Material	Thickness (feet)	Depth (feet)
Soil, sandy	2	2
Sand, brown, cemented	6	8
Sand and gravel, loose, some water, high in iron	6	14
Clay and cemented gravel	16	30
Sand and gravel, dry, cemented	34	64
Clay, silty	14	78
Clay, blue	3	81
Gravel, gray, coarse, cemented	7	88
Clay, blue	3	91
Gravel, cemented	7	98
Sand and gravel, loose	10	108
Gravel, coarse, loose	1	109

30/5-6H3. K. Alexander. Altitude 96 ft. Drilled by R. E. Freeman, August 1969. Casing: 6-inch to 115 ft; perforated 115-128 ft.

Material	Thickness (feet)	Depth (feet)
Soil, brown, sandy	2	2
Sand and gravel, brown, cemented	23	25
Sand and silt, gray	35	60
Clay, blue	7	67
Sand and gravel, gray, cemented, wet	44	111
Sand and gravel, gray, artesian	20	131

TABLE 15.--Drillers' logs of selected wells in and adjacent to the Tulalip Indian Reservation--Continued

Material	Thickness (feet)	Depth (feet)
30/5-6J4. G. Gesme. Altitude 95 ft. Drilled by R. E. Freeman, 1966. Casing: 6-inch to 107 ft; open end.		
Soil	3	3
Sand, gray, wet	47	50
Silt and fine sand, gray	27	77
Clay, blue	20	97
Sand and gravel, loose	8	105
Gravel, artesian	2	107
30/5-6Q1. Paul Watson. Altitude 225 ft. Drilled by H. E. Deckmann, April 1969. Casing: 6-inch to 107 ft. Screen: 107-112 ft.		
Sand and clay, firm	47	47
Sand, clay, and gravel, hard	13	60
Sand, gravel, and clay, hard-packed, with thin water-bearing streaks	27	87
Clay, gray, firm	18	105
Sand and gravel, water-bearing	7	112
30/5-6Q2. Jean Raymond. Altitude 225 ft. Drilled by H. E. Deckmann, April 1971. Casing: 6-inch to 100 ft. Screen: 100-105 ft.		
Sand and clay, firm	48	48
Clay and sand, hard-packed, dry	12	60
Clay, sand, and fine gravel, hard-packed	30	90
Clay, gray	10	100
Sand, with some clay, water-bearing	5	105
30/5-7F1. A. D. Neal. Altitude 275 ft. Drilled by R. E. Freeman, 1970. Casing: 6-inch to 175 ft. Screen: 175-180 ft.		
Soil	3	3
Clay, with some silt	12	15
Till	25	40
Sand and gravel, dry	98	138
(continued)		
30/5-7F1.--Continued		
Clay, blue	3	141
Clay, with sand layers, wet	29	170
Sand and gravel, loose, water-bearing	10	180
30/5-7F2. Ralph Peterson. Altitude 270 ft. Drilled by H. E. Deckmann, October 1966. Casing: 6-inch to 174 ft. Screen: 174-179 ft.		
Soil	4	4
Clay, solid	8	12
Clay, sand, and gravel	26	38
Sand, gravel, and clay, hard-packed, dry	52	90
Sand, some gravel and clay, soft	40	130
Clay and sand	17	147
Clay, firm, with streaks of water-bearing sand and gravel	6	153
Clay, with water-bearing gravel streaks	4	157
Clay and sand	10	167
Clay, with water-bearing streaks	3	170
Sand, with a little gravel, water-bearing	9	179
30/5-7G5. Norman Des Rosiers. Altitude 240 ft. Drilled by R. E. Freeman, March 1975. Casing: 6-inch to 130 ft. Screen: 130-135 ft.		
Soil, sandy	3	3
Clay, brown, with sand streaks	11	14
Gravel, brown, coarse, and cemented	89	103
Gravel, gray, coarse, cemented, with some water	25	128
Gravel, loose, with sand streaks, water-bearing	7	135

TABLE 15.--Drillers' logs of selected wells in and adjacent to the Tulalip Indian Reservation--Continued

Material	Thickness (feet)	Depth (feet)
30/5-10Q1. A. G. Ziebell. Altitude 105 ft. Casing: 6-inch to 237 ft.		
Topsoil	18	18
Till, and blue clay	22	40
Sand, fine, some water	29	69
Clay, blue	51	120
Till, and blue clay	30	150
Clay	87	237
30/5-19M1. Marysville Test Hole No. 1. Altitude 510 ft. Drilled by Northwest Pump and Drilling Co., May 1968. Casing pulled.		
Sand, gravel, and silt, brown	3	3
Sand, gravel, and boulders, brown, cemented	24	27
Sand, gravel, and silt, blue-gray	41	68
Sand and silt, blue-gray	22	90
Sand, brown, cemented	67	157
Sand and gravel, brown, cemented	11	168
Sand, brown, cemented	37	205
Sand, brown, fine, with silt streaks, water-bearing	23	228
Sand and gravel, brown, cemented	42	270
Sand, fine to coarse, water-bearing	3	273
Sand, brown, cemented	17	290
Sand, brown, fine, water-bearing	12	302
Clay, greenish-gray	15	317
Sand, gravel, and clay, greenish-gray, with lenses of water-bearing sand	35	352
Silt, blue-gray, with lenses of water-bearing sand	38	390
Clay, blue, with lenses of water-bearing sand	60	450
Sand, fine to medium, water-bearing	14	464
Sand and silt, water-bearing	18	482

Material	Thickness (feet)	Depth (feet)
30/5-20B1. Tulalip Tribe. Altitude 45 ft. Drilled November 1943. Casing: 6-inch to 40 ft. Screened.		
Sand, brown	7	7
Clay, sandy, and till	10	17
Sand, water-bearing	13	30
Clay, sandy	10	40
30/5-26D1. Town of Marysville. Altitude 110 ft. Drilled by C. E. Miller, January 1955. Casing: 10-inch to 55 ft, 8-inch to 390 ft, 6-inch to 644 ft. Screen: 644-657 ft.		
Till	65	65
Gravel, water-bearing	1	66
Gravel, tight, with water seams	44	110
Till and clay	64	174
Till, sandy clay, and wood	226	400
Till	72	472
Till, sand, and wood	78	550
Clay, blue	52	602
Sand, fine, and silt, some water	31	633
Sand, gray, water-bearing	3	636
Sand, coarse, and 10 percent fine gravel, water-bearing	21	657
Clay, sandy	1	658
30/5-29B3. Robert Moses. Altitude 26 ft. Dug by Ward Sharp, Inc., May 1963. Casing: 42-inch to 24 ft.		
Loam, sandy	2	2
Sand	16	18
Unknown	6	24

TABLE 15.--Drillers' logs of selected wells in and adjacent to the Tulalip Indian Reservation--Continued

Material	Thick-ness (feet)	Depth (feet)
30/5-29B8. Arnold Cheer. Altitude 28 ft. Dug by Ward Sharp, Inc., May 1963. Casing: 42-inches to 19 ft.		
Loam, sandy	2	2
Sand	15	17
Clay	2	19
30/5-29C2. D. T. Sherlock. Altitude 28 ft. Dug by A. W. Johnson, April 1962. Casing: 36-inch to 35 ft. Screen: 35-40 ft.		
Sand	40	40
30/5-29F3. G. G. Gregg. Altitude 21 ft. Dug by Pearson Well Drilling, July 1974. Casing: 42-inch to 26 ft. Screened.		
Sand, brown, fine	21	21
30/5-29G2. Maria Moses. Altitude 20 ft. Dug by Ward Sharp, Inc., May 1963. Casing: 42-inch to 33 ft.		
Loam, sandy	2	2
Sand	31	33
30/5-29G6. Lucille Hatch. Altitude 21 ft. Dug by Ward Sharp, Inc., May 1963. Casing: 42-inch to 21 ft.		
Loam, sandy	2	2
Sand	9	11
Clay	2	13
Sand	6	19
Clay	2	21
30/5-29K1. Richard Spencer. Altitude 17 ft. Dug by Ward Sharp, Inc., May 1963. Casing: 42-inch to 28 ft.		
Loam, sandy	2	2
Sand	26	28

Material	Thick-ness (feet)	Depth (feet)
30/5-30B1. Pete Dillon. Altitude 145 ft. Dug by Ward Sharp, Inc., July 1963. Casing: 42-inch to 33 ft.		
Loam, sandy	2	2
Gravel	30	32
Till	1	33
30/5-30B2. Nora Dillon. Altitude 140 ft. Dug by Ward Sharp, Inc., May 1963. Casing: 42-inch to 24 ft.		
Gravel	6	6
Clay	1	7
Gravel	12	19
Sand	5	24
30/5-30B4. Dallas Taylor. Altitude 115 ft. Dug by Ward Sharp, Inc., August 1963. Casing: 42-inch to 19 ft.		
Loam, sandy	2	2
Gravel	17	19
30/5-30G1. R. Kona. Altitude 112 ft. Dug by Ward Sharp, Inc., July 1963. Casing: 42-inch to 17 ft.		
Loam, sandy	2	2
Gravel	12	14
Till	3	17
30/5-30G2. Louise Ledford. Altitude 160 ft. Dug by Ward Sharp, Inc., August 1963. Casing: 42-inch to 66 ft.		
Loam, sandy	3	3
Till	31	34
Sand and gravel	5	39
Till and cobbles	14	53
Gravel	13	66

TABLE 15.--Drillers' logs of selected wells in and adjacent to the Tulalip Indian Reservation--Continued

Material	Thickness (feet)	Depth (feet)
30/5-30G3. Bernice Parks. Altitude 160 ft. Dug by Ward Sharp, Inc., July 1963. Casing: 42-inch to 64 ft.		
Gravel	1	1
Till	45	46
Gravel	18	64
30/5-31B6. Ed Johnson. Altitude 18 ft. Drilled by H. E. Deckmann, August 1957. Filled in.		
Unknown	25	25
Clay and sand, with some water	17	42
Clay, hard, and gravel	10	52
Clay, with water-bearing gravel streaks	3	55
Sand and gravel, coarse, with some clay, water-bearing	2	57
30/5-31B7. W. C. Morgan. Altitude 19 ft. Drilled by H. E. Deckmann, August 1957. Casing: 6-inch to 62 ft. Screen: 57-62 ft.		
Till	18	18
Clay and sand, firm	22	40
Clay and sand, some water	8	48
Sand, gravel, and clay, hard-packed	7	55
Sand, water-bearing	7	62
30/5-31B8. Ed Johnson. Altitude 18 ft. Drilled by H. E. Deckmann, March 1958. Casing: 6-inch to 55 ft. Screen: 52-55 ft.		
Clay, hard	8	8
Till	12	20
Clay, hard	5	25
Clay and sand, firm	10	35
Clay and sand, some water	15	50
Sand, water-bearing	5	55

Material	Thickness (feet)	Depth (feet)
30/5-31E1. S. Jones, Sr. Altitude 125 ft. Drilled by H. E. Deckmann, May 1967. Casing: 6-inch to 136 ft. Screen: 131-136 ft.		
Clay and gravel, hard	20	20
Sand, coarse, and clay, hard	30	50
Clay, sand, and gravel, some water	10	60
Sand, gray, and clay, dry	50	110
Sand and some gravel, water-bearing	26	136
30/5-31F1. D. Jones. Altitude 80 ft. Drilled by R. E. Freeman, February 1964. Casing: 6-inch to 85 ft; perforated 78-83 ft.		
Sand, loose, dry	14	14
Sand, with clay layers, dry	3	17
Sand and gravel, cemented	5	22
Sand and gravel, dry	43	65
Sand and medium gravel	8	73
Sand and coarse gravel	12	85
30/5-31F2. Carl Jones. Altitude 90 ft. Drilled by R. E. Freeman, February 1964. Casing: 6-inch to 87 ft. Screen: 87-92 ft.		
Gravel, coarse, cemented	14	14
Sand and gravel, tight	51	65
Boulder	2	67
Sand, medium, tight, dry	9	76
Sand, with 5 percent fine gravel, water-bearing	16	92

TABLE 15.--Drillers' logs of selected wells in and adjacent to the Tulalip Indian Reservation--Continued

Material	Thickness (feet)	Depth (feet)
30/5-31F3. G. E. Carpenter. Altitude 100 ft. Dug by Ward Sharp, Inc., July 1963. Casing: 4-inch to 97 ft.		
Loam, sandy	4	4
Till	48	52
Sand and gravel	45	97
30/5-31F5. Lena Harrison. Altitude 80 ft. Dug by Ward Sharp, Inc., July 1963. Casing: 42-inch to 17 ft.		
Loam, sandy	3	3
Sand, water-bearing	14	17
30/5-31F6. Carl Jones. Altitude 90 ft. Dug by Ward Sharp, Inc., July 1963. Casing: 42-inch to 21 ft.		
Loam, sandy	1	1
Till	13	14
Gravel, water-bearing	7	21
30/5-31G2. Glen and Victor Parks. Altitude 38 ft. Dug by Ward Sharp, Inc., June 1963. Casing: 42-inch to 37 ft.		
Loam, sandy	1	1
Till	37	38
30/5-31G3. Wesley Patrick. Altitude 57 ft. Dug by Ward Sharp, Inc., June 1963. Casing: 42-inch to 31 ft.		
Loam, sandy	1	1
Clay, gray	12	13
Till	18	31
30/5-31G5. L. D. Cladoosby. Altitude 17 ft. Dug by Ward Sharp, Inc., June 1963. Casing: 42-inch to 21 ft.		
Loam, sandy	1	1
Till	15	16
Gravel	4	20
Till	1	21
30/5-31M1. E. Price. Altitude 120 ft. Dug by Ward Sharp, Inc., June 1963. Casing: 42-inch to 17 ft.		
Loam, sandy	1	1
Sand and gravel	2	3
Clay	2	5
Sand	3	8
Clay	6	14
Till	3	17
30/5-31M6. Ray Price. Altitude 122 ft. Dug by Ward Sharp, Inc., June 1963. Casing: 42-inch to 19 ft.		
Gravel	4	4
Sand	13	17
Clay	2	19
31/4-22P2. City of Marysville. Altitude 422 ft. Drilled by Richardson Well Drilling Co., Inc., August 1968. Casing: 20-inch to 277 ft, 16-inch to 437 ft. Screen: 437-452 ft.		
Topsoil	12	12
Till and boulders	61	73
Clay, sand, and gravel	49	122
Till	8	130
Sand, with some gravel	6	136

(continued)

TABLE 15.--Drillers' logs of selected wells in and adjacent to the Tulalip Indian Reservation--Continued

Material	Thick-ness (feet)	Depth (feet)
31/4-22P2.--Continued		
Clay, sand, and gravel	4	140
Till	14	154
Sand and gravel, some water	10	164
Clay, sand, and gravel	16	180
Sand	87	267
Sand, coarse, and clay	8	275
Clay, sand, and gravel	23	298
Sand and clay	8	306
Sand, gravel, and clay	12	318
Clay, gray	24	342
Clay, gray, and gravel	12	354
Clay, blue	19	373
Till	31	404
Clay, gray	16	420
Clay, gray, and fine gravel	3	423
Clay, gray	17	440
Sand and gravel, some water	14	454
Clay, blue	128	582
Clay, hard	5	587
Clay, blue	106	693
Clay, hard, sandy, blue	7	700
31/4-26B1. Vernon Linth. Altitude 480 ft. Drilled by Henry E. Deckmann, August 1958. Casing: 6-inch to 211 ft. Screen: 211-216 ft.		
Topsoil	3	3
Sand, gravel, and clay, hard-packed, with till streaks	77	80
Gravel and clay, firm	40	120
Clay and sand, dry, with sand streaks	78	198
Sand and gravel, water-bearing, with clay in upper portion	7	205
Sand and gravel, water-bearing	11	216
31/4-33C2. C. T. Fairclough. Altitude 360 ft. Drilled by Ace Drilling and Pump Service, January 1974. Casing: 6-inch to 295 ft. Screen: 295-300 ft.		
Soil, brown, sandy	3	3
Sand, brown, cemented	13	16
Gravel, brown, coarse, cemented	180	196
Boulder, gray	2	198
Clay, gray	71	269
Silt, gray, loose, some water	24	293
Sand, gray, with streaks of brown clay, loose, water-bearing	7	300
31/5-29K1. Snohomish County Park and Recreation Dept. Altitude 111 ft. Drilled by H. H. Well Drilling, April 1974. Casing: 10-inch to 18 ft, 6-inch to 218 ft. Screen: 218-223 ft.		
Topsoil	2	2
Till	2	4
Gravel and clay	66	70
Sand, fine, and clay	80	150
Clay	20	170
Sand and clay	20	190
Sand, fine	2	192
Clay	3	195
Sand and clay	20	215
Sand, water-bearing	10	225
31/5-32L3. Robert E. Freeman. Altitude 98 ft. Drilled by owner, June 1964. Casing: 6-inch to 143 ft; perforated 128-141 ft.		
Soil, sandy	2	2
Sand, cemented	1	3
Sand and gravel, water-bearing	15	18
Clay, some sand in thin layers	110	128
Sand and gravel, clay streaks, water-bearing	13	141
Clay	2	143

TABLE 16.--Water levels in selected wells

[B, well pumped recently; C, nearby well being pumped; D, nearby well pumped recently; G, measured by another agency; J, well not in use, and no nearby wells in use]

29N04E01R02 MERIDIAN WATER SUPPLY

ALTITUDE OF LAND SURFACE 99 FEET.

HIGHEST WATER LEVEL 103.80 BELOW LSD, DEC. 12, 1974.
LOWEST WATER LEVEL 112.45 BELOW LSD, NOV. 8, 1974.
RECORDS AVAILABLE 1965, 1974-75.

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
APR. 5, 1965	105.00	DEC. 12, 1974	103.80B	FEB. 11, 1975	104.89B	MAR. 14, 1975	104.29B
SEP. 24, 1974	110.00B	JAN. 14, 1975	104.72B	FEB. 27	104.22B	APR. 16	104.36B
NOV. 8	112.45B						

30N04E01N01 LANDS AND WATER INC

ALTITUDE OF LAND SURFACE 524 FEET.

HIGHEST WATER LEVEL 195.13 BELOW LSD, APR. 16, 1975.
LOWEST WATER LEVEL 207.00 BELOW LSD, FEB. 14, 1970.
RECORDS AVAILABLE 1970, 1974-75.

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
FEB. 14, 1970	207.00	NOV. 14, 1974	199.50B	JAN. 15, 1975	200.92B	MAR. 14, 1975	199.87B
OCT. 8, 1974	204.80B	DEC. 12	200.30B	FEB. 11	200.75B	APR. 16	195.13B

30N04E03H01 D FALKNER

ALTITUDE OF LAND SURFACE 394 FEET.

HIGHEST WATER LEVEL 80.30 BELOW LSD, DEC. 12, 1974.
LOWEST WATER LEVEL 83.93 BELOW LSD, OCT. 2, 1974.
RECORDS AVAILABLE 1974-75.

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT. 2, 1974	83.93B	DEC. 12, 1974	80.30B	FEB. 11, 1975	81.10B	APR. 16, 1975	80.44B
NOV. 8	82.07B	JAN. 15, 1975	81.01B	MAR. 14	80.70B		

30N04E07G02 TULARE BEACH ASSOC

ALTITUDE OF LAND SURFACE 29 FEET.

HIGHEST WATER LEVEL 18.86 BELOW LSD, JAN. 15, 1975.
LOWEST WATER LEVEL 27.74 BELOW LSD, APR. 16, 1975.
RECORDS AVAILABLE 1967, 1974-75.

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
APR. 7, 1967	26.81	NOV. 14, 1974	25.63B	JAN. 15, 1975	18.86B	MAR. 14, 1975	27.22B
OCT. 16, 1974	26.96J	DEC. 12	24.09B	FEB. 11	20.86B	APR. 16	27.74B

30N04E07G03 TULARE BEACH ASSOC

ALTITUDE OF LAND SURFACE 29 FEET.

HIGHEST WATER LEVEL 19.37 BELOW LSD, OCT. 16, 1974.
LOWEST WATER LEVEL 21.85 BELOW LSD, FEB. 11, 1975.
RECORDS AVAILABLE 1974-75.

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT. 16, 1974	19.37J	DEC. 12, 1974	20.13B	FEB. 11, 1975	21.85B	APR. 16, 1975	20.17
NOV. 14	20.15B	JAN. 15, 1975	20.08B	MAR. 14	19.99B		

30N04E10L01 TULALIP TRIBE

ALTITUDE OF LAND SURFACE 223 FEET.

HIGHEST WATER LEVEL 9.04 ABOVE LSD, APR. 16, 1975, APR. 24, 1975.
LOWEST WATER LEVEL 6.97 ABOVE LSD, JAN. 14, 1975.
RECORDS AVAILABLE 1974-75.

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
DEC. 12, 1974 +	7.12J	FEB. 11, 1975 +	8.58J	APR. 16, 1975 +	9.04J	APR. 24, 1975 +	9.04C
JAN. 14, 1975 +	6.97J	MAR. 14 +	8.81J				

30N04E10L02 TULALIP TRIBE

ALTITUDE OF LAND SURFACE 229 FEET.

HIGHEST WATER LEVEL 21.04 BELOW LSD, MAR. 14, 1975.
LOWEST WATER LEVEL 22.40 BELOW LSD, JULY 10, 1974.
RECORDS AVAILABLE 1974-75.

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
JULY 10, 1974	22.40G	DEC. 12, 1974	22.12J	FEB. 11, 1975	21.31J	APR. 16, 1975	21.34J
NOV. 26	22.24J	JAN. 14, 1975	21.66J	MAR. 14	21.04J		

30N04E10L03 TULALIP TRIBE

ALTITUDE OF LAND SURFACE 213 FEET.

HIGHEST WATER LEVEL 7.97 BELOW LSD, MAR. 14, 1975.
LOWEST WATER LEVEL 9.80 BELOW LSD, JULY 15, 1974.
RECORDS AVAILABLE 1974-75.

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
JULY 15, 1974	9.80G	DEC. 12, 1974	9.11J	FEB. 11, 1975	8.43J	APR. 16, 1975	8.25J
NOV. 26	9.07J	JAN. 14, 1975	8.52J	MAR. 14	7.97J		

30N04E10L04 TULALIP TRIBE

ALTITUDE OF LAND SURFACE 189 FEET.

HIGHEST WATER LEVEL 12.11 ABOVE LSD, MAR. 14, 1975.
LOWEST WATER LEVEL 9.95 ABOVE LSD, JULY 10, 1974.
RECORDS AVAILABLE 1974-75.

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
JULY 10, 1974	+ 9.95G	JAN. 14, 1975	+ 11.26J	FEB. 27, 1975	+ 11.42J	APR. 16, 1975	+ 11.65J
DEC. 12	+ 10.64J	FEB. 11	+ 11.42J	MAR. 14	+ 12.11J	APR. 24	+ 11.42C

30N04E10L05 TULALIP TRIBE

ALTITUDE OF LAND SURFACE 201 FEET.

HIGHEST WATER LEVEL 12.17 ABOVE LSD, MAR. 14, 1975, APR. 16, 1975.
LOWEST WATER LEVEL 10.24 ABOVE LSD, DEC. 12, 1974.
RECORDS AVAILABLE 1974-75.

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
DEC. 12, 1974	+ 10.24J	FEB. 11, 1975	+ 11.71J	MAR. 14, 1975	+ 12.17J	APR. 16, 1975	+ 12.17J
JAN. 14, 1975	+ 10.78J						

30N04E17C01 SPEEHIDAH WATER CO

ALTITUDE OF LAND SURFACE 109 FEET.

HIGHEST WATER LEVEL 64.00 BELOW LSD, SEP. 15, 1946.
LOWEST WATER LEVEL 65.88 BELOW LSD, APR. 16, 1975.
RECORDS AVAILABLE 1946, 1974-75.

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
SEP. 15, 1946	64.00	NOV. 14, 1974	64.71H	FEB. 11, 1975	64.28B	MAR. 14, 1975	65.67B
AUG. 30, 1974	64.85	DEC. 12	64.10H	FEB. 27	65.10B	APR. 16	65.88B
OCT. 15	64.24	JAN. 15, 1975	64.77B	MAR. 5	64.39B		

30N04E17K01 TG MORTLAND

ALTITUDE OF LAND SURFACE 169 FEET.

HIGHEST WATER LEVEL 200.00 BELOW LSD, DEC. 10, 1946.
LOWEST WATER LEVEL 290.01 BELOW LSD, OCT. 18, 1974.
RECORDS AVAILABLE 1946, 1967, 1974-75.

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
DEC. 10, 1946	200.00	NOV. 14, 1974	271.75H	JAN. 15, 1975	247.64B	MAR. 14, 1975	265.63B
APR. 18, 1967	286.34	DEC. 12	227.60H	FEB. 11	287.10B	APR. 24	255.10B
OCT. 18, 1974	290.01H						

30N04E36P03 PRIEST POINT GRANGE

ALTITUDE OF LAND SURFACE 139 FEET.

HIGHEST WATER LEVEL 7.89 BELOW LSD, MAR. 14, 1975.
LOWEST WATER LEVEL 13.56 BELOW LSD, NOV. 8, 1974.
RECORDS AVAILABLE 1974-75.

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV. 8, 1974	13.56D	JAN. 15, 1975	9.58D	MAR. 14, 1975	7.89D	APR. 16, 1975	11.49D
DEC. 12	13.22D	FEB. 11	8.83D				

30N04E36P01 ME VANDERPOL

ALTITUDE OF LAND SURFACE 114 FEET.

HIGHEST WATER LEVEL 113.60 BELOW LSD, DEC. 12, 1974.
LOWEST WATER LEVEL 115.00 BELOW LSD, AUG. 2, 1944.
RECORDS AVAILABLE 1944, 1974-75.

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
AUG. 2, 1944	115.00	NOV. 14, 1974	114.22B	JAN. 15, 1975	114.10B	MAR. 14, 1975	113.88B
SEP. 20, 1974	113.61P	DEC. 12	113.60B	FEB. 11	114.30B	APR. 16	113.79B
OCT. 18	113.68P						

30N05E05F02 JT MORE

ALTITUDE OF LAND SURFACE 92 FEET.

HIGHEST WATER LEVEL 2.11 BELOW LSD, MAR. 19, 1975.
LOWEST WATER LEVEL 8.00 BELOW LSD, NOV. 16, 1953.
RECORDS AVAILABLE 1953, 1974-75.

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV. 16, 1953	8.00	NOV. 14, 1974	6.25J	JAN. 15, 1975	2.43J	MAR. 19, 1975	2.11J
OCT. 18, 1974	6.14J	DEC. 12	5.66J	FEB. 11	2.45J	APR. 24	3.63J

30N05E05E03 JT MORE

ALTITUDE OF LAND SURFACE 92 FEET.

HIGHEST WATER LEVEL 2.29 BELOW LSD, MAR. 19, 1975.
LOWEST WATER LEVEL 6.37 BELOW LSD, NOV. 14, 1974.
RECORDS AVAILABLE 1974-75.

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT. 18, 1974	6.29J	DEC. 12, 1974	5.07J	FEB. 11, 1975	2.56J	APR. 24, 1975	3.75J
NOV. 14	6.37J	JAN. 15, 1975	2.55J	MAR. 19	2.29J		

30N05E05J01 R CAMPBELL

ALTITUDE OF LAND SURFACE 80 FEET.

HIGHEST WATER LEVEL 2.83 BELOW LSD, MAR. 7, 1975.
LOWEST WATER LEVEL 5.01 BELOW LSD, NOV. 5, 1974.
RECORDS AVAILABLE 1974, 1975.

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV. 5, 1974	5.01B	JAN. 15, 1975	3.07B	MAR. 7, 1975	2.83B	APR. 24, 1975	4.22B

30N05E05J02 E VANWINKLE

ALTITUDE OF LAND SURFACE 79 FEET.

HIGHEST WATER LEVEL 4.22 BELOW LSD, MAR. 7, 1975.
LOWEST WATER LEVEL 5.99 BELOW LSD, NOV. 20, 1974.
RECORDS AVAILABLE 1974, 1975.

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV. 5, 1974	5.93B	NOV. 20, 1974	5.99B	JAN. 15, 1975	4.36B	MAR. 7, 1975	4.22B

30N05E06H01 W HILDE

ALTITUDE OF LAND SURFACE 207 FEET.

HIGHEST WATER LEVEL 6.06 BELOW LSD, APR. 24, 1975.
LOWEST WATER LEVEL 12.94 BELOW LSD, NOV. 20, 1974.
RECORDS AVAILABLE 1974-75.

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV. 1, 1974	11.27B	JAN. 15, 1975	11.50B	MAR. 19, 1975	6.60B	APR. 24, 1975	6.06B
NOV. 20	12.94B	FEB. 11	10.13B				

30N05E06H01 HC YANDLE

ALTITUDE OF LAND SURFACE 95 FEET.

HIGHEST WATER LEVEL 32.42 ABOVE LSD, FEB. 27, 1975.
LOWEST WATER LEVEL 29.88 ABOVE LSD, FEB. 11, 1975.
RECORDS AVAILABLE 1974-75.

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV. 26, 1974	+ 31.03B	JAN. 15, 1975	+ 31.95B	FEB. 27, 1975	+ 32.42B	APR. 16, 1975	+ 30.11B
DEC. 12	+ 30.45B	FEB. 11	+ 29.88B	MAR. 19	+ 31.49B		

30N05E07G02 GOEN

ALTITUDE OF LAND SURFACE 139 FEET.

HIGHEST WATER LEVEL 6.02 BELOW LSD, MAR. 19, 1975.
LOWEST WATER LEVEL 22.70 BELOW LSD, NOV. 20, 1974.
RECORDS AVAILABLE 1974-75.

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT. 15, 1974	22.20B	JAN. 15, 1975	11.92B	MAR. 19, 1975	6.02B	APR. 24, 1975	12.06B
NOV. 20	22.70B	FEB. 11	10.50B				

30N05E08L01 HM HARRISON

ALTITUDE OF LAND SURFACE 74 FEET.

HIGHEST WATER LEVEL 0.35 BELOW LSD, FEB. 11, 1975.
LOWEST WATER LEVEL 8.08 BELOW LSD, SEP. 12, 1945.
RECORDS AVAILABLE 1943, 1945, 1946-47, 1974-75.

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
SEP. 14, 1943	6.00	JUNE 25, 1946	4.54	APR. 18, 1947	2.73	NOV. 20, 1974	6.79B
SEP. 12, 1945	8.08	AUG. 10	6.63	JUNE 4	5.63	DEC. 12	7.16B
DEC. 28	3.20	OCT. 2	8.03	OCT. 16, 1974	6.37B	JAN. 15, 1975	2.86B
MAR. 1, 1946	2.39	DEC. 9	5.59	NOV. 14	6.82B	FEB. 11	0.35B
APR. 16	3.07	FEB. 13, 1947	2.32				

30N05E08M07 EC SMITH SR

ALTITUDE OF LAND SURFACE 77 FEET.

HIGHEST WATER LEVEL 1.72 BELOW LSD, MAR. 7, 1975.
LOWEST WATER LEVEL 6.33 BELOW LSD, NOV. 20, 1974.
RECORDS AVAILABLE 1974, 1975.

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT. 9, 1974	5.80B	NOV. 20, 1974	6.33B	JAN. 15, 1975	2.15B	MAR. 7, 1975	1.72B

30N05E20F01 RL HARRISON

ALTITUDE OF LAND SURFACE 42 FEET.

HIGHEST WATER LEVEL 8.51 BELOW LSD, MAR. 7, 1975.
LOWEST WATER LEVEL 11.39 BELOW LSD, NOV. 22, 1974.
RECORDS AVAILABLE 1974, 1975.

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
SEP. 9, 1974	10.40B	JAN. 15, 1975	9.78B	MAR. 7, 1975	8.51B	APR. 24, 1975	8.92B
NOV. 22	11.39B						

30N05E20G01 SHELDON

ALTITUDE OF LAND SURFACE 44 FEET.

HIGHEST WATER LEVEL 7.25 BELOW LSD, MAR. 14, 1975.
LOWEST WATER LEVEL 10.63 BELOW LSD, NOV. 14, 1974.
RECORDS AVAILABLE 1974-75.

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
SEP. 6, 1974	9.76B	DEC. 12, 1974	10.61B	FEB. 11, 1975	8.50B	APR. 16, 1975	7.76B
NOV. 14	10.63B	JAN. 14, 1975	9.07B	MAR. 14	7.25B	APR. 24	7.95B
NOV. 22	10.45B						

30N05E29G07

ALTITUDE OF LAND SURFACE 21 FEET.

HIGHEST WATER LEVEL 8.64 BELOW LSD, MAR. 14, 1975.
LOWEST WATER LEVEL 10.82 BELOW LSD, JAN. 14, 1975.
RECORDS AVAILABLE 1974-75.

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
SEP. 10, 1974	10.10D	NOV. 14, 1974	10.07D	JAN. 14, 1975	10.82D	MAR. 14, 1975	8.64D
OCT. 15	10.81D	DEC. 12	9.68D	FEB. 11	9.93D	APR. 16	8.79D

30N05E30H01 PETE DILLON

ALTITUDE OF LAND SURFACE 144 FEET.

HIGHEST WATER LEVEL 12.00 BELOW LSD, JULY 10, 1963.
LOWEST WATER LEVEL 20.80 BELOW LSD, SEP. 11, 1974.
RECORDS AVAILABLE 1963, 1974, 1975.

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
JULY 10, 1963	12.00	SEP. 11, 1974	20.80B	NOV. 22, 1974	19.54B	FEB. 27, 1975	16.08B

30N05E30G02 LOUISE LEDFORD

ALTITUDE OF LAND SURFACE 159 FEET.

HIGHEST WATER LEVEL 52.80 BELOW LSD, MAR. 14, 1975.
LOWEST WATER LEVEL 55.00 BELOW LSD, AUG. 1, 1963.
RECORDS AVAILABLE 1963, 1974-75.

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
AUG. 1, 1963	55.00	NOV. 22, 1974	53.93B	FEB. 11, 1975	54.12B	MAR. 14, 1975	52.80B
SEP. 12, 1974	53.65B	JAN. 14, 1975	54.53B	FEB. 27	53.05B	APR. 16	52.88B

30N05E30H01 H MCCALL

ALTITUDE OF LAND SURFACE 25 FEET.

HIGHEST WATER LEVEL 2.22 BELOW LSD, JAN. 14, 1975.
LOWEST WATER LEVEL 15.11 BELOW LSD, SEP. 10, 1974.
RECORDS AVAILABLE 1974, 1975.

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
SEP. 10, 1974	15.11B	JAN. 14, 1975	2.22B	MAR. 7, 1975	2.50B	APR. 24, 1975	2.94B
NOV. 22	6.27B						

30N05E31G02 GLEN PARKS

ALTITUDE OF LAND SURFACE 37 FEET.

HIGHEST WATER LEVEL 2.89 BELOW LSD, MAR. 14, 1975.
LOWEST WATER LEVEL 27.00 BELOW LSD, JUNE 18, 1963.
RECORDS AVAILABLE 1963, 1974-75.

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
JUNE 18, 1963	27.00	NOV. 14, 1974	18.77J	JAN. 14, 1975	5.24J	MAR. 14, 1975	2.89J
SEP. 12, 1974	15.41J	DEC. 12	19.42J	FEB. 11	3.83J	APR. 16	11.56J
OCT. 18	16.60J						

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